STUDY ON HIGH DROPOUT OF THE NVQ LEVEL 5 EQUIVALENCE AWARDING PROCESS OF TERTIARY AND VOCATIONAL EDUCATION COMMISSION

Group Members:

1. **P.W.S. Bashini, Assistant Director, TVEC**
2. **D.N.I.D. Des Silva, Assistant Director, TVEC**

Acknowledgement

It is with greatest respect and veneration we express our special and uppermost thank to the Director General and Director (Planning and Research) of Tertiary and Vocational Education Commission.

We would like to express our deepest gratitude and heartfelt thanks to our supervisor Dr. J.A.D.J. Jayalath who untiringly advised, encouraged and guided us throughout the study.

Finally, our obligation to express our indebtedness and heartfelt gratitude to all candidates who entered to the Mature Candidate Route Process in last three years and helped us to complete the study successful by providing their valuable comments for the survey.

Executive Summary

The lack of technically skilled supervisory-level workers in the Sri Lankan industry poses significant challenges. Literature indicates a strong demand for skilled workers, particularly in supervisory roles. The primary objective of this research is to gain an in-depth understanding of the high dropout rates among craft-level industry workers who seek to advance to supervisory level through the Mature Candidate Route. Additionally, this study aims to identify strategies to reduce these dropout rates.

This research employs quantitative techniques, specifically Confirmatory Factor Analysis and Logistic Regression Analysis. A cross-sectional survey using a questionnaire was conducted for data collection.

The findings reveal that several controllable factors contribute to these dropouts. Among these, Industry Support, Individual Capacity, Industry Awareness, and Technical Support have been identified as the most impactful. The research outlines key strategies that can collectively reduce dropout rates in the Mature Candidate Route, including Flexible Pathways, Technological Interventions and Digitalization, Awareness Programs through the Technical and Vocational Education Commission (TVEC), Pathways for Higher Qualifications, Technical Support through technology, and Updating TVEC Officials on the Mature Candidate Route.

While several studies have examined the upskilling of industrial workers through Technical and Vocational Education and Training (TVET) internationally, none have focused on the performance of the skill upgrading process in terms of attracting participants while reducing dropout rates. This study offers crucial insights for policymakers governing bodies, implementers, and other stakeholders on reducing dropout rates, ultimately improving the skill upgrading process for workers aiming for supervisory level in Sri Lanka's industrial sector.

Table of Content

List of Table

List of Figures

Chapter 01

1. Introduction

Skilled workforce is a major component of a country's human capital development. Sri Lanka, as a developing country, significant efforts are being made to build local human resources. Developing a skilled workforce is a prominent obstacle in Sri Lanka today. (National Education Commission [NEC], 2018.) Moreover, the Tertiary and Vocational Education and Training (TVET) is an ideal platform for solving the problems of unskilled, semi-skilled workforce in youth and industry.

The Technical and Vocational Education and Training sector focuses specifically on young people aged 15 - 29 who wish to enroll in vocational training as pre-employment training to gain job skills for employment. (Tertiary and Vocational Education Commission [TVEC], 2019). Furthermore, TVET focuses on skill development for uncertified and experienced industry workers, those who are certified but want to improve their skills to some extent, those who have returned from overseas jobs and people who want to improve their job skills. (Tertiary and Vocational Education Commission [TVEC], 2019). TVET mainly focuses on reducing unemployment by training people and therefore the government should focus on increasing employment opportunities by providing facilities to entrepreneurs. Ifnot, only trained the people is not good use of government funds. Therefore, the same priority should be open to industry workers through TVET, because they are currently employed and they use their skills for the development of the country. The Sustainable Development Goals (SDG) 4 highlighted that skill development and TVET are key to 2030 agenda for lifelong learning opportunities. (National Education Commission [NEC],2018).Operational manual for National Qualification Framework of Sri Lanka published at 2021 mentioned that country need to improve the skills of industrial workers through the skill upgrading programs which operate in various ways. Skill upgrading is needed to the workers whose jobs are not safe, older workers who need technological skills, and informal workers having low income generating opportunities. (Ullah et al., 2021) Operational manual for National Qualification Framework of Sri Lanka highlighted that in 2021, the lack of technical and supervisory level skilled workers in the labor force is a major burden to the industry in this country and there is currently a demand for skilled workers in the country. (National

Education Commission [NEC], 2018)

According to the data available in the National Vocational Qualification (NVQ) database maintained by the Tertiary and Vocational Education Commission (TVEC), the regulatory body of the TVET sector in Sri Lanka, the output of skill upgrading process of industry workers through TVET is still not in satisfactory level. Specially, the currently implementing process for experienced technical level workers who want to upgrade their levels to supervisory level.

The TVET sector in Sri Lanka operates skill upgrading process only for industry workers as a post – employment skill upgrading. It mainly applies for technical level (craft level) workers skill upgrading up to master craft level and experienced craft level people skill upgrading up to supervisory level or managerial level. Although, it has mentioned that there are popular avenues for pre-employment training, they are not suitable for the industry workers due to difficulties in attending full-time or part-time courses. According to statistics from the Tertiary and Vocational Education Commission's (TVEC) National Vocational Qualifications (NVQ) database, the number of qualifications offered to technical-level industry workers who were seeking to progress to supervisor level through the upskilling process of TVET (for year 2020, 2021, and 2022), 159 applicants have been certified, 65 applicants have failed and 226 applicants have dropped out of 450 eligible intake which is very low performance, out of the total eligible intake. Only 35% are certified. 15% failed. Other eligible applicants were dropouts. It was 50% of the total eligible applicants. In other words, only 50% of eligible applicants have reached the final step of the mature candidate route process. The other 50% have dropped at any step from the beginning of the mature candidate route process to the final VIVA.

Developing a skilled workforce is a noticeable problem in Sri Lanka today. Sri Lankan government has identified Technical and Vocational Education and Training (TVET) is an ideal platform for solving the problems of unskilled, semi-skilled workforce in the industry. (National Education Commission [NEC], 2018. According to the NVQ database maintaining by TVEC, the process of upgrading industry workers through TVET is still not working properly, especially for experienced technical level workers who want to upgrade their levels to supervisory level. Dropout at any step from the beginning of the

above said process is very high. Therefore, TVET should be implement proper upgrading process for said category. TVET in Sri Lanka experiencing a lack of technology especially for the process of upgrading of industrial workers, technological interventions and digitization process are required for their upliftment. Therefore, In order to find solutions for this deep-rooted problem of high dropout of upgrading process of TVET for said category, proper research should be conducted to identify the factors affecting dropout of said skill upgrading process and to identify how high dropout problem overcome. It will directly and indirectly help increase the skilled workforce of the industry and achieve positive socio-economic changes for the country.

1.1. Background

TVET system in Sri Lanka has been implemented the National Vocational Qualification (NVQ) frame work. It is based on the certification of competencies. National Vocational Qualifications at levels 1 to 4 focus on basic skills and upgrade competencies unskilled stage to master crafts persons tage through gaining competencies at each level, while levels 5 and 6 focus on supervisory / process management competencies. (Tertiary and Vocational Education Commission [TVEC],2021)Competency Based Training (CBT) and Enterprise Based Trainings (EBT) are two main modes of operating above levels (NVQ Level 1-6) for the pre-employment training which focus on providing skilled personnel to the industry for employment. As mentioned in the NVQ Operation Manual 2021, there are no restrictions on workers attending CBT or EBT, these two learning modes are popular avenues for pre-employment training, and they are not suitable for post-employment skills development due to the difficulty of attending full-time or part-time courses.

Recognition of Prior Learning (RPL), Mature Candidate Route (MCR) and External Candidate Route (ECR) are three special routes available to recruit industry workers who wish to upgrade their skills through TVET. In addition, CBT and EBT are ideal for pre-employment training and there is no evidence of the use of CBT and EBT for industry workers due to the time constraints of attending full-time or part-time courses. Recognitions of Prior Learning (RPL) use to award National Vocational Qualifications (NVQs) from level 1 to level 4 (from craft level to master craft level). The external candidate route operates to award supervisory level qualifications (NVQ level 5) and isno

longer in operation, while the mature candidate route also awards NVQ level 5, but is not an exact NVQ qualification and it awards equivalence qualifications to industry workers for employment purposes only. In addition, since 2018, TVEC has implemented the new route of awarding the NVQ level 5 equivalent qualifications to industrial workers in certain specializedfields who have the National Certificate of Technology (NCT) offered by the Department of Technical Education and Training (DTET) of Sri Lanka to solve the issues of upgrading of above certificate holders. But this is a temporary implementation process which will be completed by 2023. However, as per the NVQ circular 1/2021, published by the TVEC, Mature Candidate Route (MCR) will be operational till 2030 for industrial workers who wish to be promoted to their supervisory level through TVET in Sri Lanka. After 2030, there are no routes planned for the above category unless TVET starts a new program for them. Currently there is no particular way for industry workers to gain a Level 6 or equivalent qualification through TVET other than CBT or EBT, however there is no evidence that industry workers are engaging with CBT or EBT. Up grading of industry workers through TVET has been implemented especially for awarding qualifications related to skills and experience of industry workers, but there is no special scheme to give skill training for industry workers instead of CBT which is not suitable for them. Some TVET institutes have started part-time training programmes, most of which are only for craft level (NVQ level 1-4) and recently some institutes have started flexible learning programs for the same category. Unfortunately, there are no special programs to provide skills training for industry workers that require supervisory level training (NVQ Level 5 and 6) apart from CBT and EBT. TVET institutes run part-time programs only for a few subjects at supervisory level (NVQ level 5,6) for which flexible learning or online learning has not yet been introduced. It is a big problem thatthe industrialists are facing right now. Finally, TVET operates an up grading process for industry workers for NVQ Level 5, focusing on awarding equivalent qualifications only to those workers who wish to obtain relevant qualifications based on their experience and skills and those who need appropriate qualifications to secure their employment or for their personal agenda

One of the major challenges the TVET sector is currently experiencing is up grading for the workforce in the industry, particularly for experienced technical/craft level workers who want to upgrade their jobs to supervisory level.

