Spring 6-1-2023

The Dual Education System in Egypt: the system's challenges and the way forward

Raghda Khaled Mohamed
raghdakhaled@aucegypt.edu

The American University in Cairo

School of Global Affairs and Public Policy

A Thesis Submitted to the

Department of Public Policy and Administration

in partial fulfillment of the requirements for the degree of

Master of Public Policy

The Dual Education System in Egypt:

System's Challenges and the Way Forward

Semester: Spring 2023

Under the Supervision of/ Dr. Ghada Barsoum

By:
Raghda Khaled Mohamed

Student ID:

900112073

Table of Contents

List of abbreviations:

ABA: Alexandria Business Association

ATS: Applied Technology School

BMZ: German Ministry of International Cooperation

CBC: Competence Based Curricula

CBE: Competence Based Education

CSR: Corporate Social Responsibility

DS: Dual System

ECTQM: Egyptian Core Task Quality Model

EFQM: European Foundation for Quality Management

EFIA: Egyptian Federation for Investors Association

EEDS: Enhancement of Egyptian Dual System Project implemented by GIZ.

EOMS: Educational Organization Management System

EQAVET: European Quality Assurance Reference Framework for Vocational Education and Training

FEI: Federation of Egyptian Industries.

GDDS: General Directorate for the Dual System

GIZ: Deutsche Gesellschaft Fur Internationale ZusammenArbiet - *German Abbreviation for:*

German International Corporation and Development Agency

GTZ: Deutsche Gesellschaft Fur Internationale ZusammenArbiet – *German Abbreviation for:*

German Technical Cooperation Agency

IA: Investors Association

IRB: Institutional Review Board

ISO: International Standardization Organization

JICA: Japan International Corporation Agency

M&E: Monitoring and Evaluation

MoETE: Ministry of Education and Technical Education

MKI – DS: Mubarak Kohl Initiative-Dual System

NCTDE: National Center for Technological Dual System Education

NGO: Non-profit Organizations

NQF: National Qualifications Framework

PDCA: Plan – Do – Check – Act quality cycle

RQI: RADAR Quality Index

RUDS: Regional Units for Dual System

SDGs: United Nations Sustainable Development Goals.

TCTI: Technical Support for the Comprehensive Technical Education Initiative in Egypt project implemented by GIZ.

TE: Technical Education

TQM: Total Quality Management

TSS: Technical Secondary School

TVET: Technical and Vocational Educational and Trainings

USAID: United States Agency for International Development

VET: Vocational Educational Trainings

List of figures:

Acknowledgement:

This has been an indeed true, rich, and life-changing experience. The past two and half years have been roller-coaster. I was lucky enough to finalize my master's degree at my home, AUC. I was lucky enough to have been taught by the greatest group of professors in Egypt and to have been able to create this vast number of connections and friends. As much as I am thrilled to have witnessed all the details in this journey, I am leaving with a heavy heart. I consider myself lucky and blessed. I thank Allah to have given me this opportunity.

I need to thank my Youssef Jameel family. Thanks to Amira El-Beltagy for her support, patience and backstopping in every detail that had to with the fellowship processes, especially with the summer abroad at the George Washington University. I am thanking Menna Abdelhamid who was a true support to all students at the MPP department. I need to thank my professors, it would not have been the same without them. I thank Dr. Ghada Barsoum for being my thesis supervisor and for being a great academic scholar that I got to learn so much from. Dr. Rana Hendy, I am truly thankful for her, she has been my program advisor, my economics professor and the one I attended my most classes with. Thanks to Dr. Laila ElBaradei for being the kindest professor and for her supervision during the public policy hub, I truly learned a lot from her. I would also like to thank Dr. Noura Wahby, Dr. Khaled Abdelhalim and Dr. Ahmed Fayed, I enjoyed their classes and learned a lot.

I would like to extend my gratefulness to my mother Aliaa and to my sister Reem. They were the true backbone to me. They were supporting me throughout this journey and have dealt with my pressuring times the best way they could. I am also thankful to my friends who were always there for me whenever I needed advice or proof reading. Always grateful!

The American University in Cairo
School of Global Affairs and Public Policy
Department of Public Policy and Administration

The Dual Education System in Egypt: *System's Challenges and the Way Forward*

By
Raghda Khaled Mohamed

Supervised by
Dr. Ghada Barsoum

Abstract

The technical education and vocational training (TVET) system is one of the educational models that is popular all over the world. It is implemented in several countries and consists of several sub-models. One of these sub-models is the dual educational system. It is one of the booming TVET educational models that are common in Europe, especially in Germany. Since Egypt adapted the German dual educational model since the 1990's, this thesis discusses the dual educational system in Egypt through the lens of governance and quality management. Currently, Egypt is collaborating with several national and international policy advisors on enhancing the dual educational system through international best practices, policy amendments and technical and financial support from donor organizations. This thesis examines, reviews, and analyzes the dual educational system in Egypt, the current challenges, the quality model used to enhance the system (ECTQM and EFQM) and its governance mechanisms. It also elaborates on the way forward for the system, its social perception, its strengths and weaknesses, the system's accountability, and the possible recommendations that could support enhancing it. The quality management system of Egypt's dual education has never been researched before, and thus, the analysis of this thesis was fundamentally depending on the primary sources to cover and to fulfill an initial academic contribution in this area. The aim of the research is to pinpoint the challenges existing in the Egyptian dual educational system and recommend feasible solutions. The analysis shows that the system has been affected by the political situations that Egypt witnessed over the past fifteen years, which contributed to the system's current formulation. Moreover, the analysis elaborated on the reasons contributing to the system's current social perception and the possible recommendations to achieve an enhanced way forward. The findings added that the usage of ECTQM as a quality model to enhance the Egyptian dual education was not effective and was not fully able to improve the quality management system on the operational level, or on the central level due to several challenges that the thesis will elaborate on in details.

1. Chapter One. Introduction:

The UNESCO (The United Nations Educational, Scientific and Cultural Organization) and the ILO (International Labor Organization) define the Technical and Vocational Education and Training (TVET) as "aspects of the educational process including the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding, and knowledge relating to occupants in various sectors of economic and social life" (UNESCO and ILO, 2002, P.2). TVET includes several formal and non-formal education models. The focus of this thesis is one of TVET's formal education models which is called ''the dual educational system''. The dual educational system has been implemented in several European countries, especially Germany. Germany is famous for being one of the countries that depends on the dual system to support its labor market activities and has been the benchmark for this educational model over the past years. Since Egypt has adapted this international model over the past twenty years, it is important to review the performance of Egypt with regards to the enhancement of its dual educational model and to examine the quality management system associated to it.

1.1. The Egyptian dual educational system's design:

The dual educational system was originally created through a bilateral German-Egyptian technical cooperation agreement and in the 1990s was previously known as the *''Mubarak Kohl Initiative for dual System - MKI''*. (El-Ashmawi, 2020). It was implemented in the Egyptian technical schools starting 1994 with the help of the German government (Abou Zeid, et al., 1999). The dual educational system is a hybrid form of education whereby enrolled students get the opportunity of receiving their theoretical learning experience inside their schools, and on the other hand, receive their practical side of the learning experience in one of the relevant Egyptian private sector firms that are part of the system (Maher, 2013). Hence, the system can be seen as a

co-shared model between the public sector (The Ministry of Education and Technical Education MoETE) and the private sector entities participating in the system (Maher, 2013).

The idea behind the dual educational system is to modernize the usual technical education by allowing the enrolled students to have a ‘’hands-on’’ experience with the Egyptian labor market by receiving genuine labor market experience during their schools’ years. The practical training comes considering the curricula approved and accredited by the MoETE (MoETE, 2021). The dual educational system includes a dynamic framework and cooperation agreements with many private sector firms in the different sectors to be able to secure representable training opportunities to the enrolled students (Amin & Ezz, 2017). Since the dual education or the technical education in general is based on the acquisition of technical competences and skills, the enrolled students get to spend 70% of their educational experience in the private sector firm, and 30% in the schools (Maher, 2013).

Additionally, enrolled students in the dual educational system are eligible to receive monthly financial allowances from the private sector firm they are enrolled in based on their targeted occupation and sector (Grunwald, et al., 2009). These allowances vary from one academic year to the other and from one technical sector to the other based on a fixed agreement with the MoETE (Maher, 2013). The dual educational system aims to empower its students to be the future skilled workforce of Egypt and by widening the platform of Egypt’s blue-collar workers (ERF, 2018). Involved companies, factories and workshops will not compromise their trained students and would be very interested and eager to hire them after their graduation since they have acquired the most knowledge needed for them to be fully operational and successful with their technical competences and skills (UNESCO, 2002).

1.2 The significance of the study:

The dual educational system is different from the general technical education since the latter aims to teach all the components of the curricula within the workshops of the technical schools without private sector engagement (Maher, 2013). Logically, dual educational system's schools include workshops too, but these workshops are used only during the inductive period at the beginning of each year to orient the students about the basics of the practical learning and the content they shall expect, upon enrolling their respective private sector firms (GIZ central evaluation report, 2021).

The advancement of technical and dual education is attracting a lot of attention since it has been raised by President Sisi in a number of his speeches over the months in 2022, it is also taking a position in Egypt's 2030 Agenda (MoETE, 2022). Moreover, quality of education is the fourth goal in the United Nations' Sustainable Development Goals (UNHCR, 2019). Enhancement of the Egyptian dual educational system has been a shared responsibility between the Ministry of Education and Technical Education (MoETE), the private sector representatives and the relevant donor organizations. The enhancement processes involve for example: establishing and reviving dialogue platforms that bring together all relevant and interested stakeholders to strengthen the dynamics of the dual education and the steering of its sub-processes, the dynamic update of the curricula to match the labor market needs, the up skilling of teachers, schools' staff and in company trainers, and equipping of schools (GIZ central evaluation report, 2021). These dialogue platforms have been initiated by the German International Cooperation in 2016 and has been ongoing till now, it is called '*'The Technical Amanas''. ''Technical Amanas''* exist on two levels: the central and the directorate levels (GIZ central evaluation report, 2021).

The dual education in Egypt is characterized by its complex composition since it includes: different operational departments and central managements from the MoETE, representatives from the private sector, sector skills councils, accreditation entities, quality assurance units, curricula development units, donor organizations, students, and parents (GIZ central evaluation report, 2021; Maher, 2013). This complex structure of the dual educational system can be viewed as an opportunity to address all exerted efforts (from the public sector and the private sector) that are contributing to the development of the system itself and the empowerment of the Egyptian youth for the labor market (El-Ashmawi, 2020). Specially, that the dual educational system is currently exerting its efforts towards enables the youth for the worldwide direction of ‘’Green TVET’’ and ‘’Sustainable Entrepreneurship’’ thus fostering long-term and matching job opportunities for them (El-Ashmawi, 2020). This will provide some job prospects for young people both within and outside Egypt, as well as increase the production and competitiveness of Egyptian goods to compete in the global market.

1.3 Problem statement:

The number of the students enrolled in the dual educational system composes a relatively small percentage of the registered TVET students in Egypt. To be able to examine the reasons behind the decreasing number of dual system applications, there is a need to study and review the quality management system that is supporting this educational model and its governance mechanism. To further explain the operationalization of the dual system’s QMS, an international quality management framework called ‘’The European Foundation for Quality Management - EFQM’’ has been chosen to act as the international set of standards where the Egyptian dual educational system will depend on to further enhance its quality management areas (GIZ central evaluation report, 2021). The EFQM has been Egyptianized in way that could be matching to the

Egyptian context. The process of Egyptianizing the quality model has been concluded through several national and international experts who worked intensively to create the Egyptian version which is called ''The Egyptian Core Task Quality Model – ECTQM'' (GIZ central evaluation report, 2021). The ECTQM is an Egyptian quality model that is a derivative from EFQM adapting its main methodology and quality implementation objectives. The model contains forty-four areas of quality management (GIZ central evaluation report, 2021). It aims at the enhancement of the quality management of the technical education institutions and to boost the effectiveness of the quality of teaching inside classrooms (GIZ central evaluation report, 2021). The ECTQM was implemented from 2016 to 2020, with around five years only. According to the research and analysis, the ECTQM was not effective to improve the quality of the dual education system's management whether on the operational level or the strategic one.

1.4 Research objective:

This thesis seeks to offer an in-depth understanding of the challenges and conditions of the dual educational system in Egypt. It also maps the quality management system (ECTQM) used to develop the system from 2016 to 2020, which is an endeavor that has not been undertaken by many scholars. Although the quality in education had a long history in development and an intensive literature about it, the quality in the dual system had not received the same attention. The ECTQM has not been researched before, and before the implementation of ECTQM there was not a definite quality management system that the Egyptian dual system used to support its educational processes. To be able to research the ECTQM, the researcher had to acquire the needed information through primary data. Therefore, there shall be an in-depth analysis of the above-mentioned quality model whereby the researcher will analyze the model's effectiveness to support the Egyptian dual system's processes in comparison to the received

responses from the diverse pool of interviewees who participated in this research. The analysis will also elaborate on the reasons behind ECTQM's inability to fully enhance the overall quality management of the dual educational system.

On the other hand, this thesis examines the dual educational system in Egypt from a fundamental perspective, including stakeholders' analysis and their dynamics. In such an educational system, the relationship and position of stakeholders is critical, as it affects the system's progress and effectiveness (Amin & Ezz, 2017). As a result, the contribution of this research is a policy initiative that supports the development of more effective strategies and law enforcement techniques.

1.5 Research questions:

The thesis is structured to examine three main dimensions of the dual educational system in Egypt: the mapping of the quality management system of the dual system in Egypt (ECTQM), the governance mechanism of the Egyptian dual system and the system's best practices and recent accomplishments. Therefore, the examination of these three dimensions can be achieved by answering the following research questions *''How is the dual educational system in Egypt performing using the current quality model – ECTQM?''*, *''what are the governance and quality management challenges facing the Egyptian dual educational system?''* and *''What are the dual educational system's recent accomplishments and best practices?''*. To address these questions, the researcher will be analyzing the background of the system with regards to its German origin, reviewing the literature, explaining the research methodology, going further with the analysis and discussion of the respondents of the interviews and lastly the concluding remarks and recommendations. The coming parts of the thesis are steps towards finding answers to what the

challenges of the Egyptian dual educational system are, the effectiveness of the currently used quality model and the proposed recommendations.

1.6 Organization of the study:

This thesis has been organized into eight chapters which focus on the following matters:

Chapter One: This chapter introduces the thesis's research topic and gives a brief background about the topic. It also explains the problem statement that the thesis is addressing. The introduction also explains the research objective including the scope of the study. Chapter one also explains why this study is significant providing the main research question and the sub questions which will be addressed along the thesis.

Chapter Two: this chapter provides a background about the technical and dual educational systems in Egypt. The chapter starts by explaining the thesis' conceptualization and understanding of the main features of the dual educational system in Egypt as well as its structure and recent updates.

Chapter Three: this chapter aims at explaining the conceptual framework used to evaluate and assess the thesis topic. This chapter is divided into two sub frameworks. The first one if the EFQM which is the international model, followed by the ECTQM which is the Egyptian derivative of the bigger framework. This chapter explains the difference and backgrounds of both models, and the mechanisms of both.

Chapter Four: this chapter contains the themes found in the literature. The literature review has also been divided into five themes. Each theme is related to the topic of the thesis from a different perspective. Additionally, this chapter explains the gap found in the literature and how this thesis is contributing to tighten this gap.

Chapter Five: this chapter explains the research methodology that is used in this study. The

reasons behind using the qualitative research methods are expressed, as well as the approaches of data collection and data analysis. This chapter also provides explanations for the sample selection, the ethical considerations, the research limitations, and the study framework.

Chapter Six: this chapter presents the collected data and their analysis. It is sub-divided into three main themes. The themes were extracted based on the responses of the interviewees. The themes correspond to the conceptual framework and its sub-divisions.

Chapter Seven: this chapter includes the conclusion of the thesis. It concludes the entire study by providing a general concluding overview of the main findings of the analysis.

Chapter Eight: this chapter provides thorough policy recommendations based on the current overall situation of the dual educational system. It also incorporates the findings extracted from the analysis chapter. The purpose of this chapter is to provide doable solutions to the system and help with facilitating the system's current challenges.

2. Chapter Two. Background:

High unemployment, especially among the youth, is one of Egypt's most pressing issues (ILO, 2021). Rapid population growth, macroeconomic issues, insufficient work placement programs, and a lack of job-market relevance in education and training were all contributing factors to the call of an innovative form of education and training that would enrich the situation (ILO, 2021). Although the dual training method outperforms other training alternatives, the most important pillar shall be that the trainings' quality must be as dynamic and up to date as possible to be able to always cope with the changing needs of the business sectors (Abou Zeid, et al., 1999).

2.1 The German dual system operates in Egypt.

In the late 1990's, Egypt and the Federal Republic of Germany have worked together for decades to finalize a high-level agreement by which Egypt can adapt the German dual educational model and further implement it under the auspices of the Ministry of Education and Technical Education (MoETE) (Abou Zeid, et al., 1999; Maher, 2013). The German Foundation for Technical Cooperation (GTZ) back at that time was the main donor organization responsible for this cooperation and its technical implementation and funding. The first phase of the project lasted until 2006 (Adams, 2010; GIZ central evaluation report, 2021).

Both the German and Egyptian parties decided that the dual framework would be implemented in Egypt's young, increasing communities as pilot projects in the first phase (Adams, 2010). The Tenth of Ramadan, Sixth of October, and Sadat City were chosen to be the locations of the pilot phase because they had heavy industrial demands (Adams, 2010). After the completion of the preparatory stage, students had the options of either attending a general

technical secondary school, a vocational secondary school, or a vocational training center (Mayer, 2001). Students with a recent certificate of basic education completion (preparatory grade) are admitted to the system based on the admission rules and minimum score established by each of the educational directorates. Written assessments and interviews are performed by joint committees with members from schools and regional units. Students are accepted from the applicant list based on the number of training places available (ILO, 2021).

Currently, the total number of the technical schools' enrolled students is 2.2 million where only the number of students enrolled in the dual educational system is 65,000 (3% of the overall number of TVET students) (ETF, 2022). As stated by Dr. Mohamed Megahed (deputy minister to the technical education) in his opening speech in a recent ceremony for signing a cooperation protocol between the MoETE and the private sector to promote the public-private partnerships on the 19th of December 2022, he emphasized that the objective of the MoETE within the technical education scope is to increase the total number of students enrolled in the dual educational system to 200,000 by 2030. It is also worth mentioning that the technical and dual educational systems are composed of four main sectors: Industrial, Commercial, Hospitality and Agricultural (MoETE, 2022). The total number of graduates of the technical and dual system in Egypt in the year 2020/2021 was around 600,000. Of these, some 280,000 studied industrial technical education, of which 63.7% were males (CAPMAS, 2021). Graduates of the commercial technical education were around 253,395 graduates (CAPMAS, 2021). The commercial sector in the technical and dual system is known by having the majority from the females, accounting for 58.5% of the total graduates (CAPMAS, 2021).

More than fifty specializations are available in industrial technical education, including those in the automotive, mechanical technicians, construction, readymade garments, cooling and

air conditioning, carpentering, and others (CPMAS, 2021; ILO, 2021). For administrative occupations, secretary, IT, translation, and others are offered (MoETE, 2022). For careers in the hospitality sector, such as those in the kitchen, restaurants, housekeeping, services, and tour guiding are also offered. Specializations in agricultural machinery, food processing, bakery and others are also offered (MoETE, 2022). The dual educational system offers several privileges than the normal technical education. These add-ons can be elaborated as: direct connections with the labor market techniques, increased employability rates of TVET graduates, bigger range of competencies and skills, and better realization of the professional work ethics (Maher, 2013; ILO, 2021).

The graduates who pass the examination after the three TVET years, receive a diploma certificate from the MoETE and another certificate from the National Centre for Technological Dual System (NCTDE) under the umbrella of the Egyptian Federation of Investors Associations (EFIA) (Maher, 2013) indicating their scores for the theoretical and pedagogical learning. According to the ILO, more than half of the dual educational system's apprentices receive job offerings after graduation (ILO, 2021). Tuition for the dual educational system is considerate whereby students only pay minimal registration fees just like the other public schools in Egypt (ERF, 2018). Since the dual educational system refers to a system that emphasizes and adapts both the theoretical and practical methodologies of learning, and this technique is well-known and widely used, yet only few countries have well-structured and regulated dual educational systems (ETF, 2014). Germany adopted a dual educational method and has since undergone several revisions to adapt to societal changes and consumer demands (Mayer, 2021; UNESCO, 2006). The dual educational system introduced in Egypt, like the German system, had to create a solid, vital relationship between the technical school and the involved private sector firms, being

the implementers of almost 70% of the dual educational system curricula (Maher, 2013). The efforts of attracting as many private sector firms as possible in the system is dynamic and ongoing. This is due to limited number of training opportunities in the participating private sector firms in the dual educational system.

The lobbying effort is mainly done through a third acting body in this system called ‘’The Regional Units for Dual System – RUDS’’ which are also referred to as ‘’service providers’’ (Maher, 2013). Service providers are usually NGOs who work as an intermediary body between the MoETE and the private sector who are responsible for the application process of students in the dual educational system as well as allocating them to their respective private sector firms based on their chosen occupation and technical sector. All private sector firms from all backgrounds are welcomed to apply in the dual educational system to be the training providers for the students, however, due to the different backgrounds, sizes, and diverse operational systems of each firm, we can find that within the same school, the students from the same occupation are distributed amongst many private sector firms to receive their three-year technical practical training. This could be seen as a normal solution to the minimal training opportunities per firm, yet, on the long run, this causes disparities between the competences gained by students after the fulfillment of their training periods. Although each private sector abides by the published and accredited curricula given to them by the MoETE, they vary in their production lines, their working hours, their production capacities, their technological advancements, and many other aspects (GIZ central evaluation report, 2021). Eventually, and students from the same class and from the same occupation can gain different practical competences and skills based on what they have been exposed to in the training firms (GIZ central evaluation report, 2021).

