

**MOSHI CO-OPERATIVE UNIVERSITY**

**ENTREPRENEURSHIP EDUCATION AND THE POTENTIAL OF  
TECHNICAL GRADUATES TO VENTURE INTO BUSINESS START-UPS  
IN TANZANIA**

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IN TANZANIA**

**BY**

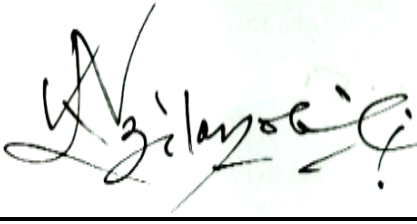
**KELVIN LUKA NZILANO**

**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF  
MOSHI CO-OPERATIVE UNIVERSITY**

**NOVEMBER, 2023**

**DECLARATION AND COPYRIGHT**

I, **Kelvin Luka Nzilano**, declare that this thesis is my original work and that it has not been presented and will not be presented to any other higher learning institution for a similar or academic award.



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10<sup>th</sup> November, 2023

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**CERTIFICATION**

The undersigned certify that they have read and hereby recommend for acceptance by the Moshi Co-operative University a thesis titled *“Entrepreneurship Education and the Potential of Technical Graduates to Venture into Business Start-ups in Tanzania”* in fulfillment of the requirements for the award of a degree of Doctor of Philosophy of Moshi Co-operative University.

Dr. Daniel Wilson Ndyetabula

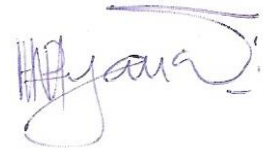
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**Main Supervisor**

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**Signature**

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15/11/2023

18/11/2023

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**Date**

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**Date**

**DEDICATION**

I dedicate this accomplishment to my beloved father, the late Mr. Luka Nemelugosi Nzilano, who passed away on 28<sup>th</sup> September 2021 prior to the realization of this dream. To my mum, Annamery Tugulwime Nyaji for her love, care, and upbringing from childhood to date. To my life mate, Dr. Sarah Nyanjara Magoti and my children Anamaria, Anaivana, Alvin, and my newborn son, Allen for their love, support, prayers, and patience during my absence throughout the study period. The thesis is also dedicated to Nzilano's and Magoti's family members for their moral and material support as well as patience in my absence during key family meetings.

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## LIST OF ABBREVIATIONS AND ACRONYMS

AJIE	:	African Journal of Innovation and Entrepreneurship
ANOVA	:	Analysis of Variance
AQRB	:	Architects and Quantity Surveyors Registration Board
ARU	:	Ardhi University
ASET	:	Applied Science, Engineering and Technology
ATC	:	Arusha Technical College
ATS	:	Attitude towards Start-ups
AVE	:	Average Variance Extracted
BDS	:	Business Development Support
BRELA	:	Business Registration and Licensing Agency
BSI	:	Business Start-up Intentions
CBE	:	College of Business Education
CB-SEM	:	Covariance Based Structural Equation Modelling
CDS	:	Concept Development Support
CIS	:	Country Institutional Support
CMB	:	Common Method Bias
CoET	:	College of Engineering and Technology
CoICT	:	College of Information Communication Technology
COSTECH	:	Tanzania Commission for Science and Technology
CR	:	Composite Reliability
CRB	:	Contractors Registration Board
DIT	:	Dar es Salaam Institute of Technology
DRPS	:	Directorate of Research and Postgraduate Studies
DVC-ARC	:	Deputy Vice Chancellor – Academic, Research, and Consultancy
DVC-PFA	:	Deputy Vice Chancellor – Planning, Finance and Administration
EAJ-SAS	:	East African Journal of Social and Applied Sciences
EGI	:	Entrepreneurial Goal Intentions
EII	:	Entrepreneurial Implementation Intentions
EPS	:	Education Provision Support
ERB	:	Engineers Registration Board

FBIS	:	Faculty of Business and Information Sciences
FYDP	:	Five Year Development Plan
GET	:	General Enterprising Tendencies
HCT	:	Human Capital Theory
HTMT	:	Heterotrait-Monotrait
IAA	:	Institute of Accounting Arusha
IFM	:	Institute of Finance Management
IT	:	Institutional Theory
JCBS	:	Journal of Co-operatives and Business Studies
JGER	:	Journal of Global Entrepreneurship Research
LDCs	:	Least Developing Countries
LGAs	:	Local Government Authorities
MoCU	:	Moshi Co-operative University
MoEST	:	Ministry of Education, Science and Technology
MIIT	:	Ministry of Investment, Industries, and Trade
MSc.	:	Master of Science
MUST	:	Mbeya University of Science and Technology
NIT	:	National Institute of Transport
NM-AIST	:	Nelson Mandela African Institution of Science and Technology
OECD	:	Organization for Economic Co-operation and Development
PBC	:	Perceived Behavioural Control
PCA	:	Principal Component Analysis
Ph.D.	:	Doctor of Philosophy
PLS-PM	:	Partial Least Squares Path Modelling
PLS-SEM	:	Partial Least Squares Structural Equation Modelling
PUS	:	Perceived University Support
SDGs	:	Sustainable Development Goals
SEAP	:	Structured Engineering Apprenticeship Programme
SJUIT	:	St. Joseph University in Tanzania
SMEs	:	Small and Medium-sized Enterprises
SSN	:	Societal-Subjective Norms
STEM	:	Science, Technology, Engineering and Mathematics
SUA	:	Sokoine University of Agriculture

TANCIS	:	Tanzania Customs Integrated System
TCU	:	Tanzania Commission for Universities
TDV	:	Tanzania Development Vision
TPB	:	Theory of Planned Behavior
TRA	:	Tanzania Revenue Authority
TRA	:	Theory of Reasoned Action
UDOM	:	University of Dodoma
UDSM	:	University of Dar es Salaam
URT	:	United Republic of Tanzania
VIF	:	Variance Inflation Factor

## EXTENDED ABSTRACT

Despite concerted efforts to integrate entrepreneurship education into the education system to address graduates' unemployment challenges through business start-ups, its effectiveness in facilitating technical graduates' acquisition of entrepreneurial competencies critical to venture into business start-ups remains questionable. Grounded on Human Capital Theory (HCT), Theory of Planned Behaviour (TPB), and Institutional Theory (IT) as theoretical frameworks, this study empirically examines the effectiveness of entrepreneurship education in facilitating technical graduates' acquisition of entrepreneurial competencies and their potential to venture into business start-ups. Specifically, the thesis (i) examines factors influencing entrepreneurial competencies acquisition among graduates, (ii) ascertains the influence of entrepreneurial competencies on business start-up intentions as mediated by TPB antecedents, (iii) measures how entrepreneurship education moderates the effect of TPB antecedents on business start-up intentions, and (iv) examines the influence of university support on graduates' business start-up intentions as mediated by institutional environment. Underpinned by the positivism paradigm and quantitative research strategy, this thesis employs a cross-sectional research design and collects data using a self-administered survey questionnaire from 391 technical graduates who graduated between 2012 and 2017 and who lived in Dar es Salaam during data collection. The collected data are analyzed using descriptive statistics, Partial Least Squares Structural Equation Modelling (PLS-SEM), and Ordered Logistic Regression Model (OLRM). The findings show that entrepreneurship education significantly facilitates entrepreneurial competencies acquisition ( $p < 0.001$ ). Specifically, technical graduates who studied at least two entrepreneurship courses were more than 10 times more likely to acquire requisite entrepreneurial competencies than those who did not study. Informal entrepreneurship exposure through life-cycle experience in age ( $p < 0.001$ ), previous employment experience ( $p < 0.01$ ), and parental role modelling through self-employment ( $p < 0.05$ ) and education ( $p < 0.05$ ) positively and significantly facilitate the acquisition of entrepreneurial competencies among technical graduates. Moreover, entrepreneurial competencies had a direct significant effect not only on the attitudes towards business start-ups ( $p < 0.001$ ) and perceived behavioural control ( $p < 0.05$ ) but also on technical graduates' intentions to venture into business start-

ups ( $p < 0.001$ ). However, attitudes towards business start-ups ( $p < 0.05$ ) and perceived behavioural control ( $p < 0.001$ ) strongly mediated the effect of entrepreneurial competencies on technical graduates' intentions to venture into business start-ups. Perceived behavioural control (52.1%) was the strongest predictor of technical graduates' business start-up intentions followed by attitudes towards business start-ups (28.9%) and subjective norms (11.5%). Entrepreneurship education significantly moderates the effect of attitudes towards business start-ups ( $p < 0.001$ ) and perceived behavioural control ( $p < 0.001$ ) on graduates' business start-up intentions, but not subjective norms ( $p > 0.05$ ). The findings further highlight that only 30.2% of technical graduates' business start-up intentions transitioned to actual business start-ups and that limited capital, perceived high taxes, unfriendly regulatory frameworks, and little awareness of business support services are the main obstacles hindering their potential. Lastly, university support through concept development support ( $p < 0.001$ ) and institutional support ( $p < 0.001$ ) had a direct effect on graduates' business start-up intentions. However, institutional support partially mediates the effects of university support on business start-up intentions through concept development support ( $p < 0.001$ ), but fully mediates education provision support ( $p < 0.001$ ) and business development support ( $p < 0.05$ ). Based on the findings, the thesis concludes as follows: *First*, entrepreneurship education is an effective intervention strategy in facilitating entrepreneurial competencies acquisition and technical graduates' intentions to pursue business start-ups. *Second*, attitudes toward start-ups and perceived behavioural control strongly mediate the effect of entrepreneurial competencies on technical graduates' business start-up intentions. *Third*, besides the direct effect of attitudes, subjective norms, and perceived behavioural control on business start-up intentions, entrepreneurship education strongly moderates their effect on graduates' business start-up intentions. *Fourth*, university and institutional support play critical roles in fostering graduates' potential to venture into business start-ups. The thesis presents three implications. *First*, the Ministry of Education, Science, and Technology should issue special directives to all educational institutions to make at least two entrepreneurship courses compulsory for all students from primary schools to universities. *Second*, technical universities should spearhead the establishment of business incubation centers and innovation spaces for graduates to innovate and test the feasibility of business ideas before further investment. *Third*, Local Government Authorities should strive to

improve business start-up ecosystems to motivate university graduates and the general public to pursue business start-ups to minimize unemployment challenges.

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background of the Study

Graduate entrepreneurship attracts policymakers and scholars during the unemployment crisis (Shabbir *et al.*, 2022; Meoli *et al.*, 2020; Lackéus, 2020). Graduate entrepreneurship, a process of starting a new business venture among university graduates (Colombo and Piva, 2020), can enhance innovation and technological changes, and generate new employment opportunities for unemployed individuals (Ashari *et al.*, 2022; Barba-Sánchez *et al.*, 2022). Given its perceived advantages, governments across the world advocate integrating entrepreneurship education into the education system to enhance graduates' ability to identify and exploit value-creating opportunities (Barba-Sánchez *et al.*, 2022; Perez *et al.*, 2021; Lackéus, 2020). Over 3,000 universities and colleges offer entrepreneurship degree programmes, courses, and certifications to equip graduates with requisite entrepreneurial competencies and mindsets (Turner and Gianiodis, 2018).

In sub-Saharan Africa, over 80% of universities and their constituent colleges offer credit courses in entrepreneurship and programmes (Legas, 2016; Zondo, 2016; Omidyar Network, 2013; Gerba, 2012; Kabongo and Okpara, 2010). Deeply rooted and embedded in the traditional faculties of business and economics (Turner and Gianiodis, 2018), the delivery of entrepreneurship courses in sub-Saharan Africa are increasingly transcending the boundaries of faculties of business and economics majors and are nowadays offered in colleges and universities specializing in Sciences, Technology, Engineering, and Mathematics (STEM) (Zondo, 2016; Legas, 2016; Gerba, 2012; Kabongo and Okpara, 2010). The underlying reason behind this transition is to produce potential technologists, engineers, and scientists equipped with not only technical know-how but also relevant entrepreneurial knowledge, skills, and attitudes to pursue high-tech business start-ups.

Compared to other continents, scholarly interest in African entrepreneurship seems to have ignored entrepreneurship education research (Puni *et al.*, 2018; Nabi *et al.*, 2017; Gerba, 2012). In particular, over 50% of entrepreneurial intention studies were conducted in the Asian continent, leaving the African continent as one of the under-explored continents (Maheshwari *et al.*, 2022). In this regard, Puni *et al.* (2018)

concludes that “...*entrepreneurship education research in Africa is described as embryonic and needs more empirical evidence to deepen the insights of and expand stakeholders’ understanding for appropriate interventions to be made...*”

Nonetheless, 61.2% of all African entrepreneurship research concerns South African entrepreneurship and small business, while only 12% is general. Tanzania is one of the countries with low number of entrepreneurship research (0.57%), compared to Uganda (0.83%), Kenya (3.65%), Ghana and Nigeria (3.84%), and Zimbabwe (5.0%) (Naudé and Havenga, 2005). Given the narrow emphasis on entrepreneurship education in sub-Saharan African countries and Tanzania in particular, it is worth undertaking a country-specific study to draw specific conclusions and actionable recommendations to the responsible authorities.

Cognizant that entrepreneurship education in higher learning institutions can effectively promote graduate entrepreneurship (Colombo and Piva, 2020), the scholarly attention in assessing its outcomes has extremely increased (Krieger *et al.*, 2022; Meoli *et al.*, 2020; Lackéus, 2020; Maresch *et al.*, 2016; Martin *et al.*, 2013). However, Al Mamun *et al.* (2016) argue that the quality of entrepreneurship education depends on its ability to equip students with requisite entrepreneurial competencies and affect their entrepreneurial intentions. Unquestionably, entrepreneurial competencies are the stepping stone toward business start-ups since entrepreneurially competent graduates can identify and exploit business opportunities to create new business ventures. Solesvik (2019) and Mueller and Anderson (2014) doubt whether entrepreneurship education is an effective means for facilitating graduates’ entrepreneurial competencies acquisition. The scholarly interest in exploring whether and how graduates acquire requisite entrepreneurial competencies beyond formal entrepreneurship education is fairly limited.

Formal entrepreneurship education may not suffice to facilitate the acquisition of entrepreneurial competencies among university graduates. Drawing on human capital theorists, entrepreneurial competencies acquisition may occur through investment in schooling, such as entrepreneurship education, on-the-job training, and other informal exposure through lifelong experiences (Marvel, 2016; Krieger *et al.*, 2022; Chen *et al.*, 2022). This implies that, besides formal entrepreneurship courses, informal entrepreneurship exposure through life experience in age (Mangasini, 2015), entrepreneurial parents (Krieger *et al.*, 2022), business start-up experience



(Maresch *et al.*, 2016), and work experience (Marvel, 2016) can facilitate the acquisition of entrepreneurial competencies that are not taught in the formal classroom settings. In this context, undertaking further empirical analysis to ascertain the influence of formal and informal entrepreneurship exposure on entrepreneurial competencies acquisition is critical (*Detailed in Chapter Two*).

Whereas studies assessing the influences of entrepreneurship education on entrepreneurial intentions dominate in entrepreneurship literature (Barba-Sánchez *et al.*, 2022; Hoang *et al.*, 2021), its differential influences occur through other antecedents (Nabi *et al.*, 2017; Bae *et al.*, 2014). Even though several factors play a significant mediation role in their relationship, only 43.4% of existing studies used mediators in their research designs (Lin *et al.*, 2019) and remain under-researched in the African context (Puni *et al.*, 2018). Entrepreneurship education can equip students with entrepreneurial competencies, which enhance their entrepreneurial intentions (Al Mamun *et al.*, 2016). However, other antecedents such as those of the Theory of Planned Behaviour (TPB) strongly mediate the effects of entrepreneurial competencies on entrepreneurial intentions (Lopez *et al.*, 2021; Fernández-Pérez *et al.*, 2019). However, limited studies examine their mediation effect in this regard. This justifies further analysis to advance an evidence-based body of knowledge on how the antecedents of TPB mediate the effect of entrepreneurial competencies on Business Start-up Intentions (BSI) (*Detailed in Chapter Three*).

Moreover, using a meta-analysis technique to assess dominant factors influencing entrepreneurial intentions between 2005 and 2022, Maheshwari *et al.* (2022) found that cognitive, personality, environmental, social, educational, contextual, and demographics are the most studied factors. Although entrepreneurship education is often studied as a major predictor of entrepreneurial intentions (Barba-Sánchez *et al.*, 2022; Hoang *et al.*, 2021), the influence of other antecedents beyond entrepreneurship education has attracted limited scholarly interests and remains unclear (Kowang *et al.*, 2021). Drawing on Ajzen's (1991) TPB and previous meta-analysis studies (Maheshwari *et al.*, 2022; Bae *et al.*, 2017), three antecedents, namely attitudes toward behaviour, subjective norms, and perceived behavioural control influence BSI. Besides the direct influence, entrepreneurship education significantly moderates the effect of the antecedents of TPB on graduates' BSI (Ashari *et al.*, 2022; Duong, 2021). To advance the body of knowledge in this

research direction, this study empirically examines how entrepreneurship education moderates the effect of TPB antecedents on BSI (*Detailed in Chapter Four*).

Moreover, since Fayolle (2013) calls for research designs that include potential moderators in the relationship between entrepreneurship education and its learning outcomes, only 21% of entrepreneurship studies included moderators in their research designs (Maheshwari *et al.*, 2022). Besides the growing number of entrepreneurial intentions studies, the influence of institutional environment on graduates' entrepreneurial intentions is ignored and remains under-explored (Chew, 2022). Supportive environments within and outside universities significantly influence graduates' BSI (Liu *et al.*, 2022; Fadzilah and Hussain, 2021). University support through Education Provision Support (EPS), Concept Development Support (CDS), and Business Development Support (BDS) can significantly enhance graduates' start-up potential (Liu *et al.*, 2022; Su *et al.*, 2021).

Besides the perceived roles of the university support on graduates' business start-up potential (Liu *et al.*, 2022; Çera *et al.*, 2021; Wegner *et al.*, 2020), previous studies largely focused on education provision support through entrepreneurship education. This leaves other components, such as concept development support and business development support under-explored (Liu *et al.*, 2022; Shi *et al.*, 2020). Similarly, previous studies produced mixed bags of contradicting results and conclusions. For example, Su *et al.* (2021) and Çera *et al.* (2021) reported that university support significantly correlated with entrepreneurial intentions, while Liu *et al.* (2022), Sim *et al.* (2021), and Wegner *et al.* (2020) confirmed that university support did not significantly influence graduates' BSI. Su *et al.*, (2021) and Anjum *et al.* (2020) found that institutional support significantly mediated the effect of university support on graduates' BSI. In light of mixed and contradicting findings and previous studies' Western focus, this study examines the influence of university support on BSI and how institutional support mediates their relationships (*Detailed in Chapter Five*).

## **1.2 Entrepreneurship education in Tanzanian higher learning institutions**

In Tanzania, promoting entrepreneurship is a longstanding national-wide agenda reflected in several policies and programmes, such as the Technical Education and Training Policy (1996), the Small and Medium Enterprises (SMEs) Development Policy (2003), the National Economic Empowerment Policy (2004), Youth

Development Policy (2007), Education and Training Policy (2014), the National Entrepreneurship Training Framework (NETF) (2013) and Higher Education Development Programme of 2010-2015. These policy documents and programmes promote entrepreneurship by calling for integrating standalone entrepreneurship courses into the education system or establishing entrepreneurship programme. In response, many universities and colleges integrated entrepreneurship courses into their programmes. The Institute of Finance Management (IFM), Mzumbe University (MU), University of Dar es Salaam (UDSM), College of Business Education (CBE), Iringa University, Moshi Co-operative University (MoCU), and University of Dodoma (UDOM) are some of the Tanzanian higher learning institutions offering entrepreneurship courses (Mwantimwa, 2019; Argidius Foundation, 2017; Mangasini, 2015). Besides offering entrepreneurship courses, the University of Dar es Salaam (UDSM), Mzumbe University (MU), College of Business Education (CBE), Iringa University, and Moshi Co-operative University (MoCU) offer entrepreneurship programme at different levels (Certificate to Ph.D.).

Moreover, the integration of entrepreneurship education in higher learning institutions is increasingly transcending outside traditional business universities and is now nested in technical colleges and universities. Estimates show that nearly all technical colleges and universities offer entrepreneurship courses across programmes. Technical higher learning institutions offering entrepreneurship courses across programmes irrespective of specialties include Arusha Technical College (ATC), Dar es Salaam Institute of Technology (DIT), National Institute of Transport (NIT), Sokoine University of Agriculture (SUA), Mbeya University of Science and Technology (MUST), Nelson Mandela African Institution of Science and Technology (NM-AIST)-Arusha, and College of Engineering and Technology (CoET) and College of Information and Technology (CoICT) both of the University of Dar es Salaam (UDSM). Similarly, in September 2022, the NM-AIST launched a MSc. and Ph.D. in Innovation and Entrepreneurship Management to inculcate the creativity and innovation potentials among technical graduates.

Similarly, some universities are increasingly establishing incubation centers for students to hatch their business ideas and test their feasibility before converting them into profitable ventures. Other universities provide innovation spaces furnished with the latest technology and tools to foster students' culture of creativity and innovation

in transforming business ideas into profitable products, services, and business models. Some of the incubation centers or innovation spaces with their respective host universities/institutions in the bracket include the University of Dar es Salaam Entrepreneurship and Innovation Centre (UDEIC) and ICT Incubator (UDICTI) (UDSM), Sokoine University Graduate Entrepreneurs Co-operative (SUGECO) (SUA), Co-operative Entrepreneurship and Innovation Centre (CEIC) (MoCU), Arusha Technical College Entrepreneurship Centre (ATC), Data Driven Innovation Incubation Centre (NM-AIST), Mzumbe University Incubation Centre (MU), University of Dodoma ICT (UDOICT), and Kiota Hub (Tumaini University).

Tanzania does not have a specific business start-up policy; yet the government implements several regulatory reforms in various areas (URT, 2022; 2017). These reforms among others include easing business start-up procedures and construction permits, expanding credit bureau borrower coverage, reducing the timeframe for importation and exportation by creating an online system for processing custom documents, i.e., the Tanzania Customs Integrated System (TANCIS), establishing online company registration, establishing credit bureau to improve access to credit information, and upgrading infrastructure at border posts to shorten cross-border trading (URT, 2022). Besides these interventions, it remains doubtful whether such efforts realize the intended objectives (Kalimasi, 2018; Shimba, 2018; URT, 2017). Empirical evidence on the ground shows that the number of graduates venturing into business start-ups is not commensurate with the investment made (URT, 2022; Chengula *et al.*, 2022; Mwantimwa *et al.*, 2019; Wakkee *et al.*, 2017).

As evidenced by Mangasini (2015), only 22.7% of graduates ventured into business start-ups that were still flourishing. Given the growing number of universities and their constituent colleges offering entrepreneurship courses yet falling number of graduates venturing into business start-ups raises a central research question: do entrepreneurship courses offered in higher learning institutions equip graduates with the requisite entrepreneurial competencies to venture into business start-ups? This question is central since entrepreneurial competencies are the stepping stone toward business start-ups. Unfortunately, previous studies in Tanzania mostly sampled respondents in traditional business universities (Mangasini, 2015); social works (Nyello *et al.*, 2015), folk development colleges (Nade, 2021), higher educational schools (Fulgence, 2015), and vocational schools (Rwamtoga, 2011).

Moreover, some studies attempted to examine the teaching context, students' profiles, expectations, and outcomes of entrepreneurship education (Mwasalwiba, 2012), the status of entrepreneurship courses in higher education schools (Fulgence, 2015), the effect of entrepreneurship education on graduates' entrepreneurial tendencies (Mangasini, 2015), entrepreneurial behaviours (Nyello *et al.*, 2015), entrepreneurial intentions (Nade, 2021), and entrepreneurship development (Rwamtoga, 2011). The analysis of the preceding literature justifies that in Tanzania, the question of whether entrepreneurship courses offered in technical universities and colleges produce the intended results has received limited scholarly attention. Besides limited scholarly attention to technical colleges and universities, previous studies exclusively confined to the entrepreneurial intentions of university graduates.

As a consequence, the questions of how entrepreneurship education facilitates entrepreneurial competencies' acquisition as a critical aspect not only for business start-ups but also for the operation of business ventures remain unattended. Despite the concerted efforts to integrate entrepreneurship courses into the mainstream education system, their benefits remain debatable, with limited empirical evidence. However, there is fairly little scholarly attention paid to assessing the effectiveness of entrepreneurship courses offered in technical colleges and universities. Against these shortfalls, this study attempts to empirically examine the influence of entrepreneurship education on entrepreneurial competencies acquisition and the potential of technical graduates to venture into business start-ups in Tanzania.

### **1.3 Statement of the Problem**

The employability of graduates in Tanzania is one of the issues of major concern not only for policymakers and academics but also among graduates, parents, and the general public. Estimates show that secondary schools and tertiary education institutions in Tanzania churn out over 900,000 youths in the labour market yearly (Mgaiwa, 2021). Besides limited work experience, these youths enter a fairly saturated labour market that can absorb hardly 60,000 entrants (Mgaiwa, 2021). By implication, 840,000 labour entrants remain unemployed, raising concerns about where they end up (Mwasalwiba *et al.*, 2012). Besides several interventions, including the integration of entrepreneurship education into the education system to enhance graduates' potential to venture into business start-ups (Mwantimwa, 2019; URT, 2017), the outcomes of such interventions remain questionable.

The perceived lack of entrepreneurial competencies is one of the obstacles for university graduates to venture into business start-ups (Chengula *et al.*, 2022; Mwantimwa, 2019; OECD, 2018; Wakkee *et al.*, 2017). As earmarked by Omidyar Network (2013), only 22% of Tanzanian entrepreneurs felt confident in their entrepreneurial knowledge and skills for successful start-ups and operations of business ventures. Graduates' perceived lack of entrepreneurial competencies amidst the increasing number of universities and colleges offering entrepreneurship courses raises doubt about their effectiveness. Previous studies mostly focused on the influence of entrepreneurship education on entrepreneurial intentions among university graduates in traditional business universities (Mangasini, 2015), colleges of social work (Nyello *et al.*, 2015), and folk development colleges (Nade, 2021).

As a consequence, the question of whether entrepreneurship education effectively facilitates entrepreneurial competencies acquisition as critical aspects for business start-ups is unattended. Some scholars doubt whether entrepreneurship education can effectively facilitate entrepreneurial competencies acquisition (Chen *et al.*, 2022; Solesvik, 2019). However, limited empirical studies examine whether and how university graduates acquire entrepreneurial competencies beyond formal entrepreneurship education. In assessing the entrepreneurial knowledge acquisition among graduates, Mwantimwa (2019) concludes that “...*the types of entrepreneurial knowledge students acquire, how it is acquired, their relevance and barriers faced in doing so remain scant...*” Notwithstanding the acquisition modalities, entrepreneurial competencies are critical ingredients in business start-up intentions as a starting point for business start-ups (Al Mamun *et al.*, 2016).

A considerable body of evidence suggests that the effects of entrepreneurial competencies on BSI are more significant when mediated by TPB the antecedents (Lopez *et al.*, 2021; Fernández-Pérez *et al.*, 2019). Besides the direct effect, understanding how entrepreneurship education moderates the effect of the antecedents of TPB on BSI is one of the promising areas for further analysis (Ashari *et al.*, 2022). With the limited scholarly attention on entrepreneurship education in technical colleges and universities (Wasilczuk *et al.*, 2021), the question of how it moderates the effect of the TPB antecedents on BSI is largely under-explored (Maheshwari *et al.*, 2022). Similarly, less is understood about how technical universities' support directly enhances graduates' start-up potential and how other

institutional support mediates their effect. Against these shortfalls, this study examines the influence of entrepreneurship education on technical graduates' potential to venture into business start-ups in Tanzania.

## **1.4 Objectives of the Study**

### **1.4.1 Main objective**

This study mainly sought to assess the influences of entrepreneurship education on the potential of technical graduates to venture into business start-ups in Tanzania.

### **1.4.2 Specific objectives**

Specifically, this study sought to:

- i. Examine factors influencing the acquisition of entrepreneurial competencies among technical graduates;
- ii. Ascertain the influence of entrepreneurial competencies on technical graduates' business start-up intentions and how the antecedents of the theory of planned behaviour mediate their effects;
- iii. Measure the effect of the antecedents of the theory of plan behaviour on technical graduates' business start-up intentions and how entrepreneurship education moderates their effect on business start-up intentions; and
- iv. Examine the direct influence of university support and institutional environment on technical graduates' business start-up intentions and how institutional support mediates the effect of university support on business start-up intentions.

### **1.4.3 Research hypotheses**

This thesis sought to test the following null hypotheses:

H<sub>01</sub>. Socio-demographic factors do not significantly influence the acquisition of entrepreneurial competencies among technical graduates.

H<sub>02</sub>. Entrepreneurial competencies do not directly significantly influence the antecedents of the theory of planned behaviour and the intentions of technical graduates to venture into business start-ups such that the antecedents of the theory of planned behaviour do not significantly mediate their effect.

H<sub>03</sub>. The antecedents of the theory of planned behaviour do not directly significantly influence technical graduates' business start-up intentions and

entrepreneurship education does not significantly moderate their effect on business start-up intentions.

H<sub>04</sub>. University support and institutional support do not directly significantly influence technical graduates' business start-up intentions such that institutional support does not significantly mediate the effect of university support on business start-up intentions.

### **1.5 Justification of the Study**

To sustain her outstanding economic growth and attain the mission of being a middle-income country by 2025, Tanzania Development Vision (TDV) 2025 and the National Five Years Development Plan (FYDP) (2021 – 2026) emphasize the need for nurturing professionals with human capital in scientific and technical specialties (URT, 2021, 2014). This is critical since the industry and construction sectors contribute 24.5% to the GDP of the country (NBS, 2021), where STEM graduates play vital roles. Exploring empirical evidence about the effectiveness of entrepreneurship education is an assurance to the government that technical universities and colleges are producing potential scientists, engineers, and technologists with technical know-how and entrepreneurial competencies to venture into high-tech business start-ups critical for the national objectives. This supports the Technical Education and Training Policy (1996), which calls for stimulating self-employment culture among technical graduates to capitalize on business opportunities in the informal sector.

Moreover, this thesis is consistent with Sustainable Development Goal (SDG) No. 4, Goal Target No. 4, which highlights that “...By 2030, substantially increase the number of youths and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship...” in that the findings provide empirical evidence on how universities through entrepreneurship education equip technical graduates with relevant entrepreneurial competencies to venture into business start-ups for creating decent employments. Moreover, the findings on university support and institutional environment for business start-ups provide useful insights to government officials into how business ecosystems support or constrain the potential for university graduates to venture into business start-ups to take corrective measures. This is useful for policymakers, educators, and



practitioners to improve the quality and effectiveness of entrepreneurship education and support services for graduates to venture into business start-ups.

The findings provide valuable insights to policymakers into how Tanzania strives to achieve African Union (AU) Agenda 2063 Goal No. 2, which emphasizes the need for producing “...*well-educated citizens and skills revolution underpinned by Science, Technology, and Innovation (STI)*...”. This can potentially enhance the employability potential of graduates not only as self-employed (independent entrepreneurs) but also as entrepreneurial employees (intrapreneurs) in business organizations to spearhead government industrialization efforts. The findings on the mediation effect of the antecedents of TPB and the moderating effect of entrepreneurship education could advance an evidence-based body of knowledge, given the limited empirical evidence on the benefits of entrepreneurship education. Lastly, this study could serve as reference material for scholars interested in entrepreneurship education to draw similar lessons in other professions.

## **1.6 Theoretical Underpinnings**

Guided by research objectives, this thesis was grounded on three theories, namely; the Human Capital Theory (HCT), the Theory of Planned Behaviour (TPB), and Institutional Theory (IT). The justifications for the addition of another theory are presented at the end of each theory. The specific explanations and contextualization of these theories follow in the next sections.

### **1.6.1 Human Capital Theory**

Human Capital Theory (HCT), as pioneered by Gary Becker in 1964, is built on the theorem that individuals invest in education and training to acquire knowledge and skills that enhance their productivity and employability (Becker, 1964). This thesis employs HCT to examine the extent to which entrepreneurship exposure through formal entrepreneurship education and informal entrepreneurship exposure through lifelong learning in age, previous employment, business start-up experience, extra-curricular activities, and parental role modelling through employment and education facilitate technical graduates’ entrepreneurial competencies acquisition. Broadly, entrepreneurial competencies are defined as a combination of the cognitive, affective, and skill-based abilities that enable individuals to perform entrepreneurial tasks and activities (Mets *et al.*, 2017). The theory assumes that graduates with

adequate human capital can identify and exploit business opportunities to start new business ventures (Marvel, 2016; Chen *et al.*, 2022; Martin *et al.*, 2013).

Besides the growing consensus that entrepreneurial competencies facilitate business start-up potential, the factors for their acquisition remain debatable (Krieger *et al.*, 2022). Traditional human capital covers knowledge and skills acquired through schooling, such as entrepreneurship education and training, on-the-job training, and life-cycle experiences (Marvel, 2016; Martin *et al.*, 2013; Becker, 1964). In contextualizing human capital in the domain of entrepreneurship, a distinction is made between human capital *investments* as inputs, such as time, efforts, and money spent for studying entrepreneurship courses, and the human capital *assets* derived from the investment, such as entrepreneurial knowledge, skills, and abilities; and the entrepreneurship *outcomes* such as business start-up intentions and actual business start-ups (Martin *et al.*, 2013). One of the specific *assets* of interest derived from investing in entrepreneurship education offered in technical colleges and universities is entrepreneurial competencies acquisition as a triad domain of learning outcomes.

Entrepreneurial competencies comprise (1) cognitive outcomes, depicting knowledge about entrepreneurship, such as opportunity identification and exploitation, (2) affective outcomes, covering entrepreneurship-related attitudes, behavioural preferences, and volition, such as motivation; and (3) skill-based outcomes, comprising entrepreneurial skills, such as business planning (Mets *et al.*, 2017; Kozlinska, 2016; Fisher *et al.*, 2008). Unlike knowledge and skills, social scientists in entrepreneurship have often used employment experience (39.9%), education level (26.6%), and entrepreneurial experience (19.8%) (Marvel, 2016) as critical factors facilitating entrepreneurial competencies acquisition. Demographics remain the least studied human capital construct (Marvel, 2016). Given this anomaly, this study considers social and demographic factors as one of the factors for entrepreneurial competencies acquisitions among technical graduates.

Despite its strengths, HCT has several weaknesses that justify extra theories to complement these weaknesses. *First*, HCT focuses on the inputs and outputs of human capital investment such as education and training but does not account for the psychological and social factors influencing individual decision to use the acquired knowledge and skills for entrepreneurship purposes (Martin *et al.*, 2013). *Second*,

HCT assumes that individuals are rational and utility-maximizing agents who invest in human capital to enhance productivity and income but does not account for the role of personal preferences, motivation, and emotions in shaping entrepreneurial intentions and behaviours (Lackéus, 2020). *Third*, HCT does not consider environmental and institutional factors such as access to financial resources, opportunities support, and regulations that can facilitate or constrain entrepreneurial potential (Chew, 2022; Oftedal *et al.* 2017). These weaknesses justify the need for additional theories to account for the observed weaknesses.

### **1.6.2 Theory of Planned Behaviour**

Derived from the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Theory of Planned Behaviour (TPB), as advocated by Icek Ajzen in 1991, has often been used to explain and predict human behaviour in different fields. Although initially used to predict voluntary behaviours (Fishbein and Ajzen, 1975), the inclusion of perceived behavioural control in 1991 enabled TPB to predict behaviours not under direct personal volition (Ajzen, 1991). Since then, TPB has become one of the famous social cognitive theories used to predict deliberate and planned behaviours across fields (Ajzen, 2020). TPB assumes that the individual intention to perform a certain behaviour is determined by attitudes, subjective norms, and perceived behavioural control towards that behaviour (Ajzen, 1991). This study uses TPB for examining how its antecedents (attitudes, subjective norms, and perceived behavioural control) influence technical graduates' BSI.

TBP has frequently been used in the field of entrepreneurship to predict individual entrepreneurial intentions, especially university graduates with diverse educational backgrounds in different contexts (Ashari *et al.*, 2022; Barba-Sánchez *et al.*, 2022; Maheshwari *et al.*, 2022). This study hypothesizes that graduates' decisions to venture into business start-ups are a function of their Attitudes toward Business Start-ups (ATS), Subjective Norms (SN), and Perceived Behavioural Control (PBC) (Lopez *et al.*, 2021; Liñán *et al.*, 2013; Ajzen, 1991). The study also assumes that the antecedents of TPB can mediate the effect of entrepreneurial competencies on graduates' BSI. In this thesis, ATS is used to denote personal evaluation of the desirability of business start-ups. It expounds on how, positively or negatively, graduates perceive business start-ups. SSN is the perceived social pressure about the

need to venture into business start-ups. It relates to graduates' feelings of being obliged to conform to specific societal values and norms in business start-ups. PBC denotes graduates' perceptions of the difficulties associated with business start-ups.

Essentially, PBC entails how confidently technical graduates feel to possess the required entrepreneurial knowledge, skills, and attitudes to venture into business start-ups. BSI denotes graduates' level of interest, efforts, and the probability of starting a business venture in some days in the future. The thesis assumes that BSI could increase when graduates positively perceive that business start-ups (ATS) conform to the public values and norms (SN) and that they fall within their ability and control (PBC). It further assumes that entrepreneurship education can facilitate graduates' acquisition of entrepreneurial competencies, which trigger their attitudes, subjective norms, and perceived behavioural control towards business start-ups. Besides the direct effect, this study treats entrepreneurship education as a moderator moderating the effect of the antecedents of TPB on graduates' BSI (Ashari *et al.*, 2022; Duong, 2021). Similarly, the study treats TPB antecedents as mediator variables mediating the effect of entrepreneurial competencies on technical graduates' BSI (Lopez *et al.*, 2021; Fernández-Pérez *et al.*, 2019).

Despite its strengths, TPB is weak in that it mainly focuses on individual psychological and social factors influencing graduates' BSI. The theory neglects the potential of external environmental and institutional factors such as access to financial resources, opportunities support, and regulations to facilitate or constrain university graduates' entrepreneurial potential (Chew, 2022; Oftedal *et al.* 2017). *Second*, it assumes that individuals are rational and intentional agents who act based on their attitudes, subjective norms, and perceived behavioral control toward business start-ups. As a result, it overlooks the role of emotions, motivations, and serendipity in shaping entrepreneurial intentions (Lackéus, 2020). *Lastly*, TPB does not capture the diversity and heterogeneity of entrepreneurial intentions and behaviours across different contexts, cultures, and domains (Liñán *et al.*, 2013). These weaknesses call for institutional theory to accommodate the external environmental and institutional factors as predictors of business start-up potential.

### 1.6.3 Institutional Theory

The Institutional Theory (IT), expounded by Douglass Cecil North in 1990, assumes that individual behaviour is conditioned and shaped by formal and informal rules, norms, and values in which they operate (Scott and Meyer, 1994; North, 1990). This thesis conceives institutions as “...*humanly devised constraints that structure political, economic and social interaction...*”. Institutions establish the societal rules of the game which in turn, condition individual behaviour and beliefs (Scott and Meyer, 1994; North, 1990). Formal regulatory, informal normative, and cognitive institutions play a critical role in shaping individual behaviour (Chew, 2022). Individual graduates and institutions are embedded in legal, socio-economic/cultural environments that shape their attitudes and behaviour towards business start-ups (Ofstedal *et al.* 2017).

Formal financial, educational, and legal institutions facilitate graduates’ decision to pursue business start-ups. Financial institutions, government programmes, friendly policies, and regulations have the potential to shape graduates’ decisions to venture into business start-ups. Graduates’ perceptions of the fairness of the rules of the game can enhance self-confidence in venture creation (Karumi and Kawai, 2017). As institutions, universities can groom and support students in several ways. *First*, through offering entrepreneurship education and organizing workshops and conferences to equip students with business start-up knowledge, skills, and attitudes (Liu *et al.*, 2022; Wegner *et al.*, 2020). *Second*, through field placements in entrepreneurial projects, crafting business plans, and sharing experiences with experienced and successful entrepreneurs, students acquire both theoretical and hands-on skills for business start-ups (Shi *et al.*, 2021; Mustafa *et al.*, 2016).

*Third*, universities can equip students with business ideas, create start-up awareness, provide financial support, use their names to support business start-ups, and serve as lead customers to new business start-ups (Liu *et al.*, 2022; Anjum *et al.*, 2020). Institutions define, create, and limit entrepreneurial opportunities for university graduates. Through institutions, the government provides graduates access to financial grants, subsidies, one-to-one counseling, and technical guidance as critical aspects for business start-ups (Sim *et al.*, 2021; Wegner *et al.*, 2020).

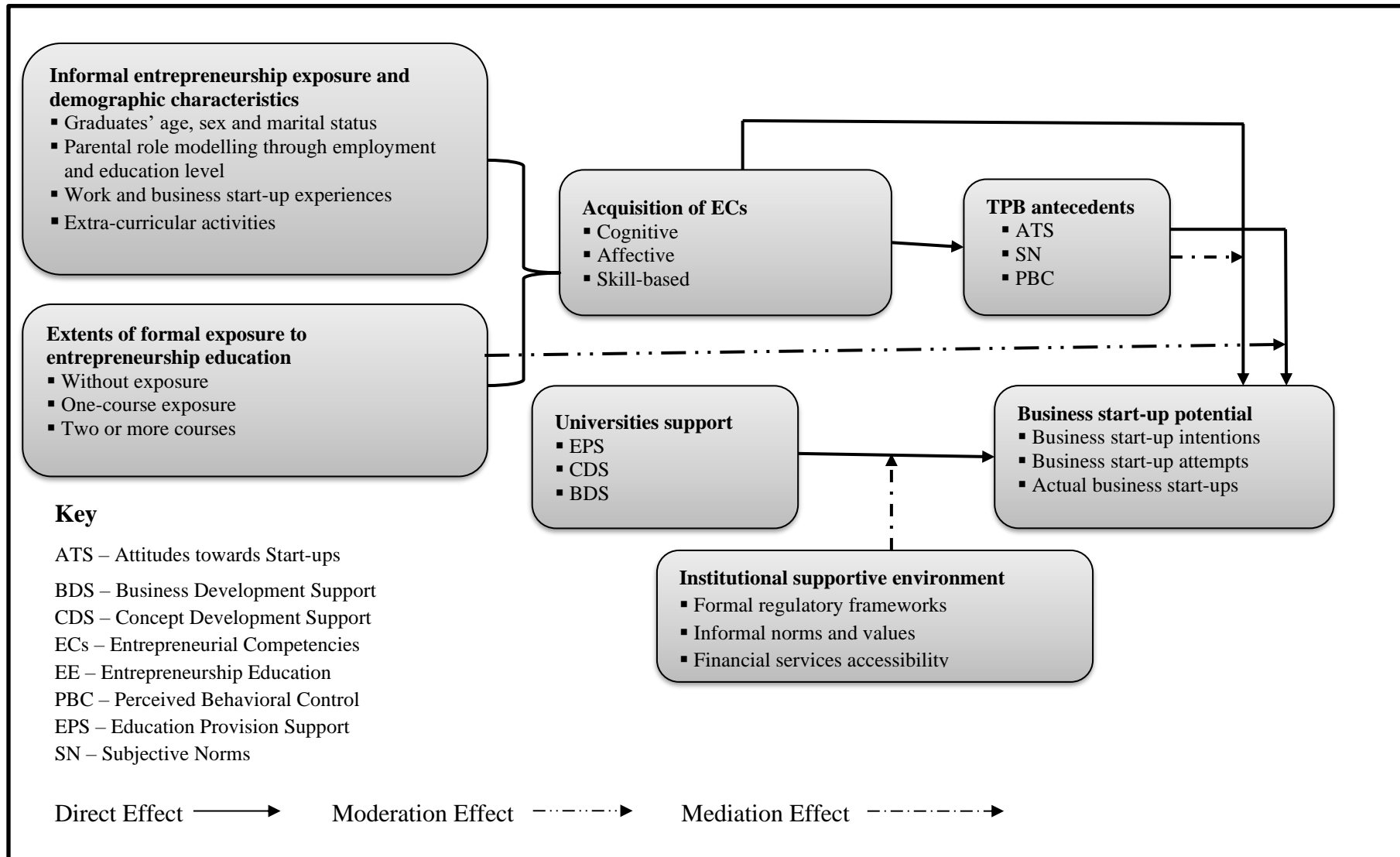
### 1.7 Conceptual framework

A conceptual framework (CF) is conceived as a researcher's conceptualization of how the variables interact and are connected (Regoniel, 2015). It identifies and proposes the variables required and their inter-relationships. In other words, a conceptual framework is a researcher's map in the investigation. Essentially, a CF is derived from the problem statement that prompted a researcher to undertake the study. This thesis was guided by the problem statement developed after thorough comprehensive theoretical and empirical literature reviews from which constructs and items were derived. As shown in Figure 1, the study assumes that demographic factors such as age, sex, and marital status; informal entrepreneurship exposure such as employment experience, extracurricular activities, business start-up experience, parental role modelling through employment and education; and formal entrepreneurship education significantly facilitate entrepreneurial competencies acquisition among technical graduates (*Objective One, forms Chapter Two*).

The CF further assumes that the acquired entrepreneurial competencies can have a direct effect not only on the antecedents of TPB (ATS, SN, and PBC) but also on the intentions of technical graduates to pursue business start-ups. However, the antecedents of the TPB (ATS and PBC) significantly mediate the effect of entrepreneurial competencies on technical graduates' business start-up intentions (*Objective Two, forms Chapter Three*). Besides having a direct effect on technical graduates' business start-up intentions, entrepreneurship education positively moderates the effect of the antecedents of TPB (ATS, SN, and PBC) on business start-up intentions (*Objective Three, forms Chapter Four*). The potential of technical graduates to venture into business start-ups depends on their perceptions of the support services extended by universities (university support) and the institutional environment upon successful graduation (institutional support).

Technical universities can support graduates through education provision support, concept development support, and business development support that can directly affect their business start-up intentions. However, a supportive institutional environment, hereinafter, referred to as institutional support in terms of financial, legal, and regulatory frameworks can have direct but also mediate the effect of university support on the intentions of technical graduates to venture into business start-ups. Technical graduates with positive perceptions of university support and

institutional environment have a higher potential to venture into business start-ups as reflected through business start-up intentions, the number of business start-up attempts, and the actual business ventures established in the market (*Objective Four, forms Chapter Five*).



**Figure 1: A combined conceptual framework of this thesis**



## 1.8 General Methodology

### 1.8.1 Description of the study area

This study was conducted in Dar es Salaam, located on the East Coast of Tanzania (latitude 6°45"S and 7°25"S, and longitude 39°E and 39°55"E), bordering the Indian Ocean to the East, and the Coast Region to the North, West and South (Todd *et al.*, 2019). Managerially, Dar es Salaam has a regional administration led by the Regional Commissioner and a City Council Administration headed by the mayor of Dar es Salaam (URT, 2020). The City Council comprises five municipal councils, namely Temeke, Kinondoni, Ilala, Ubungo, and Kigamboni municipal councils, jointly forming the municipals of the Dar es Salaam Region (URT, 2020). Several reasons prompted the choice of Dar es Salaam as a study area. *First*, it is the home to several technical universities and colleges such as the Dar es Salaam Institute of Technology (DIT), National Institute of Transport (NIT), St. Joseph University in Tanzania (SJUIT), College of Engineering and Technology (CoET), College of Information Communication Technology (CoICT) Ardhi University (ARU) (TCU, 2019). This allows access to a significant population of technical graduates as the focal point for assessing their experience in entrepreneurship education.

*Second*, Dar es Salaam is the largest city and one of the fastest-growing cities in Africa (Todd *et al.*, 2019), and the economic capital of the country plays a significant role in economic activities housing many business ventures, industries, and job opportunities. For example, it serves as the official business registration headquarters through the Business Registration and Licensing Agency (BRELA), accounting for 89.8% of all collections in the country (URT, 2017). Similarly, it is the leading manufacturing zone, accounting for 58.5% of the country's total value of manufactured goods (URT, 2017). This makes Dar es Salaam the leading region with higher Gross Domestic Product (GDP) rates than other cities and is expected to acquire a megacity status by 2030 (Todd *et al.*, 2019). This makes it an ideal location for studying entrepreneurship education and graduates' business start-up intentions.

*Third*, Dar es Salaam implements several technical projects that need the professional services of technical graduates. Some of the projects attracting technical graduates include the construction of the Kijazi and Mfugale flyovers at Ubungo and Tazara. This makes it a focal point for entrepreneurship and business start-ups and

an ideal study area. *Fourth*, Dar es Salaam is the largest city and therefore the findings of this study can be more applicable to other regions. For example, entrepreneurship education policies and initiatives are often centralized in Dar es Salaam. Studies done in capital cities can directly inform and influence policy decisions and educational reforms. The findings on the dynamics of entrepreneurship education and business start-up intentions in Dar es Salaam may have implications for other areas in the country. *Fifth*, Dar es Salaam is characterized by economic disparities with a mixture of well-established business ventures and new start-ups. This diversity can provide valuable insights into the challenges and opportunities university graduates experience in other areas of the city when considering business start-ups.

### **1.8.2 Study philosophical worldview**

The study is guided by a positivist philosophical view whereby the researcher views that a single reality exists and can be measured to enhance understanding (Saunders *et al.*, 2019). The paradigm helps to guide the researcher in choosing the research strategy, problem formulation, data collection, analysis, and interpretation (Žukauskas *et al.*, 2018). The researcher believes that reality is objective, quantifiable, and can be measured following specific procedures independent of a researcher (Ugwu *et al.*, 2021). Guided by positivism, the researcher remained neutral and detached from the participants to avoid influencing respondents' responses. Guided by positivism principles, this study developed tentative guesses derived from theoretical and empirical literature reviews (hypotheses) followed by data collection to prove or refute the theory through statistical approaches to generalize the findings to the world (Saunders *et al.*, 2019; Žukauskas *et al.*, 2018; Creswell, 2014).