According to statistics from the Tertiary and Vocational Education Commission's (TVEC) National Vocational Qualifications (NVQ) database, the number of qualifications offered to technical-level industry workers who were seeking to progress to supervisor level

through the upskilling process of TVET (for year 2020, 2021, and 2022), 159 applicants have been certified, 65 applicants have failed and 226 applicants have dropped out of 450 eligible intake which is very low performance, out of the total eligible intake. Only 35% are certified. 15% failed. Other eligible applicants were dropouts. It was 50% of the total eligible applicants. In other words, only 50% of eligible applicants have reached the final step of the mature candidate route process. The other 50% have dropped at any step from the beginning of the mature candidate route process to the final VIVA.

1.2. Problem Statement

Unskilled workforce is a well-known problem in Sri Lanka today. Lack of technical and supervisory level skilled workers in the industry raises many problems to the Sri Lanka industry and the literature shows that there is a significant demand and industry needs for skilled workers especially in the supervisory category. As a country it needs to improve the skills of industrial workers through the TVET skill upgrading programs. Although the TVET sector has a skill upgrading process for industry workers who need to promote technical to their supervisory level known as Mature Candidate Route, statistics from the NVQ system show that this group has high dropouts (226 out of 450, 50%). Retention is a one of the major key factors to improve performance of the skill upgrading process of TVET sector and it is necessary to create a skilled workforce for the industry. (Balasingham, 2021) Therefore, in order to find solutions for high dropouts for the said category, proper research should be conducted. This research focuses on to fulfill the gap in the inability to decrease high dropouts of the said skill upgrading process.

1.3. Research Question

- What are the significant factors affecting dropouts of skill upgrading process that has been implemented for industry workers seeking to be promoted to their supervisory level through Mature Candidate Route?
- How can high dropouts problem be overcome for skill upgrading process that has been implemented for industry workers seeking to be promoted to their supervisory level through Mature Candidate Route?

1.4. Main Objectives of the Study

The main objective of this research is to gain an in-depth understanding of the high dropouts of craft level industry workers who are seeking to promote their supervisory level through the Mature Candidate Route. In addition, the research will determine the strategies to reduce high dropouts for craft level industry workers who are seeking to promote their supervisory level.

Sub Objectives

- To identify the influence **of program recognition to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **program awareness to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **industry support to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **awareness from the industry to high dropouts** for craft level industry the workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **technical support to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **functional support to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **individual capacity to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route.
- To identify the influence of **demographic factors to high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route

- To **determine strategies to reduce high dropouts** for craft level industry workers who are seeking to promoted their supervisory level through the Mature Candidate Route

1.5. Hypothesis

The hypotheses will be developed based on dependent and independent variables identified in the conceptual framework. The hypotheses will be assessed in order to identify whether each independent variable have an impact on high dropouts on Mature Candidate Route

H1: Program recognition has influenced to high dropouts of Mature Candidate Route

H2: Awareness from the TVEC has influenced to high dropouts of Mature Candidate Route

H3: Industry support has influenced to high dropouts of Mature Candidate Route

H4: Awareness from the industry has influenced to high dropouts of Mature Candidate Route

H5: Technical support has influenced to high dropouts of Mature Candidate Route

H6: Functional support has influenced to high dropouts of Mature Candidate Route

H7: Individual capacity has influenced to high dropouts of Mature Candidate Route

H8: Demographic factors have influenced to high dropouts of Mature Candidate Route

1.6. Outline of the Chapters in the Report

Chapter 01

Chapter one includes the introduction, background of the study, and problem statement. Also, it includes the objectives, hypothesis, and outline of the report.

Chapter 02

In this chapter, it has been mentioned on previous researches done related to the area covered under this study and their findings as well as how this study differs from those researches.

Chapter 03

This chapter presents on methodologies those have been applied to do this study. Methodologies used for data collection, analysis of data and all methods used to complete this study.

Chapter 04

Presentation of data and results of descriptive analysis and inferential analysis have been included in this chapter.

Chapter 05

Chapter 05 includes summery and general discussion of the whole study and recommendations and conclusions have been found by end of this study.

Chapter 02

2. Literature Review

The literature review will focus on the previous work that has been completed by the researchers and their contribution to this relevant subject material. The priority has given to the originality and the quality of the work carried out by each researcher through analysing and assessing systematically. Finally, these findings will accumulate in this research proposal to make the foundation for concepts and support the findings.

2.1. Technical and Vocational Education and Training

TVET is very important for sustainable development and there is increasing focus on TVET sector globally. A great variety of TVET models can be found around the world. According to the terminology of the European Education and Training Policy published by the European Center for the Development of Vocational Training as of 2014, the term "VET" describes as vocational education that provides knowledge, skills and competence to make a competent person capable of specific work or a sector. According to the ILO conference paper, by 2021, the term "TVET" was similarly defined and it included an element beyond the occupation and sector which is lifelong learning. Actually, there are many evidences to prove the importance of TVET for lifelong learning.

TVET helps to develop human capital by giving opportunities to the access to the TVET for all and keep those without making reasons to dropouts it will accelerate human capital development. But many states experience lack of social acceptance and poor understanding of TVET and it still underperform in many countries including Sri Lanka. TVET is not recognized in Malaysia and they consider TVET as a low class sector.(Vinayan et al., 2019) Policy makers in the TVET sector should focus on efficient and effective policy development to attract everyone to TVET and improve the capacity of individuals. It will lead people to do jobs with self-sufficiency.(Tripney et al., 2013)

The TVET system in Sri Lanka is industry driven which suit the industry requirements at considerable level. But the literature found that it is still not functioning properly to get the specific requirements from the industry and it leads to low performance of the TVET system. Industry-based TVET is highly accessible to promote skills, re-skilling and up-

skilling in the categories of lifelong learning and independent adult learning. According to the National Policy on Technical and Vocational Education published by the National Education Commission of Sri Lanka in 2018, NVQ qualifications are always based on skill level and can be used to assess and classify workers in the industry for management of promotions, salaries and wages. But still industries are not getting the full benefits of the NVQ system and HR management is facing problems as workers with different qualifications and different professions still have similar tasks. In addition, the national policy indicated the need to assess and award NVQs to all those leaving for overseas employment by obtaining details of expatriate workers, launching NVQ qualification awareness programs and facilitating the acquisition of NVQs for returnees.

2.2. NVQ Level 5 Equivalence Qualifications Awarding Process of Technical and Vocational Education Commission

TVET system in Sri Lanka has been implemented the National Vocational Qualification (NVQ) frame work. It is based on the certification of competencies. National Vocational Qualifications at levels 1 to 4 focus on basic skills and upgrade competencies unskilled stage to master craftsperson

stage through gaining competencies at each level, while levels 5 and 6 focus on supervisory / process management competencies. (Tertiary and Vocational Education Commission [TVEC],2021)Competency Based Training (CBT) and Enterprise Based Trainings (EBT) are two main modes of operating above levels (NVQ Level 1-6) for the pre-employment training which focus on providing skilled personnel to the industry for employment. As mentioned in the NVQ Operation Manual 2021, there are no restrictions on workers attending CBT or EBT, these two learning modes are popular avenues for pre-employment training, and they are not suitable for post-employment skills development due to the difficulty of attending full-time or part-time courses.