The MoETE's direction in the past years has been leaning towards transforming all technical and dual system curricula to the competence based one. Competence based curricula are designed to assess the students based on the competences they gain over certain phases. Each phase is designed to teach a certain technical competency whereby students need to learn it and pass the practical examinations of it (MoETE, 2022). Scores of the practical examinations are based on a ''pass or fail'' concept without giving numerical grades like the general education. This enables students to master certain competences and skills before they graduate (MoETE, 2022). The competences are selected based on the labor market needs within each sector. Competence based curricula include manual books for schools as well as private sector firms. the same competence gets taught parallelly in the school and the factory to enable students to absorb the competency both practically and theoretically (MoETE, 2022).

Since the curricula of the dual educational system in Egypt promotes business and educational cooperation together, private sector companies and firms become affiliates to either the ''Egyptian Federation of Egyptian Industries – FEI'' or the ''Egyptian Federation for Investors' Association – EFIA'', or the ''National Center of the Technological Dual System – NCTDE'' (GIZ central evaluation report, 2021). The monitoring and evaluation processes of the in-company trainings are done through a number of legal frameworks that are binding to the system such as the (111) ministerial decree that was published in 2021 which mandated the MoETE to operate through a contract based apprenticeship (between the MoETE, the private sector and the student), the ministerial (444) decree that was published on the 8th of December in 2015, which decided on the formalization of the role of the RUDS to oversee the DS processes and the monitoring and evaluation work. (MoETE, 2015). The RUDS are responsible to perform dynamic and repetitive checkups to the dual educational system students during their practical

training periods by inspecting their ‘’performance checklists’’ and other documentations to make sure the training plans are being implemented as planned.

2.2 TE reform 2.0:

The main aim of Egypt’s newly published technical education reform TE 2.0 is to raise efficiency and increase output in the technical and vocational industries. The reform aims to turn the economy from a state-controlled to a market-driven one (Amin & Ezz, 2017). Economic mobility, privatization, and modernization are all characteristics of this reform (Amin & Ezz, 2017). One aspect of the reform is the upgrading of human resources in terms of improving technical education (El Baradei et al., 2014). The technical education reform 2.0 includes five pillars:

- Transformed technical education schools through employer engagement & work-based learning by enhancing the dual educational system and introducing new models for it including the ‘’Applied Technology Schools – ATS.’’ (MoETE, 2019).
- The upskilling of the technical education teachers through trainings of teacher under ‘’Technical and vocational education and training Academy - TVETA’’ which is a central unit in the MoETE mandated to provide soft skills and technical trainings to the teachers (MoETE, 2019).
- Transformed quality of technical education through the establishment of an independent accreditation entity mandated to accredit all technical education institutions and programs fulfilling the quality management systems as well as the creation of a quality implementation unit within the MoETE (MoETE, 2019).
- The transformed image of technical education through changing its social perception. This pillar depends on the outcomes of the other pillars in the reform (MoETE, 2019).

- Enhancement of the technical education curricula and transforming them to competency-based curricula as well as the extensive use of digital content (MoETE, 2019).

2.3 The Egyptian dual system in numbers:

Egypt only has twenty-two full/independent dual educational system schools in Egypt, fifty-six schools inside factories or farms and two hundred and thirteen technical vocational schools with attached dual educational system classes (GIZ Online TV, 2017). The dual educational system operates with about fifty-five occupations including construction and building, automotive, secretary and administrative, woodworking, commercial, readymade garments, mechanical engineering, hospitality, agri-business and food processing, electrical and electronic engineering, and applied arts (GIZ Online TV, 2017; MoETE, 2021). It is available in all twenty-eight governorates of Egypt. Each governorate has a technical educational and dual system directorate that is responsible for the flow of work and needed processes. These directorates report to the ‘’General Directorate to the Dual System located in Cairo – GDDS’’ (GIZ central evaluation report, 2021; Maher, 2013). As a result of the ongoing expansion plans implemented over the past twenty years, almost forty occupational profiles for the different specializations were developed, as well as the inclusion of almost new two thousand private sector firms and companies into the system (GIZ central evaluation report, 2021). During the planning and design phase, the joint ventures’ main goal was to pave the way for all enrolled students to be able to blend and combine their classroom theoretical learning experiences with the realistic firsthand practical experiences (Grunwald, et al., 2009). Since private sector firms are usually keen on employing their apprentices after graduation, it was indicated that back in 2017, 56% of the dual system trainees have received employment contracts by the companies involved in their training (Amin & Ezz, 2017).

3. Chapter Three. Conceptual Framework:

In the history of the dual education system, the governance and quality management have been under-researched areas, especially when it is analyzed in the context of a country, in this case, Egypt. Evaluation studies assessing the impacts of the dual education systems on boosting the labor market activities have been explored in depth by several scholars, international donor organizations and international institutions. Nevertheless, issues of governance and quality management performance within the dual education in general, and specifically in Egypt have received little attention. To implement quality management systems efficiently and effectively within the technical education models, as well as achieve good governance, it is relevant to map, examine and review the only quality management system that has been implemented in Egypt to support the dual education. Specially, that attempts to analyze, evaluate, or assess this model have not been undertaken yet. To be able to do that, the conceptual framework shall be designed into two phases. The first phase is examining the European quality framework that is used in the German dual system model, and the second phase is examining the Egyptian quality framework that has been designed in reference to the European one.

3.1 The European Foundation for Quality Management - EFQM:

EFQM Excellence Model is quality implementation model that identifies the positionality of the corporates and business entities within their schemes of quality performance and supports them with a manual on how to overcome their shortcomings and encourages them to adapt attainable and possible solutions (Uygur & Sumerli, 2013). EFQM Excellence Model was presented as a quality manual or a quality framework in the early 1990s for the European organizations at first (Taraza, 2019). It is composed of nine fundamental areas of quality which

are: leadership, stakeholders, management strategy, partnerships and resources, products, processes and services, people's results, customers' results, society results and business results (EFQM model website). The model is currently adapted international and specially in Europe that provides a base for both the European and international organizational quality standards (Uygur & Sumerli, 2013). The EFQM model is crafted based on the European values and operates using the United Nations' Sustainable Development Goals (SDGs) (ETF, 2022). Sustainability is the core value of the EFQM model (Steed, 2005). It covers all the three dimensions of sustainable development (environmental, economic, and social dimensions) (UNHCR, 2019).

The core theme of the model is the satisfaction of the end user, employees' satisfaction and business results that depend on a quality logic (Sutoova, 2022). Since there are numerous approaches that exist in the world of quality assurance and aim as well to perform sustainable quality assurance at all aspects that are related to performance, EFQM Excellence Model is adapting the following concept *"*Excellent results reflecting on performance, clients, employees and society can be achieved with aid of an appropriate understanding of policy and strategy, employees, resources, and processes." (Uygur & Sumerli, 2013, P.988). This makes the model the most widely used for complete quality management in Europe (Taraza, 2019). Different elements of a complete quality management system are included in the EFQM model (Steed, 2005). For enterprises and organizations to be able to actively participate in the current market, overall quality management and EFQM Excellence model can be used to complement one another as to achieve the required goals (Uygur & Sumerli, 2013). By compiling feedback from the best applications being used both inside and outside of Europe, EFQM continuously develops the model (Steed, 2005).

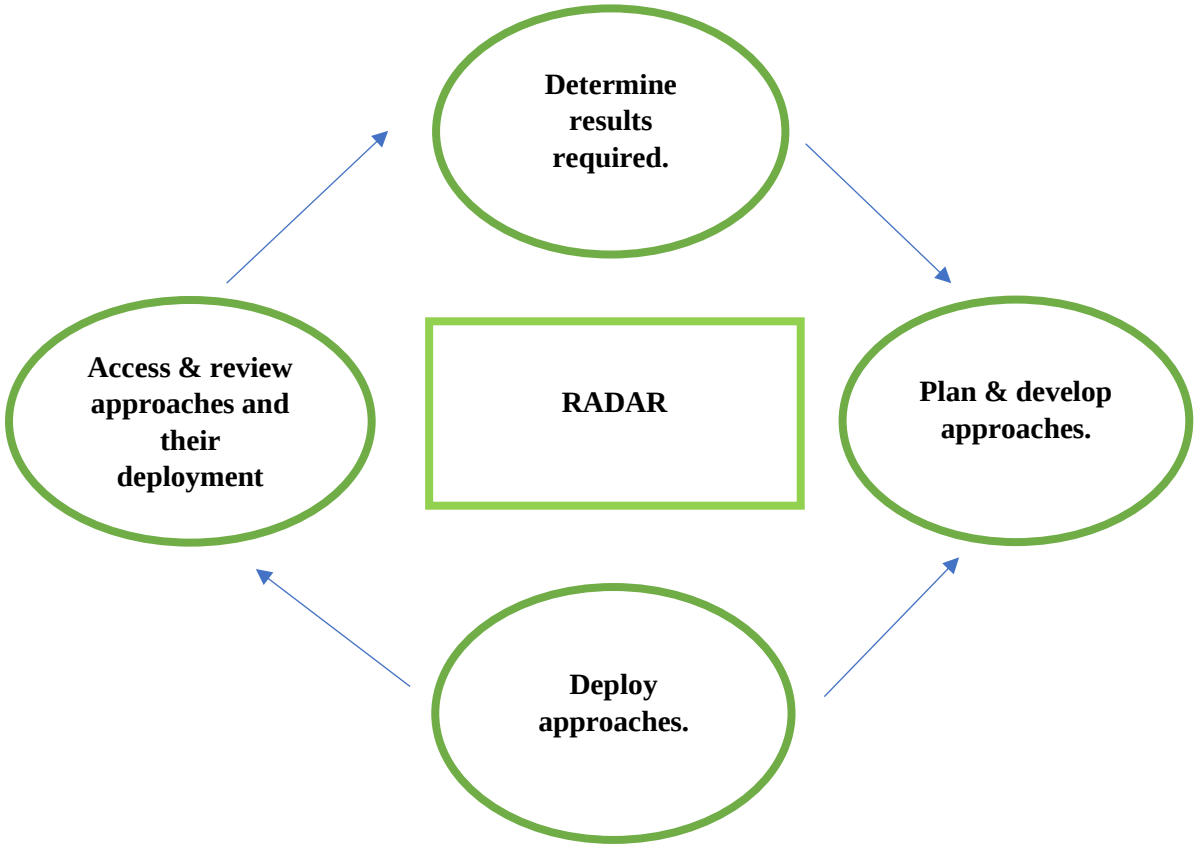
Thus, the model is dynamic and provides up to date methods about the quality areas needed to enhance the overall management (Uygur & Sumerli, 2013). Accordingly, the model was revisited four times so far over the course of history in 1997, 1999, 2003 and 2010 and therefore, innovative approaches were enhanced (Medne, 2020). The round of review that took place in 1999 resulted in changing the name of the model to "EFQM Excellence Model*"* (Du G. et al., 2017). The model adapts the quality flowchart called ''RADAR''. ''RADAR'' is a framework that is designed to support with the dynamic assessments and is considered as a convenient tool for management that provides an operational approach for testing the management implementation of any organization. It is similar to the PDCA cycle of quality management (Plan, Do, Check, Act) (Medne, 2022). RADAR encompasses certain rules that an organization must consider (Du G. et al., 2017):

- Be a results-oriented entity; anticipates end goals through analysis of the ongoing trends and targets.
- Attaining results depend on an integrated set of approaches mainly including planning and development.
- Systematic methodologies with regards to deploying approaches
- Continuous analysis of the results achieved through extensive rounds of review and assessment.

During the application of the EFQM model, ''RADAR'' matrix is mostly adapted to identify the scoring mechanisms (Uygur & Sumerli, 2013). As seen below in Figure 1, the ''RADAR'' scoring matrix is created based on these four quality areas:

Figure 1:

RADAR quality cycle



Source: (Uygur & Sumerli, International Review of Management and Business Research, 2013, P.982).

- **Results:** The result dimension describes the accomplishments of an organization. Achieving excellence requires an organization's outcomes to consistently show a positive trend and/or strong performance; the goals must be reasonable and attainable; the performance must be strong when compared to other companies; and the results must all be a direct result of the strategy.
- **Approach**: An organization's approach defines its goals and rationale. The method must become well-based in an organization that has attained excellence; in other

words, the approach must give a distinct foundation. It needs to be well defined, have established processes, and explicitly focus on the needs of the stakeholders. On the other hand, it must adhere to the organization's general policy.

- **Deployment:** An organization's actions to put its strategy into practice are contained in the deployment. It is envisaged that the technique be applied methodically to pertinent areas in an organization that has attained excellence.
- **Assessment and Review:** This quality area contains the organization's approach and its view on how to assess the deployment of the approach. It is expected that deployment of the approach to be measured regularly in case of performing towards achieving excellence. Followingly, enhancement of the priorities and approaches can be correctly planned based on the obtained information.

The primary benefits of applying the EFQM model within any organization are (Uygur & Sumerli, 2013; Taraza, 2019):

- To increase the opportunities of an expanded market share.
- To enhance the quality of the product delivered to the end user.
- To fulfill a long-term series of improvements and successes.
- To enrich the employees' effectiveness, loyalty, and stability.
- To identify and solidify the direction of the organization.

The philosophy behind EFQM is that managements should function through procedures that allow for the making of evidence-based decisions to provide results that are consistent, fair, and long-lasting. Companies shall give their best performances only when decisions are made to manage all linked operations in a methodical manner and to improve processes (De Abreu et al.,

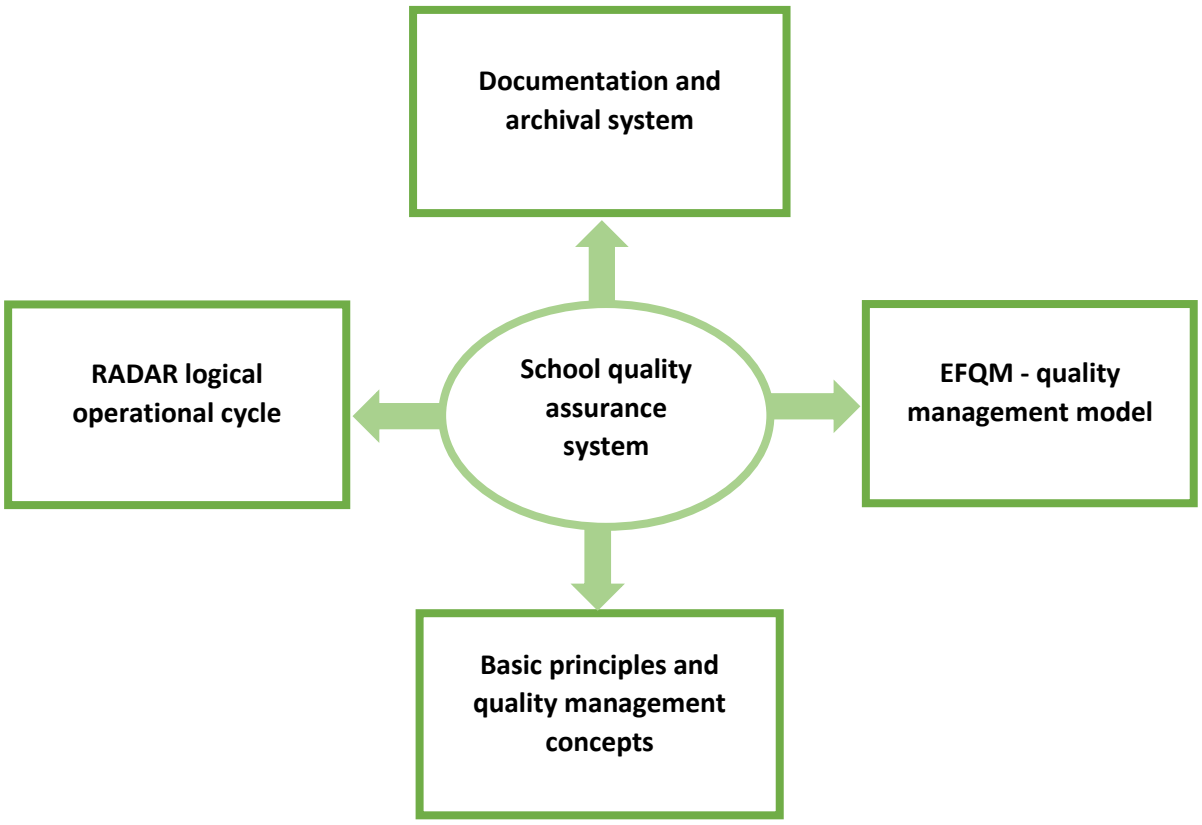
2017). With the help of European nations' strengths, EFQM has established the course and objective for improvement for European businesses (De Abreu et al., 2017). The EFQM consists of nine quality management areas, and by implementing them, businesses can finally possess an effective self-evaluation on the level of quality implementation for the organization and be able to identify the areas that require development (Webber, 2017).

Combining the EFQM model with the methodological evaluation of educational quality in schools can highlight the evaluation of the quality of the teaching methodology and can ensure an accurate assessment of the quality level of the educational services provided in schools (Webber, 2017). The next reform target can be determined by applying the EFQM model for self-assessment (Taraza, 2019). When utilized in schools, especially when it comes to evaluating the teaching level, some important changes are required because the EFQM model is typically used to evaluate the quality management situation of organizations like companies, factories, and banks. (Webber, 2017; Medne, 2020).

Teaching goals, strategies, resources, quality performances, students' satisfaction, management processes, available resources, social responsibility, and scientific research result are the nine core areas used to assess the quality management within a school as per the EFQM model (Serneels et al., 2017). Three elements make up the grading portion of the education goal: determining the clarity of the education goal, the measurability, and implement-ability. Additionally, removing any content that may affect the education level before the implementation of the education goal; and determining whether the education goal is analogous to other goals and timely (Link et al., 2017).

Figure 2.

Basic Content Structure of an EFQM related Quality Management System inside a school



Source: (Du, G. et al., 2017, P.8208)

The quality management system and its assessment criteria entail that schools shall conduct self-evaluations. As illustrated in figure 2, based on the results of these self-evaluations, school shall work and plan their long-term improvement plans including curricula enhancement, administrative issues, and school management (Du, G. et.al, 2017). The concept of conducting self-evaluations and receiving self-scoring can be beneficial to schools by allowing them to learn

more about creating and conducting operational plans, utilizing current resources, risk mitigation, and planning (Du, G. et al., 2017).

However, because only a small number of schools can perform self-evaluations, while others lack the willingness to do so and argue that self-evaluations would increase workloads and put additional stress on schools' staffs, self-evaluations and internal scoring have presented some new issues for schools (Sutoova, 2022). In contrast, most schools' self-evaluations cannot be compared to each other's, due to each school having its own unique features, circumstances, and characteristics (Uygur & Sumerli, 2013). As a result, some larger scale schools will need to simultaneously prepare multiple different quality assurance systems for multiple disciplines. As a result, as part of the evaluation of teaching quality, schools are required to define various standards (Sutoova, 2022). This encourages schools to use a variety of self-evaluation forms and offers more flexible rules for schools to coordinate their own self-assessments (Flaherty et al., 2010). Self-evaluations in other contexts are referred to as the 1st party audits. Most of the internal audit work is conducted by professionals from other schools or from the audited school itself, where reports are eventually sent to the audited schools' management (GIZ central evaluation report, 2021; Taraza, 2019). The main purpose of the self-evaluation or the 1st party audit is to ensure the trustworthiness of the self-scoring mechanism that each school gained independently, which shows whether the schools' managements have abided by the model's areas of quality improvements or not, thus can provide recommendations and improvement plans to the schools after identifying the areas of weakness and strengths (GIZ central evaluation report, 2021; Du, G. et al., 2017) .Thus, we can get the conclusion that when EFQM is implemented in the educational context, the focus shall be placed on the continuous improvement of the education level (Steed, 2005).

In the process of establishing the educational quality assurance system, it should emphasize that the quality standards must be flexible, applicable, and standardized (Uygur & Sumerli, 2013). There shall be freedom of usage and implementation within the original framework of the model whereby each educational organization is free to choose which quality areas need priority and which not. Also, schools have the flexibility to choose the implementation methods and approaches they need to fulfill those quality areas (Uygur & Sumerli, 2013).

3.2 The Egyptian Core Task Quality Model - ECTQM:

The ECTQM is a quality model that was co-created by representatives from the MoETE and national and international experts from Germany under the technical mandate of GIZ (GIZ central evaluation report, 2021). A project called EEDS (Enhancement of Egyptian Dual System) kicked off back in 2016 as a joint cooperation between the Egyptian Ministry of Education and Technical Education (MoETE) and the German Ministry of International Cooperation (BMZ) (GIZ central evaluation report, 2021). ECTQM is a made-up quality model that was created in 2016 based on the assessment tools in the EFQM excellence model previously discussed (GIZ central evaluation report, 2021). Since the experts were German, ECTQM adapted the same assessment methodology in the EFQM, but it was more Egyptianized to suit the nature of the dual educational and technical education context of Egypt (GIZ central evaluation report, 2021). The process began when a group of German experts were selected by GIZ and the MoETE to come to Egypt and undergo an in-depth study to the situation of the TVET schools, institutions, and programs in Egypt. The study and planning phase took around one full year before an agreed structure of the ECTQM was co-designed and established (GIZ central evaluation report, 2021).