The positivist paradigm has been dominant in most entrepreneurship research for 20 years (McDonald *et al.*, 2015). As a social scientist with a positivist view, this thesis attempts to examine the relationship between two variables instead of what underlines such relationships (Ugwu *et al.*, 2021). Specifically, it examines the relationship between entrepreneurship education, entrepreneurial competencies acquisition, and business start-up intentions, drawing the experience of technical graduates. The thesis further explores how lifelong experience facilitates entrepreneurial competencies acquisition and how such competencies enhance

technical graduates business start-up intentions. The hypotheses were developed following comprehensive literature reviews, both theoretical and empirical, followed by data collection, analysis, and interpretation of the research findings to attach meaning to the developed hypotheses.

### **1.8.3 Research approaches and design**

This study adopts a quantitative research approach whereby primary data were collected from respondents at one point in time using a self-administered survey questionnaire. The quantitative approach suits studies that test the causal relationships between variables (Saunders *et al.*, 2019). This study measures the relationship between entrepreneurial competencies and technical graduates' intentions to venture into business start-ups. It also measures the relationship between university support and business start-up potential when mediated by a supportive institutional environment. Consistent with Creswell (2014), the approach is suitable when comparing two cohorts. This study compares entrepreneurial competencies acquisition among graduates who studied entrepreneurship courses and those who did not. About 55% of existing articles in entrepreneurship research published in reputable international journals between 1985 – 2013 employed a quantitative research approach (McDonald *et al.*, 2015).

This study uses a cross-sectional survey design whereby data about technical graduates' experiences with entrepreneurship education and their potential to venture into business start-ups are collected once (Ragab and Arisha, 2018). The design allows estimating the status of technical graduates' intentions to venture into business start-ups and their underlying predictors at a given time frame. This is useful for assessing the present situation and providing relevant policy interventions. The design also allows comparisons of different groups within the population to identify patterns, trends, and variations in business start-up intentions (Saunders *et al.*, 2019). This study compares the differences in the acquisition of entrepreneurial competencies between technical graduates who studied entrepreneurship courses and those who did not as a basic requirement for impact assessment (Fayolle, 2013). Over 60% of previous studies in entrepreneurship education used a cross-sectional research survey design (Nabi *et al.*, 2017).

#### **1.8.4 Population and sampling**

The target population of this study was technical graduates from technical colleges and universities in Tanzania. Specifically, the sampling frame was technical graduates who graduated between 2012 and 2017, with particular attention to those living in Dar es Salaam during data collection. The time frame was chosen because many technical colleges and universities started integrating entrepreneurship education into the education system in 2008. The first batch of technical graduates with entrepreneurship courses was expected to enter the labour market in 2012s. In addition, many graduates have a higher potential to venture into business start-ups five to ten years after graduation (Mwasalwiba, 2012). The researcher subjectively selected the College of Engineering and Technology (CoET), Dar es Salaam Institute of Technology (DIT), and St. Joseph University in Tanzania (SJUIT) to represent others. These universities are prominent for producing professional graduates specializing in Applied Sciences, Technology, and Engineering (ASET).

Technical graduates were chosen because they hold a higher potential to venture into high-tech business start-ups than graduates in other professions (Colombo and Piva, 2020; Legas, 2016). The high potential for business start-ups can be attributed to the technical nature of their study programmes. DIT and CoET are public-owned institutions that offer at least one entrepreneurship course during data collection. Although SJUIT graduates did not study entrepreneurship courses, they were included in this study for two reasons. *First*, their presence was used as a benchmark for comparing entrepreneurial competencies acquisition and BSI between graduates who studied entrepreneurship and those who didn't as basic requirements assessing the associated outcomes (Fayolle, 2013). *Second*, they have been receiving supportive interventions from various stakeholders within and outside SJUIT. For example, the University of Dar es Salaam Entrepreneurship and Innovation Centre (UDEIC) incubates innovative business ideas into tangible products for the public and university graduates in particular, irrespective of their university affiliation.

Moreover, the Tanzania Commission for Science and Technology (COSTECH) established the X-Innovation Hub in 2011 to foster innovation and technology entrepreneurship among university graduates through capacity building, mentoring programs, and community empowerment of young graduates regardless of university affiliation. In this regard, SJUIT graduates possess relevant information sought by

this study. One of the determinants for estimating the sample size is how representative the sample is expected and the analysis technique to be employed (Saunders *et al.*, 2019; Fisher *et al.*, 1991). A sample size must be representative enough to generalize the findings (Omair, 2014). From the population of 10,981, the estimated sample size was 384 technical graduates estimated using Cochran’s (1977) formula at 95% confidence and ± 5% precision level as follows:

$$\text{Sample size (n)} = \frac{z^2 pq}{e^2} \dots\dots\dots(1)$$

Where,

n = Estimated sample size;

z = Confidence level at 95% (a standard value of 1.96);

p = Estimated target population of technical graduates from DIT, CoET and SJUIT living in Dar es Salaam (using a standard value of 0.5 since it is unknown);

q = 1.0 – p (1 – 0.05); and

e = Margin of error at 5% (standard 0.05).

From the formula above, the sample size (n) is estimated as follows:

$$\begin{aligned} n &= \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} \\ &= \frac{3.8416 \times 0.25}{0.0025} \\ &= 384.16 \approx 384 \end{aligned}$$

Therefore, the estimated target population was 384

Since the study sampled respondents from three universities, the sub-sample for each university/college was estimated using Fisher *et al.* (1991) proportionate formula as follows:

$$\text{Size per University} = \frac{\text{Estimated Sample Size (n)}}{\text{Total Population (N)}} \times \text{Population per University} \dots\dots\dots (2)$$

From equation (2), the computation of the sub-sample size was as follows:

$$\text{For CoET} = \frac{384}{10,981} \times 2,103 = 73$$

$$\text{For DIT} = \frac{384}{10,981} \times 3,818 = 134$$

$$\text{For SJUIT} = \frac{384}{10,981} \times 5,060 = 177$$

Moreover, since the formula estimates the minimum sample size, the researcher added 15% of the sample size, equivalent to 58 respondents, making a final sample size of 442, following Israel's (1992) recommendations to compensate for non-response potential.

**Table 1: Sample size estimation**

University	Population	Sub-sample	Sub-sample after 15%	Percent
CoET	2,103	73	84	19.2
DIT	3,818	134	154	34.7
SJUIT	5,060	177	204	46.1
<b>Total</b>	<b>10,981</b>	<b>384</b>	<b>442</b>	<b>100</b>

### 1.8.5 Data collection methods and tools

A survey questionnaire technique was used for data collection from respondents. Survey questionnaires are regularly used in quantitative studies intending to provide a broad picture of the representative sample of a large population. Surveys are cost-effective and quick in data collection from many participants (Collis and Hussey, 2013). About 53.6% of entrepreneurship studies used a survey questionnaire as a data collection method than other data collection strategies such as interviews, case studies, and documentary analysis (McDonald *et al.*, 2015). In Tanzania, technical graduates are registered in various professional bodies. Depending on their specialization, technical graduates register with the Engineers Registration Board (ERB), the Contractors Registration Board (CRB), and the Architects and Quantity Surveyors Registration Board (AQRB) for orientations and mentorship programs. Each professional body keeps a database with information about the contacts and the institution each applicant is attached to for field placement.

Similarly, through the Structured Engineering Apprenticeship Programme (SEAP), the government is recruiting engineering graduates for three years to acquire hands-on skills (URT, 2005). As a result, many respondents were still working under SEAP which simplified the data collection exercise. From the database, a simple random sampling technique using a random number Table was used to select respondents to avoid potential selection bias. With the assistance of enumerators, 442 questionnaires were distributed in person to selected respondents for one month. Finally, out of 442

printed questionnaires, 391 copies were collected equivalent to 88.5% of the completion rate, which is above the recommended threshold of 70% for a survey paper (Nulty, 2008). The 391-sample size attained the minimum required representative sample size of 370 for a population of 10,000 at a confidence level of 95% and a 5% margin of error (Saunders *et al.*, 2019).

### **1.8.6 Measurement scales and common bias method**

The items of the questionnaire were adopted from previous empirical studies following a comprehensive literature review. However, the items were slightly modified to reflect the context of this study. The strength of agreements or disagreements of the statement was measured through a five-point Likert scale using generic continuum responses ranging from Strongly Agree (=5) to Strongly Disagree (=1) due to inherent advantages over other scales (Johns, 2010). The scale reduces respondents' frustration, enhances completion rate and response quality, and improves reliabilities (Babakus and Mangold, 1992; Jenkins and Taber, 1977).

The questionnaire had four parts: respondents' socio-demographic information, entrepreneurial competencies acquisition, business start-up intentions, perceived university support, business start-up potential, and perceived start-up obstacles. Common Method Bias (CMB) is inherent in social sciences, particularly in behavioural studies, when the same data survey questionnaire is used in collecting data from similar respondents in the same location (Kock *et al.*, 2021). Cognizant of this, the study employed both statistical and non-statistical techniques to minimize the inherent potential bias. *First*, two senior academic staff in entrepreneurship reviewed the survey questionnaire. *Second*, the data collection tool was pre-tested to 20 technical graduates in Moshi District. The observed anomalies were incorporated before embarking on actual data collection.

*Third*, respondents' informed consent was sought by explaining the study objectives, guaranteeing their anonymity, assuring the confidentiality of the information they will provide, and encouraging them that there were no correct or wrong responses. The study used a statistical measure using Harman's one-factor test to test the potential bias by entering all the items as one factor using the Principal Component Analysis (PCA) technique. Harman's one-test result produced 34.7%, below the

threshold level of 50% (Kock *et al.*, 2021). This implies that CMB was not a challenge and had minimal implications on the empirical results.

### **1.8.7 Validity and reliability**

Sounders *et al.* (2019) define validity as the ability of the survey questionnaire to measure what it is purported to measure. Upon completing the data collection exercise, the collected data were tested to determine whether they were valid and reliable. Unlike reliability, reflecting the consistency, stability, or trustworthiness of the data, validity concerns how data are reliable, trustworthy, and accurate (Singh, 2017; Fisher *et al.*, 1991). Reliability refers to the extent to which the survey questionnaire is free from error and produces consistent results. The study used several strategies to ensure valid measures produce reliable results. *First*, enumerators were oriented on the questionnaire and the expectations of each question for proper guidance in filling out the survey questionnaire. *Second*, pilot testing was undertaken on 20 technical graduates with similar features in Moshi Municipal Council. This was critical for rectifying complex and ambiguous terms and estimating respondents' response latency before embarking on data collection.

*Third*, the scales used in this study were derived from previous scholars who have already tested their validity. This somehow reduced most of the data collection-related problems, such as ambiguities in wording, to improve the validity and reliability of the collected data. The constructs and items were tested for reliability and validity despite being tested in previous studies. The study used Cronbach's Alpha coefficient ( $\alpha$ ), Composite Reliability (CR), and Factor Loading (FL) for assessing the construct and item reliability after attaining a threshold level ( $\geq .70$ ) (Hair *et al.*, 2019; Chin, 1998; Cronbach, 1951). In PLS-based studies, CR is preferred over Cronbach's Alpha to avoid over or under-estimating construct reliability (Henseler *et al.*, 2016). However, the study used both methods to ensure that reliability is attained using both to ensure the measure attain the requirement reliability. Both construct and item reliability attained the conservative threshold level ( $\geq .70$ ) (Hair *et al.*, 2021; Benitez *et al.*, 2020). Impliedly, both items and constructs had adequate internal consistency reliability for further analysis.

Lastly, besides pilot testing, the researcher comprehensively reviewed both theoretical and empirical studies and carefully selected survey questionnaire items.



Two senior academics reviewed the survey questionnaire. The purpose was to maximize the content and face validity of the questionnaire. The study examined the convergent validity of the constructs through Average Variance Extracted (AVE) and indicator reliability. Convergent validity could be attained if the AVE value attained the minimum threshold level ( $\geq 0.50$ ) (Hair *et al.*, 2021). Fornell-Larcker criterion tested discriminant validity, cross-loadings, and the heterotrait-monotrait ratio (HTMT). The outer loadings were above all its loadings on other constructs, the square root of each AVE value was above its highest correlation with other constructs (Fornell and Larcker, 1981), and the HTMT values attained the correlation strength ( $\leq 0.850$ ) (Hair *et al.*, 2019). Generally, all the measurement scales attained the minimum acceptable psychometric properties for undertaking further analysis.

### **1.8.8 Analytical approaches**

The study used both inferential and descriptive statistics for data analysis. The study used descriptive statistics when analyzing respondents' demographic information, perceived obstacles, and business start-up attempts by presenting their frequencies, tables, and cross-tabulation to generate meaning. This study used the Ordinal Logistic Regression Model (OLRM) to examine factors influencing the acquisition of entrepreneurial competencies among technical graduates in Tanzania (Agresti and Tarantola, 2018). The study further used Partial Least Squares Structural Equation Modelling (PLS-SEM), also known as Partial Least Squares Structural Equation Path Modelling (PLS-PM), to broadly assess the hypothesized complex relationships. For example, this study examines the relationship between entrepreneurial competencies and technical graduates' business start-up intentions and how the antecedents of TPB mediate their relationships.

Moreover, the study used PLS-PM to examine the direct influence of the antecedents of TPB on the BSI of technical graduates and how entrepreneurship education moderates their effect. Lastly, the study employed PLS-SEM to measure the direct influence of university support and institutional support on technical graduates' BSI (Hair *et al.*, 2021; Chin *et al.*, 2020). Lin *et al.* (2021) highlight the reasons for using PLS-SEM, including the sample size is reasonably small (30.9%), when the study is meant for prediction purposes (14.3%), and the non-normality status of the collected data (13.2%). Among the underlined reasons, PLS-SEM in this study is used for prediction purposes. Essentially, PLS-SEM predicts complex relationships that

could not be predicted by first-generation multivariate analysis techniques such as multiple regression, logistic regression, and analysis of variance (ANOVA).

Unlike Covariance-Based Structural Equation Modelling (CB-SEM), which confirms or rejects theories and the hypotheses derived thereof (Hair *et al.*, 2021), PLS-SEM is a causal-predictive approach to SEM explaining the variance in the dependent variables (Chin *et al.*, 2020). The study uses PLS-SEM because it has the potential to simultaneously model and estimate complex relationships among dependent and independent variables measured through multiple items (Hair *et al.*, 2021; Chin *et al.*, 2020; Henseler *et al.*, 2016). In the entrepreneurship domain, over 90% of manuscripts published in the last four years employed PLS-SEM as a vigorous analysis technique (Manley *et al.*, 2020). In estimating hypothesized paths, the study used Smart-PLS versions 3.6 and 4.0 (Henseler *et al.*, 2015, 2022). Besides the availability of software used for estimating the model with different default settings, over 80% of existing PLS-SEM studies used Smart-PLS (Lin *et al.*, 2019).

### **1.8.9 Ethical consideration**

Ethics constitutes a set of moral principles of conduct used to govern decision-making and behaviour and procedures of undertaking activities (Sounders *et al.*, 2018). Research studies that involve human beings are bound to obtain respondents' voluntary informed consent as a mandatory requirement for the ethical conduct of human subject research. Informed consent means respondents should be well-informed about the inherent potential risks and the benefits associated with their participation. Researchers abide by research ethics by respecting respondents, protecting them from potential harm and discomfort, and being fair in selection. Based on the institutional and national guidelines, this study observed several ethics throughout the study. *First*, a research clearance letter was obtained from the university to introduce the researcher to the visited institutions (Appendix 3). *Second*, research permits were sought from technical colleges and universities, municipal councils, and professional bodies (Appendix 3).

*Third*, sought respondents' informed consent before administering the questionnaire to ensure that there is voluntary participation and confidentiality. The introduction section of the questionnaire solicited respondents' informed consent by explaining the objectives of the study, expected outcomes, issues of voluntary and anonymous,

the freedom to withdraw at any time without any consequences, and how the collected data would be protected according to the prevailing national laws (Appendix 1). *Fourth*, during problem identification, all the reviewed materials were carefully used and acknowledged. *Fifth*, during data collection, codes were used instead of respondents' names to ensure confidentiality. *Sixth*, the data were entered into the computer software and carefully analyzed. The researcher reported all the findings honestly and objectively. Lastly, during the publication process, the researcher disclosed any potential conflicts of interest or limitations of the study.

#### **1.8.10 Definitions of key concepts**

- (i) **Entrepreneurship education.** Consistent with Fayolle (2013), this study defines entrepreneurship education as the process of providing students with the knowledge, skills, and attitudes necessary to identify and pursue business opportunities for new venture creation.
- (ii) **Business start-up intentions.** Similar to Thompson (2009) defines business start-up intentions as a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future. In this study, it is understood as the self-reported likelihood or desire of a person to start a new business venture shortly.
- (iii) **Entrepreneurial competencies.** Bird (1995) defines entrepreneurial competencies as a set of abilities, traits, and skills that enable individuals to undertake entrepreneurial tasks effectively and efficiently. This study defines entrepreneurial competencies as a combination of cognitive, affective, and skill-based outcomes that are necessary for individual entrepreneurial performance (Kozlinsika, 2020).
- (iv) **Technical graduates.** These are individuals who have completed a Diploma, Degree programme, or Master Degree with applied sciences, engineering, or technology specialties from a technical college or university.
- (v) **Business start-up potentials.** This thesis conceptualizes business start-up potentials as the likelihood that a new business venture is created and succeeds in the market. The potential depends on several factors, such as the quality of the business idea, market demand for the products or services, availability of resources and funding, state of competition, and the level of entrepreneurial competencies of the founder.

- (vi) **Theory of Planned Behaviour (TPB).** Similarly, Ajzen (1991) defines TPB as the psychological theory that explains human behaviour as a function of attitudes, subjective norms, and perceived behavioural control towards a specific action. In this thesis, attitudes, subjective norms, and perceived behavioural control are used as predictors of the potential of technical graduates to pursue business start-ups.
- (vii) **Institutional support.** Consistent with Scott (2014) defines institutional support as formal and informal rules, norms, and values that shape the entrepreneurial environment and influence the behaviour and decisions of potential entrepreneurs. It includes reduced bureaucratic procedures, tax incentives, access to finance, access to business development services, etc.

### **1.8.11 Delimitation of the Study**

The scope of this study is on the influence of entrepreneurship education on the potential to venture into business start-ups in Tanzania. Specifically, the study focuses on the following aspects. *First*, it examines factors influencing entrepreneurial competencies acquisition among technical graduates. *Second*, the thesis examines the effect of entrepreneurial competencies on technical graduates' business start-up intentions when mediated by the antecedents of the Theory of Planned Behaviour. *Third*, it examines the antecedents of business start-up intentions and how entrepreneurship education moderates the effect of the antecedents of TPB on technical graduates' business start-up intentions. *Fourth*, the thesis measures the influence of university support on technical graduates' business start-up intentions when mediated by a supportive institutional environment. Lastly, the study exclusively focuses on technical graduates from three technical colleges and universities who graduated between 2012 and 2017 and who lived in Dar es Salaam during data collection.

### **1.8.12 Organization of the thesis**

This thesis is organized into six chapters, four of which are derived from publishable manuscripts. The first chapter, detailed from pages 1 to 46, provides the general introduction, which includes the problem statement, the objectives, the justifications, the conceptual framework, the general methodology, ethical issues, definitions of key concepts, scope and delimitation of the study and the organization of the thesis. The second chapter, detailed from pages 46 to 75, is derived from the first

publishable manuscript titled “*Factors Influencing Entrepreneurial Competencies Acquisition among Technical Graduates in Tanzania*”. The chapter explores socio-demographic factors influencing the acquisition of entrepreneurial competencies among technical graduates in Tanzania. The manuscript will be submitted to one of the peer-reviewed journals for publication consideration. The third chapter, detailed from pages 76 to 102, is derived from the second published manuscript titled “*Entrepreneurial Competencies and Business Start-up Intentions among Technical Graduates in Tanzania, Mediated by the Antecedents of Theory of Planned Behaviour*”.

The chapter explores the direct influence of entrepreneurial competencies not only on the antecedents of TPB but also on technical graduates’ intentions to venture into business start-ups and how the antecedents of TPB mediate the effect of entrepreneurial competencies on business start-up intentions. The article is already published online by the *African Journal of Innovation and Entrepreneurship*, Volume 1, Number 2, December 2022, pp 63-86. Available at: <https://journals.co.za/doi/abs/10.31920/2753-314X/2022/v1n2a3>. The fourth chapter, detailed from pages 103 to 134, is derived from the third published manuscript titled “*Business Start-up Intentions among Technical Graduates in Tanzania: The Moderating Effect of Entrepreneurship Education*”. This chapter explores the influence of the antecedents of TPB on the intentions of technical graduates to venture into business start-ups and how entrepreneurship education moderates the effect of the antecedents of TPB on business start-up intentions. The manuscript has been published by the *East African Journal of Social and Applied Sciences*, Vol. 4, No. 1, 30<sup>th</sup> December 2022, pp 1-19. Available at: <https://doi.org/10.2022/eaj-sas.v4i1.200>.

The fifth chapter, detailed from pages 135 to 162, is derived from the fourth published manuscript titled “*Perceived University Support and Technical Graduates’ Intentions to Venture into Business Start-ups: Does Institutional Support Matter?*” The chapter examines the direct influence of university support and institutional support on the intentions of technical graduates to venture into business start-ups and how institutional support mediates the effect of university support on technical graduates’ business start-up intentions. The manuscript has been published

online by the *Journal of Global Entrepreneurship Research*, Vol. 12(1), [3<sup>rd</sup> January 2023](#), pp 465-477, available at: <https://doi.org/10.1007/s40497-022-00334-0>. The sixth chapter, detailed on pages 164 to 172, presents the overall summary of the findings, the theoretical and policy implications emanating from the findings, and the conclusions and recommendations of the study. The chapter ends by presenting the contributions of the study, limitations, and future research directions.

## REFERENCES

- Agresti, A & Tarantola, C. (2018). Simple ways to interpret effects in modelling ordinal categorical data. *Statistica Neerlandica*, 72(3): 210-223. DOI: <https://doi.org/10.1111/stan.12130>.
- Aloulou, W. (2020). The influence of perceived institutional context support dimension on Saudi university students' entrepreneurial intentions. *Proceeding of the 15<sup>th</sup> European Conference on Innovation and Entrepreneurship*. Riyadh: DOI: [10.34190/EIE.20.134](https://doi.org/10.34190/EIE.20.134).
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50:179-211. DOI: [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Ajzen, I. (2020). The theory of planned behaviour: Frequently asked questions. *Behaviour and Emerging Technologies*, 2(4), 314-324. DOI: [10.1002/hbe2.195](https://doi.org/10.1002/hbe2.195).
- Al Mamun, A. A., Che Naw, N. B., Dewiendren, A. A., & Shamsudin, S. F. (2016). Examining the Effects of Entrepreneurial Competencies on Students' Entrepreneurial Intention. *Mediterranean Journal of Social Sciences*, 7(2):119-127. DOI:[10.5901/mjss.2016.v7n2p119](https://doi.org/10.5901/mjss.2016.v7n2p119).
- Anjum, T., Heidler, P., Amoozegar, A., & Anees, R. O. (2021). The impact of entrepreneurial passion on the entrepreneurial intention: moderating impact of perception of the university. *Administrative Sciences*, 11: 45. DOI: <https://doi.org/10.3390/admsci11020045>.
- Ashari, H., Abbas, I., Abdul-Talib, A., & Zamani, S. N. (2022). Entrepreneurship and sustainable development goals: a multi-group analysis of the moderating effects of entrepreneurship education on entrepreneurial intention. *Sustainability*, 14(431). DOI: <https://doi.org/10.3390/su14010431>.
- Babakus, E., & Mangold, W. G. (1992). Adapting the SERVQUAL scale to hospital services: an empirical investigation. *Health Serv. Res.*, 26(6): 767-786.
- Bae, T. J., Qian, S., Miao, C., & Fie, F. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 38(2):217-254. DOI: <https://doi.org/10.1111/etap.12095>.
- Barba-Sánchez, V., Mitre-Aranda, M., & Brío-González, J. D. (2022). The entrepreneurial intention of university students: An environmental

- perspective. *European Research on Management and Business Economics*, 28(2):100-184. DOI: <https://doi.org/10.1016/j.iedeen.2021.100184>.
- Becker, G. (1964). *Human capital*. Columbia University Press, New York.
- Benitez, J., Henseler, J., Castillo, A., & Schurbeth, F. (2020). How to perform and report an impactful analysis using partial least squares: Guidelines for confirmatory and explanatory IS research. *Information & Management*, 57(2): 103168. DOI: <https://doi.org/10.1016/j.im.2019.05.003>.
- Çera, G., Çera, E., Rozsa, Z., & Bilan, S. (2021). Entrepreneurial intention as a function of university atmosphere, macroeconomic environment and business support: a multi-group analysis. *European Journal of Training and Development*, 45(8/9): 706-724. DOI: <https://doi.org/10.1108/EJTD-08-2019-0148>.
- Chen, H., Tang, Y., & Han, J. (2022). Building students' entrepreneurial competencies in Chinese universities: diverse learning environment, knowledge transfer, and entrepreneurship education. *Sustainability*, 14(15): DOI: [10.3390/su14159105](https://doi.org/10.3390/su14159105).
- Chew, T. C. (2022). The development of entrepreneurial intentions: an institutional perspective. *International Conference on Business and Technology (ICBT) 2021: Financial Technology (FinTech), Entrepreneurship, and Business Development* (pp. pp 983–998). Switzerland: Springer Nature. DOI: [https://doi.org/10.1007/978-3-031-08087-6\\_68](https://doi.org/10.1007/978-3-031-08087-6_68).
- Chengula, I. J., Bengesi, K. M., Komba, S. C., & Mvena, Z. S. (2022). Effect of teaching and learning approaches on graduates' entrepreneurial Competency for self-employment in Tanzania. *International Journal of Entrepreneurship*, 6 (1): 41 - 58.
- Chin, W. W. (1998). The partial least squares approach for structural equation modelling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-236). London: Lawrence Erlbaum Associates.
- Chin, W., Cheah, J., Liu, Y., Ting, H., Lim, X., & Cham, T. H. (2020). Demystifying the role of causal-predictive modelling using partial least squares structural equation modelling in information systems research. *Industrial Management & Data Systems*, 120(12): 2161-2209. DOI: [10.1108/IMDS-10-2019-0529](https://doi.org/10.1108/IMDS-10-2019-0529).
- Collis, J., & Hussey, R. (2013). *Business research: a practical guide for undergraduate and postgraduate students*. Palgrave Macmillan.



- Colombo, M. G., & Piva, E. (2020). Start-ups launched by recent STEM university graduates: The impact of university education on entrepreneurial entry. *Research Policy*, 49:103993. DOI: <https://doi.org/10.1016/j.respol.2020.103993>.
- Cochran, W.G. (1977). *Sampling techniques*, 3<sup>rd</sup> ed. Wiley. New York.
- Cui, J., & Bell, R. (2022). Behavioural entrepreneurial mindset: How entrepreneurial education activity impacts entrepreneurial intention and behaviour. *The International Journal of Management Education*, 20(2): 100639. DOI: [10.1016/j.ijme.2022.100639](https://doi.org/10.1016/j.ijme.2022.100639).
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed method approaches*. London: SAGE Publications, Inc.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3), 297-334.
- Duong, C. D. (2021). Exploring the link between entrepreneurship education and entrepreneurial intentions: the moderating role of educational fields. *Education+Training*, 0040-0912. DOI: [10.1108/ET-05-2021-0173](https://doi.org/10.1108/ET-05-2021-0173).
- Eger, R. J., & Maridal, J. H. (2015). A statistical meta-analysis of the wellbeing literature. *International Journal of Well-being*, 5(2): 45-74.
- Fadzilah, A. S., & Hussain, M. H. (2021). Investigating the perceived university support and the relationship between entrepreneurship education and self-employment intention. *Journal of Contemporary Issues in Business and Government*, 27(3):259–264. DOI: [10.47750/cibg.2021.27.03.037](https://doi.org/10.47750/cibg.2021.27.03.037).
- Fayolle, A. (2013). Personal views on the future of entrepreneurship education. *Entrepreneurship & Regional Development*, 25(7–8): 692–701. DOI: <http://dx.doi.org/10.1080/08985626.2013.821318>.
- Fernández-Pérez, V., Montes-Merino, A., Rodríguez-Ariza, L., & Galicia, P. E. (2019). Emotional competencies and cognitive antecedents in shaping student's entrepreneurial intention: the moderating role of entrepreneurship education. *International Entrepreneurship Management Journal*, 15(1). DOI: [10.1007/s11365-017-0438-7](https://doi.org/10.1007/s11365-017-0438-7).
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behaviour: An introduction to theory and research*. Addison-Wesley, Reading, MA.

- Fisher, A. A., Laing, J. E., Stoeckel, J. E., & Townsend, J. (1991). *Handbook for Family Planning Operations Research Design*. New York: Population Council.
- Fisher, S., Graham, M., & Compeau, M. (2008). Understanding the learning outcomes of entrepreneurship education. In R. Harrison, & C. Leitch, *Entrepreneurial Learning: Conceptual Frameworks and Applications*. New York: Routledge.
- Fornell, C. G., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 9(4): 440-452. DOI: <https://doi.org/10.1177/002224378101800104>.
- Fulgence, K. (2015). Assessing the status of entrepreneurship education courses in higher education learning institutions: the case of Tanzania education schools. *Education + Training*, 57(2): 239 -258. DOI: <https://doi.org/10.1108/ET-05-2013-0063>.
- Gerba, D. T. (2012). Impact of entrepreneurship education on entrepreneurial intention of business and engineering students in Ethiopia. *African Journal of Economic and Management Studies*, 3(2): 258-277. DOI: <https://doi.org/10.1108/20400701211265036>.
- González-Lópe, M. J., Pérez-López, M. C., & Rodríguez-Ariza, L. (2020). From potential to early nascent entrepreneurship: the role of entrepreneurial competencies. *International Entrepreneurship and Management Journal*, 17:1387–1417. DOI: <https://link.springer.com/article/10.1007/s11365-020-00658-x>.
- Hahn, D., Minola, T., Van Gils, A., & Huybrechts, J. (2017). Entrepreneurial education and learning at universities: exploring multilevel contingencies. *Entrepreneurship & Regional Development*, 29:9-10, 945-974, DOI: [10.1080/08985626.2017.1376542](https://doi.org/10.1080/08985626.2017.1376542).
- Hair Jr., J. F., Tomas, G., Hult, M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. A Workbook*. DOI: <https://doi.org/10.1007/978-3-030-80519-7>.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1): 2-24. DOI: [10.1108/EBR-11-2018-0203](https://doi.org/10.1108/EBR-11-2018-0203).

- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modelling in new technology research: updated guidelines. *Industrial Management & Data Systems*, 116(1): 2-20. DOI: <https://doi.org/10.1108/IMDS-09-2015-0382>.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the Academic Marketing Science*, 43:115–135. DOI: [10.1007/s11747-014-0403-8](https://doi.org/10.1007/s11747-014-0403-8).
- Hoang, G., Le, T. T., Tran, A. A., & Du, T. (2021). Entrepreneurship education and entrepreneurial intentions of university students in Vietnam: the mediating roles of self-efficacy and learning orientation. *Education + Training*, 63(1):115-133. DOI: [10.1108/ET-05-2020-0142](https://doi.org/10.1108/ET-05-2020-0142).
- Israel, G. D. (1992). Sampling the evidence of extension program impact. *Program Evaluation and Organizational Development, Institute of Food and Agricultural Sciences, University of Florida*. PEOD-5. [<http://edis.ifas.ufl.edu>]. Visited on 12/04/2019.
- Jenkins, G. D., & Taber, T. D. (1977). A Monte Carlo study of factors affecting three indices of composite scale reliability. *Journal of Applied Psychology*, 62(4): 392–398. DOI: <https://doi.org/10.1037/0021-9010.62.4.392>.
- Johns, J. (2010). *Likert items and scales*. SQB Methods Fact Sheet 1, 11pp.
- Kabongo, J. D., & Okpara, J. O. (2010). Entrepreneurship education in sub-Saharan African universities. *International Journal of Entrepreneurial Behaviour & Research*, 16(4): 296-308.
- Kalimasi, P. (2018). Assessment of entrepreneurship education trends in the formal education system in Tanzania. *Business Management Review*, 21(2): 53-65. [<https://journals.udsm.ac.tz/index.php/bmr/article/view/2290>]. Visited on 28/6/2022.
- Katundu, M. A., & Gabagambi, D. M. (2014). Determinants of entrepreneurial tendencies among Tanzanian university graduates: A case of University of Dar-es-Salaam. *European Academic Research*, 2(1). 835-869.
- Kazumi, T., & Kawai, N. (2017). Institutional support and women's entrepreneurial self-efficacy. *Asia Pacific Journal of Innovation and Entrepreneurship*, 11(3): 345-365. DOI: [10.1108/APJIE-12-2017-041](https://doi.org/10.1108/APJIE-12-2017-041).

- Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of standard method bias: detection, prevention and control. *Tourism Management*,
- Kozlinska, I. (2016). *The link between entrepreneurial education and entrepreneurship: evidence from two post-transition countries*. University of Turku: Latvia, 414pp.
- Kozlinska, I., Rebmann, A., & Mets, T. (2020). Entrepreneurial competencies and employment status of business graduates: the role of experiential entrepreneurship pedagogy. *Journal of Small Business and Entrepreneurship*, DOI: <https://doi.org/10.1080/08276331.2020.1821159>.
- Krieger, A., Stuetzer, M., Obschonka, M., & Salmela-Aro, K. (2022). The growth of entrepreneurial human capital: origins and development of skill variety. *Small Business Economics*, 59: 645–664. DOI: <https://doi.org/10.1007/s11187-021-00555-9>.
- Lackéus, M. (2020). Comparing the impact of three different experiential approaches to entrepreneurship in education. *International Journal of Entrepreneurial Behavior & Research*, 26(5):937-971. DOI: [10.1108/IJEBR-04-2018-0236](https://doi.org/10.1108/IJEBR-04-2018-0236).
- Legas, H. A. (2016). An empirical analysis of the workings of entrepreneurship and the role of entrepreneurship education on intention towards entrepreneurship: insights from Africa. Unpublished Doctoral Thesis. Bergamo: University of Bergamo.
- Liñán, F., & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, 11(4): 907-933.
- Lin, M., Lee, M., Liang, J., Chang, H., Huang, P., & Tsai, C. (2019). A review of using Partial Least Square Structural Equation Modelling (PLS-SEM) in e-learning research. *British Journal of Educational Technology*. DOI:[10.1111/bjet.12890](https://doi.org/10.1111/bjet.12890).
- Liu, M., Gorgievski, M. J., Qi, J., & Paas, F. (2022). Perceived university support and entrepreneurial intentions: Do different students benefit differently? *Studies in Educational Evaluation*, 73: 101150. DOI: <https://doi.org/10.1016/j.stueduc.2022.101150>.
- Lopez, T., Alvarez, C., Martins, I., Perez, J. P., & Román-Calderón, J. P. (2021). Students' perception of learning from entrepreneurship education programs

- and entrepreneurial intention in Latin America. *Academia Revista Latinoamericana de Administración*, 34(3). 41-44. DOI: <https://doi.org/10.1108/ARLA-07-2020-0169>.
- Lu, G., Song, Y., & Pan, B. (2021). How university entrepreneurship support affects college students' entrepreneurial intentions: an empirical analysis in China. *Sustainability*, 13: 3224. DOI: <https://doi.org/10.3390/su13063224>.
- McDonald, S., Gan, B. C., Fraser, S. S., Oke, A., & Anderson, A. R. (2015). A review of research methods in entrepreneurship 1985-2013. *International Journal of Entrepreneurial Behavior & Research*, 21(3): 291-315. DOI: <https://doi.org/10.1108/IJEBr-02-2014-0021>.
- Meoli, A., R. Fini, M. Sobrero, and Wiklund, J. (2020). How entrepreneurial intentions influence entrepreneurial career choices: The moderating influence of social context. *Journal of Business Venturing*, 35(3): 105982. DOI: <https://doi.org/10.1016/j.jbusvent.2019.105982>.
- Maheshwari, G. (2021). Factors influencing entrepreneurial intentions the most for university students in Vietnam: educational support, personality traits or TPB components? *Education + Training*, 63(7/8):1138-1153. DOI: <https://doi.org/10.1108/ET-02-2021-0074>.
- Maheshwari, G., Kha, K. L., & Arokiasamy, A. A. (2022). Factors affecting students' entrepreneurial intentions: a systematic review (2005–2022) for future directions in theory and practice. *Management Review Quarterly*, 1-68. DOI: <https://doi.org/10.1007/s11301-022-00289-2>.
- Malebana, M. J., & Mothibi, N. H. (2022). Relationship between prior entrepreneurship exposure and entrepreneurial intention among secondary school learners in Gauteng, South Africa. *Research Square*, 1-24. DOI: <https://doi.org/10.21203/rs.3.rs-2017396/v1>.
- Mangasini, A. (2015). *Entrepreneurship education and business start-up: assessing entrepreneurial tendencies among university graduates in Tanzania*. PhD Unpublished Thesis, the Sokoine University of Agriculture., 231pp. [<https://www.suaire.sua.ac.tz/handle/123456789/799>]. Visited on 19/2/2021.
- Manley, S. C., Hair, J. F., Williams, R. I., & McDowell, W. C. (2020). Essential new PLS-SEM analysis methods for your entrepreneurship analytical toolbox. *International Entrepreneurship and Management Journal*, 17:1805–1825. DOI: <https://doi.org/10.1007/s11365-020-00687-6>.

- Maresch, D., Harms, R., Kailer, R., & Wimmer-Wurm, B. (2016). The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs. *Technological Forecasting & Social Change*, 104: 172–179. DOI: <http://dx.doi.org/10.1016/j.techfore.2015.11.006>.
- Martin, B., C., M., J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2): 211–224. DOI: <https://doi.org/10.1016/j.jbusvent.2012.03.002>.
- Marvel, M. R., Davis, J. L., & Sproul, C. R. (2016). Human capital and entrepreneurship research: A critical review and future directions. *Entrepreneurship Theory and Practice*, 40(3): 599-626. DOI: [10.1111/etap.12136](https://doi.org/10.1111/etap.12136).
- Mayer-Haug, K., Read, S., Brinckmann, J., & Dew, N. (2013). Entrepreneurial talent and venture performance: a meta-analytic investigation of SMEs. *Research Policy*, 42(6–7): 1251-1273. DOI: <https://doi.org/10.1016/j.respol.2013.03.001>.
- Mets, T., Kozlinska, I., & Raudsaar, M. (2017). Patterns in entrepreneurial competencies as the perceived learning outcomes of entrepreneurship education: The case of Estonian HEIs. *Industry and Higher Education*, 31(1): 23–33.
- Mueller, S., & Anderson, A. R. (2014). Understanding the entrepreneurial learning process and its impact on student's personal development: a European perspective. *The International Journal of Management Education*, 12(3): 500-511. DOI: <https://doi.org/10.1016/j.ijme.2014.05.003>.
- Mustafa, M. J., Hernandez, E., Mahon, C., & Chee, L. K. (2016). Entrepreneurial intentions of university students in an emerging economy: The influence of university support and proactive personality on students entrepreneurial intention. *Journal of Entrepreneurship in Emerging Economies*, 8(2):162-179. DOI: [10.1108/JEEE-10-2015-0058](https://doi.org/10.1108/JEEE-10-2015-0058).
- Mgaiwa, S. J. (2021). Fostering graduate employability: Rethinking Tanzania's university practices. *SAGE Open*, 11(2). DOI: <https://doi.org/10.1177/21582440211006709>.

- Mwantimwa, K. (2019). Higher institution education and entrepreneurial knowledge acquisition of graduates in Tanzania. *Current Politics and Economics of Africa*, 12 (2/3): 209-229.
- Mwantimwa, K., Ilomo, M., Mwabungulu, E., Mbilinyi, D., Possi, M., & Matonya, M. (2022). Graduate' future intention to venture entrepreneurial activities: the foreseen personal, sectoral and macro barriers. *Journal of Global Entrepreneurship Research*, DOI: <https://doi.org/10.1007/s40497-022-00319-z>.
- Mwasalwiba, E. S. (2012). *University entrepreneurship education in Tanzania: teaching context, students' profile and outcomes*. A thesis submitted for the Award of PhD of the Vrije Universiteit Amsterdam, Netherlands. 186pp. [<https://research.vu.nl/en/publications/university-entrepreneurship-education-in-tanzania-teaching-contex>]. Visited on 18/05/2021.
- Mwasalwiba, E., Dahles, H., & Wakkee, I. (2012). Graduate Entrepreneurship in Tanzania: Contextual Enablers and Hindrances. *European Journal of Scientific Research*, 76(3): 386-402.
- Nabi, G., Liñá, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: a systematic review and research agenda. *Academy of Management Learning and Education*, 16(2): 277-299. DOI: <https://doi.org/10.5465/amle.2015.0026>.
- Nade, P. B. (2021). The influence of agri-entrepreneurship courses studied on youth farm entrepreneurial intention: evidence from folk development colleges in Tanzania. *South African Journal of Economic and Management Sciences*, 24(1). DOI: <http://dx.doi.org/10.4102/sajems.v24i1.3788>.
- Naudé, W. A., & Havenga, J. J. (2005). An Overview of African Entrepreneurship and Small Business Research. *Journal of Small Business & Entrepreneurship*, 18(1):101-120. DOI: <https://doi.org/10.1080/08276331.2005.10593334>.
- National Bureau of Statistics. (2021). *Statistical abstract 2020*. Ministry of Finance and Planning, Dodoma. [<https://www.nbs.go.tz/index.php/en/tanzania-statistical-abstract/720-statistical-abstract-2020>]. Visited on 16/01/2022:
- North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge University. Cambridge: Cambridge University Press. DOI: <https://doi.org/10.1017/CBO9780511808678>.

- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done? *Assessment & Evaluation in Higher Education*, 33(3): 301–314. DOI:[10.1080/02602930701293231](https://doi.org/10.1080/02602930701293231).
- Nguyen, H. T., & Duong, D. C. (2021). Dataset on the effect of perceived educational support on entrepreneurial intention among Vietnamese students. *Data in Brief*, 35: 10676. DOI: <https://doi.org/10.1016/j.dib.2021.106761>.
- Nyello, R., Kalufya, N., Rengua, C., Nsolezi, M. J., & Ngirwa, N. (2015). Effect of entrepreneurship education on entrepreneurial behaviour: the case of graduates in the higher learning institutions in Tanzania. *Asian Journal of Business Management*, 7(2): 37-42.
- OECD. (2018). *Policy note on SME ministerial conference: developing entrepreneurship competencies*. 10PP. [<https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Parallel-Session-3.pdf>]. Visited on 25/03/2019.
- Oftedal, E. M., Iakovleva, T. A., & Foss, L. (2017). University context matter: an institutional perspective on entrepreneurial intentions of students. *Education + training*, 0040-0912. DOI: [10.1108/ET-06-2016-0098](https://doi.org/10.1108/ET-06-2016-0098).
- Omar, A. (2014). Sample size estimation and sampling techniques for selecting a representative sample. *Journal of Health Specialties*, 2(4): 142-147. DOI: [10.4103/1658-600X.142783](https://doi.org/10.4103/1658-600X.142783).
- Omidyar Network. (2013). *Accelerating entrepreneurship in Africa: understanding Africa's challenges to creating opportunity-driven entrepreneurship*. [<https://www.issuelab.org/resources/15195/15195.pdf>]. Visited on 19/10/2018.
- Puni, A., Anlesinya, A., & Korsorku, P. D. (2018). Entrepreneurial education, self-efficacy, and intentions in sub-Saharan Africa. *African Journal of Economic and Management Studies*, 9(4): 492-511. DOI: <https://doi.org/10.1108/AJEMS-09-2017-0211>.
- Regoniel, P. A. (2015). *Conceptual framework: a step-by-step guide on how to make one*. [<https://simplyeducate.me/2015/01/05/conceptual-framework-guide/>]. Visited on 15/10/2022.
- Rwamtoga, B. (2011). The effect of entrepreneurship education in entrepreneurship development: The case of Vocational Education and Training Authority



- (VETA). Unpublished Master's Dissertation: Dar es Salaam: The Open University of Tanzania.
- Saunders, M. N., Lewis, P., & Thornhill, A. (2019). *Research methods for business students, Eighth Edition*. London: Pearson Education Limited.
- Sim, M. S., Galloway, J. E., Ramos, H. M., & Mustafa, M. J. (2021). University's support for entrepreneurship and entrepreneurial intention: The mediating role of entrepreneurial climate. *Journal of Entrepreneurship in Emerging Economies*, DOI: [2053-4604.10.1108/JEEE-09-2021-0354](https://doi.org/10.1108/JEEE-09-2021-0354).
- Shabbir, M. S., Batool, F., & Mahmood, A. (2022). Trends in entrepreneurship education: a systematic literature review. *Higher Education, Skills and Work-Based Learning*, 12(6): 1040-1056. DOI: [10.1108/HESWBL-05-2022-0105](https://doi.org/10.1108/HESWBL-05-2022-0105).
- Shimba, A. I. (2018). Entrepreneurship education and self-employment choices of graduates: Experiences of selected Tanzanian universities. *Business Management Review*, 21(2): 14-29.
- Scott, W. R., & Meyer, J. (1994). *Institutional environments and organizations: structural complexity and individualism*. Thousand Oaks, CA: Sage.
- Shi, L., Yao, X. & Wu, W. (2020). Perceived university support, entrepreneurial self-efficacy, heterogeneous entrepreneurial intentions in entrepreneurship education: The moderating role of the Chinese sense of face. *Journal of Entrepreneurship in Emerging Economies*, 12(2). 205-230. DOI: <https://doi.org/10.1108/JEEE-04-2019-0040>.
- Singh, A. S. (2017). Common procedures for development, validity and development of the questionnaire. *International Journal of Economics, Commerce and Management*, 5(5): 790-801.
- Solesvik, M. Z. (2019). Entrepreneurial competencies and intentions: the role of higher education. *Forum Scientiae Oeconomia*, 7(1):10-23. DOI: [10.23762/FSO\\_VOL7\\_NO1\\_1](https://doi.org/10.23762/FSO_VOL7_NO1_1).
- Su, Y. S., Zhu, Z., Chen, J., Jin, Y., Wang, T., Lin, C., & Xu, D. (2021). Factors influencing the entrepreneurial intention of Chinese university students: integrating the perceived university support and theory of planned behaviour. *Sustainability*, 13: 4519. DOI: <https://doi.org/10.3390/su13084519>.
- Tanzania Commission for Universities. (2019). *List of Approved University Institutions in Tanzania as of 4th February 2019*. [[chrome-extension://efaidnbmnnnibpcajpcgiclfindmkaj/viewer.html?pdfurl=https%](https://efaidnbmnnnibpcajpcgiclfindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.tcu.ac.tz%2Fpublications%2Flist-of-approved-university-institutions-in-tanzania-as-of-4th-february-2019.pdf)

[3A%2F%2Fwww.tcu.go.tz%2Fsites%2Fdefault%2Ffiles%2FUNIVERSITY%2520INSTITUTIONS%2520IN%2520TZ%2520AS%2520OF%252017.4.2019.pdf&clen=346827&chunk=true](http://www.tcu.go.tz/sites/default/files/UNIVERSITY%20INSTITUTIONS%20IN%20TZ%20AS%20OF%2017.4.2019.pdf&clen=346827&chunk=true). Visited on 31/12/2020.

- Teixeira, A. A., & Forte, R. P. (2015). Prior education and entrepreneurial intentions: the differential impact of a wide range of fields of study. *Review of Managerial Science*, 11:353–394. DOI: [10.1007/s11846-015-0188-2](https://doi.org/10.1007/s11846-015-0188-2).
- Todd, G., Msuya, I., Levira, F., & Moshi, I. (2019). City profile: Dar es Salaam, Tanzania. *Environment and Urbanization ASIA*, 10(2): 193–215. DOI: [10.1177/0975425319859175](https://doi.org/10.1177/0975425319859175).
- Turner, T., & Gianiodis, P. (2018). Entrepreneurship unleashed: Understanding entrepreneurial education outside of the business school. *Journal of Small Business Management*, 56(1), 131–149. DOI: <https://doi.org/10.1111/jsbm.12365>.
- The United Republic of Tanzania. (2003). *Small and Medium Enterprises Development Policy*. Ministry of Finance and Trade, Dar es Salaam, Tanzania, 42pp.
- The United Republic of Tanzania. (2005). *The structured engineer's apprenticeship programme (SEAP): programme implementation document (PID)*. . Dar es Salaam: Engineers Registration Board. 127 pp.
- The United Republic of Tanzania. (2013). *The National Entrepreneurship Training Framework (NETF)*. Prime Minister's Office, Dar es Salaam, Tanzania. 44pp.
- The United Republic of Tanzania. (2020). *City Profile: Brief history of the establishment of Dar es Salaam City Council*. [<http://dcc.go.tz/en/city-profile>] Accessed on 18/7/2022.
- The United Republic of Tanzania. (2022). *A comparative baseline study on establishing start-up policy in Tanzania*. The United Republic of Tanzania, Ministry of Investment, Industry and Trade, 101pp. [<file:///C:/Users/HP/Downloads/tsareport.pdf>]. Visited on 20/04/2022.
- The United Republic of Tanzania. (2017). *Tanzania inclusive national entrepreneurship strategy*. Prime Minister's Office, The National Economic Empowerment Council, Dar-Es-Salaam, Tanzania, 13pp.