Recognition of Prior Learning (RPL), Mature Candidate Route (MCR) and External Candidate Route (ECR) are three special routes available to recruit industry workers who wish to upgrade their skills through TVET. In addition, CBT and EBT are ideal for pre-employment training and there is no evidence of the use of CBT and EBT for industry workers due to the time constraints of attending full-time or part-time courses. Recognitions

of Prior Learning (RPL) use to award National Vocational Qualifications (NVQs) from level 1 to level 4 (from craft level to master craft level). The external candidate route operates to award supervisory level qualifications (NVQ level 5) and is no longer in operation, while the mature candidate route also awards NVQ level 5, but is not an exact NVQ qualification and it awards equivalent qualifications to industry workers for employment purposes only. In addition, since 2018, TVEC has implemented the new route of awarding the NVQ level 5 equivalent qualifications to industrial workers in certain specialized fields who have the National Certificate of Technology (NCT) offered by the Department of Technical Education and Training (DTET) of Sri Lanka to solve the issues of upskilling of above certificate holders. But this is a temporary implementation process which will be completed by 2023. However, as per the NVQ circular 1/2021, published by the TVEC, Mature Candidate Route (MCR) will be operational till 2030 for industrial workers who wish to be promoted to their supervisory level through TVET in Sri Lanka. After 2030, there are no routes planned for the above category unless TVET starts a new program for them. Currently there is no particular way for industry workers to gain a Level 6 or equivalent qualification through TVET other than CBT or EBT, however there is no evidence that industry workers are engaging with CBT or EBT. Upskilling of industry workers through TVET has been implemented especially for awarding qualifications related to skills and experience of industry workers, but there is no special scheme to give skill training for industry workers instead of CBT which is not suitable for them. Some TVET institutes have started part-time training programmes, most of which are only for craft level (NVQ level 1-4) and recently some institutes have started flexible learning programs for the same category. Unfortunately, there are no special programs to provide skills training for industry workers that require supervisory level training (NVQ Level 5 and 6) apart from CBT and EBT. TVET institutes run part-time programs only for a few subjects at supervisory level (NVQ level 5, 6) for which flexible learning or online learning has not yet been introduced. It is a big problem that the industrialists are facing right now. Finally, TVET operates an upskilling process for industry workers for NVQ Level 5, focusing on awarding equivalent qualifications only to those workers who wish to obtain relevant qualifications based on their experience and skills and those who need appropriate qualifications to secure their employment or for their personal agenda. The Labour Market Information bulletin published by TVEC at 2021, indicated that the NVQ system is quite popular in the country to some extent and TVEC; the NVQ qualification awarding body of TVET in Sri Lanka, has issued 509,524 certificates for craft (level 1-4) and supervisory

(level 5, 6) as of December 2021 with public, private institutions through the pathways CBT, EBT and RPL. But only 74,993 certificates awarded through the RPL for craft level industry workers. (Commission et al., n.d.) From 2011, the mature candidate pathway which is the only way currently operate for upskilling of supervisory level; began with the aim of promoting technical level industrial workers to supervisory level and by December 2021, according to TVEC's NVQ database, TVEC has issued 299 Level 5 equivalent qualifications. Furthermore, according to TVEC's NVQ database, the special route for NCT holders has achieved 2000 NVQ level 5 equivalent certificates by December 2021. But despite reporting 80 registered applicants from 2017 to date, there at least one certificate has not been given through external candidate route. (After the introduction of the respective route by external candidate route circular).

2.3. Industry Workers Skills Upgrading

An industry is group of related companies that focus on same kind of business activities to provide good and services for a particular field. Industry categorizations may vary from country to country and according to the Sri Lanka Labour Force Survey Quarterly Report 4th Quarter by 2021, it is mainly categorized as agricultural and non-agricultural in Sri Lanka context. Public sector employees, private sector employees, employers, own account employees and contributing family employees are industry workers categories in Sri Lanka, according to the employed population as of 2022 published by the Department of Senses and Statistics of Sri Lanka.(Survey & Report, 2021) The term “Skills” refers as ability to perform a task including knowledge, competency and experience. Also skills focus to complete task or solve a issues.(Conference, 2021) As well, skill development refers as technical and skill based training for self-employment, employment, pre-employment and employed workers and formal and non-formal learning with employment and labour market oriented approaches. (Growth, 2010)

The TVET trainings for the industry workers get benefited by both industry and works. It is s better investment for the industry when consider its beneficial returns in terms of productivity, profitability and healthy competitiveness. (Tessaring & Wannan, 2010) One study pointed out that the organizational level it make positive environment to the both workers and organization and it will make better productivity to the nation.(Vinayan et al., 2019). In the ILO's strategic plan for 2022-25s, it stated that skills mismatch is a significant problem in industry and it is important to prioritize skills development and lifelong

learning. In the process of lifelong learning and skill upskilling, reskilling and upskilling are different concepts. For individuals, these lead to new job opportunities, higher pay packages, improved living standards of workers, social status and poverty reduction. For societies it leads to better peaceful development. Reducing the mismatches of workers in the informal sector can help transition to formal employment and explore labor market opportunities.

When a country focuses on improving the skills of students, citizens, workers or any party, it must think about what kind of skills are needed, what learning strategies, how to build a continuous learning culture, how to ensure high skill productivity.(Upskilling Efforts by the Public Sector Learnings from Around, 2021) A better skilled workforce requires well-defined roles and mechanisms for the partnership of government, educators and trainers. (Taylor, 2014) Most countries focus mainly on three areas for skill development namely supply to match skill demand, support for skills development activities and focus on future demands. Improving labor by imparting skills to produce goods and services is part of the concept of 'building human capital'. They are better suited to adapt to changes in the economy.(Business & Khan, 2019) For a better upskillinh process, it should focus on program quality, program relevance, industry linkages in various ways, timely analyzed data for industry demand, better awareness to society and industry, many ways to access programs and many more. Also, through better skill programs in TVET, it increases productivity, indirectly helps peaceful society, and opens many opportunities for people in the labor market. (Ullah et al., 2021)

2.4. Dropouts and Performance of a Process

There are many different definitions of dropout in the literature. As per the existing definitions, attracting people to the TVET sector defines as enroll the people to the particular course or program and retain them till they certified for a particular course. Furthermore, dropout has been defined as student enrolled to the course and left without getting certificate. Therefore, higher enrollment and lower dropout shows attractive courses or processes in the vocational training sector. As well Dropping out is defined as leaving school without a high school certificate or equivalent credentials.(Richard ,2015)Therefore retention is a key factor to evaluate performance of TVET sector. (Balasingham, 2021)One Malaysian study on workforce up skilling and reskilling across industries shows that

increasing student enrollment is necessary to create a medium and high skilled workforce.(Vinayan et al., 2019)

2.5. Attracting to TVET and Technological Intervention

As per the existing definitions, dropout has been defined as student enrolled to the course and left without getting certificate.

Many researchers found common affecting factors to attract students to the TVET sector. While some of the factors may be unique to specific countries, they have a common factor to ensure why people not attracting to TVET. National Policy on Technical and Vocational Education, published by National Education Commission in Sri Lanka in 2018, mentioned some common factors like access, quality and relevancy are most affecting to underperform of TVET and it is mostly align with the factors identified for the student dropouts from TVET courses like personal factors, social factors and educational factors. (Balasingham, 2021). Institutional factors such as nature of the course, organizational initiatives, supportive services and management skills are influenced to the attracting students to training center of vocational sector in Kenya.(Simiyu, 2009) According to the study on "Upskilling Efforts by the Public Sector Learnings from Around" done by PwC globle at 2021,it has mentined limited upskilling plans,business priorities,absence of upskilling culture,stackholders investment, lack of resources, lack of knowledge on the upskilling areas to be invest give negative resuts to the upskilling through the TVET secto. Forthermore, all stockholders like governments, industry, and TVET providers should work on build a strong and systematic upskilling agenda to achive win win situation for each parties.

Literature shows that researches on digitizing, digitalization and digital transformation have done during the past decades. Digitization is a digital representation of physical objects or attributes. Use of digital technology and digitized data to improve the processes or enable new revenue is refers as digitalization. **Digital transformation** is an organizational transformation that integrates digital technologies with business processes to moving a digital business. In addition to that digital transformation is the use of new digital technologies such as social media, mobile technology, embedded devices to enable business enhancements.(Kraus et al., 2021)

Digital technology enhances process improvement and enables ways to interact with all stakeholders. According to the study on "Upskilling Efforts by the Public Sector Learnings from Around" done by PwC globle at 2021, it mentioned some countries have better examples for the improvements of upskilling by digitalising the process and clientees of the upskilling pathways experiencing theire learnings through the digital initiatives. One study described that use of digital technologies for TVET and skill development is open new opportunities as well as some challengers. Both digitization and digitalization associate with digital transformation and that digital transformation of process may be macro transformation or transformation of national agendas. Digitalization of TVET is directing a positive transformation in the quality, quantity and accelerating TVET education. In addition, it will lead to lifelong learning and flexible learning pathways and enhance access and participation in TVET. (*The Digitization of TVET and Skills Systems*, n.d.) Digitalization leads innovations, improvement of productivity, and cost reduction.

Technological interventions will have both positive and negative effects, however to assessing the net difference resulting from the intervention must consider both. (Tripney et al., 2013) Literature found that three part strategies to overcome technological conflict such as technology should make users enjoyable and easier, it necessary for user's practice and users awareness on benefits of technology is needed.(Hylén, 2002) Moreover, combination of policy, research and practice are leading to effective implementation of technology. (Conole, 2014)

Chapter 03

3. Methodology

3.1. Research Design

This study is designed using quantitative techniques, in particular confirmatory Factor Analysis (CFA) and Logistic Regression Analysis (LRA). Dropout is used as the dependent variable while Program Recognition (PR), Program Awareness (PA), Industry Support (IS), Awareness from the Industry (AI), Technical Support (TS), Functional Support (FS), Individual Capacity (IC), and demographic factors are treated as independent variables.

This cross-sectional survey uses a questionnaire for data collection which consists of two main parts. Part 01 collects demographic data, gender, age, monthly income, entry qualification, and highest educational qualification. Part 02 includes the measures of the other six independent variables of the study. The dependent variable dropout is a binary response variable includes one of two categories (Yes or No) while seven independent variables (except demographic factors) are measured using six indicators for variable PR. Five indicators per each are used for variables IS, IC, TS, and AI. Four indicators per each are used for variables FS, and PA. Under the part 02, each variable is assessed using a five-point Likert scale, the scale includes strongly agree (1), agree (2), neutral (3), disagree (4), and strongly disagree (5).

