# Bridging the Gap between Higher Education and the Logistic Sector Needs in Oman: Designing a Needs-based Curriculum

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## I - Acknowledgments

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## II - Abbreviations Tables and figures

ADER - Analysis, Design, Evaluation and Revision

AL - Authorization Letter

APLA - Academic Program License Application Form

CAKP - Company Appointed Key Person

CBC - Competency-Based Curriculum

CBE - Competency-Based Education

CF - Consent Form

CM - Curriculum Mapping

DACUM - Developing a Curriculum

DGPUC - Directorate General of Private Universities and Colleges

DGVT - Director-General of Vocational Training

DPS - Department of Programs Supervision

FA - Functional Analysis

FTF - Face-To-Face

GAMCVCD - Gulf Arab Manual Common Vocational Classification and Description

GAPL - Guidelines for Academic Program Licensing

GCC - Gulf Cooperation Council

G-HEI - Government Higher Education Institution

HCT - Human Capital Theory

HE - Higher Education

HEI - Higher Education Institution

IBE - International Bureau of Education

IQAS - Internal Quality Assurance System

KEM - Knowledge Economy Model

KSA - Knowledge, Skills, and Abilities

LC - Logistics Company

LCP - Learner-Centered Pedagogy

LR - Literature Review

LS - Logistics Sector

MNA - Market Needs Analysis

MoD - Ministry of Defense

MoH - Ministry of Health

MoHE - Ministry of Higher Education

MoMP - Ministry of Manpower

NCSI - National Center for Statistics and Information

NCSTE - National Council on Science and Technology Education

NIS - National Institutes of Statistics

NOS - National Occupation Standards

NVivo - Navigating Viewpoints, Images and Value On-served

OECD - Organization for Economic Cooperation and Development

OJT - On-Job-Training

OS - Occupational Standards

PER - Panel of External Reviewers

P-HEI - Private Higher Education Institution

PIS - Participant Information Sheet

QAC - Quality Assurance Council

RFD - Relative Frequency Distribution

SCT - Social Capital Theory

SOLS2040 - Sultanate of Oman Logistics Strategy2040

SPSS - Statistical Package for Social Sciences

SQU - Sultan Qaboos University

TC - Technological Colleges

UAE - United Arab Emirates

VC - Vocational Colleges

VET - Vocational Education and Training

VPREC - Virtual Programme Research Ethics Committee

VTE - Vocational Training and Education

WPA - Work Process Analysis

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## III - Abstract

The backdrop of unstable oil sector prices negatively affected the Sultanate of Oman as one of the oil exporter countries, which made the government shift its economic focus towards other sectors, such as the logistics sector. The study findings showed that there is a gap and that newly graduated students from higher education institutions (HEIs) are not competent to work in the logistics sector. This thesis explores the effort required to bridge the gap between higher education and the logistics sector's needs in Oman from the perspective of curriculum design in order to support the sector's attempt to recruit competent graduates.

The purpose of the study is to evaluate and measure the curriculum as an academic plan that provides expected knowledge, skills and attitudes for the learner through understanding curriculum theories (Lindén, et al. 2017) to build "a more practice-based curriculum" (Bahl & Dietzen, 2019, p.7) to achieve the stated learning outcomes to enhance job performance and predict job success (Bahl & Dietzen, 2019) of the logistics sector in Oman and identify the best processes and tools for designing the curriculum to fit the needs of the sector and bridge the bridge any gaps found in the curriculum gap.

The study uses a mixed-method design to capture diverse data available in different higher education institutions (HEIs) and logistics companies in Oman with three samples, interviews with curriculum designers within HEIs and questionnaires with middle managers and employees within logistics companies.

The study used Anova, SPSS, and NVivo qualitative data analysis software to analyse the findings, then the discussion carried out (supported by the literature review) examined the role of ASYAD as a brand of Oman Global Logistics (OGL), which means in Arabic the dominance of Oman to the seas (Nair, 2017). It is a leading government company in the logistics sector in Oman, which is responsible for implementing the long-term logistics strategy document, the Sultanate of Oman Logistics Strategy 2040 (*SOLS2040*). This document anticipates that the logistics sector can assist with the diversification of Oman's income and finally underlines the role of the Ministry of Higher Education as a higher education institutions (HEIs) regulator. The findings showed that there is a gap and that newly graduated students from HEIs are not competent to work in the logistics sector. The main findings were that Social Capital Theory has to be considered, as there is no specific relationship between HEI and curriculum designers (CDs) while their relationships with logistics companies do not work as expected. On the other hand, the Ministry of Higher Education did not make compulsory visits from HEIs to the LCs during the curriculum design process, which affected graduates negatively. The above findings reflect the lack of a specific network shared between all stakeholders, with no particular website being able to provide National Occupational Standards (NOS) and

curriculum information as an open resource; this inevitably affects negatively curriculum design and thus the quality and competencies of logistics skills and manpower.

The study concluded some recommendations for all stakeholders. These recommendations may help to bridge the gap between higher education and the logistic sector needs in Oman by designing a need-based curriculum that will gradually narrow and hopefully eventually close this gap.

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# Chapter 1: Introduction

## 1.1 Introduction

The government of Oman had been defining broad-ended national strategies to shift its economic focus towards the non-oil sectors as the primary drivers of its economy against the backdrop of unstable oil sector prices and the negative effects of such prices (Al-Mawali, et al. 2019). The logistics sector has offered long-term promise as a revenue generator, which may help drive Oman's economy to a point that it could surpass its current oil-based revenues. Oman's geographical location is highly strategic for logistics development as it offers major transit points for trade within the region as well as from international players (Ministry of Transport and Communications, 2015). The Indian Ocean provides Oman with natural markets for its logistics services. The area has access to East African countries such as Ethiopia, Kenya, Mozambique, Somalia, South Africa and Tanzania, which also act as gateways to Congo and Uganda (Ministry of Transport and Communications, 2015). The Indian Ocean also connects to markets in the Indian subcontinent, the Arabian Peninsula, the Arabian Gulf, and cross-trade countries in Europe, the Mediterranean, Asia, and Africa.

The growth of the logistics sector has increased in the last decade and is expected to play an important role for the global economy in the coming years (Ratan, 2014). Additionally, the sector has had a broad effect on other industrial areas that depend heavily on a reliable logistics network to efficiently connect their supply chains. These sectors include aerospace, alternative energy, automotive, construction, chemicals, e-commerce, food, healthcare, maritime hubs, mining, oil and gas, railway, retail, and non-commercial sectors (e.g. the United Nation (UN) and humanitarian aid) (Ministry of Transport and Communications. 2015). The logistics sector in Oman depends on three major seaports (Salalah, Duqm, and Sohar) and two international airports (Muscat and Salalah) (De Bel-Air, 2015). These ports handle high-value, time-sensitive supply chains – including the cold chain which requires air transportation and temperature-controlled containers or vehicles to transport such products as food (fish and fruit) – as well as flowers, pharmaceuticals, industrial and marine spare parts, high-end fashion, aid items, and high-value FMCG (in Salalah, Duqm, and Sohar) and two international airports (Muscat and Salalah as mentioned). In order to operate the three

ports well, competent and educated staff are needed to work in their logistics sectors in order to ensure sustainable development (Michel-Villarreal, et al. 2019).

Education is a priority for sustainable development in every nation (Weissman, 2012), while UNESCO (2006, p.9) has underlined that “People around the world recognize that current economic development trends are not sustainable and that public awareness, education, and training are keys to moving society toward sustainability”. Thus, all education levels, including higher education, are thought of as potential key developmental areas in a given country’s employment market, including in the area of logistics which is, by itself, a key supply factor in a logistics system (Khan, et al. 2012; Tubis & Nowakowska, 2016).

This thesis explores the effort required to bridge the gap between higher education and the logistics sector’s needs in Oman from the perspective of curriculum design. This research does so by using a mixed-method design to capture the diverse data available in Oman’s different higher education institutions (HEIs) and logistics companies (Creswell & Plano-Clark, 2011). The research findings include valuable and practical recommendations that higher education providers can implement to gradually narrow and eventually close the gap between the logistic sector’s need for competent graduates and the current supply.

## 1.2 Setting the scene – the context of the logistic sector in Oman

Oman occupies a strategic geographic location at the only sea entrance to the Arabian Gulf with a land area of 309,500 sq. km. It has a coastline of 3,165 km and an exclusive maritime economic zone of 200 nautical miles, which is reflected in a high position in the trade openness index (World Bank, 2010). Economically, Oman is highly dependent on its oil and gas resources, which generates up to 85 percent of its national revenues (Moody’s Corporation, 2021). The logistics sector is one of the essential non-oil economic sectors that the Omani government is keen to use to promote Oman economically (Ministry of Transport and Communications, 2015).

The government document, Sultanate of Oman Logistics Strategy (SOLS2040) (Ministry of Transport and Communications, 2015), is one of the main documents used

in this research as it outlines the strategy behind Oman's attempt to raise the number of employees in the logistics sector from 80,000 to 300,000 by 2040. The youth unemployment rate (8.3%) (NCSI, 2019b) indicates a gap between workforce qualifications and either wage expectations or needs fulfilment capacity. There is also an immediate need for Oman to "diversify its economy away from its dependence on oil and gas" (Ministry of Transport and Communications, 2015, p. 12). In addition, the logistics sector is one of the non-oil sectors that may help the Government of Oman to pursue its goal of diversification.

### 1.2.1 Data and Facts about the State of Manpower in the Logistics Sector in Oman

Even when the SOLS2040 vision was prepared in 2015, expatriates still made up almost half of the total population. The drop in the price of oil has been reflected in a revenue decline of only 4% in the last four years (Kutty, 2020). The data from the Statistical Yearbook 2019 (NCSI, 2019a) has shown that the Omani workforce is currently expatriate-dominant with an expatriate share of 87.3 percent of the total number of employees in Oman compared to Omanis' 12.7 percent across the private sector (Table 1). Meanwhile, employees with HEC amounted to 192,968, while Omanis constituted 24.1 percent of this total.

| Details | Omanis | | Expatriates | | Total |
|---|---|---|---|---|---|
| | Number | Percentage | Number | Percentage | |
| Population | 2,672,301 | 57.2% | 2,000,667 | 42.8% | 4,672,968 |
| Employees in the private sector | 252,132 | 12.7% | 1,729,713 | 87.3% | 1,981,845 |
| Employees in the private sector holding HE certificates | Diploma 20,397<br>H. Diploma 499<br>Bachelor 24,322<br>Master 1,222<br>PhD 118<br>**46,558** | 24.1% | Diploma 51,446<br>H. Diploma 4,727<br>Bachelor 84,348<br>Master 4,410<br>PhD 1,479<br>**146,410** | 75.9% | 192,968 |
| Employees in the logistics sector | 11,764 | 14% | 68,605 | 86% | 80,369 |

Table 1. Omani and Expatriate Workforce Distribution

SOLS2040 plans to provide the logistics sector with the local human resources necessary to reduce the overall share of the expatriate workforce in the country (Kantaria & Vesuvala, 2018; Ministry of Transport and Communications, 2015). The strategy aims to increase the workforce from 80,369 to 300,000 by 2040 through providing a variety of different positions, especially for Omanis (Ministry of Transport and Communications, 2015). In particular, the numbers show that Omanis make up only 14% of the logistics sector while the average demand for the workforce in the logistics sector is anticipated to be 11,000 employees every year until 2040.

### 1.2.2 Workforce Registration Database

In Oman, the Gulf Arab Manual Common Vocational Classification and Description (GAMCVCD) document defines the classification of occupations and job descriptions. This document is accessible via the National Center for Statistics and Information (NCSI) website (NCSI, 2019c), which is the primary official government site that gathers all important information in the Sultanate, including on government and private entities.

All institutions, including educational institutions, need the GAMCVCD to better understand Oman's occupational and job structures. For colleges and universities – the designers of the curricula, including the logistics curriculum – the GAMCVCD is indispensable for their preparation of graduates for jobs that are specifically targeted in Oman's curricula to enable Omani graduates access jobs in the country and in GCC as well. Similarly, this database, like public job databases, plays an indispensable role in providing information about available logistics jobs, in order to facilitate a successful recruitment programme for logistics companies (Bredgaard, 2018).

### 1.2.3 Challenges Faced by the Omani Government in the Logistics Sector

The logistics sector, as with other sectors, has continued to experience challenges, which the Omani Government is aware of and is attempting to overcome.

#### 1.2.3.1 Lack of a Logistics-Skilled Young Omani Workforce

Despite the dramatic infrastructural development observed in Oman since 1970, the most persistent barrier in developing the logistics sector is the pervasive lack of a suitably trained workforce (Ministry of Transport and Communications, 2015; McKinnon, et al. 2017). Higher education has to be ready to establish quality programmes in order to cover the needs of the logistics sector. Gaps can be found in the number of HEI graduates and their low skills and thus risk of technological obsolescence (Allen, & De Grip, 2012). Without a capable workforce, Oman cannot sustainably create and maintain itself as an ambitious logistics hub, which has acted as a constraint on economic development (Ministry of Transport and Communications, 2015).

Moreover, there is a shortage of Omanis working in the logistics sector (Al-lamki, 2000; Ministry of Transport and Communications, 2015). This shortage may reflect similar shortages of skilled labour in various sectors of the economy (Ali, et al. 2017) such as in health (Emerson, 2018), tourism and hospitality (Atef, & Al Balushi, 2016), construction (Al Saadi & Rahman, 2019), and agriculture (Al-Anbari, 2017). Most lower-level positions are dominated by expatriates, who comprise around 70 percent of Oman's labour force in most sectors. Meanwhile, the logistics sector in Oman has attempted to build a positive reputation as a career option, even for those lower-level jobs that do not need HE certificates; this involves many challenges such as "the difficult economic conditions surrounding the region, poor wages, dependence on cheap labour, long hours of work, poor practical experience and expatriate labour force controlling certain companies in logistics, etc." (Al-Qasmi, 2017, para. 4).

Despite the huge government investment in infrastructural projects (e.g. 8 billion Omani Rials since 2011), these assets had not been significantly utilized, and are even underutilized, due to the absence of a competent logistics workforce (Ministry of Transport and Communications, 2015). This serious human resource weakness has forced Oman to turn towards expatriates including HE graduates, mostly from the Asian subcontinent (De Bel-Air, 2015).