- The United Republic of Tanzania. (2021). *National Five-Year Development Plan 2021 - 2026. Realizing the Competitive and Industrialisation for Human Development*. Ministry of Finance and Planning, Dodoma, Tanzania. 352pp.
- Ugwu, C. I., Ekere, J. N., & Onoh, C. (2021). Research paradigms and methodological choices in the research processes. *Journal of Applied Information Science and Technology*, 14(2): 116-124.
- Valerio, A., Parton, B., & Robb, A. (2014). *Entrepreneurship education and training programs around the world: Dimensions for success*. DOI: <https://doi.org/10.1596/978-1-4648-0202-7>.
- Wakkee, I., oestenberghe, K., & Mwasalwiba, E. R. (2017). Capability, social capital and opportunity-driven graduate entrepreneurship in Tanzania. *Journal of Small Business and Enterprise Development*, 1462-6004. DOI: [10.1108/JSBED-02-2017-0053](https://doi.org/10.1108/JSBED-02-2017-0053).
- Wasilczuk, J., Chukhray, N., Karyy, O., & Halkiv, L. (2021). Entrepreneurial competencies and intentions among students of technical universities. *Problems and Perspectives in Management*, 19(3): 10-21. DOI: [10.21511/ppm.19\(3\).2021.02](https://doi.org/10.21511/ppm.19(3).2021.02).
- Wegner, D., Thomas, E., Teixeira, E. K., & Maehler, A. E. (2020). University entrepreneurial push strategy and students' entrepreneurial intention. *International Journal of Entrepreneurial Behavior & Research*, 26(2):307-325. DOI: [10.1108/IJEER-10-2018-0648](https://doi.org/10.1108/IJEER-10-2018-0648).
- Zondo, R. W. (2016). Elusive search on the influence of entrepreneurship education in the private institutions of higher learning in South Africa: A paradigm for developing students into innovative thinkers. *International Journal of Innovative Research and Practices*, 4(3): 33-43.
- Žukauskas, P., Vveinhardt, J., & Andriukaitienė, R. (2018). Philosophy and paradigm of scientific research. *Management Culture and Corporate Social Responsibility*. In Tech, 121–140.

## CHAPTER TWO

### 2.0 FACTORS INFLUENCING ENTREPRENEURIAL COMPETENCIES ACQUISITION AMONG TECHNICAL GRADUATES IN TANZANIA

#### 2.1 Abstract

*Despite government efforts to integrate entrepreneurship courses into the mainstream education system, graduates' perceived lack of entrepreneurial competencies is one of the obstacles hindering their potential to venture into business start-ups. This chapter assesses the factors influencing the acquisition of entrepreneurial competencies among technical graduates in Tanzania. It adopts human capital theory as a theoretical framework and uses a cross-sectional survey design to collect data from 391 technical graduates who graduated between 2012 and 2017 from technical colleges and universities in Dar es Salaam. The data were analyzed using descriptive statistics and the Ordinal Logistic Regression Model (OLRM). The findings show that exposure to entrepreneurship courses had a significant positive effect on technical graduates' acquisition of entrepreneurial competencies ( $p < 0.001$ ). The level of acquisition of entrepreneurial competencies corresponds with the number of entrepreneurship courses studied. Specifically, graduates who studied at least one entrepreneurship course were 10 times more likely to acquire requisite entrepreneurial competencies than those who did not study. Beyond formal entrepreneurship education, informal entrepreneurship exposure through life experience in age ( $p < 0.001$ ), employment ( $p < 0.01$ ), and parental role modeling in self-employment ( $p < 0.05$ ) and education ( $p < 0.05$ ) had a significant effect on graduates' acquisition of entrepreneurial competencies. This chapter concludes that entrepreneurship education is an effective intervention strategy for enhancing the acquisition of requisite entrepreneurial knowledge, skills, and attitudes critical for technical graduates to pursue business start-ups. However, it should be complemented by lifecycle experiences in age, employment, and parental role modelling in self-employment and education. The findings suggest some policy and practical implications for improving the quality and relevance of entrepreneurship education in higher learning institutions in the country.*

**Keywords:** Factors, Entrepreneurial Competencies, Acquisition, Technical Graduates

## 2.2 Introduction

Unemployment is one of the global challenges that trouble policymakers, academics, and university graduates. By 2030, sub-Saharan Africa will supply 38% of the worldwide labour force, and between 2017 and 2030, the supply will increase by 198 million across ages (ILO, 2018). Similarly, sub-Saharan Africa will experience an unemployment rate of 88%, far higher than that of Latin America (79%), Europe (71%), Middle East and North Africa (70%), North America (64%), and Asia (62%) (ILO, 2018). Policymakers consider entrepreneurship education as a strategic tool for hastening business start-ups to minimize unemployment challenges (Valerio *et al.*, 2014). Worldwide, governments advocate the integration of entrepreneurship education into the education system to equip students with entrepreneurial competencies to turn ideas into livelihood opportunities and cope with the growing global unemployment challenges (Perez *et al.*, 2022; Lackéus, 2020).

Besides advocating the integration of entrepreneurship education, the context under which entrepreneurial competencies are acquired and nurtured remains a mix of trickery and frustration (Fayolle and Gailly, 2015). The perceived lack of entrepreneurial competencies is one of the obstacles for business start-ups among youths aged 18-30, who depend on education as the main tool of entrepreneurial competencies acquisition (OECD, 2018). In sub-Saharan African countries, the percentage of afro-entrepreneurs with confidence in their entrepreneurial competencies to successfully start and manage the day-to-day operations of business ventures is considerably low. In Tanzania, only 22% of entrepreneurs possess requisite entrepreneurial competencies. Other countries with their respective entrepreneurial competencies percentages in brackets include Kenya (23%), Ethiopia (19%), Ghana and Nigeria (14%), and South Africa (9%) (Omidyar Network, 2013). This situation raises several concerns about the efficacy of entrepreneurship courses on entrepreneurial competencies acquisition (Chen *et al.*, 2022; Hahn *et al.*, 2017).

Understanding the dynamics that shape entrepreneurial competencies raises questions about how graduates acquire entrepreneurial competencies and whether such competencies are the result of individual or contextual factors (Rasmussen *et al.*, 2015). By implication, although many graduates acquire entrepreneurial competencies from entrepreneurship education, some acquire them through entrepreneurial life-cycle experiences (Krieger *et al.*, 2022; Tittel and Terzidis,

2020). This calls for further analysis of the effectiveness of formal and informal contexts under which entrepreneurial competencies develop. Despite the roles of individual and contextual factors in entrepreneurial competencies acquisition (Rasmussen *et al.*, 2015), the extent of their influence on entrepreneurial competencies acquisition among graduates is largely under-explored in the existing literature. In this regard, Mateo *et al.* (2012) underline the role of socio-cultural environments such as schools, homes, and social situations, and work in shaping entrepreneurial competencies acquisition among learners.

Given the myriad means that graduates may acquire requisite entrepreneurial competencies, further analysis is needed to ascertain the influence of formal entrepreneurship education alongside contextual and personal factors facilitating the acquisition of entrepreneurial competencies among u graduates. The integration of entrepreneurship education into the education system corresponds with scholarly interest in evaluating their associated outcomes (Krieger *et al.*, 2022; Perez *et al.*, 2022; Hahn *et al.*, 2017). The learning outcomes of entrepreneurship education can manifest through entrepreneurial competencies, entrepreneurial attitudes, entrepreneurial knowledge and skills, entrepreneurial motivations, entrepreneurial intentions, and business start-ups (Othman and Othman, 2019). Among these outcomes, entrepreneurial competencies play critical roles in counterbalancing the perceived barriers to business start-ups, enhancing university graduates' business start-up intentions, and contributing to socio-economic growth.

Besides their perceived roles, entrepreneurial competencies are inadequately explored as one of the entrepreneurship education outcomes than entrepreneurial intentions (Nabi *et al.*, 2017). Besides the concerted efforts to integrate entrepreneurship courses into the education system in Tanzania, studies assessing their effectiveness in equipping students with entrepreneurial competencies are largely missing. Existing studies mainly focused on the influence of entrepreneurship education on university graduates' entrepreneurial tendencies (Mangasini, 2015), entrepreneurial behaviours (Nyello *et al.*, 2015), entrepreneurial intentions (Nade, 2021), and entrepreneurship development (Rwamtoga, 2011). Furthermore, some studies examined the teaching contexts, students' profiles, expectations, and outcomes of entrepreneurship education (Mwasalwiba, 2012), and the status of entrepreneurship education in higher educational schools (Fulgence, 2015).

It is evident from the reviewed studies that the extent to which entrepreneurship courses offered in technical universities and colleges effectively equip students with requisite entrepreneurial competencies is largely ignored. The dearth of research studies assessing the effectiveness of entrepreneurship courses offered in technical colleges and universities with Applied Sciences, Engineering, and Technology (ASET) specialties leaves the problem unclear. As a result, it remains unclear whether technical graduates acquire entrepreneurial competencies through informal or formal means and which means are more effective for policy interventions. Emphasizing this knowledge gap, Mwantimwa (2019) concludes that “...*the types of entrepreneurial competencies students acquire, how they are acquired, their relevance and barriers faced in doing so remain scant....*” Given this knowledge gap, this study empirically examines the influence of formal entrepreneurship education and informal entrepreneurship exposure on technical graduates’ entrepreneurial competencies acquisition.

The findings could provide valuable insights to the administration of technical universities and college policymakers to revisit the current teaching practices or revisit existing policies about entrepreneurship education delivery. Moreover, the findings could be useful to curriculum designers in designing and aligning the delivery of entrepreneurship courses with experiential pedagogies that enhance theoretical and hands-on skills. In this context, this study partly addresses the following key research questions: (1) do technical graduates exposed to entrepreneurship courses acquire more entrepreneurial competencies than those who did not? (2) How many courses suffice to equip learners with requisite entrepreneurial competencies? (3) Beyond formal entrepreneurship courses, which other informal entrepreneurship exposure facilitates the acquisition of entrepreneurial competencies among technical graduates?

## **2.3 Theoretical Grounding**

### **2.3.1 Human Capital Theory**

This study employs Human Capital Theory (HCT) as advocated by Gary Becker in 1964 to examine factors influencing entrepreneurial competencies acquisition among technical graduates in Tanzania. The theory posits that individuals invest in education and training to acquire knowledge and skills that enhance their

productivity and employability (Becker, 1964). Based on the HCT assumptions, this study contextualizes that formal education, such as entrepreneurship courses and informal entrepreneurship exposure through lifelong learning significantly influence graduates' entrepreneurial competencies acquisition (Krieger *et al.*, 2022; Marvel, 2016; Becker, 1964). Specifically, informal entrepreneurship exposure includes lifelong learning in graduates' age, employment, and business start-up experience, extra-curricular activities, and parental role modelling through employment and education significantly facilitate graduates' acquisition of entrepreneurial competencies.

Broadly, Mets *et al.* (2017) define entrepreneurial competencies as the cognitive, affective, and skill-based abilities that enable individuals to perform entrepreneurial tasks and activities. Besides the varying components, this study classifies entrepreneurial competencies into three domains, namely (1) cognitive outcomes, depicting entrepreneurship knowledge, such as opportunity identification and risk assessment and management; (2) skill-based outcomes, describing entrepreneurship skills, such as the ability to prepare a business plan, identifying and exploiting business opportunities; and (3) affective outcomes, covering entrepreneurship-related attitudes, behavioural preferences and volition such as entrepreneurial motivation (Mets *et al.*, 2017; Kozlinska, 2016). Technical graduates with adequate requisite human capital develop a higher ability not only to identify and exploit business opportunities but also the ability to successfully start and operate business ventures (Chen *et al.*, 2022; Marvel, 2016; Martin *et al.*, 2013).

HCT suits this study since it seeks to evaluate educational outcomes such as entrepreneurial competencies acquired through investment in education and training, on-the-job training, and other lifecycle experiences (Martin *et al.*, 2013; Becker, 1964). In contextualizing human capital in entrepreneurship, a distinction is often made between human capital *investments* as inputs covering time, efforts, and money spent in pursuing entrepreneurship courses; the *human capital assets* derived from the investment, such as knowledge, skills, abilities, and *entrepreneurship outcomes* such as business start-up intentions or business start-ups (Marvel, 2016; Martin *et al.*, 2013). Beyond traditional human capital constructs of knowledge and skills (Becker, 1964), entrepreneurship scholars have used different constructs. Unlike demographics, rarely used as human capital constructs, employment experience



(39.9%), education levels (26.6%), and previous entrepreneurship experience (19.8%) are commonly used human capital constructs that enhance the acquisition of entrepreneurial competencies among learners (Marvel, 2016).

## **2.4 Empirical literature review**

### **2.4.1 Informal entrepreneurship exposure and entrepreneurial competencies acquisition**

Although entrepreneurship education effectively equips entrepreneurial competencies (Solesvik, 2019), whether and to what extent such courses suffice to equip graduates with the required entrepreneurial competencies remains debatable (Mueller and Anderson, 2014). Indeed, entrepreneurship education cannot be a one-size-fits-all, given that entrepreneurial competencies acquisition may take through both formal and informal environments. In this context, Mateo *et al.* (2012) and Man and Lau (2005) highlight the importance of informal entrepreneurship exposure through sociocultural environments, such as schools, homes, social situations, and work on learners' entrepreneurial competencies acquisitions. Similarly, Marvel (2016) found the importance of individual demographics as one of the factors that facilitate learners' entrepreneurial knowledge and skills acquisition.

Moreover, Krieger *et al.* (2022) affirmed that graduates whose parents were entrepreneurs, especially those owning business ventures acquired requisite entrepreneurial skill-variety than others because they engaged them in the day-to-day activities of the business ventures. Similarly, Liu (2020) reported that students' gender and family business had a significant influence on enterprising tendency, although age, household income, parents' education, and occupation did not. Umar *et al.* (2019) confirmed that entrepreneurship education had significant influences on graduates' entrepreneurial competencies, while training before and after business start-ups did not. Supporting this view, Maresch *et al.* (2016) found that graduates with business start-up experience acquired more entrepreneurial knowledge and skills than those without. Contrary, Perez and Guevarra (2020) reported that business experience does not account for entrepreneurial competencies acquisition.

In Tanzania, considerably few studies link informal entrepreneurship exposure with graduates' acquisition of entrepreneurial knowledge, skills, and attitudes. Mangasini (2015) found that graduates' age, parent's education level, birth order, prior

employment and business start-up experiences, and parents' employment had a positive and significant influence on graduates' General Enterprising Tendencies (GETs) such as the need for achievements, locus of control, and risk-taking propensities. Another study by Rwamtoga (2011) affirmed that as major role models, parents had positively influenced over 40% of vocational graduates' desire to pursue entrepreneurial careers. Olcareersd Sinyamule (2009) found that vocational graduates who grew up in entrepreneurial families acquired not only entrepreneurial knowledge, skills, and attitudes but also changed their expectations of what it entails to start and operate business ventures. None of the studies focused on technical graduates with science, engineering, or technology specialties. Given the high start-up potential of technical graduates, assessing the influence of informal entrepreneurship exposure on entrepreneurial competencies acquisition is critical.

To this effect, this study hypothesizes that:

H<sub>01b</sub>: There is no significant difference in entrepreneurial competencies acquisition among technical graduates according to their age, sex, marital status, previous work experience, business start-up experience, extra-curricular activities, and parental role modelling through employment and education.

#### **2.4.2 Entrepreneurship education and entrepreneurial competencies acquisition**

The question of whether investing in entrepreneurship education pays off remains hitherto debatable in most existing literature (Kozlinska *et al.*, 2020; Hahn *et al.*, 2017). Since starting a business venture is the most desired learning outcome from the policymakers' perspectives (Perez *et al.*, 2022), it is critical to assess the influence of entrepreneurship education on entrepreneurial competencies acquisition (Lackéus, 2020; Hahn *et al.*, 2017). This line of research is critical given that entrepreneurial competencies precondition the realisation of other learning outcomes of entrepreneurship education. In particular, entrepreneurial competencies equip graduates with the ability not only to identify and exploit business opportunities for business start-ups but also to enhance their BSI and contribute to economic growth through business start-ups (Kozlinska *et al.*, 2020). Besides the perceived importance of entrepreneurial competencies as a stepping stone toward achieving other learning outcomes, 51% of empirical studies in entrepreneurship education focused on entrepreneurial intentions as learning outcomes (Nabi *et al.*, 2017).

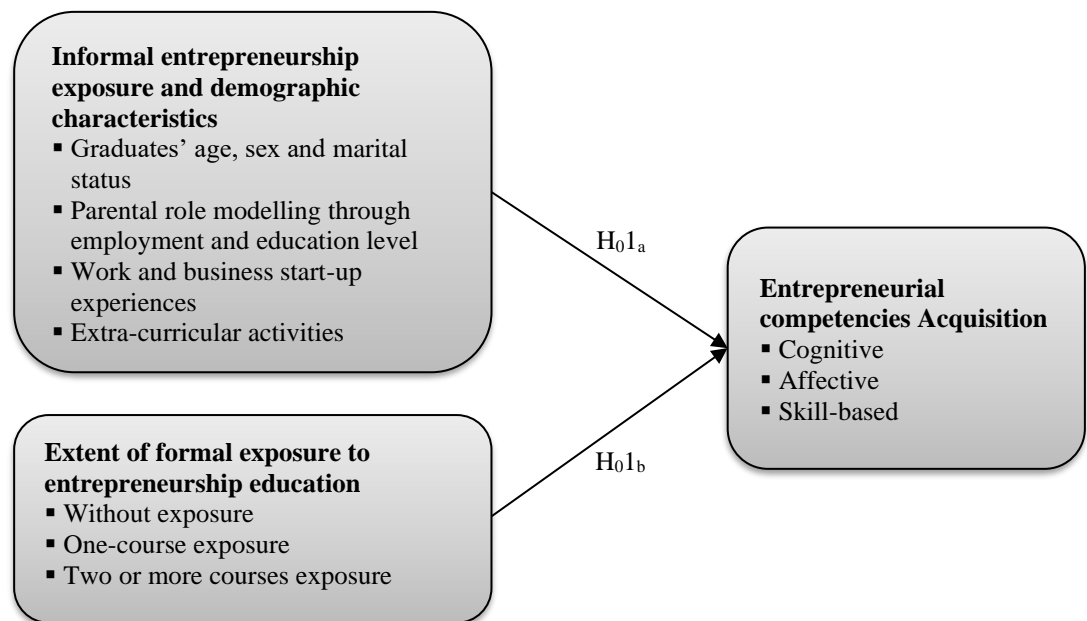
Moreover, besides scholarly interest in entrepreneurship education outcomes, existing studies have often been critiqued for producing contradicting findings. For example, Solesvik (2019) and Malebana (2016) reported that graduates with exposure to at least one entrepreneurship course acquired more entrepreneurial competencies than those who didn't. Kozlinska (2016) found that entrepreneurship courses significantly facilitate entrepreneurial competencies acquisition in terms of three domains namely cognitive, affective, and skill-based outcomes. In a similar vein, Bosompem *et al.* (2013), Sánchez (2011), and von Graevenitz *et al.* (2010) affirmed that exposure to entrepreneurship courses had a significant influence on students' self-assessed entrepreneurial skills. Contrary, studies by Malekipour *et al.* (2018) and Seabela and Fatoki (2014) found that entrepreneurship education did not significantly enhance entrepreneurial competencies acquisition. Specifically, graduates' ability to generate new business ideas, identify business opportunities, craft business plans, and understand sources of finance were below average.

Furthermore, Oosterbeek *et al.* (2010) found that the effects of entrepreneurship education on students' self-assessed entrepreneurial skills were not significantly different from zero and that the point of estimation was even negative. The inconsistent findings, ranging from positive to negative and no impact, call for further empirical analysis. Amidst contradicting findings, existing studies ignore the effects of additional entrepreneurship courses on entrepreneurial competencies acquisition (Hahn *et al.*, 2017). Similarly, Lange *et al.* (2011) show that graduates exposed to at least two entrepreneurship courses acquired more entrepreneurial knowledge and skills than those with one course or without exposure. This was supported by Malebana (2016), who found that graduates with at least two entrepreneurship course exposure for at least three consecutive years exhibited fairly higher entrepreneurial competencies than those who did not. However, Hahn *et al.* (2017) conclude that additional exposure to entrepreneurship courses significantly enhances entrepreneurial knowledge and skills only up to a certain threshold, beyond which learners cannot further acquire entrepreneurial knowledge.

In Tanzania, besides the limited number of studies exploring the influence of entrepreneurship courses on entrepreneurial competencies, their findings are mixed and inconclusive. For example, Mangasini (2015) reported that graduates who studied at least one entrepreneurship course had higher entrepreneurial propensity

and aspirations to become entrepreneurs than those without exposure. Contrary, Shimba (2018) found that entrepreneurship education had a moderate effect on university graduates' General Enterprising Tendencies (GETs), although their creativity, innovation, and risk-taking abilities scores were below average. This was supported by Wakkee *et al.* (2017), who conclude that despite exposure to entrepreneurship courses, many university graduates in Tanzania lack the requisite entrepreneurial capabilities to tackle real-life challenges. This study, therefore, hypothesizes that technical graduates who study entrepreneurship courses have a higher potential to acquire more requisite entrepreneurial competencies compared to those without. To that effect, the study hypothesizes that:

H<sub>01b</sub>. There is no significant difference in entrepreneurial competencies acquisition among technical graduates concerning the extent of exposure to entrepreneurship courses.



**Figure 2: Conceptual Framework and Hypotheses**

## 2.5 Methodology

### 2.5.1 Study area, design, sampling, and data collection

This study was carried out in Dar es Salaam, the largest commercial city in Tanzania. Dar es Salaam is one of Africa's most populated and fast-growing cities (URT, 2016) and serves as the official business registration headquarters through the Business Registration and Licensing Agency (BRELA) (URT, 2017). Dar-es-Salaam has

several higher learning institutions specializing in applied sciences, engineering, and technology (TCU, 2019). Some of them include the Dar es Salaam Institute of Technology (DIT), National Institute of Transport (NIT), St. Joseph University in Tanzania (SJUIT), College of Information Communication Technology (CoICT) and College of Engineering and Technology (CoET), both of the University of Dar es Salaam (UDSM), and Ardhi University (ARU).

The study employed a cross-sectional design and collected quantitative data through a self-administered survey questionnaire. A cross-section research design is considered suitable for studies with several multiple variables aiming to establish their inter-relationship using mathematical models, theories, and hypotheses (Creswell, 2014). Over 60% of existing empirical studies in entrepreneurship education used a cross-section research design (Nabi *et al.*, 2017). This study involved 10,981 technical graduates from DIT, CoET, and SJUI who graduated between 2012 and 2017, living in Dar es Salaam during data collection. The selected time frame was selected because many graduates take five to ten years to transition into entrepreneurship after graduation (Mueller and Anderson, 2014).

Many technical colleges and universities started integrating entrepreneurship courses into their programmes in 2008. The first batch of technical graduates with entrepreneurship courses was expected to enter the labour market in 2012s. DIT and CoET offered entrepreneurship courses as compulsory subjects during data collection. SJUIT did not offer entrepreneurship courses during data collection but its graduates were included to compare the level of entrepreneurial competencies acquisition between graduates who studied entrepreneurship courses and those who didn't, as critical requirements in impact evaluation studies (Fayolle, 2013). The study involved 384 technical graduates estimated through Cochran's (1977) formula at 95% confidence and  $\pm 5\%$  precision level:

$$\text{Sample size (n)} = \frac{z^2 pq}{e^2} \dots\dots\dots(2.1)$$

Whereby; n = estimated sample size; z = confidence level at 95% (a standard value of 1.96); p = estimated technical graduates (a standard value of 0.5 was used since technical graduates living in Dar es Salaam only were not known); q = (1.0 – p); and e = margin of error at 5% (standard value of 0.05).

$$\text{Therefore, } n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = \frac{3.8416 \times 0.25}{0.0025} = 384.16 \approx 384$$

Furthermore, the proportionate formula by Fisher *et al.* (1991) was used to estimate the sub-sample for each technical university/college as follows:

$$\text{Sample Size per University} = \frac{\text{Estimated Sample Size (n)}}{\text{Total Population (N)}} \times \text{Population per University (N)} \dots\dots\dots (2.2)$$

From equation (2.2), the computation of the sub-sample size was as follows:

$$\text{For CoET} = \frac{384}{10,981} \times 2,103 = 73$$

$$\text{DIT} = \frac{384}{10,981} \times 3,818 = 134$$

$$\text{SJUIT} = \frac{384}{10,981} \times 5,060 = 177$$

The researcher added 15% of the sample size to compensate for non-response potential following Israel's (1992) recommendations. This resulted to the addition of 58 respondents, making a final sample size of 442 as shown in Table 2.

**Table 2: Sub-sample size per university**

University/college	Population	Sub-sample	Sub-sample after 15%	Percent
CoET	2,103	73	84	19.2
DIT	3,818	134	154	34.7
SJUIT	5,060	177	204	46.1
Total	10,981	384	442	100

In Tanzania, technical graduates must register through professional bodies, namely the Contractors Registration Board (CRB), the Architects and Quantity Surveyors Registration Board (AQRB), and the Engineers Registration Board (ERB). Similarly, the government through the Structured Engineering Apprenticeship Programme (SEAP) recruits engineering graduates for three years to equip them with engineering-related hands-on skills to qualify as professional engineers (URT, 2005). During data collection, many respondents were easily accessible because they were still working under SEAP, which simplified the data collection exercise. The study used a simple random sampling technique using a random number Table to select respondents to avoid potential selection bias. The questionnaire was administered in person for one month. Out of 442 copies of issued questionnaires,

391 copies of questionnaires were successfully collected equivalent to 88.5% of the response rate which is above the threshold of 70% for a survey paper (Nulty, 2008).

### 2.5.2 Measurement scales, reliability and analytical methods

After a comprehensive literature review, the items of the questionnaire were adopted from previously validated studies. The items of the three domains of entrepreneurial competencies were adapted from Mets *et al.* (2017) and Kozlinska (2016) and were slightly modified to reflect the study context. The statements of the item were measured using a five-point Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Five-point Likert scale has the potential to reduce respondents' degree of frustration, increase the completion rate and quality of responses (Babakus and Mangold, 1992), and improve reliabilities (Jenkins and Taber, 1977). Self-assessment was chosen since competencies are not easily observable, and graduates should personally understand their level of competencies (Adeyonu *et al.*, 2022).

To control the Common Method Bias (CMB), the researcher avoided double-barrelled questions, explained key concepts, assured anonymity, and explained that no right or wrong answers. In addition to non-statistical measures, the study used a statistical measure through Harman's one-factor test to extract one fixed factor from all the constructs. The results showed that the constructs explained 34.7% of the variance, below the threshold level of 50% (Kock *et al.*, 2021). Impliedly, CMB was insignificant and had no severe effect on empirical findings.

**Table 3: Measurement instruments**

Construct	Measurement items	Source
Cognitive outcomes	1. Entrepreneurship courses increased my understanding of planning a business.	Mets <i>et al.</i> , 2017; Kozlinska (2016)
	2. ...increased my understanding of generating innovative business ideas	
	3. ...improved my understanding of theoretical aspects of business start-ups.	
	4. ...enhanced my understanding of legal issues related to new business start-ups.	
	5...increased my understanding of the steps for establishing a business venture.	
	6...increased my business communication skills	
Affective outcomes	1. ...increased my confidence in new business start-ups	Mets <i>et al.</i> , 2017; Kozlinska (2016)
	2. ...enhanced my preference for business start-ups to provide freedom and autonomy.	
	3. ...increased my interest in starting a business venture	
	4. ...increased my motives to engage in business start-up	
	1. ...increased my skills in controlling business projects.	
	2. ...increased my skills in identifying and evaluating business opportunities.	

Skill-based outcomes	3. ...improved my practical management skills for business start-ups 4. ... increased my skills to attract potential investors in business ventures. 5. ...improved my skills to develop profitable business models. 6. ...increased my skills in identifying and analyzing business start-up risks. 7. ...courses enhanced skills in negotiating a deal with other business partners.	Mets <i>et al.</i> 2017; Kozlinska (2016)
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Cronbach's Alpha coefficient was used as a conservative measure of internal consistency reliability. All constructs attained the threshold level of ( $\geq 0.70$ ) with cognitive ( $\alpha = 0.807$ ), affective ( $\alpha = 0.814$ ), and skill-based outcomes ( $\alpha = 0.821$ ) (Taber, 2018). The results imply that the constructs had a high correlation between items and that the questionnaire was consistently reliable (Taber, 2018). This implies all constructs had high cohesiveness among response options of the multiple items in the Likert scale (Warmbrod, 2014). The descriptive analysis examined whether the domains of entrepreneurial competencies correspond to the extent of exposure to entrepreneurship courses (without, one course, two or more courses exposure). The Ordinal Logistic Regression Model (OLRM) estimated factors influencing technical graduates' entrepreneurial competencies acquisition. The responses' classification followed Adeyonu's *et al.* (2022) recommendations (low =  $< 2.7$ ), (moderate =  $2.7-3.5$ ), and (high =  $>3.5$ ). The following OLRM by Agresti and Tarantola (2018) was used:

$$\text{Log} \left[ \frac{p}{1-p} \right] = \beta_{0k} + x_1\beta_1 + \dots + x_m\beta_m + \varepsilon \dots \dots \dots (2.3)$$

**Whereby;**

$\text{Log} \left[ \frac{p}{1-p} \right]$  = The log odds (logit) of being in low, moderate, or high competencies.

$x_1\beta_1 \dots x_m\beta_m$  = The slope coefficients influencing individuals' choices of different levels equally.

$x_1 \dots x_m$  = is the vector of socio-demographic factors as predictor variables

$\beta_{0k}$  = Is an intercept/cut-off varying from one level of entrepreneurial competencies to another.

$\varepsilon$  = is an error term.



## 2.6 Results and Discussion

### 2.6.1 Descriptive statistics

Socio-demographic characteristics in Table 4 show that males over-represented females by 77.7%. The male dominance in ASET can be attributed, among others, to the low dedication of female students in science subjects at primary and secondary schools (Ndalichako and Komba, 2014). Concerted efforts are needed to entice female students to pursue science subjects to enhance the supply of potential scientists, engineers, and technologists. While the age range is relatively broad, many graduates were aged 20s (65.2%), mostly below 30 years. The late 20s and early 40s are the age range for entrepreneurship (Bohlmann *et al.*, 2017).

Moreover, 72.4% of graduates had Bachelor's Degrees with limited work experience (62.4%), and the majority were single (69.3%). Similarly, 64.2% of the surveyed graduates had exposure to entrepreneurship courses but had no experience in employment (70.6%) and business (62.4%). Concerning parents' education level, 47.8% of them had a college or university education level, and 47.6% were employed in public/private sector organizations. Self-employed parents are better positioned to facilitate their children's acquisition of entrepreneurial knowledge, skills, and attitudes than employed parents (Liu *et al.*, 2020).

**Table 4: Respondents' socio-demographic characteristics**

Variables	Categories	Number	Percent (%)
Sex	Male	304	77.7
	Female	87	22.3
Age	Below 30 years	255	65.2
	30 – 39	92	23.5
	40 – 49	34	8.7
	50 years and above	10	2.6
Marital status	Single	271	69.3
	Married	120	30.7
Academic qualifications	Diploma	84	21.5
	Bachelor Degree	283	72.4
	Master Degree	20	5.1
	Ph.D.	4	1.0
Extent of exposure to entrepreneurship courses	No exposure	140	35.8
	One-course exposure	210	53.7
	Two or more courses of exposure	41	10.5
Previous work experience	No experience	276	70.6
	Below 2 years	77	19.7
	Above 3 years	24	6.1
	10-years and above	9	3.6
Parents' work type	Public/private	186	47.6
	Self-employed	92	23.5

	Peasants	113	28.9
	No experience	244	62.4
Business experience	Less a year	85	21.7
	1 – 3-years	50	12.8
	Above 3-years	12	3.1
	No education	110	28.1
Parents education level	Primary	28	7.2
	Secondary	66	16.9
	College/University	187	47.8

## 2.6.2 Factors influencing graduates' entrepreneurial competencies acquisition

### 2.6.2.1 Ordinal logistic regression model fit statistics

Before running the ordered logistic regression, the model's fitness was tested. The LR Chi2 is a likelihood ratio test that compares the fit of the full model with all the predictor variables to a reduced model with only the intercept. The null hypothesis is that the reduced model fits similarly to the full model. Table 5 presents the model fit statistics.

**Table 5: Ordered logistic model fit statistics summary**

Ordered logit estimates	Number of OBS =	391
	LR Chi2(17) =	112.41
	Prob > Chi <sup>2</sup> =	0.000
Log Likelihood = -154.01	Pseudo R <sup>2</sup> =	0.267

The results in Table 5 show that the model test statistics is 112.41 with 17 degrees of freedom and a p-value of 0.000. This suggests rejecting the null hypothesis and concluding that the full model fits significantly better relative to the reduced model. The log-likelihood is a measure of how well the model predicts the observed data. The higher the value, the better the fit. The likelihood of the full model is -154.01. This means that the probability of observing the data given the model is very low. However, this value cannot be interpreted in isolation and should be compared to other models or criteria. The Pseudo R-squared measures how much variation in the outcome variable is explained by the predictor variables in the model. Normally, it ranges from 0 to 1, with higher values signifying a better fit.

Different from R-squared in linear regression, there is no consensus on how to calculate or interpret the Pseudo R-squared in ordinal logistic regression. This is because different methods may produce different values and have different

properties. The Pseudo R-squared is based on McFadden's formula, which compares the log-likelihood of the full model to the Log-Likelihood of the reduced model. Ugba and Gertheiss (2022) suggest the Likelihood Ratio Index (LRI) or McFadden- $R^2$  values between 0.2 and 0.4 are a perfect fit for the model. The estimated Pseudo R-squared is 0.267. This means that about 27% of the variation in entrepreneurial competencies is explained by the socio-demographic factors as predictor variables in the model. The Pseudo  $R^2 = 0.267$  falls within the range, suggesting a perfect model fit for further analysis of the ordinal logistic regression model.

### 2.6.2.2 Testing the Assumption of the Ordered Logistic Regression

The study tested the proportional odds assumption, also known as the parallel regression assumption using different tests shown in Table 6. The assumption tests whether the coefficients of the ordinal logistic regression model are the same across different levels of outcome variables (low, moderate, or high). If this assumption is violated, it means the effect of the predictor variables on the outcome variable varies depending on the level of the outcome variable. The test results highlight that the  $p$ -values for all three domains of entrepreneurial competencies (cognitive, affective, and skill-based) are greater than 0.05. This means that the assumption is not violated. This entails that the coefficients of the predictor variables are constant across different levels of entrepreneurial competencies. Therefore, the ordinal logistic regression model is valid for further analysis.

**Table 6: Testing of parallel regression assumption**

Test type	Cognitive outcomes			Affective outcomes			Skill-based outcomes		
	Chi <sup>2</sup>	Df	> Chi <sup>2</sup>	Chi <sup>2</sup>	Df	P > Chi <sup>2</sup>	Chi <sup>2</sup>	Df	P > Chi <sup>2</sup>
Wolfe Gould	13.1	9	160	11.9	9	0.219	14.3	9	0.113
Brant	13.2	9	154	11.0	9	0.273	16.5	9	0.057
Score	13.3	9	149	11.1	9	0.272	14.4	9	0.110
Likelihood	13.9	9	127	12.2	9	0.205	14.8	9	0.097
Wald	13.4	9	146	10.7	9	0.295	13.8	9	0.129

### 2.6.3 Ordered logistic Regression results

Table 7 presents the ordered logistic results on the factors influencing the acquisition of entrepreneurial competencies among technical graduates in Tanzania. The findings show that the coefficient for age is positive and significant for affective ( $p < 0.001$ , odds 0.91) but not for cognitive and skill-based outcomes. This means that age significantly positively influences the acquisition of affective competencies, such

that older graduates have higher chances of acquiring affective competencies than younger ones. For every one-year increase in age increases by 9.1% the odds of technical graduates acquiring affective entrepreneurial competencies. However, affection towards entrepreneurship might be affected in the middle of adulthood due to other career and family commitments than younger graduates (Bohlmann *et al.*, 2017). These findings contradict what Liu *et al.* (2020) reported that individual age did not significantly influence students' enterprising tendencies. The coefficients for sex, marital status, extra-curricular activities, and business start-up experience are positive but not significant ( $p > 0.05$ ). This means no significant differences in the log-odds of graduates acquiring entrepreneurial competencies based on age, marital status, extra-curricular activities, and business start-up experience.

The coefficient for graduates whose parents had primary education is positive and significant for affective ( $p < 0.05$ , odds 1.08) and skill-based ( $p < 0.05$ , odds 6.56) but cognitive outcomes. This implies that graduates whose parents had primary education had 1.08-and 6.56-times log-odds of acquiring affective and skill-based competencies than graduates whose parents had no formal education. Similarly, the coefficients for graduates whose parents had university education were positive and significant affective ( $p < 0.05$ , odds 4.79) and skill-based ( $p < 0.001$ , odds 7.48) but not cognitive outcomes. This implies that graduates whose parents had university education had 4.79 and 7.48 times the odds of acquiring affective and skill-based competencies than those whose parents had no formal education. Parents' education level significantly facilitates technical graduates' acquisition of affective and skill-based competencies. As role models, educated parents facilitate the acquisition of entrepreneurial knowledge and skills among children (von Graevenitz *et al.*, 2010; Rwamtoga, 2011). The findings contradict Liu *et al.* (2020), who found that age, parents' education and employment category do not significantly facilitate entrepreneurial skills acquisition.

**Table 7: Factors influencing entrepreneurial competencies**

Independent Variables	Variable Category	Dependent variable: entrepreneurial competencies					
		Cognitive		Affective		Skill-based	
		Odds	SE	Odds	SE	Odds	SE
Sex	Female	0.60	0.21	1.103	0.44	1.21	0.45
Age	Actual age in years	0.97	0.03	0.91***	0.03	0.96	0.03
Marital status	Married	0.89	0.40	1.76	0.88	1.16	0.53
Parents' education level	Primary	3.65	3.88	1.08*	1.15	6.56*	7.45
	Secondary	3.39	3.27	1.76	1.82	3.63	3.48
	College/University	3.39	2.87	4.79*	4.15	7.48***	5.79

Previous work experience	Less than two years	0.67	0.27	7.35**	6.17	4.96**	3.71
	3 – 5 years	0.44	0.27	6.54**	5.67	14.2***	11.28
	Above five years	1.06	1.01	0.65	0.26	1.24	0.47
Parent's employment	Self-employed	3.30*	2.33	4.62*	0.88	1.85	0.92
	Peasants	3.53	2.98	0.89	1.09	2.23	2.59
Business experience	Less than 1-year	0.60	0.22	0.88	0.38	1.22	0.50
	Between 1 – 3 years	1.12	0.53	0.40	0.26	0.46	0.28
Extracurricular Extents of exposure to EE	No	0.83	0.25	0.75	0.25	1.53	0.48
	One course	13.4***	4.7	17.3***	7.18	14.4***	5.41
Ancillary Parameters	/Cut1	-4.29	1.40	-6.45	1.64	-2.57	1.29
	/Cut2	0.11	1.22	-1.47	1.26	1.28	1.17

**Key:** \* =  $p < 0.05$ ; \*\* =  $p < 0.01$  and \*\*\* =  $p < 0.001$ , Standard Error (SE)

Moreover, the coefficient of graduates with at least two years of work experience is positive and significant for affective ( $p < 0.01$ , odds 4.96) and skill-based ( $p < 0.01$ , odds 7.35) but not cognitive outcomes ( $p > 0.05$ , odds 0.67). The coefficient of graduates with three to five years of work experience is positive and significant for affective ( $p < 0.01$ , odds 6.54) and skill-based ( $p < 0.001$ , odds 14.19) but not for cognitive outcomes ( $p > 0.05$ , odds 0.44). This means employment experience increases by 6.54 and 14.19 times log-odds of graduates' potential to acquire affective and skill-based outcomes, respectively than those without experience. The findings are consistent with Maresch *et al.* (2016) and Olomi and Sinyamule (2009) who found that work and start-up experiences significantly facilitate graduates' acquisition of entrepreneurial competencies. Marvel (2016) argues that work experience has often been used in entrepreneurship education and is ranked first among human capital constructs. These findings are consistent with HCT that work experience facilitates the acquisition of entrepreneurial knowledge and skills (Becker, 1964).

Moreover, the coefficient of graduates whose parents are self-employed is positive and significant for cognitive ( $p < 0.05$ , odds 3.30) and affective ( $p < 0.05$ , odds 4.62) but not skill-based outcomes ( $p > 0.05$ , odds 1.85). This means self-employed parents increase 3.30 and 4.62 times the log odds of graduates' potential to acquire cognitive and affective competencies respectively than graduates whose parents are merely public servants. Self-employed parents, particularly business owners, tend to engage their children in day-to-day business activities. This helps children to acquire not only entrepreneurial abilities but also affection through role modelling. These findings are consistent with Liu *et al.* (2020), Olomi and Sinyamule (2009), and Graevenitz *et al.* (2010) who found that graduates who grow up with self-employed parents learn and replicate their parents' entrepreneurial behaviours than those raised

by public servants' parents. The findings partly reject the null hypothesis  $H_{01a}$ . This implies age, work experience, and parental role modelling through self-employment and education significantly facilitate entrepreneurial competencies acquisition

Lastly, the coefficients for graduates exposed to one entrepreneurship course are positive and significant for cognitive ( $p < 0.001$ , odds 13.4), affective ( $p < 0.001$ , odds 17.3), and skill-based competencies ( $p < 0.001$ , odds 14.4). Similarly, the coefficient for graduates with two or more entrepreneurship course exposure is positive for cognitive ( $p < 0.001$ , odds 18.3), affective ( $p < 0.001$ , odds 33.9), and skill-based outcomes ( $p < 0.001$ , odds 19.2). This means that studying at least one entrepreneurship course increases the odds of acquiring cognitive (13.4), affective (17.3), and skill-based competencies (14.4) than not studying. The odds of technical graduates acquiring entrepreneurial competencies correspond to the number of entrepreneurship courses studied ( $p < 0.001$ ). The findings suggest that graduates who studied at least two entrepreneurship courses have more than 10 times the odds of acquiring entrepreneurial competencies across the three domains compared to those who did not.

The findings provide empirical evidence to reject the null hypothesis  $H_{01b}$ . Impliedly, entrepreneurship education is an effective intervention tool to facilitate graduates' entrepreneurial competencies acquisition. Education is ranked second after work experience among human capital constructs used in entrepreneurship education studies (Marvel, 2016). The findings are congruent with HCT, which views entrepreneurship education as an investment whose outcomes are entrepreneurial knowledge, skills, and attitudes (Krieger *et al.*, 2022; Mets *et al.*, 2017; Marvel, 2016; Becker, 1964). These assets are critical in enhancing graduates' employability attributes in self-employment as entrepreneurs or entrepreneurial employees (intrapreneurs) in existing business organizations. The findings support previous studies that highlight the role of entrepreneurship education in the acquisition of entrepreneurial knowledge, skills, and attitudes (Liu *et al.*, 2020; Solesvik, 2019; Mets *et al.*, 2017; Hahn *et al.*, 2017; Kozlinska, 2016).

However, the findings of this study contradict empirical previous studies that reported that entrepreneurship education did not significantly enhance entrepreneurial competencies acquisition (Malekipour *et al.*, 2018; Seabela and

Fatoki, 2014). Specifically, these studies report that university graduates' ability to generate new business ideas, identify business opportunities, develop business plans, and understand the sources of finance were below average. The findings contradict Oosterbeek *et al.* (2010), who underscored that the effects of entrepreneurship courses on university students' self-assessed entrepreneurial knowledge and skills remained significantly different from zero and the point of estimation was even negative. The findings further contradict Wakkee's *et al.* (2017) findings, which underscored that many university graduates in Tanzania lack adequate entrepreneurial capabilities to tackle real-life challenges besides exposure to entrepreneurship courses.

#### 2.6.4 Entrepreneurship courses and entrepreneurial competencies acquisition

Besides, inferential results, the study used descriptive statistics to examine the level of entrepreneurial competencies acquisition by cross-tabulating with the extent of exposure to entrepreneurship courses. Table 8 presents the cross-tabulation analysis results of the level of entrepreneurial competencies acquisition by the extent of exposure to entrepreneurship courses. The table compares the level of entrepreneurial competencies acquisition (low, medium, or high) in the three domains (cognitive, affective, and skill-based) among technical graduates who did not study any entrepreneurship course, those who studied one entrepreneurship course, or those who studied two or more courses.

**Table 8: Entrepreneurial competencies acquisition by extent of exposure**

Construct	Categories	Extents of exposure to entrepreneurship courses							
		No exposure		One-course exposure		Two/more courses		Overall sample	
		N	%	N	%	N	%	N	%
Cognitive outcomes	Low	2	1.4	0	0.0	0	0.0	2	0.5
	Medium	64	46	14	6.6	2	4.9	80	20.5
	High	73	52.5	197	93.4	39	95.1	309	79.
	<b>Total</b>	<b>139</b>	<b>100</b>	<b>211</b>	<b>100</b>	<b>41</b>	<b>100</b>	<b>391</b>	<b>100</b>
Affective outcomes	Low	1	0.7	0	0.0	0	0.0	1	0.3
	Medium	56	40.3	10	4.7	1	2.4	67	17.1
	High	82	59	201	95.3	40	97.6	323	82.6
	<b>Total</b>	<b>139</b>	<b>100</b>	<b>211</b>	<b>100</b>	<b>41</b>	<b>100</b>	<b>391</b>	<b>100</b>
Skills-based outcomes	Low	3	2.2	0	0.0	0	0.0	3	0.8
	Medium	56	40.3	13	6.2	3	7.3	72	18.4
	High	80	57.6	198	93.8	38	92.7	316	80.8
	<b>Total</b>	<b>139</b>	<b>100</b>	<b>211</b>	<b>100</b>	<b>41</b>	<b>100</b>	<b>391</b>	<b>100</b>

The findings in Table 8 suggest that graduates who did not study any entrepreneurship course had lower levels of entrepreneurial competencies in all three domains compared to graduates who studied one course or more courses. For example, the findings show that only 52.5% of graduates who did not study any course had higher cognitive competencies compared to 95.1% and 93.4% of those who studied one course and two or more courses respectively. Similarly, only 59% of graduates who did not study entrepreneurship courses had higher affective competencies compared to 95.3% and 97.6% of those who studied one course and two or more courses respectively. Lastly, only 57.6% of graduates without exposure to entrepreneurship courses had high skill-based competencies compared to 93.8% with one-course exposure and 92.7% with two or more courses exposure. These findings complement inferential results that entrepreneurship education facilitates graduates' acquisition of entrepreneurial competencies in cognitive, affective, and skill-based domains.

Based on the inferential and descriptive statistics results, the study concludes that entrepreneurship education facilitates technical graduates' entrepreneurial competencies acquisition. Graduates acquired relevant entrepreneurial knowledge, interest, motivation, and skills to venture into business start-ups. This is consistent with Lange *et al.* (2011) and Malebana (2016), who reported that graduates who studied at least two entrepreneurship courses exposure for three consecutive years have a higher likelihood of acquiring requisite entrepreneurial competencies than those who didn't. Criticizing these studies, Hahn *et al.* (2017) argue that entrepreneurship education enhances entrepreneurial competencies acquisition only up to a certain threshold, beyond which students cannot further acquire anything. Although this study found that graduates exposed to at least two entrepreneurship courses significantly acquired entrepreneurial competencies, it remains debatable at which level of exposure makes students reach the saturation point.

## **2.7 Conclusions, Implications, and Recommendations**

### **2.7.1 Conclusions**

This study examines factors influencing entrepreneurial competencies acquisition among technical graduates in Tanzania. Based on the findings, the study concludes in the following ways: *First*, formal entrepreneurship education is an effective



intervention strategy for facilitating entrepreneurial competencies acquisition among technical graduates in Tanzania. Technical graduates exposed to at least two or more entrepreneurship courses had more than 10 times the likelihood of acquiring requisite entrepreneurial competencies compared to those without exposure. *Second*, beyond formal entrepreneurship education, informal entrepreneurship exposure through graduates' lifelong learning in age, employment experience, and parental role modelling through self-employment and education level significantly facilitates the acquisition of entrepreneurial competencies among technical graduates. Lastly, the study concludes that course lecturers should strike the right balance between lecture and experiential teaching methods to facilitate graduates' acquisition of entrepreneurial competencies.

### **2.7.2 Theoretical and practical implications**

Consistent with Human Capital Theory (Becker, 1964) and previous empirical studies (Krieger *et al.*, 2022; Marvel, 2016), these findings present several theoretical and empirical implications. *First*, entrepreneurship education is worth investing in, whose outcomes, among others, are acquired entrepreneurial competencies in cognitive, affective, and skill-based domains critical for starting and operating business ventures. *Second*, the Ministry of Education, Science, and Technology (MoEST) should issue directives to all educational institutions from the primary and university levels to integrate at least two entrepreneurship courses to entrench employability attributes among university students. This should be supported by engaging experienced and successful entrepreneurs in designing and delivering entrepreneurship courses. This could be a suitable avenue for graduates to acquire theoretical and hands-on business start-up skills to reflect what it takes to start and operate business ventures. This will enhance not only their innovative potential as entrepreneurs but also as innovative employees (intrapreneurs) in business ventures.

### **2.7.3 Recommendations**

Universities and colleges should commit more institutional resources to designing and delivering entrepreneurship courses, striking the right balance between lecture-based and experiential pedagogies to reap the intended benefits. In collaboration with universities, the MoEST should establish incubation centers for graduates to incubate the feasibility of business ideas before further investment and enhance the acquisition of hands-on start-up skills. In this regard, curriculum designers and

course instructors should consider informal entrepreneurship exposure in designing curricula and delivering entrepreneurship courses to equip learners with relevant entrepreneurial competencies to enhance business start-ups. Pending on financial resources, the MoEST should consider financing technical universities and colleges to establish business incubation centers for graduates to experiment and commercialize their business ideas before further investment. This is critical to equip technical graduates with both theoretical and practical aspects needed for business start-ups.