3.2. Method of Sample Selection

The sample was selected using the stratified random sampling technique. The sample frame was total number of eligible candidates who applied for NVQ level 05 qualification through mature candidate route in past 03 years (2023, 2022, and 2021). It was 450 eligible candidates. Among those 450 candidates, 159 was certified and other 291 was dropped. It was 35 percent and 65 percent of the sample frame. As per the Krejcie and Morgon table of sample selection, sample size for 450 population is 210. Therefore, he simple was selected as follows;

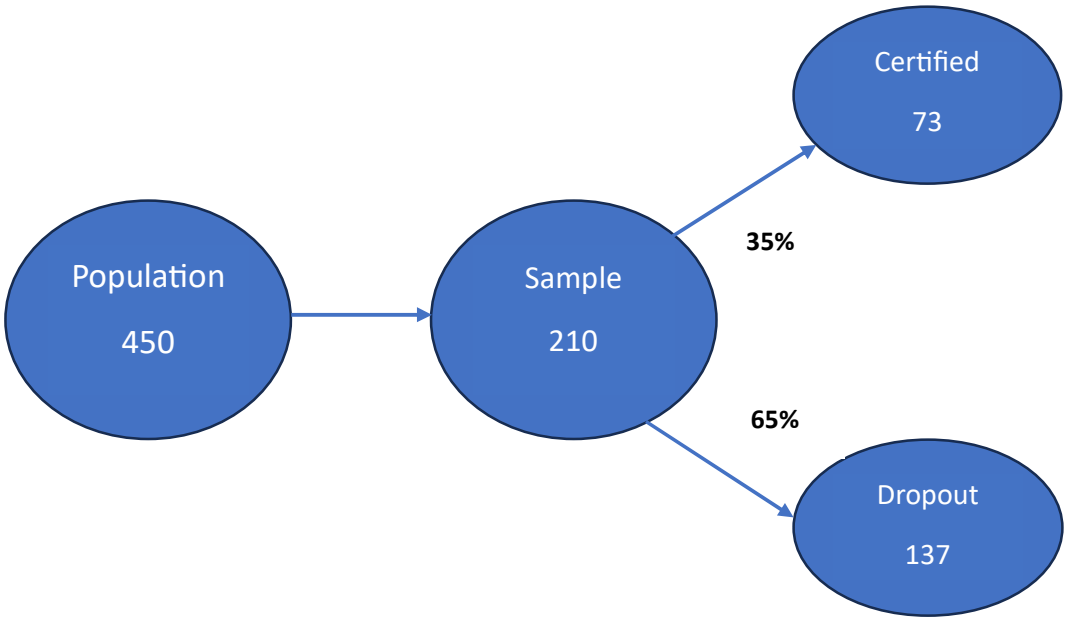

Figure 3.1: Sample Selection Procedure

3.3. Method of Data Collection

Data was collected using a structured questionnaire. Questionnaires were prepared as Microsoft forms and emailed to randomly selected candidates as per the sample proportion.

3.4. Methods of Data Analysis

Logistic regression is a statistical method for analyzing a dataset in which there are one or more independent variables that determine an outcome. The outcome is measured with a dichotomous variable (in which there are only two possible outcomes). In logistic regression, the dependent variable is binary or dichotomous, i.e. it only contains data coded as 1 (TRUE, success, pregnant, etc.) or 0 (FALSE, failure, non-pregnant, etc.).

The goal of logistic regression is to find the best fitting (yet biologically reasonable) model to describe the relationship between the dichotomous characteristic of interest (dependent variable = response or outcome variable) and a set of independent (predictor or explanatory) variables. Logistic regression generates the coefficients (and its standard errors and

significance levels) of a formula to predict a *logit transformation* of the probability of presence of the characteristic of interest: A logistic regression model is as follows,

$$logit(p) = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \ldots + b_kX_k$$

Testing Goodness of Fit in Logistic Regression

a. Hosmer and Lemeshow Test

The Hosmer and Lemeshow test is a statistical test for testing the goodness of fit for logistic regression models. The test assesses whether or not the observed event rates match expected event rates in subgroups of the model population. The Hosmer and Lemeshow test specifically identify subgroups as the deciles of fitted risk values.

Hypothesis: -

Ho: Model is adequate

H1: Model is not adequate

The Hosmer and Lemeshow goodness-of-fit statistic is obtained by calculating the Pearson chi-square statistic from the $2 \times g$ table of observed and expected frequencies, where g is the number of groups. The test statistic is written as,

$$\chi^2_{HL} = \sum_{i=1}^{g} \frac{(O_i - N_i\bar{\pi}_i)^2}{N_i\pi_i(1-\pi_i)}$$

If the p-value for Hosmer and Lemeshow test is greater than 0.05, then it is concluded that the fitted model is adequate.

b. Negelkerke R-square

Another indicator for testing the goodness of fit is a Negelkerke R-square. It provides that the Normally, more than 60 percent Negelkerke R-square is accepted.

c. Omnibus Test of Model Coefficients

In this test it is tested whether intercept only model works better than the fitted model.

Hypothesis: -

Ho: Intercept only model work well

H1: Fitted model work better than the intercept only model

If the p-value given by the omnibus test is less than 0.05, then it can be concluded that the fitted regression model works better than the intercept only model.

d. Testing the Significance of Parameters

Test of model effects shows the hypothesis test of significance for each of the variables in the model individually. In this test, the chi-square test statistics and associate p-values are used to check whether each variable in the model is improve the model fit or not.

Hypothesis: -

H0: Selected variable is not significant

H1: Selected variable is significant

If the p-value for each variable is less than 0.05, then it can be concluded that the variable is significantly improve the model fit.

e. Model Diagnostics

Receiver Operating Characteristic (ROC) curve

A Receiver Operating Characteristic (ROC) curve is a way to compare diagnostic tests. It is a plot of the true positive rate against the false positive rate. Test accuracy is also shown as the area under the curve. The greater the area under the curve, the more accurate the test. A perfect test has an area under the ROC curve (AUROCC) of 1. In other words, it shows the predictive power of all possible π_0 in the fitted logistic regression model.

Chapter 04

4. Analysis of Data

This chapter contains presentation and analysis of the data collected through the structured questionnaire. The frequency tables show the findings as derived from the responses by respondents to the various questions contained in the questionnaire followed by discussions. The findings were organized according to the themes and sub-themes derived from the objectives and research questions presented in Chapter One. The eight research objectives set up in Chapter One are achieved using both descriptive and inferential statistics.

4.1: Descriptive Statistics

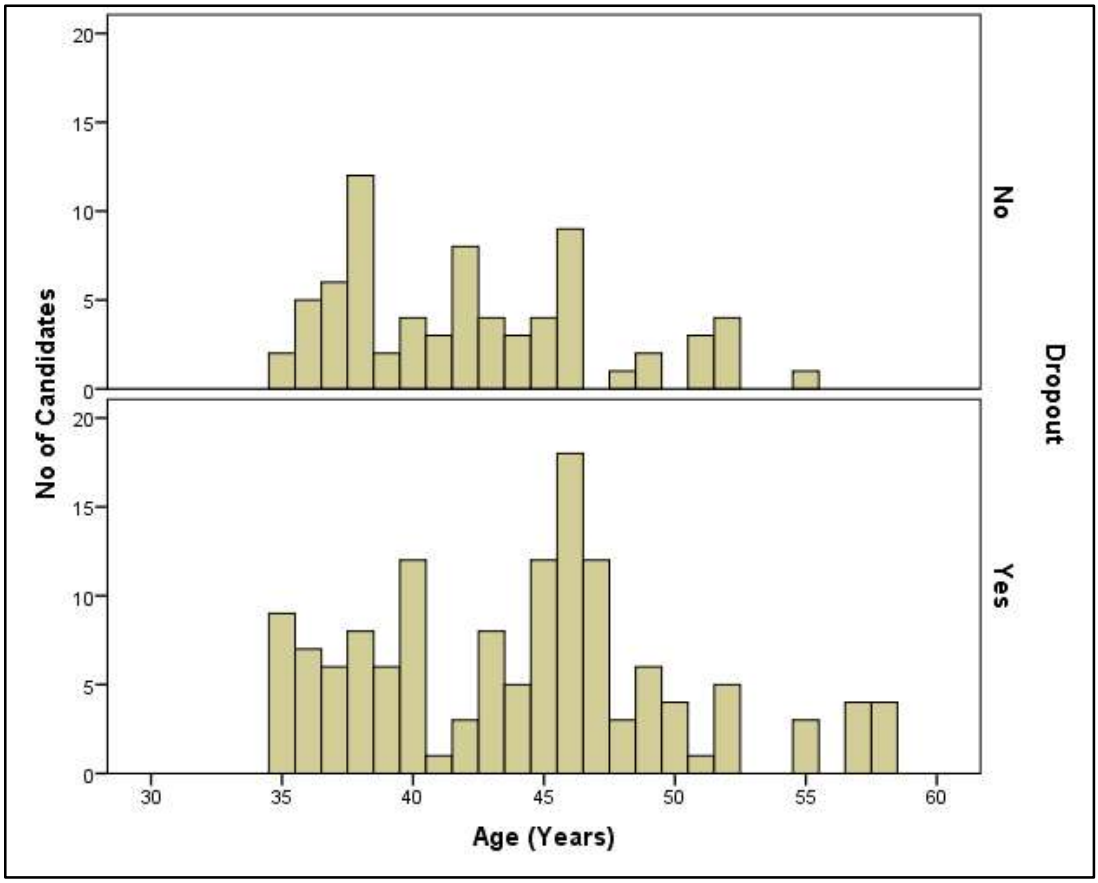

Figure 4.1: Sample Distribution of Candidates by Age and Dropout Status

Figure 4.1 shows the sample distribution of candidates according to their age and whether they drop or not. It clearly shows that minimum age of all candidates are 35 years. More candidates who dropped from the mature candidate process can be seen in between 40 to

50 years of age. In contrast, majority of candidates who successfully completed NVQ level five through mature candidate route are in 35 to 42 years of age.