### 1.2.3.2 Challenges to meet the targets of SOLS2040

Abdulrahman Al Hatmi (IRU, 2018) the Chief Executive Officer of ASYAD, has stated that implementing the Sultanate of Oman Logistics Strategy (SOLS2040) is one of the two primary mandates for ASYAD, which is responsible for executing plans to create 300,000 jobs in the logistics sector by 2040 by building human capacity and skills which will help to achieve SOLS' vision. Thus, the ambitious human resources goal of the Sultanate of Oman Logistics Strategy is expected to encounter enormous challenges to achieve an additional 220,000 workers by 2040 (Ministry of Transport and Communications, 2015; World Economic Forum, 2012). The current level of logistics-orientated HEI graduates generated by Oman's educational system has not addressed the sector's ongoing demands in terms of both quality and quantity. Consequently, based on the target of workers required by 2040, ASYAD (2019a) as a new integrated logistics provider in Oman is working with HEIs to provide qualified graduates as its first priority, thereby building the capacity required by the logistics sector in stages of growth (ISFU, 2018)

SOLS2040 has concluded that the high number of expatriates in the logistics sector indicates three fundamental challenges: (1) lack of training opportunities; (2) lack of training awareness; and (3) the poor perception of logistics as a career option (Chu & Gordon, 2002; Ministry of Transport and Communications, 2015). The Education Taskforce has recommended that the educational logistics strategy must address three important issues, namely to ensure: (a) a sufficient number of trained and experienced Omanis (b) that Omani workers are adequately flexible for logistics companies to redeploy or retrain; and (c) school leavers become strongly attracted to the logistics sector as a primary career choice.

There is a need to raise awareness among Omani youths about this specialized opportunity by increasing the perceived value of this curriculum vis-à-vis other educational options (Ernst & Young Global, 2020; Ministry of Transport and Communications, 2015). The attractiveness of a logistics career must be improved through an effective career marketing campaign backed by attractive reward packages for logistics workers.

## 1.3 Oman's Higher Education System

In Oman all HEIs are regulated by four government ministries, namely the Ministries of Manpower (MoMP), Higher Education (MoHE), Health (MoH), and Defense (MoD). The MoMP supervises and regulates seven technological colleges (TCs) and eight vocational colleges (VCs) under Royal Decree No. 108 (2001) (Ministry of Manpower, 2019). In relation to this function, the MoMP is also obligated to develop and expand vocational and technical training according to the requirements of Oman's labour market.

Conversely, the MoHE supervises and regulates 27 private higher education institutions (P-HEIs) and seven applied science government higher education institutions (G-HEIs). The major HEI in Oman that offers logistics programmes is Sultan Qaboos University in Muscat (Ministry of Higher Education, 2019a). The MoHE website has estimated that 50,000 postgraduates with 97% of the students being Omani, and 4,000 affiliate universities abroad (Ministry of Higher Education, 2019b). Meanwhile, the MoH, under its first broad function (Ministry of Health, 2019), supervises and regulates nursing and nutrition HEIs and provided training. Moreover, it employs a workforce of nursing and nutrition graduates for all government hospitals and healthcare centres.

Finally, the MoD supervises and regulates the defence colleges, the graduates of which it employs for assignment in the different military services of the Sultan's Armed Forces (Ministry of Defence, 2019). The Armed Forces consist of the Royal Army of Oman, the Royal Air Force of Oman, the Royal Navy of Oman, and the Royal Guard of Oman.

## 1.4 The Role of the MoHE in Evaluating the Curriculum

In Oman the Ministry of Higher Education (MoHE) regulates the country's HEIs. One of its tasks is to ensure that the higher education curricula meet certain quality assurance standards and criteria. Through its Ministerial Decree No. 50/2014 ("The Regulations for Granting Licenses for Academic Programs in Higher Education Institutions"), the Ministry of Higher Education (2014) regulates the licenses for academic programmes, including the assessing curriculum quality; licensing is also an essential quality measure that benefits consumers (i.e. students and employers) (National Conference of State Legislature, 2017).

This decree is implemented by the Department of Programs Supervision (DPS), a department attached to the Directorate General of Private Universities and Colleges (DGPUC). In line with the executive assignment in the Ministerial Decree 50/2014 concerning the regulations for granting licenses to academic programmes in HEIs (Ministry of Higher Education, Oman, 2014), the DPS had published the Guidelines for Academic Program Licensing (GAPL) Report (Appendix E). This describes the main tasks of the Panel of External Reviewers (PER), the programme report structure, staffing and resource requirements, management arrangements, and the required reference documents (Ministry of Higher Education, 2014); every HEI has to prepare specific information provided in the Academic Program License Application Form (APLA) (Appendix F).

The PER must include two external experts (Ministry of Higher Education, 2014). The former has the power to revise the definition of contact hours and curriculum coherence. It must also ensure that each module or course design encourages and supports the achievement of its learning outcomes. Administratively, the PER is responsible for licensing a new curricular programme, maintaining and protecting all documents that HEIs submit for licensing review (Ministry of Higher Education, 2014). It has full accountability in terms of the confidentiality of any necessary communication the HEIs conduct through the DPS.

As a joint panel, external experts submit an executive summary report on the academic programme that is being evaluated to the Ministry of Higher Education (2014). The report must include the findings and three required pieces of information: (1) the strengths of the new programme of study; (2) areas for improvement in this new

programme; and (3) recommendations to address areas for improvement. The HEIs must implement recommendations within a maximum of two weeks after receiving the report. Such implementation must be documented in a summary report on the programme and the amendments that have been implemented. The DPS is tasked with informing the relevant HEI regarding the findings.

Independently, each external expert is required to submit a detailed individual report to the MoHE describing the programme's compliance with the licensing department (Ministry of Higher Education, 2014). The evaluation of the curriculum design centres on five measurable criteria: the learning outcomes (LO); the structure-aim consistency (SAC); the appropriateness of module or course choice and sequence (ACS); the adequate coverage of the academic areas (ACAA); and the inclusion of professional requirements and industry needs (IPRIN) (Ministry of Higher Education, 2014).

Thus, the Ministry of Higher Education (2014) plays a central role and holds responsibility for the evaluation and measurement of the HEI curricula, thereby supporting the primary responsibility of HEIs in relation to programme quality and relevance (Oman Academic Accreditation Authority (OAAA), 2013). Its goal is to ensure the quality of the curriculum and the learning outcomes expected of its graduates in a manner that fits with the learning theories that the HEIs espouse in their curricular design. The Omani philosophy of education is essentially progressive and perennial (Kooli, et al. 2019).

## 1.5 The aim of the research

The general aim of this research is to produce recommendations that might help to effect change in Omani HEIs' capacity to serve the country's logistics sector. Such changes would be expected to enhance and improve the competencies (knowledge, skills, and abilities) of higher education (HE) graduates through a needs-based development of the logistics curriculum, thereby potentially affecting the relationship between the logistics environment, higher education and the logistics sector's performance through the development of the standardization of the Omani logistics curriculum and logistics occupational descriptions for use within the sector. Thus, the thesis intends to assist HEIs' delivery of an industry-adjusted curriculum, resulting in

logistics companies' access to industry-fit graduates. Moreover, the expected beneficiaries of this curriculum are Omani HEIs, which consist of 97% Omani students (NCSI, 2020). Therefore, this research could also support the Omanisation initiative (namely, the employment of the Omani workforce in the right jobs based on their competencies) given the emergence of competent and industry-fit logistics graduates (Ali, et al. 2017).

## 1.6 Research questions

The thesis aims to answer the overarching question: How can the skills gap in Oman's logistics sector be identified and addressed?

The research proposes to answer the following secondary questions:

- How do Omani HEIs conceptualize the processes of designing curricula for the private sector?
- What is the relationship between the HE curriculum and the skills need of logistic sector?
- How do employers' expectations regarding the attributes they expect of graduates' effect on curriculum design and delivery in the higher education sector?
- How can a purposefully designed HE curriculum's effects on the logistics sector be measured and evaluated?
- How can HE curriculum designers develop curricula according to the skills required to satisfy employers in Oman's logistics sector?

## 1.7 Research Objectives

The research focuses on finding an approach in order to identify and address the skills gap in the logistics sector in Oman from a curriculum perspective. Specifically, it intends to:

- Understand the way that Omani HEIs conceptualize the process of designing curricula for the private sector;

- Determine the relationship between the HE curriculum and the skills needs of the logistics sector;
- Understand the expectations of employer in relation to logistics graduates on curriculum design and delivery in the higher education sector;
- Identify the likely significance of a purposefully designed HE curriculum on the logistics sector through measurement and evaluation; and
- Determine the way HE curriculum designers might develop a curriculum according to the required skills to satisfy the employers in the logistics sector in Oman.

These objectives are expected to provide previously unavailable information concerning the design of a need-based logistics curriculum that will directly benefit the logistics sector, which is the priority developmental focus in Oman today. This developmental priority has been addressed in detail in the *Sultanate of Oman Logistics Strategy-2040*, adopted in 2013. Establishing Oman as a global logistics hub opens up the prospect of the creation of tens to hundreds of thousands of quality jobs from 2020 to 2040 (Ministry of Transport and Communications, 2015). In addition, a needs-based logistics HE curriculum can provide a strong academic and skill development foundation for Omani graduates, consistent with the goals of Omanisation (Chartered Institute of Logistics and Transport, 2015).

The research also has the potential to contribute indirectly to the enhancement of non-logistics higher education programmes in Omani HEIs, such as engineering or management programmes. The recommendations may, therefore, help to provide the best methods to use in order to add certain course units to prepare graduates to work in the logistics sector.

## 1.8 Study Impact

Omanisation is a policy endorsed in 1988 by the Government of Oman to reduce the number of Omani jobseekers by recruiting them and having them replace expatriate workers, thereby decreasing dependence on foreign labour (Gokhale, 2004). This policy helps to determine the current Omani national workforce needed in the private sector and as such assists the Ministry of Higher Education (MoHE) to

prepare a competent curriculum to ensure the specific determination of actual competencies (practical and theoretical) in order to specify the competencies required in the logistic sector (Valeri, 2005).

By pursuing this research, I had the opportunity to discover the gap between the needs of the country's logistics sector and the current state of Omani HE's curriculum design. The research may also help to present recommendations to higher education institutions (HEIs) and logistics companies (LCs) that may lead to increasing logistics sector/HEI cooperation while improving the processes of curriculum design. The recommendations may enhance the progress towards Omanisation within the logistics sector as well in the logistics sector in Oman itself, as Omanis make up more than 97% of the students in the country's HEIs as mentioned previously (NCSI, 2020).

The recommendations drawn from this research might show the need for the standardization of Oman's logistics curriculum, which could then result in clarity as it relates to the knowledge and skills needed for the logistics industry's future employees. Second, the recommendations of the thesis may help participating companies (and other companies in the industry) to standardize their occupational descriptions if they take the thesis recommendations to be actionable items.

The study will have a potential impact on local curriculum design. First, the study will draft recommendations in relation to the creation of an industry-matched HE logistics curriculum and, where a current curriculum exists, will re-evaluate the capacity of Omani HEIs to supply higher logistics education competence to local students in an environment where curricula have tended to be mismatched in terms of industries' actual competency needs.

Second, the thesis will, engage Omani logistics companies in order to determine their competency needs regarding their manpower requirements, thereby helping the country's HEIs to precisely match that need. This engagement may have a compounding effect in terms of building human capital (Ratan, 2014; Ministry of Transport and Communications, 2015) in the logistics sector.

Third, the research has the potential to encourage HEIs to establish an educational programme for the logistics sector. In a sense, the research may start a culture of engagement with the job market in terms of redefining HEIs' logistics

education programmes in such a manner that they specifically target the exact skill gaps needed in each industry, not just in logistics.

Moreover, the thesis seeks to contribute to enriching the literature on curriculum development, skills gaps, and logistics higher education globally in general, and in Oman more specifically. It will also help in the application of human capital and screening theories to the fields of higher education and logistics, thereby encouraging future research to expand this into other industries and sectors.

## 1.9 Researcher Positionality

As Director-General of Vocation Training (DGVT) in the Ministry of Manpower in Oman, I am responsible for eight vocational colleges (VCs) that implement several types of certificates, some of which are non-HE certificates while one is a HE certificate. The vocational diploma programme is the only qualification that is considered to be a tertiary certification and, thus, a HE programme within the vocational colleges.

However, the VCs were not included in this study for two reasons. First, not including them removes potential bias, such as knowledge and social desirability biases (Olson, et al. 2016) associated with my work in this educational sector, thus, avoiding an important ethical dilemma. Second, vocational colleges do not implement logistics programmes. VCs' focus relates to more practical programmes that are very useful for the development of independent livelihoods (Okoye & Chijioke, 2013) such as agriculture, beauty care, carpentry, electrics, electronics, marketing, mechanics and mechatronics, therefore, programmes which assume corporate employment, such as logistics, are inherently out of place in this sector.

## 1.10 The structure of the thesis

This thesis is organized into six chapters. Chapter 1 is made up of the introduction, research objective and questions. Chapter 2 reviews the literature related to the research study's context, covering curriculum design theories as well as Oman's HE system and logistics sector. Chapter 3 outlines the methodologies used, the research design, sample size and types (Curriculum Designers (CDs), Middle

Managers (MMs), and employees), and ethical considerations. Chapter 4 discusses the findings and analysis of the three samples which created five themes, with each theme representing one sub-question of the study questions. Chapter 5 covers the discussions of Chapter 4 supported by Chapter 2's literature review, and finally, Chapter 6 ends with the thesis recommendations and conclusions.

# Chapter 2. Literature Review

## 2.1 Introduction

This literature review discusses the theoretical knowledge related to the skills gaps in curriculum design in order to establish a foundation for the research. The chapter is divided into five main parts.

Part One, covers the role of higher education in logistics sector in the context of employment in developing the logistics students to achieve the expected knowledge, skills, and behaviours of the LCs, and the role of lifelong learning at the higher education level in bridging this competence gap. The quality assurance is presented with its role in regulating the Internal Quality Assurance System (IQAS) under the Quality Assurance Council (QAC) within the HEIs, and the importance of the professional accreditation bodies in logistics sector with the listing process in Oman Qualification Framework (OQF).

Part Two, 'The Concepts of Human and Social Capital', examines logistics curriculum development and human and social capital theories as they can provide relevant perspectives regarding skill gaps in Oman's logistics sector. Both theories assert that capital resources – whether human or social – are indispensable for delivering an acceptable level of economic productivity.

Part Three, Competence, Competency-based Training, the three elements of the Competency "knowledge, skills, and abilities" will be defined and their role in preparing competent graduates for the logistics sector examined.

Part Four, 'Concept of Skills Gap', discusses gaps and skill shortages in the logistics sector as global phenomena from the expatriate dominance and actual skill-specific shortage perspectives.

Part Five, 'Concept of Curriculum Design', discusses academic theories on curricula design will be explained, and the definitions of the curriculum design theories will be examined. This part ends by discussing research on curriculum design in the regional Gulf Cooperation Council (GCC).