## REFERENCES

- Adeyonu, A. G., Balogun, O. L., Amao, I. O., & Agboola, T. O. (2022). Do farmers' entrepreneurial competencies explain their household poverty status? Evidence from rural areas of Kwara State, Nigeria. *Cogent Economics and Finance*, 10(1): 2071384. DOI: <https://doi.org/10.1080/23322039.2022.2071384>.
- Africa Economic Outlook. (2014). *Global Value Chains and Africa's Industrialization*.  
[<http://www.un.org/en/africa/osaa/pdf/pubs/2014afrecooutlook-afdb.pdf>].  
Visited on 17/06/2018.
- African Economic Outlook. (2012). *Promoting Youth Employment*. African Development Bank. 294pp. [<http://www.undp.org/content/dam/rba/docs/Reports/African%20Economic%20Outlook%202012%20En.pdf>]. Site visited on 14/9/2018.
- Agresti, A & Tarantola, C. (2018). Simple ways to interpret effects in modelling ordinal categorical data. *Statistica Neerlandica*, 72(3): 210-223. DOI: <https://doi.org/10.1111/stan.12130>.
- Becker, G. (1964). *Human capital*. Columbia University Press, New York.
- Bohlmann, C., Rauch, A., & Zacher, H. (2017). A lifespan perspective on entrepreneurship: perceived opportunities and skills explain the negative association between age and entrepreneurial activity. *Frontiers in Psychology*, 8, 2015. DOI: [10.3389/fpsyg.2017.02015](https://doi.org/10.3389/fpsyg.2017.02015).
- Bosompem, M., Annor-Frempong, F., & Achiaa, Y. (2013). Perceived entrepreneurial competencies of undergraduates and self-employment creation after graduation: implications for youth policy in Ghana. *International Journal of Business and Management Studies*, 2(3): 35–365.
- Chen, H., Tang, Y., & Han, J. (2022). Building students' entrepreneurial competencies in Chinese universities: diverse learning environment, knowledge transfer, and entrepreneurship education. *Sustainability*, 14(15): DOI: [10.3390/su14159105](https://doi.org/10.3390/su14159105).
- Creswell, J. W. (2014). *Research design: qualitative, quantitative and mixed methods*. Thousand Oaks, CA: SAGE.

- Fayolle, A., & Gailly, B. (2015). The impact of entrepreneurship education on entrepreneurial attitudes and intention: Hysteresis and persistence. *Journal of Small Business Management*, 53(1), 75-93.
- Fulgence, K. (2015). Assessing the status of entrepreneurship education courses in higher education learning institutions: the case of Tanzania education schools. *Education + training*, 57(2): 239–258. DOI: <https://doi.org/10.1108/ET-05-2013-0063>.
- Hahn, D., Minola, T., Van Gils, A., & Huybrechts, J. (2017). Entrepreneurial education and learning at universities: Exploring multilevel contingencies. *Entrepreneurship & Regional Development*, 29(9-10): 945–974. DOI: <https://doi.org/10.1080/08985626.2017.1376542>.
- Ilonen, I., & Heinonen, J. (2018). Understanding affective learning outcomes in entrepreneurship education. *Industry and Higher Education*, 32(6): 391–404. DOI: [10.1177/0950422218805177](https://doi.org/10.1177/0950422218805177).
- International Labour Organisation (2018). *World employment social outlook: 2018 trends*. International Labour Office, Geneva. 82pp.
- Israel, G. D. (1992). Sampling the evidence of extension program impact. *Program Evaluation and Organizational Development, Institute of Food and Agricultural Sciences*, University of Florida. PEOD-5. [ <http://edis.ifas.ufl.edu>]. Visited on 12/04/2019.
- Kozlinska, I. (2016). Evaluation of the outcomes of entrepreneurship education revisited. Doctoral dissertation: University of Turku. 416pp.
- Kozlinska, I., Mets, T & Rõigas, K. (2020). Measuring learning outcomes of entrepreneurship education using Structural Equation Modeling. *Administrative Sciences*, 10(58): 1–17. DOI: <https://doi.org/10.3390/admsci10030058>.
- Krieger, A., Stuetzer, M., Obschonka, M., & Salmela-Aro, K. (2022). The growth of entrepreneurial human capital: origins and development of skill variety. *Small Business Economics*, 59: 645–664. DOI: <https://doi.org/10.1007/s11187-021-00555-9>.
- Liu, T., Walley, K., Pugh, G., & Adkin, P. (2020). Entrepreneurship education in China: Evidence from a preliminary scoping study of enterprising tendency in Chinese university students. *Journal of Entrepreneurship in Emerging Economies*, 12(2): 305-326. DOI: [10.1108/JEEE-01-2019-0006](https://doi.org/10.1108/JEEE-01-2019-0006).

- Lackéus, M. (2020). Comparing the impact of three different experiential approaches to entrepreneurship in education. *International Journal of Entrepreneurial Behavior & Research*, 26(5):937-971. DOI: [10.1108/IJEBR-04-2018-0236](https://doi.org/10.1108/IJEBR-04-2018-0236).
- Lange, J. E., Marram, E., Jawahar, A. S., Yong, W., & Bygrave, W. (2011). Does an entrepreneurship education have lasting value? A study of careers of 4,000 alumni. *Frontiers of entrepreneurship research*, 31(6): 2.
- Legas, H., A. (2016). *An empirical analysis of the workings of entrepreneurship and the role of entrepreneurship education on intention towards entrepreneurship: insights from Africa*. Ph.D. thesis, university of Bergamo. 212pp. [<https://aisberg.unibg.it/handle/10446/62254>]. Visited on 20/07/2020.
- Liu, H; Kulturel-Konak, S & Konak, A. (2020). Measuring the effectiveness of entrepreneurship education. *Proceedings of 53<sup>rd</sup> Hawaii International Conference on System Sciences, 2020*. DOI: <http://hdl.handle.net/10125/64321>.
- Malebana, M. (2016). Does entrepreneurship education matter for the enhancement of entrepreneurial intention? *Southern African Business Review*, 20(1): 365–387.
- Malekipour, A., Hakimzadeh, R., Dehghani, M., & Zali, M. R. (2018). Analysis of entrepreneurial competency training in the curriculum of Bachelor of Physical Education in universities in Iran. *Cogent Education*, 5: 1462423, DOI: <https://doi.org/10.1080/2331186X.2018.1462423>.
- Magasini, A.K. (2015). *Entrepreneurship education and business start-up: assessing entrepreneurial tendencies among university graduates in Tanzania*. Ph.D. Thesis, Sokoine University of Agriculture. 231pp. [<https://www.suaire.sua.ac.tz/handle/123456789/799>]. Visited on 11/12/2019.
- Martin, B., C., M., J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2): 211–224. DOI: <https://doi.org/10.1016/j.jbusvent.2012.03.002>.
- Man, T. Y., & Lau, T. (2005). The context of entrepreneurship in Hong Kong: an investigation through the patterns of entrepreneurial competencies in contrasting industrial environments. *Journal of Small Business and*

- Enterprise Development*, 12(4), 464-481. DOI: <http://dx.doi.org/10.1108/14626000510628162>.
- Maresch, D., Harms, R., Kailer, R., & Wimmer-Wurm, B. (2016). The impact of entrepreneurship education on students' entrepreneurial intention in science and engineering versus business studies university programs. *Technological Forecasting & Social Change*, 104: 172–179. DOI: <http://dx.doi.org/10.1016/j.techfore.2015.11.006>.
- Marvel, M. R., Davis, J. L., & Sproul, C. R. (2016). Human capital and entrepreneurship research: A critical review and future directions. *Entrepreneurship Theory and Practice*, 40(3): 599-626. DOI: [10.1111/etap.12136](http://dx.doi.org/10.1111/etap.12136).
- Mateo, J., Escofet, A., Martínez-Olmo, F., Ventura, J., & Vlachopoulos, D. (2012). Evaluation tools in the European higher education area: An assessment for evaluating the competencies of the final year project in the social sciences. *European Journal of Education*, 47(3).
- Mets, T., Kozlinska, I., & Raudsaar, M. (2017). Patterns in entrepreneurial competencies as the perceived learning outcomes of entrepreneurship education: The case of Estonian HEIs. *Industry and Higher Education*, 31(1): 23–33. DOI: <https://doi.org/10.1177/0950422216684061>.
- Mueller, S., & Anderson, A. R. (2014). Understanding the entrepreneurial learning process and its impact on student's personal development: A European perspective. *The International Journal of Management Education*, 12(3): 500-511. DOI: <https://doi.org/10.1016/j.ijme.2014.05.003>.
- Mwantimwa, K. (2019). Higher institution education and entrepreneurial knowledge acquisition of graduates in Tanzania. *Current Politics and Economics of Africa*, 12 (2/3): 209-229.
- Mwasalwiba, E. S. (2012). *University entrepreneurship education in Tanzania: teaching context, students' profile and outcomes*. A thesis submitted for the Award of PhD of the Vrije Universiteit Amsterdam, Netherlands. 186pp. [<https://research.vu.nl/en/publications/university-entrepreneurship-education-in-tanzania-teaching-contex>]. Accessed on 18/01/2019.
- Nabi, G., Liñán, F., Fayolle, A., & Walmsey, A. (2017). The impact of entrepreneurship education in higher education: a systematic review and

- research agenda. *Academy of Management Learning & Education*, 16(2): 277-299. DOI: <https://doi.org/10.5465/amle.2015.0026>.
- Nade, P. B. (2021). The influence of agri-entrepreneurship courses studied on youth farm entrepreneurial intention: Evidence from Folk Development Colleges in Tanzania. *South African Journal of Economic and Management Sciences*, 24(1). DOI: <http://dx.doi.org/10.4102/sajems.v24i1.3788>.
- Ndalichako, J. L., & Komba, A. A. (2014). Students' subject choice in secondary schools in Tanzania: A matter of students' ability and interests or forced circumstances? *Open Journal of Social Sciences*, 2(08): 49–56. DOI: <http://dx.doi.org/10.4236/jss.2014.28008>.
- OECD. (2018). *Policy Note on SME Ministerial Conference: Developing entrepreneurship competencies. 10PP*. [<https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Parallel-Session-3.pdf>]. Site visited on 25/03/2019.
- Olomi, D. R., & Sinyamule, R. S. (2009). Entrepreneurial inclinations of vocational education students: A comparative study of male and female trainees in Iringa Region. *Journal of Enterprising Culture*, 17(1): 103–125. DOI: <https://doi.org/10.1142/S0218495809000242>.
- Omidyar Network. (2013). *Accelerating Entrepreneurship in Africa: Understanding Africa's Challenges to Creating Opportunity-driven Entrepreneurship*. [<https://www.issuelab.org/resources/15195/15195.pdf>]. Visited on 19/10/2018.
- Oosterbeek, H., van Praag, M., & IJsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review*, 54: 442–45. DOI: [10.1016/j.euroecorev.2009.08.002](https://doi.org/10.1016/j.euroecorev.2009.08.002).
- Othman, N. H., & Othman, N. (2019). A systematic review on entrepreneurship education in higher learning institutions in Southeast Asia. *Universal Journal of Educational Research*, 7(11): 2406-2416. DOI: [10.13189/ujer.2019.071118](https://doi.org/10.13189/ujer.2019.071118).
- Perez, J. P., Martins, I., & Mahau, M. D. (2022). A bridge between entrepreneurship education, program inspiration, and entrepreneurial intention: the role of individual entrepreneurial orientation. Evidence from Latin American

- emerging economies. *Journal of Entrepreneurship in Emerging Economies*, 2053-4604. DOI: [10.1108/JEEE-04-2021-0137](https://doi.org/10.1108/JEEE-04-2021-0137).
- Rasmussen, E., Mosey, S., & Wright, M. (2015). The transformation of network ties to develop entrepreneurial competencies for university spin-offs. *Entrepreneurship & Regional Development*, 27(7-8): 430-457. DOI: [10.1080/08985626.2015.1070536](https://doi.org/10.1080/08985626.2015.1070536).
- Rwamtoga, B. (2011). *Effects of entrepreneurship education on entrepreneurship development: A case of vocational education and training authority (Dar-Es-Salaam Centre)*. Master Degree Thesis, Open University of Tanzania. 108pp.
- Sánchez, J. C. (2013). The impact of an entrepreneurship education program on entrepreneurial competencies and intention. *Journal of Small Business Management*, 51(3):447–465. DOI: [10.1111/jsbm.12025](https://doi.org/10.1111/jsbm.12025).
- Seabela, M., & Fatoki, O. (2014). The entrepreneurial competencies of non-business university students in South Africa. *International Journal of Educational Sciences*, 6(3): 375 – 381.
- Shimba, A. I. (2018). Entrepreneurship education and self-employment choices of graduates: Experiences of selected Tanzanian universities. *Business Management Review*, 21(2): 14-29.
- Solesvik, M. Z. (2019). Entrepreneurial competencies and intentions: the role of higher education. *Forum Scientiae Oeconomia*, 7(1): 10-23. DOI: [10.23762/FSO\\_VOL7\\_NO1\\_1](https://doi.org/10.23762/FSO_VOL7_NO1_1).
- Tittel, A., & Terzidis, O. (2020). Entrepreneurial competencies revised: developing a consolidated and categorized list of entrepreneurial competencies. *Entrepreneurship Education*, 3:1–35. DOI: <https://doi.org/10.1007/s41959-019-00021-4>.
- Taber, K. (2018). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48:1273–1296. DOI: [10.1007/s11165-016-9602-2](https://doi.org/10.1007/s11165-016-9602-2).
- The United Republic of Tanzania (2017). *Tanzania inclusive national entrepreneurship strategy*. Prime Minister's Office, The National Economic Empowerment Council, Dar-Es-Salaam, Tanzania. 13pp.
- Ugba, E. R., & Gertheiss, J. (2022). *A modification of McFadden's  $R^2$  ordinal response*



*models*. [<chromeextension://efaidnbmninnibpcajpegcliclefindmkaj/https://arxiv.org/pdf/2204.01301.pdf>]. Visited on 17/06/2022.

- Valerio, A., Parton, B., & Robb, A. (2014). *Entrepreneurship education and training programs around the world: Dimensions for success: A World Bank Report*. [<https://openknowledge.worldbank.org/bitstream/handle/10986/18031/9781464802027.pdf>]. Accessed on 22/11/2019.
- Von Graevenitz, G., Harhoff, D., & Weber, R. (2010). The effects of entrepreneurship education. *Journal of Economic Behavior & Organization*, 76(1): 90–112.
- Wakkee, I., Hoestenbergh, K., & Mwasalwiba, E. (2018). Capability, social capital and opportunity-driven graduate entrepreneurship in Tanzania. *Journal of Small Business and Enterprise Development*. DOI: <https://doi.org/10.1108/JSBED-02-2017-0053>.
- Warmbrod, J. R. (2014). Reporting and interpreting scores derived from Likert-type scales. *Journal of Agricultural Education*, 55(5): 30–47.

## CHAPTER THREE

### 3.0 ENTREPRENEURIAL COMPETENCIES AND BUSINESS START-UP INTENTIONS AMONG TECHNICAL GRADUATES IN TANZANIA, MEDIATED BY ANTECEDENTS OF THEORY OF PLANNED BEHAVIOUR

#### 3.1 Abstract

*Despite government efforts to integrate entrepreneurship courses into the mainstream education system in most developing countries, empirical evidence of whether and how they influence business start-up intentions through the lens of entrepreneurial competencies has not been given scholarly attention. This chapter explores the influence of entrepreneurial competencies in enhancing the business start-up intentions of technical graduates in Tanzania. It adopts the Theory of Planned Behaviour (TPB) as a theoretical framework to examine how entrepreneurial competencies directly influence the antecedents of TPB and how the antecedents mediate the effect of entrepreneurial competencies on business start-up intentions. It uses a cross-sectional survey research design and collects empirical data from 391 technical graduates who graduated between 2012 and 2017 from technical universities and colleges who lived in Dar es Salaam during data collection. The collected data are analyzed using Partial Least Squares Path Modelling (PLS-PM). The findings highlight that entrepreneurial competencies had a direct significant influence not only on the perceived behavioural control ( $p < 0.05$ ) and attitudes toward business start-ups ( $p < 0.001$ ) but also on technical graduates' intentions to venture into business start-ups ( $p < 0.001$ ). However, perceived behavioural control ( $p < 0.001$ ) and attitudes toward business start-ups ( $p < 0.05$ ) significantly mediate the effects of entrepreneurial competencies on technical graduates' business start-up intentions. This chapter concludes that entrepreneurial competencies are critical aspects for fostering technical graduates' business start-up intentions, especially by enhancing their attitudes and perceived behavioural control towards business start-ups. This chapter suggests policy and practical implications for improving the quality and relevance of entrepreneurship education in technical universities and colleges in Tanzania.*

**Keywords:** Entrepreneurial Competencies, Business Start-up Intentions, Theory of Planned Behaviour, Mediation Effect

### 3.2 Introduction

Business start-ups are pivotal to innovations and employment creation worldwide. Statistics across countries under the Organization for Economic Co-operation and Development (OECD) advocate that Small and Medium-sized Enterprises (SMEs) account for 95% of all companies and create 60-70% of new jobs (Mayer-Haug *et al.*, 2013). Given their labor-intensive nature, SMEs have a higher potential to accommodate many people, including university graduates who frequently have limited labour market experience. In this context, governments in developed and Least Developing Countries (LDCs) strive to improve the start-up ecosystems for university graduates and the general public to pursue business start-ups (URT, 2022, 2017; Åstebro *et al.*, 2012). Cognizant that merely creating a supportive start-up ecosystem may not guarantee graduates' business start-ups, the Tanzanian government resolved to integrate entrepreneurship education into the education system irrespective of specialties (Mwantomwa, 2019; URT, 2017; Mwasalwiba, 2012).

Nearly all universities and their constituent colleges including those specializing in Applied Sciences, Engineering, and Technology (ASET) offer at least one stand-alone entrepreneurship course at different levels (Certificate to Ph.D.). Some of the technical universities and colleges offering entrepreneurship courses in Tanzania include Dar es Salaam Institute of Technology (DIT), Arusha Technical College (ATC), National Institute of Transport (NIT), Sokoine University of Agriculture (SUA), Mbeya University of Science and Technology (MUST), College of Engineering and Technology (CoET) and College of Information and Technology (CoICT) of the University of Dar es Salaam (UDSM) and Nelson Mandela African Institution of Science and Technology (NM-AIST), Arusha. Technical graduates with ASET specialties supposedly have higher potential for business start-ups than graduates of other professions (Legas, 2016; Åstebro *et al.*, 2012), perhaps due to the technical nature of their study programmes. Given their start-up potential, they must acquire requisite entrepreneurial competencies and orientations.

Given the concerted efforts to equip graduates with requisite entrepreneurial competencies, it is unclear and debatable whether and how such competencies translate into entrepreneurial intentions and subsequently to actual business start-ups (Wasilczuk *et al.*, 2021). The knowledge of whether and how entrepreneurship

education facilitates business start-up intentions could provide valuable insights for government officials and technical universities to make informed decisions in designing suitable educational interventions. Such decisions are critical given the unemployment challenge whereby 900,000 youths enter the labour market yearly. The public sector, as the leading employer can employ between 50,000 to 60,000 labour market entrants (Mgaiwa, 2021). This leaves 840,000 youths, including university graduates, unemployed, raising the question of where they end up.

In the context of the high unemployment rate, one would expect many graduates to venture into business start-ups as a livelihood strategy. However, evidence on the ground shows that the number of graduates venturing into business start-ups is reasonably low compared to the level of country investment (Mangasini, 2015; Mwasalwiba *et al.*, 2012). For example, Mangasini (2015) discovered that only 22.7% of university graduates had established flourishing business ventures. Aside from the low number of university graduates venturing into business start-ups, estimates show that 30% of business ventures close their operations within two years (Lee and Kim, 2019), while 75% fail within five years (Blank, 2013). This makes the role of entrepreneurship education for graduates timely and relevant. However, previous empirical studies merely concentrated on assessing the determinants of entrepreneurial intentions (Fernandez-Perez *et al.*, 2019; Yong *et al.*, 2021).

In Tanzania, previous studies mainly explored the influence of entrepreneurship education on entrepreneurial tendencies/intentions, drawing the experience of graduates in business-related universities (Mangasini, 2015; Mwasalwiba, 2012). As a result, the question of whether entrepreneurship education facilitates the acquisition of requisite entrepreneurial competencies among technical graduates and how such competencies enhance their intention to venture into business start-ups remains open for discussion. Wasilczuk *et al.* (2021) cast doubt on whether entrepreneurship courses can effectively facilitate technical graduates' business start-up intention, and indeed, little scholarly attention is paid in this regard, leaving the matter unclear and unresolved. There is limited empirical evidence to substantiate whether and how entrepreneurship education facilitates technical graduates' BSI through the lens of entrepreneurial competencies.

This study is an empirical attempt to partly address the following critical questions. (1) Do entrepreneurial competencies acquired from entrepreneurship courses facilitate technical graduates' intentions to venture into business start-ups? (2) Which antecedents strongly mediate the effect of entrepreneurial competencies on technical graduates' business start-up intentions? In addressing these questions, the study acknowledges that entrepreneurial competencies acquisition and technical graduates' intentions to venture into business start-ups are largely shaped by personal and educational backgrounds and life experiences, as advocated by human capital theorists (Lackéus, 2014; Becker, 1964). Therefore, and in more specific terms, this empirical study had twofold objectives: (1) examine the influence of entrepreneurial competencies on technical graduates' business start-up intentions. (2) to measure how the antecedents of TPB mediate the effect of entrepreneurial competencies on the intentions of technical graduates to venture into business start-ups.

### **3.3 Theoretical underpinning**

The individual decision to venture into business start-ups is frequently conceptualized through Ajzen's (1991) Theory of Planned Behavior. Specifically, TPB posits that personal attitudes toward a behaviour, such as an Attitude Towards Business Start-ups (ATS), Subjective Norms (SN), and Perceived Behavioural Control (PBC) influence individual intention and willingness to pursue a certain action (Liñán and Fayolle, 2015; Liñán *et al.*, 2013; Ajzen, 1991). ATS reflects the personal evaluation of the desirability of business start-ups; PBC refers to perceived difficulties associated with business start-ups; SN is the perceived social pressure about the need to venture into business start-ups. Traditionally, the antecedents of TPB (ATS, SN, and PBC) have been used to predict Business Start-up Intention (BSI) (Liñán and Fayolle, 2015; Liñán *et al.*, 2013; Ajzen, 1991). However, some empirical studies have attempted to examine other antecedents to explain individual decision-making toward business start-ups (Lopez *et al.*, 2021; Ahmed *et al.*, 2020b).

In this regard, some scholars use entrepreneurship education as one of the antecedents of predicting graduate entrepreneurial intentions (Lopez *et al.*, 2021; Fernandez-Perez *et al.*, 2019; Farani *et al.*, 2017). This is built on the assumption that entrepreneurship courses facilitate graduates' entrepreneurial competencies acquisition reflected in the three domains of cognitive (knowledge about entrepreneurship), affective (affection towards entrepreneurship), and skill-based

outcomes (entrepreneurship skills) (Ratten and Usmanij, 2021; Mets *et al.*, 2017; Kozlinska, 2016). Specifically, cognitive outcomes are critical thinking ability due to new knowledge about start-ups and the operation of business ventures in complex business settings. Skill-based outcomes cover the skills and abilities needed for business start-ups. The affective outcomes represent the changes in the attitudes, volition, and behavioural preference for business start-ups (Ratten and Usmanij, 2021; Mets *et al.*, 2017; Kozlinska, 2016; Fisher *et al.*, 2008).

One of the weaknesses of TPB is that it does not view entrepreneurial competencies as one of the predictors of entrepreneurial intentions (Fernandez-Perez *et al.*, 2019; Roy *et al.*, 2017; Farani *et al.*, 2017). Considering that the antecedents of TPB alone may not adequately explain business start-up intentions in different contexts (Liñán and Fayolle, 2015; Teixeira and Forte, 2015), it is critical to explore other antecedents to broaden scholarly understanding. Unlike intelligence and skills, entrepreneurial competencies have the potential to influence the individual willingness and ability to venture into business start-ups (Lackéus, 2014). Consistent with Lopez *et al.* (2021) and Fernandez-Perez *et al.* (2019), it is assumed that TPB antecedents (PBC, SN, and ATS) can significantly mediate the effect of entrepreneurial competencies on graduates' business start-up intentions.

Previous studies by Fernandez-Perez *et al.* (2019), Liñán *et al.* (2013), and Mwasalwiba (2012) jointly confirm that SN is the weakest predictor of entrepreneurial intentions. Consistent with these studies, this study maintains that ATS and PBC are major predictors of technical graduates' intentions to venture into business start-ups. This study uses entrepreneurial competencies underpinned by TPB to assess their influence on BSI through ATS and PBC as mediators (Liñán and Fayolle, 2015; Ajzen, 1991). Using the Theory of Planned Behaviour (Ajzen, 1991) and Human Capital Theory (Becker, 1964) this study underscores that entrepreneurial competencies and the antecedents of TPB can be acquired through life-cycle experiences, culture, and education, such as entrepreneurship courses.

Despite the potential effect of TPB antecedents on graduates' entrepreneurial intentions, how they mediate the effect of entrepreneurial competencies on graduates' BSI has hardly attracted scholarly attention. In addition, there is scant information regarding the extent to which entrepreneurship education enhances

technical graduates' BSI through the lens of entrepreneurial competencies (Wasilczuk *et al.*, 2021). Considering this knowledge gap, it is critical to undertake further empirical studies to narrow this knowledge gap. This study empirically examines the direct influence of entrepreneurial competencies on technical graduates' business start-up intentions and how the antecedents of TPB mediate the effect of entrepreneurial competencies on graduates' business start-up intentions.

### **3.4 Hypotheses Development**

#### **3.4.1 Influence of entrepreneurial competencies on business start-up intentions**

Business start-up is a complex process whose decisions are shaped by internal and external factors. Although financial gain is the prime factor for graduates to venture into business start-ups, their risk-tolerance ability can draw them back to realize such desires (Ahmed *et al.*, 2020a). However, the limited number of job opportunities as an alternative livelihood strategy could push graduates to venture into business start-ups (Adu-Gyamfi *et al.*, 2022). Irrespective of whether graduates are pushed or pulled, the business start-up is an outcome of someone's intentions and is later on triggered by other factors including entrepreneurial competencies (Aboobaker and D, 2020; Sánchez, 2011). In this context, Zdolšek and Širec (2014) argue that entrepreneurship courses, entrepreneurial competencies acquisition, and business start-up intention seem to be closely intertwined.

However, the extent to which entrepreneurship courses, entrepreneurial competencies acquisition, and business start-up intention are intertwined has not adequately been examined (Draksler and Širec, 2021; Draksler and Širec, 2018). This calls for context-specific analysis to ascertain their interlinkages to advance the body of empirical evidence to broaden scholarly understanding. Similarly, since entrepreneurs are jack-of-all-trades who perform multiple entrepreneurial tasks (Kurczewska and Mackiewicz, 2020), there is no wonder they need a broader set of entrepreneurial knowledge, attitudes, and skills. Previous empirical studies merely examined the influence of entrepreneurship education on graduates' entrepreneurial intentions (Wasilczuk *et al.*, 2021; Draksler and Širec, 2021; Sánchez, 2011). What remains hitherto unattended is the question of the channels through which entrepreneurship education can facilitate technical graduates' intentions to venture into entrepreneurial activities (Draksler and Širec, 2018).

Indeed, much remains to be done to ascertain whether and how entrepreneurial competencies acquired through entrepreneurship courses directly influence the antecedents of TPB, which, subsequently influence business start-up intentions (Aboobaker and D, 2020; Lackéus, 2014; Sánchez, 2011). To broaden scholarly understanding, the study further analysis examines the influence of entrepreneurial competencies on BSI. This is critical since the components of entrepreneurial competencies vary from entrepreneurial knowledge, attitudes, and skills (Lackéus, 2014), to General Enterprising Tendencies (GETs) such as the need for achievement, locus of control, and risk-taking propensity (Mangasini, 2015). Moberg *et al.* (2014) classify entrepreneurial competencies as entrepreneurial skills, knowledge, connectedness to education, and career ambitions.

Although previous studies examined the influence of entrepreneurial competencies on graduates' entrepreneurial intentions (Wasilczuk *et al.*, 2021; Draksler and Sirec, 2021), they produced mixed findings, both significant, weak/partial, and non-significant. In light of the mixed findings and varying components of entrepreneurial competencies, further analysis is inevitable. Consistent with previous studies by Ratten and Usmanij (2021), Mets *et al.* (2017), and Fisher *et al.* (2008), this study underscores that entrepreneurial competencies reflected by three domains, namely cognitive (knowledge about entrepreneurship), affective (affection towards entrepreneurship), and skill-based outcomes (entrepreneurship skills) will have direct effect not only on the antecedents of TPB (PBC and ATS), which subsequently influence graduates' business start-up intentions. To this effect, this study hypothesizes that:

H<sub>01a-c</sub><sup>1</sup>. Entrepreneurial competencies (cognitive, affective, and skill-based) do not directly significantly influence technical graduates' perceived behavioural control;

H<sub>02a-c</sub>. Entrepreneurial competencies (cognitive, affective, and skill-based) do not directly significantly influence technical graduates' attitudes toward business start-ups;

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<sup>1</sup> H<sub>01a-c</sub> represents the null hypotheses H<sub>01a</sub>, H<sub>01b</sub>, and H<sub>01c</sub>. The same applies to H<sub>02a-c</sub> and H<sub>03a-c</sub>.



- H<sub>03a-c</sub>. Entrepreneurial competencies (cognitive, affective, and skill-based) do not directly significantly influence technical graduates' business start-up intentions;
- H<sub>04</sub>. The perceived behavioural control does not directly significantly influence technical graduates' intentions to venture into business start-ups; and
- H<sub>05</sub>. Attitudes toward business start-ups do not directly significantly influence technical graduates' intentions to venture into business start-ups.

### **3.4.2 Mediation effect of antecedents of TPB on business start-up intentions**

Several theories and models have been used to pursue rigorous theoretical grounds for studying individual business start-up intentions. However, Ajzen's (1991) Theory of Planned Behavior (TPB) is the most influential theory often used for predicting personal decisions to pursue business start-ups (Liñán *et al.*, 2013; Ajzen, 1991). TPB constructs have proven to be the significant antecedents of BSI, with empirical evidence confirming their hypothesized relationship (Lopez *et al.*, 2021; Fernandez-Perez *et al.*, 2019). As an attempt to broaden scholarly understanding, previous studies examined other factors influencing the antecedents of TPB. Roy *et al.* (2017) confirmed that attitudes toward entrepreneurship significantly influence entrepreneurial intentions when mediated by entrepreneurial knowledge and a feasible career option. However, these studies found that SN exerted a positive but relatively weak influence on entrepreneurial intentions.

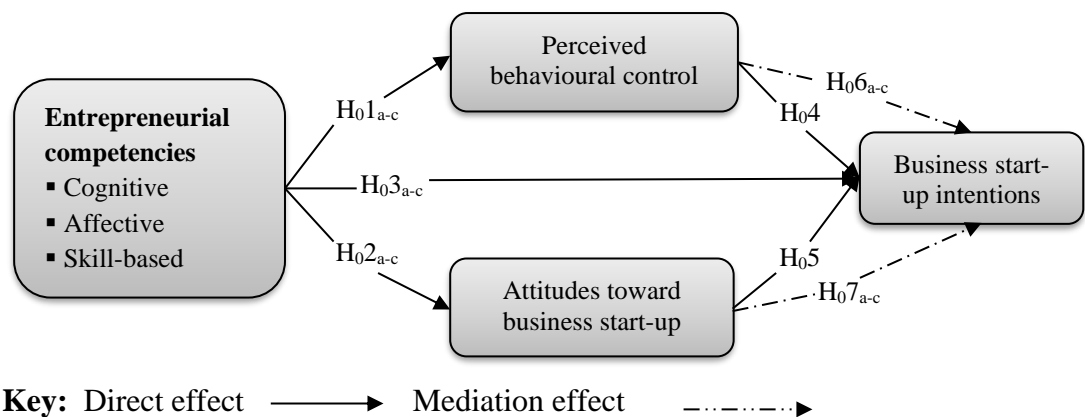
Moreover, Fernández-Pérez *et al.* (2019) affirmed that emotional competencies had a significant influence on graduates' entrepreneurial attitudes and perceived self-efficacy, as a predictor of entrepreneurial intentions. Roy *et al.* (2017) affirmed that perceived self-efficacy significantly boosted graduates' entrepreneurial personality traits to entrepreneurial intention relationships. This was supported by Lopez *et al.* (2021), who found that the graduates' perceptions of entrepreneurship education programmes influenced the antecedents of entrepreneurial intentions. Farani *et al.* (2017) reported similar findings that entrepreneurial knowledge had an indirect effect on digital entrepreneurial intentions through attitudes toward digital entrepreneurship and perceived behavioural control.

Ahmed *et al.* (2020b) found that the components of entrepreneurship education, such as learning, inspiration, and resources, influenced graduates' intentions for venture

creation. Despite the notable developments in this research stream, previous studies merely used the antecedents of TPB as independent variables that predict graduates' entrepreneurial intentions as the dependent variable. To broaden scholarly understanding and advance the body of evidence, this study examines how the antecedents of TPB (ATS and PBC) mediate the effect of entrepreneurial competencies on graduates' business start-up intentions. To this effect, this study tests the following null hypotheses:

H<sub>06a-c</sub><sup>2</sup>. Entrepreneurial competencies (cognitive, affective, and skill-based) do not significantly influence technical graduates' business start-up intentions when mediated by perceived behavioural control; and

H<sub>07a-c</sub>. Entrepreneurial competencies (cognitive, affective, and skill-based) do not significantly influence technical graduates' business start-up intentions when mediated by attitude toward business start-ups.



**Figure 3: Conceptual framework**

### 3.5 Methodology

#### 3.5.1 Study area, research design, and sampling technique

This study was carried out in Dar es Salaam, Tanzania. Dar es Salaam was selected as a suitable study area because it is one of the fastest-growing cities in Africa (URT, 2016), a country's economic hub expected to acquire a megacity status by 2030 (Todd *et al.*, 2019). The units of inquiry, namely Dar es Salaam Institute of Technology (DIT), College of Engineering and Technology (CoET), and St. Joseph University in Tanzania (SJUIT), were arbitrarily selected for sampling the

<sup>2</sup> H<sub>06a-c</sub> represents null hypotheses H<sub>06a</sub>, H<sub>06b</sub>, and H<sub>06c</sub>. The same applies to H<sub>07a-c</sub>

observation unit. A cross-sectional survey design was used because it suits studies assessing the relationship between variables using mathematical models, theories, and hypotheses (Saunders *et al.*, 2016). About 60% of studies in entrepreneurship education employed a cross-sectional survey design (Nabi *et al.*, 2017).

The study involved 10,981 technical graduates living in Dar es Salaam during data collection. Since many graduates have the potential to start their first business venture five to ten years after graduation (Mwasalwiba, 2012), the study involved technical graduates who graduated between 2012 and 2017. The timeframe is adequate for graduates with start-up zeal to venture into business start-ups. Moreover, technical colleges and universities started integrating entrepreneurship education into the mainstream education system in 2008. The first batch of technical graduates with entrepreneurship courses entered the labour market in 2012s. About 64.5% of surveyed graduates had studied at least one entrepreneurship course as a critical aspect for acquiring requisite entrepreneurial competencies (Yong *et al.*, 2021; Draksler and Širec, 2018). Cochran's formula was used to estimate the sample size at 95% confidence and  $\pm 5\%$  precision level:

$$\text{Sample size (n)} = \frac{z^2 pq}{e^2} \dots\dots\dots(3.1)$$

Whereby  $n$  = estimated sample size;  $z$  = confidence level at 95% (a standard value of 1.96);  $p$  = estimated target population (since graduates living in Dar es Salaam were not known, a standard value of 0.5 was used);  $q = (1.0 - p)$ ; and  $e$  = Margin of error at 5% (standard value of 0.05).

$$\text{Therefore, } n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = \frac{3.8416 \times 0.25}{0.0025} = 384.16 \approx 384$$

Since the formula merely estimates the minimum sample, 15% of the sample size was added to compensate for the non-response potential following Israel's (1992) recommendations. The 15% addition corresponds to 58 respondents, making the final sample 442. Finally, the sub-sample for each university was estimated using the proportionate formula by Fisher *et al.* (1991) as follows:

$$\text{Sample Size per University} = \frac{\text{Estimated Sample Size (n)}}{\text{Total Population (N)}} \times \text{Population per University (N)} \dots\dots\dots(3.2)$$

From equation (2), the sub-sample for each university/college was computed as follows:

$$\text{CoET} = \frac{384}{10,981} \times 2,103 = \mathbf{73}, \quad \text{DIT} = \frac{384}{10,981} \times 3,818 = \mathbf{134}, \quad \text{SJUIT} = \frac{384}{10,981} \times 5,060 = \mathbf{177}$$

**Table 9: Sub-sample size per technical university**

<b>University</b>	<b>Population</b>	<b>Sub-sample</b>	<b>Sub-sample after 15%</b>	<b>Percent (%)</b>
CoET	2,103	73	84	19.2
DIT	3,818	134	154	34.7
SJUIT	5,060	177	204	46.1
<b>Total</b>	<b>10,981</b>	<b>384</b>	<b>442</b>	<b>100</b>

In Tanzania, many technical graduates are required to register in their professional bodies to obtain business permits. Depending on their professions, such bodies include the Contractors Registration Board (CRB), Architects and Quantity Surveyors Registration Board (AQRB), and Engineers Registration Board (ERB). In addition, the government recruits all engineering graduates under the Structured Engineering Apprenticeship Programme (SEAP) for three years to acquire engineering hands-on before qualifying as professional engineers. Since many graduates were still working under SEAP, the data collection exercise was simplified. Ultimately, 442 questionnaires were distributed in person with enumerators' assistance, and 391 copies were successfully collected, equivalent to 88.5% completion rate. The completion rate was considered satisfactory for further analysis relative to the recommended threshold level of 70% for survey research studies (Nulty, 2008).

### **3.5.2 Variables and Measurement**

The operational definitions of constructs and the measurement items were designed following comprehensive theoretical and empirical reviews. Table 10 indicates the constructs and their respective items along with previous scholars who used such constructs. All the measurement items in the constructs were measured through a five-point Likert scale using a generic response continuum ranging from (=1) Strongly Disagree to Agree Strongly (= 5).

**Table 10: Measurement constructs and items**

Construct	Measurement items	Sources
Cognitive outcomes	1. Entrepreneurship courses increased my understanding of planning a business.	Mets <i>et al.</i> , 2017
	2. ...increased my understanding of generating innovative business ideas	
	3. ...improved my understanding of theoretical aspects of business start-ups.	
	4. ...enhanced my understanding of legal issues related to new business start-ups.	
	5. ...increased my understanding of the steps for establishing a business venture.	
	6. ...increased my business communication skills	
Affective outcomes	1. ...increased my confidence in new business start-ups	Lopez <i>et al.</i> 2021; Mets <i>et al.</i> 2017
	2. ...enhanced my preference for business start-ups to provide freedom and autonomy.	
	3. ...increased my interest in starting a business venture	
	4. ...increased my motives to engage in business start-up	
Skill-based outcomes	1. ...increased my skills in controlling business projects.	Lopez <i>et al.</i> 2021; Mets <i>et al.</i> 2017
	2. ...increased my skills in identifying and evaluating business opportunities.	
	3. ...improved my practical management skills for business start-ups	
	4. ... increased my skills to attract potential investors in business ventures.	
	5. ...improved my skills to develop profitable business models.	
	6. ...increased my skills in identifying and analyzing business start-up risks.	
	7. ...courses enhanced skills in negotiating a deal with other business partners.	
Attitude towards start-ups	1. To start a business venture and keep it working would be easy for me.	Liñán <i>et al.</i> , 2013
	2. I can control the creation process of a new business venture.	
	3. I understand the practical details of starting a business venture.	
	4. I know how to develop an entrepreneurship project.	
Perceived behavioural control	1. To start a new business and keep it working would be easy for me.	Lopez <i>et al.</i> 2021; Liñán <i>et al.</i> , 2013
	2. I can control the creation process of a new business venture.	
	3. I understand the practical details of starting a business venture.	
	4. I know how to develop an entrepreneurship project.	
	5. If I tried to start a business, I would have a high chance of succeeding.	
Business start-up intentions	1. I have seriously thought of starting a business venture.	Lopez <i>et al.</i> 2021; Liñán <i>et al.</i> , 2013
	2. My professional goal is to start a business venture.	
	3. I am ready to do anything to start a new business venture.	
	4. I will make every effort to start a business venture.	
	5. I have seriously thought of starting a business venture some days in the future.	
	6. The probability of starting a business venture is high.	

### 3.5.3 Common method bias

Common Method Bias (CMB) is inherent in self-administered studies that can potentially affect empirical findings (Rodríguez-Ardura and Meseguer-Artola, 2020). To minimize the inherent potential bias, various techniques were employed. *First*, the study pre-tested the survey questionnaire to 20 technical graduates in Moshi District, not included in the final analysis. *Second*, the study sought informed

consent from the respondents by explaining the objectives, guaranteeing their anonymity, assuring the confidentiality of their information, and encouraging them to have no correct or wrong responses. *Third*, the study used Harman's one-factor test as a statistical measure to test the CMB and produced 34.74% of the variances, below the threshold level of 50%. This implies that CMB had a marginal effect on empirical findings (Rodríguez-Ardura and Meseguer-Artola, 2020).

### **3.5.4 Analytical techniques**

This study employed Partial Least Squares Path Modelling (PLS-PM) to examine the direct effect of entrepreneurial competencies on the antecedents of TPB and business start-up intentions. The technique was also used to test how the antecedents of TPB mediate the effects of entrepreneurial competencies on business start-up intentions (Hair *et al.*, 2021; Benitez *et al.*, 2020). To estimate the mediation effect of TPB antecedents, the study ran two path models with and without mediators and compared their variances explained ( $R^2$ ) and path coefficients. PLS-PM is suitable for this study given the complex nature of the hypothesized relationships. PLS-PM simultaneously models and estimates the complex relationships among the exogenous and endogenous variables measured through multiple items (Hair *et al.*, 2021). PLS-PM is increasingly becoming a vigorous analysis method used by over 90% of the articles published in reputable journals in the past four years (Manley *et al.*, 2020). Smart-PLS version 4.0 estimated the relationships (Henseler *et al.*, 2022).

## **3.6 Results and Discussions**

### **3.6.1 Measurement model**

Reflective measurement was used to assess the psychometric properties of the model. The reliability and validity of the constructs were tested to ensure the robustness of the results. Table 11 presents the values of composite reliability (CR), average variance extracted (AVE), and cross-loadings for each latent variable and its corresponding indicators. To reflect high reliability,  $\alpha$  and CR must attain the threshold ( $\geq .70$ ) (Hair *et al.*, 2019; Fornell and Larcker, 1981). All the latent variables attained the threshold level ( $\geq .70$ ), indicating high internal consistency reliability (Dash and Pau, 2021; Hair *et al.*, 2019). All the latent variables have AVE values above a threshold level ( $\geq 0.50$ ). This confirms that the variables have high convergent validity (Benitez *et al.*, 2020; Hair *et al.*, 2021). Similarly, all the indicators have higher loadings on their respective latent variables than on other

latent variables, implying they have high indicator reliability. There could be a multi-collinearity problem if the Variance Inflation Factor (VIF) values are above 10 while VIF values ranging between 5 and 10 indicate moderate multi-collinearity issues. All VIF values are below 5, indicating the absence of a serious multi-collinearity challenge in the measurement model.

**Table 11: Construct reliability and validity**

Construct	Items	Loadings	VIF < 5	A	Rho_A	CR	AVE
Cognitive Competencies	CC_1	0.818	2.393	0.906	0.908	0.927	0.680
	CC_2	0.824	2.405				
	CC_3	0.780	1.961				
	CC_4	0.858	2.763				
	CC_5	0.827	2.544				
	CC_6	0.838	2.728				
Affective Competencies	AC_1	0.834	2.210	0.878	0.879	0.911	0.672
	AC_2	0.800	1.943				
	AC_3	0.829	2.155				
	AC_4	0.832	2.250				
	AC_5	0.804	1.974				
Skill-based competencies	SC_1	0.758	1.865	0.908	0.909	0.927	0.644
	SC_2	0.780	2.009				
	SC_3	0.820	2.539				
	SC_4	0.811	2.280				
	SC_5	0.822	2.442				
	SC_6	0.833	2.431				
	SC_7	0.792	2.052				
Attitudes Towards Start-ups	ATS_1	0.870	2.323	0.863	0.864	0.907	0.709
	ATS_2	0.846	2.069				
	ATS_3	0.812	1.800				
	ATS_4	0.840	2.047				
Perceived Behavioural Control	PBC_1	0.727	1.600	0.862	0.866	0.901	0.646
	PBC_2	0.843	2.259				
	PBC_3	0.839	2.478				
	PBC_4	0.835	2.318				
	PBC_5	0.768	1.668				
Business Start-up Intention	BSI_1	0.815	2.233	0.912	0.912	0.932	0.694
	BSI_2	0.823	2.228				
	BSI_3	0.826	2.383				
	BSI_4	0.852	2.664				
	BSI_5	0.827	2.396				
	BSI_6	0.855	2.724				

**Key:** Average Variance Extracted (AVE), Composite Reliability ( $\alpha$ ), Jöreskog's coefficient (Rho\_A), Variance Inflation Factor (VIF)

In terms of construct validity, convergent and discriminant validity tests were carried out to ensure each construct differed. Discriminant validity tests the extent to which the constructs are genuinely distinct from other constructs (Hair *et al.*, 2019). Fornell–Larcker criterion was used to assess discriminant validity by comparing the square root of the AVE values with the latent variable correlations. The rule of thumb requires that the square root of each construct's AVE value be above its highest correlation with other constructs (Fornell and Larcker, 1981). Table 12 presents the

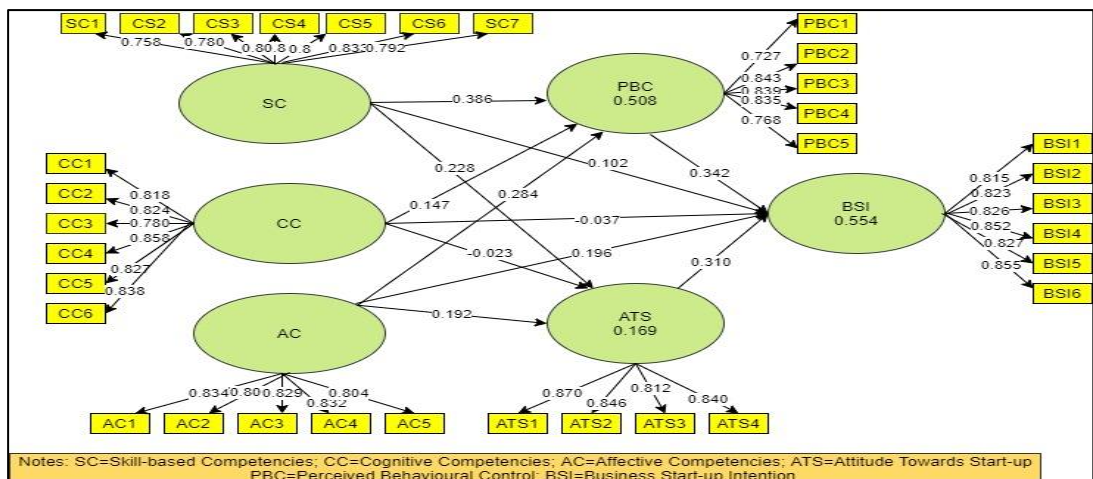
Fornell and Larcker criterion for the discriminant validity of the latent variables. The square root of the diagonal is higher than the values beneath the inter-construct correlation coefficients (Fornell and Larcker, 1981). This indicates that all the constructs attained the convergent validity requirements (Hair *et al.*, 2019, 2021; Benitez *et al.*, 2020). The reflective measurement model generally indicates that the scales display acceptable psychometric properties suitable for further analysis.

**Table 12: Discriminant validity – Fornell and Larcker Criterion**

S/No	Construct	1	2	3	4	5	6
1	Affective competencies	<b>0.820</b>					
2	Attitude towards start-up	0.355	<b>0.842</b>				
3	Business start-up intentions	0.557	0.588	<b>0.833</b>			
4	Cognitive competencies	0.691	0.281	0.441	<b>0.825</b>		
5	Perceived behavioural control	0.625	0.524	0.671	0.572	<b>0.804</b>	
5	Skill-based competencies	0.621	0.394	0.546	0.594	0.649	<b>0.803</b>

**3.6.2 Structural Model Evaluation**

A structural model assessment was used to assess the relationship between latent constructs and validate the conceptual framework (Hair *et al.*, 2021). The inner model evaluation involved path analysis based on the hypothesized relationship between latent exogenous and endogenous constructs. The variance, explained in the model ( $R^2$ ), indicates a sufficient explanatory power of the mediating variables;  $R^2 = 55.4%$  (PBC = 0.508, ATS = 0.169). This implies that mediators moderately accounted for 55.4% of the variance in BSI. These results are consistent with previous studies that reported that the antecedents of TPB explain 30–50% of the variances in entrepreneurial intentions (Liñán *et al.*, 2013).