Table 4.1: Gender Distribution of Candidates by Dropout or Not

Gender	Dropout				Total	
	No		Yes			
	Number	%	Number	%	Number	%
Male	38	52%	55	40%	93	44%
Female	35	48%	82	60%	117	56%
Total	**73**	**100%**	**137**	**100%**	**210**	**100%**

According to the table 4.1, female candidates who dropped from the mature candidate rout is higher than that of male candidates. It is 60 percent. However, the sample percentage of female candidates is 56 percent. When compared gender wise, male candidates more successfully completed the NVQ level five qualification than females.

Table 4.2: Sample Distribution of candidates by the Entry Qualification

Entry Qualification	Dropout				Total	
	No		Yes			
	Number	%	Number	%	Number	%
NVQ Level 4 / NCT / NCIT with 10 years of experience	43	58.9	72	52.6	115	54.8
Diploma or Higher with 10 years of experience	4	5.5	12	8.8	16	7.6
Certificate Level with 12 years of experience	17	23.3	38	27.7	55	26.2
More than 15 years of experience without above qualifications	9	12.3	15	10.9	24	11.4
Total	**73**	**100.0**	**137**	**100.0**	**210**	**100.0**

As far as concerned the entry qualification for mature candidate rout, majority who entered to the process were under the qualification of NVQ level 4/ NCT/ NCIT with 10 years of

experience. It was 52.6 percent. However, when consider the sample distribution of candidates by the entry qualification for mature candidate process, percentage of candidates having qualification with NVQ level 4/ NCT/ NCIT with 10 years of experience is 54.8 percent.

Table 4.3: Sample Distribution of Candidates by Type of the Designation

Type of the Designation	Dropout				Total	
	No		Yes			
	Number	%	Number	%	Number	%
Permanent	65	89.0	105	76.6	170	81.0
Temporary/ Contract Basis	8	11.0	32	23.4	40	19.0
Total	**73**	**100.0**	**137**	**100.0**	**210**	**100.0**

Table 4.3 shows the sample distribution of candidates by type of the designation. It clearly shows that the permanent workers have highly dropped from the mature candidate process than temporary or contract basis workers. Most probably the reason may be the requirement for taking NVQ level five qualification for contract basis workers to be permanent their jobs.

Table 4.4: Sample Distribution of Candidates by Highest Educational Qualification

Highest Educational Qualification	Dropout				Total	
	No		Yes			
	Number	%	Number	%	Number	%
Degree and above	11	15.1	25	18.2	36	17.1
G.C.E. A/L	54	74.0	68	49.6	122	58.1
G.C.E. O/L	8	11.0	44	32.1	52	24.8
Total	**73**	**100.0**	**137**	**100.0**	**210**	**100.0**

According to the table 4.4, majority of candidates having G.C.E. A/L as the highest educational qualification, have dropped from the mature candidate process. It was 49.6 percent. However, the sample distribution of candidate having G.C.E. A/L qualification was 58.1 percent.

4.1.1: Descriptive Statistics of Latent Variables

All latent variables, viz., program recognition, program awareness, industry support, awareness from the industry, technical support, functional support, and individual capacity was measured using a five-point Lickert scale ranging from strongly agree (1) to strongly disagree (5). However, the points strongly agree and agree were combined to create the single response *Agree.* Table 4.5 shows the percentages of responses for each indicator variable measured under the seven latent constructs. Only responses for agree are recorded.

Table 4.5: Descriptive Statistics of Latent Variables

Program Recognition (PR)		**Agree**	
		No. of Responses	**%**
PS 1	The NVQ Level 5 equivalent qualification applied /obtained helps me to go for a new job	68	32.4%
PS 2	The NVQ Level 5 equivalent qualification applied /obtained helps me to get job promotion	80	38.1%
PS 3	The NVQ Level 5 equivalent qualification applied /obtained helps me to go for a salary increment	85	40.5%
PS 4	The NVQ Level 5 equivalent qualification applied /obtained helps me to go for a foreign job	75	35.7%
PS 5	To start my own business or continue my own business I need NVQ qualification	40	19.0%
PS 6	There are many paths to continue your higher studies guaranteed after obtain the NVQ Level 5 certificate through the Mature Candidate Route	20	9.5%
Program Awareness (PA)		**Agree**	
		No. of Responses	**%**
PA 1	TVEC clearly explains about this qualification and Mature Candidate process through the awareness programs	20	9.5%
PA2	TVEC clearly explains about the application evaluation process	58	27.6%
PA 3	TVEC's guidance for understanding formats and preparation of the evidence portfolio is helpful	80	38.1%
PA 4	TVEC guidance help me to well prepare for the final interview	74	35.2%
Industry Support (IS)		**Agree**	
		No. of Responses	**%**
IS 1	My work place provides me the funds / loan to get NVQ Level 5 equivalence qualification	10	4.8%
IS 2	My work place provides trainings to get NVQ Level 5 equivalence qualification	10	4.8%

IS 3	My work place provides online facilities and other facilities to participate for the interview	20	9.5%
IS 4	My work place releases some hours / approve some leave from my work to get NVQ Level 5 equivalence qualification	20	9.5%
IS 5	Applying for this qualification through my work place was convenient	30	14.3%
Awareness from the Industry (AI)		**Agree**	
		No. of Responses	**%**
AI 1	My workplace provides me the information about this qualification	40	19.0%
AI 2	My Company asked me NVQ qualification for my salary increment	68	32.4%
AI 3	My Company asked me NVQ qualification for my Promotions	64	30.5%
AI 4	To permanent my job my Company asked me NVQ qualification	67	31.9%
AI 5	My Company asked me NVQ qualification for my career development in future	45	21.4%
Technical Support (TS)		**Agree**	
		No. of Responses	**%**
TS 1	Details about Mature Candidate Route available on the TVEC website can easily understand	75	35.7%
TS 2	TVEC published/provide contact details of the relevant officers to get information about this qualification	69	32.9%
TS 3	To get information about this program we can easily contact TVEC officers	90	42.9%
TS 4	There are TVEC officers to help us to fill the online application, if needed	20	9.5%
TS 5	No need to wait long time to obtained the certificate after the interview	85	40.5%
Functional Support (TS)		**Agree**	
		No. of Responses	**%**
FS 1	Online document submission saves our time	120	57.1%
FS 2	Online interview saves our time and money than physical interviews	120	57.1%
FS 3	Panel members in the interview panel very clearly asked the questions	110	52.4%
FS 4	Panel members in the interview panel very friendly asked the questions	105	50.0%
Individual Capacity (IC)		**Agree**	
		No. of Responses	**%**
IC 1	It is not a barrier to prepare a portfolio in English language	68	32.4%
IC 2	It is convenient to face an interview in my preferred language	100	47.6%
IC 3	I am satisfied about my subject knowledge to face an interview	45	21.4%

IC 4	I am satisfied about my IT application and management knowledge to face an interview	66	31.4%
IC 5	I can manage the time to participate in this program without disturbing my other works	85	40.5%

Table 4.6. Reliability of Latent Constructs

Construct	No. of Items	Alpha (α)	Status
Program Recognition (PR)	5	0.866	Excellent
Program Awareness (PA)	4	0.845	Excellent
Industry Support (IS)	5	0.907	Excellent
Awareness from the Industry (AI)	4	0.917	Excellent
Technical Support (TS)	5	0.903	Excellent
Functional Support (FS)	4	0.901	Excellent
Individual Capacity (IC)	5	0.975	Excellent

The reliability of all structural measurement (latent variable) is estimated using Cronbach's Alpha. Reliability, which explores the internal consistency and properties of the measuring scale. Table 4.6 provides a summary of Cronbach's Alpha for each of the constructs measured. According to the George Milley (2003) [65], alpha frequencies indicate a more reliable level at 0.7 while a value greater than 0.8 indicates a higher level of reliability. As the table 4.6 shows, the alpha coefficients for all latent variable are above 0.8, thus indicating excellent internal consistency for those variables. Therefore, it can be concluded that all the latent constructs were categorized by good internal consistency allowing further analysis. One indicator from each program recognition (PR) had to be removed to improve the alpha coefficient for that construct.