## 2.2 The Role of the Higher Education Sector in the Context of Employment

In the last two decades, emerging economies have changed and played an important role in economic development, encouraging stakeholders to build relationships and networks with each other (Peng, et al. 2018). This unprecedented change had demanded enormous levels of adaptability on behalf of higher education systems around the world in order to supply the private sector with graduates who can meet a constant demand for ever-changing employable skills (Lazányi, 2015). Some researchers such as Levy (2013) and Lazányi (2015) view HEIs as ineffective in developing their students to achieve the expected knowledge, skills, and behaviours that the modern employment environment demands or needs.

HEIs around the world, including Oman, have to interact with the labour market to meet the private sector's need for a quality education system (OECD, 2017). The education system is critical to the development of human capital. As such, no state can attain sustainable economic development when they do not have a substantial investment in human capital (Cleary, et al. 2007; Hadad, 2017). A thriving economy possesses a workforce that is capable of operating machinery and industries at higher levels, providing a given company with a competitive advantage over the economies of other states (Fallows & Steven, 2000). In the context of employment, most employers want employees who are productive and require less management (Bracht, et al. 2006).

Cleary et al. (2007) have insisted that employability skills are best acquired and applied within the environment of higher education while the inclusion of employability skills in curriculum units is essential, as a vehicle to improve students' employability and to fit the needs of the labour market (Bracht, et al., 2006). The availability and supply of skilled and knowledgeable workers is a key factor in the growth of a country's economy and businesses (Lazányi, 2015) is one of significant role of education. The more a worker is skilled and knowledgeable regarding their role in an organization, the more they will understand the industry and therefore the more valuable they will become to their employer (Knox & Stone, 2019). For that reason, workers will need to learn new skills that will enable them to compete for higher wages even though

employees would expect an increase in their wages at a smaller percentage than the productivity gains achieved by their employers (Gros, 2006). It is, therefore, essential for countries to a good curriculum to ensure that they can produce a labour force that can dovetail well with new developing industries (McCowan, 2015). However, beyond technical skills (Lim & Wang, 2016b), today's ideal employees are more flexible and adaptable in relation to frequently changing workplace demands compared to those in the past (Wang, 2012).

The real need today in the private sector is an ample supply of work-ready employees to avoid cost of recruiting unqualified workers (Small, et al. 2018). In effect, the HE sector should be more closely linked with industry, the former having a contributory role to the employment (Lazányi, 2015). There is an existing need for the higher education curriculum to be designed with employment objectives where work-ready employees are produced to meet the demands of both government and private sectors. Lastly, apprenticeship programs are representative of an interactive relationship between the employer and the HEI and offers better promise and greater opportunity for the education sector to collaborate closely with the private sector (Lim, et al. 2016).

The consensus among the European higher education authorities and institutions concerns, foremost, in educating students to acquire knowledge and skills necessary for their future employment (Vettori, 2020). This bridges the gap between HE and employment. The logistics sector has a strong demand for "well-educated and qualified employees" (Wrobel-Lachowska, et al. 2017, p. 402). For example, the demand for information and communication technologies (ICTs) rises as a trend of LCs "to gain maximum benefits from the invested capital" (Adamczewski, 2017, p.400). The competence gap between worker supply and employee demand will also increase. The competence gap will also increase between physical and intellectual workers, from younger workers and older workers. Unfortunately, though, education for adults remains disjointed and incoherent (Osborne, et al. 2015), weakening the HE system's ability to respond effectively. The increases in analytics and specialization in all logistics processes lead to increase of reliance on technologies, as most executive work will be delegated to automation (Wrobel-Lachowska, *et al*, 2017). This will affect both in the supply and demand fulfilment links in exports and imports. Thus, employees

will be performing only “organizational and conceptual tasks” (Wrobel-Lachowska, *et al*, 2017, p. 402), reducing physical work while intellectual work increases.

Finally, the lifelong learning (LLL) plays an important role within the HE in the context of employment and bridging the competence gaps between workers (Sawano, 2015). Kotzab, et al. (2018) stated that companies must upskill their employees for implementing various logistical activities to comply with the competences for LLL, considering that lifelong learning is one of the main parts of building competences (European Parliament and Council of the EU. 2006). Universities, along with the logistics companies, have to work together to gain the required skills and competencies that fit the logistics sector's needs and prepare a continuous learning environment on the job (Kotzab, et al, 2018).

## 2.3 The Role of Quality Assurance in Curriculum Design

Consistency between the external and the internal quality assurance systems plays a crucial role in the development of the logistics curriculum in an era of borderless interconnectedness, not just in the GCC region, but also around the world; building competencies has to become part of the academic world (Roegiers, 2016). For Oman, an effectively working internal quality assurance system (IQAS) offers greater practicality. It requires a lower demand for time and effort compared to those HE activities that are based on an external quality assurance system (Ganseuer & Pistor, 2017).

Consequently, the objective of the IQAS must be the modernization of the HE curricula, which, in the case of the logistics curriculum, involves starting with the development of a modernized logistics curriculum (ECDVT, 2012) From this view, the goal constitutes not just meeting the needs of the logistics sector in terms of competencies in the logistics practice (ECDVT, 2012; Manivannan & Suseendran, 2017), it also helps to equip Omanis to be successful in their jobs while preparing the curriculum according to the requirements of Omani society (Al-Gharibi, 2009), through collaboration and benchmarking between HIEs nationally and internationally as benchmarking is considered as “a successful tool for quality in higher education” (Tasopoulou & Tsiotras, 2017, p.3).

The establishment of the Quality Assurance Council (QAC) plays a crucial part in ensuring that an IQAS is in place for Omani HE education (Baporikar & Shah, 2012; Ganseuer & Pistor, 2017), including efforts in curriculum development (Ganseuer & Pistor, 2017). The QAC has been tasked to monitor the quality offerings and outputs of all HEIs in Oman across different governing institutions from private owners to government entities QAC plays a crucial role in improving the whole quality elements, including the logistics sector curriculum.

## 2.4 Professional Accreditation Bodies in Logistics Sector

HEIs commonly approach graduate employability through three objectives: short-term graduation outcomes; professional preparedness; and meaningful and lifetime productivity (Bridgstock & Jackson, 2019). However, although higher education logistics certificate guarantees the graduates' quality, an accredited logistics professional further guarantees a far higher level of competency in the field. For logistics graduates in Oman, the nearest providers of professional logistics accreditation are the Chartered Institute of Logistics and Transport (CILT), located in Northampton, England, and the European Logistics Association, which is based in Brussels, Belgium.

The CILT is the only accreditation organization in the UK that accredits European Logisticians for the European Certification Board for Logistics and has a worldwide reputation in the logistics sector (CILT, 2020a). It is recognized in 20 countries around the world, including only two entities in Oman (Ministry of Higher Education. 2019c), such as in Blue Ocean Academy (BOTC, 2020) and International Maritime College Oman (IMCO,2020). It also offers a certificate program for Customs Competency Training (CILT, 2020b).

The European Logistics Association (ELA) is a provider of the qualification standards for professional logistics competence, which is aligned with the European Qualification Framework (European Logistics Association, 2020). These standards underwent development with and were recognized by global logistics industries globally. Moreover, these standards reflect the expectations of the logistics sector for workplace performance among logistics professionals. The ELA accredits based on a

standard of competence for logistics supervisors, managers/consultants, and senior managers/consultants.

Some international universities implement logistics programs worldwide to cover specific sectors according to the geographical areas' needs; for example, Curtin University of Technology (CUT) is located in Western Australia and near oil and gas companies. Earnest (2020) mentions that the CUT established a Logistics and Supply Chain Management Major program with industry-based learning (IBL) to help the oil and gas sector by providing logistics programs covering the industry-needs. The CUT trend is to design an integrated curriculum by offering students the opportunity to prepare work-ready graduates in the industry (Rajibussalim, et al. 2016) and utilizing the benefit of developing ideas for designing the curriculum from the same geographic area (Suñé & de Armas Urquiza, 2016). Another example from Asia, Malaysia Institute for Supply Chain Innovation (MISI), while not an accreditation organization, is a private university that was a joint initiative between the Massachusetts Institute of Technology and Malaysian Ministry of Education (MISI, 2020). MISI has the initiatives to develop human resource solutions in the supply chain programs, and to boost the region to the "supply chain research, education and thought leadership" in order to bring "academics and practitioners together for supply chain advancement in Asia". (Cottrill, & Singh, 2011, p3).

All types of programs, either national or international, have to be listed in the Oman Qualification Framework (OQF) (Oman Academic Accreditation Authority, 2019). In Oman, all course qualifications (including units or modules) have to be included in the OQF through the listing process, which allows for the allocation of an OQF level, namely, an "evaluation of the learning outcomes and assessment of the units/modules/courses that comprise the qualification" (OAAA, 2018, p. 7). CDs within the HEIs have to be involved in listing logistics programmes in OQF to meet the validation criteria (OAAA, 2018, p. 24).

# Part Two: The Concepts of Human and Social Capital

## 2.5 Capital theories in logistics curriculum development

Two capital theories, Human Capital Theory (HCT) and Social Capital Theory (SCT), provide relevant perspectives regarding the challenge associated with a gap in employability skills and those experienced within Oman's logistics sector. Both theories believe that capital resources, whether human or social, are indispensable for delivering an acceptable economic productivity level.

### 2.5.1 Human Capital Theory (HCT)

Human Capital Theory (HCT) asserts that human skills are capital resources of importance in delivering economic productivity (Brennan, et al. 2004; Miller, et al. 2015). Meanwhile, human capital comprises the "knowledge, skills, and talents" (KST) (Miller et al., 2015, p.1) resources of working-age individuals who can contribute to economic productivity, which in this case, involves the logistics sector in Oman.

With the recent re-theorization of education under HCT, particularly in Western countries, HCT, as a theory, has become the most influential economic approach applied in Western education (Fitzsimons, 2018). In HCT, education is understood as 'invested' with an expectation of returns in due course, both for the individual student in terms of employee salary and for the state in terms of employment and, consequently, economic growth (Gillies, 2011). Thus, within the context of Oman, education can be viewed as playing a pivotal role in boosting Oman's economic growth.

Moreover, in this interpretation, human capital is viewed as a capital resource that delivers economic productivity (Miller et al., 2015), not only to individual graduates but also to the Sultanate of Oman (Al-hajry, 2002), which in this research context is delivered through the logistics sector. Gillies (2015) has asserted that "the better the investment made by individuals in education, the better they and the economy will do" (p.1). HCT stresses individual education that improves financial rewards and, in turn, positively improves the national economy.

In the absence of a needs-based curriculum, or even in the presence of a seriously defective one, HEIs lack the human capital resources required for logistics.

In the Omani context, and through the lens of HCT, HEIs have to focus on the required skills that reflect the labour market's specific needs in the logistics curricula and design a needs-based curriculum that fits the logistics sector needs.

### 2.5.2 Social Capital Theory (SCT)

SCT asserts that social capital has a causal nature regarding social group engagement (Brennan et al., 2004; Vaughan, et al. 2014). SCT is also a social relation (Rogosic & Baranovic, 2016), meaning investing in social relationships can deliver expected economic benefits. Consequently, the concept of social capital has a unique relationship with the concept of human capital.

Rogosic and Baranovic (2016) have explained that social capital significantly influences the resources that people can invest in their educational development. Stocke, et al. (2019) have observed that social origin determines educational outcomes in Germany in an exceptionally strong manner, including educational decisions (Stocke et al., 2019) and educational mobility (Stephany, 2019). Thus, social capital has an indirect effect on the development of human capital.

Pishghadam and Zabihi (2011) have observed that greater access to social capital has been associated with greater educational achievement. This outcome has been confirmed in several earlier studies (e.g. Parcel & Dufur, 2001; White & Glick, 2000) and more recent research (e.g. Abrar-ul-haq, et al. 2015; Stephany, 2019; Stocke et al., 2019). Unlike Western countries, which are culturally individualistic, Asian countries, like the GCC nations, are culturally collectivist. Collectivism was associated with citizens' ability to work together for common goals, which is a crucial requirement for economic success (Baldacchino, 2005). For example, Bahrain is one of the GCC countries; it was one of the ten most prosperous nations in the world in 2004 because of the cohesiveness of its small and below one-million population. A clear assessment of Bahrain’s social capital has been challenging to achieve due to its social networks' prevailing informality. Nevertheless, its cultural and social self-organization is demonstrable (Bertelsmann, 2019).

In addition, these connections, despite differences in terms of their sociocultural backgrounds, allow people mutual resource access between groups in a mutually

beneficial manner (Vaughan et al., 2014). Thus, SCT offers a suitable model for understanding the machinery that Omani graduates can exploit to gain employment in the logistics sector, collect better compensation, or, perhaps, earn a job promotion.

### 2.5.3 The role of human and social capital theories in education

Both SCT and HCT can provide, together, an essential role in the educational environment, especially for curriculum designers, when they intend to design curriculum according to the needs of the labour market. When looking for improved economic growth, social and human capital theories have to work in tandem to support and facilitate educational attainment and support concerning the development of highly valued and rewarded skills (Castellano, et al. 2010).

The concept of education in a community should inspire trust to create networks that play a role in shaping the logistics industry (Sharma, 2014). Education needs to reflect the constructed personal relationships and improve the learning environment. Learning needs to happen within a specific value system. In contrast, the learning process requires re-evaluation to determine what level of knowledge and skills are necessary to engage in better human capital development (Karoly, 2010, p. 37). Human capital is vital for a higher level of innovation. Companies look for people with the skills and attributes that increase their performance (Crook Todd, et al. 2011).

The best way of achieving increased student engagement in learning is to include those both inside and outside of the educational structure. In relation to this, Kessels and Poell (2004) have discussed the positive effect of andragogy and SCT in terms of moving the traditional workplace into a new learning environment, thereby supporting social networks and collaboration between educators and learners while encouraging Curriculum Designers (CDs) to design a corporate curriculum, thus increasing knowledge productivity and curriculum innovation (Manivannan & Suseendran, 2017). When applying SCT, as a theory, benefits such as increasing the long-term viability of a business to achieve its goals might be achieved (Abreu & Camarinha-Matos, 2010). Additionally, through collaboration and benchmarking against academic excellence located with HIEs, nationally and internationally, applying

SCT could be useful in achieving significant results to enhancing, improving and transforming HEIs (Tasopoulou & Tsiotras, 2017).