**Figure 4: Structural model of endogenous and exogenous variables**



Moreover, the effect size ( $f^2$ ) of each exogenous latent variable on the endogenous variable was calibrated by inspecting the change in adjusted  $R^2$  when one construct is excluded from the model (Benitez *et al.*, 2020). In evaluating the effect size, the rule of thumb holds that ( $f^2$ ) values 0.02, 0.15, and 0.35 represent small, medium, and large effect sizes, respectively (Hair *et al.*, 2021). Table 13 shows that omitting skill-based competencies leads to the effect size of PBC (0.19), ATS (0.05), and BSI (0.09), ranging from small to medium effect size. Controlling cognitive competencies, the effect sizes of PBC (0.02), ATS (0.004), and BSI (0.002) had small effect sizes. Lastly, removing the affective competencies results in the effect size of PBC (0.07), ATS (0.01), and BSI (0.03) with a small effect.

**Table 13: Effect size analysis**

Inclusion & exclusion criteria	PBC	Effect size	ATS	Effect size	BSI	Effect size
$R^2$ when SC, CC, and AC included	0.512		0.172		0.560	
When SC removed	0.421	0.19	0.127	0.05	0.556	0.09
When CC excluded	0.501	0.02	0.175	0.004	0.559	0.002
When AC excluded	0.476	0.07	0.158	0.012	0.543	0.038

**Key:** Cognitive competencies (CC), affective competencies (AC), skilled-based competencies (SC)

### 3.7 Hypotheses testing

#### 3.7.1 Direct paths

The study tested the significance of the path relationships through bootstrapping for 391 cases with no significant changes (Hair *et al.*, 2019). The findings in Table 14 show that skill-based ( $\beta = 0.386$ ,  $p < 0.001$ ), cognitive ( $\beta = 0.147$ ,  $p < 0.001$ ), and affective outcomes ( $\beta = 0.284$ ,  $p < 0.05$ ) had direct positive and significant on PBC. The results support the null hypotheses  $H_{01a}$ ,  $H_{01b}$ , and  $H_{01c}$ . This implies that all domains of entrepreneurial competencies have a direct effect on graduates' business start-up intentions. Graduates require entrepreneurial competencies to identify and exploit business opportunities for business start-ups. Moreover, the study found that skill-based ( $\beta = 0.288$ ,  $p < 0.001$ ) and affective outcomes ( $\beta = 0.192$ ,  $p < 0.05$ ) had a direct positive significant effect on technical graduates' ATS. The findings support null hypotheses  $H_{02a}$  and  $H_{02c}$ . This means graduates with requisite entrepreneurial competencies such as skill-based and affective develop positive attitudes toward business start-ups.

Previous studies underline the roles of entrepreneurial knowledge and skills in predicting graduates' perceived behavioural control (Aboobaker and D, 2020; Wasilczuk *et al.*, 2021; Ahmed *et al.*, 2020b; Sánchez, 2011). Surprisingly, cognitive outcomes did not significantly affect ATS with a negative path coefficient ( $\beta = -0.023$ ,  $p > 0.05$ ), failing to support H<sub>02b</sub>. This implies cognitive outcomes do not enhance graduates' attitudes toward business start-ups. The negative sign of the path coefficient implies that technical graduates with cognitive abilities have negative attitudes toward business start-ups. This is due to the fact highly cognitive individuals are naturally risk-averse. This is consistent with Ahmed *et al.* (2020a), who reported that highly cognitive individuals tend to avoid risky undertakings. Business start-up is one of the risky endeavours that requires careful analysis of risks. Unfortunately, highly cognitive individuals are well-versed in risk assessment before further investment.

**Table 14: Direct paths of entrepreneurial competencies**

Hypotheses	Path	Path Coefficient	T-stat.	p-value	Remarks
H <sub>01a</sub>	SC --> PBC	0.386	8.135	***	Supported
H <sub>01b</sub>	CC --> PBC	0.147	2.500	0.012*	Supported
H <sub>01c</sub>	AC --> PBC	0.284	2.647	0.008*	Supported
H <sub>02a</sub>	SC --> ATS	0.288	4.305	***	Supported
H <sub>02b</sub>	CC --> ATS	-0.023	0.319	0.750	Not supported
H <sub>02c</sub>	AC --> ATS	0.192	3.184	0.001*	Supported
H <sub>03a</sub>	SC --> BSI	0.102	1.816	0.069	Not Supported
H <sub>03b</sub>	CC --> BSI	-0.037	0.634	0.526	Not supported
H <sub>03c</sub>	AC --> BSI	0.196	5.416	***	Supported
H <sub>04</sub>	PBC --> BSI	0.342	5.596	***	Supported
H <sub>05</sub>	ATS --> BSI	0.310	5.021	***	Supported

**Legend:** \* =  $p < 0.05$ , \*\*\* =  $p < 0.001$

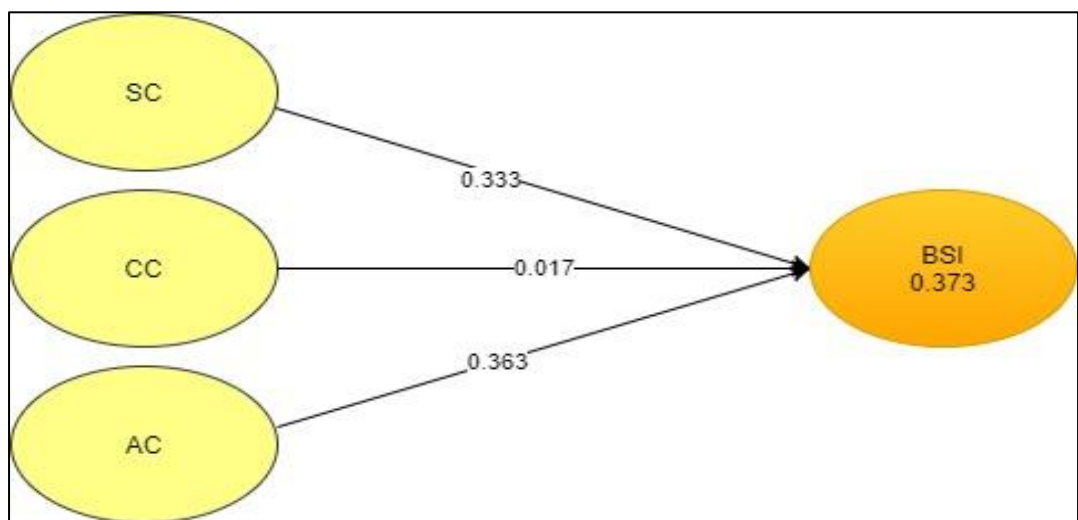
Moreover, the findings highlight that cognitive ( $\beta = -0.037$ ,  $p > 0.05$ ) and skill-based outcomes ( $\beta = 0.102$ ,  $p > 0.05$ ) did not directly significantly influence BSI with, a negative path coefficient on cognitive outcomes. The findings failed to support the null hypotheses H<sub>03a</sub> and H<sub>03b</sub>. This means skill-based and cognitive competencies do not directly influence technical graduates' business start-up intentions. The negative sign on the path coefficient of cognitive outcomes implies that highly cognitive graduates have negative attitudes toward business start-ups. Highly cognitive individuals have risk-averse behaviour and tend to avoid undertakings perceived to be risky (Ahmed *et al.*, 2020a). Individuals with high cognitive abilities and start-up skills are well-versed in cost-benefit analyses of the risks associated with

business start-ups. These skills help them to make rational decisions about whether or not to pursue business start-ups. As a rational decision-maker, they will choose a comfort zone by avoiding risky projects.

However, the findings highlight that affective outcomes had a positive significant effect on BSI ( $\beta = 0.147, p < 0.001$ ), supporting hypothesis H<sub>03c</sub>. Impliedly, affective competencies enhance the intention of technical graduates to venture into business start-ups. Lastly, the findings highlight that PBC ( $\beta = 0.342, p < 0.001$ ) and ATS ( $\beta = 0.310, p < 0.001$ ) had a direct positive significant effect on BSI, supporting hypotheses H<sub>04</sub> and H<sub>05</sub>, respectively. Impliedly, attitudes toward business start-ups and perceived behavioural control have a direct positive significant influence on graduates' BSI. Consistent with previous studies, perceived behavioural control and business start-up attitudes had a significant influence not only on graduates towards business start-ups but also on entrepreneurial intentions (Roy *et al.*, 2017; Ahmed *et al.*, 2020b; Farani *et al.*, 2017).

### 3.7.2 Mediation analysis

To capture the mediation effect of the antecedents of TPB, another model without mediators was run to compare the path coefficients of the model with mediators. Figure 5 presents the model without mediators, and Table 15 presents the coefficient of determination, path coefficients, and their  $p$ -values of mediated and non-mediated models.



**Figure 5: A path analysis of the model without mediator variable**

The results in Table 15 show without mediators, affective outcomes had a positive significant effect on BSI ( $p < 0.001$ ). However, without mediators, cognitive competencies were not significant but changed to significance after including mediators. This implies that attitudes toward business start-ups and perceived behavioural control mediate the effect of cognitive competencies on graduates' business start-up intentions. However, attitudes toward business start-ups and perceived behavioural control do not mediate the effect of skill-based competencies on graduates' business start-up intentions. The coefficient of determination of the model with mediators changed from  $R^2 = 0.554$  to  $R^2 = 0.373$  without mediators. Impliedly, the antecedents of TPB contribute 18.1% in the 55.4% of the variance in business start-up intentions. This implies entrepreneurial competencies account for 37.3% of the variance in BSI. Impliedly, besides the direct effect of entrepreneurial competencies on graduates' business start-up intentions, their effects are stronger when mediated by the antecedents of TPB (ATS and PBC).

**Table 15: Comparing the mediated and non-mediated models**

S/No.	Without mediators				With mediators		
	Path	Path coeff.	t-stat.	p-values	Path coeff.	T-stat.	p-values
1	AC --> BSI	0.363	6.035	***	0.196	5.416	***
2	CC --> BSI	-0.017	0.258	0.796	0.147	2.500	0.012*
3	SC --> BSI	0.333	6.506	***	0.102	1.816	0.069

**Legend:** \* =  $p < 0.05$ , \*\*\* =  $p < 0.001$

Table 16 presents the mediation effect of the antecedents of the TPB. The findings show that PBC partially mediates the effect of skill-based ( $\beta = 0.025$ ,  $p < 0.001$ ) and affective competencies ( $\beta = 0.025$ ,  $p < 0.001$ ) but fully mediate the effect of cognitive competencies ( $\beta = 0.023$ ,  $p < 0.05$ ) on BSI, supporting the null hypotheses  $H_{06a}$ ,  $H_{06b}$ , and  $H_{06c}$  respectively. This means perceived behavioural control partially mediates the effect of skill-based and affective outcomes but fully mediates the effects of cognitive outcomes on BSI. This denotes that perceived behavioural control strengthens the effects of entrepreneurial competencies on technical graduates' business start-up intentions. These findings are consistent with previous empirical studies which found that perceived behavioural control mediates the effects of entrepreneurial knowledge on entrepreneurial intentions (Lopez *et al.*, 2021; Ahmed *et al.*, 2020b; Fernández-Pérez *et al.* (2017).

**Table 16: Mediating effect of TPB antecedents**

Hypotheses	Path	Path Coef.	T-stat.	p-value	Supported	Remarks
H <sub>06a</sub>	SC --> PBC --> BSI	0.029	4.598	***	YES	Partial med.
H <sub>06b</sub>	CC --> PBC --> BSI	0.023	2.184	0.029*	YES	Full mediation
H <sub>06c</sub>	AC --> PBC --> BSI	0.025	3.940	***	YES	Partial med.
H <sub>07a</sub>	SC --> ATS --> BSI	0.029	3.084	0.002*	YES	Full mediation
H <sub>07b</sub>	CC --> ATS --> BSI	0.023	0.313	0.754	NO	No mediation
H <sub>07c</sub>	AC --> ATS --> BSI	0.026	2.308	0.021*	YES	Partial med.

**Legend:** \* =  $p < 0.05$ , \*\*\* =  $p < 0.001$

Lastly, the findings underline that ATS fully mediates the effect of skill-based ( $\beta = 0.029$ ,  $p < 0.05$ ) but partially mediates the effects of affective outcomes ( $\beta = 0.026$ ,  $p < 0.05$ ) on BSI. The findings support the null hypotheses H<sub>07a</sub> and H<sub>07c</sub>. This implies that attitudes toward business start-ups fully mediate the effect of skill-based competencies on graduates' business start-up intentions but partially mediates the effect of affective competencies. The findings support studies by Lopez *et al.* (2021), Ahmed *et al.* (2020b), and Fernández-Pérez *et al.* (2017), which reported that attitudes toward business start-ups mediate the effect of entrepreneurial knowledge/learning on entrepreneurial intentions. However, ATS did not mediate the influence of cognitive competencies on BSI ( $\beta = 0.023$ ,  $p > 0.05$ ), failing to support hypothesis H<sub>07b</sub>. This implies that the attitudes toward business start-ups do not strengthen the effect of cognitive competencies on technical graduates' business start-up intentions.

### 3.8 Conclusions and Implications

This chapter examines the direct influence of entrepreneurial competencies on the intentions of technical graduates to venture into business start-ups in a non-Western country, Tanzania. The findings show that entrepreneurial competencies had a direct significant effect not only on the attitudes toward business start-ups and perceived behavioural control but also on the intentions of technical graduates to venture into business start-ups. However, the effects of entrepreneurial competencies on technical graduates' business start-up intentions were significantly higher when mediated with attitudes towards business start-ups and perceived behavioural control. This chapter concludes that to enhance the intentions of technical graduates to venture into business start-ups, technical colleges, and universities should strike a balance

between graduates' entrepreneurial competencies acquisition and developing perceived behavioural control and positive attitudes toward business start-ups.

From the findings, several theoretical and practical implications are drawn. *First*, entrepreneurial competencies had a direct significant influence on business start intentions. This implies that entrepreneurship education is one of the antecedents predicting the intentions of technical graduates to venture into business start-ups. This adds a new antecedent besides the traditional antecedents of TPB (ATS, SN, and PBC). *Second*, entrepreneurial competencies had a direct positive effect on the antecedents of TPB and business start-up intentions. This provides implications on the mechanisms through which entrepreneurship education enhances the intentions of technical graduates to venture into business start-ups. This contributes to the ongoing debate on how entrepreneurship education facilitates entrepreneurial intentions (Wasilczuk *et al.*, 2021; Liñán and Fayolle, 2015).

*Third*, besides the direct effect of entrepreneurial competencies on technical graduates' business start-up intentions, the findings suggest that their effects were remarkably higher when mediated by positive attitudes towards business start-ups and perceived behavioural control. This implies that to enhance the intentions of technical graduates to venture into business start-ups, technical universities, and colleges should not merely concentrate on facilitating entrepreneurial competencies acquisition but also commit their institutional resources to develop perceived behavioural control and positive attitudes of graduates towards business start-ups. This can be achieved by designing suitable entrepreneurship courses and blending traditional lecture and experiential teaching methods to capitalize on the acquisition of not only entrepreneurial competencies but also perceived behavioural control and attitudes towards business start-ups as critical aspects for business start-ups.

## REFERENCES

- Aboobaker, N., & Renjini, D. (2020). Human capital and entrepreneurial intentions: do entrepreneurship education and training provided by universities add value? *On the Horizon*, 28(2): 3–83. DOI: [10.1108/OTH-11-2019-0077](https://doi.org/10.1108/OTH-11-2019-0077).
- Adu-Gyamfi, R., Kuada, J., & Asongu, S. A. (2022). An integrative framework for formal and informal entrepreneurship research in Africa. *Journal of African Business*, DOI: [10.1080/15228916.2022.2042102](https://doi.org/10.1080/15228916.2022.2042102).
- Ahmed, M. A., Khattak, M. S., & Anwar, M. (2020). Personality traits and entrepreneurial intention: The mediating role of risk aversion. *Journal of Public Affairs*, 2022;22:e2275. DOI: [10.1002/pa.2275](https://doi.org/10.1002/pa.2275).
- Ahmed, Q., Chandranb, V. G., Klobas, J. E., & Liñán, F. (2020). Entrepreneurship education programmes: How learning, inspiration, and resources affect intentions for new venture creation in a developing economy. *The International Journal of Management Education*, 18. 100327. DOI: <https://doi.org/10.1016/j.ijme.2019.100327>.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50:179-211. DOI: [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Åstebro, T., Bazzazian, N., & Braguinsky, S. (2012). Start-ups by recent university graduates and their faculty: Implications for university entrepreneurship policy. *Research Policy*, 41(4): 663–677. DOI: <https://doi.org/10.1016/j.respol.2012.01.004>.
- Al Mamun, A. A., Che Naw, N. B., Dewiendren, A. A., & Shamsudin, S. F. (2016). Examining the effects of entrepreneurial competencies on students' entrepreneurial intention. *Mediterranean Journal of Social Sciences*, 7(2):119-127. DOI: [10.5901/mjss.2016.v7n2p119](https://doi.org/10.5901/mjss.2016.v7n2p119).
- Benitez, J., Henseler, J., Castillo, A., & Schurbeth, F. (2020). How to perform and report an impactful analysis using Partial Least Squares: Guidelines for confirmatory and explanatory research. *Information & Management*, 57(2): 103168. DOI: <https://doi.org/10.1016/j.im.2019.05.003>.
- Blank, S. (2013). Why the lean start-up changes everything? *Harvard Business Review*, 91(5): 64–68.

- Dash, G., & Pau, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and. *Technological Forecasting & Social Change*, 173: 121092. DOI: <https://doi.org/10.1016/j.techfore.2021.121092>.
- Draksler, T. Z., & Širec, K. (2018). A conceptual research model for studying students' entrepreneurial competencies. *Naše Gospodarstvo/Our Economy*, 64(4): 23-33. DOI: [10.2478/ngoe-2018-0020](https://doi.org/10.2478/ngoe-2018-0020).
- Draksler, T. Z., & Sirec, K. (2021). The study of entrepreneurial intentions and entrepreneurial competencies of business vs non-business students. *Journal of Competitiveness*, 13(2): 171–188. DOI: <https://doi.org/10.7441/joc.2021.02.10>.
- Farani, A. Y., Karimi, S., & Motaghd, M. (2017). The role of entrepreneurial knowledge as competence in shaping Iranian students' career intentions to start a new digital business. *European Journal of Training and Development*, 41(1): 83-100. DOI: [10.1108/EJTD-07-2016-0054](https://doi.org/10.1108/EJTD-07-2016-0054).
- Fernández-Pérez, V., Montes-Merino, A., Rodríguez-Ariza, L., & Galicia, P. E. (2017). Emotional competencies and cognitive antecedents in shaping student's entrepreneurial intention: the moderating role of entrepreneurship education. *International Entrepreneurship Management Journal*, 15(1). DOI: [10.1007/s11365-017-0438-7](https://doi.org/10.1007/s11365-017-0438-7).
- Fisher, A. A., Laing, J. E., Stoeckel, J. E., & Townsend, J. (1991). *Handbook for Family Planning Operations Research Design*. New York: Population Council.
- Fisher, S., Graham, M., & Compeau, M. (2008). Understanding the learning outcomes of entrepreneurship education. In R. Harrison, & C. Leitch, *Entrepreneurial Learning: Conceptual Frameworks and Applications*. New York: Routledge.
- Fornell, C. G., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 9(4): 440-452
- Hair., J. F., Tomas, G., Hult, M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. A Workbook*. DOI: <https://doi.org/10.1007/978-3-030-80519-7>.



- Hair, J. F., Risher, J.J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1):2-24. DOI: 10.1108/EBR-11-2018-0203.
- Israel, G. D. (1992). *Sampling the evidence of extension program impact*. University of Florida, IFAS Extension.
- Katundu, M. A., & Gabagambi, D. M. (2014). Determinants of entrepreneurial tendencies among Tanzanian university graduates: A case of the University of Dar-es-Salaam. *European Academic Research*, 2(1). 835-869.
- Kurczewska, A., & Mackiewicz, M. (2020). Are jacks-of-all-trades successful entrepreneurs? Revisiting Lazear's theory of entrepreneurship. *Baltic Journal of Management*, 15(3): 411-430. DOI: [10.1108/BJM-07-2019-0274](https://doi.org/10.1108/BJM-07-2019-0274).
- Lackéus, M. (2014). An emotion-based approach to assessing entrepreneurial education. *International Journal of Management Education*, 12(3): 374–396. DOI: <https://doi.org/10.1016/j.ijme.2014.06.005>.
- Legas, H. A. (2016). *An empirical analysis of the workings of entrepreneurship and the role of entrepreneurship education on intention towards entrepreneurship: Insights from Africa*. 212pp. PhD thesis, University of Bergamo.
- Lee, W., & Kim, B. (2019). Business sustainability of start-ups based on government support: An empirical study of Korean start-ups. *Sustainability*, 11(18): 4851. DOI: <https://doi.org/10.3390/su11184851>.
- Liñán, F., Nabi, G., & Krueger, N. (2013). British and Spanish Entrepreneurial intentions: a comparative study. *Revista de Economía Mundial*, 33: 73-103.
- Liñán, F. & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: Citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, 11(4): 907-933. DOI: <https://doi.org/10.1007/s11365-015-0356-5>.
- Lopez, T., Alvarez, C., Martins, I., Perez, J. P., & Román-Calderón, J. P. (2021). Students' perception of learning from entrepreneurship education programs and entrepreneurial intention in Latin America. *Academia Revista Latinoamericana de Administración*, 34(3). 419 - 44. DOI: <https://doi.org/10.1108/ARLA-07-2020-0169>.
- Mangasini, A.K. (2015). *Entrepreneurship education and business start-up: assessing entrepreneurial tendencies among university graduates in*

- Tanzania*. Ph.D. Thesis, Sokoine University of Agriculture. 231pp. [<https://www.suaire.sua.ac.tz/handle/123456789/799>]. Visited on 11/12/2021.
- Mayer-Haug, K., Read, S., Brinckmann, J., & Dew, N. (2013). Entrepreneurial talent and venture performance: A meta-analytic investigation of SMEs. *Research Policy*, 42 (6–7): 1251-1273. DOI: <https://doi.org/10.1016/j.respol.2013.03.001>.
- Mets, T., Kozlinska, I., & Raudsaar, M. (2017). Patterns in entrepreneurial competencies as the perceived learning outcomes of entrepreneurship education: The case of Estonian HEIs. *Industry and Higher Education*, 31(1): 23–33.
- Mgaiwa, S. J. (2021). Fostering graduate employability: Rethinking Tanzania's university practices. *SAGE Open*, 11(2). DOI: <https://doi.org/10.1177/21582440211006709>.
- Mwantimwa, K. (2019). Higher institution education and entrepreneurial knowledge acquisition of graduates in Tanzania. *Current Politics and Economics of Africa*, 12(2/3): 209.
- Mwasalwiba, E., Dahles, H., & Wakkee, I. (2012). Graduate entrepreneurship in Tanzania: Contextual enablers and hindrances. *European Journal of Scientific Research*, 76(3): 386-402. DOI: <http://hdl.handle.net/20.500.12018/2649>.
- Mwasalwiba, E. S. (2012). *University entrepreneurship education in Tanzania: teaching context, students' profile and outcomes*. A thesis submitted for the Award of PhD of the Vrije Universiteit Amsterdam, Netherlands. 186pp. [<https://research.vu.nl/en/publications/university-entrepreneurship-education-in-tanzania-teaching-context>]. Accessed on 18/02/2021.
- Nabi, G., Liñán, F., Fayolle, A., & Walmsey, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning and Education*, 16(2): 277-299. DOI: <https://doi.org/10.5465/amle.2015.0026>.
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done? *Assessment and Evaluation in Higher Education*, 33(3): 301–314. DOI: [10.1080/02602930701293231](https://doi.org/10.1080/02602930701293231).

- Ratten, V., & Usmanij, P. (2021). Entrepreneurship education: time for a change in research direction? *The International Journal of Management Education*, 19(1): 100367. DOI: <https://doi.org/10.1016/j.ijme.2020.100367>.
- Ringle, C. M., Wende, S., and Becker, J.M. (2022). *SmartPLS 4. Oststeinbek: SmartPLS GmbH*. [<http://www.smartpls.com>]. Accessed on 20<sup>th</sup> August, 2022.
- Rodríguez-Ardura, I., & Meseguer-Artola, A. (2020). Editorial: how to prevent, detect, and control common method variance in electronic commerce research. *Journal of Theoretical and Applied Electronic Commerce Research*, 15(2): I-V. DOI: [10.4067/S0718-187620200002001](https://doi.org/10.4067/S0718-187620200002001).
- Roy, R., Akhtar, F., & Das, N. (2017). Entrepreneurial intention among science & technology students in India: extending the theory of planned behaviour. *International Entrepreneurship Management Journal*, 1–29. DOI: [10.1007/s11365-017-0434-y](https://doi.org/10.1007/s11365-017-0434-y).
- Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students* (Seventh). Edinburgh: Pearson.
- Sánchez, J. C. (2011). University training for entrepreneurial competencies: Its impact on intention of venture creation. *International Entrepreneurship Management Journal*, 7:239–254. DOI: [10.1007/s11365-010-0156-x](https://doi.org/10.1007/s11365-010-0156-x).
- Teixeira, A. A., & Forte, R. P. (2015). Prior education and entrepreneurial intentions: the differential impact of various fields of study. *Review of Managerial Science*, 11:353–394. DOI: [10.1007/s11846-015-0188-2](https://doi.org/10.1007/s11846-015-0188-2).
- The United Republic of Tanzania. (2022). *A comparative baseline study on the establishment of start-up policy in Tanzania*. Ministry of Investment, Industry, and Trade. 101pp. [<file:///C:/Users/HP/Downloads/tsareport.pdf>]. Visited on 20/04/2022.
- The United Republic of Tanzania. (2016). *National five years development plan: nurturing industrialization for economic transformation and human development*. Ministry of Finance and Planning, Dar-Es-Salaam, Tanzania. 316 pp.
- The United Republic of Tanzania. (2017). *Tanzania inclusive national entrepreneurship strategy*. Prime Minister's Office, The National Economic Empowerment Council, Dar-Es-Salaam, Tanzania. [<file:///C:/Users/HP/>

[Downloads/FINAL%20Tanzania%20%20NOV%202017-1%20\(1\).pdf](#)].

Visited on 23/01/2022.

- Todd, G., Msuya, I., Levira, F., & Moshi, I. (2019). City Profile: Dar es Salaam, Tanzania. *Environment and Urbanization ASIA*, 10(2): 193–215. DOI: [10.1177/0975425319859175](https://doi.org/10.1177/0975425319859175).
- Wasilczuk, J., Chukhray, N., Karyy, O., & Halkiv, L. (2021). Entrepreneurial competencies and intentions among students of technical universities. *Problems and Perspectives in Management*, 19(3): 10-21. DOI: [10.21511/ppm.19\(3\).2021.02](https://doi.org/10.21511/ppm.19(3).2021.02).
- Yong, K., Zainal, N. A., & ChekimaB. (2021). The relationship between entrepreneurial competencies and entrepreneurial success among homestay entrepreneurs in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 11(6): 99-114.
- Zdolšek, T., & Širec, K. (2014). Impact of entrepreneurship education on students' entrepreneurial intentions: A review of empirical research. *Naše gospodarstvo/Our economy*, 60(3-4): 55-64. DOI: <https://doi.org/10.7549/ourecon.2014.3-4.06>.

## CHAPTER FOUR

### 4.0 BUSINESS START-UP INTENTIONS AMONG TECHNICAL GRADUATES IN TANZANIA: THE MODERATING EFFECT OF ENTREPRENEURSHIP EDUCATION

#### 4.1 Abstract

*Despite the role of entrepreneurship education on business start-up intentions, information about its moderating effect on the antecedents of business start-up intentions remains scant. This chapter examines the antecedents of business start-up intentions and the moderating effects of entrepreneurship education on the antecedents of business start-up intentions. Specifically, it uses the Theory of Planned Behaviour (TPB) to assess the effects of attitudes, subjective norms, and perceived behavioural control on graduates' intentions to venture into business start-ups and how entrepreneurship education moderates their effects. The study uses a cross-sectional survey design and collects data from 391 technical graduates who graduated between 2012 and 2017 from technical universities and colleges who lived in Dar es Salaam during data collection. The data are analyzed using Partial Least Squares Path Modelling (PLS-PM) and descriptive statistics. The results show that perceived behavioural control (52.1%) was the strongest predictor of graduates' business start-up intentions, followed by attitudes (28.9%) and subjective norms (11.5%). Entrepreneurship education moderates the effect of attitudes ( $p < 0.001$ ) and perceived behavioural control ( $p < 0.001$ ) on business start-up intentions but not subjective norms ( $p > 0.05$ ). However, the study finds that only 30.2% of technical graduates' intentions transitioned into actual business start-ups, mainly due to limited start-up capital, perceived high taxes, unfriendly regulations, and low awareness of business support services. The study concludes that entrepreneurship education is an important intervention tool for fostering technical graduates' business start-up intentions. The study proposes some policy and practical implications for improving the quality and relevancy of entrepreneurship education in technical universities in Tanzania.*

**Keywords:** Business Start-up Intentions, Moderating Effect, Entrepreneurship Courses, Business Start-ups, Theory of Planned Behavior

## 4.2 Introduction

The world over, business start-ups are renowned for their potential to spearhead economic development by enhancing innovation, technological changes, and employment creation (Ashari *et al.*, 2022; Barba-Sanchez *et al.*, 2022). Policymakers and scholars should understand the antecedents of Business Start-up Intentions (BSI) among graduates to nurture their potential to venture into business start-ups (Malebana and Mothibi, 2022; Maheshwari *et al.*, 2022). Previous empirical studies such as García-Uceda and Murillo-Luna (2022), Cui and Bell (2022), and Otach *et al.* (2019) advocate that graduates' BSI is primarily determined by personal-level factors, such as personality and background factors. In recognizing that graduates' potential to pursue business start-ups stem from intentions, some scholars such as Hoang (2021), Otach *et al.* (2019), and Maresch *et al.* (2016) urge the administration of universities and policymakers to consider entrepreneurship education as a strategic tool for enhancing students' intentions to venture into business start-ups upon graduation.

In this context, entrepreneurship courses should be integrated across programmes despite originating in traditional colleges and universities with business and economics majors. Trend analysis shows that entrepreneurship courses are increasingly offered outside traditional business universities and colleges, particularly those majoring in Science, Technology, Engineering, and Mathematics (STEM) (Adelaja, 2021; Maresch *et al.*, 2016). These developments are no exception in Tanzania, where nearly all technical colleges and universities offer at least one entrepreneurship course (Fulgence, 2015; Mwasalwiba, 2012). However, Maheshwari *et al.* (2022) and Doang (2021) believe that graduates majoring in business and economics stand a better chance to benefit from entrepreneurship courses than their non-business counterparts. Similarly, entrepreneurial activities of scientific and technical graduates can create new and high-quality technology-oriented business ventures (Soomro and Shah, 2021; Åstebro *et al.*, 2012).

Evidence on the grounds shows that 71% of modern-day top 21<sup>st</sup>-century entrepreneurs conduct technology-related businesses, 9% do retail, 3% do entertainment, and 17% do other businesses (Legas, 2016). Besides the high technical graduates' potential to pursue business start-ups, entrepreneurial intentions studies frequently overlook the heterogeneity of graduates' educational

backgrounds. For example, Teixeira and Forte (2015) reported that 52% of studies addressed the entrepreneurial intentions of business students than only 3% of scientific and technical fields. Similarly, extant studies in Tanzania sampled respondents in folk development colleges (Nade, 2021), social works (Nyello *et al.*, 2015), business universities (Mangasini, 2015; Mwasalwiba, 2012); higher educational schools (Fulgence, 2015), and vocational schools (Rwamtoga, 2011). Some studies examined the teaching contexts, students' profiles, expectations, and outcomes of entrepreneurship education (Mwasalwiba, 2012), and the status of entrepreneurship courses in higher educational schools (Fulgence, 2015).

Moreover, some studies examined the effect of entrepreneurship education on graduates' general enterprising tendencies (Mangasini, 2015), entrepreneurial behaviours (Nyello *et al.*, 2015), students' entrepreneurial intentions (Nade, 2021), and entrepreneurial development (Rwamtoga, 2011). The analysis of the preceding discussion shows that many scholars primarily focused on graduates' entrepreneurial intentions in fields other than STEM. Given the narrow focus on technical graduates' entrepreneurial intentions in Tanzania, this study examines technical graduates' intentions to venture into business start-ups. The motivation for this research study stems from the fact that training programmes of technical universities and colleges are perceived to be potentially attributable to positive BSI more than programmes at other training institutions (Legas, 2016; Åstebro *et al.*, 2012).

Furthermore, since Fayolle's (2013) call on the need for studies using research designs that include potential moderators on the relationship between entrepreneurship education and its learning outcomes, fairly limited studies responded to this call in Tanzania. Entrepreneurship research biased toward technical graduates' BSI is less prominent in Tanzania, where technical universities and colleges have steadfastly introduced entrepreneurship as a compulsory course. In this regard, recent meta-analysis studies by Maheshwari *et al.* (2022) and Nabi *et al.* (2017) call for context-specific studies, particularly in the under-researched regions such as sub-Saharan Africa and Tanzania. Undertaking context-specific studies is critical since the effect of entrepreneurship education is contingent on contextual factors that significantly vary across regions (Ferreira *et al.*, 2016) and the educational backgrounds of graduates (Teixeira and Forte, 2015).

Given the knowledge gap, this study is an empirical attempt to partly address the following key research questions: (i) Which antecedents influence technical graduates' business start-up intentions? (ii) Does exposure to entrepreneurship education moderate the effect of graduates' attitudes towards business start-ups, subjective norms, and perceived behaviour on business start-up intentions? (iii) Do graduates' entrepreneurial intentions translate into business start-ups? (iv) Which factors hinder such a transition? The chapter is structured based on the orientation that after the introduction, the second section presents theoretical foundations and an empirical literature review from which research hypotheses are derived. The third section is the methodology, where research design, sample size, measurement scales, common bias methods, and data analysis are specified. The fourth section presents and discusses the research findings, followed by the conclusion and implications of the study findings to the theory, practice, and teaching.

### **4.3 Theoretical Grounding and Research Hypotheses**

#### **4.3.1 Antecedents of business start-up intentions**

To enhance graduates' potential to venture into business start-ups, it is critical to explore the antecedents of BSI, particularly among technical graduates (Soomro and Shah, 2021; Maresch *et al.*, 2016). While entrepreneurship education is often treated as one of the external antecedents of BSI, internal factors play equally important roles (Cui and Bell, 2022; Maheshwari, 2021; Bae *et al.*, 2017). Drawing on Ajzen's (1991) Theory of Planned Behaviour (TPB) and the meta-analysis study by Maheshwari *et al.* (2022), the intentions to perform a given behaviour are often predicted by three antecedents, namely: attitudes towards the behaviour, subjective norms, and perceived behavioural control. Some scholars group the internal antecedents of BSI into personal-level and background factors (García-Uceda and Murillo-Luna, 2022; Liñan and Fayolle, 2015; Liñán *et al.*, 2011).

Irrespective of these groupings, these factors are worth further analysis since they critically influence graduates' business start-up intentions. Attitudes towards start-ups (ATS) explain how individuals positively or negatively evaluate business start-ups (Malebana and Mothibi, 2022). Societal-subjective norms (SSN) measure the individual perception of the support received from society and the significant-close people when considering to venture into business start-ups (Entrialgo and Iglesias,



2016). Perceived behavioural control (PBC) is the belief about the ease or difficulty of a given task. It reflects how graduates believe to possess relevant knowledge, skills, and resources to start and operate business ventures (Duong, 2021). Though these antecedents predict BSI, their usefulness varies in diverse contexts (Entrialgo and Iglesias, 2016). As a deliberate and planned activity, business start-ups require personal preparedness, preceded by intentions (Kowang *et al.*, 2021, Shah *et al.*, 2020).

Built on the assumptions TPB, start business start-up intentions supposedly increase when graduates positively perceive (attitudes) that starting a business venture is within their ability and control (perceived behavioural control) and that it conforms to the societal norms and values (subjective norms). Despite the role of the antecedents of TPB, their influence on entrepreneurial intentions differs in various contexts (Ferreira *et al.*, 2016). As a result, Maheshwari (2021) concludes that the components of TPB substantially affect graduates' entrepreneurial intentions by accounting for 30% to 45% of variances to individual-level factors. Kowang *et al.* (2021) reported that the antecedents of TPB had stronger and more significant correlations with graduates' entrepreneurial intentions than personality traits.

Furthermore, previous empirical studies by Duong (2021), Vuong (2021), and Mwasalwiba (2012) jointly discovered that entrepreneurial attitudes and perceived behavioural control had a significant positive association with students' entrepreneurial intentions. However, these studies jointly suggest that subjective norms did not significantly influence graduates' entrepreneurial intentions. In light of the inconsistent findings about the influence of the antecedents of TPB on graduates' entrepreneurial intentions and the varying contexts under which previous studies were conducted, there is a need for further empirical analysis in different contexts. To this effect, this study tests the following null hypotheses:

H<sub>01</sub>. Attitudes toward business start-ups do not significantly directly influence the intentions of technical graduates to venture into business start-ups;

H<sub>02</sub>. Societal-subjective norms significantly do not directly influence the intentions of technical graduates to venture into business start-ups; and

H<sub>03</sub>. Perceived behavioural control directly does not significantly influence the intentions of technical graduates to venture into business start-ups.

#### **4.3.2 Moderating effect of entrepreneurship education**

Entrepreneurship education supposedly influences business start-up intentions through the antecedents of TPB as it equips students with entrepreneurial knowledge and skills to identify business opportunities to venture into business start-ups (Maheshwari *et al.*, 2022). Despite its role, certain theoretical and empirical variations persist because it is not established whether entrepreneurship education influences entrepreneurial intentions through the antecedents of TPB (Maheshwari, 2021; Otach *et al.*, 2019; Nabi *et al.*, 2017). Previous studies on the direct and indirect effects of entrepreneurship courses on graduates' entrepreneurial intentions produced varying findings, both significant and non-significant (Duong, 2021; Bouhalleb, 2020; Longva and Strand, 2020; Odia and Odia, 2019).

A study by Odia and Odia (2019) underscored that exposure to entrepreneurship courses had a moderate effect on university students' entrepreneurial intentions but adversely interacted with entrepreneurial attitudes, subjective norms, and perceived behavioural control. Longva and Strand (2020) reported a significant decrease in entrepreneurial intentions among students who studied entrepreneurship education than those who did not. The findings support Adelaja and Minai's (2018) and Bouhalleb's (2020) findings, which affirmed that entrepreneurship courses did not significantly affect students' entrepreneurial intentions. Entrialgo and Iglesias (2016) reported weak subjective norms and perceived behavioural control of graduates who studied entrepreneurship courses than those who did not. However, the effect of entrepreneurship courses on entrepreneurial intentions varies based on graduates' educational backgrounds (Teixeira and Forte, 2015).

For example, a study by Adelaja (2021) found a significantly weak relationship between entrepreneurship education and non-technical students' entrepreneurial intentions but no significant among technical students after entrepreneurship education. When the sample was combined, no significant relationship was reported between entrepreneurship education and entrepreneurial intentions. Maresch *et al.* (2016) reported that entrepreneurship courses had a significant influence on business students' entrepreneurial intentions but negative on non-business students. Duong

(2021) supports similar views and opines that the influence of entrepreneurship courses on entrepreneurial attitudes and perceived behavioural control on entrepreneurial intentions were much more substantial in economics and business management students than in science and engineering majors. Barba-Sanchez *et al.* (2022) affirmed that entrepreneurship education moderates the effect of entrepreneurial attitudes and perceived behavioural control on entrepreneurial intentions but not subjective norms.

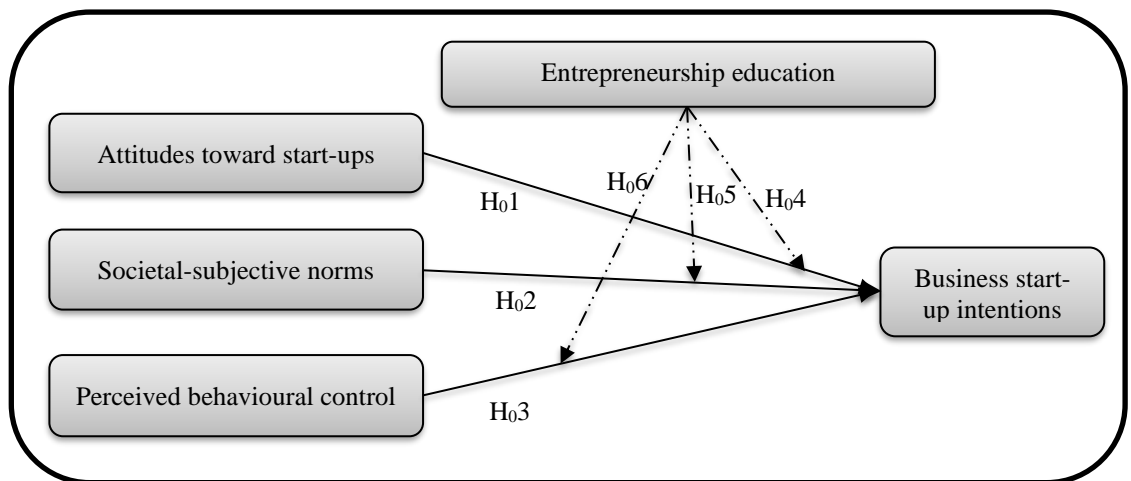
The implication of the reviewed studies suggests that the perceptions of significant people such as parents, friends, and society had a minor effect on entrepreneurial intentions. Moreover, García-Uceda and Murillo-Luna (2022) reported that although entrepreneurship courses moderate the effect of students' entrepreneurial attitude, subjective norms, and perceived behavioural control on entrepreneurial intentions; however, their effects were partial and not positive. The study by Duong (2021) underlines that entrepreneurship courses had a moderate effect on entrepreneurial attitudes and perceived behavioural control on graduates' entrepreneurial intentions but did not directly influence entrepreneurial intentions. This implies that entrepreneurship education had an indirect effect on graduates' entrepreneurial intentions through attitudes and perceived behavioural control.

Contrary to previous studies, Ashari *et al.* (2022) affirmed that exposure to entrepreneurship courses did not increase the strength of entrepreneurial attitudes, subjective norms, and perceived behavioural control on students' entrepreneurial intentions. Specifically, students who studied entrepreneurship courses had more positive entrepreneurial attitudes and intentions than those who didn't. In light of the contradicting results, this study sought to extend this discussion by innovatively treating entrepreneurship education as a moderator of the antecedents of TPB. The study draws the experience of technical graduates as the least studied cohort in a non-Western country, Tanzania. This study, therefore, hypothesizes that:

H<sub>04</sub>. Entrepreneurship education does not significantly moderate the effect of attitudes toward business start-ups on technical graduates' business start-up intentions;

H<sub>05</sub>. Entrepreneurship education does not significantly moderate the effect of societal-subjective norms on technical graduates' business start-up intentions; and

H<sub>06</sub>. Entrepreneurship education does not significantly moderate the effect of perceived behavioural control on technical graduates' business start-up intentions.



**Key:** —▶ Direct effect      - - - - -▶ Moderating effect

**Figure 6: Theoretical framework and hypotheses**

#### 4.4 Intention potential to translate into actual business start-ups

Despite the increased number of entrepreneurship literature, the potential of graduates' intention to translate into business start-ups has not adequately attracted scholarly interest (Cui and Bell, 2022). Many graduates in the Least Developing Countries (LDCs) seem to hold higher entrepreneurial intentions than those in developed countries (Iakovleva *et al.*, 2014). However, there is limited empirical evidence to verify whether such intentions translate into business start-ups (González-López *et al.*, 2020). Similarly, few studies explored factors hindering graduates from translating their intentions into business start-ups, especially in LDCs (Sharma, 2018; Iakovleva *et al.*, 2014). Graduates' potential to translate intentions into business start-ups is constrained by obstacles that take different facets (Katundu and Gabagambi, 2016), and the definition of such barriers is context-specific (Sharma, 2018).

Given the contextual variations, undertaking country-specific studies is inevitable, given the limited number of studies on obstacles to entrepreneurial intention in LDCs including Tanzania (Iakovleva *et al.*, 2014). In Tanzania, several studies attempted to examine obstacles for business start-ups among graduates. For example, Mwasalwiba *et al.* (2012) reported that inhibitive banking and taxation, inadequate access to start-up capital and trust, poor technology, corruption, and cheaply imported Chinese products constrain business start-ups. Wrong pedagogical methods, extended families, poor university programmes, limited business experience, and administrative systems hinder graduates' business start-ups (Katundu and Gabagambi, 2016). Similarly, the lack of access to start-up capital, negative attitude toward business start-ups, bureaucratic and corrupt systems, lack of entrepreneurial skills, poor marketing, and taxation hinder quantity surveyors' business start-up potentials (Emmanuel *et al.*, 2020).

Moreover, Mwantimwa *et al.* (2022) underscore that personal, sectoral, and macro-obstacles weaken students' intentions despite their strong intentions to venture into entrepreneurial activities. However, previous studies present the general obstacles for business start-ups drawing the experience of university graduates in the traditional business and social sciences. In this regard, it is important to examine the potential for technical graduates to translate their intentions into actual business ventures and the possible constraints towards that end. The study, therefore, examines the potential of technical graduates' intentions to translate into business start-ups and the obstacles hindering the realization of such a dream.

## **4.5 Methodology**

### **4.5.1 Study area, design, and sampling techniques**

This study was conducted in Dar es Salaam due to the following reasons. *First*, Dar es Salaam hosts many technical universities and colleges producing professionals in STEM, such as Dar es Salaam Institute of Technology (DIT), National Institute of Transport (NIT), St. Joseph University in Tanzania (SJUIT), College of Engineering and Technology (CoICT), Ardhi University (ARU), College of Engineering and Technology (CoET), and International Medical and Technological University (IMTU). This allows access to many technical graduates as the focal point of this study for assessing their experience with entrepreneurship education and business

start-up intentions. *Second*, Dar es Salaam is one of the fastest-growing cities in Africa, a country's commercial center, and the country's economic hub is expected to acquire a megacity status by 2030 (Todd *et al.*, 2019). It plays a key role in economic activities housing many business ventures, industries, and job opportunities.

*Third*, Dar es Salaam is characterized by economic disparities with a mixture of giant business ventures and start-ups. These diversities can serve as valuable insights into the challenges and opportunities graduates experience in an attempt to pursue business start-ups. For example, it implements several technical projects that require the services of technical graduates. Fourth, as the headquarters of official business registration through the Business Registration and Licensing Agency (BRELA), Dar es Salaam accounts for 89.8% of all collections (URT, 2017). This makes it a focal point of graduates' entrepreneurship and business start-up potential, thus an ideal study location for this study.

This study employed a cross-sectional survey design where technical graduates' perceptions of the antecedents of business start-up intentions were collected once (Ragab and Arisha, 2018). The design is chosen because it allows estimating the status of technical graduates' intentions to venture into business start-ups and their underlying predictors at a given time frame (2012-2017). This is valuable for assessing the present situation and providing relevant policy interventions. The design also allows comparisons of different groups within the population to identify patterns, trends, and variations in business start-up intentions (Saunders *et al.*, 2019). For example, the design allows a comparison of graduates' responses who studied entrepreneurship courses with those who did not to examine their differences in their business start-up intentions as a basic requirement for impact assessment (Fayolle, 2013).

This study involved 10, 981 population of technical graduates who graduated between 2012 and 2017 from DIT, CoET, and SJUIT living in Dar es Salaam during data collection. The choice of this time frame revolves around the fact that many technical colleges and universities integrated entrepreneurship courses in 2008 and the first batch entered the labour market in 2012s. In addition, many graduates are likely to venture into business start-ups five to ten years after graduation

(Mwasalwiba, 2012). Although graduates from SJUIT did not study entrepreneurship courses, they were included in comparing their perceptions of the antecedents of business start-up intentions against those studied as an essential requirement for impact assessment studies (Fayolle, 2013). Technical graduates were chosen because they hold high-quality business start-up potential more than graduates in other professions (Åstebro *et al.*, 2012). The study involved 384 respondents estimated through Cochran’s (1977) formula at 95% confidence and ± 5% precision level as follows:

$$\text{Sample size (n)} = \frac{z^2pq}{e^2} \dots\dots\dots(4.1)$$

Where n = sample size; z = confidence level at 95% (a standard value of 1.96); p = target population (used a standard value of 0.5 since graduates living in Dar es Salaam were not known); q = (1.0 – p); and e = Margin of error at 5% (standard value of 0.05).

$$\text{Therefore, } n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = \frac{3.8416 \times 0.25}{0.0025} = 384.16 \approx 384$$

Since the formula merely estimates a minimum sample size, 15% of the sample was spared to compensate for non-response potentials following Israel’s (1992) recommendation. Eventually, the sample size was 442. The study used the formula by Fisher *et al.* (1991) to estimate the sub-sample for each university as follows:

$$\text{Sample Size per University} = \frac{\text{Estimated Sample Size (n)}}{\text{Total Population (N)}} \times \text{Population per University (N)} \dots\dots\dots(4.2)$$

From equation (4.2), the sub-sample for each university was computed as follows:

$$\text{CoET} = \frac{384}{10,981} \times 2,103 = \mathbf{73}, \text{ DIT} = \frac{384}{10,981} \times 3,818 = \mathbf{134}, \text{ SJUIT} = \frac{384}{10,981} \times 5,060 = \mathbf{177}$$

**Table 17: Sub-sample size per university/college**

University	Population	Sub-sample	Sub-sample after 15%	Percent (%)
CoET	2,103	73	84	19.2
DIT	3,818	134	154	34.7
SJUIT	5,060	177	204	46.1
<b>Total</b>	<b>10,981</b>	<b>384</b>	<b>442</b>	<b>100</b>

In Tanzania, technical graduates must register through professional associations based on their professions, such as the Engineers' Registration Board (ERB), the Contractors Registration Board (CRB), and the Architects and Quantity Surveyors Registration Board (AQRB). Using the database of the professional bodies, selected respondents' contact information and location were obtained from the respective professional body registered. The government recruits engineering graduates under the Structured Engineering Apprenticeship Programme (SEAP) for three years to acquire hands-on professional experience (URT, 2005). During data collection, many respondents were still working under SEAP, making it easy to access and confine them to this study. The study used a simple random sampling technique using a random number Table in respondents' selection to avoid potential selection bias. With the support of enumerators, 391 copies of the questionnaire were successfully collected out of 442 issued questionnaires. The collected questionnaires correspond to 88.5% completion rate, which is above the threshold level of 70% for a survey study (Nulty, 2008).