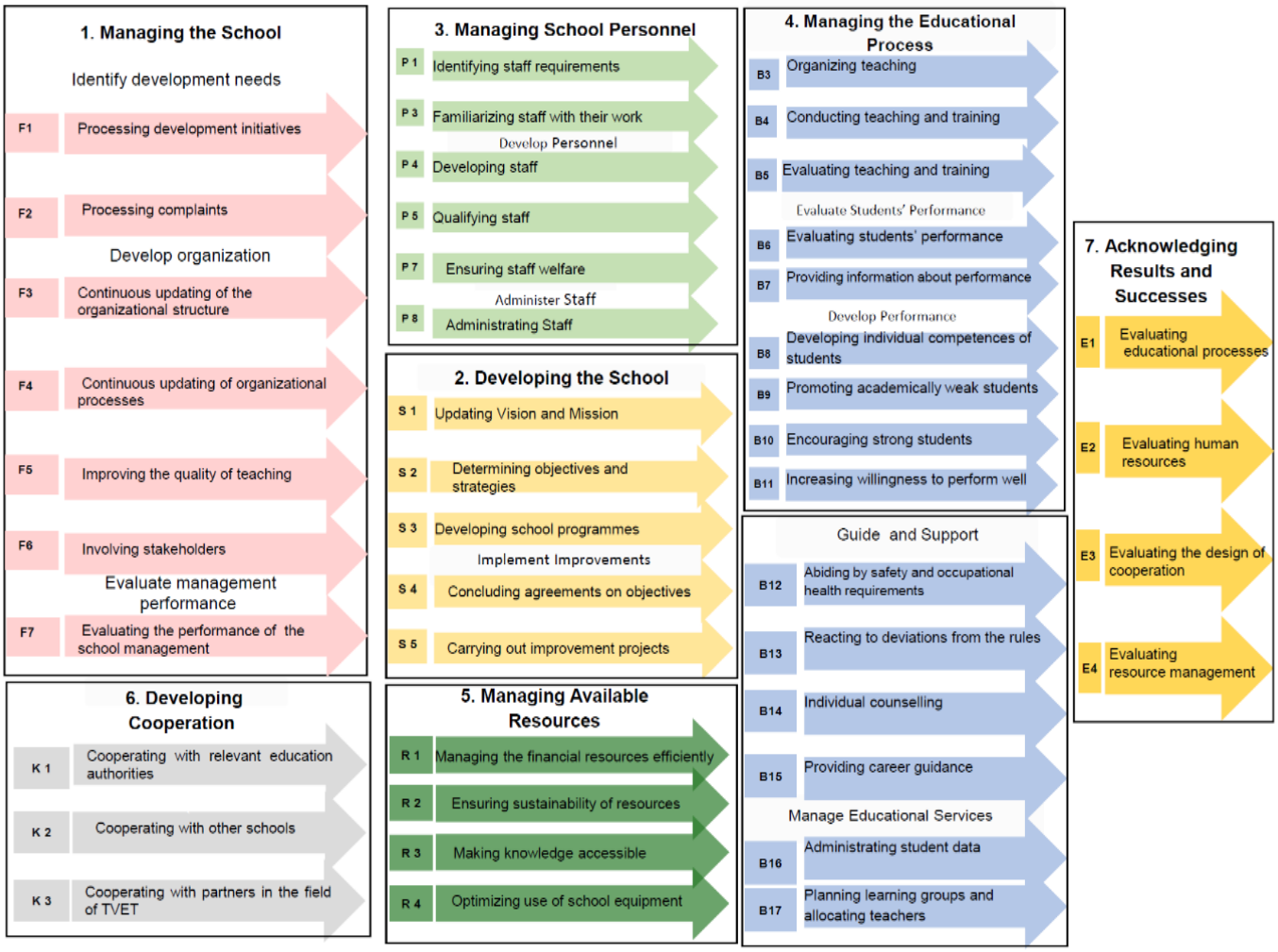
The ECTQM method was chosen as one tool to improve the system's quality. It was composed of seven quality areas that are: School management, developing cooperations, school personnel management, school development, management f available resources, management of educational process, guide and support and acknowledgement of results and successes. These seven areas further included forty-four quality implementation tasks within them that covered the entire TVET educational system whether in class teaching effectiveness, schools' management systems, self-evaluations methodologies, improvement plans, SWOT analysis, enhancement of the teaching experience, digitization, communication strategies, sustainability and so much more (GIZ central evaluation report, 2021). School managers and teachers were trained on the usage of ECTQM, and a coaching system was established (GIZ central evaluation report, 2021).

It is important to mention that the forty-four quality areas were not implemented equally amongst all dual system schools. As per the EFQM's methodology, the implementation of quality systems shall be customized to the nature of each organization. Therefore, during the ECTQM trainings given to teachers and schools' managers, the trainees were told that it is up to the school to choose the relevant areas of intervention out of the forty-four areas in the model to implement in their schools. Additionally, the ECTQM was not implemented equally amongst all governorates, it was mostly implemented in Cairo, greater Cairo, Giza, and Alexandria. This resulted in discrepancies in the implementation of the ECTQM model across the dual system schools in Egypt. The ECTQM diagram shown below in figure 3 is used to demonstrate the understanding of the ECTQM's quality areas but does not necessarily to indicate that these areas were equally or parallelly practiced by all schools in the system. The researcher will not extract certain variables from the model to conduct her research, since the choice of quality areas varied from one school and one directorate to the other. The ECTQM and the EFQM construct together

the understanding of the implementation of quality management in the Egyptian dual system schools. They are the basis of the interviews' questions. Since the researcher cannot identify the quality areas that were implemented by all schools in the system, and that the ECTQM was not researched before, it was important to map the ECTQM's perceptions and operationalization through the responses of the interviewees. Almost half of the interviewees received ECTQM trainings and elaborating on the model was needed to provide the essential understanding of the conceptual structure of the thesis.

Figure 3:

The Egyptian Core Task Quality Model - ECTQM



Source: GIZ, EEDS Project, 2016. (German International Cooperation)

As seen in figure 3, the ECTQM model was developed as a tool for quality management structure and implementation and "self-improvement" based on findings from a discussion platform that included the two primary actors in dual educational system: the public and private sectors (GIZ central evaluation report, 2021). This guaranteed the inclusion of both viewpoints and a shared understanding of the application of the ECTQM as a management quality

framework. Three hundred and eleven participants participated in the system's first "ECTQM round'' in twenty-eight schools, which resulted in corresponding modifications to the management system of those schools (GIZ central evaluation report, 2021). By the year 2020, the higher-quality schools had helped nearly five thousand students (GIZ central evaluation report, 2021). A follow-up monitoring mechanism was launched. This was done to improve both the number and quality of services provided to students, which would raise their employability on the one hand and increase the pool of skilled workers on the other, with an effect on Egypt's sustained economic growth (GIZ central evaluation report, 2021). School administration, faculty, the private sector, and beneficiaries all attested to the improved quality in DS schools using ECTQM (GIZ central evaluation report, 2021). The results of ECTQM's implementation, along with possible adjustments, modifications, and the necessary support, were digitally submitted to MoETE for archiving, processing, and, if necessary, consideration in future policy discussions (GIZ central evaluation report, 2021). The coaching approach enabled regular deployment of ECTQM rounds and ensured the durability of the ECTQM implementation (GIZ central evaluation report, 2021).

4. Chapter Four. Literature Review:

While most TVET discourses have centered around evaluation studies, design and implementation questions, regional divergences and similarities, limited attention has been given to governance mechanisms and implementation of quality management. This literature review examines the concept of quality management in TVET and the governance mechanisms and its relation to the effectiveness of the entire educational model. The thesis's conceptual framework is based on a European quality model (EFQM) that has been popularly used in Europe and has also been taken as a reference to the Egyptian dual education's quality management system. Therefore, it was important to review the different relevant and non-relevant European TVET systems (whether they use the EFQM or not) to have an overview about the different European dual system models. The rationale behind choosing the below case studies as examples, is to state that even if some countries share the same theoretical TVET concept, they may vary in the practice. It was also important to review international models that are both similar and unsimilar to the Egyptian one to grasp the needed holistic understanding. By conducting the literature review, the researcher was able to identify several literature review themes including:

- The international understanding of the vocational education and training (VET).
- International models of technical and vocational education and training (TVET).
- Quality management systems in technical education.
- International TVET governance systems.
- The research gaps.

4.1 The international understanding of VET.

The international understanding of the VET educational models puts more emphasis on the "softer" skills and competences like presentation skills, negotiation skills, pedagogic skills, and the ability to work in teams, plus the technical knowledge needed for the different occupations (USAID, 2010). TVET is offered at both public and private educational institutions, as well as other formal or non-formal learning environments, with the goal of providing all societal segments with access to resources for lifelong learning (Sellin, 2002). In the past, "manual" labor has frequently been compared with "intellectual" work (USAID, 2010). Thus, there would be craftsmen, technicians, etc. on the one hand, and white-collar occupations on the other (USAID, 2010). Today, even though society continues to devalue and diminish technical education, such a divide is no longer viable (USAID, 2010). The crises that Africa experienced in the 1980s is what led to this idea of TVET (UNESCO -UNEVOC, 2006). Graduate unemployment rose because of the continent's severe economic and financial crisis at the time, which led to significant changes in the labor market and industrial system (UNESCO - UNEVOC, 2006). In that situation, the skills required by enterprises couldn't be provided via TVET systems. TVET systems had to deal with severe budget cuts due to rising expenditures associated with structural adjustment programs (UNESCO, 2006). Finally, insufficient TVET funding led to its decline and decreased efficacy. The main goal of TVET is to prepare the youth for the workforce through training (UNESCO, 2006). The necessities of the labor market have greatly changed because of the technological revolution and scientific and technological advances (PWC, 2019).

Furthermore, even though the dual educational system can be used as a benchmark, no other nation can adopt the exact same dual educational system or specific parts of a given nation

because every nation has a unique educational and economic situation that is influenced by a variety of internal and external factors (Eichhorst, et al., 2013). Instead, it must depend on the German constitutive elements to effectively adapt the German model's dual spirit (Eichhorst, et al., 2013; UNESCO, 2014). Vocational education, and training (VET) is regarded as one of the most effective ways to combat youth unemployment (UNESCO, 2014). There are three forms of VET: the normal school based technical education, the dual educational system which is a mix between the school education and the in-company trainings, and the non-formal education provided at the vocational centers (Maher, 2013). Although the dual educational system is more prosperous than school-based VET when it comes to technical competencies, it is still not very known, compared to other types of vocational education (Eichhorst, et al., 2013).

4.2 International models of TVET:

The German dual system model, the UK TVET model, the French TVET model, are three major models that TVET systems around the world represent and that largely mirror the European experience (USAID, 2010). The key models, their structures, and the proposed reform initiatives are highlighted in this review (Osseo-Asare, 2005). The private market has demands which are driven by industries and enterprises, are reflected in TVET and its supply and demand specially within the liberal market economies (as practiced in Australia and UK) (Sung et al., 2006). In this method, the types of occupational certifications that private sector firms will need to provide trainings for their employees on are decided by the relevant sector skills councils (Heitmann, 2001). This is mostly named as a ‘’volunteer model’’, whereby apprenticeships and training programs are offered on a full funded basis to employees (Heitmann, 2001). State subsidies typically assist "at-risk" students by expanding their access to and chances for obtaining workforce education and practical trainings (Sung et al., 2006). In this paradigm,

governments establish sector skills councils and certification schemes based on national and international frameworks and fund relevant research to stay aligned with the industrial and occupational needs (Sellin, 2002). The three TVET models, structures, and policy reforms are necessary for training. Evidence from Europe places expectations on private firms and, in some cases, can result in a limited view of professions (Sellin, 2002).

In state regulated bureaucracies such as France, Italy, Sweden, and Finland, the national education systems there are responsible to finance, research, provide and contribute to the vocational education and training (UNESCO, 2002). Public-private partnerships work mostly on a consultative level with businesses, industries, and labor unions (Grunwald, et al., 2009). Due to theoretical courses and a lack of on-the-job or hands-on training for students, TVET has historically done poorly within this model (Sung et al., 2006). Since TVET is an important pillar of the national educational systems, the national curriculum determines the course material but frequently does not consider local labor demand realities (Sellin, 2002).

The planning, development, and implementation of TVET in the dual educational model that is found in Germany, Austria, Norway, and Switzerland involve a significant range of public and private players, including unions and governmental agencies and organizations (Forsen, 2011; Mayer, 2001). As a result, the dual system features substantial public-private cooperation; businesses fund apprenticeship training while state agencies fund TVET institutions (Mayer, 2001). The model's biggest flaws are the few apprenticeship positions available in businesses and the high price of vocational education in comparison to ordinary secondary school (Sellin, 2002). Case studies would also open the door for a more thorough examination of TVET in the context of the various nations (Mayer, 2001). The top three international reformers have been selected from a list of nations. These three nations represent various approaches to TVET reform. The

dual system model used in the Czech Republic comes first. By decentralizing its educational system and implementing the EU 2020 Strategy for TVET reform, the Czech Republic has given regions, schools, and parents more control over decision-making (USAID, 2010). A national credentials framework was created, vocational education courses as well as general education ones were incorporated into the curricula of the secondary stages, and improved access for students transitioning from the TVET secondary education to the university education options in the Czech Republic (USAID, 2010).

Policy priorities still include career education and lifelong learning. The Hungarian dual system model is the next (USAID, 2010). Hungary's TVET reform is characterized by the decentralization of the educational system including the TVET programs, creating national qualifications framework, expanding the academic options for upper secondary schools, and forming collaborations with the corporate sector in strategic industries (ETF, 2014). But many of these changes are still inconsistent, and the system still has significant issues with TVET education quality (USAID, 2010). The dual system model used in the Republic of Macedonia is the third (ETF, 2007).

Macedonia has also decentralized and expanded its overall educational system, including the TVET programs, to involve the public and private entities (Ertl, 2000). Over the past ten years, significant progress has been achieved in expanding education to include the upper secondary and the higher education as well as increasing the students' enrollment (ETF, 2007). Macedonia has adopted numerous significant TVET reform efforts, including the creation of national qualifications and the adoption of lifelong learning and adult education laws (Ertl, 2000) (ILO, 2010). However, advancement is still elusive, in large part because of the national government's financial limitations (ETF, 2007).

A combination of thorough TVET reform that is composed of educational reforms and strategic policies have been successful in the above-mentioned three nations (USAID, 2010). Most of the time, TVET reforms are viewed as components of educational policies (Kuzmanoska, 2007). To achieve comprehensive educational changes, there shall be political buy-in from all concerned and relevant stakeholders including local, international, and national stakeholders as well as the involved donor organizations (USAID, 2010). The complexity and scope of reform agendas as well as the difficulties they still face are verified by these three studies. Those three international models will be discussed in greater depth during the chapter.

4.2.1 Czech Republic:

The Czech Republic has a holistic system for vocational education, significantly that the TVET changes are aligned and adapted from the "Europe 2020" agenda and the Education and the Strategic Framework for 2020 (USAID, 2010). The EU strategy includes the establishment of a national qualification framework, public-private partnerships, apprenticeship programs and innovation. The aim of the strategy is to enhance the quality of education and the TVET trainings (UNESCO – UNEVOC, 2013). The Czech Republic has reformed its education models, including TVET programs, and transformed them to be more relevant to its society (UNESCO, 2013). The Czech's educational system is an example of a complete strategy that emphasizes regional administration and efficacy in addition to TVET quality through the National Framework (ETF, 2021). Despite the significant progress, there are still four key issues that have been recognized as essential to enhancing the TVET system in the Czech Republic:

- There shall be emphasis on the enhancement of the competencies of TVET graduates. There shall be improvement of the quality of the basic and soft skills in the earlier educational stages through the TVET programs (UNESCO, 2013).

- Curricula can be further improved, through supporting teachers with trainings and innovative learning techniques (UNESCO, 2013).
- Partnerships and increased employer involvement with educational and training institutions are essential for enhancing the standard and applicability of TVET. These partnerships would offer students useful apprenticeship chances to interact with the commercial sector. Employers may receive financial incentives in exchange for assisting with curricula development, teacher preparation, and apprenticeship provision. The importance of making sure that the curricula are relevant as well as the "on-site" experience for students through creating mutual relationships between the private sector and the educational institutions (ETF, 2007).
- Enhancement of regional TVET institutions' management, governance, and transparency. Greater efficiencies could be attained by establishing regional TVET institutes. Along with strengthening the institution's community outreach and openness, this should be followed with superior management and control of the regional TVET centers (ETF, 2007).
- Students who receive good career counselling can examine their interests and skills and gain a better understanding of employment options. A different knowledge base than that offered by standard school counsellors is needed for career advising (regarding careers, jobs, and employment demands in career sectors). As a result, career counsellors must get specialized trainings in career guidance to be able to fulfill this role (UNESCO, 2013).

4.2.2 Hungary:

Hungary has implemented some policies to improve the TVET system, putting a particular emphasis on lifelong learning and integrating vocational education into higher

education programs (Balica, 2009). However, some of these reforms overlap and are not fully implemented because new rules and procedures have been adopted without displacing earlier ones (ETF, 2014). The TVET advisory boards at the national and regional levels that work with businesses are supported by an enterprise tax in Hungary (Balica, 2009). Reforms are based on the European lifelong learning paradigm, and the EU sponsors them with structural funds (Manning, 2001). Producing graduates with the skills required in the workplace is TVET's main objective (ETF, 2014). Three methods are used in Hungary to provide this practical training:

- Workshops held in schools, training provided by businesses through agreements between schools and businesses.
- Training provided by individuals signing contracts with businesses (Nikolovska, 2014; Lannert, 1999).
- Apprenticeships are determined by student contracts and job availability (UNEVOC, 2013).

Theoretically, students' contract can be concluded within any TVET program provided inside the educational system, however accessibility varies by industry and field of employment (Kanwar, et al., 2019). In 277 professions in 2009, students' contracts-based training took place (Balica, 2009). Estimates of enrollment reveal that Hungary's involvement in TVET in upper secondary education is significantly lower than that of most other European nations by almost 25% (UNEVOC, 2013). This is partly due to the "blending" of TVET secondary vocational education with normal secondary education (UNEVOC, 2013). The Hungarian system is difficult to comprehend and interpret, because each reform system has added another layer of training while leaving the rest of the system's mechanisms as they are (Balica, 2009). Due to disagreements amongst the Hungarian policy makers over the nature of the TVET education, the

TVET system in Hungary is not fully clear and is hard to be adapted by other nations due to its complexity (Eurydice, 2011, p. 4). The system has improved because of the efforts made to raise the caliber of the skills and knowledge attained by graduates, which are consistent with recommendations made in the EU strategy to involve businesses in the policy making and processes of decision-making (Eurydice, 2011). Advisory boards made up of business and government representatives are one of the structural reforms (UNEVOC, 2013). Hungary has created a number of TVET-related initiatives, such as:

- Establishing a new national qualifications framework (NQF) (ILO, 2010).
- Mandating students to finalize their apprenticeships through a fixed timeframe. The minimum is three weeks, and the maximum is thirty-nine weeks abroad (USAID, 2010).
- Creating professional development programs for teachers and trainers. It is a top goal to address the perception that state employment of teachers will increase their social standing (USAID, 2010).

4.2.3 Republic of Macedonia:

Several important reforms have been concluded by the Ministry of Education and Science (MES) of Macedonia, both in the TVET system and the broader educational system (ETF, 2007). Primary education has been amended to be nine years instead of nine years under this new system, and secondary education is now required (Ertl, 2000). Physical education, English language instruction, and life skills are now included in the basic education curriculum (Manning, 2001). Although a lifelong learning strategy and national credentials framework have been implemented, only a small amount of progress has been made in incorporating them into upper secondary and postsecondary education (Balica, 2009). Despite being developed separately rather than as a part of a strongly interconnected system, sub-sector strategies and

legislation have been created (Kuzmansoka, 2007). Although funding restrictions have precluded a full integration of the new reforms into the educational system, Macedonia has progressed in establishing several TVET reforms (ETF, 2007). Macedonia adopted some programs and techniques to support TVET reform and development such as:

- Creating forty-four occupational profiles that are connected to the NQF, skills outputs, and restructuring the TVET programs to include fourteen new technical sectors (ILO, 2010).
- Integrating the upper secondary curricula for general education and TVET to create ladders and bridges between the two upper secondary learning programs (ETF, 2007).

4.3 Quality management systems in technical education:

The newly introduced public management reforms have caused several amendments to applying quality management measures at the educational institutions. Therefore, schools' managers were directed towards gaining the needed knowledge to apply the suitable tools and steps to apply the quality measures needed for their institutions (Lunenburg, 2010). Elevation in the overall educational quality within schools is an inevitable step that is a prerequisite to provide the students with the competences and skills they need to be labor market oriented after graduation (Deming, 1986). Subsequently, schools are in need to prepare themselves with a functional quality management system. Currently, the most well-known and widely used quality management model for all educational institutions is the ISO (Sallis, 2002). ISO is an internationally reliable management system that tackles quality implementation and auditing techniques (Sallis, 2002).

For example, ISO 9001 is a general quality management system that focuses on all operational areas of business organizations and identifies the needed requirements for each quality area (Idialu, 2013). It is a process model that many organizations nowadays choose to implement for the sake of improving their entire operational performance. This ISO version in specific promotes continuous improvement, process-oriented approaches and risk-mitigation thinking (Idialu, 2013). The ISO process model has been successfully used by many organizations whether within the public sectors or the private sectors (Elsokhn, 2022). ISO series 9000 standards are the international standards created by the International Organization for Standardization (ISO), devoted to the quality management system (Elsokh, 2022). The ISO 9001 quality management system is composed of the technical and organizational structure, roles and responsibilities, competences and skills, operational procedures, allocation and utilization of resources and definition of quality cycles and processes (Idialu, 2013). Furthermore, there has been an addition to the ISO family in the past few years, which is the ISO 21001 (GIZ central evaluation report, 2021). ISO 21001 is a model that has been crafted to suit the educational context. ISO 21001 is a model for the educational organization management systems (EOMS) (GIZ central evaluation report, 2021). As much as there are commonalities between ISO 9001 and ISO 21001, the ISO 21001 covers the educational needs in more details, supporting the unique establishment and formulation of the educational organizations (GIZ central evaluation report, 2021). ISO 21001 defines the methods and conditionalities of the educational processes, enhances the concept of the offered educational services, focuses on the quality of teaching methodologies used and the maximum benefit of the end user which is the student in this case (GIZ central evaluation report, 2021). ISO 21001 made all possible comparisons through analytical comparisons of the educational institutions in the European countries and in other

countries as well, with the aim of creating a motivational and competitive work environment of the workers and the benefit of students with depending on as much low costs as possible (GIZ central evaluation report, 2021).