Using the lens of HCT, it appears that CDs emphasizes skills relevant to new economies and the development of social and cultural capital (Luke, et al. 2013). CDs acting as the main part in human capital, they design a curriculum that helps to add quality to its graduates for improved economic productivity, which comprises the "knowledge, skills, and talents" (KST) (Miller et al., 2015) to boost the economic growth of Oman in all sectors, including logistics. They can also design a curriculum that helps to add quality to its graduates to increase economic productivity (Miller et al., 2015).

CDs have to focus on quality, knowledge, intellectual pursuits, and the needs of the logistics companies in the process of designing the logistics curriculum. In this trend, they have to build social relations with different social groups (Rogosic & Baranovic, 2016), such as HE students and logistics sector managers.

By enhancing social capital creation in the sector, CDs can reach greater educational achievement (Pishghadam and Zabihi, 2011) and reap the expected economic benefits while bridging the curriculum skills gap.

# Part Three: Concept of Competency and Competency-Based Training

## 2.6 Competencies

This section covers the definitions of competency, its three main elements, and how the CDs build competent graduates to work in the logistics sector and become useful and skilled employees.

### 2.6.1 The three elements of competencies

Barnes and Liao (2012, p.889) have defined competence as a combination of "knowledge, skills, and abilities" (KSA) that should produce a high-performance level. However, such a definition may be understood differently from different perspectives, including from the macro- and sector-level, at a company level, and by the individual.

From a worker's perspective, HEI programs' learning outcomes in logistics must be aligned with employer expectations. Truck drivers, for instance, must be capable of delivering products in impeccable timeliness. Similarly, a logistics manager must be an expert in warehousing operations (McKinnon et al., 2017).

The three elements of competencies (knowledge, skills, and abilities) play a crucial role in effectively allocating the workforce across all jobs (Blair, 2012). These competencies must be precisely defined and harmonized between the HEIs and the logistics job market. The skills gap makes collaboration between HEIs and the logistics sector necessary, if not imperative (Manivannan, et al. 2015), while failure to do so has been viewed as the underlying cause of the current skills gap in the logistics job market. However, the capacity of HEIs to deliver may not be directly compatible with the job market's needs.

### 2.6.2 Concept of Competence and Competency-based Training

The concept of competence involves a diverse set of perspectives. For example, the Tradition Model conceived competence as understandable from three psychological traditions: the behaviorist tradition success-based competence), the generic tradition (commonality-based competence), and the cognitive tradition (mental resources-based competence) (Mulder, et al. 2007). Moreover, the Cheetham-Chivers Holistic Model classified competences and competencies into five: the "cognitive competence" (knowledge-based), the "functional competencies" (skills-based), the "personal competency" (behavior-based), the "ethical competencies" (values-based), and the "meta-competencies" (learning-based) (Guthrie, 2009, pp. 19-20). Lastly, the Le Deist-Winterton typology of competence identified four domains (occupational, individual, conceptual, and operational) that generate a uniquely mixed competency types, namely: the "cognitive competence" (occupational-conceptual), the "meta-competence" (individual-conceptual), the "functional competence" (occupational-operational), and the "social competence" (individual-operational) (Le Deist & Winterton, 2005).

Competency-Based Training (CBT) involves activity that are work performance oriented, in a manner that its outcomes should be assessable, either qualitatively (observation) or quantitatively (measurement) (Guthrie, 2009; Dubey & Ali, 2013). This

means that the focus of this approach, particularly as understood through a various conceptual understanding of competence, is not resource-oriented but performance-oriented. From this perspective, competence is not necessarily a worker resource but an indication of the outcomes. Nevertheless, the focus on assessment demonstrates that CBT and performance-oriented competence have positive and measurable effects on logistics graduates. In effect, a good understanding of competence and a skilful use of CBT in higher education logistics can help logistics graduates improve their graduate employability.

### 2.6.3 Competent employees

Work experience has positive effects on employees; it supports their academic studies and teaches them new skills (Rowe, 2017). Blasko, et al. (2002) have found that work experience and the competencies acquired in the labour market at the postgraduate level resulted in positive employment outcomes, which equipped graduates with employability skills (Cleary et al., 2007; Lazányi, 2015). Generally, the direct roles of logistics supervisors or logistics managers in the provision of competent skills to potential employees in the future occur only in work shadowing programmes that involve newly employed graduates and HE students in their on-the-job-training (OJT) (Lin & Hsu, 2017).

Zhu and Zhu, (2018) have implemented a questionnaire survey on 123 Graduates' satisfaction with education and teaching based on logistics management in HEIs. One of the findings was the importance of "Improving Students' Knowledge Ability Level", which means that the HEIs have to choose the corresponding LC to allow students to join the different logistics processes within the companies during summer practice, or internships to eliminate students' phobias in the work environment post-graduation. Humburg, et al. (2013), have implemented a study with more than 900 employers in nine different European countries about the "lack of information on the employers' perspective on what makes graduates employable" (p. 6). Very few employers have mentioned that they frequently cooperated with universities on curriculum design, and more than half of the targeted employers reported that "they had never done so" (p. 4). Overall, most of the employers argue that there is a chance

for improvement by involving them with the HEIs during the curriculum design process to include ‘real’ work practices in the curriculum (p. 86).

Abas and Imam (2016) support the same trend, stating that HEIs can build competent graduates by developing their students before their graduation and entry into a workplace. The employers have to cooperate with the HEIs to enhance the competencies required by graduates. In general, preparing competent employees has to be done by HEIs and the logistics companies collaborating during the curriculum design stage.

# Part Four: Concepts Associated with the Skills Gap

## 2.7 Exploring the role of HEIs in the determination of skills gaps

From a global perspective, the ongoing skills gap within the labour market has been attributed to the failure of the higher education sector to deliver a supply of suitably skilled graduates (Moreau & Leathwood, 2006) or to develop “human capital and [foster] innovation” (Okebukola, 2014, p. 9). Higher education must consider the skills required by companies and the need to move into the digital economy, thus prioritizing “areas of knowledge and skills that complement machine capabilities” (Valenduc & Vendramin, 2016, p. 24). These developments will result in changes to jobs; some jobs will disappear while others will emerge (Salmi, 2017).

In the case of higher education, Hills, et al. (2003) have noted that universities have been resistant to making the necessary changes in delivering graduate employability due to the ample financial resources available to them given the way the education system is currently constructed. Moreover, a new education delivery system, such as blended learning and the creative use of the education curriculum to develop student competencies in problem analysis and solution development, can also be challenging for some HEIs (Xiaoqing, 2016).

The central objective of the graduate employability agenda is to link the diversity of higher education degree programmes to the range of employment situations, thereby bridging the current skills gap or skill mismatches. Ferns, et al. (2019) have insisted that the ideal is to link students' learning outcomes and the employment

market's needs. Studies indicate a gap between the competencies of graduates and the needs of employers (Ferns et al., 2019) alongside preparing a curriculum that is more relevant to the workplace (Tran, 2016). In this way, HEIs must consider involving all stakeholders in curriculum design processes (Jongbloed, et al. 2008).

## 2.8 Examples of Skills Gap in Logistics

Skill gaps are a global phenomenon (Zuraimi, et al. 2013) that result in increased unemployment rates (Cerf, 2018). Hallett (2016) has attributed this phenomenon to rapid technological advances and workplace digitization. Price Waterhouse Coopers (2012) have stated that, in Europe, logistics companies prefer to hire new graduates, so they can finally fill the positions of their more experienced colleagues. The main challenge that LCs face is that education and training do not cover the LCs' needs in terms of both skills and technology. Simultaneously, it is "difficult to attract good candidates, especially younger, skilled employees, with competition for resources tight and awareness and interest levels relatively low" (p.15). In the OECD region, almost half (45%) of its workers have claimed they lack the skill sets required to perform jobs effectively (Hallett, 2016). Moreover, large economies such as the USA, China, Japan, India, Brazil, Germany and the UK are among the nations with the greatest shortages of job-related skills (The World Economic Forum, 2020)

However, these phenomena may be considered based on two different perspectives: (a) expatriate dominance and (b) actual skill-specific shortages. The next two subsections explore these issues based on published sources.

### 2.8.1 Skills gaps from the perspective of expatriate dominance

From the perspective of expatriate dominance of the jobs market, five of the six GCC nations are experiencing skill gaps as of mid-2018 (National Institutes of Statistics [NIS], 2018). Qatar and the United Arab Emirates had the greatest expatriate dominance at 87.4% and 87.3%, respectively. However, these rates are

underestimates because expatriates are expected to have jobs, while in Oman, nationals may not have jobs.

Interestingly, Oman was the only GCC nation that was not dominated (44%) by expatriates (NIS, 2017). While the overall percentage of expatriates in the population is high (NCSI, 2019a), it is segmented by job sector, with 87.3% in the private sector (p. 112) as opposed only to 15.4% (p. 113) in public, as Omani nationals prefer to work in the latter. The Omani government gives priority to them in this area. Consequently, expatriates also dominate (80%) the logistics workforce (Benayoune, 2018), which means a substantial opportunity for HEIs to prepare Omani graduates to work in this sector.

### 2.8.2 Skills gap from the actual skill-specific shortage perspective

From the skill-specific perspective, Benayoune (2018) has reported a shortage of 29,834 logistics workers in Oman in 2014 (p. 154). Broken down according to the McKinnon levels of employment, the shortage in the logistics workforce was 1,682 positions (5.6%) for logistics managers, 3,734 (12.5%) for logistics supervisors, and 24,418 (81.8%) for operative staff. The labour shortage was expected to widen to almost double in the next six years (i.e. by 2020), and the needs for qualified employees will exceed 300,000 by 2040.

These skilled labour force shortages across the logistics employment levels could be challenging to fill because three-quarters of Omani youngsters dislike working in the logistics sector (Benayoune, 2018). Moreover, Omani nationals have shunned blue-collar operative staff positions with low salaries (Times News Service, 2018). CDs may add to the curriculum some units that might help students accept working in LCs, thus generating graduate success stories.

## Part Five: Concept of Curriculum Design

### 2.9 An introduction to Curriculum Design

Curriculum design is an academic plan (Lattuca & Stark, 2009) includes competencies expected for the learner to achieve the stated learning outcomes (Gonçalves, et al. 2016). Ordinarily, it is coordinated by a country's department (or ministry) of education or, in other political systems, by regional authorities in education (Franco, et al. 2019; Taylor, & Richards, 2018; Tibbitts, 2015). Ideally, several stakeholders such as "students, staff, scholars, administration and management, research communities, alumni, businesses, social movements, consumer organizations, governments and professional associations" (Jongbloed et al., 2008, p. 305) must be involved in the process.

In some types of curriculum, there are distinct standards that have been set by governing agencies to ensure that learners get the same type of education (Kelly, et al. 2019). Curriculum designers (CDs) have to involve stakeholders during work on curriculum design. As such, designing a curriculum can be challenging because students, in most learning institutions, come from distinct economic and cultural backgrounds (Wijnen-Meijer, 2019). In addition, teaching techniques can also be dissimilar based on the basic makeup that constitutes a given student body (Zhang & Li, 2019). Hence, curriculum design should include student needs to improve learning aligned from one stage of learning to the next. Designers should also think about its limitations, such as time, student abilities, and budget (Ali, 2018). Curriculum design is a rewarding opportunity for all stakeholders as they can positively affect a student's learning when 'knowledge' or 'skills' are combined to form an essential contribution to student learning (Rata, 2019).

### 2.9.1 Curriculum Design Theories

Curriculum design theories are mainly the methods of managing educational processes and policy decisions with specific values by engaging stakeholders about new policy and practice directions (Phelan, 2015), thereby serving to "release the virtual in the actual" (Wallin, 2011, p. 294). The seven curriculum design theories presented in this section include: Curriculum Mapping (CM), Competency-Based Curriculum (CBC), Learner-Centred Pedagogy (LCP), and Knowledge Economy Model (KEM), Developing a Curriculum (DACUM), Functional Analysis (FA) and Work

Process Analysis (WPA). These theories will be discussed at length and breadth by explaining their role in the logistics sector.

### 2.8.1.1: definitions and advantages:

| CT | Definition | Advantages |
|---|---|---|
| **Curriculum Mapping** | The process of indexing or diagramming a curriculum to identify and address academic gaps, redundancies, and misalignments to activate the coherence of the curriculum (Great Schools Partnership, 2013) | • Builds a coherent relationship between the curriculum and teaching content by concentrating on learning processes (Great Schools Partnership, 2013).<br>• Concentrates on graduate attributes – particularly employability skills – to make them achievable through the curriculum Cleary et al. (2007).<br>• Includes course content, educational environment, educational experiences, educational strategies, learning assessment, learning outcomes, and student factors (Harden, 2000). |
| **Competency-Based Curriculum (CBC)** | A set of academic content designed to acquire and develop specific competencies by the end of the education program (Kouwenhoven, 2009). | • Knowledge and skills must be developed well to be driven by the competencies to cover all economic sectors (Kouwenhoven, 2009).<br>• Ensures that each graduate has the required competencies including the ability to perform a task up to a standard (Kouwenhoven, 2009, p. 2).<br>• Tests the performance of the graduates according to the expectations of the labour market (Mulder, 2012).<br>• The use of the content, job, and task analytical outcomes as the starting point of curriculum development, thus links academic education to workplace standards (Mulder, 2012). |
| **Learner-Centered Pedagogy (LCP)** | An educational practice that views knowledge through the lenses of social and relational processes by constructing a collaboration environment (Moate & Cox, 2015) | • Constructing a collaboration environment and builds personal knowledge and understanding (Moate & Cox, 2015).<br>• In the classroom, teacher and students share the obligation to create a meaningful experience of learning and developing problem-solving skills in students (Abdelmalak & Trespalacios, 2013).<br>• builds learners to be "transformative thinkers", which may positively affect later the graduates in their workplace (Herranen, Vesterinen, & Aksela, 2018, p. 2).<br>• Encourages applied and experiential-based learning to achieve deep learning in all targeted sectors (Herranen, Vesterinen, & Aksela, 2018; Moate & Cox, 2015). |