#### **4.5.2 Measurement scale**

The study employed a self-administered survey questionnaire to solicit responses from respondents whose items were adopted from existing literature with proven reliability. To confirm the questionnaire in the study context, the questionnaire was piloted to 20 technical graduates in Moshi District who were excluded from the final analysis. The observed anomalies from the pilot exercise were accommodated before embarking on full data collection. The strength of agreements or disagreements was measured through a five-point Likert scale using generic continuum responses ranging from Strongly Agree (=5) to Strongly Disagree (=1) due to inherent advantages over other scales (Johns, 2010). The Likert scale has the potential to reduce respondents' frustration and enhance completion rate, response quality, and reliabilities (Babakus and Mangold, 1992; Jenkins and Taber, 1977).



**Table 18: Measurement scales**

Construct	Measurement items	Source
Attitudes towards start-ups	<ol style="list-style-type: none"> <li>1. A career as an entrepreneur is attractive to me.</li> <li>2. If I had the resources, I would choose to start my business venture.</li> <li>3. I would be satisfied if I became an entrepreneur.</li> <li>4. Among the options, I would instead choose to be an entrepreneur.</li> </ol>	Doang, 2021; Liñán <i>et al.</i> , 2009
Subjective norms	<ol style="list-style-type: none"> <li>1. My closest family would approve if I decided to start a business venture.</li> <li>2. My closest friends would approve if I decided to start a business venture.</li> <li>3. If I decided to start a business venture, people who are important to me would approve of that decision.</li> </ol>	Doang, 2021; Liñán <i>et al.</i> , 2011
Perceived behavioural control	<ol style="list-style-type: none"> <li>1. To start a new business and keep it working would be easy for me.</li> <li>2. I can control the creation process of a new business venture.</li> <li>3. I understand the practical details of starting a business venture.</li> <li>4. I know how to develop an entrepreneurship project.</li> <li>5. If I tried to start a business, I would have a high chance of succeeding.</li> </ol>	Doang, 2021; Liñán <i>et al.</i> , 2011
Business start-up intentions	<ol style="list-style-type: none"> <li>1. I have seriously thought of becoming an entrepreneur.</li> <li>2. My professional goal is to become an entrepreneur.</li> <li>3. I am ready to do anything to become an entrepreneur.</li> <li>4. I have a serious intention to start a business someday in the future.</li> <li>5. The probability of becoming an entrepreneur is high.</li> <li>6. If I had the opportunity and resources, I would start my own business.</li> </ol>	Doang, 2021; Liñán <i>et al.</i> , 2011

### 4.5.3 Common method bias

According to Kock *et al.* (2021), Common Method Bias (CMB) is inherent in most behavioural studies, especially when a similar survey questionnaire is used to collect data from similar respondents in the exact location. To minimize CMB potential, both statistical and non-statistical measures were used. The non-statistical measures include avoiding double-barreled questions, properly defining key concepts, assuring anonymity, and explaining that, no right or wrong answers (Babakus and Mangold, 1992). Harman's one-factor is a statistical test used to assess the potential bias by entering all the items of the constructs as one factor in the Principal Component Analysis (PCA). Harman's one-factor test result produced 34.7%, below the threshold level of 50% (Kock *et al.*, 2021). This result entails that CMB was not challenging and had minimal implications on the empirical results.

### 4.5.4 Data analysis approaches

The study employed a second-generation technique known as the Partial Least Squares Path Modelling (PLS-PM) technique for testing the direct effect of the

antecedents of TPB on business start-up intentions. Similarly, PLS-PM was used to test how entrepreneurship education moderates the effect of the antecedents of TPB on business start-up intentions. The significance of the path coefficients was estimated using Smart PLS software version 3.6 (Ringle *et al.*, 2015). PLS-PM can simultaneously test the direct and indirect relationship of the constructs measured through multiple items (Hair *et al.*, 2021; Henseler *et al.*, 2016). PLS-PM is proven to be vigorously used by over 90% of manuscripts published for the past four years on entrepreneurship (Manley *et al.*, 2020). Descriptive statistics examined technical graduates' business start-up attempts and the potential obstacles drawing back their efforts to translate their intentions into actual business start-ups.

## **4.6 Results and Discussions**

### **4.6.1 Measurement model assessment**

The study employed Cronbach's Alpha ( $\alpha$ ), Composite Reliability (CR), Jöreskog's Rho\_A, and Factor Loading (FL) to test the reliability and validity of the constructs. The reflective measurement model in Table 18 shows that all the constructs were reliable with  $\alpha$ , CR, Rho\_A, and FL ( $\geq .70$ ) (Hair *et al.*, 2021; Chin, 1998; Cronbach, 1951). Both items and constructs reflect adequate internal consistency reliability for further analysis. Moreover, the study uses Average Variance Extracted (AVE) and individual indicator reliability to assess constructs' convergent validity. The AVE values for all the constructs attained a threshold level  $\geq 0.50$  (Hair *et al.*, 2019, 2021). Impliedly, the constructs can interpret over 50% of the variance of its items, confirming the constructs' convergent validity (Manley *et al.*, 2020).

**Table 19: Construct reliability and validity test**

Construct	Items	Loadings	VIF	CR	Rho_A	$\alpha$	AVE
ATS	ATS_1	0.866	2.225	0.899	0.862	0.850	0.691
	ATS_2	0.734	1.518				
	ATS_3	0.849	2.133				
	ATS_4	0.869	2.279				
SSN	SSN_1	0.912	2.559	0.929	0.898	0.886	0.813
	SSN_2	0.871	2.288				
	SSN_3	0.922	3.077				
PBC	PBC_1	0.836	2.149	0.920	0.894	0.892	0.698
	PBC_2	0.845	2.454				
	PBC_3	0.870	3.091				
	PBC_4	0.834	2.565				
	PBC_5	0.790	1.810				
BSI	BSI_1	0.738	1.726	0.920	0.896	0.895	0.658
	BSI_2	0.858	2.675				
	BSI_3	0.814	2.181				
	BSI_4	0.780	1.974				
	BSI_5	0.819	2.239				
	BSI_6	0.852	2.607				

**Key:** Variance Inflation Factor (VIF), Composite Reliability (CR), Jöreskog's Coefficient (Rho\_A), Cronbach's Alpha ( $\alpha$ ), and Average Variance Extracted (AVE).

Moreover, the study uses the Fornell-Larcker criterion, cross-loadings, and the heterotrait-monotrait ratio (HTMT) for assessing the discriminant validity of the measurement model. Cross-loadings explain how strongly each indicator loads on the other constructs. As a rule of thumb, the outer loadings should be above all its loadings on different constructs. Table 18 presents the results that the outer loadings were more significant than their loadings on other constructs, suggesting the absence of a discriminant validity challenge. The study also used the Fornell-Larcker criterion to assess discriminant validity by comparing the square root of the AVE values with the latent variable correlations (Table 20).

**Table 20: Discriminant validity analysis**

<b>Constructs</b>	<b>ATS</b>	<b>BSI</b>	<b>PBC</b>	<b>SSN</b>
<i>Fornell and Larcker Criteria</i>				
ATS	<b>0.831</b>			
BSI	0.638	<b>0.811</b>		
PBC	0.575	0.744	<b>0.835</b>	
SSN	0.426	0.495	0.494	<b>0.902</b>
<i>Cross-loading</i>				
ATS_1	<b>0.866</b>	0.579	0.486	0.371
ATS_2	<b>0.734</b>	0.445	0.381	0.282
ATS_3	<b>0.849</b>	0.503	0.487	0.312
ATS_4	<b>0.869</b>	0.578	0.545	0.437
BSI_1	0.497	<b>0.738</b>	0.619	0.375
BSI_2	0.525	<b>0.858</b>	0.646	0.461
BSI_3	0.560	<b>0.814</b>	0.585	0.450
BSI_4	0.487	<b>0.780</b>	0.575	0.342
BSI_5	0.506	<b>0.819</b>	0.606	0.381
BSI_6	0.525	<b>0.852</b>	0.587	0.394
PBC_1	0.542	0.671	<b>0.836</b>	0.438
PBC_2	0.454	0.588	<b>0.845</b>	0.395
PBC_3	0.429	0.628	<b>0.870</b>	0.354
PBC_4	0.420	0.551	<b>0.834</b>	0.462
PBC_5	0.542	0.652	<b>0.790</b>	0.415
SSN_1	0.393	0.500	0.439	<b>0.912</b>
SSN_2	0.326	0.395	0.442	<b>0.871</b>
SSN_3	0.430	0.435	0.457	<b>0.922</b>
<i>Heterotrait and Monotrait Ratio (HTMT)</i>				
ATS				
BSI	<b>0.727</b>			
PBC	0.652	<b>0.828</b>		
SSN	0.484	0.550	<b>0.557</b>	

The rule of thumb requires that the square root of each construct's AVE values be above its highest correlation with other constructs (Fornell and Larcker, 1981). The results in Table 20 indicate that all constructs achieved the discriminant validity criterion where the square of each construct's AVE values is above the correlation that the construct had with other constructs (Fornell and Larcker, 1981). In addition, the study uses Heterotrait-Monotrait (HTMT) to assess discriminant validity. HTMT is attained when it meets the threshold level ( $\leq 0.850$ ) (Hair *et al.*, 2019; Henseler *et al.*, 2016). The results in Table 20 show that all HTMT values had a correlation strength of ( $\leq 0.850$ ). The analysis of the reflective measurement model generally suggests that the scales display acceptable psychometric properties suitable for further analysis.

#### 4.6.2 Structural Model Assessment

The study used structural model assessment to assess the relationship between latent constructs and validate the conceptual framework (Hair *et al.*, 2021). The inner model evaluation involved path analysis of the relationship between latent exogenous and endogenous constructs. The model variance explained ( $R^2$ ) advocates a sufficient explanatory power of antecedents on BSI with  $R^2 = 0.629$  (ATS = 0.289, SSN = 0.115, PBC = 0.521). Impliedly, PBC (52.1%), ATS (28.9%), and SSN (11.5%) account for 62.9% of the variances in BSI. The remaining 37.1% of variances in BSI could be accounted for by other factors that were not studied by this study. The 62.9% of variance explained is fairly higher than the 30% reported by Mwasalwiba (2012) in Tanzania, 39% by Ndofirepi and Rambe (2017) in Zimbabwe, and 53% by Shah *et al.* (2020) in Oman. A meta-analysis study by Maheshwari (2021) concludes that the antecedents of TPB account for 30-45% of the variance in entrepreneurial intentions.

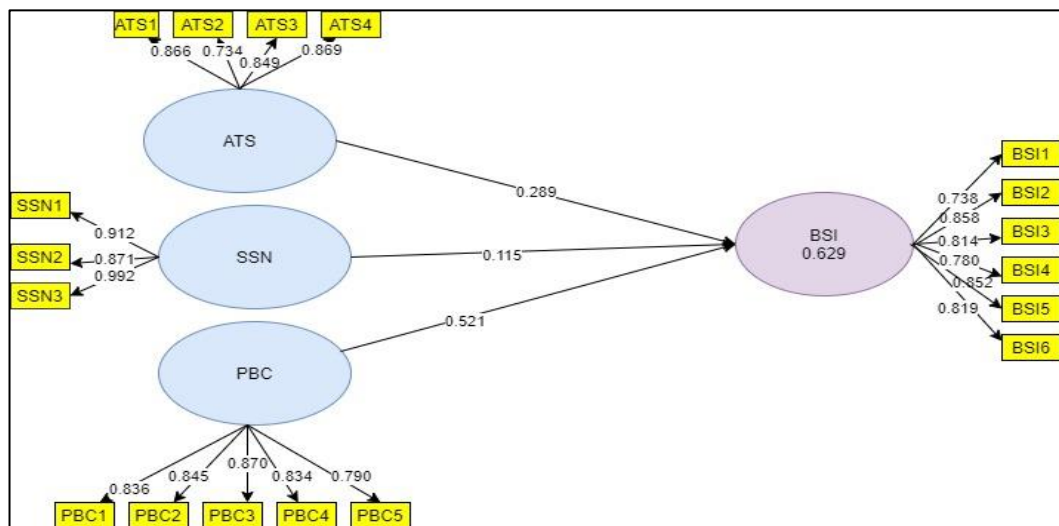


Figure 7: A path analysis of the antecedents of TPB

#### 4.7 Hypothesis testing

##### 4.7.1 Direct paths of the antecedents of TPB on business start-up intentions

Table 21 presents the direct paths and their corresponding p-values of the antecedents of TPB on BSI. The findings show that ATS ( $\beta = 0.289$ ,  $p < 0.05$ ), SSN ( $\beta = 0.115$ ,  $p < 0.05$ ), and PBC ( $\beta = 0.521$ ,  $p < 0.001$ ) had a direct positive significant effect on BSI. These findings support null hypotheses  $H_{01}$ ,  $H_{02}$ , and  $H_{03}$ . This implies that attitudes toward business start-ups, subjective norms, and perceived behavioural control had a positive and significant influence on technical graduates' intentions to

venture into business start-ups. Among these predictors, perceived behavioural control (52.1%) is the strongest predictor of technical graduates' intentions to venture into business start-ups, followed by attitudes toward business start-ups (28.9%) and subjective norms (11.5%). Technical graduates with positive attitudes toward business start-ups, subjective norms, and perceived behavioural control have a higher potential to venture into business start-ups compared to those with negative perceptions. Entrepreneurship education should foster students' positive attitudes toward business start-ups, subjective norms, and perceived behavioural control to enhance their potential to pursue business start-ups upon graduation.

**Table 21: Direct paths of the antecedents of TPB**

Hypotheses	Path	Path coefficient	t-statistics	p-value	Supported
H <sub>01</sub>	ATS → BSI	0.289	3.017	0.003**	Yes
H <sub>02</sub>	SSN → BSI	0.115	2.002	0.046*	Yes
H <sub>03</sub>	PBC → BSI	0.521	7.215	***	Yes

Legend: \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

The findings support previous studies by Malebana and Mothibi (2022), Maheshwari (2021), and Vuong (2021), which confirm that attitudes toward business start-ups, social pressure about business start-ups, and perceived behavioural control are the main predictors of graduates' intentions to venture into business start-ups. Similarly, the findings support the TPB assumptions that business start-up behaviour is a function of attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991). However, the findings contradict Kowang' *et al.* (2021), who reported that entrepreneurial attitudes were the major predictor of Malaysian students' entrepreneurial intentions. Moreover, the findings contradict Longva and Strand's (2020) and Bouhaleb's (2020) findings which reported a non-significant and significant decrease in entrepreneurial attitudes and perceived behavioural control respectively on graduates' entrepreneurial intentions. Contrary, some studies found that subjective norms do not significantly enhance graduates' entrepreneurial intentions (Malebana and Mothibi, 2022; Duong, 2021; Vuong, 2021; Odia and Odia, 2019; Mwasalwiba, 2012). Though the study found SN had a positive and significant effect on technical graduates' BSI, its effect is very minimal.

#### 4.7.2 Moderating effect analysis of entrepreneurship education

To capture the moderating effect of entrepreneurship education, two models with exposure and without exposure were jointly run to compare path coefficients and  $p$ -

values between graduates with and without exposure. Figures 8 and 9 respectively present the path analysis of the model with and without exposure to entrepreneurship education. Figure 8 indicates that the model with exposure to entrepreneurship education as moderator had a predictive accuracy of  $R^2 = 54.4\%$  (ATS = 31.8%, SSN = 4.5%, PBC = 49.3%). However, without entrepreneurship education, the model predictive power dropped from  $R^2 = 54.4\%$  to  $R^2 = 46.5\%$  (ATS = 47.1%, SSN = 3.4%, PBC = 33.9%). The changes explain how entrepreneurship education moderates the effect of attitudes toward business start-ups, subjective norms, and perceived behavioural control on explaining the intentions of technical graduates to venture into business start-ups. This implies that without entrepreneurship education, the model predictive power of the antecedents stands for only 46.5% of the variance in business start-up intentions (Figure 9).

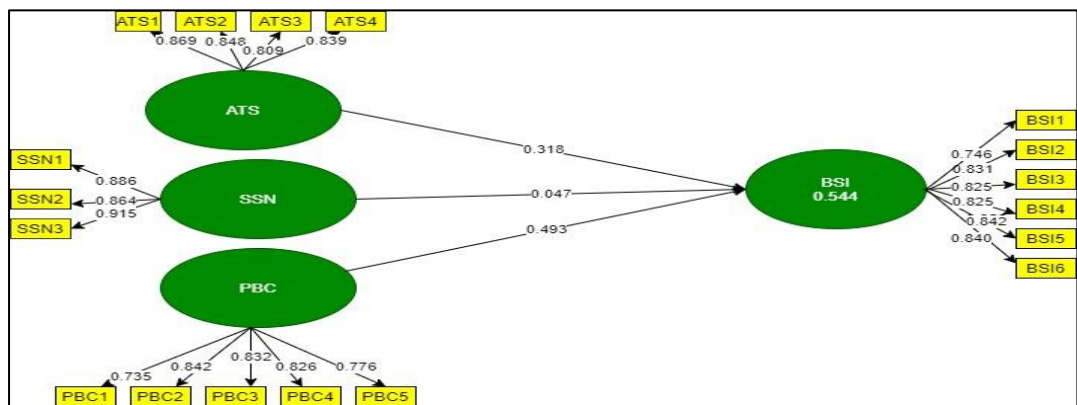


Figure 8: A path model with exposure

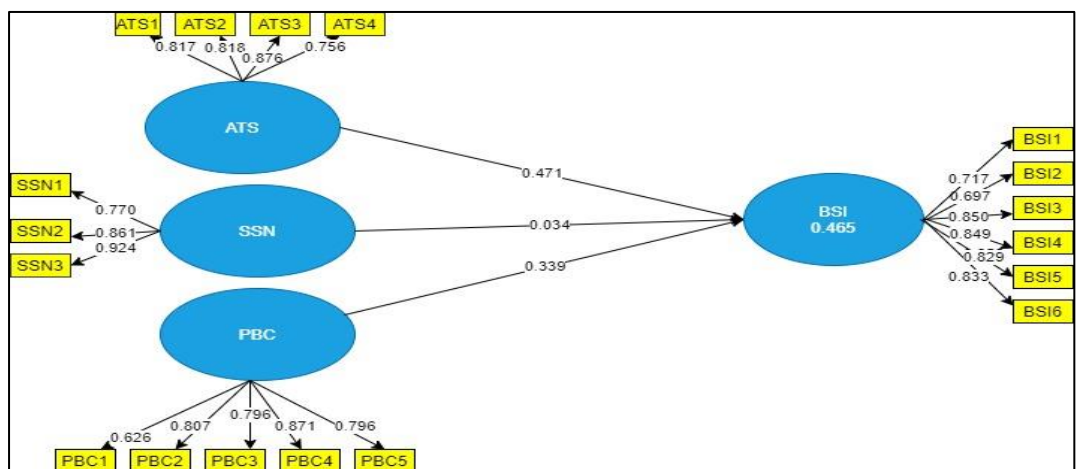


Figure 9: A path model without exposure

Table 22 indicates the effect of attitudes toward business start-ups on business start-up intentions in the model with exposure ( $\beta = 0.318, p < 0.01$ ) and without exposure ( $\beta = 0.471, p < 0.001$ ). Although the  $p$ -values in both models were significant and supported hypothesis H<sub>04</sub>, the path coefficient of the model with exposure (31.8%) is fairly lower than that without exposure (47.1%). The difference could entail that besides formal entrepreneurship education, informal entrepreneurship exposure is critical in this regard (Malebana and Mothibi, 2022). Consistent with Maheshwari (2021), Kowang *et al.* (2021), and Doang (2019) the findings confirm that entrepreneurship education is an effective strategy for equipping learners with the entrepreneurial knowledge and skills critical to enhancing their attitudes toward business start-ups. Entrepreneurship education significantly positively moderates the effect of attitudes toward business start-ups on business start-up intentions.

**Table 22: Comparing the moderated and non-moderated paths**

Hyp.	Path	With exposure to EE			Without exposure to EE			Supported
		R <sup>2</sup> = 0.544			R <sup>2</sup> = 0.465			
		$\beta$	t-stat.	p-values	$\beta$	t-stat.	p-values	
H <sub>04</sub>	ATS→BSI	0.318	2.970	0.003**	0.471	6.209	***	Yes
H <sub>05</sub>	SSN→BSI	0.047	0.185	0.853	0.034	0.437	0.662	No
H <sub>06</sub>	PBC→BSI	0.493	5.750	***	0.339	3.863	***	Yes

**Legend:** \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Moreover, the effect of subjective norms on graduates' business start-up intentions was not significant in both models with and without exposure ( $p > 0.05$ ); thus, failed to support the null hypothesis H<sub>05</sub>. This entails that entrepreneurship education did not strengthen the perceptions of technical graduates on the opinions of significant-close people such as parents, friends, business associates, and the general society in predicting their intentions to venture into business start-ups. The effect of perceived behavioral control on business start-up intentions was significant in both models with exposure ( $\beta = 0.493, p < 0.001$ ) and without exposure to entrepreneurship education ( $\beta = 0.339, p < 0.001$ ). The findings support hypothesis H<sub>06</sub> because the path coefficients of the perceived behavioural control in the model with exposure (49.3%) were considerably greater than that in the model without exposure (33.9%), and their corresponding  $p$ -values were significant in both models.

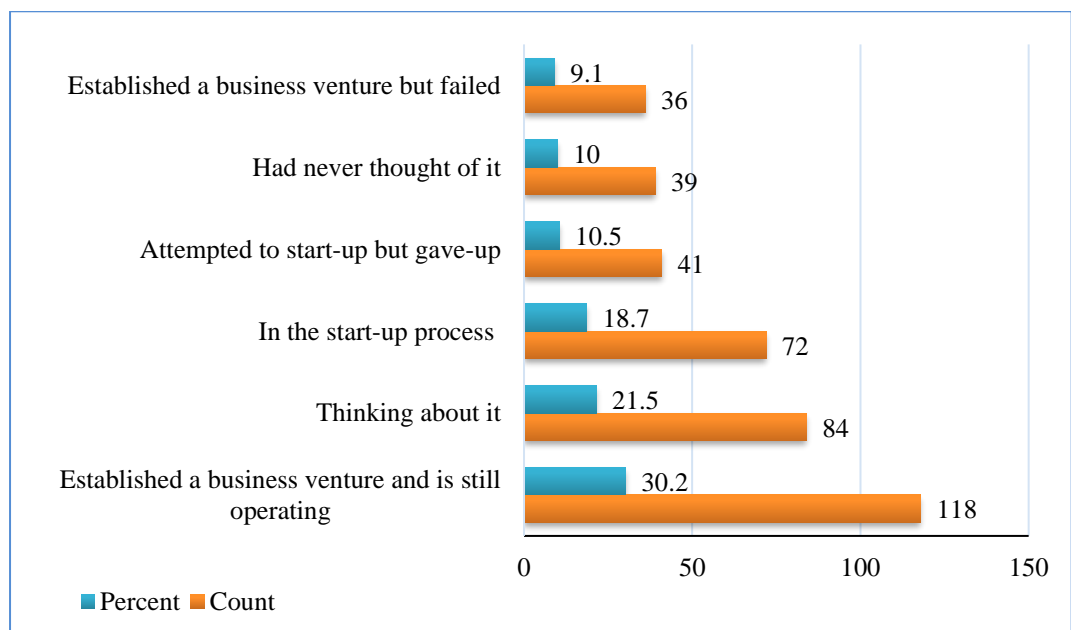
This study empirically confirms how entrepreneurship education significantly moderates the effect of attitudes toward business start-ups and perceived behavioural



control on technical graduates' business start-up intentions. The findings are consistent with García-Uceda and Murillo-Luna (2022), who reported that entrepreneurship courses moderate the effect of students' entrepreneurial attitudes, subjective norms, and perceived behavioural control on entrepreneurial intentions. However, the findings are contrary to Kowang *et al.* (2021), who found that entrepreneurship courses had lower correlation coefficients with entrepreneurial intentions among studied antecedents. The findings also contradict those of Maheshwari (2021), Doang (2019), and Malebana and Mothibi (2022), who found that entrepreneurship courses did not moderate the effect of entrepreneurial attitudes but positively moderated the effect of perceived behavioural control on graduates' entrepreneurial intentions.

#### 4.7.3 Potential of intentions to translate into business start-ups

Besides the direct and moderating effect of entrepreneurship education, the study examines the extent to which the intentions of technical graduates translate into actual business ventures and the possible factors hindering such transition. Figure 10 presents the attempts made to translate their intentions into actual business start-ups. The study uses descriptive statistic techniques to examine the attempts graduates make to translate their intentions to venture into business start-ups and the constraints drawing them back toward that end.

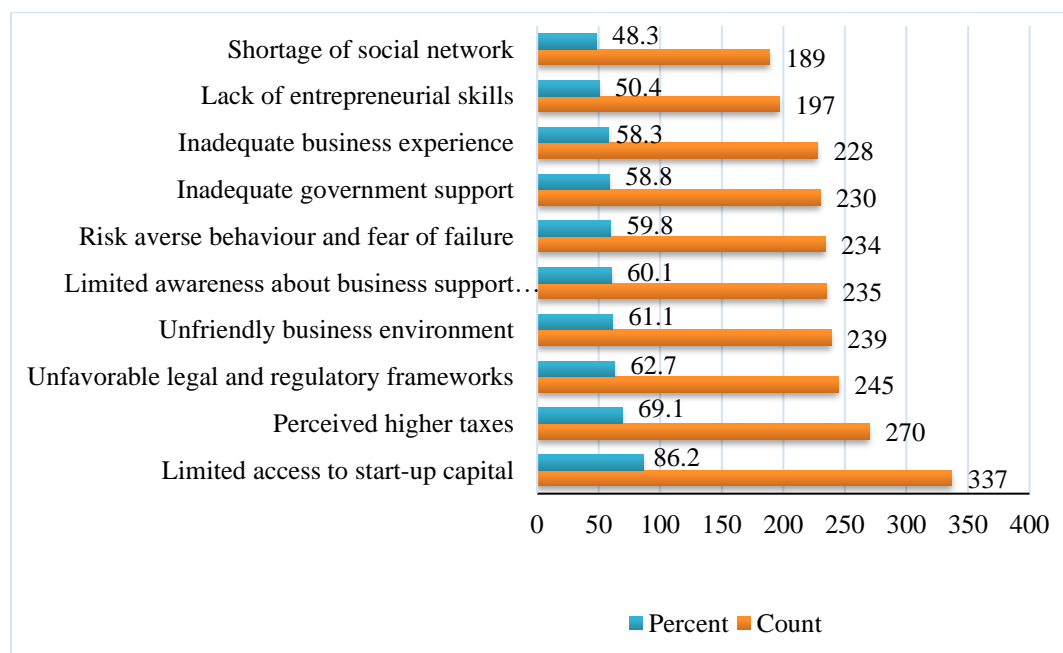


**Figure 10: Business start-ups attempt**

Figure 10 shows that 10% of technical graduates never thought of business start-ups, 9.1% thought of it but never took action, and 10.5% tried to start a business venture but gave up. Similarly, 9.2% of graduates tried to start business ventures but failed, 18.7% were in the process of starting a business venture, and 30.2% had established business ventures that were still operating. Although 30.2% of business start-ups by technical graduates is low compared to the investment made, it is fairly higher than the 22.7% of business start-ups of traditional business graduates reported by Mangasini (2015). This partly supports Legas's (2016) and Åstebro's *et al.* (2012) assertion that technical graduates have higher business start-up potential than graduates in other specialties. The implication emanating from these findings is that nearly 70% of technical graduates depend on ready-made job opportunities. Partly, the findings contribute to the limited empirical evidence about the extent to which students' intentions translate to actual business start-ups (González-López *et al.*, 2020).

#### 4.7.4 Obstacles hindering intention to transition into business start-ups

Lastly, the study examines factors constraining technical graduates from translating their start-up intentions into actual business start-ups. Figure 11 presents the factors constraining the potential of technical graduates to translate their intentions into actual business start-ups.



**Figure 11: Business start-up obstacles**

Figure 11 shows that although technical graduates had an interest in business start-ups, attempts to transform their intentions into actual business start-ups are obstructed by several factors. The major constraints include limited access to start-up capital (86.2%), perceived high taxes (69.1%), unfavorable regulatory frameworks (62.7%), unfriendly business environment (61.1%), and graduates' limited awareness of where and how to access business support services (60.1%), among others. These findings support previous studies which reported that an inhibitive taxation system (Mwasalwiba *et al.*, 2012), limited business experiences (Katundu and Gabagambi, 2016), access to start-up funds (Emmanuel *et al.*, 2020) are some of the constraints for graduates' potential to venture into business start-ups. Creating a friendly business start-up ecosystem motivates many university graduates to pursue business start-ups to get rid of the unemployment challenge.

#### **4.8 Conclusions and Recommendations**

This study sought to examine the antecedents of technical graduates' business start-up intentions and how entrepreneurship education moderates the effect of attitudes toward business start-ups, subjective norms, and perceived behavior on business start-up intentions. The study concludes that besides the direct effect of attitudes toward start-ups, subjective norms, and perceived behavioural control on business start-up intentions, entrepreneurship education is a critical factor that significantly moderates their effect on technical graduates' intentions to venture into business start-ups. However, entrepreneurship education moderates only the attitudes and perceived behavioural control, not subjective norms. Technical colleges and universities should use experiential pedagogies in the delivery of entrepreneurship courses to capitalize on developing perceived behavioural control and attitudes towards start-ups to enhance business start-up intentions. Since entrepreneurship does not moderate the effect of subjective norms on business start-up intentions, successful entrepreneurs should be encouraged to document their entrepreneurial journey to draw lessons and motivate young graduates to emulate their path. The potential of graduates' intentions to translate into actual business ventures is 30.2% due to several challenges, such as limited start-up capital, high taxes, unfriendly regulatory frameworks, and little awareness of business support services. Local government authorities should strive to improve the business start-up ecosystem for graduates to pursue business start-ups to minimize unemployment challenges.

#### **4.9 Theoretical and policy implications**

These findings present several theoretical and practical implications for entrepreneurship scholars and policymakers in Tanzania. *First*, since entrepreneurship education did not moderate the effect of societal subjective norms on business start-up intentions, technical universities should involve experienced and successful entrepreneurs in delivering entrepreneurship courses to strengthen technical graduates' perceived social and cultural norms. *Second*, LGAs should encourage successful entrepreneurs to document their success stories and publish them through social media and community radios to entice university graduates as role models. Publicizing success stories of successful entrepreneurs could dispel the negative perceptions of societies towards self-employment and entrepreneurship careers in general. *Third*, the government, in collaboration with industries and other stakeholders, should create a supportive institutional environment in terms of financial, legal, and regulatory support to enhance the potential of university graduates to venture into business start-ups to minimize unemployment challenges.

## REFERENCES

- Cui, J., & Bell, R. (2022). Behavioural entrepreneurial mindset: How entrepreneurial education activity impacts entrepreneurial intention and behaviour. *The International Journal of Management Education*, 20(2): 1-16. 100639. DOI: [10.1016/j.ijme.2022.100639](https://doi.org/10.1016/j.ijme.2022.100639).
- Liñán, F., Santos, F. J., & Fernández, J. (2011). The influence of perceptions on potential entrepreneurs. *International Entrepreneurship Management Journal*, 7: 373 - 390.
- Adelaja, A. A. (2021). Entrepreneurial education exposure: a comparative investigation between technical and non-technical higher education. *Journal of Small Business and Enterprise Development*, 28(5): 711-723. DOI: <https://doi.org/10.1108/JSBED-12-2020-0429>.
- Adelaja, A. A., & Minai, M. S. (2018). Students' entrepreneurial intention changes due to entrepreneurial education exposure: the experimental design approach. *Journal of Entrepreneurship Education*, 21(4): 1-4. DOI: <https://doi.org/10.13140/RG.2.2.35573.83688>.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*, 50: 179-211. DOI: [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
- Åstebro, T., Bazzazian, N., & Braguinsky, S. (2012). Start-ups by recent university graduates and their faculty: Implications for university entrepreneurship policy. *Research Policy*, 41: 663–677. DOI: <https://doi.org/10.1016/j.respol.2012.01.004>.
- Babakus, E., & Mangold, W. G. (1992). Adapting the SERVQUAL scale to hospital services: an empirical investigation. *Health Service Research*, 26(6): 767–786.
- Bae, T. J., Qian, S., Miao, C., & Fie, F. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 38(2):217-254. DOI: <https://doi.org/10.1111/etap.12095>.
- Barba-Sánchez, V., Mitre-Aranda, M., & Brío-González, J. D. (2022). The entrepreneurial intention of university students: An environmental perspective. *European research on management and business economics*, 28(2):100-184. DOI: <https://doi.org/10.1016/j.iedeen.2021.100184>.

- Belitski, M., Aginskaja, A., & Marozau, R. (2019). Commercializing university research in transition economies: technology transfer offices or direct industrial funding? *Research Policy*, 48(3): 601-615. DOI: <https://doi.org/10.1016/j.respol.2018.10.011>.
- Bouhaleb, A. (2020). Antecedents of entrepreneurial intention: the moderating effect of the family entrepreneurial background. *Journal of Enterprising Culture*, 28(2): 147–169. DOI:[10.1142/S0218495820500077](https://doi.org/10.1142/S0218495820500077).
- Chin, W. W. (1998). The partial least squares approach for structural equation modelling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-236). London: Lawrence Erlbaum Associates.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3), 297-334.
- Duong, C. D. (2021). Exploring the link between entrepreneurship education and entrepreneurial intentions: the moderating role of educational fields. *Education+Training*, 0040-0912. DOI:[10.1108/ET-05-2021-0173](https://doi.org/10.1108/ET-05-2021-0173).
- Emmanuel, B. C., Denis , N. G., Tesha, A. K., & Mwaitenda, S. S. (2020). Barriers and motives for entrepreneurship in building construction industry in Dar-es-Salaam, Tanzania. *International Journal of Construction Engineering and Management*, 9(2): 45-62. DOI:[10.5923/j.ijcem.20200902.02](https://doi.org/10.5923/j.ijcem.20200902.02).
- Entrialgo, M., & Iglesias, V. (2016). The moderating role of entrepreneurship education on the antecedents of entrepreneurial intention. *International Entrepreneurship Management Journal*, 1-25. DOI:[10.1007/s11365-016-0389-4](https://doi.org/10.1007/s11365-016-0389-4).
- Fayolle, A. (2013). Personal views on the future of entrepreneurship education. *Entrepreneurship & Regional Development*, 25:7-8, 692-701. DOI:[10.1080/08985626.2013.821318](https://doi.org/10.1080/08985626.2013.821318).
- Ferreira, A. D., Loiola, E., & Gondim, S. M. (2016). Individual and contextual predictors of entrepreneurial intention among undergraduates: a literature review. *Cad. EBAPE.BR*, 15(2): 293-308. DOI: <http://dx.doi.org/10.1590/1679-395159595>.
- Fisher, A. A., Laing, J. E., Stoeckel, J. E., & Townsend, J. (1991). *Handbook for family planning operations research design*. New York: Population Council.
- Fornell, C. G., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing*

*Research*, 9(4): 440-452. DOI: <https://doi.org/10.1177/002224378101800104>.

- Fulgence, K. (2015). Assessing the status of entrepreneurship education courses in higher education learning institutions: the case of Tanzania education schools. *Education + Training*, 57(2): 239 -258. DOI: <https://doi.org/10.1108/ET-05-2013-0063>.
- García-Uceda, E., & Murillo-Luna, J. L. (2022). Determinant factors in entrepreneurial intention among Social Work degree students: the moderating effect of entrepreneurship education. *Social Enterprise Journal*, 18(4): 563-584. DOI: <https://doi.org/10.1108/SEJ-07-2021-0061>.
- González-Lópe, M. J., Pérez-López, M. C., & Rodríguez-Ariza , L. (2020). From potential to early nascent entrepreneurship: the role of entrepreneurial competencies. *International Entrepreneurship and Management Journal*, 17:1387–1417. [<https://link.springer.com/article/10.1007/s11365-020-00658-x>]. Visited on 16/04/2021.
- Hair J., J. F., Tomas, G., Hult, M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. A Workbook*. DOI: <https://doi.org/10.1007/978-3-030-80519-7>.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1): 2-24. DOI: [10.1108/EBR-11-2018-0203](https://doi.org/10.1108/EBR-11-2018-0203).
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the Academic Marketing Science*, 43:115–135. DOI:[10.1007/s11747-014-0403-8](https://doi.org/10.1007/s11747-014-0403-8).
- Hoang, G., Le, T. T., Tran, A. A., & Du, T. (2021). Entrepreneurship education and entrepreneurial intentions of university students in Vietnam: the mediating roles of self-efficacy and learning orientation. *Education + Training*, 63(1):115-133. DOI:[10.1108/ET-05-2020-0142](https://doi.org/10.1108/ET-05-2020-0142).
- Iakovleva, T. A., Kolvereid, L., Gorgievski, M. J., & Sørhaug, Ø. (2014). Comparison of perceived barriers to entrepreneurship in Eastern and Western European countries. *International Journal of Entrepreneurship and Innovation Management*, 18(2/3): 115- 133. [<http://hdl.handle.net/1765/77504>]. Visited on 14/08/2021.

- Israel, G. D. (1992). *Sampling the evidence of extension program impact*. University of Florida, IFAS Extension.
- Johns, J. (2010). *Likert items and scales*. SQB Methods Fact Sheet 1, 11pp.
- Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of common method bias: detection, prevention and control. *Tourism Management*, 86:104-330. DOI: <https://doi.org/10.1016/j.tourman.2021.104330>.
- Kowang, T. O., Apandi, S. A., Hee, O. C., Fei, G. C., Saadon, M. S., & Othman, M. R. (2021). Undergraduates entrepreneurial intention: holistic determinants matter. *International Journal of Evaluation and Research in Education*, 10(1): 57-64. DOI: [10.11591/ijere.v10i1.20733](https://doi.org/10.11591/ijere.v10i1.20733).
- Legas, H. A. (2016). An empirical analysis of the workings of entrepreneurship and the role of entrepreneurship education on intention towards entrepreneurship: insights from Africa. Unpublished Doctoral Thesis. Bergamo: University of Bergamo.
- Liñán, F., & Fayolle, A. (2015). A systematic literature review on entrepreneurial intentions: citation, thematic analyses, and research agenda. *International Entrepreneurship and Management Journal*, 11(4): 907-933.
- Longva, K. K., & Strand, Ø. (2020). Entrepreneurship education as an arena for career reflection: the shift of students' career preferences after a business planning course. *Education + Training*, 62(7/8): 877- 896. DOI: <https://doi.org/10.1108/ET-08-2019-0187>.
- Maheshwari, G. (2021). Factors influencing entrepreneurial intentions the most for university students in Vietnam: educational support, personality traits or TPB components? *Education + Training*, 63(7/8): 1138-1153. DOI: <https://doi.org/10.1108/ET-02-2021-0074>.
- Maheshwari, G., Kha, K. L., & Arokiasamy, A. A. (2022). Factors affecting students' entrepreneurial intentions: a systematic review (2005–2022) for future directions in theory and practice. *Management Review Quarterly*, 1-68. DOI: <https://doi.org/10.1007/s11301-022-00289->
- Malebana, M. J., & Mothibi, N. H. (2022). Relationship between prior entrepreneurship exposure and entrepreneurial intention among secondary school learners in Gauteng, South Africa. *Research Square*, 1-24. DOI: <https://doi.org/10.21203/rs.3.rs-2017396/v1>.



- Mangasini, A. (2015). *Entrepreneurship education and business start-up: assessing entrepreneurial tendencies among university graduates in Tanzania*. PhD. Unpublished Thesis, the Sokoine University of Agriculture., 231pp.
- Manley, S. C., Hair, J. F., Williams, R. I., & McDowell, W. C. (2020). Essential new PLS-SEM analysis methods for your entrepreneurship analytical toolbox. *International Entrepreneurship and Management Journal*, 17:1805–1825. DOI: <https://doi.org/10.1007/s11365-020-00687-6>.
- Maresch, D., Harms, R., Kailer, R., & Wimmer-Wurm, B. (2016). The impact of entrepreneurship education on the entrepreneurial intention of students in science and engineering versus business studies university programs. *Technological Forecasting & Social Change*, 104: 172–179. DOI: <http://dx.doi.org/10.1016/j.techfore.2015.11.006>.
- Mwantimwa, K., Ilomo, M., Mwabungulu, E., Mbilinyi, D., Possi, M., & Matonya, M. (2022). Graduate' future intention to venture entrepreneurial activities: the foreseen personal, sectoral and macro barriers. *Journal of Global Entrepreneurship Research*. DOI: <https://doi.org/10.1007/s40497-022-00319-z>.
- Mwasalwiba, E., Dahles, H., & Wakkee, I. (2012). Graduate entrepreneurship in Tanzania: Contextual enablers and hindrances. *European Journal of Scientific Research*, 76(3): 386-402. DOI: <http://hdl.handle.net/20.500.12018/2649>.
- Mwasalwiba, E. S. (2012). *University entrepreneurship education in Tanzania: teaching context, students' profile and outcomes*. Doctoral Thesis. Amsterdam: The Vrije Universiteit.
- Nabi, G., Liñán, F., Fayolle, A., & Walmsey, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. *Academy of Management Learning & Education*, 16(2): 277-299. DOI: <https://doi.org/10.5465/amle.2015.0026>.
- Nade, P. B. (2021). The influence of agri-entrepreneurship courses studied on youth farm entrepreneurial intention: Evidence from folk development colleges in Tanzania. *South African Journal of Economic and Management Sciences*, 24(1): DOI: <http://dx.doi.org/10.4102/sajems.v24i1.3788>.
- Ndofirepi, T. M., & Rambe, P. (2017). Entrepreneurship education and its impact on the entrepreneurship career intentions of vocational education students.

- Problems and Perspectives in Management*, 5(1-1): 191-199.  
DOI:[10.21511/ppm.15\(1-1\).2017.06](https://doi.org/10.21511/ppm.15(1-1).2017.06).
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done? *Assessment & Evaluation in Higher Education*, 33(3):301–314. DOI: [10.1080/02602930701293231](https://doi.org/10.1080/02602930701293231).
- Nyello, R., Kalufya, N., Rengua, C., Nsolezi, M. J., & Ngirwa, N. (2015). Effect of entrepreneurship education on entrepreneurial behaviour: the case of graduates in the higher learning institutions in Tanzania. *Asian Journal of Business Management*, 7(2): 37-42.
- Odia , J. O., & Odia, A. A. (2019). Entrepreneurship education and entrepreneurial intention of undergraduate students in Nigeria. *International Journal of Business Management*, 4(2): 30-40.
- Otache, I., Umar, K., & Audu, Y. (2019). The effects of entrepreneurship education on students' entrepreneurial intentions: a longitudinal approach. *Education + Training*, 63(7/8): 967-991. DOI: <https://doi.org/10.1108/ET-01-2019-0005>.
- Ragab, M. A., & Arisha, A. (2018). Research methodology in business: a starter's guide. *Management and Organisational Studies*, 5(1):1-14. [<http://www.sciedupress.com/journal/index.php/mos/article/view/12708>]. Visited on 18/05/2021.
- Rwamtoga, B. (2011). The effect of entrepreneurship education in entrepreneurship development: The case of Vocational Education and Training Authority (VETA). Unpublished Master's Dissertation: Dar es Salaam: The Open University of Tanzania.
- Shah, I. A., mjed, J., & Jaboob, S. (2020). The moderating role of entrepreneurship education in shaping entrepreneurial intentions. *Journal of Economic Structures*, 9:19. 1-15. DOI: <https://doi.org/10.1186/s40008-020-00195-4>.
- Sharma, L. (2018). Entrepreneurial intentions and perceived barriers to entrepreneurship among youth in Uttarakhand state of India: A cross-cultural investigation across genders. *International Journal of Gender and Entrepreneurship*, 10(3), 243-269. DOI: <https://doi.org/10.1108/IJGE-02-2018-0009>.
- Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention-behaviour link in student entrepreneurship: moderating effects of individual

- and environmental characteristics. *European Management Journal*, 34(4): 386-399. DOI: <https://doi.org/10.1016/j.emj.2015.12.007>.
- Tanzania Commission for Universities. (2019). *State of University Education in Tanzania 2018*. Ministry of Education, Science and Technology, 158pp.
- Teixeira, A. A., & Forte, R. P. (2015). Prior education and entrepreneurial intentions: the differential impact of a wide range of fields of study. *Review of Managerial Science*, 11: 353–394. DOI:[10.1007/s11846-015-0188-2](https://doi.org/10.1007/s11846-015-0188-2).
- Todd, G., Msuya, I., Levira, F., & Moshi, I. (2019). City Profile: Dar es Salaam, Tanzania. *Environment and Urbanization ASIA*, 10(2): 193–215. DOI:[10.1177/0975425319859175](https://doi.org/10.1177/0975425319859175).
- The United Republic of Tanzania. (2005). *The structured engineers' apprenticeship programme: programme implementation document*. Dar es Salaam: Engineers Registration Board.
- The United Republic of Tanzania. (2017). *Tanzania inclusive national entrepreneurship strategy*. Prime Minister's Office, The National Economic Empowerment Council, Dar-Es-Salaam, Tanzania.
- Van Gelderen, M., Kautonen, T., & Fink, M. (2015). From entrepreneurial intentions to actions: Self-control and action-related doubt, fear, and aversion. *Journal of Business Venturing*, 30(5): 655-673. DOI: <https://doi.org/10.1016/j.jbusvent.2015.01.003>.
- Vuong, B. N. (2021). The determinants of entrepreneurial cognitions: Start-up intentions of business students in Vietnam. *Research Square*, 1-19. DOI: <https://doi.org/10.21203/rs.3.rs-267502/v1>.
- Yamane, T. (1967). *Statistics: An introductory, 2<sup>nd</sup> ed.*, New York: Harper and Row.

## CHAPTER FIVE

### 5.0 PERCEIVED UNIVERSITY SUPPORT AND TECHNICAL GRADUATES' INTENTIONS TO VENTURE INTO BUSINESS START-UPS IN TANZANIA: DOES INSTITUTIONAL SUPPORT MATTER?

#### 5.1 Abstract

*Despite the perceived roles of university support on graduates' business start-up intentions, limited scholarly attention is paid to how institutional support mediates the effect of university support on graduates' business start-up potential. Specifically, this study examines the influence of university support through education provision support, concept development support, and business development support on technical graduates' business start-up intentions and how the institutional environment mediates the effects of university support on graduates' business start-up intentions. This study uses institutional theory as a theoretical framework and a cross-sectional survey design. It collects empirical data from 391 technical graduates who graduated between 2012 and 2017 from technical colleges and universities who lived in Dar es Salaam during data collection. The data are analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings reveal that institutional support ( $p < 0.001$ ) and university support through concept development support ( $p < 0.001$ ) had a direct effect on graduates' business start-up intentions. However, institutional support partially mediates the effect of university support on graduates' business start-up intentions through concept development support ( $p < 0.001$ ) but fully mediates through education provision support ( $p < 0.001$ ) and business development support ( $p < 0.05$ ). This implies that the potential of technical universities' support to enhance graduates' business start-ups depends on the supportive institutional environment. The chapter concludes that a supportive institutional environment plays a critical role in enhancing the potential of graduates to venture into business start-ups. The chapter suggests policy and practical implications for improving the business start-up ecosystem for university graduates to pursue business start-ups to minimize unemployment challenges.*

**Keywords:** Universities support, business start-up intentions, supportive institutional environment, technical graduates

## 5.2 Introduction

There is a growing consensus in the literature that entrepreneurship is a critical tool for addressing the unemployment challenge among youths (Jadmiko *et al.*, 2019; Wegner *et al.*, 2020). Consequently, entrepreneurship is increasingly attracting the commitment of various stakeholders to harness the associated desired outputs. Governments, universities, and other development partners invest substantial sums of money and other institutional resources in designing and delivering entrepreneurship courses across diverse study fields (Barba-Sánchez *et al.*, 2022; Fadzilah and Hussain, 2021). These efforts are meant to equip graduates with not only requisite entrepreneurial knowledge and skills but also ignite their intention to pursue business start-ups (Çera *et al.*, 2021; Sim *et al.*, 2021; Shi *et al.*, 2020).

Although entrepreneurial competencies are prerequisites for starting and operating business ventures, they may not sufficiently enhance graduates' intentions to pursue business start-ups. Besides individual behavioural traits and entrepreneurial competencies, business start-up intentions (BSI) develop when receive adequate support from the context in which graduates are embedded (Aloualou, 2020; Oftedal *et al.*, 2017). In this regard, governments in developed and Least Developing Countries (LDCs) such as Tanzania strive to create fertile grounds for societal members, particularly university graduates to venture into business start-ups (Barba-Sánchez *et al.*, 2022; Wegner *et al.*, 2020). Besides integrating entrepreneurship education into the education system (URT, 2017), the government of Tanzania is creating a supportive business start-up ecosystem for university graduates and the general public to venture into business start-ups as a strategy to diversify their livelihoods (URT, 2022; Galperin and Melyoki, 2017).

To complement government efforts, universities and their constituent colleges use various measurable supports to cultivate and groom students' business start-up behaviour upon graduation. Although university support is one of the critical factors in facilitating graduates' business start-up potential, their antecedents remain hardly explored (Nguyen and Duong, 2021). Universities support is conceived as the formalized activities and practices that nurture students' BSI (Sim *et al.*, 2021). This includes Education Provision Support (EPS), Concept Development Support (CDS), and Business Development Support (BDS) (Liu *et al.*, 2022; Fadzilah and Hussain, 2021; Lu *et al.*, 2021). Even if university support can enhance graduates' BSI, it

provides limited insights into LDCs. Sim *et al.* (2021) posit that deliberate formal university support in LDCs may or may not always directly influence students' BSI. In light of this, further analysis to assess the influence of university support on graduates' potential to venture into business start-ups is inevitable.