Additionally, as elaborated during the chapter of the conceptual framework, the European Foundation for Quality Management (EFQM) excellence model has been also used within a number of educational organizations (Du, G. et al., 2017). The implementation of EFQM as stated is depending on the ‘’RADAR’’ quality index (RQI) and the ‘’PDCA’’ framework (Idialu, 2013). EFQM is founded based on the implementation of a total quality management (TQM) concept (Colombo Plan College, 2013). The main essence of the TQM methodology is to establish the level of management effectiveness on the organizational levels (Sallis, 2002). It is originally planned and created to cater all types of organizations including privately owned business and public institutions as well (Sallis, 2002). Originally, EFQM was developed to support organizations; later, it gained the popularity which made it expand within other service institutions, including NGOs, health care system, educational organizations, banks, etc. (Uygur & Sumerli, 2013). Lunenburg (2010) commented in his study that the TQM approach is relevant to schools, universities, service organizations and business corporations. Yet, to achieve a proper TQM implementation, it is mandatory to establish first q proper quality culture. This can be achieved through shifting from the traditional management styles to a more holistic (Lunenburg, 2010). According to Deming, ‘’TQM is a management philosophy that requires a radical cultural change from traditional management to a continuous improvement management style in an organization’’ (1986). Similarly, Sallis (2002) stated that TQM need culture appropriation, which is a total change in attitudes, behavioral management and working mindsets. From the literature, there are scholars who view the EFQM’s TQM is suitable to be implemented in educations,

while others do not. This makes us understand that the techniques of EFQM are subject to customization when it comes to application in education (Sutoova, 2022).

It is worth mentioning that ISO standards are considered as a quality management system standard that set quality requirements and adapts the concept of quality auditing, while the EFQM model is an assessment tool, not standards, which involves criteria and gives direction towards excellence (Elsokhn, 2022). Rodriguez, et al. (p. 1602) finalized an experiment that analyzed the simultaneous effect of a set of variables of the effect witnessed by teachers and schools' managers about two different quality management systems; the EFQM model and a quality management system following the ISO 9001 standard (Rodriguez, et al., 2019). The results of the experiment showed that, in the schools following the EFQM model, the perception of the quality implementation effects was higher than with the ISO standard implementation (Rodriguez, et al., 2019). The reasons behind these results are that the EFQM model supports organizations to work strategically on the continuous improvement of their educational processes rather than focusing only on the external auditing techniques (Rodriguez, et al., 2019). Saraiva, et al. (pp. 50–51) conducted a study that emphasized the EFQM's application mainly in primary schools and the study's conclusion confirmed that the EFQM Model is applicable to educational organizations and is a useful tool than supports the educational processes to. Calvo-Mora, et al. (pp. 120–122), Steed, et al. (pp. 318–319) and Đordevi˘c, A., et al. (pp. 17–18) conducted studies that validated the fact that EFQM can be used as a framework for the quality implementation and the overall improvement of the higher educational organizations. Boele, et al. (p. 103) concluded a study that showcased that EFQM can have a positive impact on the internal quality assurance processes within the higher education organizations. The study by Saraiva, et al. (pp. 50-51) aimed at showing that the FEQM excellence model when used in elementary schools can cause

effective impacts with the overall performance of schools. The EFQM excellence model offers a reference for emphasizing critical elements and steps towards achieving management improvements. It also acts as a manual which supports organizations to plan for their pathways towards sustainable growth, specially within the higher educational organizations, according to Medne, et al. (p. 37–38). Osseo-Asare (p. 35) drew attention to the fact that the EFQM model cannot provide the anticipated benefits without strong leadership commitment. The EFQM model was employed in the study by Du, G. et al. (p. 8209), along with some of its component parts, including instructional content, responsibility distribution, management style, resource allocation, and outcomes of scientific research. The study supported the model's applicability in education and demonstrated its ability to focus reform efforts and offer concrete steps. According to (Uygur & Sumerli, 2013), several TVET schools in Turkey have used the EFQM approach to motivate improvement efforts. According to a study by (Taraza, 2019) and (Nikolovska, 2014) in the area of TVET, the EFQM model's criteria are trustworthy and valid and directly affect how well something is assessed to be overall. TVET providers who apply the EFQM methodology are reputed to have a well-established quality culture, claims the ‘’Inner City Fund International’’ (p. 4).

4.4 International TVET governance systems:

It is important to consider quality assurance of TVET certifications and accreditation as an essential process that ensures the quality implementation and assessment of both the development of skills and the learning experiences of students (Bhatta, 2021). TVET quality assurance can be implemented at a number of levels, including certification bodies, conformity assessment bodies, individual institutions, national and international efforts, as well as national approaches (ILO, 2021). At the national levels, these complex interlinkages are frequently

interconnected in many ways (Bhatta, 2021). Quality assurance in TVET often is described as the planned procedures that give customers assurance in the educational and training services provided by the TVET institutions (USAID, 2010).

TVET quality assurance systems must be continuously updated to create a strong governance framework that enables strategic leadership to implement quick changes (ETF, 2008). Employers must be involved in many elements of developing a strong system for quality development (Kanwar, et al., 2019). As an example, defining occupational standards and skills as the foundation for education and training, or how to include or include people on decision-making boards. Engagement is generally easier to obtain when it comes to the process of creating the standards since businesses believe that these standards are owned by them, but it is more challenging to create qualifications when industries frequently view this as the ownership of the government only (El-Ashmawi, 2020). The focus of the processes for quality assurance is done through the consistency of the qualification and assessment processes, ensuring that assessments adhere to the necessary standards, and making sure that qualifications are up to date (Economics Research Forum, 2018).

The TVET system in a nation may make use of these standards or may choose to focus on some of them, such as occupational standards or competencies of students (ILO, 2010). Developing standards must place a strong emphasis on making sure they are applicable to the industry and up to date (PWC, 2019). Regardless of the choice of standards, TVET system developers and policy advisors tend to endorse the private sector industry representation in the development of these standards, to create a complete standard that is inclusive of all stakeholders' points of view (Amin & Ezz, 2017). If we look at other nations, we will discover various methods and strategies to deal with quality assurance. In this chapter, we'll demonstrate

three various approaches using three distinct countries. We will investigate the quality assurance and TVET systems in Australia, Norway, and France as international references applying TVET quality management systems.

4.4.1 Australia:

According to Langthaler (2015, P.20), ‘’Australia is known for its evaluation of skills model. This model includes trades recognition, license recognition, assessment for skilled migration, and qualification evaluation and identification’’. The Australian system includes several stakeholders including: The Commonwealth Department of Education and Training and the State and Territory evaluating authorities (UNESCO, 2018). The Australian Industry and Skills Committee and the Department of Education and Training of the Australian Government are in charge of creating and maintaining high-quality VET curricula (Fullarton, 2001). Depending on the field of study, Australia's formal VET certificates are classified under their separate training packages (Bagnall, 2000). A training package is a collection of standards and criteria that have received national TVET country profiles endorsement for use in identifying and evaluating people's talents in each industry (Bagnall, 2000).

In the planning and review of training programs, industry skills requirements are formally considered by Industry Reference Committees (IRCs) (UNESCO, 2018). Each IRC is composed of individuals with strong ties to business (Learning, 2020; Sellin, 2002). They are industry leaders who are aware of the skills requirements for their industry, whether major business, small business, peak bodies, or unions (UNESCO, 2018). The Australian Industry and Skills Committee (AISC) is advised by IRCs regarding the skill requirements of their industry sector (UNESCO, 2018). IRCs make sure training programs are following the needs of employers, training providers, and anyone looking to earn a training credential (Bagnall, 2000). The

Department of Education and Training of the Australian Government funds six SSOs (Learning, 2020). While maintaining their independence from both the training and the industry sectors, SSOs promote industry interaction (UNESCO, 2018). Various IRCs are served by each SSO according to an agreement. To teach, TVET institutes must have accreditation (Learning, 2020). The Australian Skills Quality Authority advocates for high-quality training to enable the employers and students to believe in the system and its outcomes (Langthaler, 2015). It oversees designating institutions as VET providers, where state authorities oversee that (Langthaler, 2015). An institution must meet the following requirements to become registered:

- Adherence to the VET Quality Framework and its methodologies (UNESCO, 2018).
- Collaboration with the Australian Skills Quality Authority, which includes following general instructions and helping with compliance monitoring activities (UNESCO, 2018).
- Educational institutions must be registered in the Commonwealth Register of Institutions and Courses for Overseas Students, to be able to provide courses to foreign and exchange students. (UNESCO, 2018).

4.4.2 Norway:

In Norway, the VET system is formulated to include two years of theoretical learning, the practical trainings taking place in the workshops, and corporate internships (Manning, 2001). Afterwards, students are subject to another two years of formal apprenticeship by working in one of the public sector institutions (ETF, 2014). The apprentice is mandated to conclude a year of training and a year of employment over the final two years (ETF, 2014). It is usually referred to it as a 2+2 model. The training is the responsibility of the local county administrations (Forsen, 2011). A high-quality system for the VET system is being implemented by the ‘’Norwegian Directorate for Education and Training’’ (Forsen, 2011). The method attempts to assist in

supplying pertinent training for learners and apprentices. This involves establishing a conducive learning environment so that as many people can finish the course (UNESCO & ILO, 2002). The system improves the knowledge of VET, provide information and accessibility for all stakeholders, and clarifies the legal and training mandates of each organizational and operational level (UNESCO & UNEVOC, 2018). The VET providers are advisory groups responsible for ensuring that VET provisions comply with the ongoing labor market demands (ETF, 2014). The boards' work encompasses both the in-class and out-of-class components of an apprenticeship (Chankseliani, 2019). What the Boards do is:

- Creating guiding principles to the enrolled students
- Enhance the quality of the education and the practical trainings.
- Supply a decent quality of VET establishment on the national level.

The boards aim to provide recommendations to the authorities with regards to the decisions for courses that should be delivered on an annual basis (Forsen, 2011). Additionally, they make recommendations about the advancement of vocational education and the efficiency of partnerships between educational institutions and training facilities (UNESCO, 2018). This planning arrangement aids in the growth of new businesses and employment opportunities in the region (UNESCO, 2018). Members of the boards are appointed by the county parliament (UNESCO, 2018).

4.4.3 France:

The foundation for the system based in vocational schools mandates a required period of on-the-job training (Lutz, 1981). One of the occupational qualifications granted by the Ministry of Education can be obtained through the system (ETF, 2014). Under this system, general

academic courses, pedagogical courses, and extra-curricular activities are all included in the training scheme that is delivered by vocational schools (UNESCO & ILO, 2002). Additionally, it contains mandatory training that take place in the workplace and are evaluated (UNESCO, 2010). These evaluations are considered while deciding on the awarding of the graduation diploma (Bagnall, 2000). The method used to establish the goals of the training periods is a critical component of quality assurance (UNESCO, 2010). The procedure entails:

- The training program leading to a diploma is prepared by the vocational school's pedagogical team. This considers the current requirements for each occupational diploma as well as the relevant regulatory texts. The learning objectives that must be met are specified in these standards. The program also specifies when and how long the work-based training will last (UNESCO, 2010).
- An administrative and pedagogical partnership agreement is completed by the VET school, employer, and student. It outlines the goals of work-based learning, the tasks that learners will complete, the expected learning results, and the evaluation procedures (Sellin, 2002).

Employers and VET institutions should remain in touch and make sure that there is constant conversation about the training quality to support this process (ILO, 2002). Teachers regularly visit the tutors of the in-company trainings to boost communication and encourages the creation of reports on progresses achieved by the learners (UNESCO, 2010). Additionally, these visits enable the instruction to be modified as required (Bagnall, 2000). This sort of trainings is supported by legal documents that allow the VET school and the private sector employer to work together to complete the final evaluation and monitor the learners' progress on all competencies that are based on the educational objectives (UNESCO & ILO, 2002).

4.5 The research gap:

A significant gap in the litreature still exists; we can see that there have been efforts and academic trials to analyze the quality management systems and their suitability to the educational contexts on the interntional level. Also, these atempts were generally focusing on the educational sphere as a whole. There have been minimal attempts to analyze the quality management systems applied in the Egyptian technical education sphere with its programs and policy spheres. This finding is important because the technical education in Egypt – and in the region - is an essential topic and is facing similar challenges. Therefore, analyzing the ECTQM was manadatory to fill in the gap in the litreature. This research's main aim is to include the analysis of the ECTQM in the available litreature, since it is not there yet. ECTQM's implementation has occupied a certain period in the history of the technical and dual system education in Egypt, yet, its implementation details have been rarely undertaken by enough scholars. There is a common understanding that ECTQM is a sub model extracted and created in reference to EFQM, yet ECTQM needs to be independantly analyzed given that it has been introduced and used as an independent model that should have been fitting enough to the Egyptian technical educational context.

Linking the theory to practice enables the overall system to be able to link between the understandings and the recommendations which may not been considered before. Many of the published studies and case studies discussing the EFQM do not link the theory to practice. Therefore, this thesis' emphasis of the ECTQM's quality framework in Egypt suppoorts with understanding the evidence-based and comprehensive mechanisms and recommendations to the quality implementation modules in the Egyptian TVET sector, specially that is originally based on the FEQM excellence model. This thesis provides a rational and operational explanation on the effectiveness of ECTQM to the Egyptain technical education modality. By analyzing the

application of ECTQM in Egypt, not only reflections about is effectiveness will be tackled, but also its design and implementation mechanisms will be examined, as well as the strategic and operational challenges faced during the phases of its operationalization.

To conclude, during reviewing the themes in the literature, a gap was found. The gap in the literature lies in having several academic sources studying the dual educational system whether in Egypt or abroad as well as the different quality management systems used in the technical education context mainly abroad. The literature analyzing the quality model that the Egyptian dual educational system was using between 2016-2020 (ECTQM) is non-existent yet. Additionally, since the dual educational system in Egypt did not adapt any quality management systems before the ECTQM, it was challenging to perform a comparative analysis between the ECTQM and any other QMS used for the Egyptian dual system. Since there was a significant gap in the literature with regards to this research area, the researcher decided to tackle the research process forward to be able to narrow down this gap by further reviewing the themes in the available literature (mainly internationally) as well as meeting with key national and international interviewees who can support with the mapping of the quality management system of the dual system. The mapping was essential to understand the perceptions about ECTQM for the first time. This study does not provide assessment or evaluation to the ECTQM, but rather setting the understanding of how the ECTQM worked through the eyes of its recepients, using the model's diagram as a reference on which all interviewes' questions were created. In response to the research questions, the primary data were gathered to contribute to closing the gap, which supports the exclusivity of the topic since it is linking the strategic level to the operational level.

5. Chapter Five. Research Methodology:

Qualitative research methods are adapted in this research as they pave the way for the in-depth assessment of the dual educational system policies and the circumstances of their establishment as well as being able to trace their evolution. This has been applied thorough contextual for the available literature and in-depth interviews with several relevant stakeholders and interested and involved Egyptian and International key players in the dual educational system.

5.1 Data collection:

This thesis has depended on two main research pillars which are reviewing the available literature concerning the topic whether thesis papers, books, international best practices, or published work from the involved donor organizations, as well as *purposive sampling* done by conducting fifteen semi structured interviews with candidates who are all relevant to the TVET system whether on the national or the international levels (Chun Tie, et al., 2019). Each interview was almost sixty minutes. The entire primary data collection phase was composed of about fifteen working hours, and the transcribing and coding of interviews was composed of about fifty working hours. Interviews were concluded between September 2022 and December 2022 after the acquisition of the IRB clearance. The interviewees were chosen based on basis of diversity and collectiveness. Since the dual educational system is driven of three main key players which are the public sector, the private sector and the donor organizations, the target was to try to reach several interviewees who cover those three sectors. Since the thesis is trying to examine the ECTQM's effectiveness, most of the interviewees were recipients to the ECTQM trainings given by GIZ.

5.2 Ethical considerations:

The aim of conducting the interviews was to try to combine as many answers as possible from the respondents to cover all aspects of research as well as to try to tighten the gap in the literature through their primary input. All interviewees were informed about the purpose of the interviews as well as have signed on the previously drafted and confirmed consent forms. All interviewees have been also informed that their answers were subject to being recorded and transcribed for research purposed and they agreed to the terms and conditions. Most of the fifteen interviewees were very welcoming to have their full names and job titles disclosed within the research. The researcher has abided by all research ethical considerations, moreover, it was clearly communicated to all fifteen respondents that none of the primary content given by them will be taken against them or used elsewhere by the researcher. Although the researcher happens to be a full time advisor at GIZ which is an international donor organization that supports the MoETE with the enhancement of the dual educational system technically and financially as per a joint governmental cooperation agreement, the researcher's professional role is not affecting the researcher's academic stance because the researcher is not by any mean a beneficiary of the project or the program and is not a decision maker in technical field or the financial aspects within the project.

5.3 Research design:

The questions of the interviews varied from one interview to the other, as questions were customized to the nature of each interviewee's job and work environment. The researcher used to build questions during the interviews based on the given responses in hope of keeping the conversation going. Additionally, since the researcher was not aware of the findings of ECTQM since it is an unpublished quality model, the only source to obtain information about it was the

interviewees responses. Some interviewees worked in the MoETE, some were international experts and other were private sector representatives. Therefore, questions were flexibly matching the professional backgrounds and expertise of each of them to be able to obtain the maximum amount of information possible during the one-hour interview. Additionally, the researcher depended on the non-random sampling methodology which is ‘’snowballing’’ approach in trying to find available candidates for the interview (Taherdoost, 2016, P.20). Each selected interviewee was helpful enough to suggest another possible interviewee which was indeed very useful and time efficient in the planning and designing phase of the interviews. All approached interviewees were briefed and oriented about the nature, objective, and purpose of the research (Marshall et al., 2014). The researcher explained the fact that she is a full-time graduate student at the American University in Cairo who is finalizing her master’s degree in Public Policy and is expected to graduate very soon. All interviews were done physically and face to face as per the interviewee’s preferences and as per what Berg (2009) stated that this causes more effectiveness to the research outcome. Some interviews were concluded fully in English while others were concluded orally in Arabic due to the interviewees preference but later were translated and transcribed to English for the fulfillment of the research purpose. To ensure that the findings of this study are both reliable and valid, the findings are verified through the literature review (Marshall et al., 2014). The researcher’s bias is almost not existing as the researcher is not involved neither in the Egyptian political system nor has been a beneficiary of the dual educational system in Egypt. Additionally, the researcher depended on the triangulation method during the setup of the data collection which helped the researcher to make sure the data collected are credible (Marshall, et al., 2014).

As discussed, the interviews were designed and executed in a way that could cater to all research needs. Therefore, the following table summarizes the details of the participating interviewees.

No.	Interviewee's title	Job description
1	Advisor to the deputy minister of education to the TE	- Curricula development advisor to the deputy minister to the TE - Coordinates the needed work between the deputy minister and the donor organizations.
2	Dual system inspector	- Responsible for the automotive occupations at Qalubeya governorate, Egypt. - ECTQM trainee.
3	Dual system inspector	- Responsible for the commercial sector and occupations at Cairo governorate, Egypt. - ECTQM trainee.
4	Dual system inspector	- Responsible for the carpentry occupation at Alexandria governorate, Egypt. - ECTQM trainee.
5	Dual system inspector	- General inspector to the dual system at Al-Sadat city, Egypt. - ECTQM trainee.
6	Head teacher	- Readymade garments teacher at Zain Al-Abidin school, Cairo, Egypt. - ECTQM trainee

7	Dual system official employee	- A full-time employee at the General Directorate of the Dual System in Cairo and has retired two years ago.
8	GIZ advisor	- Advisor to the curricula development at GIZ - Moderated ECTQM trainings between 2016-2020
9	GIZ advisor	- ECTQM advisor at GIZ between 2016 – 2020 - Moderated and designed ECTQM workshops and trainings
10	GIZ advisor	- Advisor to the dual system governance affairs from 2016 – present.
11	GIZ advisor	- Advisor to the quality of in-company trainings for the dual system.
12	GIZ advisor	- Advisor to the quality assurance in TVET and the accreditation systems.
13	NCTDE general manager	- General manager to the NCTDE which is a main service provider in the Egyptian dual system.
14	TVET international expert	- TVET German expert - Head of the Enhancement of Egyptian Dual System project – GIZ from 2016-2020.
15	EFQM international expert	- EFQM German expert - Designed and co-drafted the ECTQM in 2016

5.4 Research limitations:

The research limitations could be described in the form of the time limitations given with the research's limited duration and the inability to conduct further interviewees. The researcher depended on primary data collection to obtain the needed information about ECTQM, since secondary sources were not available. The entire researched content about ECTQM depended only on the primary data collection since the area of quality management in the Egyptian dual system was not undertaken before by any scholars. Purposive sampling was chosen in this case due to the time constraints while also having the need to receive as much in depth and diverse content as possible. Additionally, as per the researcher's findings, the gap in the literature was found mainly within the context of TVET quality assurance in Egypt. The shortage with the published work on the ECTQM as the quality assurance model in the TVET sector in Egypt between 2016 and 2020 widened the intellectual horizons in front of the researcher by motivating her to further research this gap and tighten it through the primary data collected.

Another challenge that faced the researcher was that interviewing representatives with critical positions like the candidates chosen for this assignment, made it a challenge to receive as many grounded information as expected. The reason behind this challenge could be tied with the fact that some of the respondents were not in charge of disclosing information that are either not normally shared by their entities or that are still undergoing governmental debates and discussions and they are uncertain about their validity yet. Other selected participants rejected to get interviewed due to the sensitivity of their positions.

6. Chapter Six. Analysis:

This chapter presents the findings of the data collected on the governance of the dual education system in Egypt as well as the effectiveness and efficiency of ECTQM as a quality management system. As previously mentioned, neither assessment nor evaluation analysis to the ECTQM were feasible in this study because of the lack of data on this sphere. Hence, the focus lies on the coordination challenges between the MoETE, the private sector and the service providers, especially in terms of accountability. The researcher also highlights the coordination obstacles that the MoETE faced in the design and implementation of ECTQM. Therefore, interview data showed three main themes which are:

- System's governance mechanism and challenges.
- ECTQM's effectiveness and efficiency
- The system's way forward and best practices.