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|---|---|---|
| **Knowledge-Economy Model (KEM)** | Relies on providing knowledge as the base of an economy to improve economic development effectively (Dima, Begu, Vasilescu, & Maassen, 2018). | • KEM is capable of using high modern technology to deliver highly-skilled future graduates (Hadad, 2017).<br>• Providing unlimited resources (Information and knowledge) in the education stage (Hadad, 2017).<br>• Can turn a contemporary society into a learning one through its graduates who are formed based on a knowledge economy mindset (Hadad, 2017).<br>• Ability to create new knowledge through synthesising and combining existing knowledge to build tactical knowledge (Lam, 2002, p.19). |
| **Developing a Curriculum (DACUM)** | Is a process of incorporating the focus group into a facilitated storyboarding process to capture the major duties and related tasks, and necessary knowledge, skills, and traits in a specific occupation (Nyirenda & Giridharan, 2019, p. 82). | • Facilitate the analysis and description of job profiles in terms of workplace needs and skills requirements (Geleto, 2017) for analyse better job tasks (Linton et al., 2011).<br>• Consists in three fast processes (within a two-day period); initial occupational profiling, a validation process, and actual curriculum development (Nickbeen et al., 2017; Geleto, 2017).<br>• Analysis of a job to bridge skills gaps and mismatches between industry needs and students' academic skills (Nickbeen et al., 2017).<br>• Analyze job details and requirements so that current employees may be developed and trained into expert workers (Geleto, 2017; Irshaid, Zaid, Schmidt, & Kolath, 2015). |

| | | |
|---|---|---|
| **Functional Analysis** | A competency analysis technique to define the competency cascade from the working process to the demonstrated work-related behaviors (Ngamvichaikit, 2017, p. 63). | • Assessment of work-related behaviour through systematic manipulation of variables (Lloyd, Weaver, and Staubitz, 2016).<br>• It has the ability of describing individual tasks by breaking the working functions down into main functions and their respective sub-functions (Irshaid et al., 2015).<br>• A deep analytical technique by providing unique richness to job analysis and each skill analysed, particularly in terms of task outcomes (Irshaid et al., 2015).<br>• Enriches task analysis with occupational outcomes instead of specific task details, thereby addressing graduates' competence deficiencies in targeted jobs (Irshaid et al., 2015). |
| **Work Process Analysis** | An on-site survey of skilled work that identifies the knowledge, skills, and competencies needed for the execution and shaping of work tasks within a given occupation or job position (Bahl and Dietzen, 2019). | • A detailed method of investigation of how daily work is being performed (Fisseler, Jeschke, and Schaten, 2010, p. 2).<br>• Determination of all competencies needed and domain-specific skills within the overall occupational procedure so that it can be conveyed in HE curriculum (Schulte & Spöttl, 2015, p. 1).<br>• Builds a broad competency that are relevant to specific occupational units to enriches the systematics of curriculum design with the technology-centred and process-oriented skills (Spöttl & Loose, 2018). |

### 2.8.1.2: The Role of Curriculum Design Theories in Logistics

Curriculum design theories play an important role in defining requirements for capacity building and underline the logistics sector's importance to the younger generation by providing technical knowledge acquired in core subjects that can find practical applications in logistics (McKinnon et al., 2017). The role of these theories will be for analysis and to determine their advantages and utility by the logistics sector.

#### 2.8.1.2.1 Curriculum Mapping

Curriculum mapping can play an important role in the logistics sector, particularly given the unique employability skills required by or sought in the labour market (Cleary et al., 2007). Gonçalves et al. (2016) have stated that curriculum mapping links effectively all the important elements of the curriculum, such as "learning

outcomes and learning opportunities, diverse learning outcomes, and assessment" to pedagogy (p. 1052), while allowing HEIs to determine how (or if) those specific skills, required by the logistics sector, are able to boost productivity and the economy. Curriculum mapping is a fundamental mechanism in ensuring that graduate employability is attainable in the higher education context (Cleary et al., 2007). Specific employability skills can be given greater prioritization in a curriculum to meet the workplace skills. Overall, properly performed curriculum mapping leads to greater effectiveness and efficiency in higher education.

#### 2.8.1.2.2 Competency-Based Curriculum (CBC)

CBC offers apparently the strongest promise in terms of bridging the skills gap regarding logistics graduates (Mammi & Ithnin, 2012) by ensuring that each graduate has the required competencies, including "the ability to perform a task up to a standard" (Kouwenhoven, 2009, p. 2). Logistics professionals must be equipped with the necessary knowledge and skills needed in the logistics workplace (Thai, 2012; McKinnon et al., 2017). It is not sufficient that graduates have received higher education certification. Instead, the greatest test of educational success rests on graduates' proven ability to perform according to the labour market (Mulder, 2012).

Another dimension of CBC is its use of the content, job, and task analytical outcomes as the starting point of curriculum development (Mulder, 2012). This foundational requirement effectively connects academic content with job requirements and links academic education to workplace standards. Content analysis constitutes the supply side of logistics education. CBC plays a crucial role in connecting the supply and demand sides of logistics in higher education. It combines information from both content analysis and job and task analyses to generate an education and training programme that conveys a set of competencies that bridges the skills gap in the logistics sector (Mammi & Ithnin, 2012; Mulder, 2012). In a highly competitive global environment, employers are seeking the best employees based on known potential, which must include professional and technical competence (Mammi & Ithnin, 2012).

#### 2.8.1.2.3 Learner-Centred Pedagogy (LCP)

LCP could play an essential role in the logistics sector because of its potential to bridge the current skills gap in logistics education. This advantage is based on its focus on applied and experiential learning, and its trust to learners by giving them more freedom of thought regarding how they can identify problems and develop solutions to become “transformative thinkers” (Herranen, et al. 2018, p.2). It is considered a social process that gives a chance to students while applying experiential learning to enhance their problem-solving skills by challenging their accepted beliefs of classroom and curriculum contents (Moate & Cox, 2015). Deep learning, however, has the freedom to be more flexible in terms of course content (Baeten, et al. 2013). Herranen, et al. (2018) and, Moate and Cox (2015) have stated that LCP encourages applied- and experiential-based learning to achieve deep learning. Even in poorly designed logistics curricula, it can help employees bridge their skills gap after graduating from higher education.

#### 2.8.1.2.4 Knowledge-Economy Model (KEM)

KEM introduced an important education objective that recognized its value in various industries and sectors. It has also been introduced as a form of accountability where graduates become valuable contributors to the competitiveness of the companies (Hadad, 2017). In effect, an educational system that uses KEM can turn a contemporary society into a learning one through its graduates who are formed based on a knowledge economy mindset.

Nedelea (2013) has stated that the knowledge economy's context leads to a new level of logistics development as logistics information is based on a revaluation of the knowledge base. In this regard, logistics plays an important role in its field, one where most of an organization’s activities enter into the procurement, storage, and dissemination of knowledge. This helps to highlight its importance in ensuring organizations’ competitive advantage (Nedelea, 2013). It is necessary to create new knowledge through synthesising and combining existing knowledge to build tactical knowledge and gain a competitive advantage in new technology by improving existing components and products (Lam, 2002), thus KEM plays a vital role by acting as a

development model in higher education, thereby helping to bridge the logistics skills gap, not just in Oman, but also worldwide.

#### 2.8.1.2.5 Developing a Curriculum (DACUM)

The DACUM process with its capacity to capture the necessary tasks, knowledge, skills, and attributes needed in a specific profession, can play a crucial role in bridging skills gaps and mismatches between “industry needs… and students’ academic skills” (Nickbeen, et al. 2017, p. 1). In effect, this tool enables the quick but thorough analysis of a given job and is capable of linking academia with industry (Halbrooks, 2003; Nickbeen et al., 2017). However, despite its focus on the fresh development of a given curriculum, it has been used in the revision of curricula (Halbrooks, 2003), including curricular content. Vocational educators use this process in “relevant, up-to-date, and localized curriculum base for instructional programs” (Halbrooks, 2003, p. 569).

The ultimate objective of the DACUM process is to analyse job details and requirements so that current employees may be developed and trained into expert workers (Geleto, 2017; Irshaid, et al. 2015). Geleto (2017) has defined the expert worker as one who has superior work-related knowledge, skills, and attitudes and who can train other workers. Logistics professionals must have control of a wide range of technical skills, including business and management (Ngamvichaikit, 2017).

#### 2.8.1.2.6 Functional Analysis

The assessment of work-related behaviour as part of the analysis technique is one of the best advantages of Functional Analysis (FA), which adds value in bridging the skills gap in the logistics sector and other industries and sectors in Oman and around the world. FA can play a deeper role in describing individual tasks in all job positions in the logistics sector (Irshaid et al., 2015). It plays the role of task analysis enricher in terms of occupational outcomes instead of specific task details. Consequently, it can act as the link between logistics employment requirements and

in-house training needs, thereby addressing logistics graduates' competence deficiencies.

The educational system needs to analyse the systematic process, "purposes, investigation of organization's status, and discrimination of gap between current and ideal status" (Mozdabadi 2017, p.130). FA technique provides unique richness to job analysis and each skill analysed, particularly in terms of task outcomes. As Irshaid et al. (2015) have noted, FA can dig deeper into each fragment of each task so that the ultimate goal of the task is identified and revealed. CDs in HEIs can utilize FA's advantages to analyse occupational outcomes and to assess the skills deficiencies of graduates, thereby giving a chance to the HEIs to add quality to the curriculum to overcome these deficiencies as a means of obtaining competent graduates.

#### 2.8.1.2.7 Work Process Analysis (WPA)

WPA identifies domain-specific skills that are fundamental to the core work processes of a specific occupation or job position (Schulte & Spöttl, 2015). In effect, when WPA is incorporated into curriculum development for the logistics sector, observing situative work practices becomes essential in order to evaluate successful professional work (Spöttl & Loose, 2018). CDs can design a curriculum by visiting the LCs, observing situative work practices, and then preparing the required curriculum units according to the logistics sectors' needs.

The primary goal of WPA is the acquisition of a set of broad competences that empower the worker to deal with uncertainties and changes in the workplace (Bahl & Dietzen, 2019). WPA addresses several shortcomings in the traditional systematics of curriculum design. These shortcomings include content deviation or the separation of basic academic training from the actual work process, resulting in motivational problems among trainees and curriculum overload with contents that are of no practical value in the work environment (Spöttl & Loose, 2018). WPA can correct this inherent academic deviation from actual work processes, thereby bridging the skills gap that results from academic training.

In the logistics sector, WPA plays an important role in identifying broad competencies that are relevant to specific occupational units and can help to create a

more holistic occupational profile that corrects the skills gap significantly, if not completely.

### 2.9.2 The Processes of Designing the Curriculum

Any curriculum may be designed using different, sometimes unique, scientific stepwise processes. Each design model often results in relatively different curriculum outcomes either in content focus (e.g. subject-, learner-, or problem-centred respectively) or student outcomes, such as student dropout rate (Vergel, et al. 2018; Lau, 2001).

Thus, the choice of a specific process must be performed with wisdom and informed discretion. Many CDs, for instance, follow the Analyze, Design, Develop, Implement, and Evaluate (ADDIE) model in doing so (Cheung, 2016; Kurt, 2017). Nevertheless, others have developed other processes and stages, such as Schweitzer (2019), who suggested identify, create, consider, establish, and remember in helping with curriculum design. The processes are mostly repetitive in a spiral or cyclical way and cover four main steps, namely Analysis, Design, Evaluation and Revision activities (ADER), until balancing ideals and realization learning (van den Akker, 2007).

The process of designing a curriculum should meet the National Occupation Standards (NOS) of every country. NOS plays an important role in designing the logistics sector curriculum by effectively addressing the current skills gap (McKinnon et al., 2017) and applying more advantages to the logistics firms (Goldrick-Kelly, & Nugent, 2019).

Methodologies that are currently NOS compliant include the Canada-developed DACUM Process (Ho, 2013), while in the UK most of the NOS “consultation activities follow Functional Analysis” (p. 86) and WPA in Bremen University in Germany (Spöttl & Loose, 2019). Some countries use hybrid methodologies, such as the Functional Analysis-DACUM methodology in Canada (Rogers, & Lachapelle, 2012).

Curriculum design follows frameworks based on competency, pedagogy, performance, and proficiency, which are becoming more popular in the logistics sector. Competency frameworks include the Competency-Based Approach (CBA), often

referred to as Competency-Based Education (CBE) (Bahl & Dietzen, 2019; Heaslip, Tatham, & Vaillancourt, 2018; Heinrich, 2016), Competency-Based Curriculum (CBC) (Kouwenhoven, 2009), and Competency-Based Learning (CBL) (Hertlein, et al. 2013; Voorhees, 2001). CBE, for instance, has been approached recently through the perspective of work-based learning as a strategy aimed at resolving the prevailing skills gap in the logistics sector (Bahl & Dietzen, 2019), especially from the perspective of logistics employers (Heinrich, 2016). CBL is essentially a learning strategy that can be used for CBE application in logistics higher education (Voorhees, 2001).

Meanwhile, pedagogy frameworks, which are viewed lately through the perspective of curricular integration, include Pedagogy of Integration (Daud, 2012). Performance-associated frameworks include a Performance-Based Approach (Brockmann, et al. 2008) and Outcome Approach (Ntongieh, 2016; Ortega, 2018). Lastly, proficiency-associated frameworks, which are relatively new, include the Proficiency-Based Approach, which is the foundation of Proficiency-Based Education (Hammond, 2019), and the Mastery-Based Approach (Springpoint, 2018).

Overall, curriculum essentially is a “plan for learning” (Afidah, 2019, p.12), however, learning is the main issue in the development of academic relationships (Lindén, et al. 2013). It is necessary that such a logistics curriculum is capable of delivering graduates that contribute meaningfully and competently to the logistics workplace. If these conditions are met, HEI graduates will effectively fulfill the logistics sector’s expectations and needs.

### 2.9.3 Attributes of Good Curriculum Design

A well-designed and precise curriculum prepares teachers to teach well. The National Council on Science and Technology Education (NCSTE, 2001) identified seven good curriculum design attributes.

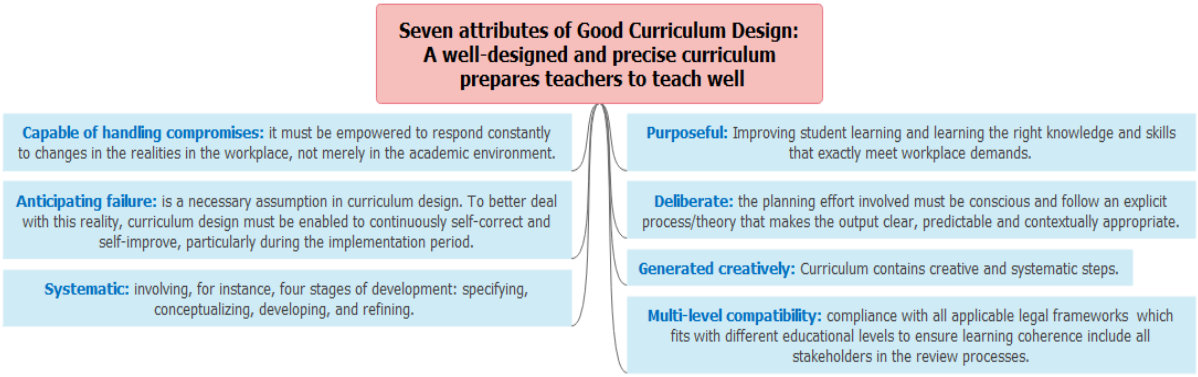



Figure 1: Attributes of Good Curriculum Design

First, it must be purposeful; in the context of graduate employability, a curriculum design must have the greater purpose of improving learning, knowledge and skills that exactly meet workplace demands.