4.2: Inferential Statistics

To identify the influence of factors (described under the preliminary analysis) to the dropout of candidates from the mature candidate process, a logistic regression model is applied. Response and predictor variables as follow,

Response Variable: - Dropout (Yes/No)

Predictor Variables: - Gender (Male/Female)

Age (in Years)

Highest Educational Category (GCE O/L or below/ GCE A/L / Degree and above/ Other)

Type of Designation (Permanent/ Temporary or contract Basis)

Program Recognition (Average score of indicators under each latent variable)

Program Awareness (Average score of indicators under each latent variable)

Industry Support (Average score of indicators under each latent variable)

Awareness from the Industry (Average score of indicators under each latent variable)

Technical Support (Average score of indicators under each latent variable)

Functional Support (Average score of indicators under each latent variable)

Individual Capacity (Average score of indicators under each latent variable)

4.2.1: Testing the significance of each explanatory variables

Table 4.7: Test of Model effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	12.717	1	.000
Gender	7.222	1	.007
Type of the designation	13.340	1	.000

Source	Type III		
	Wald Chi-Square	df	Sig.
Highest educational qualification	3.764	2	.152
Age	7.266	1	.007
Program Recognition (PR)	10.295	1	.001
Program Awareness (PA)	5.523	1	.021
Industry Support (IS)	5.411	1	.020
Awareness from the Industry (AI)	8.687	1	.003
Technical Support (TS)	9.578	1	.002
Functional Support (FS)	11.738	1	.001
Individual Capacity (IC)	14.257	1	.000

Dependent Variable: Dropout

Model: (Intercept), Gender, Type of the designation, Highest educational qualification, Age, PR, PA, IS, AI, TS, FS, IC

As shown in the table 4.7, p-value for all variables except the variable "highest educational qualification" are less than 0.05. That means all those variables are significant at 5% level of significance. Therefore, those variables (Gender, type of the designation, age, program recognition, program awareness, industry support, awareness from the industry, technical support, functional support, and individual capacity) can be included into the model.

4.2.2: Significance of Parameter Estimates

Table 4.8: Significance of Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	12.300	3.7971	4.858	19.743	10.494	1	.001
[Gender=1]	-1.897	.7133	-3.315	-.519	7.222	1	.007
[Gender=2]	0[a]						
[Type of the designation=1]	-.235	.6703	1.134	3.762	13.340	1	.000
[Type of the designation=2]	0[a]						

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
[highest educational qualification=1]	-.241	.7861	-1.782	1.300	.094	1	.759
[highest educational qualification=2]	.692	.5671	-.420	1.803	1.487	1	.223
[highest educational qualification=3]	0[a]						
Age	-.116	.0439	-.204	-.032	7.266	1	.007
Program Recognition (PR)	-1.427	.4455	-2.303	-.556	10.295	1	.001
Program Awareness (PA)	-1.238	.4374	-.476	1.238	5.523	1	.021
Industry Support (IS)	-.274	.4330	-1.856	-.159	5.411	1	.020
Awareness from the Industry (AI)	-.386	.4309	.425	2.114	8.687	1	.003
Technical Support (TS)	-.478	.4313	-2.180	-.489	9.578	1	.002
Functional Support (FS)	-.446	.3789	-1.242	.243	11.738	1	.001
Individual Capacity (IC)	-.223	.4224	-1.042	.614	14.257	1	.000
(Scale)	1[b]						

Dependent Variable: Dropout

Model: (Intercept), Gender, Type of the designation, highest educational qualification, Age, PR, PA, IS, AI, TS, FS, IC

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

As per the table 4.8, p-value (sig. value) of all the variable except the variable "Highest educational qualification" is less than 0.05. p-values of two categories of variable "highest educational qualification are 0.759 for degree and above and 0.223 for A/L categories. Therefore, the variable "highest educational qualification" can not be included in to the model. All other variable can be included in to the model.

4.2.3: Comparing Fitted Model with the Null Model

Hypothesis: -

Ho: Intercept only model work well

H1: Fitted model work better than the intercept only model

Table 4.9: Omnibus Test of Model Coefficients

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
90.034	12	.000

Dependent Variable: Dropout

Model: (Intercept), Gender, Type of the designation, highest educational qualification, Age, PR, PA, IS, AI, TS, FS, IC

a. Compares the fitted model against the intercept-only model.

Table 4.9 present the result of the omnibus test. Using omnibus test, it is compared the fitted model against intercept only model. Also, table 4.8 shows that the p-value is 0.000 which is less than 0.05. Therefore, the null hypothesis can be rejected and alternative hypothesis is accepted at 5% level of significance. Further, enough evidences are there to conclude that the fitted model works better than the intercept only model.

4.2.4: Testing Goodness of Fit of the Fitted Model

Hypothesis: -

Ho: Model is adequate

H1: Model is not adequate

Table 4.10: Hosmer and Lemeshow Test

Hosmer and Lemeshow Test			
Step	**Chi-square**	**df**	**Sig.**
1	3.314	8	.913

After identifying that the fitted model is better than the intercept only model under the omnibus test, it is needed to check the adequacy or the goodness of fit of the fitted model. It is tested using Hosmer and Lemeshow test which is mentioned in table 4.10. As per the

results of table 4.10, the p-value is 0.913 which is greater than 0.05. Therefore, enough evidences are there not to reject H0 (null hypothesis). In other words, the null hypothesis has to be accepted. Then it can be concluded that the fitted model is adequate.

Table 4.11: Model Summary

Step	-2 Log likelihood	Nagelkerke R Square
1	181.269	.862

According to the model summary table, it can be seen that Negelkerke R-square for the fitted model is 0.862. Normally it is believed that more than 0.60 Negelkerke R-square indicates that the fitted model fit the data well.

4.2.5: Model Diagnostics

Receiver Operating Characteristics (ROC) Curve

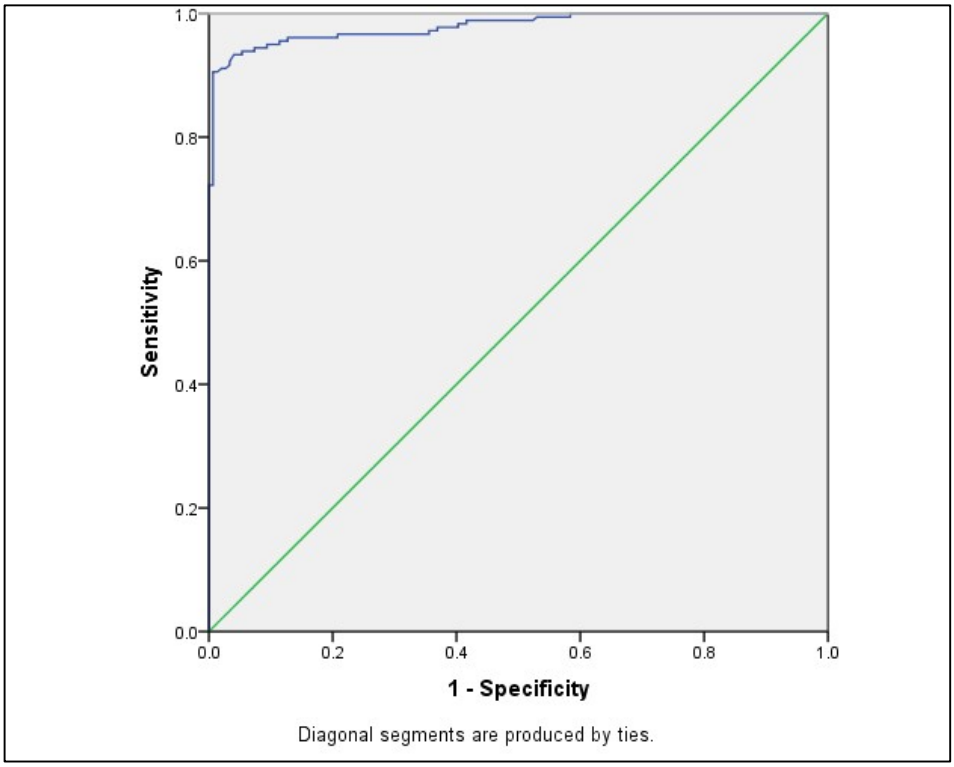

Figure 4.2: ROC Curve for Fitted Model

Table 4.12: Area Under the Curve (AUC)

Area Under the Curve (AUC)

Test Result Variable(s): Predicted probability

Area	Std. Error	Asymptotic Sig.	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
.889	.007	.000	.966	.993

Figure 4.2 illustrates that the Receiver Operating Characteristics (ROC) curve for the fitted logistic regression model by plotting predicted probabilities of the fitted model. It has been clearly identified that the graph is closer to the top and left-hand borders. That means it shows that the test is more accurate. In other words, area mentioned in above AUC table is 0.889 (with 95% confidence interval) is very closer to 1. Therefore, it can be concluded that the *ability of the model to predict an event correctly is 88.9 percent. That means, this model fits the data well.*

Finally, after following the each and every step for fitting a logistic regression model, the fitted model can be mentioned as follows;

Logit (Dropout) = 12.3 – 1.897 Male -0.235 Permanent -0.116 Age – 1.427 PR – 1.238 PA – 0.274 IS – 0.386 AI – 0.478 TS – 0.446 FS – 0.223 IC

Model Interpretation

- Odds of having dropped from the mature candidate route is 0.15 times lower than for male candidate when compared with odds of having dropped from the mature candidate route for female candidate.
- Odds of having dropped from the mature candidate route is 0.79 times lower than for temporary or contract basis worker when compared with odds of having dropped from the mature candidate route for permanent worker.
- For every one-year increase in age of a candidate, odds of having dropped from the mature candidate route decrease by 0.89 times.
- For every one-unit increase in program recognition of mature candidate route, odds of having dropped from the mature candidate route decrease by 0.24 times.