6.1 Governance mechanisms and challenges:

The dual educational system is an old endeavor that has been operating for more than twenty years in Egypt. Through the past decades, the system has witnessed differences amongst its operational levels and governance levels. The presence of the German aid through all phases of this system made it unique and enabled it to perform a lot of its phases. There are differences between the German and the Egyptian dual system models, and these differences are still existing. One of the main differences is that in the German model, the relationship is direct between the private sector and the educational institutions, however, in Egypt, there is an intermediary body called the ''RUDS – Regional Units for the Dual System'' who coordinates the relationship between both sides, this is usually because both sides do not have the enough

capacity to fulfill this role, and also because the MoETE is the owner of the dual system endeavor in Egypt, whereby its human resources cannot tackle this role independently. An advisor for curricula development at GIZ, elaborated on the above saying:

> *''The German arm began the project in the 1990s using the best quality. German specialists were stationed in every regional unit (RUDS) whose roles were to follow up and supervise the implementation of the quality. More recently, however, the* ***quality scene in the dual system started to differ because the system got bigger and lots of stakeholders joined****. GIZ was no longer able to afford to add a German specialist in every RUDS unit because the system got expanded beyond GIZ's capacity. When the system expanded, there was a need to seek alternative quality management solution.''* (Interview, advisor for curricula development, GIZ, September 2022)

Unlike the German model of the dual system where the relationship between schools and private sector is direct, the Egyptian dual system is different. In Egypt, the system is not bi-lateral, it is multi- lateral. The system was unable to function through a direct relationship between the MoETE and the private sector. This is because in Germany, the owner of the dual system is the private sector, but in Egypt, the owner of the system is the MoETE. Due to difference in human and financial capacities, the dual educational system in Egypt needed a third party to mediate the relationships between the MoETE and the private sector and play the role of the ''moderator''. At first, GIZ was playing this role, however, it had to phase out due to the system's expansion, and it was replaced by national representation of the ''RUDS''. As explained earlier in the thesis, the RUDS are dual system regional units that are in every governorate and are responsible to monitor, evaluate and report for the dual system schools and students located in their directorate. They handle the relationship between schools and the factories based on the registered training opportunities. Additionally, any new project shall be

designed in phases. Each phase shall be characterized with its relevant features, needs and technicalities. Expansion of projects is inevitable, and so shall be the expansion plans. Expansion plans help projects mitigate future risks, stay prepared in front of unexpected circumstances, and ensure sustainability and resilience of projects. Having change of plans is accepted, however being one step ahead is always preferred to avoid wasting resources and to support capitalizing on what has been achieved already. The German support to the dual system in Egypt shall not be provided for the entire system's existence, and there should have been alternative plans during the design phase of the dual system launch whereby the creation of the intermediary bodies could have been discussed and planned, instead of depending on the German assistance to mediate the processes.

6.1.1 In-company training:

Egypt faces many obstacles to achieve its education targets, and these challenges include the need to enhance basic education quality, strengthen educational management and performance, and improve equity (Krafft, 2013). The dual educational system in Egypt faces some of the challenges that have been there for the past decade. One of the biggest challenges is the occupational safety and health of the apprentices. Some might mistakenly think of the dual educational system as' 'Child labor'' due to the violations that take place inside factories and training places. This affects the reputation and credibility of the system. Speaking on this particularly important point, the general manager of the dual system department at NCTDE claimed that:

> ' *'During times of shortened training opportunities, the NCTDE was trying to encourage as many enterprises as possible to enroll within the DS to expand the platform of training*

opportunities, and unfortunately this affected the quality of trainings given to the students during their practical training cycles. ***The issue of the downgrading quality of in company trainings was a reason behind some of the accidents and even deaths of some of the students,*** *and the system since then has been in a state of instability. Moreover, there has been lack of supervision for the quality of trainings provided due to the increased number of private sector firms and the shortage in the human resources''.*
(Interview, general manager, NCTDE, September 2022)

Compromised in-company training quality because of the existence of the RUDS in the system resulted in overlooking the quality of the students' safety, which is also part of the challenges in the governance system. Compromised quality leads to unfortunate results. Having deaths cases between the dual system students in Egypt due to compromised quality management levels must be treated in the firmest methods possible. Dual system students are exposed to practical trainings that include lots of physical contribution as well as usage of machineries and tools that must be dealt with caution and care. Death cases have been reported due to lack of implementation of the occupational safety and health measures. Factories and private sector entities who fail to secure the safety of the dual system students and are unable to provide the needed equipment for the safety and health must be banned from being involved in the system. The NCTDE general manager elaborated in his interview, that factories who breach the safety and health rules are usually banned from taking a role in the dual system, but also, they must be subject to legal consequences. There is a fine line between students who receive in company trainings during their school years and between child labor and perceiving students in training as cheap labor. This fine line must be maintained by powerful supervision from the private sector representation and the MoETE. No families would be willing to register their children in a system that put their children into risk while working, even if they will receive financial

compensation. These unfortunate social perceptions affect the decisions of many families considering their children's enrollment onto the system. Similar attitudes happen because private sector firms' owners see those trainees as unexperienced labor who can be abused in many manners instead of seeing in them the potential to gain experience at a youthful age and give them ownership and secure job opportunities for them in the future. Additionally, private sector firms are not interested to join the system and provide trainings to the apprentices claiming that it does not add profit to their companies, this forces the RUDS to accept private sector companies below the agreed qualities. Private sector firms which do not fulfill the in-company training quality criteria delivers trainings of less quality to students and this affects both the learning experience of students and their occupational safety and health during the working hours. In Egypt, only about a quarter of human resource managers believe vocational graduates possess the hard and soft skills they need (UNESCO, 2014).

The regular technical education requires that enrolled students receive both the theoretical and practical learning inside the walls of their schools. Theoretical learning is in the classrooms and the practical learning is inside the workshops of the schools. The regular technical education requires less fees than the dual educational system, yet its students do not get financially compensated for their technical trainings unlike the dual educational system. There has always been an unusual inquiry of why the number of applications within the regular technical education is higher than that of the dual educational system given the financial compensation and the labor market exposure the dual system offers? The dual educational system offers students financial stipends during their in-company training periods as well as a three-year training inside one of Egypt's industrial facilities. An international TVET expert added:

'' The worldwide inflation and cost of living has gone up a lot. ***So, if the remuneration hasn't caught up to salaries in general, and then also the remuneration of apprentices, then, it's not enough of an incentive.*** *And this remuneration, while being a student should, in theory, be connected to the level of productivity so that someone towards the end of the training who was nearly as productive as full worker, then also the remuneration should reach that kind of level. Whether the private sector is willing to pay that may be a different question''.* (Interview, an international TVET expert, December 2022)

Private sector firms involved in the dual system shall consider paying suitable financial stipends to the students involved in the trainings. There is a fixed range of stipends that is agreed with the MoETE and gets amended every certain period. Financials play a very important role in attracting students and their families to enroll in the dual system, and without this incentive, students may find the dual system as a less attractive model. Specially, that the dual system forces students to enroll as a full-time apprentice in the private sector while the traditional technical education does not. Students will register in the normal technical education if they found that the dual system imposes labor burden without paying for it. Additionally, the ability to gain money while studying can be a powerful motivator for students to participate in apprenticeship programs. In some cases, however, individuals may earn more by directly entering the labor market rather than pursuing an apprenticeship. As a result, higher pay for unskilled labor can dissuade a person from choosing an apprenticeship and bearing a portion of the training costs (through lower pay) over directly entering the labor market (Chankseliani, et al., 2019, P.270).

The social perception of the dual system is a shared responsibility between the MoETE and the private sector. Since they share the educational process, they shall also

share the responsibility of promoting to the system. The MoETE has the educational mandate, and the private sector has the resources, and they shall collaborate jointly to promote the reputation of the dual system and further work on diminishing its challenging aspects which contribute to the overall perception. The dual educational system is usually viewed as an educational system for the underprivileged students who were unfortunate with obtaining high scores in their preparatory stage. Also, it is viewed as an educational system to provide cheap labor to the industry. An advisor at GIZ for the governance affairs added the following:

> *''**All the involved stakeholders are responsible for the unfair representation of the dual system** among the rest of the technical education programs. Technical education in general does not enjoy a particularly good reputation and a social perception, yet the dual educational system's social perception is more affected than that of the regular technical education. This could be because of the dual system's higher fees, to the news that get published every now and then about the low quality of the in-company trainings, etc. Therefore, I see that the ministry needs to take better care of the dual system, as they view it as a minimal part of the system and not a core program. They cannot provide the needed resources and capacities to it constantly and on the other hand, the industry in Egypt is very problematic.''* (Interview, an advisor for the dual system governance, GIZ, November 2022)

Bad social perception is one of the challenges causing decreasing number in the enrollment rate of students, and the first theme discusses the system's challenges, so it was needed to refer to the reasons. If students are not well briefed about the available programs that they can enroll in, they may miss several opportunities. The MoETE can participate in conferences, exhibitions, and press releases to promote for the dual system as well as

exposing the system's best practices. Since improving the TVET's social perception is one of the TE 2.0 reform, there shall be strategic steps towards fulfilling this pillar. The MoETE can co-plan for this goal along with the available donor organizations to be able to achieve prestigious results. There shall also be strategic discussions on how the MoETE, and the private sector can jointly sustain this goal after the phasing out of the donor organizations.

In Egypt, it is very prestigious when students earn the university degrees, and the technical diplomas are usually looked down upon. Families in Egypt foresees the technical diplomas as a less privileged degree that are only attainable to a certain class in Egypt. This ideology also contributes to the overall perception of the dual system. The importance of the blue collar in Egypt and to the economies in general cannot be disgraced. The misconception that technical diplomas are for the underprivileged is causing harm to the dual system since it is a mindset practiced on a national level. A retired MoETE official added the following:

> *''We have some social misconceptions in Egypt because most parents want their children to graduate from university. For example, I know some extremely gifted people who graduated from the readymade garment dual system and were offered jobs after graduation because this sector. I knew later that they enrolled into college, and in a completely different major. The labor market in this case missed great calibers.* ***The social image of the blue collar must change.*** *Technical education graduates are as important to our country as university graduates. The idea that university degrees bring families prestige shall change''.*
> (Interview, a retired dual system official, MoETE, September 2022)

The dual educational system shall pay attention to investing in its social image since the targets are all about expansion and increasing the numbers of enrollments. There shall be campaigns within the preparatory schools for students to hear more about the dual educational

system. There shall be advertisements whether on social media, on the directorate level or even by the RUDS. Enhancement of the social image of this system can boost its enhancement and financial model. Many families do not know what the dual educational system is and would consider it if they heard good about it. Marketing strategies will pay a key role in accomplishing the ministry's 2030 target.

The recommendations to enhance the dual system does not reach the management of the system or 1are rather practiced on an operational level. Involved stakeholders tend to share recommendations with regards improving the dual system's reputation. Their recommendations need to be voiced in a proper channel to reach the central and decision-making levels. For example, a readymade garments teacher at Zain Al-Abidin dual system school in Cairo shared:

> *''There are lots of ideas to attract new students every academic year.* ***We struggle every year with the dual educational system's enrollment rate*** *because either the students are not attracted or because enrolled students drop out and shift to regular technical education instead. We understand that the dual system obliges students to have many responsibilities. Students spend most of the time in the private sector facilities under certain working hours, they are required to acquire certain competences and apply them. All these obligations may seem like a turn off to many students who do not want to be committed to their educational burdens.''* (Interview, a head teacher, Zain Al-Abidin dual system School, December 2022)

The phenomenon of students dropping out from the dual system in Egypt is common and is a yearly challenge to the system. Some occupations freeze every academic year due to the insufficient number of enrolled students and this affects the overall productivity of the system. There shall be recommendations and adjustments to the governance of the system by making it more attractive to the students. There shall be considerations for the working

hours for example, or there could be pre-TVET orientation sessions to the preparatory stage students where the MoETE explains to them the benefits of the system. There is a general understanding within the MoETE, that the dual system is just a minimal portion of the entire TVET system, and this causes in minimal recognition and focus given to it. When in fact, if greater focus is given to the dual system, the overall economic situation in Egypt can be boosted.

6.1.2 Accountability:

Accountability is another huge challenge facing the dual educational education and is a factor determining the success of the entire program Egypt. As illustrated throughout the research that the dual educational system in Egypt is subject to some instability with its ownership. Ideally, MoETE is the official owner of the program receiving support from the service providers and the private sector, yet, due to several reasons, the MoETE is having difficulty fulfilling this role. Because accountability of the program is and must be a shared responsibility between the system's three main actors, the advisor to the deputy Minister of Education to TE further added that:

> ‘’ *The Ministry sees itself as the main and only body responsible about the students, because at the end of the day they are enrolled students under its supervision. But our counterpart from the private sector, also claimed that it is not the public sector's responsibility alone since the private sector also has a role to monitor and supervise inside the factories and companies. What I can say that* ***both partners are not performing this auditing or supervising task the way they should****, that is why sometimes the Ministry of Education pushes some of its employees to go do the inspection visits themselves on the companies, while on the other hand, the company owners are not in favor of being supervised by*

representatives from the public sector.'' (Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

It has been concluded from the research and from meeting the different interviewees, that the MoETE and the private sector representatives tend to spill the responsibility over each other's. There have been tensions between both sides to whose responsibility shall be to keep an eye on the M&E of the system, instead of co-planning the process together. Unifying the efforts would be more efficient than losing the time and efforts exerted on an individual level. Both sides are two equal pillars representing the system and contributing to its success, and the success will not be achieved through one sided effort without the other. The idea of joint ventures shall be further integrated in the mindset of the managing stakeholders to be able to develop this system further.

Since the dual educational system is a two-sided system including schools and private sector firms, school curricula also play a significant role in determining and shaping the horizons of the enrolled students. Dual system curricula are not all up to date and are not matching the modern-day labor market needs. We are living in a world full of changes, digital solutions, and dynamic trends, and to this end, there shall be further understanding where an advisor to the deputy Minister of Education to TE added:

'***'Most of the current curricula need development****. The MoETE started four years ago to enhance the quality of curricula for all types of education and not only the dual educational system. We have now a new approach, which is the competence-based education, which means that the schools are not only teaching them the regular way, but to add several competences to their learning journey and enhance their capacities. Students shall not pass a stage without being practically examined about its competence. We started to analyze each*

technical sector to extract the competences for each occupation and build the training programs based on them. We started in 2018 to try this on the dual educational system, and I believe in the coming years this will reflect on modernizing and developing the curricula.''
(Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

Technical curricula are what produce competent graduates and future work force. There is no doubt that receiving good educational quality through well developed and suitable curricula at schools play a key role in preparing the students to be more active and integrated inside factories. The curricula shall be designed in a complementary manner, whereby, the theoretical content completes the practical one. There shall be harmonization between the school and the private sector firm. The student shall receive at the school the enough capacities to enable them to meet the professional working conditions and vice versa. The curricula at schools and trainings in factories should complement each other, and hopefully that will the competence-based education can achieve in the coming years.

On the other hand, the donor organizations involved in the dual educational system - mainly GIZ - are also contributing to the enhancement of the curricula through their technical backstopping to the curricula development processes. The advisor on quality management of in-company training at the former EEDS project- GIZ clarified that:

'' EEDS project introduced what is called ''The Quality Tools'' of schools and in company training. These quality tools came in the scene to set rules and regulations to optimize the quality of the learning experience to the students. Alongside trainings about the occupational safety and health to make sure the safety measures for the students are well applied in the companies. To achieve this, GIZ hired an international consultant that did an assessment for forty companies around Egypt, seven quality tools were developed with the

cooperation of the private sector and the schools. They teach the companies how to implement proper in company trainings and they teach the students their rights and obligations. Five hundred in company trainers received trainings on how to apply these quality tools, in addition to eighty service providers as well. The results were that our of two hundred surveyed companies, 168 companies were implementing these tools successfully.''
(Interview, an in-company training advisor, GIZ, October 2022)

GIZ has been a key player in the enhancement of the Egyptian dual educational system since the 1990s. It has been an engaged partner supporting the MoETE with the different operational plans including curricula development and quality assurance amongst the levels of educational institutions and private sector firms. GIZ has contributed to the above indicators by for example conducting quality assurance visits, curricula enhancement workshops and consultancy services to the MoETE and its involved representatives and key players. These efforts could be appreciated and needed, yet there could be challenges implementing and sustain them. The MoETE needs to deepen its understanding of sustainability and to constructively make use of the donor organizations' exerted efforts to optimize the time and work done on all related levels.

The dual educational system usually gets affected by the political situation in Egypt specially before and after the 2011 revolution. During and post the 2011 revolution, the dual educational system was affected on several dimensions including the governance system, the human resources performance, and mainly the funding resources of system. As well as other internal and external factors. An advisor for the in-company training at GIZ emphasizes on these topics contributing to the system's challenges, being one of the main core values of the research:

> *''From 2007 to 2015, the system suffered from a very fragmented legal system. There was no proper collaboration and coordination between the private sector and the schools. The curricula were outdated, and the trainings inside companies were not sufficient or even relevant, and sometimes the students themselves were exposed to exploitation. GIZ interfered in 2015 again through a small project which is EEDS. From 2016 to 2020, GIZ invested so much financial aid and technical backstopping to the system in trails to support and revive again the enhancement of the dual educational system and its expansion plans.''* (Interview, an in-company training advisor, GIZ, October 2022)

There has been an obvious decline in the performance of the dual educational system and its governance which caused instability. The system is still paying the cost of some of the traces of this period till now. This decline can be traced to several reasons including the instable political situations, the dynamic economic conditions, and the phasing out of the supporting donor organization during a certain period. Political and economic circumstances are inevitable and constant; however, powerful, and well-structured governance system can always be reliable enough to keep the systems ongoing regardless of the external factors. Good governance systems can always be a solid ground for systems to rely on even if the surrounding environments are not supporting, and that is what the MoETE in collaboration with its partners need to focus on in the *coming periods.*

6.1.3 MoETE's internal weaknesses:

Additionally, sustainability plays an important reason behind any system's maintenance and continuity. Therefore, the concept of building a sustainable system shall be incorporated within the mindset of all educational programs and the TVET. Donor organizations' support is not eternal and therefore, there shall be no full dependency on donor organizations' work, since their

work is only limited to introducing technical support, provide financial support when needed and their projects are usually short termed. Having mentioned this, and further exploring the system's challenges, the deputy minister's advisor in the dual system department commented that:

> '***'We have a challenge with the capacity of the staff. The MoETE is underemployed****, and we have a lack with the number of the staff working for the dual educational system in general. Most of the employed staff are reaching their retirement age, and there has been no official channels to make sure the information, skills, experience, and competences these employees received over their years of service can be formally transmitted to their predecessors. When an employee retires or resigns, they leave with all the knowledge they have gained, and we find that the new employees join without finding any proper documentation for what have been done before they have joined''*. (Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

One of the biggest challenges that the dual system is suffering from is the shortage of the human resources. The MoETE suffers from the lack of sufficient number of human resources that cover all its operational areas. It is also important to note that the rapid staff turnover at MoETE, particularly with regards to new directors who must be trained in and motivated to apply the system, has been a persistent challenge to the longevity and efficacy of ECTQM (GIZ, 2021). There shall be amended allocation of resources to be able to meet the needs of the system. There shall also be peer to peer coaching between teachers, schools' managers, and inspectors to ensure the sustainability and smooth transition between the MoETE staff. There shall be internal mandates for example on the directorate level, that before retirement, an MoETE staff shall deliver certain knowledge sharing sessions to their successors to make sure the knowledge and information are inherited and continuous.

The MoETE needs to perform periodic amendments to its operational and financial bylaws. There shall also methodologies that enable the MoETE to fundraise to fulfill its mandates. Donor organizations may support with the technical backstopping for the MoETE officials, but the MoETE shall have within its mandate, the available resources to handle these requirements once the donor organizations phase out. The advisor to the deputy minister of education to TE added the following:

> *''**Another challenge is building the capacities of the current employees in the MoETE**. The MoETE has a financial challenge, mainly with financing the field employees. The Service provider i.e., the RUDS – Regional Unit for Dual System acting as the Human Resources focal point need to receive capacity building and to be better supervised to perform better quality of schools' supervision and in company supervision. I have to say that they need to work on their financial model, internal bylaws, internal system, clear strategies, disclosure, and well-trained technical resources''.* (Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

The MoETE is a big ministry and is responsible for big files, and thus, in need to be allocated reasonable budgets to enable it to fund the system in a way that could empower the fulfillment of its rules and regulations. The technical and dual educational systems are mainly dependent on the technical performance. Technical work requires sustainable funding solutions since there is an ongoing need of purchasing new equipment, maintenance fees, training fees, etc. If there is lack of providing the needed materials, the learning experience shall not be as prosperous as needed affecting the learning outcomes of all enrolled end users. These reasons are also contributing to the overall social perception of the system. Additionally, there shall be formal standard operational procedures that obligate all educational institutions to keep well-documented and archived data of all progresses, completed milestones, knowledge, and

aggregated results within their entities to optimize the usage of these information whenever needed.

Working in the public sector requires a certain set of skills that need to be in all public sector employees. Working with the MoETE and in the field of TVET mandates the affiliated employees to be characterized with certain features including good academic competences, pedagogical skills, technical knowledge, widened horizons and many more. Investing in the human resources is a solution where everyone benefits. It empowers the employees, benefit the end users, and enhance the overall learning experience. To this end, the general manager at NCTDE, added that out of the challenges that the dual educational system in Egypt is going through, human resources and their capacities is a main one:

> ‘’ ***NCTDE’s human resources are a main challenge****. By this, I mean that the – not everyone of course, but a recognizable amount of – the colleagues working in the schools we visit or at the RUDS are of course understaffed, and they are not well prepared, nor capacity developed enough to perform their work in decent quality. They are incapable of doing market surveys, transferring the know-how to the companies, or even do proper marketing to the dual educational system initiative.’’* (Interview, general manager, NCTDE, September 2022)

RUDS employees are the intermediary focal persons between the public and the private sector. They should enjoy fundamental characteristics like strategic thinking, design thinking, policy advising, analytical skills, networking skills, and many more. They shall go through phases of upskilling and relevant workshops to support them with their required tasks. They play a vital role in the coherence of the entire system, and without their role the connection between the other two sides of the system will face fragmentation. Nevertheless, there are intersecting findings between the above responses and the literature, for instance, Krafft (2013) confirmed

that: ‘’Egypt faces many obstacles to achieve its education targets, and these challenges include the need to enhance basic education quality, strengthen educational management and performance, and improve equity’’. (P.7)

6.1.4 Job misplacements and labor market mismatches:

Since the literature indicated that the dual educational system needs to operate in parallel with the needs of the economy and the labor market, there shall be as minimized market mismatches as possible to utilize the original purpose of apprenticeships. Krafft (2013) elaborated on the market mismatch as challenge in the dual educational system in general, yet in Egypt it is furthermore significant (P.9). Coherently, the advisor to the deputy minister of education to the TE had a comment on this issue:

> ‘’ *We face some* ***challenges with job placements and matching the dual educational system’s students in training and graduates with relevant jobs*** *and find training opportunities for them in relevant industrial entities matching what they are studying or what they have studied. Sometimes we have training opportunities but there are no places in the schools, and vice versa. This challenge must be studied case by case. This challenge also depends on the availability of resources such as landscape to build schools on, availability of teachers and human resources, research capacities, and many more.’’* (Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

The MoETE could start looking into the possibility of dedicating certain departments which are responsible for the research and development aspect of TVET, in other words, to be the research engine of the ministry through researching the market needs, creating expansion plans of schools and occupations, tailoring occupations to the nature and characteristics of each governorate, studying all gender phenomena in the TVET sector and any other related aspects.