Second, the curriculum design must also be deliberate, well planned and follow an explicit process/theory that makes the output clear and predictable (NCSTE, 2001) as well as considered and contextually appropriate (Stabback, 2016).

Third, the curriculum design must be generated creatively. Although the work process is deliberate, it cannot be pursued in an inflexible series of steps (NCSTE, 2001). Thus, it is both creative and systematic.

Fourth, the curriculum design must have multi-level compatibility (NCSTE, 2001) and compliance with all applicable legal frameworks (Rogers & Lachapelle, 2012). The curriculum content must meaningfully mesh with different educational levels to ensure learning coherence for students at different levels and include all stakeholders in the review processes in developing higher-level skills (Rogers & Lachapelle, 2012).

Fifth, curriculum design is systematic, involving, for instance, four stages of development: specifying, conceptualizing, developing, and refining (NCSTE, 2001). It must be advised by good research and practice from inside and outside the country performing it (IBE, 2016) while also utilizing the inputs of curriculum design experts. Consequently, a good curriculum design must be so established that it is sustainable in the long term (IBE, 2016; Lim & Wang, 2016a; Tan, 2016). A good curriculum must keep up with changes in the workplace.

Sixth, even a good curriculum design has the potential to fail operationally (NCSTE, 2001). It can fail because of the failure of implementers to execute according to its specifications. Thus, anticipating failure is a necessity to continuously self-correct and self-improve, particularly during the implementation period.

Seventh, and lastly, the curriculum design must be capable of handling compromises (NCSTE, 2001). It must be empowered to respond constantly to changes in the realities in the workplace (Stabback, 2016). Stabback, (2016) has stated that a good curriculum must be able to "keep pace with a world in which knowledge is rapidly expanding, communication technologies are broadening access to information, and, as a result, the skills needed by students are constantly changing or being invented" (p. 16). This observation from the IBE constitutes the core rationale of graduate employability in the context of the primary higher education goal.

### 2.9.4 CDs as Main Experts in Curriculum Design for logistics sector

It is the nature of a curriculum to be dynamic, not stagnant (Nhlapo & Maharajh, 2017). The dynamic factors include the rapid development of economic sectors, national education policies, mission, and vision, which must be interpreted into general objectives that can be transformed into pedagogical goals and learning standards (Nhlapo & Maharajh, 2017). Not all curriculum designers are experts in the trade (Ertmer, et al. 2008). The specialized expertise of curriculum designers must reflect the capability to address design issues.

Alsubaie (2016) mentioned that the teacher is the most important person in curriculum design. McKenney, et al. (2015) have stated that some studies support teachers to be curriculum designers. Teaching gives them more skills, including responsibility for constructing and designing educational resources (Tronsmo, & Nerland, 2018, p.34).

CDs' role is first to get away from the *ivory tower* concept by designing the curriculum to be conscious and purposeful (Farkas & Duffett, 2010) according to the Market Needs Analysis (Albilehi, et al. 2013). They have to avoid of "pure academic approach" as it is not adequate for post-graduate professional programs (Pallai, 2016, p.30), which are considered as insufficient correlated with the industrial sector

(Salihovid & Zagora, 2018), inadequate in addressing educational performance as it ignores the holistic approach (Lindley, 2015), and considered too rigid and more focused on the structure of knowledge (Mynatt, 2018).

CDs have to follow a specific curriculum design theory and cooperate with LCs. The HEI-LC cooperation will help to design a logistics curriculum with best-fit curricular units in order to meet the sector's skills needs (Manivannan & Suseendran, 2017; Tessema & Abejehu, 2017), and the best way to do so is to implement visitation exchanges to strengthen relationships and improve cooperation and teamwork (Steingraber & Bampton, 2017) and activation of the longlife learning (LLL). Regarding the visits to large companies, it is recommended to stress 'high-grade' companies because small companies have low capitalization and can be expected to have low-income levels and quality (Maupa, et al. 2019), and normally employ multitasking employees in order to cut down on salary costs, which affects their quality negatively (Dzubak, 2008; Otto, et al. 2012). To use a very simple definition, CDs have to think of a curriculum that provides certain skills and knowledge to students by leaving school (Young, 2014) and joining the logistics companies as competent graduates.

### 2.9.5 Role of the curriculum in bridging the skill gaps

The workforce's skills gap can be bridged by a curriculum designed based on related knowledge, skills, and abilities (Spang, 2014; World Economic Forum, 2014). In order to follow this trend, the logistics sector in Oman has to prepare the curriculum according to LS requirements. CBC development must not lose sight of the enormous gap between a traditional logistics curriculum and the more updated intelligent logistics curriculum (Liu, 2018). This huge gap and the need to develop the curriculum from scratch increases the distance between academic logistics and logistics need.

The effective curriculum must reflect shifts in education and the labour market (European Center for the Development of Vocational Training [ECDVT], 2012). Thus, it must incorporate developments in intelligent logistics, particularly in intelligent transportation, intelligent distribution, and intelligent warehousing "(e.g. analytics that visualize supply and demand)" (Liu, 2018, p. 933). Consequently, the Omani MoHE must first define current needs in the logistics sector in line with UNESCO-IBE's (2013)

two-step process: context analysis of supply and demand and context-driven curriculum design.

Omani HEIs must be strongly committed to developing an updated logistics curriculum as per the NOS and to provide a high-quality logistics education, which collectively bridges the graduate skills gap and provides graduates with relevant and demonstrable skills (McClarty & Gaertner, 2015). Nevertheless, the curriculum constitutes a tool that can prepare critical thinkers, problem solvers capable of increasing the chances of getting jobs in the highly competitive logistics sector while enhancing institutional quality perception (Radwan, 2014; Eckardt, 2012; Fisher & Scott, 2011).

### 2.9.6 The embodiment of Curriculum with Pertinent Knowledge, Skills, and Application

Curriculum design and development embodies the core element of quality higher education because it guides and codifies the knowledge, skills, and application imparted to students in HEIs to bridge the gap between higher education and logistics workplace requirements (Blair, 2012; Nickbeen et al., 2017).

#### 2.9.6.1 Strategies of the Embodiment of Curriculum

A needs-based curriculum must embody, as completely as possible, an entire plethora of learning strategies available in current education literature, such as authentic learning, work-integrated learning, industry-based learning, and the best knowhows of such concepts as graduate employability and internship, as they described below:

***Authentic Learning:*** Authentic learning is an approach that brings real elements of work experience into higher education as an essential teaching tool (Abelha, et al. 2020). This authenticity is also expected in the workplace, whether in the private, public, or even in the voluntary sector (Lowden, et al. 2011). It brings work

experience to formal education, wherein it can enhance graduate employability competence because of the involvement of real workplace context (Abelha et al., 2020).

***Graduate Employability:*** Employers, in general, viewed any definition of 'employability' as unimportant in addressing the transferability of graduate skills into workplace skills (Abelha et al., 2020; Lowden et al., 2011; Nita, et al. 2018). This is understandable because from the level of recruitment (qualified for hiring) to the level of practical knowledge and skills (transferability) the term *graduate employability* means differently. Some researchers (Scott, et al. 2019) even ventured to use cross concepts, such as "employability skills." Thus, graduate employability means the sense of hirability (Abelha et al., 2020) and transferability of competency (Scott et al., 2019; Lowden et al., 2011), depending on the context of its specific use.

***Work Integrated Learning:*** Ajjawi, et al. (2020, p. 304) defined *work-integrated learning* (WIL) as a broad term to cover learning strategies that "integrate theory with the practice of work within a purposefully designed curriculum." Although Ajjawi et al. (2020) focused on employment placements, WIL might also incorporate other development strategies (such as internships) as vehicles for employing authentic learning elements.

***Industry-based Learning:*** Like WIL, *industry-based learning* (IBL) is a curriculum integrated learning strategy that integrates theory and practice in authentic workplaces. The strategy is to offer the students an opportunity to implement real practical works to prepare work-ready graduates in the industry (Rajibussalim *et al*, 2016). Although claimed to be of longer history in higher education practice, it utilizes similar developmental strategies, as WIL, in addition to specifically named other

strategies, such as practicum, apprenticeship, and volunteering (Alberta, 2019). IBL one of the essential programs in preparing competent graduates who are ready for employment in the competitive global market (Rajibussalim, et al, 2016)

***Internships, Placements, and Job Simulations:*** Internship is one of several modes of work-based learning (Lowden et al., 2011). The National Association of Colleges and Employers (2018), defined internship as a form of experiential learning that links the knowledge acquired in theory with practical applications in a professional environment. Lowden et al. (2011) reported it as an effective approach to promote graduate employability. In most academic fields, though, internships are commonly related with unpaid work in the affiliated company (National Association of Colleges and Employers, 2018).

Similar to internships, employment placements are work-based learning models, serving as a practical approach to promote graduate employability (Lowden et al., 2011). Moreover, like internships, placements are workplace-associated methods Incorporated within learning models, such as work-integrated learning (Ajjawi et al., 2019) and industry-based learning. The Job simulation is a term developed by Pôle employ agency as a governmental entity in France as a recruitment agency to help unemployed people to find jobs and provides them with financial aid (Pôle, 2021). The method works by assessing unemployed people's actual abilities based on their existing skills rather than a professional experience to perform a task and simulate them with real working conditions they could face. (Andersen, et al. 2015).

Although there are slight differences in definitions between the Internships, Placements, and Job Simulations, however, they are all similar in integrating work environment characteristics within the learning setting to form the integration between

the employment market and university curriculum (Galloway, et al. 2014; Renganathan, Karim, and Li, 2012).

***Digital Competencies:*** In a highly digital workplace, employees are expected to acquire the ability to use ICT in a specific context according to the job specific requirements (Rizza, 2014; Shirinkina & Strih, 2019). High digital competency levels had transformed into a competitive advantage to jobseekers at different levels in any company, especially in the logistics sector.

Digital competencies are essential in every sector as a trend to employ educated employees with digital knowledge. Most companies choose the direction of increasing the level of digitization for all employees. High level of employees with digital competencies at different levels of the company will provide it with a competitive advantage (Elena & Nikolay, 2019).

### 2.9.6.2 The roles of the Strategies of the Curriculum Embodiment in the Logistics Sector (LS)

The logistics sector suffers from lack of competent graduates, as well as the academic curriculum, which is assumed to play a pivotal role in providing the necessary information during the study period. The strategies of the curriculum embodiment as described in 2.9.6.1 may help the LS to bridge the gaps.

Internships, Placements, and Job Simulations are strategies with the integration between the employment market and university curriculum, in the same direction digital competencies provide high level of employees in ICT. Authentic learning plays a crucial part from the side of logistics higher education. It links lifelong learning to competence development within the logistics sector in line with digital competencies and the

increasing emphasis of ICTs and analytics in managing the entire logistics network within a country, like Oman, as connected with the global logistics networks that facilitate import and export activities. The workplace element of authentic learning within the logistics higher education, creates a perpetual circle of knowledge building and workplace learning (Abelha et al., 2020). Authentic learning can bring to higher education any valuable workplace skills to help students gain authentic workplace experience.

Through relatively different approaches, WIL and IBL can deliver authentic learning through actual workplace experience instead of completing the work solely within the academe's confines. Both models use almost similar curricular programs, such as internship, placement, and simulations. Currently, MMs provide elements of OJT and in-house training support to Omani logistics companies. CDs within the HEIs can use the strategies by bringing the real elements of work experience into higher education and add them to the curriculum units. WIL and IBL are a curriculum integrated learning strategy that integrates theory and practice in authentic workplaces. Both strategies offer the students an opportunity to implement real practical works to increase the graduate employability chances in the competitive global market.

### 2.9.8 Involvement of Logistics Companies in Curriculum Design

A widely perceived shortage of logistics skills appears to exist across the four levels of employment in the sector: operative (blue-collar) logistics staff; administrative logistics staff; logistics supervisors; and logistics managers (McKinnon et al., 2017). Holcomb, et al. (2015) and McKinnon et al. (2017) have attributed this shortage to the lack of meaningful coordination between academia – particularly the HEIs – and the

logistics sector – especially the logistics companies operating across the entire spread of the supply chain.

Manivannan and Suseendran (2017) and the ECDVT (2012) have insisted that logistics curriculum design and development must be consistent with the requirements of the logistics sector. The involvement and contribution of the logistics companies in the preparation of the source information for the logistics curriculum must be viewed as non-negotiable (Ernst & Young Global, 2020). The HEIs often embrace this as previously it has been sometimes misinterpreted as industrial intrusion into the academic space.

Thus, both institutions and logistics sectors' collaborative engagement brings positive outcomes in the Omani workforce, academia, and the logistics sector alike. Moreover, all these stakeholders are directly involved in the “development, monitoring, and certification of logistics skills” (McKinnon et al., 2017, p. 38).

The logistics companies must participate in logistics curriculum design and implementation through meaningful engagement with HEIs, contributing to effective collaboration (Ma, 2011). The companies must engage colleges and universities in the academic preparation of their white-collar employees, which are the logistics administration staff, the logistics supervisors, and the logistics managers.

The Omani government, through its various ministries with HE oversight, could engage the logistics companies through a curriculum development committee represented by all direct stakeholders, including the Oman Global Logistics Group ASYAD (2019b) in the upgraded curricula in general and also in a new but fully updated logistics curriculum, in particular, to meet the business opportunities in Oman. During logistics curriculum information gathering, this committee could visit all logistics companies in Oman to conduct the competency mapping of all companies' jobs.

An important purpose of these visits includes the fair grading of all logistics companies in Oman, including their employees at all employment levels, particularly those required to hold logistics KSA as part of their hiring requirements to increase collaboration between HEIs and LCs and building networks (Hargreaves, 2001).

### 2.9.9 Research on Curriculum Design in GCC’s HEIs

Curriculum development within the GCC has been shaping the job market. Building a competitive industry requires education skills that will ensure a better review of the competitive ability of the logistics industry. Economic growth is defined by the ability to meet the core demands of industry (Alpen Capital, 2018). Creating needs-based curriculum projects reiterate how HEIs within the GCC can be useful in building the education process (Abouammoh, 2009).

The GCC is evident in building a system that evaluates some of the common issues within their schooling system. Abouammoh (2009) notes that the level of expansion was important in the planning session, as there has been insufficient planning to build on its revenues. The process of building a stringent system is only viable if the change presented helps address low performance while developing a better curriculum for higher education (Abouammoh, 2009). The education process must be useful in dealing students' effectiveness in terms of accessing the job market.