Undertaking regular assessment is vital since universities equip students with entrepreneurial knowledge, skills and attitudes, start-up awareness and motivation, and provide them with viable business ideas and practical guidance for business start-ups (Lu *et al.*, 2021; Shi *et al.*, 2020). Moreover, universities use their goodwill to support business start-ups, provide start-up funds, and serve as lead customers of the start-ups (Su *et al.*, 2021; Mustafa *et al.*, 2016). Universities support alone may not adequately enhance BSI given that sociocultural factors condition individual attitudes toward business start-ups (Wegner *et al.*, 2020). Institutional contexts can reinforce the effect of university support on BSI (Barba-Sánchez *et al.*, 2022; Oftedal *et al.*, 2017). However, there is limited empirical evidence on how institutional support mediates the effect of university support on BSI.

Institutional support is the organizational encouragement through the creation of supportive policies, regulations, formal and informal incentive programs, and plans to enhance business start-ups. It creates and defines the rules of the game where business ventures operate, shortens access to micro-loans, and friendly policies for smooth start-up and operation of business ventures (Fahinde *et al.*, 2022; Su *et al.*, 2021). Besides the perceived roles of university support, its contextualization in LDCs remains challenging (Nabi *et al.*, 2017; Trivedi, 2016) and hardly explored (Nguyen and Duong, 2021). Since the business start-up ecosystem in LDCs varies significantly from that in developed countries (Elnadi and Gheith, 2021; Trivedi, 2016), undertaking a specific country-specific analysis is critical. Regrettably, many LDCs frequently duplicate various practices from the advanced world irrespective of the environment within which business ventures operate (Campos *et al.*, 2021).

In LDCs, many institutions, such as universities find themselves in a hostile environment without consensus on effective policy, pedagogy, and resources to support business start-ups (Karumi and Kawai, 2017). Although previous studies attempted to examine the influence of university support (Su *et al.*, 2021; Shi *et al.*, 2020), such studies in Tanzania are confined to entrepreneurship education provision

(Nade, 2021; Mangasini, 2015; Mwasalwiba, 2012). As a result, the broad understanding of how technical universities and colleges support students to develop intentions to venture into business start-ups upon graduation has not attracted scholarly attention. This could limit scholarly understanding of how university support influences graduates' business start-up intentions through CDS and BDS. Since technical colleges and universities spend public resources in designing and delivering entrepreneurship courses, the dearth of empirical studies assessing the benefit of such investment on business start-up potential is not expected and is unhealthy for the country.

The dearth of studies leaves several questions unanswered. *First*, how do university support and supportive institutional environments directly influence business start-up intentions? *Second*, does a supportive institutional environment mediate the effect of university support on graduates' business start-up intentions? This study partly addresses these critical research questions using empirical data collected from technical graduates in Tanzania. The remainder of this study is structured as follows: next to this introduction is section two, which presents the conceptual and theoretical foundations. Section three presents the hypotheses derived from the theoretical and empirical literature reviews. Next to the hypotheses, is section four which presents the methodological approach and the analytical framework. Section five discusses the study findings, the conclusions, and the policy implications.

### **5.3 Theoretical underpinning and hypotheses development**

This study is guided by Institutional Theory (IT) by Douglass Cecil North in 1990 to examine how the institutional system exerts pressure that regulates individual behaviour and beliefs. The theory is built on the assumption that individual behaviour is shaped by formal and informal rules, norms, and values of the institutional environment in which they operate (Scott, 2008; North, 1990). The study uses IT to examine how university support and a supportive institutional environment facilitate technical graduates' intentions to pursue business start-ups. The study measures university support through the extent of EPS, CDS, and BDS; institutional support is measured by the perceived supportive institutional environment, such as financial, legal, and regulatory frameworks for supporting graduates' business start-up potential. Business start-up intention is measured by

self-reported likelihood or desire that graduates will start a new business venture shortly (Ajzen, 1991).

North (1990) defines institutions as a set of humanly devised restrictions that condition human interactions. Institutions establish the societal rules of the game, both formal and informal, that predict individual behaviour and beliefs (Scott and Meyer, 1994). For example, formal institutions such as financial, educational, and legal systems can significantly enhance individual decisions to venture into business start-ups. Supportive financial institutions, government support programs, policies, and regulations enhance the individual decision to pursue business start-ups. However, the extent to which existing rules of the game enhance graduates' self-confidence to venture into business start-ups requires further empirical analysis (Fahinde *et al.*, 2022; Karumi and Kawai, 2017). Similarly, universities can support and groom students by providing entrepreneurship education and organizing workshops and conferences to equip them with knowledge, skills, and attitudes.

Universities can further equip graduates with hands-on skills for business start-ups through field placements in entrepreneurial projects, crafting business plans, and sharing experiences with successful entrepreneurs (Shi *et al.*, 2021; Mustafa *et al.*, 2016). Universities can also support graduates with the development of feasible business ideas, creating business start-up awareness and motivation, providing financial support, using their good images to support business start-ups, and sometimes serving as lead customers to new business start-ups (Liu *et al.*, 2022; Anjum *et al.*, 2020). The regulatory, normative, and cognitive institutional environments can significantly influence the business start-up behaviours of university graduates (Nguyen *et al.*, 2021; Scott and Meyer, 1994). Through formal and informal institutions, the government can provide an avenue for graduates to access financial grants, subsidies, one-to-one counseling, and technical guidance as critical aspects for business start-ups (Sim *et al.*, 2021; Wegner *et al.*, 2020; Aloualou, 2020).

### **5.3.1 Perceived university support and business start-up intentions**

It is well-established that enhancing university graduates' business start-up behaviour is part and parcel of the third mission of the universities (Liu *et al.*, 2022;



Campos *et al.*, 2021). Universities should, therefore, create fertile ground for grooming and orienting students toward business start-ups. Traditionally, universities have been cultivating students' business start-up behaviour through entrepreneurship education provision (Campos *et al.*, 2021; Çera *et al.*, 2021). As a result, previous studies were confined to assessing the effectiveness of entrepreneurship education on graduates' entrepreneurial intentions while overlooking other components of university support, such as concept development support and business development support (Liu *et al.*, 2022; Çera *et al.*, 2021; Shi *et al.*, 2020). Given the imbalance in the previous studies, which are predominantly biased in the Western world, this study attempts to empirically explore the influence of university support on business start-up intentions using empirical data collected from technical graduates in Tanzania.

Although several scholars have examined university support through education provision support using entrepreneurship education dimension (Liu *et al.*, 2022; Fahinde *et al.*, 2022; Mustafa *et al.*, 2016), such studies are often subjected to several criticisms for producing inconsistent findings, both significant, moderate, and non-significant. Specifically, some empirical studies reported that university support had a significant correlation with students' entrepreneurial perceptions, attitudes, awareness, motivation, and self-confidence toward business start-ups (Su *et al.*, 2021; Çera *et al.*, 2021; Abhayarathne, 2021; Shi *et al.* 2020). On the contrary, some studies underscored that university support exhibited a significant moderate effect (Jadmiko *et al.*, 2019), a positive but marginal effect (Campos *et al.*, 2021), a significant but weak effect (Lu *et al.*, 2021), and no significant effect on university students' entrepreneurial intentions (Liu *et al.*, 2022; Sim *et al.*, 2021).

In light of the contradicting findings and previous studies' Western focus, undertaking further specific context analysis is crucial to ascertain how universities support and enhance graduates' business start-up potential in the perspectives of developing countries. Besides university support, a supportive institutional environment can enhance university graduates' business start-up potential. This is because university graduates are embedded in a specific context, communities, and institutions, which condition their attitudes toward business start-ups (Fahinde *et al.*, 2022; Nguyen *et al.*, 2021; Lu *et al.*, 2021; Wegner *et al.*, 2020). In this context, graduates groomed in a supportive university and institutional environment can

acquire business start-up know-how, network with experienced entrepreneurs, and develop positive attitudes toward the institutional environment for business start-ups. To this effect, the study hypothesizes that:

H<sub>01a-c</sub><sup>3</sup>: Universities support (education provision support, concept development support, and business development support) do not directly significantly influence technical graduates' intentions to venture into business start-ups;

H<sub>02a-c</sub>: Universities support (education provision support, concept development support, and business development support) does not directly significantly influence technical graduates' perceptions of institutional support for business start-ups.

### **5.3.2 Direct and mediation effect of institutional support**

The potential for graduates to venture into business start-ups stems from individual intentions and is regularly shaped by institutional supports, such as social, economic, and political stability (Campos *et al.*, 2021; Shi *et al.*, 2020). Such environments have the potential to enhance individual attitudes, beliefs, values, and perceived behavioural control toward business start-ups (Ofstedal *et al.*, 2017; Sim *et al.*, 2021). A supportive institutional environment can directly affect or mediate the effect of university support on graduates' potential to venture into business start-ups. However, limited studies have explicitly examined how institutional support enhances graduates' intentions to pursue business start-ups (Nabi *et al.*, 2017; Bae *et al.*, 2014). Besides the few attempts, these studies reported mixed findings. Fahinde *et al.* (2022), Çera *et al.* (2021), and Su *et al.* (2021) found that institutional support had a direct positive significant effect on business start-up intentions.

Moreover, Nguyen *et al.* (2021) and Ofstedal *et al.* (2017) highlight that the regulative and normative environments had a direct significant effect on entrepreneurial intentions and graduates' ability to identify business opportunities. Similarly, Sim *et al.* (2021) affirm that the university entrepreneurial climate had a direct and mediation effect of university support on students' entrepreneurial intentions. Moreover, Anjum *et al.* (2020) and Jadmiko *et al.* (2019) confirm that institutional support moderated the effect of entrepreneurship education on entrepreneurial

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<sup>3</sup> Represents the null hypotheses H<sub>01a</sub>, H<sub>01b</sub>, and H<sub>01c</sub>. The same applies to H<sub>02a</sub>

intentions. Unlike previous studies, some studies reported that institutional structural support variables had no direct significant effect (Çera *et al.*, 2021; Fischer *et al.*, 2019), had weak explanatory power (Turker and Selcuk, 2009), and adversely affected entrepreneurial intentions and subjective norms (Trang and Doanh, 2019).

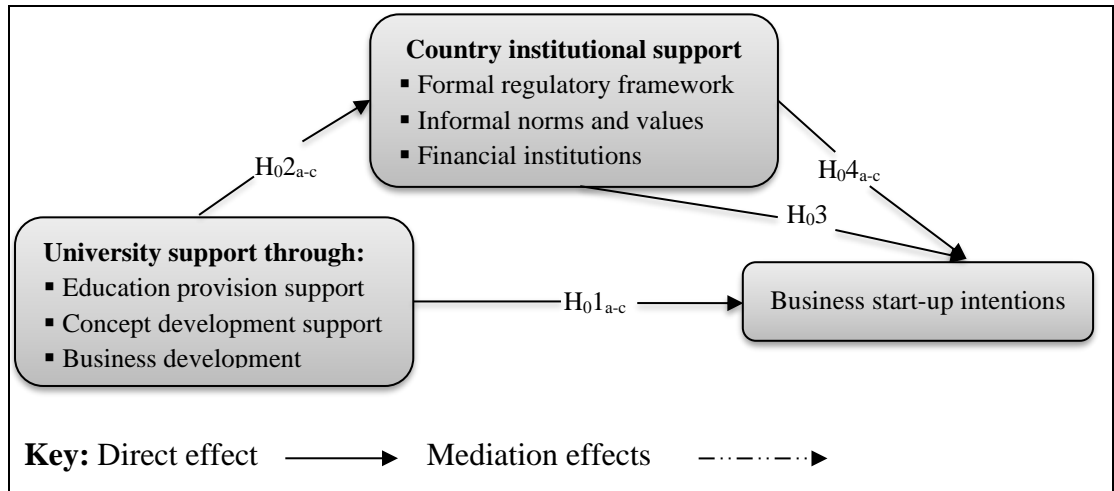
In Tanzania, previous studies on university support mostly focused on education provision support through entrepreneurship education, drawing the experience of graduates in the traditional business universities (Mangasini, 2015), vocation educational schools (Olomi and Senyamule, 2009), college of social works (Nyello *et al.*, 2015), and folk development colleges (Nade, 2021). As a result, the question of how technical university support enhances graduates' business start-up potential remains unattended. Since technical colleges and universities spend public resources to extend various support services to their students, it is critical to examine how such support delivers the intended results to substantiate public resource spending. This study is an empirical attempt to examine how institutional support directly mediates the effect of university support on graduates' BSI. To this effect, the study hypothesizes that:

H<sub>03</sub>: Institutional support does not directly significantly influence technical graduates' intentions to venture into business start-ups.

H<sub>04a-b</sub><sup>4</sup>: Institutional support does not mediate the effect of university support (education provision support, concept development support, and business development support) on technical graduates' business start-up intentions.

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<sup>4</sup> Represents the null hypotheses H<sub>04a</sub>, H<sub>04b</sub>, and H<sub>04c</sub>.



**Figure 12: Conceptual framework**

## 5.4 Methodology

### 5.4.1 Study area, research design, and sampling techniques

This study was carried out in Dar es Salaam, Tanzania. Dar es Salaam was chosen due to the presence of many technical colleges and universities which allows access to many technical graduates to solicit their perceptions of the universities' support and their intentions to venture into business start-ups. Similarly, Dar es Salaam is the country's economic and business hub that plays a central role in the economic activities housing many business ventures, industries, and job opportunities. This makes it an ideal study area for assessing technical graduates' perceptions of institutional support for business start-ups. This study employs a cross-sectional survey research design, which fits studies that make inferences about variable inter-relationships (Cherry, 2019). For example, the study examines the relationship between university support (education provision support, concept development support, and business development support), and technical graduates' potential to pursue business start-ups and supportive institutional environments as mediators.

The population of this study were all technical graduates who graduated between 2012 and 2017 from the Dar es Salaam Institute of Technology (DIT), College of Engineering and Technology (CoET), and St. Joseph University in Tanzania (SJUIT). The colleges were subjectively selected since they produce professional graduates specializing in Applied Sciences, Technology, and Engineering (ASET). CoET and DIT are public institutions that extend various support to students including the provision of compulsory entrepreneurship courses and other support

services. Although SJUIT graduates did not study entrepreneurship courses they are included because they have been receiving other supports within and outside the university. Since 2011, the Tanzania Commission for Science and Technology (COSTECH) through the X-Innovation Hub project fosters innovation and technology entrepreneurship through capacity building, community empowerment, and mentoring programs for all university graduates across the country.

The respondents were sampled from technical graduates who graduated between 2012 and 2017 and who lived in Dar es Salaam during data collection. The time frame was chosen because many graduates have a high chance of starting their first business venture five to ten years after graduation (Mwasalwiba, 2012). Graduates were selected as respondents because they can provide practical experience of support received from universities while studying and other support services sought from other institutions after graduation. Technical graduates were chosen due to their higher potential to venture into business start-ups compared to graduates in other professions (Colombo and Piva, 2020).

Although public universities and their constituent colleges in Tanzania are considerably fewer than their counterpart private universities (TCU, 2019), they register over 65% of all students in Tanzania (Faria, 2021), perhaps due to subsidized tuition fees. About 65.7% of the surveyed respondents were sampled from public universities. The study involved 384 technical graduates estimated using Cochran's (1977) formula at a 95% confidence interval and  $\pm 5\%$  precision level as follows:

$$n = \frac{z^2 pq}{e^2} \dots\dots\dots (5.1)$$

Where: n = sample size; z = confidence level at 95% (a standard value of 1.96); p = target population (since the number of graduates living in Dar es Salaam was unknown, a standard value of 0.5 was used); q = (1.0 – p); and e = margin of error at 5% (equivalent to 0.05).

Therefore, the sample size  $n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = \frac{3.8416 \times 0.25}{0.0025} = 384.16 \approx 384$

Since the formula merely estimates the minimum samples, an addition of 15% of the sample size was made following Israel's (1992) recommendations for compensating non-response potentials. Ultimately, 58 respondents were added to make a new

sample size of 442 respondents. The study estimated the sub-sample size for each technical university/college through the proportionate formula by Fisher *et al.* (1991) as follows:

$$\text{Sample Size per University (N)} = \frac{\text{Estimated Sample Size (n)}}{\text{Total Population (N)}} \times \text{Population per University (N)} \dots\dots\dots (5.2)$$

From equation (5.2), the sub-sample was computed as follows:

$$\text{CoET} = \frac{384}{10,981} \times 2,103 = \mathbf{73}, \quad \text{DIT} = \frac{384}{10,981} \times 3,818 = \mathbf{134}, \quad \text{SJUIT} = \frac{384}{10,981} \times 5,060 = \mathbf{177}$$

**Table 23: Sub-sample size estimation**

University/College	Population	Sub-sample	Sub-sample after 15%	Percent (%)
CoET	2,103	73	84	19.2
DIT	3,818	134	154	34.7
SJUIT	5,060	177	204	46.1
<b>Total</b>	<b>10,981</b>	<b>384</b>	<b>442</b>	<b>100</b>

In Tanzania, technical graduates are required to register in professional bodies such as the Engineers Registration Board (ERB), the Contractors Registration Board (CRB), and the Architects and Quantity Surveyors Registration Board (AQRB). In addition, the Structured Engineering Apprenticeship Programme (SEAP) is recruiting engineering graduates for three years as an avenue to acquire hands-on professional experience (URT, 2005). Consequently, many respondents were still working under SEAP, which simplified the data collection exercise. A simple random sampling method using a random number Table was used to select respondents to avoid potential selection bias. The contact information and location of the selected respondents were accessed from the respective registered professional bodies. With the assistance of data enumerators, 391 questionnaires were successfully collected out of 442 copies of distributed questionnaires, equivalent to 88.5% of the response rate, which is above the recommended threshold level of 70% for a survey paper (Nulty, 2008).

**5.4.2 Measurement scales**

The constructs and items of the questionnaire were adopted from the previous studies after a comprehensive literature review. Table 24 presents some of the studies from

which the constructs and items were derived. The items were slightly modified to reflect the context of the study. All the scales were examined using Likert-type response categories, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The five-point Likert scale was selected as it can reduce respondents' frustration, increase the completion rate and quality of responses (Babakus and Mangold, 1992), and improve reliabilities (Jenkins and Taber, 1977).

**Table 24: Measurement scales**

Construct	Measurement items	Source
Education provision support	1. My university offers project work on entrepreneurship. 2. ... provides entrepreneurship-related internships. 3. ...organizes entrepreneurship conferences and workshops.	Mustafa <i>et al.</i> (2016) & Shi <i>et al.</i> , 2020)
Concept development support	1. ... motivates graduates to start business ventures. 2. ...equips graduates with business ideas and concepts for business start-ups. 3. ...equips graduates with the knowledge and skills to start a new business venture.	Shi <i>et al.</i> , 2020; Mustafa <i>et al.</i> (2016),
Business development support	1. ... uses its reputation to support graduates who start a new business venture. 2. ...serves as a lead customer of graduates who establish a new business venture.	Shi <i>et al.</i> , 2020; Mustafa <i>et al.</i> (2016),
Institutional support	1. The institutional support of the country facilitates graduates' access to start-up capital for business start-ups. 2. The Tanzanian economy provides many business opportunities for university graduates to venture into business start-ups. 3. The institutional support of the country creates friendly policies and regulations for graduates to start and operate business ventures.	Trang & Doanh, 2019, Turker & Selcuk, 2009
Business start-up intention	1. I have seriously thought of starting a business venture. 2. My professional goal is to start a business venture. 3. I am ready to do anything to start a new business venture. 4. I will make every effort to start a business venture. 5. I have seriously thought about starting a business venture some days in the future. 6. The probability of starting a business venture is high. 7. I have always wanted to start a business venture for myself. 8. I prefer to start and operate business ventures instead of being employed. 9. I would start a business venture if the opportunity and resources were available.	Liñán <i>et al.</i> (2011).

### 5.4.3 Data analysis techniques

The study used a second-generation technique known as the Partial Least Squares Structural Equation Modelling (PLS-SEM) for testing the hypothesized relationships (Benitez *et al.*, 2020; Wong, 2019; Hair *et al.*, 2019). PLS-SEM suits this study as it can simultaneously examine the direct and indirect relationships of constructs measured through multiple items (Hair *et al.*, 2019; Henseler *et al.*, 2016). For

example, the study tests the direct effect of university support and other institutional support on business start-up intentions and how institutional support mediates the effect of university support on graduates' BSI. The significance of path coefficients was estimated using Smart PLS software version 3.6 (Henseler *et al.*, 2015). For the past four years, about 90% of entrepreneurship articles published in reputable journals used PLS-SEM as a robust analysis technique (Manley *et al.*, 2020).

## **5.5 Results and Discussion**

### **5.5.1 Common method bias**

Common Method Bias (CMB) is inherent in most of the survey-based studies (Kock *et al.*, 2021). Cognizant of this, the researcher employed several techniques to minimize the potential bias. *First*, for data collection, two senior academic staff reviewed the survey questionnaire. *Second*, the questionnaire was piloted to 20 technical graduates in Moshi District, different from the study area and the questionnaire was not used in the final analysis. *Third*, respondents' informed consent was sought by explaining the objectives of the study, explaining that participation is voluntary, and assuring confidentiality of the information provided. Besides the non-statistical technique, a statistical test known as Harman's one-factor was used to assess CMB. CMB results produced 34.7% of the variance, below the threshold level of 50% (Kock *et al.*, 2021), suggesting that CMB was not apparent and had minimal effect on the empirical results.

### **5.5.2 Measurement model**

The fact that the study adopted measurement scales from previous studies with Western orientations, it is critical to assess their psychometric properties to reflect the study context. The study measured the validity and reliability through Cronbach's Alpha ( $\alpha$ ), Jöreskog's Rho\_A, Composite Reliability (CR), and Factor Loadings (FL). To reflect the high reliability,  $\alpha$ , CR, and Rho\_A must attain the minimum threshold level ( $\geq .70$ ) (Benitez *et al.*, 2020). Table 24 presents the reliability and validity of the measurement model. The results show that all the variables attained the threshold level for internal consistency ( $\alpha$ , CR, rho-A  $\geq 0.700$ ) and convergent validity (AVE  $\geq 0.50$ ) (Wong, 2019; Kline, 2018).



**Table 25: Construct reliability and validity**

Construct	Items	Loadings	VIF	CA	Rho_A	CR	AVE
BSI	BSI_1	0.715	1.820	0.729	0.936	0.841	0.639
	BSI_2	0.791	2.046				
	BSI_3	0.797	2.421				
	BSI_4	0.815	2.488				
	BSI_5	0.788	2.390				
	BSI_6	0.794	2.330				
	BSI_7	0.840	2.806				
	BSI_8	0.807	2.511				
	BSI_9	0.843	2.864				
EPS	EPS_1	0.924	3.539	0.825	0.896	0.835	0.527
	EPS_2	0.920	3.444				
	EPS_3	0.884	2.132				
CDS	CDS_1	0.935	3.791	0.805	0.905	0.841	0.541
	CDS_2	0.923	3.346				
	CDS_3	0.893	2.407				
BDS	BDS_1	0.906	1.651	0.772	0.772	0.877	0.614
	BDS_2	0.899	1.651				
CIS	CIS_1	0.872	2.056	0.734	0.754	0.851	0.659
	CIS_2	0.875	2.073				
	CIS_3	0.671	1.183				

**Key:** Education provision support (EPS), concept development support (CDS), business development support (BDS), Country institutional support (CIS), business start-up intentions (BSI), Cronbach's Alpha (CA), Jöreskog's coefficient (Rho\_A), Composite Reliability (CR), Average Variance Extracted (AVE)

Item loadings and cross-loadings in Table 25 confirm construct discriminant validity after attaining the conservative threshold level ( $\geq 0.50$ ) (Kline, 2018). In addition, the study used Variance Inflation Factor (VIF) to examine the collinearity. The results show that VIF values attained the quality standard ( $\leq 5.00$ ), ranging between 1.183 to 3.539. This implies that multi-collinearity was not a challenge in the dataset (Benitez *et al.*, 2020; Wong, 2019).

**Table 26: Item loadings and cross-loadings**

Constructs/Items	BDS	BSI	CDS	EPS	CIS
BDS_1	<b>0.906</b>	0.217	0.337	0.331	0.108
BDS_2	<b>0.899</b>	0.25	0.302	0.3	0.151
BSI_1	0.124	<b>0.715</b>	0.358	0.381	0.318
BSI_2	0.233	<b>0.791</b>	0.435	0.455	0.328
BSI_3	0.211	<b>0.797</b>	0.462	0.467	0.329
BSI_4	0.217	<b>0.815</b>	0.477	0.468	0.322
BSI_5	0.213	<b>0.788</b>	0.43	0.443	0.336
BSI_6	0.224	<b>0.794</b>	0.465	0.442	0.255
BSI_7	0.248	<b>0.840</b>	0.487	0.491	0.275
BSI_8	0.204	<b>0.807</b>	0.462	0.483	0.270
BSI_9	0.189	<b>0.843</b>	0.48	0.482	0.333
CDS_1	0.352	0.521	<b>0.935</b>	0.872	0.272
CDS_2	0.35	0.539	<b>0.923</b>	0.858	0.249
CDS_3	0.277	0.507	<b>0.893</b>	0.839	0.334
EPS_1	0.331	0.538	0.876	<b>0.924</b>	0.319
EPS_2	0.356	0.541	0.853	<b>0.920</b>	0.285
EPS_3	0.269	0.499	0.824	<b>0.884</b>	0.250
CIS_1	0.117	0.355	0.263	0.264	<b>0.872</b>
CIS_2	0.152	0.325	0.309	0.313	<b>0.875</b>
CIS_3	0.118	0.343	0.249	0.25	<b>0.671</b>

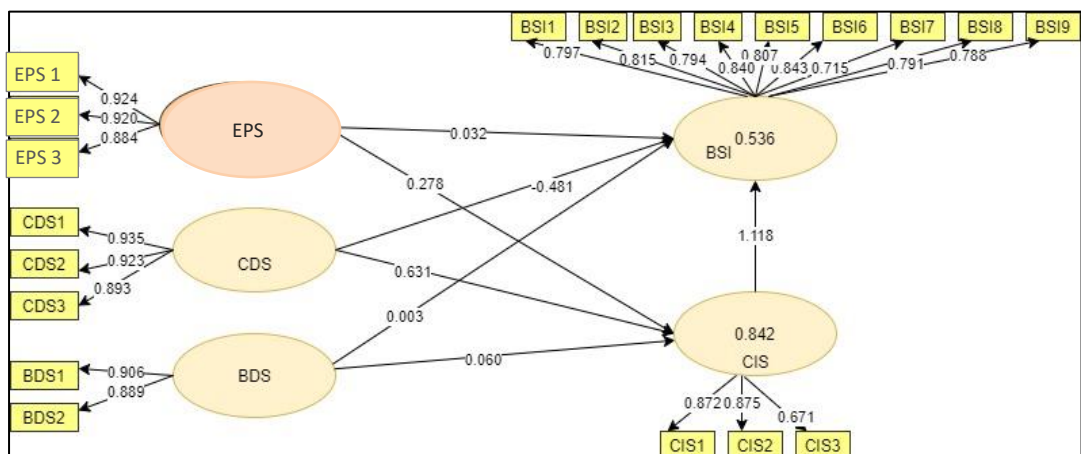
The study further, examined the validity of the constructs using convergent and discriminant validity. Discriminant validity is attained when the correlation values are less than the square root of AVE along the diagonals and Heterotrait-Monotrait (HTMT) ratio has a correlation strength ( $\leq 0.850$ ) (Fornell and Larcker, 1981). The results in Table 25 confirm that discriminant validity is attained since the square root of each construct's AVE along the diagonal is higher than its correlation with other constructs. Similarly, HTMT values had a threshold level of correlation strength ( $\leq 0.850$ ) (Hair *et al.*, 2019; Henseler *et al.*, 2016). Based on the results, it is rational to conclude that there is adequate discriminant validity and that the constructs were significantly different. The measurement scales had acceptable psychometric properties for further analysis (Wong, 2019; Hair *et al.*, 2019; Kline, 2018).

**Table 27: Construct validity assessment**

Construct	BDS	BSI	CDS	CIS	EPS
<b>Fornell and Larcker Criteria</b>					
BDS	<b>0.784</b>				
BSI	0.26	<b>0.800</b>			
CDS	0.352	0.565	<b>0.735</b>		
CIS	0.146	0.384	0.309	<b>0.812</b>	
EPS	0.348	0.572	0.525	0.311	<b>0.726</b>
<b>Heterotrait and Monotrait Ratio (HTMT)</b>					
BDS	<b>0.784</b>				
BSI	0.304	<b>0.800</b>			
CDS	0.424	0.612	<b>0.735</b>		
CIS	0.499	0.710	0.396	<b>0.812</b>	
EPS	0.408	0.624	0.526	0.468	<b>0.726</b>

**5.5.3 Structural Path Analysis**

The study uses structural model analysis to examine the relationship between latent constructs and validate the conceptual framework (Hair *et al.*, 2021). The inner model evaluation involved path analysis following the hypothesized relationship between latent exogenous and endogenous constructs. The model coefficient of determination ( $R^2=0.536$ ) reflects the ability of exogenous latent variables to predict the endogenous latent variable (Kline, 2018). This infers that the constructs of the university support (EPS, CDS, and BDS) jointly account for 53.6% of the variance in business start-up intentions. The remaining 46.4% is explained by other variables not covered by this study.



**Figure 13: A path analysis of universities' support**

## 5.6 Hypotheses testing

### 5.6.1 Direct Path Analysis

First, this study examines the direct effect of university support, such as education provision support (EPS), concept development support (CDS), and business development support (BDS) on technical graduates' business start-up intentions (BSI). Table 28 presents the direct effect of university support on the business start-up intentions of technical graduates.

**Table 28: Direct paths of university support on business start-up intentions**

Hypotheses	Path	Path Coefficients	T-statistics	p-values	Remarks
H <sub>01a</sub>	EPS --> BSI	0.032	0.314	0.753	Not supported
H <sub>01b</sub>	CDS --> BSI	-0.481	4.231	***	Supported
H <sub>01c</sub>	BDS --> BSI	-0.003	0.086	0.931	Not supported
H <sub>02a</sub>	EPS --> CIS	0.278	4.993	***	Supported
H <sub>02b</sub>	CDS --> CIS	0.631	11.646	***	Supported
H <sub>02c</sub>	BDS --> CIS	0.060	2.781	0.006*	Supported
H <sub>03</sub>	CIS --> BSI	1.118	8.962	***	Supported

**Legend:** \* =  $p < 0.05$ , \*\*\* =  $p < 0.001$

Table 28 underlines that university support through CDS ( $\beta = -0.481$ ;  $p < 0.001$ ) had a direct effect on BSI but not through EPS ( $\beta = 0.032$ ;  $p > 0.05$ ) and BDS ( $\beta = 0.032$ ;  $p > 0.05$ ). The findings support the null hypothesis H<sub>01b</sub> but fail to support null hypotheses H<sub>01a</sub> and H<sub>01c</sub>. Impliedly, university support does not directly affect graduates' business start-up intentions. This raises doubt about the effectiveness of university support in grooming graduates to tackle real-life challenges. The findings are consistent with Liu *et al.* (2022), Sim *et al.* (2021), and Wegner *et al.* (2020) who found that university support does not have a direct effect on graduates' business start-up intentions. Similarly, Sim *et al.* (2021) argues that in LDCs, deliberate formal university support may have little or no direct effect on graduates' business start-up potential. University support through entrepreneurship education may not be an effective strategy to enhance students' entrepreneurial intentions (Nabi *et al.*, 2017; Bae *et al.*, 2014).

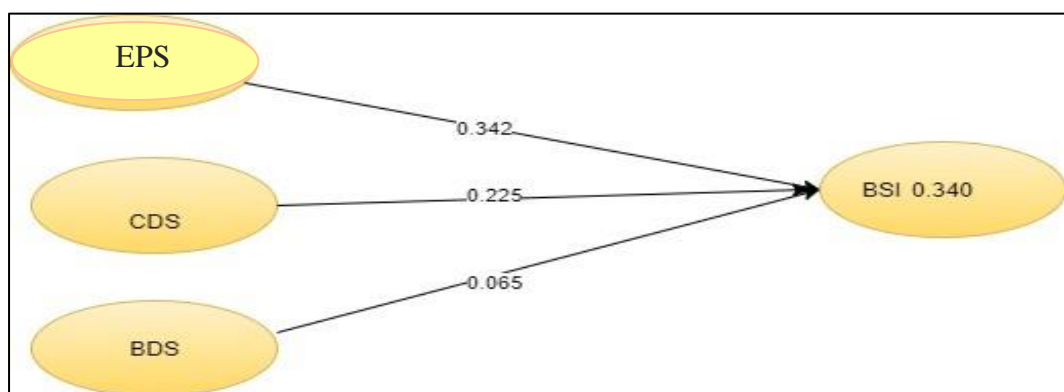
The lack of direct effect of university support through education provision and business development support on graduates' business start-up intentions could be attributed to some respondents from SJUIT not receiving entrepreneurship education support. However, cultural differences and learners' educational backgrounds can condition the effectiveness of university support through entrepreneurship education

(Bae *et al.*, 2014). This calls for collaborative efforts in the provision of tangible support, such as access to start-up capital, business mentorship, and linkages to potential investors to enhance graduates' business start-ups (Sim *et al.*, 2021; Choi *et al.*, 2018). Due to limited experience, experienced academic staff and entrepreneurs should provide orientation, practical guidance, and mentorship to enhance university graduates' potential to venture into business start-ups.

Although university faculty members are responsible for the orientation and grooming of university graduates through business development services, its access remains one of the challenges of the entrepreneurial ecosystem in Tanzania (Galperin and Melyoki, 2017), ranked third after access to finance and markets (Mori, 2015). This could partly explain why university support through business development support did not directly significantly enhance graduates' business start-up intentions. University support through concept development support had a direct effect ( $\beta = -0.481$ ;  $p < 0.001$ ), and the negative path coefficient presents several implications. *First*, although technical universities support students through business ideation and concept development, these graduates seem to have negative perceptions toward those services. *Second*, technical graduates perhaps doubt the feasibility of business ideas and concepts to venture into business start-ups.

### 5.6.2 Mediation analysis of institutional support

The study examines how a supportive institutional environment mediates the effect of university support on technical graduates' potential to venture into business start-ups. Toward this end, another model without a mediator (Figure 14) and was subsequently compared against the model with a mediator (Figure 13).



**Figure 14: A path analysis of the model without a mediator**

When comparing models with and without mediators, one can deduce that the predictive accuracy of the model with a mediator dropped from  $R^2 = 0.536$  to  $R^2 = 0.34$  (Figure 14) after controlling the mediator variable institutional support. The changes signify that a supportive institutional environment in the country significantly strengthens the influence of university support on university graduates to venture into business start-ups, accounting for 53.6% of variances. This implies that institutional support contributes 19.6% to the potential of university support in the model predictive accuracy of 53.6%. Without institutional support, the potential of university support to predict technical graduates' business start-up intentions could be 34% of the variance. Consistent with the Triple Helix Model of innovation, collaboration between government, industries, and universities in grooming university graduates' potential to pursue business start-ups (Etzkowitz and Leydesdorff, 1990).

Moreover, Table 29 presents the mediation analysis (indirect paths) of institutional support on the potential of universities to enhance university graduates' business start-up intentions through education provision support (EPS), concept development support (CDS), and business development support (BDS). The findings show that the institutional environment partly mediates the effect of university support on BSI through CDS ( $\beta = 0.705$ ,  $p < 0.001$ ). The findings partially support the null hypothesis  $H_{04b}$ . This implies that the absence of a supportive institutional environment does not significantly affect the ability of technical universities to equip graduates with relevant business ideas and concepts. The relevance of institutional support comes in during the implementation of business ideas into actual business ventures.

**Table 29: The mediating effect of institutional support on university support**

Hyp.	Path	$\beta$	T-statist.	p-values	Supported	Remarks
H <sub>04a</sub>	EPS--> CIS--> BSI	0.311	4.086	***	YES	Full mediation
H <sub>04b</sub>	CDS--> CIS--> BSI	0.705	7.213	***	YES	Partial mediation
H <sub>04c</sub>	BDS --> CIS --> BSI	0.067	2.575	0.010*	YES	Full mediation

**Legend:** \* =  $p < 0.05$ , \*\*\* =  $p < 0.001$

Moreover, the findings in Table 27 highlight that university support through EPS ( $\beta = 0.032$ ;  $p > 0.05$ ) and BDS ( $\beta = 0.032$ ;  $p > 0.05$ ) on BSI was positive but not significant. However, the inclusion of institutional support in Table 28 changed their  $p$ -values significantly from no significant to significant for EPS ( $\beta = 0.311$ ,  $p$

$< 0.001$ ) and BDS ( $\beta = 0.067, p < 0.05$ ). These findings fully support the null hypotheses  $H_{04a}$  and  $H_{04c}$ . Impliedly, an institutional supportive environment has a full mediation effect on the effect of university support on the potential of technical graduates to venture into business start-ups through education provision support and business development support services. This justifies the need for a collaborative effort of government, universities, and industries in grooming and nurturing graduates' potential to venture into business start-ups.

These findings are consistent with Fahinde *et al.* (2022) and Abhayarathne, (2021), who underscore the role of the institutional environment as a vital component of the business start-up ecosystem for graduates to venture into business start-ups. A supportive business start-up ecosystem facilitates access to micro-loans, creates friendly regulations and policies for business start-ups, and smooth operation of business ventures (Elnadi and Gheith, 2021). However, the findings contradict Mwasalwiba (2012), who reported that the business environments in Tanzania are complex and unsupportive for graduates to venture into business start-ups. This could entail that there are concerted efforts of stakeholders to improve the existing business start-up ecosystem for university graduates and the general public to venture into business start-ups to minimize unemployment challenges.

## **5.7 Conclusions, Implications, and Recommendations**

### **5.7.1 Conclusions**

This study sought to assess the direct influence of university support through education provision, concept development, and concept development support on the potential of technical graduates to venture into business start-ups and how institutional support mediates the effect of university support in this regard. The study concludes that a supportive institutional environment plays a critical role in enhancing university support in grooming and nurturing the potential of technical graduates to venture into business start-ups. In particular, the potential of university support to enhance technical graduates' intentions to venture into business start-ups is strengthened by the prevailing supportive institutional environment. University support had a direct influence not only on technical graduates' perceived institutional support but also on their intentions to venture into business start-ups. Lastly, the study concludes that concerted efforts between government, industries, and universities are critical to enhancing university graduates' potential to venture into

business start-ups as an avenue to create self-employment and minimize the unemployment challenge.

### **5.7.2 Theoretical and practical implications**

This study presents several theoretical and practical implications to the administrators of universities, policymakers, and educators in Tanzania. *First*, since university support through education provision and business development support did not directly influence graduates' business start-up intentions, universities should regularly evaluate the pedagogies used in delivering entrepreneurship education and the modalities of delivering business development support services to students. *Second*, since university support has a direct effect not only on the perceived institutional environment for a business start-up but also on technical graduates' business start-up intentions, universities should continue capitalizing on those services to enhance students' start-up behaviour upon completion. *Third* and last, since the potential of university support to enhance technical graduates' business start-up intentions depends on a supportive institutional environment, the government through the Ministry of Education, Science, and Technology (MoEST) should strengthen collaboration between universities, industries, and other stakeholder in grooming and orienting graduates towards business start-ups.

### **5.7.3 Recommendations**

The study recommends the following to various stakeholders. *First*, the study recommends that the administration of technical universities and colleges should continually evaluate their practices and policy measures in grooming and orienting graduates for business start-ups to enhance the country's economic growth. *Second*, since technical university support through education and business development support does not adequately enhance graduates' business start-up intentions, the study recommends curriculum designers should devise tailor-made programs using experiential teaching methods to enhance hands-on skills. *Third*, since institutional support mediates the effects of university support on technical graduates' business start-up intentions, the study offers valuable information for policymakers and other stakeholders to create a conducive business start-up ecosystem that enhances university graduates and the general public to venture into business start-ups as a viable career option to minimize unemployment challenges. In addition, the



government should strengthen collaborative efforts between universities, industries, and other stakeholders to enhance university graduates' business start-up potential.

## REFERENCES

- Abhayarathne, M. H. (2021). The perceived university support and perceived institutional support on entrepreneurial intentions. *International Conference on Business Research*, 3:109-118. [<http://dl.lib.uom.lk/handle/123/16855>]. Accessed on 11/06/2022.
- Alfianti, R., Mulyono, K. B., & Nurhidayati, F. (2020). Perceived university support: how does it build entrepreneurial intention? A case from Indonesia. *Advances in Economics, Business and Management Research*, 163:17-21. [[file:///C:/Users/HP/Downloads/125952993%20\(3\).pdf](file:///C:/Users/HP/Downloads/125952993%20(3).pdf)]. Visited on 15/01/2022.
- Aloualou, W. (2020). The influence of perceived institutional context support dimension on Saudi University students' entrepreneurial intentions. *Proceeding of the 15<sup>th</sup> European Conference on Innovation and Entrepreneurship*. Riyadh: DOI: [10.34190/EIE.20.134](https://doi.org/10.34190/EIE.20.134).
- Anjum, T., Heidler, P., Amoozegar, A., & Anees, R. O. (2021). The impact of entrepreneurial passion on the entrepreneurial intention: moderating impact of perception of the university. *Administrative Sciences*, 11:45. DOI: <https://doi.org/10.3390/admsci11020045>.
- Bae, T. J., Qian, S., Miao, C., & Fie, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship Theory and Practice*, 38(2):217–254. DOI: <https://doi.org/10.1111/etap.12095>.
- Babakus, E., & Mangold, W. G. (1992). Adapting the SERVQUAL scale to hospital services: an empirical investigation. *Health Service Research Journal*, 26(6): 767–786.
- Barba-Sánchez, V., Mitre-Aranda, M., & Brío-González, J. D. (2022). The entrepreneurial intention of university students: An environmental perspective. *European Research on Management and Business Economics*, 28(2):100-184. DOI: <https://doi.org/10.1016/j.iedeen.2021.100184>.
- Benitez, J., Henseler, J., Castillo, A., & Schurbeth, F. (2020). How to perform and report an impactful analysis using Partial Least Squares: guidelines for confirmatory and explanatory research. *Information & Management*, 57(2): 103168. DOI: <https://doi.org/10.1016/j.im.2019.05.003>.

- Campos, M. L., de Moraes, G. H., & Spatti, A. C. (2021). Do university ecosystems impact students' entrepreneurial behaviour? *Brazilian Administration Review*, 18(2): 4. DOI: <https://doi.org/10.1590/1807-7692bar2021200079>.
- Çera, G., Çera, E., Rozsa, Z., & Bilan, S. (2021). Entrepreneurial intention as a function of university atmosphere, macroeconomic environment and business support: a multi-group analysis. *European Journal of Training and Development*, 45(8/9): 706-724. DOI: <https://doi.org/10.1108/EJTD-08-2019-0148>.
- Cochran, W.G. (1977). *Sampling techniques*, 3<sup>rd</sup> ed. Wiley. New York.
- Colombo, M. G., & Piva, E. (2020). Start-ups launched by recent STEM university graduates: The impact of university education on entrepreneurial entry. *Research Policy*, 49:103993. DOI: <https://doi.org/10.1016/j.respol.2020.103993>.
- Cherry, K. (2019). *How does the cross-sectional research method work?* Retrieved from: [<https://www.verywellmind.com/what-is-a-cross-sectional-study-2794978>].
- Choi, K., Park, J., Cho, D., & Chu, H. Y. (2018). The Impact of university support on the creation of student entrepreneurs: evidence from South Korea. *Entrepreneurship Research Journal*, 8(1). 1–14. DOI: [10.1515/erj-2017-0010](https://doi.org/10.1515/erj-2017-0010).
- Elnadi, M., & Gheith, M. H. (2021). Entrepreneurial ecosystem, entrepreneurial self-efficacy, and entrepreneurial intention in higher education: Evidence from Saudi Arabia. *The International Journal of Management Education*, 19: 100458. DOI: <https://doi.org/10.1016/j.ijme.2021.100458>.
- Fadzilah, A. S., & Hussain, M. H. (2021). Investigating the perceived university support and the relationship between entrepreneurship education and self-employment intention. *Journal of Contemporary Issues in Business and Government*, 27(3): 259–264. DOI: [10.47750/cibg.2021.27.03.037](https://doi.org/10.47750/cibg.2021.27.03.037).
- Fahinde, C., Abodohou, A., Mayuto, R., & Su, Z. (2022). How does institutional context influence entrepreneurship education outcomes? Evidence from two African countries. *Entrepreneurship Research Journal*, 1-34. DOI: <https://doi.org/10.1515/erj-2021-0458>.
- Faria, J. (2021). *By institution type, the number of students enrolled in universities and colleges in Tanzania from 2017/2018 to 2019/2020*.

[<https://www.statista.com/statistics/1260497/number-of-students-in-universities-in-tanzania/>]. Visited 11/12/2021.

- Fischer, B. B., de Morae, G. H., & Schaeffe, P. R. (2019). Universities' institutional settings and academic entrepreneurship: notes from a developing country. *Technological Forecasting and Social Change*, *147*: 243–252. DOI: <https://doi.org/10.1016/j.techfore.2019.07.009>.
- Fornell, C. G., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*: 39-50. DOI: <https://doi.org/10.2307/3151312>.
- Galperin, B. L., & Melyoki, L. L. (2018). Tanzania as an emerging entrepreneurial ecosystem: prospects and challenges. *African Entrepreneurship*, 29–58. DOI:[10.1007/978-3-319-73700-3\\_3](https://doi.org/10.1007/978-3-319-73700-3_3).
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1):2-24. DOI:[10.1108/EBR-11-2018-0203](https://doi.org/10.1108/EBR-11-2018-0203).
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modelling in new technology research: updated guidelines. *Industrial Management & Data Systems*, *116*(1): 2-20. DOI: <https://doi.org/10.1108/IMDS-09-2015-0382>.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the Academic Marketing Science*, *43*:115–135. DOI:[10.1007/s11747-014-0403-8](https://doi.org/10.1007/s11747-014-0403-8).
- Israel, G.D. (1992) *Sampling: the evidence of extension program impact*. Program Evaluation and Organizational Development, IFAS, University of Florida; PEOD-5. [<http://edis.ifas.ufl.edu/pdffiles/PD/PD00500.pdf3/6/2011>]. Visited on 18/7/2021.
- Jadmiko, P., Azliyanti, E., & Putri, T. W. (2019). Linking perceived educational support to entrepreneur intention: The mediating effect of self-confidence. *Andalas Management Review*, *3*(1): 1-17.
- Jenkins, G. D., & Taber, T. D. (1977). A Monte Carlo study of factors affecting three indices of composite scale reliability. *Journal of Applied Psychology*, *62*(4), 392–398. DOI: <https://doi.org/10.1037/0021-9010.62.4.392>.

- Kazumi, T., & Kawai, N. (2017). Institutional support and women's entrepreneurial self-efficacy. *Asia Pacific Journal of Innovation and Entrepreneurship*, 11(3): 345-365. DOI: [10.1108/APJIE-12-2017-041](https://doi.org/10.1108/APJIE-12-2017-041).
- Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of standard method bias: detection, prevention and control. *Tourism Management*, 86:104330. DOI: <https://doi.org/10.1016/j.tourman.2021.104330>.
- Kline, R. B. (2018). Response to Leslie Hayduk's review of principles and practice of structural equation modelling. *Canadian Studies in Population*, 3–4: 188–95. DOI:[10.25336/csp29418](https://doi.org/10.25336/csp29418).
- Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship: Theory and Practice*, 33(3): 593–617. DOI: <https://doi.org/10.1111/j.1540-6520.2009.00318.x>.
- Liu, M., Gorgievski, M. J., Qi, J., & Paas, F. (2022). Perceived university support and entrepreneurial intentions: Do different students benefit differently? *Studies in Educational Evaluation*, 73: 101150. DOI: <https://doi.org/10.1016/j.stueduc.2022.101150>.
- Lu, G., Song, Y., & Pan, B. (2021). How university entrepreneurship support affects college students' entrepreneurial intentions: an empirical analysis in China. *Sustainability*, 13: 3224. DOI: <https://doi.org/10.3390/su13063224>.
- Manley, S. C., Hair, J. F., Williams, R. I., & McDowell, W. C. (2020). Essential new PLS-SEM analysis methods for your entrepreneurship analytical toolbox. *International Entrepreneurship and Management Journal*, pp. 1–21. DOI: [10.1007/s11365-020-00687-6](https://doi.org/10.1007/s11365-020-00687-6).
- Mangasini, A.K. (2015). *Entrepreneurship education and business start-up: assessing entrepreneurial tendencies among university graduates in Tanzania*. PhD. Thesis, Sokoine University of Agriculture. 231pp. [<https://www.suaire.sua.ac.tz/handle/123456789/799>]. Visited on 19/2/2021.
- Mori, N. (2015). Access to business development support services and performance of youth-owned enterprises in Tanzania. *Journal of Entrepreneurship Management and Innovation*, 11(2): 57–82. DOI: [10-1108\\_JEEE-04-2019-0040](https://doi.org/10.1108/JEEE-04-2019-0040).