There shall be a fully funded department responsible for similar tasks, we understand the financial scarcity aspects, yet there shall be an in-house research team to achieve internal saturation.

There could be available job and training opportunities but not well distributed geographically. Egypt's dual educational system operates in all twenty-eight governorates. There seems to have been an ongoing challenge with the geographical distribution of the training opportunities of the dual system amongst all governorates. Like previously stated above, the MoETE shall tailor job and training opportunities to each governorate like a separate case study. Each governorate enjoys unique characteristics that can make it boom in one or two occupations than the others and so on. For example, Cairo being the center of the dual educational system with the largest number of schools, serves almost all occupations and sector unlike the rest of the governorates. To better understand this, the representative from the private sector service provider had to mention:

> *'' Another challenge we need to combat is* ***the uneven distribution of supply and demand.*** *Some governorates have high demand on the dual educational system but does not have that many companies and vice versa, which make us see that sometimes, apprentices go work in other governorates than their original hometowns which is not convenient specially in their young ages and can further expose them to un-needed risks or dangers. This also will not be attractive to parents. Parents will be very reluctant to send their children to study or even stay at other governorates to study at this relatively early age. Eventually, we find that some occupations must freeze at certain academic years due to the lack of demand, which affects the overall process including teachers, schools' staff, etc.''* (Interview, general manager, NCTDE, September 2022)

Education and labor market mismatch is another fundamental challenge in Egypt, in part due to problems in the Egyptian education system, especially in vocational secondary schools (Krafft, 2013, P.9). For example, in 2009, less than half of vocational secondary students who received hands-on training and found work said their education represented labor market needs due to geographical and labor market mismatches (Krafft, 2013, P.9). The mismatch of education and labor markets is a barrier to not only individual achievement but also does not enable the Egyptian economy from benefiting from the technical competencies of its TVET graduates (Amin & Ezz, 2017). There shall be in depth studies to the most booming sectors and occupations per governorate. There shall also be bilateral dialogues between the MoETE and the private sector representatives on the expansion plans based on the supply and demand of the labor market. Geographical distribution shall be the main determinant of allocating private sector firms and training opportunities, given the nature of the dual system. The living expenses currently are very high given the inflation and the devaluation Egypt is facing, this will not encourage families to further handle the burden of paying logistics costs to their children if they got accepted in a training opportunity that is outside of their respective governorate. The industrial chamber/s shall seek collaborations with the MoETE and vice versa to overcome this challenge. Specially, if the financial compensations paid by the private sector to the apprentices are not representable. The dual educational system in Egypt needs to activate connections and collaborations between its main stakeholders and private sector partners. The MoETE needs to supervise and execute a strategic plan to cover all governorates' schools and training institutions whereby each student can at least be assigned or given one training opportunity per his or her three academic years. Additionally, it is crucial for the MoETE to keep its database as dynamic

as possible to support with identifying gaps and weaknesses instantly so the reactions to these ad-hoc situations are as fast and to consider the risk mitigation aspect.

Although the dual educational system in Egypt is from a German origin, the situation and surroundings in Egypt are not the same as German. These differences and variations should have been considered in the plan and design phase to tailor the system to the Egyptian context. For example, in Germany, the main owner of the dual educational system is the private sector represented in the chambers. Chambers in Germany moderate and manage all specifications of the system and not the schools. It is seen there as a pure industrial apprenticeship, yet in Egypt, it is otherwise. The private sector representation in Egypt is not the same. The responsibilities of the available chambers cannot fulfill similar responsibilities and tasks, therefore, the MoETE oversees the model and that is the main difference between both models. Additionally, the reason behind establishing the RUDS in Egypt is because neither private sector nor the public sector was alone able to supervise the processes of administration, job allocation, market match, and networking. Therefore, the model in Egypt has been a three dimensional one whereby it is only a bilateral agreement in Germany. Adding to this the advisor to the deputy minister of education to the TE had to discuss the following:

> *''**The industry in Egypt is not as well prepared and well established as it is in Germany**. The role of chambers in Egypt is not as sufficient as needed. Both, the public sector, and the private sector cannot carry the responsibility alone due to a lot of internal reasons and RUDS had to come in. The RUDS as an idea is great, yet, they also have internal challenges that affect the system as well. Sometimes, it is the case that students are not being trained well, sometimes there are cases of child labor, accidents of child abuse inside the factories, and children are not treated in the proper way. I have to say that Egypt needs good*

industries to have good training opportunities for the technical students. Also, students cannot find the suitable type of occupation they are most interested in, due to lack of places, mainly in delta and upper Egypt.'' (Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

As discussed before, since the quality management models give the absolute flexibility to schools to apply it the way the schools find convenient and attainable, governments shall also apply the dual educational system the way they find most successful. The full adaptation of the German model may not be the best scenario for Egypt, and the Egyptian government was able to identify that. RUDS was created to mitigate one of the differences, and there is still a long path of differences that the MoETE shall plan on how to work around them. These differences include for example the capacity and size of the Egyptian private sector, the legal representation, the competences of the preparatory students enrolling to the dual system, etc.

During the research and interview phases, it was enriching enough to realize the coherence between the perspectives of the public and the private sector. It is important to understand that both sides of the system share the same dialogue, the same narrative, and the same ambition. Findings from the literature have also contributed to the overall understanding of the system and its needs. The need is to capitalize on these mutual understandings to further build a systemic ground for operations rather than having individual attempts.

6.1.5 Legal frameworks:

Over the past years, the dual educational system was rather operating without a real binding legal basis that mandates all its relevant actors to perform their duties under a certain bylaw that formulates the borders of the roles, responsibilities and even penalties. Recently, the MoETE was able to publish more than a ministerial decree to support the processes of the dual

educational system. The (111) decree is a decree that was published in 2021. It shapes the framework of cooperation between the MoETE, the training institutions and the students' families. It is like a contract whereby it sets the understanding the role of each of the involved parties, the rights, and the duties of each. It obliges each term to perform their duties the legal way and it was an important milestone with regards the legal construction of the system. The (444) decree is a decree that was published in 2015 whereby it formalized the role of all RUDS units across all governorates. Under this ministerial decree, the RUDS became a formal acting body in the governance mechanism of the dual system in Egypt. They are mandated to perform all related monitoring and evaluation tasks whether on the company level or on the school level.

> *''The supervision on the entire system including schools and training facilities was the main responsibility of the MoETE until the ministry decided back in 2015 to create a joint ministerial decree that emphasizes on the need of integrating all relevant actors on the level of the field who could perform the continuous field inspection work for the quality over the in-company trainings and this decree is called "444". This is the legal stance formalizing the work of all RUDS units amongst all governorates.* ***Legalizing the role of the private sector through decrees, cooperation agreements and cooperation protocols is a great step*** *towards empowering the role of the private sector and highlighting their equal share of the responsibilities''.* (Interview, general manager, NCTDE, September 2022)

It is important that the MoETE is creating alternative solutions to share the ownership of the dual system with its relevant stakeholders given its shortcomings. Yet, since on the Egyptian level, the dual system responsibility and mandate lies in the hands of the MoETE, the MoETE shall still own the overall supervision work. Delegating inspection work is important to fill the gaps in the system, however, there shall be more focus and

attention to the quality of the inspection processes. Legally binding ministerial decrees is a good step towards documenting the mandates of the inspection work and shall be further enhanced in the future to also include MoETE staff.

The 444 ministerial decree was launched to formalize the role of the intermediate body (the RUDS) to perform quality inspection work and be responsible for the monitoring and evaluation of the dual system educational processes, specially within the in-company trainings. Another decree was needed to formalize the relationship between the MoETE, the service providers and the students. Students under the umbrella of the dual are considered as full-time apprentices, and based on that, they shall receive contracts to enable them to know their rights and duties. Considering this discussion, the 111 ministerial decree was published a couple of years ago to fulfill this role. An advisor at GIZ for the governance affairs of the dual system added the following:

> *''The 111 decree has five extensions, and it is the contract between the ministry of education and the service provider. If the service provider breached the contract in any way the ministry could sue them.* ***The ministry decided to make the agreements more legalized by signing and ratifying ministerial decrees extension in a form of a contract between the partners and is indeed binding upon them both.''*** (Interview, an advisor for the dual system governance, GIZ, November 2022)

Legalizing the relationships between the MoETE and its involved stakeholders under the umbrella of the dual system is critical. The relationships and dynamics within the dual system in Egypt are complex and legalizing them shall make this complexity clearer and more fundamental. Under the umbrella of the previously mentioned decrees, the system can be

better monitored and regulated. This leaves less room for corruption and gives the system the credibility and reliability it deserves.

6.2 ECTQM's effectiveness and efficiency:

Any quality management model needs enough time to be fully implemented, tested, and enhanced based on the feedback and best practices. Additionally, any newly introduced concept must be introduced based on several pilot phases, rounds of feedback and improvement plans. This should have been the case with the implementation of the ECTQM. The ECTQM was introduced by GIZ to the MoETE in the late 2015. Therefore, An ECTQM advisor at GIZ advised that:

> *''**The ECTQM has not been given enough chance to be fully implemented.** It was resisted by the ministry leaders at first, even before it got the chance to be fully implemented on a large scale. We understand that in general new concepts can be faced with resistance, but due to the project's duration this resistance phase affected the timeline of implementation. So that for us to be able to provide a fair evaluation of ECTQM's results and effect, we should have allocated the needed time for it to be fully implemented. All ECTQM related activities, workshops and seminars stopped by the time of COVID-19, so, the entire period that it was implemented, it was less than five years''.* (Interview, an ECTQM advisor, GIZ, September 2022)

Quality management includes within its application behavioral changes, mindsets shifts and cultural appropriations. To change such aspects, there shall be extensive and continuous application of the new concepts in an attainable and smooth methodologies that would appeal to the target audience. Since the period of ECTQM's implementation was almost five years (2016-2020), this relatively short timeframe might not have been enough to radically establish a full

quality management model within a system that was not adapting similar models before. Therefore, quality management implementation shall come with a strategic plan that contains milestones to support the processes of its monitoring and evaluation.

6.2.1 Model's inception:

Any plan and design phases are the main determining factor of the project's success. The more structured and defined the first phases are, the more successful the planned projects are. This applies specially with international best practices. International models can function as great references for many countries, and they can further learn from and adapt, yet choosing the suitable techniques and methodologies by which these international models can be implemented on a national level requires extensive consultations, lobbying and strategic and operational discussions to come up with a collective scenario that all involved stakeholders agree to.

> *''**The main challenge for the ECTQM is that it was not Egyptianized nor nationalized enough**. When I look back at these efforts, I can say that the efforts of drafting and creating the ECTQM including the brainstorming workshops, and consultation meetings, were not sufficient in fully nationalizing the model and introducing it to Egypt. I believe more work could have been done back at this stage to make sure that it will be a sustainable model and that it captures all the particularities of the Egyptian context''*. (Interview, an ECTQM advisor, GIZ, September 2022)

Adapting international best practices or models is an important step towards amending several national policies. However, copying and pasting a certain model may not be a promising solution, given the difference in the economic, social, and political features of each nation. The customization of international quality management systems shall happen considering the input of national expertise, to be able to insert the national input in the

customized model. Additionally, there shall be more focus and attention paid during the planning phases to help reduce the future risks and the un-necessary changes due to lack of planning. Although there were several workshops between the GIZ and the EFQM experts to conclude the drafting of ECTQM as well as several consultation meetings, these efforts were not fulfilling to shifting the model from a European one to a more Egyptianized one. There should have been additional rounds of stakeholders' dialogue sessions for example, where involved stakeholders could have contributed to the formulation of the model. Quality management systems are like by-laws, which means that all relevant stakeholders shall be aware of its operationalization, history, and usage.

6.2.2 Initial insights:

Communication plays a key role in the delivery of any content from an expert to a new knowledge recipient. There shall be clear communication methodologies that ensure smooth and easy transfer of the knowledge and ease the process of content elaboration and exchange of information. The technical content of any training material can be very interesting, but the audience might not feel as engaged due to a lack in the communication and delivery approaches. Since feedbacks from recipients are very important, A dual system carpentry inspector in Alexandria had to add:

> *'' GIZ works with us to develop the ideologies, curricula, and quality of the training as well. The changes keep happening in a very quick manner that does not leave enough room for us to grasp, implement and test. What we extracted from the trainings was that ECTQM is composed of 44 quality areas, but we were told that these core areas are only recommendations.* ***None of the trainers informed us that failing to implement them would result in gaps in the current projects****.* ***None of the trainers linked the training theory to***

> ***practice***. *Now, since we understood that quality management systems lead to the acquisition of accreditation certificates, why weren't we advised about that?''* (Interview, a dual system carpentry inspector, MoETE, September 2022)

As elaborated before, theory shall be linked to practice and vice versa. Theoretical and practical methodologies combined give the content credibility and reliability. Audiences can lose track, lose attention, or does not feel engaged and passionate enough if they were not briefed about the aims, goals and objectives of the roles and tasks they are mandated to perform. Nevertheless, public sector employees are in need to be incentivized to be willing to perform extra duties that are out of their original official job description. The absence of incentives can be a reason why the involved key actors are detached from the end results of ECTQM.

The ECTQM advocated that schools shall have the absolute freedom to choose which areas of the model to start with and to focus about based on its internal gaps, weakness, and improvement plans. The original essence of this quality management model was to let the schools be the owners of their improvement plans given a guiding principle to follow and use as a rubric. The orientation workshops of ECTQM to the target audience were conducted by a group of international experts, national experts and the GIZ team. During an interview with one of the international EFQM experts who was part of the designing mission of ECTQM, he added:

> *''After the first batches of trainings and workshops with the schools, I had the impression that they are pleased of this quality model. They were willing to implement parts of the* ***model not the whole model at once as discussed with them***. ***In the trainings, we informed all participants to investigate their needs at their schools and then choose the most critical core tasks that they need to start with***. *As per the final evaluation, there were lots of*

improvements based on the first insights of applying the quality model. The group of experts were impressed by the successes and the improvements that were reached in the schools. But I have to also mention that some other participants were not really convinced with the concept''. (Interview, an International EFQM expert, December 2022)

Resistance is inevitable. It takes time, effort, and resilience to spread a certain concept amongst culture that was used to otherwise. Suitability checks, monitoring and evaluation can always be references and evidence to the reachability and success of the newly introduced theories. Specially if the introduced concept ensures enough flexibility and freedom to the beneficiaries to apply it the way they find suitable to their own suitability. ECTQM is a big model that contains more than forty core areas. Each area contains lots of steps and modules for one of the management areas of schools. Therefore, its application is a lengthy and detailed process. The number of trainings, workshops and orientation sessions should have as equally extensive as the volume of the model, specially, if the target audience does not own any related knowledge about the application processes.

The quality and the quantity should be combined to achieve a prosperous result. The quantity of trainings and workshops should correspond to the quality of the training materials explained. To this end, a carpentry inspector in Alexandria (and was one of the MoETE who received GIZ trainings on ECTQM) shared the following:

''There is fundamental lack of vision on the Egyptian side; in all our collaborations with the GIZ, ***the plan was never clear****; we don't know what the goals were and what are we working towards, or even what our expectations should be at the end of each training. During the ECTQM training workshops, the experts described what ECTQM is****, but it was never clear from anyone on what are the targets and purposes from applying this model****. We were*

always feeling detached from the model, we were just doing what we were told to do.'.

(Interview, a dual system carpentry inspector, MoETE, September 2022)

Consistency plays a key role in ensuring any project's sustainability. If a group of beneficiaries is chosen to receive a certain training, there shall be consistency with the time frames given to those trainees as well as clear explanations of the goals, objectives, and anticipated results of the applications. Additionally, nominations of trainees shall stay consistent. If a training is divided amongst three phases for example, it is expected that the same trainees shall attend all modules till they receive the entire training content.

6.2.3 Implementation challenges:

Maybe it was not the case with the ECTQM trainings. At first, schools were told to formulate ''quality teams'' inside each school. The aim of this step was to have quality focal persons in each school to start with in terms of receiving the trainings and the expansion of the quality culture inside their facilities. The quality teams could be composed of five to six individuals at average. They were all in need to receive the relevant trainings and then cascade the knowledge to their peer learners and the rest of their schools' staff. In this regard, an inspector for the commercial sector for the Cairo directorate added:

''I noticed that during the trainings were asked to join, ***new representatives from the same school joined every time****, although the main objective of the trainings was to capitalize on the original knowledge the first attendees gained in the first rounds. I used to witness colleagues attending with me for the first time halfway through the modules not having any idea about what their other quality team members received. They were detached from the training materials because they were not inducted about what was covered before. There are 2 main challenges here: firstly, the same trainee from the school shall attend all modules*

and then the rest of the quality teams' members will be considered for the next training batches. Secondly, the schools should not have allowed the trainees from the first batches to drop out and send replacements just to fill in the gap. These reasons caused unpleasant consequences''. (Interview, a dual system commercial inspector, MoETE, December 2022)

Consistency is key to success. If donor organizations shall take the responsibility of capacity building and upskilling of the affiliated staff of the MoETE, the MoETE in return shall be committed to the overall objective of the trainings provided. The MoETE and the GIZ in this regard are considered partners, and therefore, there should have been cooperation on the objectives and anticipates results of this initiative. The nominations of the ECTQM trainees comes from the MoETE. GIZ is responsible to communicate with the MoETE before each training to request the MoETE to invite, nominate and confirm with the selected trainees. If there is absence with the consistency of the trainees' selection and attendance patterns, shortcomings may occur. Therefore, there should have been extensive focus to the feedbacks received from the participants after the conclusion of each training round, and the MoETE should have been kept in the loop to be able to undergo the necessary changes and decisions.

Applying new knowledge and newly acquired competences amongst a level of school for example, requires financial and technical resources. Having discussed before that the MoETE struggled from a financial scarcity problem within the system of the dual education, there was by default a challenge with implementing most of the ECTQM's core areas that required finances and technical needs. A dual system carpentry inspector in Alexandria added here the following:

'' When they were briefed about the forty-four core areas of the ECTQM, we noticed that the occupational safety and health accounted for most of the model. In Alexandria, most schools

started the improvement plans by focusing on improving the standards of the occupational safety and health inside their schools, however, they faced a challenge. ***This challenge was the financial resources.*** *To apply correct safety standards, schools were required to purchase helmet, cover ups, information boards, protective glasses, gloves, etc. Schools could not attain that, all they could do was to send budget requests to the MoETE but* ***everyone inside the MoETE understands the budget deficits the ministry is facing****; therefore, full application of some core areas was impossible giving the available resources''.* (Interview, a dual system carpentry inspector, MoETE, December 2022)

Quality implementation is a culture. Sometimes it requires financial assets to further enhance correctly execute, yet quality culture is also about how to utilize the current resources in the most possible efficient way. This mindset could also have been transmitted to the MoETE staff who received the ECQTM as an alternative to the financial challenges. Financial challenges within the government could be traced to strategic and political reasons that donor organizations may not be able to overcome, therefore, alternative solutions and tactics can be introduced instead. Moreover, the ECTQM trainings given over its brief period of implementation was not able to cover all involved MoETE staff. During an interview with an automotive inspector in the Qalubiya directorate he emphasized that:

‘***'I did not receive any ECTQM trainings since it was introduced****, and I have not had a chance to look at the training materials as well. I heard about it of course from other colleagues, yet I was not able to explore beyond that. Amongst the schools I am mandated to inspect, some schools implemented ECTQM and some not. I believe only the schools where their members received the trainings collaborated with it, but those who were not nominated for trainings did not implement anything''.* (Interview, a dual system automotive inspector, MoETE, December 2022)

To be able to evaluate the outcomes of certain trainings or initiatives, there shall be enough time to fulfill this obligation. The ECTQM lasted only for five years, given the big number of MoETE staff involved in the dual system, GIZ was not able amongst this relatively short course of time to expand its trainings scheme amongst all MoETE employees. There could have been different outcomes if the course of trainings was extended, however, the status quo of the capacity building based on ECTQM ensures that there have been discrepancies in the delivery of the trainings. Some employees received extensive ECTQM, while others were totally excluded. Exclusion may not have happened intentionally, however, this led to the variation in the competences and qualifications of teachers and inspectors.

The designing phase of any training is the core of its success. Trainings shall come in the most diverse way possible and shall ensure equality, inclusiveness, and gender balance. Mr. Tarek Mohamed added the following:

> *'' Trainings shall be tailored to the nature of the recipients. You cannot give detailed trainings to an audience who hears the content for the first time. GIZ based on the ECTQM introduced the idea of quality teams inside schools, and that was fine. What was not fine was* ***that all ECTQM trainings were mainly directed to the members of these teams****. What about the rest of the involved key actors? I understand that the original idea was to have these members as knowledge carriers and their role was to cascade the knowledge to their peers and colleagues. But this is never enough. Trainings should have been more holistic and more inclusive. Knowledge carriers are very few at the end of the day and will not be able to spread the knowledge the way they received it.''* (Interview, a dual system automotive inspector, MoETE, December 2022)

The idea of creating ‘’quality teams’’ is a double-edged weapon. From one side, it created a pool of experts in applying and implementing ECTQM, however, on the other side it is not very sustainable. Members of these quality teams will either retire, resign, or leave the system. They could have benefited their schools during times of active implementation, however, by their absence, the entire quality management cycle may pause. We cannot restrict quality implementation over a certain number of employees. As mentioned before, quality assurance is a collective course of action that requires the involvement of all system’s participants. Additionally, the quality teams concept made it appear to schools that those quality teams are the only individuals responsible for the quality work. There was a misconception during delivering ECTQM trainings that the quality model requires everyone to contribute to the implementation and not only the trainings’ receivers.