Youth participation is very important to build any nation, and helping them to become active global citizens is essential (Lawale, 2020). Oxford Business Group (2018) has suggested that, in GCC countries, "the percentage of the population that is under the age of 25 ranges from 25% in Qatar to 50% in Oman. In the UAE it stands at 34%, while it is 35% in Bahrain, 40% in Kuwait and 46% in Saudi Arabia". This indicates that the average percentage of the population under 25 is 38% in the GCC, making up more than one-third of the population. The Statistical Centre for the Cooperation Council for the Arab Countries of the Gulf (2019, p. 14) has indicated that there are 11,947,293 students in the GCC, making up 21.3% of its entire population. The growth of registered tertiary students from 2014 to 2016 is 7.3% (p. 18), which indicates that GCC countries have to provide HE specializations that fit the economy's requirements like logistics.

GCC countries have invested in raising enrolment rates in HE as a share of national income between 2004-2013, on average by 3.9 percent compared to the average global rate of 4.6 percent (Callen, et al. 2014).

In 2012, Ernst & Young (2012) implemented a study in the GCC engaging employers in the private sector and students across the region. Only 16% of employers said that curricula are in line with the private sector's needs, in other words the findings showed that 84% of employers within the GCC stated that the existing curriculum does

not align with their requirements. The study concluded that “aligning curricula with employers’ needs” is one of four main areas that HEIs have to devote their attention to. Other advice to HEIs includes designing a balanced curriculum covering the required skills for the targeted sector (E&Y, 2012). Another report by Alpen Capital (2018) based in the GCC states remarks that the existing curriculum in the region has to be designed to fit the industry’s current and future requirements.

GCC countries have to be keen to enhance graduate employability through a better review of current challenges. Logistics is one of the sectors that face challenges in curriculum design in both GCC countries and around the world (David, et al. 2017). Meanwhile, Ba-Awain and Daud (2018) have suggested a conceptual framework that links the relationship between logistics infrastructure, logistics educational needs, and logistics hubs. One of the framework's main targets is to engage the employers in identifying certain competencies during the study period. This will assist in the design of a dynamic curriculum that matches the needs of the targeted sectors (Nair, 2017). If education proves more viable when linking skills and the curriculum to match job demands, this will improve the learning outcomes (Khan, 2016).

## 2.10 Conclusion

Chapter 2 has outlined the literature review in five main sections, namely, the logistics sector in Oman, its higher education system, academic theories on curriculum design, gaps and skill shortages in the logistics sector, and Human and Social Capital Theories as applied in logistics curriculum development.

# Chapter 3: Methodologies, Research Design, and Ethical Considerations

## 3.1 Introduction

This chapter covers the methodology that answers the research questions and the objectives of the study. It covers methodological features such as the research design, population, sample design, the instruments used in the data collection, and inclusion and exclusion criteria. It also examines the research validity, reliability, types of samples, research population, sampling and sample size, data tools, pilot study, and different data collection phases in detail. Ethical considerations and other miscellaneous aspects are also discussed.

I used a questionnaire to collect the data from the LCs and structured interviews were conducted in the HEIs. The study used the SPSS package to analyse the quantitative data and NVivo software to analyse the qualitative information. Data derived from the targeted logistics companies will be shown and the ten HEIs that are implementing logistics programmes will be displayed. The pilot testing based on a small sample in both the HEIs and LCs (Section 3.9, 'Validity and Reliability'), followed by the actual implementation of the interviews and questionnaires in the three samples.

## 3.2 The Rationale for the Research Design

The purpose of the study is to address the skills gap in Oman by defining the role of academic curricula in providing skills for graduates of the logistics sector through understanding curriculum theories (Lindén, et al. 2017), as the logistics sector has recently been identified by the Omani government as a new separate sector extracted from the transportation and telecommunication sector. Participation was invited from CDs, MMs and employees in HEIs and logistics companies, to analyse the gap in terms of curriculum design based on the findings and analysis of the interviews and questionnaires.

The research utilized a mixed-methods design, which consists of a quantitative phase and a qualitative phase underpinned by the dual paradigms of the Greene-Caracelli tradition (Creswell & Plano-Clark, 2011). It does this by using the advantage

of convergent design so the data collected can draw on both types simultaneously, thereby it can be “analyzed separately and independently, using the techniques traditionally associated with each data type” (p. 78). The study utilizes an interactive level of analysis as there is direct interaction between the quantitative and qualitative questions in order to analyse the findings as the basis for the preparation of the final discussions and recommendations. By definition, the research design aims to integrate several methods and procedures from data collection to data analysis in order to answer the research questions (De Vaus, 2001). The research design makes these components coherent and logical within the study, ensuring that the answers to the research questions are clear and in line with relevant literature and previous research work (Trochim, 2006). The study used a purposive sampling method, namely the Patton model (Suri, 2011), when selecting the participants (Battaglia, 2011).

There were two sets of types in this study consistent with the study design (Figure-2). The first type consisted of 25 logistics companies at two different levels. The first level was the MMs while the second level included employees who have HE certificates and some years of experience associated with logistics.

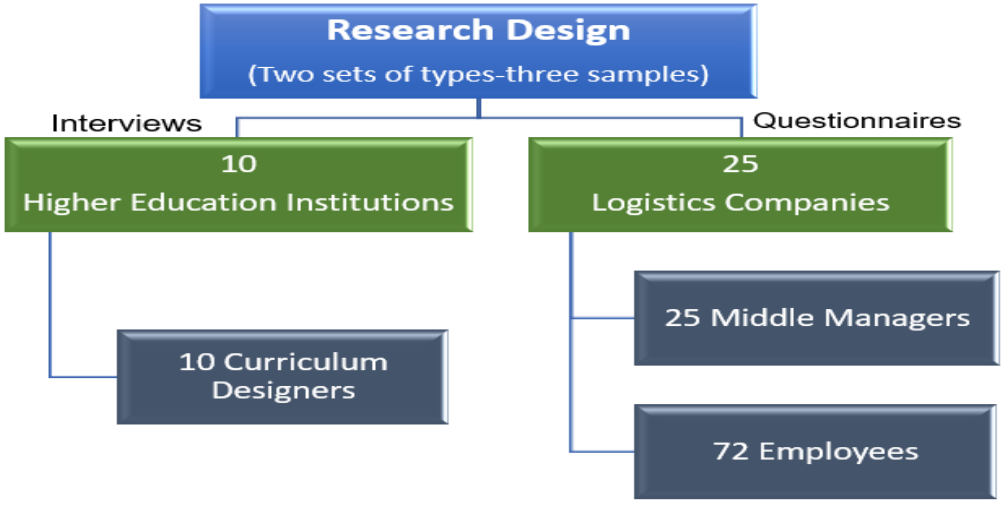



Figure 2: The types and samples of the study

The questionnaires for the two groups of participants (MMs and employees) were developed in order to reveal the current state of logistics programmes in Oman, the curriculum design procedures followed, cooperation with ASYAD, the MoHE and other HEIs, the application of specific curriculum theories, and tools utilized during the company visits. As Ozment and Keller (2011) and Buck and Sowbel (2016) have suggested, the variety and relevance of education in logistics have always been

constrained by the limited courses available to the students. The main goal of the current research is to find any gaps in the HE curriculum that belong to the logistics sector and explore the experiences of the employees who have higher education certificates in terms of their education and ability to implement this in their work. Both questionnaires and interviews are effective methods of collecting information (Zahrabi, 2013).

Questionnaires in electronic or physical formats were provided to the MMs (Appendix B) and employees (Appendix C). Each questionnaire includes biographical information and logistics information. Both questionnaires allow me to retrieve the recommendations from MMs and employees concerning the educational curriculum, which could positively improve the curriculum according to the logistics sector's needs.

The second type consisted of CDs from academia, specifically from the HEIs (Appendix D). This information included educational background, skill level, years of work experience in HEIs, the tools used to get information about the required skills, and the cooperation between HEIs and logistics companies. The skill level was measured using the labour markets' performance assessment of the participants and a standardized skill measurement tool such as European Skills/Competences, Qualifications and Occupations (ESCO) (European Union, 2013). The results were categorized under Education Level (DL) and Experience Level (XL).

The study used a semi-structured questionnaire for the first set of samples (MMs and employees), as there are some partially structured, contingency and open-ended questions that are rich in detail (Mathers, et al. 2009 p. 36). Every questionnaire is divided into two parts. Some questions use a Likert scale and some offer choices to generate percentages (Appendices B and C).

The second set of the sample is based on ten CDs and semi-structured interviews are used. The interview question form consists of 36 questions (Appendix D). Some questions are structured with direct answers (eg, 'Yse' or 'No'), others consist of open-ended questions and some contingency questions that cover deeper information when the CDs says 'Yes' or 'No'. These types of questions are predetermined to "ensure flexibility in the way issues are addressed by the informant" (Longhurst, 2003, p. 105).

The questionnaires normally can provide evidence of patterns amongst large populations (Kendall, 2008). The study used the questionnaire to reach the LC (MMs and employees) to retrieve the required information. In the same trend, the study focuses on the interviews with the CDs as they are the main drivers of curriculum design, while interviews normally help to gather more in-depth insights on participant attitudes, thoughts, and actions (Kendall, 2008).

The data was gathered by a face-to-face open-ended, structured interview for CDs and by online-administered questionnaire for MMs and employees in the logistics sector. These data were analysed and interpreted using a thematic approach it helps in summarising key features of a large body of data (Braun & Clarke, 2006, p. 35). In addition, some similar data is required to be analysed and discussed from the three samples and from different viewpoints, allowing me to describe the “themes creatively in response to the research question” (Vaismoradi, & Snelgrove, 2019, p. 5).

According to Banerjee and Chaudhury (2010), generalizability is always an issue in research, and in order to ensure it, a research project must have a reasonable number of participants and an increased level of randomization. However, as Vasileiou, et al. (2018) have admitted, it is difficult to determine the sample size in qualitative research due to the availability of resources and the lack of participants in some professional areas. Sileyew (2019) has argued that the research population has to possess the necessary credibility or knowledge about a given phenomenon or an event that I am aiming to explore.

I will discuss data collection and analysis in the methods section and research population, sampling, and sample size in a section on participants in the coming sections. Every part will be described and divided into two sections, namely the HEIs and LCs in Oman.

### 3.2.1 Research Population

In relation to the research population, I describe the general populations for LCs and HEIs as population is very important in order to set the general view and to describe the targeted sample size.

#### 3.2.1.1 Logistics Companies in Oman

The current database system of the Ministry of Manpower (MoMP) shows that there are 203,005 companies registered in all sectors in Oman (Ministry of Manpower, Oman, 2018, p. 26). MoMP's database system registered companies under specific sectors (e.g. engineering, transportation, and communication). Unfortunately, until 2015 the logistics sector was not specified in the system. In 2015, ASYAD took the lead and discussed establishing the logistics sector in its system with the MoMP. The sector itself, which was included in other sectors (e.g. engineering, transportation and communication), was not isolated as a separate sector in the system until 2015 when MoMP established it as a distinct logistics sector in its system.

Every sector has some economic activities; ASYAD has identified 29 activities under all other sectors and prepared them as logistics activities. By focusing on 29 unique logistics activities, ASYAD was able to identify 13,836 companies in Oman that meet the activities criteria. These companies represent a workforce of 80,369 employees. The number of companies operating in the logistics sector is 13,836, which involves 29 activities (Appendix G). In Oman, the MoMP has divided the database of the companies into activities. Every activity has a specific code and many jobs are registered under every activity; for example, 205 employees are registered under the activity of "Carriage of goods by road" (Code 492399). Some occupations are registered under every activity: these occupations are divided into skills from 'Semi-skilled' to the 'Leaders & Supervisors' level under the 29 activities (Appendix G). HE graduates are recruited under 'Technicians', 'Specialists', and 'Leaders and Supervisors' levels.

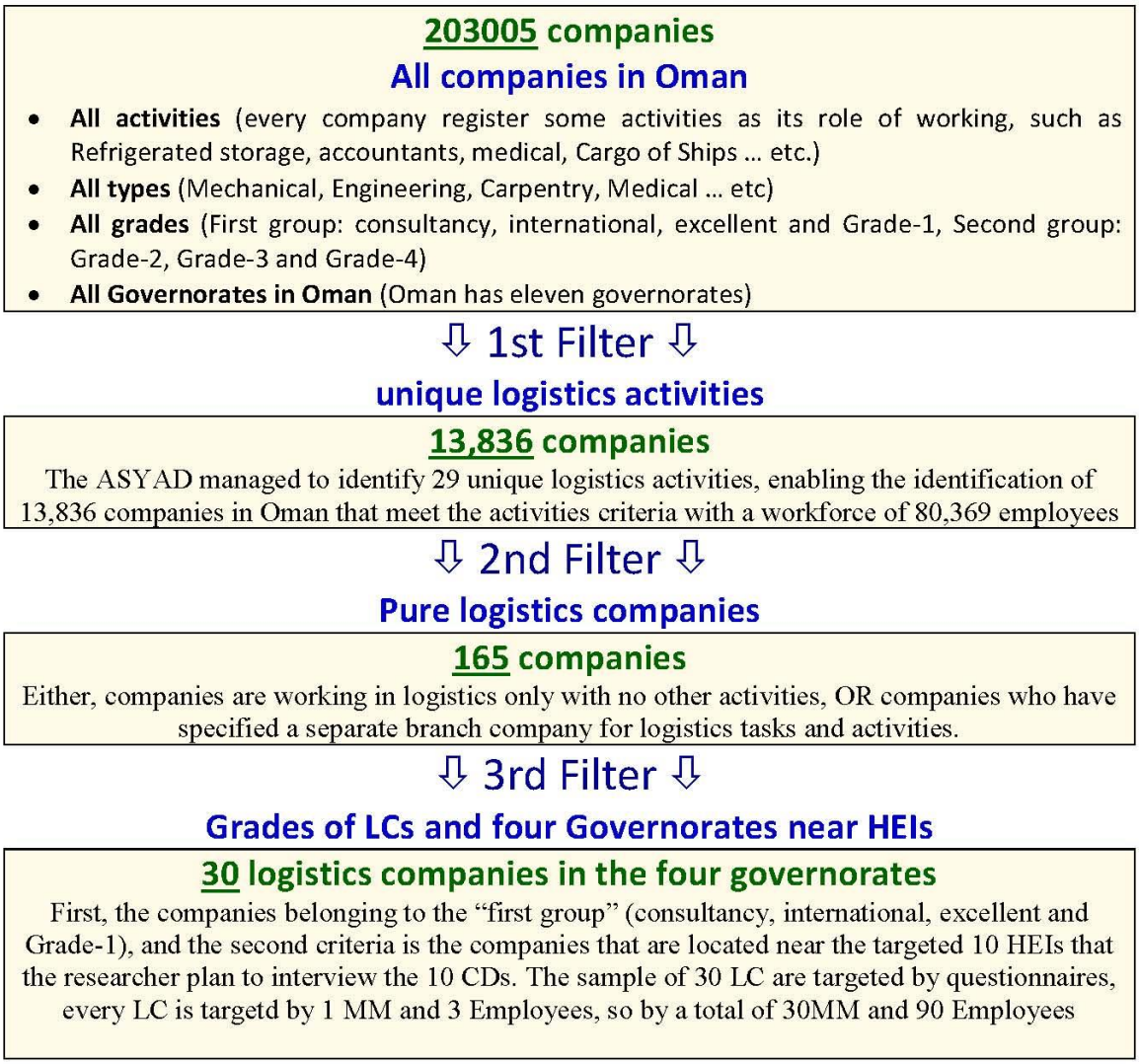



Figure 3. The filtration of the logistics companies to the targeted sample

ASYAD established new criteria for targeting logistics companies; it has gone through the 13,836 companies and tried to identify pure logistics companies, meaning those companies that are working in logistics only with no other activities, or companies who have specified a separate branch company for logistics tasks and activities. The results have shown that there are 165 pure logistics companies in Oman; these are considered in the study to constitute a population.