- For every one-unit increase in program awareness of mature candidate route, odds of having dropped from the mature candidate route decrease by 0.29 times.
- For every one-unit increase in industry support for taking NVQ level five through mature candidate route, odds of having dropped from the mature candidate route decrease by 0.76 times.
- For every one-unit increase in awareness from the industry for taking NVQ level five through mature candidate route, odds of having dropped from the mature candidate route decrease by 0.68 times.
- For every one-unit increase in technical support for taking NVQ level five through mature candidate route, odds of having dropped from the mature candidate route decrease by 0.62 times.
- For every one-unit increase in functional support for taking NVQ level five through mature candidate route, odds of having dropped from the mature candidate route decrease by 0.64 times.
- For every one-unit increase in individual capacity for taking NVQ level five through mature candidate route, odds of having dropped from the mature candidate route decrease by 0.8 times.

4.2.6. Significance of the Study

Sri Lanka seeks to improve the skills of industrial workers through the skill upgrading programs which operates in many ways and identified TVET as an ideal place for that. Though there is a skill upgrading process for industry workers who aspire to be promoted from craft level to their supervisory level through TVET, the performance of the skill upgrading process implement through TVET for the above category is low. Furthermore, poor attraction to the skill upgrading process for said group make high dropouts to the skill upgrading process and it is leads to law performance of the process. Retention is one of the key factors to improve performance of TVET sector and it is necessary to create a skilled workforce for the industry. According to some literature, interviews done with TVET sector stakeholders and statistics available; lack of technical and supervisory level skilled workers in the labour force is a major burden to the industry in Sri Lanka today. Furthermore, currently in Sri Lanka there are many industries needs and problems in such fields without proper training system. Therefore, it is very critical to improve the skill upgrading process of TVET in many ways to attracting industry workers by reducing

dropouts. There is no proper study has been done for regarding the skill upgrading or ongoing skill upgrading process of TVET in Sri Lanka for said group.

This research focused on to fulfill the gap on inability to decrease high dropouts of the said skill upgrading process by improving the skill upgrading process through many ways. No research focus on, either nationally or internationally, on the particular area that this research focuses

There are some studies have been conducted internationally regarding upskilling of industrial workers through TVET and they are mainly focus on upskilling of digital knowledge of the industry workers. None of them focus on the performance of the skill upgrading process in terms of attraction through the reduce dropouts. Only a few studies related to upskilling of industry workers through TVET have been conducted nationally, but all of them are focused on the industry workers upskilling process which has been implemented to promote them from craft level to master craft level (NVQ Level 1-4 ; as per the National Vocational Qualification (NVQ) Framework of Sri Lanka).Recognition of Prior Learning (RPL) system has been implemented for the above category in Sri Lanka and many studies have been conducted for RPL system nationally and internationally.

Although some research has been done country-wise and region-wise to determine the factors influencing recruitment to TVET, including in the Sri Lankan domain, it is uncertain how these findings apply to the skill upgrading process of experienced craft-level workers that aid their promotion to supervisory level. Because many variables such as background, environment, expectation, perception related to above category are still different from unemployed students, apprentices employed who are not eligible for the supervisory level achievements. Therefore, it is necessity to identifying the factors influencing to the dropouts of the skill up grading process which has been implemented for industry workers seeking to be promoted to their supervisory level through TVET in Sri Lanka. Furthermore, research should focus on to fulfill the gap in the inability to decrease high dropouts of the said skill upgrading process.

TVET sectors in many countries are experiencing improvements, benefits through technical intervention, digitalization of processes. There are some research focuses on how digitalization, new technologies, technological interventions involve with TVET

systems in many countries. Sri Lanka has also introduced several digital innovations in the administrative sector of TVET, most of which are not working properly and few of which are working at a significant level. Still Sri Lanka uses online courses and some online activities only for lip service rather than using technology for systematic changes in the learning process in the TVET framework. However, there is no significant involvement of digital activities to the skill upgrading process which has been implemented for industry workers seeking to be promoted to their supervisory level through TVET in Sri Lanka.

This study findings provided valuable insights for policy makers, governing bodies, implementers and all other stakeholders, how can underperformance problems be overcome by decreasing high dropouts of the skill upgrading process which has been implemented for industry workers seeking to be promoted totheir supervisory level through TVET in Sri Lanka through the Mature Candidate Route. Finally Output of this study will be an instrument to implement long term sustainable solution towards skill upgrading of industry workforce and it will directly affect to the increase of skilled workforce of the country.

4.2.7. Limitations:

1. Although we did our best to construct appropriate measures and took all possible safety measures in administering the questionnaire, self-report biases cannot be ruled out completely

2. **Sample size may limit the generalization of findings to all industry sectors in the Mature Candidate Route program.** Larger samples from varied sectors could provide a more comprehensive view of the dropout rates and their causes.

3. **All students** who drop out not entered to the survey, and those who do respond might not represent the views of all dropouts.

4. This study only observed a short timeframe; it may not capture longitudinal trends. Dropout causes can evolve over time, especially with changing economic or social conditions.

4.2.8. Suggestions for Further Research:

1. **Evaluate the Impact of Organizational Changes on Dropout Rates at TVEC:** Conduct an in-depth analysis of how changes in processes and activities within TVEC, such as the introduction of online interviews and certification verification processes, affect dropout rates among candidates. Identifying correlations between these new procedures and dropout trends could help optimize processes to improve candidate retention.
2. **Examine the Career Advancement Benefits of NVQ Level 5 Equivalence Qualifications for Mature Candidates:**
   Assess the impact of achieving NVQ Level 5 equivalent qualifications via the Mature Candidate Route on career progression. This research could explore whether obtaining this qualification influences opportunities for job promotion, salary increments, or role changes within their respective fields.
3. **Analyze the Value of NVQ Level 5 Equivalence Qualifications for Overseas Workers and Returnees:**
   Investigate the relevance and utility of NVQ Level 5 equivalent qualifications for candidates who have worked abroad or have recently returned from overseas. This study could provide insights into how these qualifications support the reintegration of returnees into the local job market and enhance employment opportunities for those with international work experience.

These limitations and expanding the scope in future studies, researchers can develop a clearer understanding of the dropout phenomenon and provide actionable recommendations to improve student retention in the NVQ Level 5 equivalence qualification awarding program through the Mature Candidate Route

Chapter 05

5. Conclusion and Recommendation

5.1. Conclusions

The purpose of the research was to carry out quantitative analysis to get depth understanding about high drop outs of NVQ level five equivalence qualification awarding process of TVEC.

This study is designed using quantitative techniques, in particular confirmatory Factor Analysis (CFA) and Logistic Regression Analysis (LRA). Dropout is used as the dependent variable while Program Recognition (PR), Program Awareness (PA), Industry Support (IS), Awareness from the Industry (AI), Technical Support (TS), Functional Support (FS), Individual Capacity (IC), and demographic factors are treated as independent variables.

The findings related to the first research objective, "factors influencing high dropout rates among craft-level industry workers seeking promotion to supervisory levels through the Mature Candidate Route," reveal that several controllable factors contribute to these dropouts. Specifically, **Program Recognition**, **Program Awareness**, **Industry Support**, **Industry Awareness**, **Technical Support**, **Functional Support**, and **Individual Capacity** play significant roles in influencing dropout rates in the Mature Candidate Route Process.

Among these factors, **Industry Support**, **Individual Capacity**, **Industry Awareness**, and **Technical Support** are identified as the most impactful. These elements collectively affect the participants' likelihood of completing the program, as they shape both the accessibility and perceived value of the program. **Industry Support** and **Technical Support** help provide the resources and guidance needed to navigate the program, while **Individual Capacity** and **Awareness from the Industry** determine the participants' readiness and understanding of the program's importance for career advancement.

The findings related to the research objective—"to determine strategies to reduce high dropout rates among craft-level industry workers seeking promotion to supervisory positions through the Mature Candidate Route"—revealed several effective strategies. Based on the questionnaire survey and interviews with stakeholders, the study identified key approaches, including:

1. **Flexible Pathways**: Offering adaptable learning and career pathways can help address individual knowledge and practical skill gaps, enhancing each candidate's capacity to advance.
2. **Technological Interventions and Digitalization**: Introducing technological tools and digital processes can support candidates in building required skills and facilitate the Mature Candidate Route process.
3. **Awareness Programs through TVEC**: Raising awareness among industry workers and leading employers through the Tertiary and Vocational Education Commission (TVEC) can increase understanding and motivation for workers to pursue advancement. Increasing public awareness through the media on a regular basis will be more effective in attracting and retaining industry workers for the Mature Candidate Route.
4. **Pathways for Higher Qualifications**: Implementing accessible routes to higher qualifications or further studies via the Mature Candidate Route can encourage candidates to remain engaged.
5. **Technical Support through Technology**: Providing technical support through technology can assist candidates as they navigate the Mature Candidate Route, further enhancing retention.
6. **Update TVEC Officials on the Mature Candidate Route:** Since this process is industry-focused, many workers are often too busy with their jobs to make repeated trips for information when contacting the TVEC. It is crucial for TVEC officers to be well-informed about the Mature Candidate Route process, enabling them to provide accurate and efficient assistance to candidates. This knowledge will help ensure that candidates receive the support they need, reducing the likelihood of them abandoning the process.