6.2.4 Results:

Not only the number of trainings make the difference in the qualifications of the trainees, but also the quality of the training methodologies. Quality always overcomes quantity, and therefore, it could have been very efficient for GIZ to better design the ECTQM implementation and relevant trainings to be shorter for example, and instead invest in the training materials and delivery methods. An inspector at the MoETE clarified in the following quotation, that after certain ECTQM trainings, minimal changes amongst the governorate he works at happened:

> *‘’The **application of ECTQM did not achieve many goals beyond some paperwork and documentation** on information board and some knowledge that was exclusive to the quality teams inside the schools I visited. At the end of the day, it was all paperwork; what the schools cared about was to have their paperwork ready when GIZ visits them to show them*

that they have done the work, but no real infusion of the quality culture''. (Interview, a dual system automotive inspector, MoETE, December 2022)

There shall be continuous documentation of all quality related work of any school, however, it is not efficient to restrict the work to documentation only. Documentation comes as a complementary stage to the actual work that has been done on ground. Documentation gives a glimpse of the quality of work that was finalized in a certain quality area, yet the culture, the mindsets and the change of behavior is what accounts for a true quality management. Maybe one of the ECTQM's weakness was that it stressed on the importance of documentation without referring to the equal importance of the other factors of quality implementation.

Since the dual educational system depends on the external factors as much as the internal factors and it is a system that entails several upskilling measures. There shall be more efforts dedicated to the concept of ''training''. Trainings are a vital pillar in transforming any entity or project. Every employee, trainer or student need continuous phases of training to master their required skills and competences. A dual system inspector in Al-Sadat city commented:

'' *We received lots of trainings,* ***but during the training times, there was always missing elements, for example:*** *the training plans and methodologies shall be unified with the trainers. I attended trainings with trainer 1 who was teaching with certain concepts, when I attended the same training with trainer 2, I found him saying the opposite of what trainer 1 was saying, and this was very confusing to all the trainees. Also, during the phases of training, some trainers were national, and some were international, and the content was not the same nor the key messages and implementation methods''.* (Interview, a dual system inspector, MoETE, December 2022)

Since GIZ is contributing to the expansion of quality management cultures amongst the MoETE departments and involved stakeholders, there shall be internal quality management from their end as well. GIZ is mandated to play as a role model of what it is advocating for. It is hard to convince an audience with a concept whereby the trainer is not abiding by this concept. From the above response, it could be concluded that depending on more than one training provider at the same time comes with a risk of lack of coordination. If the same training is delivered using different key messages or different approaches, this could create discrepancy in the overall objective of the training. This is a very important lesson learned when it comes to planning any future upskilling measures.

It is particularly important to link between the theory and practice whenever implementing a new project. Many models for quality management and other implementation areas are exceptionally good in content, but sometimes these models do not fulfill the expectations during the practice. Analysis and reasons behind the implementation could vary. Some would argue that the challenge is because the theoretical content was not promising, others would claim that the reasons are within the hands of the recipients of that content. For a model to succeed, there shall be a good understanding of whether the given content matches the culture and behavioral context of the recipients or not. Additionally, no model would fully succeed unless it was followed by rounds of feedback, monitoring and evaluation. Therefore, an ECTQM advisor at GIZ added:

> *''I do not believe that the lack of the success for the ECTQM had to do with the model itself. I believe this would be the least relevant factor. I believe that looking back at the past years now, I would say we realized that* ***we should have invested more in the training of trainers, because quality is all about cascading the knowledge****. We depended so much in the*

beginning about raising awareness and giving mass trainings, which is not very sustainable''. (Interview, an ECTQM advisor, GIZ, September 2022)

Sustainable trainings produce the most aspiring outcomes. The ECTQM methodology was explained to the trainees based on an EFQM mindset. This mindset entailed that the quality progress could be tackled in the form of short-term projects. The school was given the freedom to choose which area of quality within the ECTQM to start with based on the techniques received in the trainings. The approach by which this concept was explained made it look to the trainees as if the ECTQM is mandating them to perform short term successes without paying attention to the overall purpose of quality implementation. There should have been deeper emphasis on the element of sustainability to support the trainees and the system with the needed change management.

Another reason which contributed to the sustainability issues with the ECTQM was the excessive amounts of incentives GIZ had to offer to guarantee the fulfillment of the trainings' instructions by the trainees. There is an understanding that GIZ might have resorted to this approach to attract the trainees to invest more in implementing ECTQM and to make it more appealing to them, however, on the other side, this contributed to letting the trainees depend on GIZ to continuously provide for incentives to ensure the model's implementation. An ECTQM advisor at GIZ added:

''In any new intervention, there shall equal usage of carrots and sticks, but in the ECTQM case, it was always and just carrots. There was minimal reference to accountability and real senses of responsibility, except based on the individual sense of responsibility. Therefore, so it was only sustained within people who wanted to do it on their own, without any supervision from GIZ's end. So, I believe any quality management system's success will

depend on whether the organization itself wants to implement and improve or not. In the ECTQM case, the educational organization; the school, the governorate and the ministry approach should have believed in this model more to further adapt it and continue with it.''
(Interview, an ECTQM advisor, GIZ, September 2022)

Success comes both ways. There shall be equal attention and effort exerted from the giving party and the receiving party. If efforts exerted are one sided, there shall always be a lack in the efficiency. Early rounds of monitoring and evaluation help mitigate any future un-necessary risks. It also helps identifying more sensible and realistic funding methodologies. Unfinished work usually causes hibernation to the overall system. Employees within this system will suffer from confusions, different training approaches, and other inconveniences. The optimum scenario for any new project is to build up on the current knowledge, capitalize on the competences of the involved human resources, and to keep evaluating the processes until results are as expected and planned.

Since improvement comes from within. There shall firstly be a personal desire of change before getting introduced to supporting mechanisms. If there are no incentives, continuous support and follow up, sustainability might be at risk. Donor organizations usually tend to support the beneficiaries as per the guidelines and agreements finalized with the official partner and in this case, GIZ was coordinating the ECTQM introduction and expansion within the involved stakeholders i.e., schools, in company trainers, directorates, etc. A dual system inspector in Al-Sadat city, added:

''I have received extensive ECTQM trainings, the model is great. However, there ***was no follow up or evaluation to the involved schools over time, nor did we hold rounds of feedbacks and discussions****. Managers who were really interested to improve, kept working.*

Managers who were interested did not work with the model unless there was a GIZ visit to their schools. And their work was only preparing the needed documentation which was fine to GIZ back then. Quality management was seen as a part time job. A job that could have been finalized the minute they were informed about a GIZ visit.'' (Interview, a dual system inspector, MoETE, October 2022)

Donor organizations act and implement on behalf of the national partner. There shall be a clear distinction between GIZ's independent efforts, and the implementation offers than are done on behalf of the partner. The MoETE as well, on the other hand, shall own and dominate whatever improvement project taking place. Improvement projects are executed on its behalf, because of many reasons including mainly the shortage of the human and financial resources. There shall be extensive follow up and supervision from the public sector partner on what the donor organizations are achieving. It will never be the donor organizations' role alone to sustain and maintain the system. If a project is being seen as owned and finalized by a donor organization, this means that the partner did not fulfill a complete role being the owner and the supervisor of it.

What about the students? Did ECTQM support students in their learning experiences? The ECTQM is a quality management framework that aims to enhance organizations in general. Since schools are educational organizations, and its enhancement includes the students and their leaning journeys, it was very important to learn about ECTQM's effect on students. A curricula development advisor at GIZ commented here by saying:

''The ECTQM was created for schools as an administrative model to enhance the quality of their managements. In my opinion, ***it had little to do with the students.*** *The students were not the main objective of the framework. If you have a look at the 44 core quality areas of*

> *ECTQM, you will find that most of them target the schools' operations and their administrative processes. Of course, students shall benefit if their schools are performing well, yet it was not designed to enhance the students' cultures, competences, or skills as such. teaching quality criteria. We can say that students benefited indirectly.''* (Interview, a curricula development advisor, GIZ, September 2022)

The quality management systems that any dual educational system depends on, shall focus on the end beneficiary of the service. The end beneficiary of the educational services is the student. If students were impacted even indirectly by the implementation of the quality management systems in schools, then the implementation methodologies and the objectives of the system shall be revisited. Students may not be aware about the exact details of the QMS implemented in their schools, but they shall witness the change for example in the teaching methodologies, the management techniques, the staff's behaviors, and so on. A holistic quality management system shall focus on all the beneficiaries in the system and not only some of them.

Since the dual educational system in Egypt is a system that adapts labor market trends, it shall be as dynamic as possible within its entire strategies. Digitalization plays an important role with enhancing the dual educational system. There have been extensive discussions beforehand about sustainability and continuity, therefore, the dual educational system shall act as such. There shall be deeper understanding and usage of digitized solutions within the system to guarantee its continuity and resilience. One of ECTQM's failures was that it had to stop once COVID-19 hit back in 2020. The ECTQM was not designed to ensure online implementation, and all introduced methodologies were tackling physical efforts and plans. An international TVET expert added here saying:

''The MoETE usually asked GIZ to support with digitalizing as much processes as possible that had to do with the dual system, including online learning and digitized management systems. There were research efforts exerted in the field of digitalization, but these efforts did not make it to the ECTQM. The entire world was not ready to meet COVID-19, yet ***ECTQM was not sustainable enough to continue online****. Suddenly, just like the rest of the world, all working modes shifted online. But the ECTQM did not, it was not ready for that. Even GIZ, never prepared alternative plans to resume the ECTQM trainings online. I have to say, ECTQM's performance got drastically affected after COVID-19 hit.''* (Interview, an international TVET expert, December 2022)

The implications of COVID-19 were global, and all services whether educational or not were negatively impacted by this pandemic. Some services were able to cope fast enough with the worldwide changes back in 2020, and some were not. The reasons behind this, is because some services adapted digital solutions beforehand. The educational services in Egypt were not ready to transition to online and virtual solutions, which caused a gap in the system within the pandemic's years.

6.3 System's way-forward and best practices:

During the past years, the dual educational system was able to achieve considerable successes, these successes are important to the continuity of the system, and they ensure that the system is flexible enough to continue towards the fulfillment of TE 2.0 reform. The advisor to the deputy minister of education to TE added that some of the improvements are:

''Some of the milestones that the dual educational system has encountered recently are:

1) The increasing number of students' applications is the most dominant achievement.

2) Restructuring again the quality aspect inside the dual system in Egypt

3) Building the trust between the public and private sector

4) Developing the content and quality of the curricula, which is in the process.

5) The executive council which is the policy making council for the dual system.''

(Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

The cooperation between the MoETE and the donor organizations shall be constructive enough to fill the gaps in the system. For example, the executive council establishment was an initiative that was taken by GIZ in 2016 and has been operating since then. It is acting a supreme board that overlooks the entire system and its mechanisms and works on applying all the legal matters of the system.

GIZ has been the sole donor organization supporting the enhancement of the dual system in Egypt since the 1990s. GIZ's support has caused important milestones in the system, and it is still supporting until now. To reflect on the input of GIZ being the dual educational system's main supporter, and how the dual system has benefited from this partnership, the advisor on in-company training at GIZ added:

'' GIZ has contributed over the course of the EEDS project from 2016-2020 to some milestones that are considered successful in collaboration with the MoETE and under their guidance and supervision, ***these enhancements mainly came in the scope of the system's governance*** *such as:*

- *Engaging more stakeholders into the system*
- *Enhancing the standards of the system*
- *Reinforcing the dialogue between all counterparts on all levels*
- *Enhancing the quality of the In-company trainings*

- *Proposing quality management structure*

- *Drafting a unified strategy*''. (Interview, an-in company training advisor, GIZ, September 2022)

The final decision in every proposal is taken by the MoETE since it is the sole decision maker towards the 2030 vision and the TE 2.0 reform. Deliberations, lobbying and extensive rounds of discussions take place on a regular base to make sure the visions of the donor organizations and the public sector partner are aligned. Some visions get implemented faster than others due to many reasons. Even if some of the above-mentioned successes do not seem obvious to the beneficiaries and to the public, they can be better portrayed and publicized through well-organized promotion campaigns. These campaigns will attract several users to the system and will supply the system with more credibility and reliability. Speaking of the way forward with the dual educational system, there shall be reflection to the transformation phases where the MoETE is working on with regards to the re-branding of the technical and dual system curricula. Developing curricula is needed to match the needs of the labor market. Students need to receive educational standards that match the labor market needs whether nationally or internationally. The advisor to the deputy minister of education to TE advised the following as a comment on the improvements done with the curricula so far:

> *'' **Not all current occupations are reflecting the actual needs of the market**. During the coming development phases, we will work on closing outdated ones and open new ones based on the feedbacks we have been receiving. The occupation design is dynamic and sustainable system, which must be revised every five years to reflect the needs of the students' demands. The decision of closing or opening occupations is not only taken by the*

MoETE, however, it is always through the recommendations received through the private sector. (Interview, an advisor to the deputy minister of TE, MoETE, October 2022)

One of the drawbacks of the dual educational system is the available occupations the system is offering to its students. Some occupations are time-less but some are not. Building on the established relationship between the MoETE and private sector representatives, there shall be further capitalization on this, to be able to create a dynamic discussion about the feasibility of the offered occupations in the system. There shall be dynamic evaluation of the labor market and to the international markets' needs to be able to provide attractive occupations to the students, or otherwise the system will not be able to cope with the national and international economic changes.

Promotions and marketing strategies are essential to any newly introduced concept. The more socially appealing the concept is, the more successful it is anticipated to be. The dual educational system in Egypt shall be subject to further marketing campaigns. One of the reasons the dual educational system in Egypt is still facing some challenges, is because it is not well promoted to the society as many other educational models. Investing in physical and digital promoting campaigns can support the system flourish. These campaigns can be held with the support and implementation of the available donor organizations. A readymade garments teacher from Zain Al-Abidin dual system school advised the following:

‘*’ The MoETE can capitalize on some marketing campaigns to the dual system in Egypt that do not cost much if they are facing financial challenges. For example, the* ***MoETE can start marketing for the dual system in all governmental preparatory stage schools across all governorates*** *using word of mouth and flyers. There shall marketing plans within their spheres. Additionally, there could be a class per week given by any of the dual system*

employees at the central level at the schools of their governorates about the benefits and privileges of the dual system. Students rarely knows about the system, and they learn about it by accident.'' (Interview, a head teacher, Zain Al-Abidin dual system school, December 2022).

Since quality management is based on obtaining the optimum levels of efficiency with the least costs and under the utilization of the available resources, achieving quality with the dual system's marketing techniques shall follow the same approach. If allocation of budgets is a challenge, the MoETE can work on alternative solutions that are not of high budgets as well as receiving support from the private sector and the donor organizations. Social perception of the technical education is the technical education's reform fifth pillar and is considered a signature direction of the reform. Without attaining a decent social image of the dual educational system, the entire technical education reform may not be fully achieved.

The absence of digital solutions did not only affect the continuity of quality management system's implementations but also the number of students' applications for the academic year 2022. In 2022, MoETE introduced a new digital concept to the admissions process to the dual educational system. The MoETE decided in 2022 the launch of a digital portal that is affiliated to the ministry's website where students and families shall finalize the admission process to the dual system online rather than physical through the RUDS offices. A dual system inspector at Al-Sadat city claimed the following:

*''**The digital portal was not lucky enough to receive a good time of exposure**, advertisement or even announcement. We heard about it shortly before its launch. The MoETE has been working on it with the support of some other stakeholders, however, there was no orientation about it to the beneficiaries or the end users. Families who wanted to*

> *enroll their children in the dual educational system for the academic year 2022, thought admission was physical like every year, little did they know that it has been shifted online through the digital portal. Some families managed to apply online, some did not. This largely affected the number of applications this year, and schools and directorates started to feel this challenge after the start of the academic year''.* (Interview, a dual system inspector, MoETE, October 2022)

If the dual educational system is suffering from the few numbers of students' enrollments each academic year, there should have been better preparation and planning for the launch of the digital portal in this sense. The dual educational system's main target students are students from the governmental schools, and their families might not be very fortunate or knowledgeable with surfing the internet and using digitalized tools. Additionally, if the system is well known with its physical admission system, there shall be enough buffer time between the digital portal's launch and the admissions deadline to leave enough time for the end users to test, try and ask questions about the navigation mechanisms and usage of the portal.

The dual educational system lacks proper planning. Several challenges of the system can be mitigated if the involved decision makers invested thoroughly in the plan and design phases. It is inevitable to have enough time for certain projects to be implemented, however projects that affect the entire system and its feasibility shall be thoroughly studied and thought of. A launch of an admissions digital portal is a step in the history of the dual educational system, and the purpose of it should have been to increase the number of enrolled students and facilitate the admission process, yet the opposite happened.

7. Chapter Seven. Conclusion:

The ability of a developing country like Egypt to adapt to new technologies and international best practices will be a key determinant of development. This capability would be contingent on providing a professional and adaptable labor force, both male and female. A centralized and dynamic education management structure with several specialized departments and often overlapping mandates can be a challenging operational format, however, it can smoothly operate using the correct strategies and quality model. Though the MoETE has delegated education implementation at the governorate level and at the district level, policy, curriculum, and particularly budgeting decisions are made centrally with little consultation with the lower tiers of government. Furthermore, crucial decisions about education staff and funding are taken outside the Ministry of Education at the local level. Egypt still has a long way to go in this sector, particularly because both the quality and coverage of technical education limit the country's ability to compete in global markets. Egypt began its education reform program in the early 1990s, significantly increasing the budget allocated to this sector but not as needed. While many achievements have been made, particularly in terms of increasing access and equality, there is still widespread agreement that further focus should be placed on the quality standards provided in the technical and dual system schools. Regional, socio-economic, and gender imbalances remain significant for key education indicators such as enrolment, participation, and literacy rates, to the detriment of upper Egypt, rural areas, and women and girls, according to the study. Insufficient compensations for the qualified teachers will remain a challenge in front of the educational thriving private industry that needs to consider considerable financial alternatives for its employees.

While some attempts have been made to engage communities in the technical education through creative programs, community engagement remains a concern. Until now, community involvement has mostly centered on mobilizing communities to guarantee that all children are enrolled in educational institutions, with little or no attention paid to engaging communities in providing funding and/or other services to the school, or in school management. Diversified financial sources to sustain the TVET system are needed to sustain and boost the overall system. It is necessary to examine the solutions available for financing TVET, mainly with paying attention to alternative financing through admission fees, private sector contributions, revisiting the financial bylaws and so on.

The dual educational system has been operating in Egypt for more than 20 years, and the government in collaboration with all involved stakeholders shall jointly work on enhancing the system given the past experiences, the international models, the best practices, the results of the monitoring and evaluation and by responding to the latest labor market needs. The MoETE is in need to find fund raising solutions to be able to meet its systems' needs and to maintain delivery good quality of teaching amongst its different programs, especially the technical ones.

The Sustainable Development Goals (SDGs) have focused on lifelong learning, which is a key component of the fourth SDG on education. It is intended to be a means of improving skill sets, boosting the economy, as well as fostering peace and global citizenship. Although the fourth SDG has ambitious goals, there is little guidance on how to operationalize this transformative type of lifelong learning, and there are no obvious values or guidelines relating to non-formal or formal learning in the fourth SDG. In higher education digitalization has been promoted to increase opportunities for lifelong learning. However, many regions of the world still have only a basic level of technological integration into TVET systems including Egypt. In

addition, for TVET to support lifelong learning, open and flexible models must coexist with the use of technology. Increased technological access is required for the continuous upskilling for the future educational systems and labor market forces as well as the overall development of individuals, since only pedagogical models that are common today will not do so.

Any experience comes with lessons learned and best practices, even if the results were not fully promising. These lessons learned can function as a good base for the next projects. The dual educational system in Egypt is still in the phase where it is open for innovative ideas, proposals and opportunities that can shift its current status to a whole more organized one. To give policy suggestions to enhance the labor market or the TVET sector, expectations were not met, and the model was not fully transferred and exchanged with the MoETE new actors (GIZ central evaluation report, 2021). The construction of a self-sustaining M&E system inside the technical sector of the MoETE helped to generate evidence-based and pertinent education and policy, which ultimately improved young readiness for labor market demands (GIZ central evaluation report, 2021). After almost four years of the implementation of the ECTQM, the MoETE started discussing with the donor organizations the need to stop the implementation of ECTQM and instead start working on introducing another quality management system that suits the TVET context as they claimed that ECTQM was not effective and did not fully achieve its planned goals (GIZ central evaluation report, 2021).

The established M&E system could not have been validated by ECTQM as a strong foundation for policy discussion and quality improvement (GIZ central evaluation report, 2021). Another significant problem has been the GIZ - EEDS project's partial overlap with the quality assurance activities of other donor organizations, which could have been avoided if the donors' communications had been more binding and less ambiguous (GIZ central evaluation report,

2021). The challenge facing the adoption of ECTQM has always been the availability of resources to continue or even scale it (GIZ central evaluation report, 2021). It was uncertain whether the government authorities would have access to adequate resources to continue the execution at the desired level of excellence (GIZ central evaluation report, 2021). Although some costs may be covered by the private sector as part of its commitment to CSR, it is not guaranteed that the partners will contribute the necessary funding (GIZ central evaluation report, 2021). Instead, it will likely rely on continual foreign assistance, which is questionable in practice because donor organizations work with short-term programs that must inevitably be phased down after a given amount of time.

The GIZ project EEDS supported the capacity building efforts of numerous players in the dual educational field (GIZ central evaluation report, 2021). As a result, EEDS carried out needs assessments, created training modules in accordance with needs, introduced the ECTQM quality management tool, and furthermore carried out in-company trainings for the trainers involved in the dual educational system at the private sector enterprises (GIZ central evaluation report, 2021). Although coaching is an effective tool for capacity development and follow-up of training, the system was unable to create a suitable entity with the necessary authority to carry out systematic follow-ups and to start consequences in response to findings (GIZ central evaluation report, 2021). The risks and unintended implications of ECTQM were not properly addressed, and consequent (re)actions were partially absent (GIZ central evaluation report, 2021). The effects of teachers' observations are also in doubt because no accountable party was established. The RUDS also lacked complete legitimacy and follow-up capability (GIZ central evaluation report, 2021).