- Mustafa, M. J., Hernandez, E., Mahon, C., & Chee, L. K. (2016). Entrepreneurial intentions of university students in an emerging economy: The influence of university support and proactive personality on students entrepreneurial intention. *Journal of Entrepreneurship in Emerging Economies*, 8(2):162-179. DOI:[10.1108/JEEE-10-2015-0058](https://doi.org/10.1108/JEEE-10-2015-0058).
- Mwasalwiba, E. S. (2012). *University entrepreneurship education in Tanzania: teaching context, students' profile and outcomes*. A thesis submitted for the Award of PhD of the Vrije Universiteit Amsterdam, Netherlands. 186pp. [<https://research.vu.nl/en/publications/university-entrepreneurship-education-in-tanzania-teaching-contex>]. Accessed on 18/05/2021.
- Nade, P. B. (2021). The influence of agri-entrepreneurship courses studied on youth farm entrepreneurial intention: Evidence from Folk Development Colleges in Tanzania. *South African Journal of Economic and Management Sciences*, 24(1). DOI: <http://dx.doi.org/10.4102/sajems.v24i1.3788>.
- Nguyen, H. T., & Duong, D. C. (2021). Dataset on the effect of perceived educational support on entrepreneurial intention among Vietnamese students. *Data in Brief*, 35: 10676. <https://doi.org/10.1016/j.dib.2021.106761>.
- North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge University. Cambridge: Cambridge University Press. DOI: <https://doi.org/10.1017/CBO9780511808678>.
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: what can be done? *Assessment and Evaluation in Higher Education*, 33(3): 301–314. DOI: [1080/02602930701293231](https://doi.org/10.1080/02602930701293231).
- Oftedal, E. M., Iakovleva, T. A., & Foss, L. (2017). University context matter: an institutional perspective on entrepreneurial intentions of students. *Education + training*, 0040-0912. DOI: [10.1108/ET-06-2016-0098](https://doi.org/10.1108/ET-06-2016-0098).
- Sim, M. S., Galloway, J. E., Ramos, H. M., & Mustafa, M. J. (2021). University's support for entrepreneurship and entrepreneurial intention: The mediating role of entrepreneurial climate. *Journal of Entrepreneurship in Emerging Economies*, 2053-4604. DOI: [10.1108/JEEE-09-2021-0354](https://doi.org/10.1108/JEEE-09-2021-0354).
- Scott, W. R., & Meyer, J. (1994). *Institutional environments and organizations: structural complexity and individualism*. Thousand Oaks, CA: Sage.
- Su, Y. S., Zhu, Z., Chen, J., Jin, Y., Wang, T., Lin, C., & Xu, D. (2021). Factors influencing the entrepreneurial intention of Chinese university students:

- integrating the perceived university support and theory of planned behaviour. *Sustainability*, 13: 4519. DOI: <https://doi.org/10.3390/su13084519>.
- Shi, L., Yao, X. & Wu, W. (2020). Perceived university support, entrepreneurial self-efficacy, heterogeneous entrepreneurial intentions in entrepreneurship education: The moderating role of the Chinese sense of face. *Journal of Entrepreneurship in Emerging Economies*, 12(2). 205-230. DOI: <https://doi.org/10.1108/JEEE-04-2019-0040>.
- Tanzania Commission for Universities. (2019). *List of approved university institutions in Tanzania as of 4<sup>th</sup> February 2019*. [<chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.tcu.go.tz%2Fsites%2Fdefault%2Ffiles%2FUNIVERSITY%2520INSTITUTIONS%2520IN%2520TZ%2520AS%2520OF%252017.4.2019.pdf&clen=346827&chunk=true>]. Accessed on 31/12/2020.
- Trang, T. V., & Doanh, D. C. (2019). The role of structural support in predicting entrepreneurial intention: insights from Vietnam. *Management Science Letters*, 9:1783–1798. DOI: [10.5267/j.msl.2019.6.012](https://doi.org/10.5267/j.msl.2019.6.012).
- Trivedi, R. (2016). Does the university play a significant role in shaping entrepreneurial intention? A comparative cross-country analysis. *Journal of Small Business and Enterprise Development*, 23(3): 790–811. DOI: [10.1108/JSBED-10-2015-0149](https://doi.org/10.1108/JSBED-10-2015-0149).
- Turker, D., & Selcuk, S. S. (2009). Which factors affect the entrepreneurial intention of university students? *Journal of European Industrial Training*, 33(2): 142-159. DOI: [10.1108/03090590910939049](https://doi.org/10.1108/03090590910939049).
- The United Republic of Tanzania (2022). *A comparative baseline study on the establishment of start-up policy in Tanzania*. Ministry of Investment, Industry and Trade. 101pp. [<file:///C:/Users/HP/Downloads/tsareport.pdf>]. Visited on 20/04/2022.
- The United Republic of Tanzania. (2017). *Tanzania inclusive national entrepreneurship strategy*. Prime Minister's Office, The National Economic Empowerment Council, Dar-Es-Salaam, Tanzania, 13pp. [[file:///C:/Users/HP/Downloads/FINAL%20Tanzania%20%20NOV%202017-1%20\(1\).pdf](file:///C:/Users/HP/Downloads/FINAL%20Tanzania%20%20NOV%202017-1%20(1).pdf)]. Visited on 11/10/2022.

- The United Republic of Tanzania. (2005). *The structured engineers' apprenticeship programme (SEAP): programme implementation document (PID)*. Dar es Salaam: Engineers Registration Board. 127 pp.
- Wegner, D., Thomas, E., Teixeira, E. K., & Maehler, A. E. (2020). University entrepreneurial push strategy and students' entrepreneurial intention. *International Journal of Entrepreneurial Behavior & Research*, 26(2):307-325. DOI: [10.1108/IJEBR-10-2018-0648](https://doi.org/10.1108/IJEBR-10-2018-0648).
- Wong, K. K. (2019). *Mastering partial least squares structural equation modelling (PLS-SEM) with SmartPLS in 38 hours*. Presentia: [<https://corladancash.com/wp-content/uploads/2019/03/Mastering-Partial-Least-Squares.pdf>]. Visited on 11/10/2020.



## CHAPTER SIX

### 6.0 SUMMARY, IMPLICATIONS, CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Introduction

This thesis is an empirical attempt to broaden scholarly understanding of the interplay between entrepreneurship education and the potential of technical graduates to venture into business start-ups in Tanzania. To achieve this mission, the thesis adopts a positivist paradigm and a quantitative research strategy. The central guiding research question was “*What is the influence of entrepreneurship education on entrepreneurial competencies acquisition, and to what extent do such competencies facilitate technical graduates’ intentions to venture into business start-ups?*” This question was broken down into four sub-questions that guided the development of four empirical chapters apart from chapter one and chapter six which provide the general conclusions. This chapter summarizes the key findings emanating from the empirical chapters derived from the conceptual framework depicted in Figure 1 in Chapter One. The chapter further presents the theoretical, policy, and practical implications. It also presents the recommendations and the study contributions. Lastly, the chapter ends by presenting the limitations and future directions of the research areas.

#### 6.2 Summary of the Major Findings

##### 6.2.1 Factors influencing entrepreneurial competencies acquisition

The first objective sought to examine factors influencing entrepreneurial competencies acquisition among technical graduates in Tanzania. The findings highlight that entrepreneurship education had a significant positive effect on graduates’ entrepreneurial competencies acquisition ( $p < 0.001$ ). The level of entrepreneurial competencies acquisition corresponds with the number of entrepreneurship courses studied. Specifically, graduates who studied at least two entrepreneurship courses were 10 times more likely to acquire more requisite entrepreneurial competencies compared to those who did not study. Beyond formal entrepreneurship education, informal entrepreneurship exposure through life experience in age ( $p < 0.001$ ), previous employment ( $p < 0.01$ ), and parental role modeling in self-employment ( $p < 0.05$ ) and education level ( $p < 0.05$ ) had a positive

significant effect on graduates' entrepreneurial competencies acquisition. Impliedly, both formal and informal exposure to entrepreneurship play critical roles in entrepreneurial competencies acquisition.

### **6.2.2 Entrepreneurial competencies and business start-up intentions**

The second objective sought to examine the influence of entrepreneurial competencies on technical graduates' business start-up intentions and how the antecedents of the TPB mediate their relationships. The findings reveal that entrepreneurial competencies had a direct significant influence not only on graduates' attitudes towards business start-ups ( $p < 0.001$ ) and perceived behavioural control ( $p < 0.05$ ) but also on their intentions to venture into business start-ups ( $p < 0.001$ ). However, the influence of entrepreneurial competencies on graduates' business start-up intentions was more significant when mediated by perceived behavioural control ( $p < 0.001$ ) and attitudes toward business start-ups ( $p < 0.05$ ). This implies that positive attitudes towards business start-ups and perceived behavioural control reinforce the effect of entrepreneurial competencies on business start-up intentions.

### **6.2.3 Moderating effects of entrepreneurship education**

The third objective sought to examine the antecedents of business start-up intentions and how entrepreneurship education moderates the effect of the antecedents of TPB on business start-up intentions. The findings highlight that perceived behavioural control (52.1%) was the strongest predictor of technical graduates' business start-up intentions, followed by attitudes (28.9%) and subjective norms (11.5%). Entrepreneurship education significantly moderates the effect of attitudes toward business start-ups ( $p < 0.001$ ) and perceived behavioural control ( $p < 0.001$ ) on technical graduates' business start-up intentions but not on subjective norms ( $p > 0.05$ ). The study further finds that only 30.2% of technical graduates' business start-up intentions translated into actual business start-ups, mainly due to limited start-up capital, perceived high taxes, unfriendly regulations, and low awareness of business support services.

### **6.2.4 University support and business start-up intentions**

Lastly, the study sought to measure the influence of university support on technical graduates' business start-up intentions and how a supportive institutional

environment mediates the effect of university support on graduates' business start-up potential. The findings show that university support through concept development support ( $p < 0.001$ ) and institutional support ( $p < 0.001$ ) had a direct effect on graduates' business start-up intentions. However, institutional support partially mediated the effect of university support on graduates' business start-up intentions through concept development support ( $p < 0.001$ ), but fully mediated through education provision support ( $p < 0.001$ ) and business development support ( $p < 0.05$ ). This implies that to realize the full potential of university support on the potential of technical graduates to venture into business start-ups, the creation of supportive and improving existing institutional environment is inevitable.

### **6.3 Theoretical and Policy Implications**

#### **6.3.1 Theoretical implications**

Based on the findings presented above, the thesis draws several theoretical implications. *First*, the thesis contributes to the fields of research on entrepreneurship, entrepreneurship education, and entrepreneurial competencies by showcasing the extent and circumstances under which students acquire entrepreneurial competencies. *Second*, it adopts a human capital theory perspective to explain a curved relationship between entrepreneurship education and entrepreneurial learning outcomes and the moderating effect of individual, university, and national factors. *Third*, it offers a multi-level approach to assess the transformation of human capital investment into assets while considering the characteristics of individual graduates, the university offerings, and the national context. *Fourth*, it provides a nuanced view of the impact of entrepreneurship education on technical graduates' entrepreneurial competencies, showing that it not only enhances human capital but also stimulates graduates' self-reflection and critical awareness of their learning gaps and needs.

#### **6.3.2 Policy and practical implications**

The study presents several policy and practical implications emanating from this thesis. *First*, the Ministry of Science, Education, and Technology should support the development and implementation of entrepreneurship policies and programs in higher learning institutions to equip graduates with entrepreneurial competencies and mindsets. Among other things, the policy should direct all educational institutions

from primary schools to universities to teach at least two entrepreneurship courses to all students irrespective of their specialties. The delivery of entrepreneurship courses should blend experiential-based learning and traditional lecture methods for students to acquire theoretical and hands-on entrepreneurial knowledge, skills, and attitudes critical for the start-up and operation of business ventures.

*Second*, the Ministry of Investment, Industries, and Trade (MIIT) should establish a National Business Start-up Policy that defines the roles and responsibilities of different players, such as universities, LGAs, tax authorities, and business development services providers that facilitate graduates' transition from business start-up intentions to actual business ventures. *Third*, the government should enhance collaboration with universities, industries, and other stakeholders to create a conducive institutional environment for graduates to venture into business start-ups. Besides collaboration, higher learning institutions should revisit the practices of students' field placement by grouping students based on their entrepreneurial drives. Students with entrepreneurial dreams should be placed in entrepreneurial projects or attached to experienced and successful entrepreneurs to acquire relevant hands-on business start-up skills. Students interested in traditional job roles as potential entrepreneurial employees (intrapreneurs) should be placed in routine organizational activities to equip them with relevant hands-on skills suitable to the positions aspired in the future.

*Fourth*, higher learning institutions should motivate faculty members to extend business development support services to their students as one of their core responsibilities. This should go along with spearheading the establishment of student entrepreneurship clubs and inviting experienced and successful entrepreneurs to talk with students to impart relevant entrepreneurship hard and soft skills critical for start-up and operation of business ventures. As primary role models, parents should appreciate the importance of engaging their children in familial business ventures since childhood, if any, or other related business activities as a platform to facilitate the acquisition of requisite soft entrepreneurial knowledge and skills not frequently taught in formal classrooms. To support this, LGAs should encourage experienced successful entrepreneurs in their jurisdictions to document and disseminate success stories through local media news, such as community radios to create graduates' positive perceptions of social aspects and attitudes towards business start-ups.

## 6.4 Conclusions

Based on the findings and their implications, several conclusions can be drawn based on specific objectives; *First*, formal entrepreneurship education and informal exposure to entrepreneurship through life experience in age and work experience, parental role modelling through self-employment, and education effectively facilitate entrepreneurial competencies among technical graduates. Exposing graduates to at least two or more entrepreneurship courses the likelihood of graduates acquiring requisite entrepreneurial competencies compared to those without exposure. *Second*, entrepreneurial competencies significantly enhance not only positive attitudes toward business start-ups and perceived behavioural control but also the intentions of technical graduates to venture into business start-ups. The effect of entrepreneurial competencies on graduates' business start-up intentions increases when mediated by attitudes and perceived behavioural control.

*Third*, perceived behavioural control and attitudes toward business start-up intentions are the major predictors of technical graduates' business start-up intentions. Entrepreneurship education significantly positively moderates the effect of attitudes towards business start-ups and perceived behavioural control on technical graduates' business start-up intentions. The potential of technical graduates' business start-up intentions to translate into business start-ups is 30.2% due to various challenges such as limited start-up capital, perceived high taxes, unfriendly regulatory frameworks, and lack of awareness of business support services. *Fourth and last*, the potential of university support to enhance the intentions of technical graduates to venture into business start-ups largely depends on the prevailing supportive institutional environment. A supportive environment within and outside universities is a critical aspect for realizing the potential of technical graduates to venture into business start-ups as an avenue to create self-employment and minimize the unemployment challenge.

## 6.5 Recommendations

### 6.5.1 To technical colleges and universities

The thesis recommends the following to technical universities and colleges. *First*, technical colleges and universities should integrate at least two entrepreneurship courses across programmes, irrespective of the fields of study. This should go hand-

in-hand with blending the traditional classroom lectures with experiential learning to enhance learners' acquisition of theoretical and hands-on skills critical for successful start-up and operation of business ventures. *Second*, technical colleges and universities should spearhead the establishment of student entrepreneurship clubs and engage experienced and successful entrepreneurs not only in the delivery but also in designing entrepreneurship courses to entrench employability attributes to university students. *Third*, pending the availability of financial resources, technical colleges, and universities should establish business incubation centers for students to test the feasibility of business concepts and ideas before further investment. This will increase the potential of business ideas to translate into actual business ventures.

### **6.5.2 To Tanzania Commission for Universities**

As the regulator, the study recommends the following to the Tanzania Commission for Universities (TCU). *First*, TCU should review the curriculum of higher learning institutions, especially technical colleges and universities to ensure that they integrate at least two entrepreneurship courses that are relevant and responsive to the needs of the current labour market and the general society. *Second*, TCU should revise the National Entrepreneurship Training Framework (NETF) of 2013 to read the National Entrepreneurship Education and Training Framework (NEETF) and provide guidelines in the design, delivery, and assessment of entrepreneurship courses in higher learning institutions and other informal entrepreneurship training. In addition, the framework should stipulate the minimum requirements for entrepreneurship lecturers in terms of academic qualifications, pedagogical skills, and industry experience to impart relevant knowledge and skills to students.

*Third*, TCU should facilitate the collaboration between universities and stakeholders such as industry, government, financial institutions, and business support organizations to enhance graduates' exposure to real-world entrepreneurial challenges and opportunities and provide them with access to mentorship, funding, and networking. *Fourth and last*, TCU should monitor and evaluate the impact of entrepreneurship education on graduates' entrepreneurial outcomes in terms of business start-up intentions, entrepreneurial competencies acquisition, and the performance of established business ventures. This will help to identify the best practices, challenges, and areas for improvement in entrepreneurship education.

### **6.5.3 To Local Government Authorities**

This thesis recommends the following to the Local Government Authorities (LGAs). *First*, LGAs should create a conducive business environment for university graduates to freely venture into business start-ups by simplifying business registration and licensing procedures, lessening the tax burden, and providing incentives and subsidies for new business start-ups. This will encourage more graduates to venture into business start-ups as a livelihood strategy and be able to contribute to the socio-economic development of the country. *Second*, LGAs should facilitate university graduates' access to finance and credits by collaborating with financial institutions, such as commercial banks, Savings and Credit cooperative societies (SACCOS), and other microfinance institutions to provide affordable loans and grants for new business start-ups. This will help to overcome the challenge of limited start-up capital and enhance the growth and sustainability of new business ventures.

*Third*, LGAs should provide business support services and infrastructure for university graduates to venture into business start-ups by establishing business incubation centers, innovation hubs, and co-working spaces where graduates can access mentorship, coaching, training, networking, and market linkages. This will help to improve the entrepreneurial competencies and confidence of graduates and enable them to cope with the current hypercompetitive and dynamic business environment. *Fourth*, LGA should raise university graduates' awareness and promote entrepreneurial mindsets and culture by organizing entrepreneurship events, such as competitions, exhibitions, fairs, and awards, where university graduates can showcase their innovations and achievements. This will help to inspire and motivate more graduates to consider entrepreneurship as a viable career option and be able to identify and exploit prevailing business opportunities in their localities.

### **6.5.4 To Tanzania Revenue Authority**

As a revenue authority in the country, this thesis recommends the following to the Tanzania Revenue Authority (TRA). *First*, TRA should simplify the tax system and procedures for university graduates wishing to venture into business start-ups. This will reduce the tax burden and compliance costs for nascent entrepreneurs and encourage them to formalize their business venture and increase taxpayers. *Second*, TRA should provide tax incentives and exemptions for university graduates who

start innovative and high-tech business ventures with growth potential to contribute to the national development goals. This will motivate many graduates to pursue business start-ups in sectors that have high growth potential, employment, and social impact. *Third*, TRA should enhance the provision of tax education and awareness programs for university graduates interested in business start-ups instead of closing their business ventures. This will help them to understand their tax obligations, benefits, and the available tax support services and schemes. In collaboration with higher learning institutions, TRA can also integrate tax education into entrepreneurship courses and participate in the delivery process.

## **6.5 Study Contributions**

### **6.5.1 Theoretical contributions**

Theoretically, this thesis contributes in the following ways. *First*, it contributes to the literature on entrepreneurship education and graduate entrepreneurship by applying a combination of Human Capital Theory (HCT), Theory of Planned Behaviour (TPB), and Institutional Theory (IT) to examine the influence of entrepreneurship education on technical graduates' potential to venture into business start-ups in Tanzania. *Second*, it extends to the literature on entrepreneurial competencies by exploring factors influencing their acquisition among technical graduates, such as entrepreneurship education, informal entrepreneurship exposure, and socio-demographic factors. In addition, it examines the direct and indirect effect of entrepreneurial competencies on graduates' business start-up intentions as mediated by the antecedents of the Theory of Planned Behaviour. *Third*, the thesis enriches the literature on entrepreneurial intentions by measuring how entrepreneurship education moderates the effect of the antecedents of the Theory of Planned Behaviour on technical graduates' intentions to venture into business start-ups. *Fourth*, the thesis adds to the literature on university support and the institutional environment by examining the direct and indirect effects on technical graduates' business start-up potential. The thesis also examines how institutional support mediates the effect of university support on technical graduates' potential to venture into business start-ups.



### **6.5.2 Policy contributions**

Policy-wise, this thesis contributes in the following ways: *First*, it provides policy insights for the government and other stakeholders on the modalities of promoting and supporting graduate entrepreneurship, particularly for technical graduates with high potential to venture into high-tech and innovative business ventures that can potentially contribute to the national development goals. *Second*, the study contributes to enlightening government officials on the need to adequately invest in entrepreneurship education in technical colleges and universities by ensuring that the curricula are relevant, responsive, and experiential. *Third*, the study calls for the need to revisit the current National Entrepreneurship Training Framework (NETF) to provide guidelines to various stakeholders involved in the design, delivery, and assessment of entrepreneurship education in higher learning institutions. *Fourth*, the study contributes by calling on the need for the government to create a conducive business environment for graduates to pursue business start-ups by simplifying the business registration and licensing procedures, reducing the tax burden, providing incentives and subsidies, and facilitating access to finance and credit. *Fifth* and last, it provides new insights to government officials to foster public awareness and interest in entrepreneurship and innovation through organizing entrepreneurship events, such as competitions, fairs, exhibitions, and awards for graduates to showcase their innovations and achievements.

### **6.5.3 Methodological contributions**

Methodologically, this study contributes in the following ways. *First*, it extends the application of Partial Least Squares Path Modelling (PLS-PM) in testing the relationships among the latent variables in the conceptual framework. Unlike first-generation multivariate analysis techniques such as multiple regression, logistic regression, and analysis of variance (ANOVA), which fail to predict complex relationships, PLS-PM is a second-generation multivariate technique that handles complex models with multiple mediators and moderators. PLS-SEM has hardly been used in entrepreneurship studies in Tanzania. *Second*, it contextualizes theories with Western origins in the non-Western country, Tanzania. Given the social and cultural differences, the study provides empirical evidence of their suitability in conceptualizing entrepreneurship education in the developing country, of Tanzania.

## **6.6 Limitations and Future Research Direction**

### **6.6.1 Limitations**

Despite its contributions, this study is not free from limitations that form future research direction. *First*, the study used a purely quantitative research strategy, which limits data depth and richness. A mixed research approach combining qualitative and quantitative could provide more insights and triangulations of the findings. *Second*, this study uses only a cross-sectional research design, which does not capture changes in business start-up intentions and behaviour over time. A longitudinal research design that follows the same respondents for a longer period could show the factors influencing the transition from intentions to actions. *Third*, this study used self-reported data, which may be subject to social desirability bias or recall errors. However, the researcher used statistical and non-statistical techniques to minimize the potential harm to the results. The statistical results show that the bias had less implication on the findings.

### **6.6.2 Future Research Direction**

This study recommends future research to focus on the following areas. First, one study could assess the impact of entrepreneurial competencies on the performance of business ventures established by technical graduates. Second, another study could examine the influence of entrepreneurship education on students' Entrepreneurial Implementation Intentions (EII) and Entrepreneurial Goal Intentions (EGI). This could be useful to disentangle students committed to implementing their intentions and those with mere goal intentions to pursue business start-ups without concrete plans. This could help to fill the intention-behavior gap and provide policy directives on government interventions by focusing on graduates with high commitment to translating their intentions into actual business ventures. Third and last, another study could assess the influence of prior entrepreneurship exposure, mentors, role models, and networks on graduates' business start-up intentions.

## APPENDICES

## Appendix 1: Survey Questionnaire

**Respondents' Informed Consent to Participation**

Dear esteemed respondent,

My name is Kelvin Luka Nzilano, a doctoral student at the Moshi Co-operative University, in Moshi Municipal, Tanzania. As an essential requirement of the award of the Degree, I am conducting a research study titled *“Entrepreneurship Education and the Potential of Technical Graduates to Venture into Business Start-ups in Tanzania”* The findings could be useful to policymakers, scholarly communities, and the administration of higher learning institutions. Although it is in the researcher's interest that you could fully participate by answering all the questions, you may choose not to answer some of the questions or completely withdraw your participation at any point in time without any negative impact. However, I would appreciate it if you could spare hardly 20 minutes of your precious time to fill in this questionnaire. I assure you that all the information you provide will be kept with a high degree of confidentiality and will be used for academic purposes only. Please don't write your name to retain your anonymity. Feel free to ask for clarification if the questions are not understood through the contacts provided below.

Should you consent to participate in this study, kindly sign in the blank space provided.

\_\_\_\_\_  
**Respondent's Signature**

\_\_\_\_\_  
**Phone number (optional)**

Sincerely, yours,

Kelvin Luka Nzilano (Ph.D. Student)

**Call:** +255 (0)756 939 144

+255 (0)713 531 663

**Email:** [kelvinluka@yahoo.com](mailto:kelvinluka@yahoo.com)

Dr. Hawa Petro Tundui (Supervisor)

**Call:** +255 (0)754 824 860

**Email:** [hpetro@mzumbe.ac.tz](mailto:hpetro@mzumbe.ac.tz)

<b>PART I: ENTREPRENEURIAL COMPETENCES ACQUISITION</b>					
<b>To what extent do you feel the university education facilitated you to acquire the following entrepreneurial competencies?</b>					
<i>[Please put a Check Mark (✓) on a Statement that Applies to you]</i>					
	Strongly Disagree	Disagree	I Don' t Know	Agree	Strongly Agree
<b>Cognitive outcomes (Knowledge about entrepreneurship or business start-ups)</b>					
University education increased my understanding of planning a business.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my knowledge about generating innovative business ideas.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...improved my understanding of theoretical aspects of business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...enhanced my understanding of legal issues related to new business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my understanding of the steps for establishing a business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... improved my business communication skills.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my understanding of business opportunity recognition.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... increased my knowledge of the steps that one has to take to establish a business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... increased my understanding of entrepreneurship processes.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... increased my knowledge of evaluating business opportunities.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... increased my understanding of the environmental assessment of entrepreneurial ventures.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Affective outcomes (affection towards entrepreneurship or business start-ups)</b>					
...increased my confidence in new business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my understanding of the role of entrepreneurship at the individual level and the general society.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...enhanced my preference for business start-ups to provide freedom and autonomy.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my understanding of characteristics to become successful entrepreneurs (e.g., risk-taking, innovation, etc.).	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my belief that starting a business venture is possible.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my interest in starting a new business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my motivation to venture into business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my choice of being an entrepreneur among alternative options available.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

...affected my attitudes, values, and motivation to be an entrepreneur.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Skill-based outcomes (Entrepreneurial skills or business start-up skills)</b>					
...increased my skills in controlling business projects.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... improved my skills in identifying and evaluating business opportunities.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my skills to allocate scarce resources (e.g., money, personnel, time, etc.).	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...improved my practical management skills for business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... increased my skills to attract potential investors in business ventures.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... improved my professional networking skills.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...improved my skills to develop profitable business models.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my skills in identifying and analyzing business start-up risks.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... improved my skills in conducting market research for business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... enhanced skills in negotiating a deal with other business partners.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...increased my skills to attract potential investors to my business.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... improved my skills in preparing cash flow for a new business.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

<b>PART II: BUSINESS START-UP INTENTIONS</b>					
<i>[Please put a Check Mark (✓) on a Statement that Applies to you]</i>					
	Strong Disagree	Disagree	I Don' t Know	Agree	Strongly Agree
<b>Attitudes towards Business Start-ups</b>					
A career as an entrepreneur is attractive to me.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
If I had the resources, I would choose to start my business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
I would be satisfied if I became an entrepreneur.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Among the options, I would instead choose to be an entrepreneur.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Being an entrepreneur could benefit me more than disadvantages.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Subjective Norms</b>					
My closest family would approve if I decided to start a business venture	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
My closest friends would approve if I decided to start a business venture	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
If I decided to start a business venture, people who are important to me would approve of that decision.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

<b>Perceived Behavioural Control</b>					
To start a new business and keep it working would be easy for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can control the creation process of a new business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand the practical details of starting a business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know how to develop an entrepreneurship project.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I tried to start a business, I would have a high chance of succeeding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am prepared to create a viable business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Business Start-up Intentions</b>					
I have seriously thought of starting a business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My professional goal is to start a business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am ready to do anything to start a new business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will make every effort to start a business venture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have seriously thought about starting a business venture some days in the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The probability of starting a business venture is high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have always wanted to start a business venture for myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to start and operate business ventures instead of being employed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would start a business venture if the opportunity and resources were available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PART III: BUSINESS START-UP POTENTIALS AND PERCEIVED START-UP OBSTACLES</b>					
<b>Start-up Efforts to Transform Intentions into Business Start-ups</b>					
<b>Business start-up attempts</b>					<b>Tick (✓) tick what applies to you</b>
1.	It never came to my mind.				
2.	I am thinking about it.				
3.	I thought about it and took some steps to start a business but gave up.				
4.	I am currently taking some steps to establish a business venture.				
5.	I have established the business venture, and it is still active.				
6.	I once established a business venture, but it failed.				
<b>Perceived Business Start-up Barriers</b>					<b>Tick (✓) tick what applies to you</b>
1.	Limited access to start-up capital.				
2.	Perceived higher taxes.				
3.	Unfavorable legal and regulatory frameworks.				
4.	Unfriendly business environment.				
5.	Limited awareness of business support services.				
6.	Risk-averse behaviour and fear of failure.				
7.	Inadequate government support.				
8.	Inadequate business experience.				

9.	Lack of entrepreneurial skills.	
10.	Shortage of social network.	

<b>PART IV: PERCEIVED UNIVERSITY SUPPORT</b>					
<i>[Please put a Check Mark (✓) on a Statement that Applies to you]</i>					
	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>I Don' t Know</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>Education Provision Support</b>					
My university/college teaches entrepreneurship courses.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... provides entrepreneurship-related internships.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... organizes entrepreneurship conferences and workshops.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... brings entrepreneurial graduates in contact with each other.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Concept Development Support</b>					
My university/college motivates graduates to start business ventures.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... equips graduates with business ideas and concepts for business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... prepares graduates with the knowledge and skills to start a new business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... creates awareness for graduates to engage in entrepreneurship as an alternative career choice.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Business Development Support</b>					
My university/college uses its reputation to support graduates who start a new business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...serves as a lead customer of graduates who establish a new business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... established a students' entrepreneurship club that innovative network graduates with experienced entrepreneurs.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
... established a business incubator to facilitate creative graduates to convert their business ideas into an actual business venture.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
...provides graduates with the financial means and moral support to start new businesses.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Perceived Institutional Environment Support</b>					
The institutional environment in Tanzania facilitates graduates' access to start-up funds for business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The economic sectors in Tanzania provide many business opportunities for university graduates to venture into business start-ups.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
The Tanzanian business policies are supportive and friendly enough for graduates to start and operate business ventures.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

The laws and regulations in Tanzania are friendly for university graduates to start and freely operate their business ventures.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Government institutions are supportive of university graduates starting and operating business ventures in Tanzania					

**PART V: SOCIO-DEMOGRAPHIC INFORMATION**

*(Put a check mark (✓) to the correct answer)*

1	Your sex	Male	Female
		1	2

2	Your current age in years ( <b>Mention</b> )	
---	--	--

3	Your marital status	Single	Married	Widow/widower	Divorced
		1	2	3	4

4	Your highest level of education	Ordinary Diploma	Bachelor Degree	Masters	PhD
		1	2	3	4

5	University Affiliation	CoET - UDSM	SJUIT	DIT
		1	2	3

6	Year of graduation	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
		1	2	3	4	5

7	Your Specialties	Engineering-related	Technology-related	Applied sciences-related, e.g., Mathematics, Laboratory Science
		1	2	3

8	Your employment	Full/part-time employee	Self-employed	Seeking Employment	Engaged in the family business	Pursuing further education
		1	2	3	4	5

9	Extents of exposure to entrepreneurship courses	No exposure at all	One-course exposure	Two or more courses of exposure
		1	2	3

10	Business experience	No experience	Below one year	1 – 3 years	More than three years
		1	2	3	4

11	Employment experience	No experience	Below two years	2 – 5 years	More than five years
		1	2	3	4

12	Parent's employment	Public/private sector employee	Business owner/self-employed	Farmer/Peasant
		1	2	3



13	Parents' education level	No formal education	Primary-level	Secondary-level	College/University
		1	2	3	4

## Appendix 2: Abstract of Published Manuscripts

### Paper One

Home → African Journal of Innovation and Entrepreneurship → Vol. 1, No. 2

 No Access

## Entrepreneurial Competencies and Business Start-up Intentions among Technical Graduates in Tanzania: The Mediating Effect of Antecedents of Theory of Planned Behaviour

Kelvin Luka Nzilano<sup>1</sup>, Daniel Wilson Ndyetabula<sup>2</sup> and Hawa Petro Tundui<sup>3</sup>

Affiliations ▾

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### Abstract

Despite institutional efforts to integrate entrepreneurship courses into the mainstream education system in most developing countries, empirical evidence of whether and how they influence business start-up intentions through entrepreneurial competencies remains scarce. Against this perception, this paper explores the influence of entrepreneurial competencies on business start-up intentions. Partial Least Squares Path Modelling (PLS-PM) was used to examine the relationship between entrepreneurial competencies and business start-up intentions and how the antecedents of Theory of Planned Behaviour mediate their relationships using empirical data collected from 391 graduates who graduated between 2012 and 2017 from technical universities in the commercial city of Tanzania (Dar es Salaam). The findings reveal that entrepreneurial competencies influence attitudes toward start-ups and perceived behavioural control, jointly predicting business start-up intentions. However, their influence was more significant when mediated by attitudes toward start-ups and perceived behavioural control. Curriculum designers should design entrepreneurship programs using experiential pedagogies to facilitate learners' acquisition of entrepreneurial competencies, attitudes towards start-ups, and perceived behavioural control.

## Paper Two



East African Journal of Social and Applied Sciences (EJ-SAS)

Vol.4, No.1 Publication Date: December 30, 2022

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Full articles of this journal are available at: <https://journals.mocu.ac.tz/index.php/eaj-sas>

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## BUSINESS START-UP INTENTIONS AMONG TECHNICAL GRADUATES IN TANZANIA: THE MODERATING EFFECT OF ENTREPRENEURSHIP EDUCATION

**Kelvin Luka Nzilano**

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Department of Marketing and Entrepreneurship,  
Mzumbe University,  
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### ABSTRACT

This paper examines the influence of entrepreneurship courses on technical graduates' business start-up intentions. Specifically, it assesses the antecedents of business start-up intentions and how entrepreneurship moderates the effect of attitudes towards business start-ups, societal-subjective norms, and perceived behavioural control on business start-up intentions. Data for this study were collected from 391 technical graduates who graduated between 2012 and 2017 from technical colleges and universities who lived in Dar es Salaam during data collection. The collected data were analysed using descriptive statistics and Partial Least Squares Path Modelling (PLS-PM). The findings indicate that perceived behavioural control (52.1%) was the strongest predictor of business start-up intentions, followed by attitude towards business start-up (28.9%), and societal-subjective norms (11.5%). Moreover, entrepreneurship education moderated the effect of attitudes towards business start-ups and perceived behaviour on business start-up intentions but not subjective norms. Moreover, only 30.2% of technical graduates' start-up intentions translated into actual business start-ups. Limited start-up funds, perceived high taxes, unfriendly regulatory frameworks, and little awareness of business support services constrained the potential of graduates' intentions to translate into business start-ups. Alongside government efforts to improve the business start-up environment, technical colleges and universities should align entrepreneurship courses with experiential pedagogies to enhance the attitudes of students towards business start-ups and perceived behavioural control as critical antecedents for business start-ups upon graduation.

**Paper Three**[Home](#) > [Journal of Global Entrepreneurship Research](#) > [Article](#)Research | [Published: 13 January 2023](#)

## Perceived university support and technical graduates' intentions to venture into business start-ups in Tanzania: does institutional support matter?

[Kelvin Luka Nzilano](#) , [Hawa Petro Tundui](#) & [Daniel Wilson Ndyetabula](#)[Journal of Global Entrepreneurship Research](#) **12**, 465–477 (2022) | [Cite this article](#)**64** Accesses | [Metrics](#)

### Abstract

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This paper examines the influence of perceived university and institutional support on business start-up intentions using empirical data collected from 391 technical graduates in Tanzania. Specifically, the paper examines the influence of perceived educational, concept, and business development support on business start-up intentions and the mediating effect of institutional support on the hypothesized relationships. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to examine the influence of perceived university support on business start-up intentions and the mediating effect of institutional support on the hypothesized relationships. The findings indicate that concept development and institutional support significantly influenced business start-up intentions. However, institutional support partially mediated the influence of perceived university support on business start-up intentions through concept development support but fully mediated through educational and business development support. Conclusively, institutional support matters a lot if colleges and universities are to properly groom and orient graduates towards business start-ups. Technical colleges and universities should employ experiential pedagogical methods while designing tailor-made business development services to equip graduates with know-how and hands-on skills to enhance their potential to venture into business start-ups.

### Appendix 3: Ethical Clearance Letters

## MOSHI CO-OPERATIVE UNIVERSITY (MoCU) CHUO KIKUU CHA USHIRIKA MOSHI

Sokoine Road,  
P.O. Box 474,  
Moshi, Tanzania.  
Tel: +255 272754401  
Fax: +255 272750806  
e-mail: [info@mocu.ac.tz](mailto:info@mocu.ac.tz)  
Website: [www.mocu.ac.tz](http://www.mocu.ac.tz)



OFFICE OF THE VICE CHANCELLOR  
P.O. Box 474,  
Moshi, Tanzania.  
Tel: +255 27 2751833  
Fax: +255 27 2750806  
E-mail: [vc@mocu.ac.tz](mailto:vc@mocu.ac.tz)

Our Ref. No: MoCU/UGS/3/41

Date: 10 April, 2017

Your Ref. No:

Katibu Tawala wa Wilaya,  
Wilaya ya Kigamboni,  
DAR ES SALAAM.

### YAH: KIBALI CHA KUFANYA UTAFITI KWA WANATAALUMA NA WANAFUNZI WA CHUO KIKUU CHA USHIRIKA MOSHI (MoCU)

Madhumuni ya barua hii ni kuwatambulisha kwako **Ndugu Kelvin L. Nzilano** watafiti/mwanafunzi wa Chuo Kikuu cha Ushirika Moshi ambao kwa sasa wanatarajia kufanya utafiti katika eneo lako.

Maombi haya yamezingatia Waraka wa Serikali wenye Kumb. Na. MPEC/R/10/1 wa tarehe 7 Julai, 1980 pamoja na Hati Idhini ya Chuo Kikuu Cha Ushirika Moshi (MoCU). Moja ya majukumu ya Chuo ni pamoja na kufanya tafiti na kutumia matokeo ya tafiti hizo katika kufundishia. Aidha, wanafunzi hufanya tafiti kama sehemu ya masomo yao wakiwa Chuoni.

Ili kufanikisha utekelezaji wa tafiti hizo, Makamu wa Mkuu wa Chuo hutoa vibali vya kufanya tafiti nchini kwa wanafunzi, wahadhiri na wanataaluma wengine kwa niaba ya Serikali na Tume ya Sayansi na Teknolojia.

Hivyo basi, tunakuomba uwapatie mwanafunzi/watafiti waliotajwa hapo juu msaada watakaohitaji ili kufanikisha utafiti wao. Gharama za malazi, chakula pamoja na usafiri wake watalipia wenyewe kutokana na fedha walizopewa na Chuo. Msaada wanaohitaji ni kuruhusiwa kuonana na viongozi na wananchi ili waweze kuzungumza nao na kuwauliza maswali waliyo nayo kuhusiana na utafiti wao.

Madhumuni ya utafiti wa mwanafunzi/wataalamu waliyotajwa hapo juu ni: **"Entrepreneurship Education and its Influence on Engineering Graduates Engagement in Entrepreneurship in Tanzania."**

Sehemu watakazofanyia utafiti huo ni: **DAR ES SALAAM.**

Ikiwa kuna Sehemu ambazo zinazuliwa, ni wajibu wako kuzuia zisitembelewe.

Muda wa Utafiti huo ni kuanzia tarehe **20/01/2017** hadi **30/12/2019**.

Ikiwa utahitaji maelezo zaidi tafadhali wasiliana nami.

Wako katika ujenzi wa Taifa,

Prof. F.K. Bee  
**MAKAMU MKUU WA CHUO**

Nakala kwa: **Mtafiti**



*Vision: To become a Centre of Excellence in Co-operative Education and Practice*  
*Centre of Excellence in Co-operative and Business Management Training of the East Africa Community (EAC)*



**UNIVERSITY OF DAR ES SALAAM  
COLLEGE OF ENGINEERING AND TECHNOLOGY  
Administration Office**

**P.O. Box 35131 - DAR ES SALAAM - TANZANIA**

Tel.: +255 22 2410753 (Direct) or 2410501-9/Ext.2925  
Fax: +255 22 2410114 or 2410411 or 2410029

E-mail:  
Website: [www.CoET.udsm.ac.tz](http://www.CoET.udsm.ac.tz)

Our Ref.: ADMIN-Field/107GC/jb

Date: 31<sup>st</sup> October, 2017

Kelvin Luka Nzilano  
PhD Student-Moshi Co-operative University  
P.o Box 474,  
Moshi,  
**TANZANIA.**

**Re: PERMISSION TO CONDUCT RESEARCH AT OUR INSTITUTION**

Reference is made to your letter dated 26<sup>th</sup> October 2017 requesting for permission to conduct research at our institution.

Kindly be informed that permission is granted subject to submission of the research clearance from the UDSM Vice-Chancellor.

*G. Charles*  
G. Charles  
**Ag: Head Human Resource and Administration**

c.c. Principal, CoET  
c.c. Deputy Principal - CoET





# ST. JOSEPH UNIVERSITY

*In Tanzania*

P.O. BOX 11007 Plot no 111&113,  
Kibamba 8 Dar-Es-Salaam, Tanzania  
Phone: +255 784 757010, 0713 757090  
Email: vc@sjuit.ac.tz; registrar@sjuit.ac.tz

17<sup>th</sup> October 2017

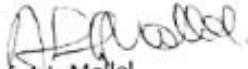
DVC-RMA/SJUIT/EST/01421/001

Makamu Mkuu wa Chuo,  
Chuo Kikuu Cha Ushirika Moshi,  
S.L.P. 474,  
MOSHI.

## YAH: KIBALI CHA KUFANYA UTAFITI KWA WANATAALUMA NA WANAFUNZI WA CHUO KIKUU CHA USHIRIKA MOSHI (MoCU)

Tafadhali rejea barua yako yenye Kumb. Na. MoCU/UGS/3/41, ya tarehe 10.04.2107 kuhusu maombi ya kibali cha ndugu Kelvin L. Nzilano kuja kufanya utafiti katika chuo chetu. Tunapenda kukutaarifu kuwa Uongozi wa Chuo Kikuu Cha Mtakatifu Yosefu unamkaribisha sana katika Chuo chetu. Tunaahidi kutoa ushirikiano wakutosha kwa kipindi chote cha utafiti wake. Pia tutampangia ofisa wa chuo atakaye msaidia katika kufanikisha utafiti na kumpangia sehemu ambazo zinaruhusiwa kufanyiwa utafiti.

Wako katika ujenzi wa Taifa,

  
Prof. A.L. Mollel  
Naibu Makamu Mkuu wa Chuo-Utawala



Makala: 

1. Principal
2. Assistant Registrar (Admission Office)
3. Mtafiti

## Dar es Salaam Institute of Technology

**Department of Industrial Liaison and Career Guidance**  
P.O. Box 2958, Dar es Salaam, TANZANIA.  
Tel.: 022 2150824  
Fax: 022 2152504  
E-mail: [io@dit.ac.tz](mailto:io@dit.ac.tz)



1<sup>st</sup> February, 2018

**TO: HoDs, Heads of Units, ILCG Coordinators, Staff Members, and Students**

Dear all,

**RE: Introduction of Mr. Kelvin Luka Nzilano, a PhD student from the Moshi Co-operative University (MoCU).**

Reference is made to the above heading.

**Mr. Kelvin Luka Nzilano** is a PhD student at Moshi Co-operative University. He is currently collecting data related to his research titled "Entrepreneurship education and engineering graduates' potentials to engage in the entrepreneurship activities in Tanzania". Kindly provide him with necessary support in order to make his research successful.

Thanking you in advance for continued corporation.

Thanking you,

For: PRINCIPAL  
DAR-ES-SALAAM INSTITUTE OF  
TECHNOLOGY  
P. O. Box 2958  
DAR-ES-SALAAM

Dr John A. Msumba

**Head of Industrial Liaison and Career Guidance Department**

Copy to: DEAN OF STUDENTS  
DIT SECURITY OFFICE



# KINONDONI MUNICIPAL COUNCIL

ALL CORRESPONDENCES TO BE ADDRESSED TO THE MUNICIPAL DIRECTOR

Tel: 2170173  
Fax: 2172606

In reply please quote:  
Ref. KMC/F.6/5



MUNICIPAL DIRECTOR  
KINONDONI MUNICIPAL COUNCIL  
P. O. BOX 31902  
2MOROGORO ROAD  
DAR ES SALAAM

Date: 9<sup>th</sup> October, 2017

**Kelvin Luka Nzilano,**  
Moshi Co-operative University,  
P. O. Box 474,  
**MOSHI.**

RE: **RESEARCH PERMISSION.**

Refer to the above heading.

I am pleased to inform you that your above request has been considered by the Municipal Director, and has offered you a place to conduct your Research from **10<sup>th</sup> October, 2017 to 30<sup>th</sup> January, 2018.**

Upon receive of this letter, please report to **All Kinondoni Ward Executives** for commencement of your Research work.

During the period of your research you are required to obey the rules and regulations as they will be defined by the All Kinondoni Ward Executives.

For: MUNICIPAL DIRECTOR  
KINONDONI MUNICIPAL COUNCIL  
DAR-ES-SALAAM

V. Shangoli

For: **THE MUNICIPAL DIRECTOR**  
**KINONDONI**

**Copy :** Vice Chancellor,  
Moshi Co-operative University,  
P. O. Box 474,  
**MOSHI.**

# HALMASHAURI YA MANISPAA TEMEKE

[Barua zote zipelekwe kwa Mkurugenzi wa Manispaa Temeke]

Simu: +255 22-2928132  
 Fax: +255 22-2928137  
 Barua pepe: temekemc@temeke.go.tz  
 Tovuti: <http://www.temeke.go.tz>



Ofisi ya Mkurugenzi  
 92 Barabara ya Mandele/Taifa  
 S.L.P: 46343,  
 15833 - DAR ES SALAAM,

Tarehe: 12/10/2017

Afisa Mtendaji,  
 Kata ya .....  
**DAR ES SALAAM**

## YAH: KIBALI CHA KUFANYA UTAFITI

Tafadhali husika na kichwa cha habari hapo juu.  
 Manispaa ya Temeke ilipokea barua tarehe 5 Octoba 2017 kutoka kwa Kelvin Luka Nzilano ambaye ni mwanachuo kutoka Chuo Kikuu cha Ushirika Moshi (MoCU) ambaye anahitaji kufanya utafiti wa "elimu ya ujasiriamali na ushiriki wa wahandisi katika shughuli za ujasiriamali nchini".

Utafiti huu utafanyika mwezi Oktoba hadi Januari 2018 katika kata zote za Manispaa ya Temeke.

Kwa barua hii naomba apate ushikiriano ili kufanikisha utafiti wake.

Nawasilisha.

J. S. Bwana  
 KNY: MKURUGENZI  
 MANISPAA YA TEMEKE

Kny: MKURUGENZI WA MANISPAA  
 TEMEKE

## KIGAMBONI MUNICIPAL COUNCIL

[All letters should be addressed to the Municipal Director]

Tell: +255 22-2928468  
 Fax: +255 22-2928469  
 E-mail: info@kigamboni.go.tz  
 website: www.kigamboni.go.tz



S.L.P. 36009,  
 KIGAMBONI,  
 DAR ES SALAAM,  
 TANZANIA.

Ref. No. AC-241/288/01/119

Date. 11-10-2017

WEO - MJIMWEMA  
 WEO - KIGAMBONI  
 WEO - KIBABA  
 WEO - KIBARAWA II  
 WEO - SOMANGILA  
 WEO - FUNGETI  
 WEO - VIJIBWENI  
 WEO - PEMBAMINAZI  
 WEO - KIMBIJI

**RE: RESEAECH PERMIT** ..... FOR MR. KELVIN L. NZILANO

Student/researcher from MOSHI CO-OPER UNIVERSITY has been permitted to undertake a field work reach on ENTERPRENEURSHIP EDUCATION AND ITS INFLUENCE ON ENGINEERING GRADUATE'S ENGAGEMENT IN ENTERPRENEURSHIP ACTIVITIES IN TANZANIA from OCTOBER 2017 to JANUARY 2018. I kindly request request your assistance to enable him/her to complete research.

For: **MUNICIPAL DIRECTOR**  
**KIGAMBONI**

Ky: MKURUGENZI WA MANISP  
 KIGAMBONI

HALMASHAURI YA MANISPAA YA ILALA

BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA MANISPAA

SIMU NA. 2128800  
2128805  
FAX NO. 2121486



OFISI YA MKURUGENZI  
1 MTA A WA MISSION  
S.L.P 20950  
11883 - DAR ES SALAAM

KUMB. NA. IMC/AF.3/31

.....11.10.2017

YAH: KUMTAMBULISHA...KELVIN LUKA NZILANO.....

Husika na mada tajwa hapo juu.

Halmashauri ya Manispaa ya Ilala imemruhusu Mwanachuo  
toka...CHUO KIKUU GHA USHIRIKI MASHI.....kufanya  
Project/Field/Research juu  
ya...MCHANGO WA ELIMU YA WASHAMBAI KIKASHIMULIZO.....katika ofisi  
KWASHAMBAI KWA WASHIMU WA IKIMIA NEJIMI  
yako. "Project/Field/Research" itaanza kuanzia tarehe  
OCTOBER...../.....2017 hadi...JANUARY.....2018

Tafadhali umpe Ushirikiano.

Nakutakia kazi njema.

R. Muna

Kny: MKURUGENZI WA HALMASHAURI  
MANISPAA YA ILALA