These strategies collectively contribute to reducing dropout rates in the Mature Candidate Route by supporting industry workers in their professional growth and maintaining their commitment to the process.

This study findings provided valuable insights for policy makers, governing bodies, implementers and all other stakeholders, how can underperformance problems be overcome by decreasing high dropouts of the skill upgrading process which has been implemented for industry workers seeking to be promoted totheir supervisory level through TVET in Sri Lanka through the Mature Candidate Route. Ultimately, the outcomes of this study offer a foundation for establishing long-term, sustainable solutions for workforce skill enhancement, which is essential for increasing the country's pool of skilled workers and boosting overall workforce quality.

References

Balasingham, R. (2021). *Factors influencing to students' dropout in vocational training education: an empirical study of training and vocational education and training sector (tvet)*. *April*.

Business, G., & Khan, S. (2019). *IMPACT OF HUMAN CAPITAL FORMATION ON ECONOMIC GROWTH : EVIDENCE*. *March*.

Commission, V. E., Silva, N. D. E., Wickramasinghe, S., Rammawadu, V., & Karunadasa, L. (n.d.). *PUBLISHER TERTIARY & VOCATIONAL EDUCATION COMMISSION GUIDANCE ANALYSIS & PRESENTATION GRAPHIC DESIGNING & TYPE SETTING PUBLISHER 'S NOTE*.

Conference, I. L. (2021). *Shaping skills and lifelong learning for the future of work*.

Growth, B. (2010). *A Skilled Workforce for Strong, Sustainable and Balanced Growth* (Issue November).

Hylén, J. (2002). *Open Educational Resources : Opportunities and Challenges*.

On, N. P. (n.d.). *NATIONAL POLICY ON TECHNICAL AND VOCATIONAL*.

Sampling, S., & Kanpur, I. I. T. (n.d.). *Chapter 4 Stratified Sampling*. 1–26.

Simiyu, J. W. (2009). *Level 3 Factors That Influence the Attractiveness of a Technical and Vocational Education and Training Centre : a Case Study of a Technical Institute in Kenya A case study of a Technical Institute in Kenya*. *7*(1), 0–18. https://doi.org/10.21427/D7B73V

Survey, L. F., & Report, Q. (2021). *Sri Lanka Labour Force Survey Quarterly Report 4 th Quarter - 2021*.

Taherdoost, H. (2017). *Sampling Methods in Research Methodology ; How to Choose a Sampling Sampling Methods in Research Methodology ; How to Choose a Sampling Technique for*. *September*. https://doi.org/10.2139/ssrn.3205035

Taylor, A. (2014). *The Challenges of partnership in school-to-work transition The Challenges of Partnership in School-to-Work Transition *. September 2006*. https://doi.org/10.1080/13636820600955716

Tessaring, M., & Wannan, J. (2010). *Vocational education and training – key to the future*.

The Digitization of TVET and Skills Systems. (n.d.).

Ullah, A., Pinglu, C., Ullah, S., Syed, H., & Abbas, M. (2021). The Role of E - Governance in Combating COVID - 19 and Promoting Sustainable Development : A Comparative. In *Chinese Political Science Review* (Vol. 6, Issue 1). Springer Singapore. https://doi.org/10.1007/s41111-020-00167-w

Upskilling efforts by the public sector Learnings from around. (2021). *October*.

Vinayan, G., Harikirishanan, D., & Ling, S. M. (2019). *UPSKILLING AND RESKILLING THE WORKFORCE VIA INDUSTRY DRIVEN TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING : STRATEGIES TO INITIATE INDUSTRY / INSTITUTION PARTNERSHIP IN MALAYSIA*.

UNESCO. 2015. Recommendation concerning Technical and Vocational Education and Training (TVET). https:// unesdoc.unesco.org/ark:/48223/pf0000245178 (Accessed 11 October 2019).

Appendix

Questionnaire

STUDY ON HIGH DROPOUT OF THE NVQ LEVEL 5 EQUIVALANCE QUALIFICATION AWARDING PROCESS OF TVEC

Thank you for participating in this survey. We are conducting a study on high dropouts of the NVQ level 5 equivalence qualification awarding process of TVEC. Your feedback will help us understand the impact of key factors to the dropout of the NVQ level 5 mature candidate route. This survey should take approximately 10 minutes to complete.

Your responses will remain confidential and anonymous.

PART I: PERSONAL INFORMATION

1. Age ☐ Years

2. Gender
   i) Male ☐
   ii) Female ☐

3. Monthly Income (approximately) Rs: …….

4. What was the entry qualification applied for NVQ level 05 under the mature candidate route?
   i) NVQ Level 4 / NCT / NCIT with 10 years of experience ☐
   ii) Diploma or Higher with 10 years of experience ☐
   iii) Certificate Level with 12 years of experience ☐
   iv) More than 15 years of experience without above qualifications ☐

5. Designation …….

5.1 Type of the designation

Permanent ☐

Temporary/ Contract Basis ☐

Other ……

6. What is your highest educational qualification

   Degree and above ☐

   G.C.E. A/L ☐

   G.C.E. O/L ☐

   Other ☐

7. What is your highest professional qualification

   ……

   ……

   ……

PART II:

These questions are aimed to gather information related to the factors affecting high dropouts of skill upgrading process**. Please indicate your opinion with respect to the statements given below.**

Number	Statement	Strongly agreed	Agreed	Neutral	Disagree	Strongly Disagree
I.	**Program Related Factors** **Program Recognition (PR)**					
01	The NVQ Level 5 equivalent qualification applied /obtained helps me to go for a new job					
02	The NVQ Level 5 equivalent qualification applied /obtained helps me to get job promotion					
03	The NVQ Level 5 equivalent qualification applied /obtained helps me to go for a salary increment					
04	The NVQ Level 5 equivalent qualification applied /obtained helps me to go for a foreign job					
05	To start my own business or continue my own business I need NVQ qualification					
06	There are many paths to continue your higher studies guaranteed after obtain the NVQ Level 5 certificate through the Mature Candidate Route					

II.	**Program Awareness (PA)**					
07	TVEC clearly explains about this qualification and Mature Candidate process					
08	TVEC clearly explains about the application evaluation process					
09	TVEC's guidance for understanding formats and preparation of the evidence portfolio is helpful					
10	TVEC guidance help me to well prepare for the final interview					
	Job/Industry Related Factors					
III.	**Industry Support (IS)**					
11	My work place provides me the funds / loan to get NVQ Level 5 equivalence qualification					
12	My work place provides trainings to get NVQ Level 5 equivalence qualification					
13	My work place provides online facilities and other facilities to participate for the interview					
14	My work place releases some hours / approve some leave from my work to get NVQ Level 5 equivalence qualification					
15	Applying for this qualification through my work place was convenient					
IV.	**Awareness from the Industry (AI)**					
16	My workplace provides me the information about this qualification					
17	My Company asked me NVQ qualification for my salary increment					
18	My Company asked me NVQ qualification for my Promotions					
19	To permanent my job my Company asked me NVQ qualification					

20	My Company asked me NVQ qualification for my career development in future					
V.	**Service-Related Factors** **Technical Support (TS)**					
21	Details about Mature Candidate Route available on the TVEC website can easily understand					
22	TVEC published/provide contact details of the relevant officers to get information about this qualification					
23	To get information about this program we can easily contact TVEC officers					
24	There are TVEC officers to help us to fill the online application, if needed					
25	No need to wait long time to obtained the certificate after the interview					
VI.	**Functional Support (FS)**					
26	Online document submission saves our time					
27	Online interview saves our time and money than physical interviews					
28	Panel members in the interview panel very clearly asked the questions					
29	Panel members in the interview panel very friendly asked the questions					
VII.	**Personal Capacity** **Individual Capacity (IC)**					
30	It is not a barrier to prepare a portfolio in English language					
31	It is convenient to face an interview in my preferred language					

32	I am satisfied about my subject knowledge to face an interview					
33	I am satisfied about my IT application and management knowledge to face an interview					
34	I can manage the time to participate in this program without disturbing my other works					

33. Were you able to complete the NVQ level 05 equivalence qualification awarding process successfully?

Yes ☐

No ☐

34. If the answer for the question 33 is "No", then what was the most decisive reason for that?

……

……

……

……

33. What are the specific aspects of the **Mature Candidate Route Process** that you find most important and useful for you?

……

……

……

……

34. What are the specific aspects of the **Mature Candidate Route Process** that you find least important and need improvement?

……

……

……

……

35. Do you have any additional comments or suggestions for improving the **Mature Candidate Route Process**?

……

……

……

……

Thank you for taking the time to complete this survey!