8. Chapter Eight. Policy Recommendations:

1- Useful partners establish structures **for the follow-up of quality standards and capacity development measures,** including organizations with a formal mandate for follow-up, and make sure the outcomes of monitoring or evaluation result in an adequate reaction. This primarily relates to ECTQM or any subsequent quality management approach.

2- Relevant partners should **set up a framework for graduates and students to be followed up with**. This relates to contacting graduates after graduation (career guidance, placement offers or entrepreneurship education).

3- Relevant partners should support the contributions made by donor organizations by **helping the relevant institutions institutionalize, especially by providing correctly allocated funds** and a clear definition of each institution's tasks and responsibilities. This applies to inter-company trainings, RUDS, and NCTDE.

4- The **private sector should guarantee the availability of financial resources,** and its role and obligations might be expanded to include social corporate responsibility.

5- **To effectively prepare partners for the conclusion of the projects, an exit strategy must be defined and developed.** This covers talks of institutional capabilities, human knowledge and skills, rules, and financial resources that are readily available.

6- **Partnerships with business and the private sector**. To develop, deliver, assess, and continuously update curriculum, and competency criteria to meet the labor market needs, these relationships are essential. Through efficient collaboration and collaborations with regional business/sector and industry organizations, skill needs are identified. New program development, implementation, and assessment are priorities for local planning agencies.

7- **National Qualifications Framework**. In collaboration with business sector players, these frameworks create, categorizes, and establish standards for competency levels and learning modules obtained by TVET graduates (ILO, 2010; ETF, 2021). All qualification frameworks are intended to create a foundation and benchmark for:

- Quality that is based on continuous improvement, or raising the levels of competencies, soft skills, and overall knowledge in the labor force (Allais, 2010).
- Primary inputs and insights from the labor market based on the engagement with the stakeholders (Allais, 2010).
- High-quality competency-based instruction combined with on-site practical hands-on learning, ladders to careers, and possibilities for additional education (Allais, 2010).
- The participation of independent, industry-based lecturers, trainers, and evaluators with exceptional qualifications and experience. There are obvious pathways and chances for TVET students to advance in their employment and, if they so choose, to enroll in further education (Allais, 2010).

References

Đordevič, A.; Klochkov, Y.; Arsovski, S.; Stefanovič, N.; Shamina, L.; Pavlovič, A. *The Impact of ICT Support and the EFQM Criteria on Sustainable Business Excellence in Higher Education Institutions*. Sustainability 2021, 13, 7523.

Abou-Zeid, M. N., Bode, R. K., & Sayed, A. (1999). Implementing a Dual System of Technical Education in Egypt. *The Journal of Technology Studies*, *25*(1), 64-67. Retrieved from: https://scholar.lib.vt.edu/ejournals/JTS/Winter-Spring-1999/PDF/ideas.pdf

Adams, A. V. (2010, September 28). *The Mubarak Kohl Initiative - Dual System in Egypt: An assessment of its impact on the school to work transition*. https://www.ikn-network.org/lib/exe/fetch.php/themen/berufsbildung/bb-weltweit/aegypten/avril_2010_mki-an_assessment_of_its_impact.pdf.

Allais, S. (2010). *The implementation and impact of National Qualifications Frameworks: Report of a study in 16 countries*. Geneva: ILO.

Amin, G., & Ezz, H. (2017). Apprenticeship in Egypt: towards a unified system?. Retrieved from: https://www.ilo.org/wcmsp5/groups/public/---africa/---ro-abidjan/---sro-cairo/documents/publication/wcms_616298.pdf

Bagnall, N. F. (2000). *The balance between vocational secondary and general secondary schooling in France and Australia*. Comparative Education, 36 (4), 459-475.

Balica, M. (2009). Quality Assurance in TVET in Romania. In *International Handbook of Education for the Changing World of Work* (pp. 2953-2969). Springer, Dordrecht.

Berg, B. (2009). Qualitative research methods for the social sciences. Allyn & Bacon, Incorporated, 2009.

Bhatta, K. (2021). Ensuring Quality Assurance in Technical and Vocational Education and Training. *Journal of Technical and Vocational Education and Training*, *1*(15), 71-82.

Boele, B.B.; Burgler, H.; Kuiper, H. Using EFQM in higher education: Ten years of experience with auditing at Hanzehogeschool Groningen. *Beiträge Zur Hochschulforschung* **2008**, *30*, 94–110.

Calvo-Mora, A.; Leal, A.; Roldán, J.L. Using enablers of the EFQM model to manage institutions of higher education. *Qual. Assur. Educ.* **2006**, *14*, 99–122.

Central Project Evaluation. On behalf of GIZ central evaluation report by Dr Judith Abdel-Massih-Thiemann, Dr Thomas Döhne, Dr Bahaa Saleh, and Dr Heba Youssef (MADIBA Consult GmbH) March 2021.

Chankseliani, M., & Anuar, A. M. (2019). Cross-country comparison of engagement in apprenticeships: A conceptual analysis of incentives for individuals and firms. *International journal for research in vocational education and training*, *6*(3), 261-283. Retrieved from: https://journals.sub.uni-hamburg.de/hup2/ijrvet/article/view/338/111

Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE open medicine*, *7*, 2050312118822927.

CIKD, UNESCO. (2014, June 28). *Public–private partnerships in TVET: adapting the dual system in the United States*. Taylor & Francis. https://www.tandfonline.com/doi/abs/10.1080/13636820.2018.1450776.

De Abreu, I. D., Hinojosa-Lindsey, M., & Asghar-Ali, A. A. (2017). *A Simulation Exercise to Raise Learners' Awareness of the Physical and Cognitive Changes in Older Adults.* Academic Psychiatry, 41(5), 684-687.

Deming, W.E. *Out of the Crisis; MIT Press*: Cambridge, MA, USA, 1986.

de Nooijer, Paul & Edelenbosch, Geert. (2004). Education in Egypt - a desk study. 10.13140/RG.2.1.2884.4245. Retrieved from: https://www.researchgate.net/publication/282861478_Education_in_Egypt_-_a_desk_study/citation/download

Du, G., Yuan, J., Miao, F., & Wei, P. (2017). Effectiveness of Design Process of Education Quality Assurance System based on EFQM Model. *EURASIA Journal of Mathematics, Science and Technology Education*, *13*(12). https://doi.org/10.12973/ejmste/80784

"Education" announces the details of the national strategy to reform …. (n.d.). Retrieved December 22, 2022, from https://moe.gov.eg//en/what-s-on/news/national-strategy/

EFQM Model. *Available online: **https://efqm.org/efqm-model** (retrieved 12 December 2022).*

EFQM Assess Base. *Available online: **https://assessbase.digitalefqm.com/** (Retrieved 11 November 2022).*

Egypt: TVET graduates by specialty and gender 2021 - through CAPMAS. (n.d.). Statista. Retrieved December 22, 2022, from https://www.statista.com/statistics/1252852/number-

of-technical-vocational-training-graduates-by-specialty-and-gender-in-egypt/

Egypt' s Ministry of education launches National strategy to reform and develop Technical Education—Society—Egypt. (n.d.). Ahram Online. Retrieved December 22, 2022, from https://english.ahram.org.eg/News/473375.aspx

Eichhorst, W., Rodríguez-Planas, N., Schmidl, R., & Zimmermann, K. F. (2013, January 12). *A Roadmap to Vocational Education and Training Systems Around the World*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2199793.

El Baradei, L., & El Baradei, M. (2004). Needs assessment of the education sector.

El-Ashmawi, M. A., & Megahed, D. M. (n.d.). *Combatting COVID-19 Consequences: Egypt's Response in the Technical and Vocational Education and Training (TVET) Sector*.

Elsokhn, N. (n.d.). *A Quality Management System Implementation Framework for Contracting Companies in Egypt*.

EQAVET. Available online: **https://ec.europa.eu/social/main.jsp?catId=1536&langId=en** (retrieved on 11 December 2022).

Ertl, H. (2000). The transition of vocational education and training in Eastern Germany. Comparative Education Review, 44(4), 464-492.

European Training Foundation ETF, *National Qualifications Framework*, Egypt, 2021.

Eurydice. (2011). The structure of the European education systems 2011-12: Schematic diagrams. Brussels: European Commission

Flaherty, A. A., O'Dwyer, A., Mannix-McNamara, P., & Leahy, J. J. (2017). *The Influence of*

Psychological Empowerment on the Enhancement of Chemistry Laboratory Demonstrators' Perceived Teaching SelfImage and Behaviours as Graduate Teaching Assistants. Chemistry Education Research and Practice, 18(4), 710- 736.

Forsen, G. (2011). Education for All and TVET – Two sides of the same coin? Potential synergies through integration and linkages. Norwegian National Commission for UNESCO

Fullarton, S. (2001). *VET (vocational education and training) in schools: Participation and pathways. Victoria, Australia:* Australian Council for Educational Research, 21. Retrieved from http://www.acer.edu.au/research/vocational/lsay/reports/lsay21.pdf

GIZ online TV. (2017, October 30). *GIZ: Training Company Siro Misr in the Egyptian Dual System. 2017*. YouTube. https://www.youtube.com/watch?v=K1FiJqjecGs.

Grunwald, E., & Becker, B. Mubarak-Kohl Initiative for Dual System (MKI-DS)–The Case of Egypt. Successful in Reforming the TVET System and Shaping the Society. *Innovative Apprenticeships*, 245. Retrieved from: https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.426.8026&rep=rep1&type=pdf#page=249

Grunwald, E., Lotz, G., Nitschke, K., & Sakr, N. (2009). Vocational education and training in the context of labour mobility–country report "Egypt". *Manuscript, German Technical Cooperation*.

Heitmann, G. (2001). *European structures of qualification levels on recent developments in Germany, Spain, France, the Netherlands and in the United Kingdom (England and Wales)*

(Vol. 3). Thessaloniki, Greece: European Centre for the Development of Vocational Training (CEDEFOP).

Idialu, E. E. (2013). Ensuring Quality Assurance in Vocational Education. *Contemporary Issues in Education Research (CIER)*, *6*(4), 431.

Inner City Fund International. *EQAVET PLA: 'Quality Assurance in Continuing Vocational Education and Training': Flash Report*; ICF: Brussels, Belgium, 2021; pp. 1–4.

Kanwar, A., Balasubramanian, K., & Carr, A. (2019). Changing the TVET paradigm: New models for lifelong learning. *International Journal of Training Research*, *17*(sup1), 54–68. https://doi.org/10.1080/14480220.2019.1629722

Krafft, C. (2013). *Is school the best route to skills? Returns to vocational school and vocational skills in Egypt* (No. 2013-09). Minnesota Population Center Working Paper Series. Retrieved from: https://pop.umn.edu/sites/pop.umn.edu/files/wp-2013-9.pdf

Kuzmanoska, I., Janevski, V., Stojanova, V. & Kermicieva-Panovska, A. (2007). *Report on Macedonian education policy and priorities in the light of the EU's policy directions*. Unpublished ETF report

Langthaler, M. (2015). *The transfer of the Austrian dual system of vocational education to transition and developing countries: An analysis from a developmental perspective*. Econstor. https://www.econstor.eu/bitstream/10419/113285/1/833011960.pdf.

Lannert, J. (1999). Building up partnership: The Hungarian experience. *Getting the stakeholders involved*.

Learning, E. Australian Government, Department of Foreign Affairs and Trade. *TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING*. 2020

Link, H., Gallo, S., & Wortham, S. E. (2017). *The Production of Schoolchildren as Enlightenment Subjects*. American Educational Research Journal, 54(5), 834-867.

Lunenburg, F.C. *Total Quality Management Applied to Schools*. Schooling 2010, 1, 6.

Lutz, B. (1981). Education and employment: *Contrasting evidence from France and the Federal Republic of Germany*. European Journal of Education, 16(1), 73–86.

Maher, A. (2013, May). *THE DUAL EDUCATION PROGRAM IN EGYPT A QUALITATIVE STUDY ON CHALLENGES AND OPPORTUNITIES*. The American University in Cairo. http://dar.aucegypt.edu/bitstream/handle/10526/3556/The%20Dual%20Education%20Program%20In%20Egypt.pdf?sequence=1.

Manning, S. (2001). *What can we learn from the use of qualifications with a dual orientation across Europe?* Vocational Training: European Journal, (23), 45-52.

Marshall, C., & Rossman, G. B. (2014). The How of the Study: Building the Research Design. In C. Marshall, & G. B. Rossman, *Designing qualitative research.* Thousand Oaks: Sage publications.

Mayer, C. (2001). *Transfer of concepts and practices of vocational education and training from the center to the peripheries: The case of Germany*. Journal of Education and Work, 14(2), 189-208

Medne, A.; Lapina, I.; Zeps, A. Sustainability of a university's quality system: Adaptation of the EFQM excellence model. Int. J. Qual. Serv. Sci. 2020, 12, 29–43.

Mohamed, R. (2018, July 31). *Technical and vocational education in Egypt: The missing link*. Economic Research Forum (ERF). https://theforum.erf.org.eg/2018/07/31/technical-vocational-education-egypt-missing-link/

Nikolovska, M. *The Quality Approach in Vocation Education and Training in South-Eastern Europe and Turkey: Building the Torino Process Findings*. In *Quality Assurance of Vocational Education and Training*; European Training Foundation: Turin, Italy, 2014; pp. 35–46.

Osseo-Asare, A.E.; Longbottom, D.; Murphy, W.D. *Leadership best practices for sustaining quality in UK higher education from the perspective of the EFQM Excellence* Model. *Qual. Assur. Educ.* **2005**, *13*, 148–170.

PWC, *Understanding Middle East Education - Egypt country profile,* PWC education and skills practice. 2018/2019

Quality and quality assurance in technical and vocational education and training (MEDA ETE regional project) | ETF. (n.d.). Retrieved December 26, 2022, from https://www.etf.europa.eu/en/publications-and-resources/publications/quality-and-quality-assurance-technical-and-vocational

Quality Assurance Management of TVET & TVET Institutions. (n.d.).

Quality assurance of Technical Vocational Education and Training (TVET) – Lucubrate. (n.d.). Retrieved December 26, 2022, from https://lucu.nkb.no/lets-tvet/

Rodriguez-Mantilla, J.; Fernandez-Cruz, F.; Fernandez-Diaz, M. *Factors associated with the impact of implementing quality management systems at schools: A multilevel analysis. Total Qual. Manag. Bus. Excell.* ***2018****, 31, 1588–1604*

Sallis, E. Total Quality Management in Education, 3rd ed.; Routledge: London, UK, 2002.

Saraiva, P.M.; Rosa, M.J.; d'Orey, J.L. *Applying an Excellence Model to Schools*. *Qual. Prog.* **2003**, *11*, 46–51.

Sellin, B. (2002). *Scenarios and strategies for vocational education and lifelong learning in Europe:* Summary of findings and conclusions European Centre for the Development of Vocational Training (CEDEFOP).

Serneels, P., Beegle, K., & Dillon, A. (2017). *Do returns to education depend on how and whom you ask?* Economics of Education Review, 60, 5-19.

Steed, C.; Maslow, D.; Mazaletskaya, A. *The EFQM Excellence Model for Deploying Quality Management: A British-Russian Journey*. High. Educ. Eur. 2005, 30, 307–319.

Sung, J., Raddon, A. & Ashton, D. (2006). *Skills abroad: A comparative assessment of international policy approaches to skills leading to the development of policy recommendations for the UK.* Centre for Labor Market Studies, University of Leicester.

Sütőová, A., Teplická, K., & Straka, M. (2022). Application of the EFQM Model in the Education Institution for Driving Improvement of Processes towards Sustainability. *Sustainability*, *14*(13), Article 13. https://doi.org/10.3390/su14137711

Taherdoost, H. (2016). Sampling methods in research methodology; how to choose a sampling technique for research. *How to Choose a Sampling Technique for Research (April 10, 2016)*. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3205035

Taraza, E.; Anastasiadou, S. *EFQM Excellence Model in Vocational Lyceum: Reliability and*

Validity of EFQM Instrument. In Proceedings of the 13th International Technology, Education and Development Conference, INTED2019 Proceedings, Valencia, Spain, 11–13 March 2019; Chova, L.G., Martínez, A.L., Torres, I.C., Eds.; IATED: Valencia, Spain, 2019; pp. 2273–2285.

Technical and Vocational Education and Training (TVET) mapping for refugees, asylum seekers and host communities in Egypt. (2021). [Report]. http://www.ilo.org/global/programmes-and-projects/prospects/countries/egypt/WCMS_803415/lang--en/index.htm

Total Quality Management in TVET. (n.d.). Retrieved December 26, 2022, from https://www.cpsctech.org/2002/09/total-quality-management-in-tvet.html

TVET country profile: Australia—UNESCO Digital Library. (n.d.). Retrieved January 2, 2023, from https://unesdoc.unesco.org/ark:/48223/pf0000373103

UNESCO (2010). "*Guidelines for TVET Policy Review*". Paris, France: UNESCO. Retrieved from: http://unesdoc.unesco.org/images/0018/001874/187487e.pdf UNESCO (2011). Institute for Statistics. Retrieved from: http://www.uis.unesco.org/Pages/default.aspx

UNESCO Institute for Statistics. (2006*). Participation in formal technical and vocational education and training programs worldwide: An initial statistical study: Germany.*

UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. Retrieved from: http://unesdoc.unesco.org/images/0014/001496/149652e.pdf

UNESCO-UNEVOC, World TVET Database Czech Republic November 2013

UNESCO & ILO. (2002). Technical and vocational education and training for the twenty-first century. Paris and Geneva: UNESCO/ILO.

UNHCR, *Key considerations on Technical and Vocational Education and Training (TVET), EDUCATION BRIEF | 2019*

USAID, *Technical Vocational Education, and training in Egypt*, 2010.

Uygur, A., & Sümerli, S. (2013). EFQM excellence model. *International Review of Management and Business Research*, *2*(4), 980.

Vocational and technical education guiding career development in Egypt | ETF. (n.d.). Retrieved December 22, 2022, from https://www.etf.europa.eu/en/news-and-events/news/vocational-and-technical-education-guiding-career-development-egypt

Vocational Education and Training. (n.d.). AHK Ägypten. Retrieved January 3, 2023, from https://aegypten.ahk.de/en/services/vocational-education-and-training

Webber, D. A. (2017). *State divestment and tuition at public institutions*. Economics of Education Review, 60, 1-4

What is Technical and Vocational Education and Training (TVET). (n.d.).

وزارة التربية والتعليم—والتعليم الفني. (n.d.-a). Retrieved January 2, 2023, from https://tech.moe.gov.eg/tech/gallery/365

وزارة التربية والتعليم—والتعليم الفني. (n.d.-b). Retrieved January 2, 2023, from https://tech.moe.gov.eg/tech/article/details/1593

1. وطن, ا. ا. م. (n.d.). الهلالى إلغاء القرار الوزارى (14) ويستبدله بقرار (444)لتنظيم الاشراف على التعليم المزدوج والتدريب بالتعليم الفنى | التعليم الفني مستقبل وطن. *الهلالى إلغاء القرار الوزارى (14) ويستبدله بقرار (444)لتنظيم الاشراف على التعليم المزدوج والتدريب بالتعليم الفنى | التعليم الفني مستقبل وطن*. Retrieved January 2, 2023, from http://technical-edu.blogspot.com/2016/01/14-444.html.

محكمة النقض المصرية ـ قانون رقم ١٦٠ لسنة ٢٠٢٢. (n.d.). محكمة النقض المصرية. Retrieved January 3, 2023, from https://www.cc.gov.eg/legislation_single?id=425305

Questions in English:

1) Please introduce yourself and explain more what your role and how long you have been in your job and explain your scope of work?

2) How was the Dual System before the donor organizations interfered and how is the Dual System scene now after they worked on several developmental aspects?

3) Since the job of donor organizations is generally planting seeds and providing the basis for developmental projects, why didn't the seeds of the older project that ended in 2007 last or further enhanced? And why were the donor organizations in need to do a come back again with a new project in 2015?

4) Do you think that the private sector is to be held responsible about the drawbacks happened to the system?

5) How do you see the dual system surviving without the existence of any foreign aid? What is your forecast about it and what are your expectations when the donor organizations decide again in the future to phase out?

6) To which extent do you see that the German Dual System is compatible to be implemented within the Egyptian context?

7) In your opinion, and since the research indicates that the system is very complex and that is a challenge, can you please brief us about what are the exact complexities the dual system is facing?

8) How are the violations done in schools or in companies met by law? Are there any legal bases that holds this whole system binding and in order?

9) Why is not the Egyptian Dual System well promoted or well known? Whose responsibility is it to work on promoting the system?

10) When the student is trained inside the company, is he or she seen as an employee or a student? If they are students, the MoETE shall do the supervision, but if they are seen as employees then the ministry of manpower has to also share the supervision responsibility, please clarify.

11) What other challenges that the MoETE is facing whether internally or externally so we can address it in this interview? We would like to know more about what the MoETE is working on?

12) Why did the phenomena of dual system affiliated classes appear in independent schools? Why didn't the MoETE decide to build independent dual system schools for the affiliated

classes' students using foreign aid like GIZ and many others instead of creating this challenge?

13) What do you think of the existing curricula for the different occupations? And do you think that the current occupations available in the labor market are reflecting the real supply and demand of the Egyptian needs or not?

14) Does the MoETE work and invest on its own research bodies so that they can better study the mismatches and find solutions for the above-mentioned challenge? Does the MoETE have a research unit, or the research done being funded and concluded by development partners?

15) Can you please briefly explain the achievements that the dual system has encountered so far since its reopening in 2016 and until now?

16) Have you been an ECTQM trainee? If yes, please describe your experience and feedback about the quality model.

17) Do you think the design and division of ECTQM is relevant to the nature of the Egyptian dual educational system. Please elaborate on your answer.

18) What could have been done better by GIZ to enhance your experience with the ECTQM trainings and applications?

19) Do you think ECTQM is an effective quality model and has helped your school or institution to develop its performance and overall quality culture? Please elaborate on your answer.

20) How was ECTQM designed? And what is your feedback about applying it at your school or educational organization?