#### 3.2.1.2 CDs in the HEIs

The MoHE website estimates 45,000 postgraduates have been produced in its 104 HEIs and 4,000 affiliate universities abroad (Ministry of Higher Education, 2019b). The general population of the total number of HEIs in Oman is 104. However, not all are implementing logistics programmes. The current research is interested only in HEIs that provide educational services in logistics. In addition, it was essential to recruit CDs who had vast experience in designing curricula for HEIs that propose logistics education. As Garg (2016) has suggested, before conducting a study, researchers have to determine if all of a given target population has to be included or whether the participants have to possess certain characteristics.

Since it was revealed that Oman has only ten HEIs that implement logistics programmes, targeting all CDs in those HEIs was the main target for me. As Ponto (2015) has claimed, it is critical to ensure that the population of interest's responses reflect the study’s goals and answer the research questions.

### 3.2.2 Research Sampling

This section covers the main general sampling size with the inclusion criteria within the logistics companies and the HEIs. Gentles, et al. (2015) have emphasised that purposeful sampling in qualitative research has to be purposeful, as the structure of this type of design differs dramatically from the quantitative approach and its specificity.

#### 3.2.2.1 MMs and Employees in the Logistics Companies

The selection process for sampling LCs started with the preparation of an Authorization Letter (AL) at the Ministry of Manpower on 7 October 2018, which the University of Liverpool Virtual Programme Research Ethics Committee (VPREC) reviewed and approved. Several copies of the Consent Form, the PIS, the AL, and the questionnaire were generated. During a pre-appointed company meeting with all LC managers, a set of these copies were provided. During the meetings with managers at their companies, a quick run through of the necessary information about the project was presented, after which surveygizmo.com links were provided should they decide to participate.

The 165 logistics companies are the total number of logistics companies in Oman in the eleven governorates. I added two other criteria to filter the number and choose the best sample. First, the companies belonging to the “first group”, which will be described as ‘high-grade’ in the study (consultancy, international, excellent and Grade 1), were classified according to their size of capital and the second criteria is that the companies are located near the targeted 10 HEIs where I planned to interview the 10 CDs.

Administratively Oman is divided into eleven governorates while the 10 HEIs, which are implementing logistics programmes, are located in four governorates, namely Muscat, Dhofar, Al Batinah South, and Al Buraimi. I used the database to identify the LCs meeting the criteria “first group” grades, which were: consultancy, international, excellent, and Grade 1. In addition, another criterion was ‘pure logistics companies’ as shown in Figure 3, the results generated 30 logistics companies in the four governorates. I decided to target the 30 LCs and visit the companies to meet the

management to explain the process and handle the required forms and surveygizmo.com link.

#### 3.3.2.2 CDs in the HEIs

Out of 104 HEIs, the academic programmes in private HEIs for 2018-2019 showed that there are only 10 HEIs implementing logistics programmes (Ministry of Higher Education, 2019c), so the sample targeted 10 CDs from 10 HEIs implement logistics programmes.

After contacting the MoHE as a regulator to all HEIs in Oman, they agreed to provide a second AL (Appendix J), along with the approved AL from the MoMP as a registration government entity to all sectors in Oman (Appendix K). Fortunately, all targeted HEIs agreed and appointed the correct CD to undertake the interview. The PIS, Consent Form (CF), and interview question forms were distributed to all CDs in hard copy. The CDs also received brief information about the project, the objectives, and the research statement. The time and place for participation were planned according to the appropriate time for the CDs to be conducted face-to-face (FTF). The entire interview process did not last more than an hour.

### 3.2.3 Research Sample Size

Employing a sufficient number of samples along with providing highly effective questions in the questionnaire will result in more reliable and valid results and help to specify good recommendations (Kotrlik & Higgins, 2001). Three sample size in the study (MMs and employees in the logistics companies and CDs in the HEIs) will be interpreted and show the logic of choosing them.

#### 3.3.3.1 MMs and Employees in the Logistics Companies

As mentioned in Section 3.4.2.1, there are 30 logistics companies in the four governorates. I targeted these 30 LCs. More than one employee in every company

was taken into consideration as they are graduates of the HEIs' logistics programmes. The total number targeted was 30 MMs and 90 employees.

In the current case, I used Slovin's formula to calculate sample size in order to determine the ideal sample size for a population; one of the considerations in this formula is using subgroups (Isip, n.d.). For example, the total number of logistics companies is 165 and, after implementing the inclusion criteria, it became 30 (Table 2), so the number that will be used is 30 LCs to determine the sample size for MMs and employees in the logistics companies. Slovin's formula is based on the following equation: n = N / (1 + N e2), where n = number of samples, N = total population, e = error (tolerance level).

| | **Questionnaire** | |
|---|---|---|
| **Population of Interest** | 120 staff in the 30 LCs | |
| | 30 MMs | 90 employees |
| **Given** | N = 30<br>e = 0.1 (90 percent confidence level). | N = 90<br>e = 0.1 (90 percent confidence level). |
| **Applying the Slovin's formula** | n = N / (1 + N e2) | |
| | $30 / (1 + 30 * 0.1^2)$ | $90 / (1 + 90 * 0.1^2)$ |
| **The results of the Sample Size** | 23.07<br>≈ 24 | 69.23<br>≈ 70 |
| **Actual Sample Size in the study** | 25 MMs | 72 employees |

Table 2. Slovin's formula and sample size

In total, 120 logistics professionals (both MMs and employees) were included in the study. According to Slovin's formula, the relevant number of MMs was 24, while the number of employees could be 70. I targeted the 30 LCs and the results show that 5 LCs did not respond and 25 MMs provided complete answers. Completed answers were found in 25 MM questionnaires, with the respondents belonging to 25 LCs (83%) of the targeted sample of logistics companies. Consequently, only the 25 MM questionnaires from 25 LCs were admitted as study samples. The corresponding

process took place for the EMP respondents, resulting in 72 EMP questionnaires from the same 25 LCs. The MMs and the EMP that belong to the same LC were matched for the study and covered the results of the sample size in Slovin's formula to provide more accurate answers as shown in the "Results of the Sample Size" row of Table 2.

#### 3.3.3.2 CDs in the HEIs

According to the Academic Programs in Private Higher Education Institutions 2018-2019 (Ministry of Higher Education, 2019c) a total of 10 HEIs are implementing logistics programmes. The sample targeted 10 CDs from 10 HEIs. The CDs for interview were selected out of the relatively small population of interest as explained earlier. Fortunately, 10 CDs working at 10 HEIs entered the FTF interviews as interviewees, making up 100% of the sample, affirming that all participants samples are covered.

## 3.3 Methods

The study used a mixed research design that combines qualitative and quantitative frameworks. Data was collected with the help of two different questionnaires disseminated between two groups of participants (employees and MMs of logistics companies). The second type of data was gathered with the help of structured interviews by involving CDs in Oman.

Since the study explores three sets of participant samples (CDs, MMs, and employees), I had to ensure that each of them complied with the inclusion criteria, namely that they had to have some experience and have been exposed to the work environment to be able to answer the questions while the LCs have to be classified in grades according to the size of their capital (IMC Group, 2016, p. 9). In addition, both Omani and expatriate employees who have HE certificates and work in logistics companies in Oman were involved as the study evaluates the logistics sector in Oman. As Palinkas, et al. (2015) have argued, in addition to knowledge and experience, the participants have to be willing to participate and able to communicate their experiences regarding the research phenomenon.

It is important to create different instruments for each sample as the methods of data collection as well as the purposes of retrieving information from the sample varied (Thomas, et al. 2018). In particular, ten respondents recruited among the CDs were involved in the interviews obtaining important issues regarding the curriculum at a deep level. Meerah, et al. (2012) have recommended developing interview questions by using a five-phase model, which includes the literature review, generating operational definitions, field testing to validate the content of the questions, item analysis and preparation, and a pilot study to determine the instrument's reliability. Solans-Domènech et al. (2019, p. 254) propose assessing "the internal consistency and contents validity" of the instruments before implementing them in the field by sending the developed instruments to several experts as well as testing and evaluating the feedback of the questionnaires. Each of these procedures were implemented.

However, the methodological approach used abandoned the purist approach to understanding research paradigms as dichotomies of deductive-inductive approaches or qualitative-quantitative assumptions and theoretical perspectives (Creswell, 2011; Thanh & Thanh, 2015). The evident in MMRD originated from the Greene-Caracelli-Graham mixing perspective whereby either method was viewed as unlinked to a specific paradigm of inquiry (Creswell, 2011; Creswell, & Plano-Clark, 2011), thus using a quantitative method might exist alongside a qualitative method.

This study embraced the so-called "third paradigm" (Joshi, 2013) whereby underlying philosophical and theoretical drives could be combined but individually respected (Timans, et al. 2019; Thanh & Thanh, 2015; Creswell, 2011). This means that these dichotomies of multiple paradigms were applied to "different phases of the research design" (Riolo, 2019, p. 75). Therefore, this study, under the third paradigm, namely MMRD, used the post-positivist theoretical perspective to carry out the research according to the nature of the research questions. In the initial phase of the quantitative questionnaire phase involving all the quantitative data gathered. Consequently, it followed both deductive and inductive orientations.

The Greene-Caracelli tradition weaves two different phases into a single mixed-method design through the interactive level of analysis as there is a direct interaction between the quantitative and qualitative questions strands of the study (p. 65). (Creswell & Plano-Clark, 2011). Creswell (2011) has referred to this method as the fusion of methodologies that collect both qualitative and quantitative data. This study

constitutes the first phase (Diagnosis Phase) in the knowledge economy model (Dima, et al., 2018). However, its approach was modified to generate the emergence of integrative findings when it constitutes of data collection and data analysis.

Therefore, in this study, both quantitative data and qualitative data was used. Overall, this mixed-methods approach was intended to implement a design with an adequately balanced implementation between its qualitative and quantitative components.

## 3.4 Inclusion and Exclusion Criteria

Any study has some criteria; these criteria are important to describe in order to guide me along a specific path to answer the questions of the study. In this section, inclusion criteria are chosen to specify the key features of the target population. On the other hand, the exclusion criteria are defined as features for potential study participants who meet the inclusion criteria but provide additional characteristics that can interfere with study objectives and may negatively affect the success of the study (Patino, & Ferreira, 2018).

### 3.4.1 Inclusion Criteria

The Ministry of Commerce and Industry in Oman has classified companies into two main groups with seven grades based on the nature of the company and the size of its capital, namely consultancy, international, excellent, and Grade 1 for the first 'high-grade' group which employs 96% of Omanis in the private sector, and Grades 2, 3 and 4 for the second 'low-grade' group, namely small enterprises which employ only 4% of Omanis in the private sector (NCSI, 2019; Redha, 2014). The first 'high-grade' group will be included in the study as the companies have more commitment to employment while the occupations involved can be measured accurately because these types of companies have quality assurance systems and usually follow National Occupational Standards (Laur-Earnst, et al. 2000). Moreover, regarding the first group, I chose from companies located near the targeted 10 HEIs where I conducted the interviews with 10 CDs in order to ensure cooperation between the HEIs and LCs.

Working experience helps to understand the feedback on the various tasks required by a given job, the impact of situational factors on work, and the physiological reactions to work situations (Hektner, et al. 2007). In addition, Chen, et al. (2017) have observed that work experience allows the staff – especially directors – to integrate the knowledge of the firm's internal affairs (p. 65), develop knowledge of how to manage relationships and operations (p. 66), and increase access to critical information and valuable resources (p. 85). Years of working experience helped to add accuracy to the answers assuming that taking data from newly employed employees would be less meaningful. In the three samples the data showed that employees had a minimum of two years of experience while the minimum years of experience for MMs and CDs was five.

Participants were selected based on their experiences in the logistics sector, therefore, they are capable of "providing information that is both detailed (depth) and generalizable (breadth)" (Palinkas et al., 2015, p. 539). The three samples (EMP, CDs, and MMs) had to have a HE certificates and speak English as a valid assumption for their competent graduation from a HEI.

### 3.4.2 Exclusion Criteria

All LC employees, mostly 'low-grade' Grades 2-4, were excluded because of their low commitment to the Omanisation programme as the numbers show that a small number of Omanis (only 4%) (NCSI, 2019) are working at lower grade companies (Redha, 2014), thus it is difficult to find Omanis in 'low-grade' which are considered to be small enterprises, especially those who hold HE certificates. These 'low-grade' companies have low capitalization, are expected to have low income and quality (Maupa, et al. 2019), and normally employ multitasking employees to cut down on salary costs (Dzubak, 2008; Otto, et al. 2012). Consequently, their occupations usually consist of merged tasks for each employee–unrepresentative of the logistics sector, thus these occupations could not be measured accurately. Moreover, their job quality assurance is low and usually divergent from NOS. Furthermore, these companies do not conduct relevant VET, primarily due to a "lack of relevant training competence" and "focus on short-term competition" (European Training Foundation, 2000, p. 23).

All three samples in the pilot tests were excluded (figure-5) during the actual data collection processes. Moreover, the CDs who work in the Ministry of Manpower were excluded from the study to reduce potential bias I am the director-general of vocational training in the Ministry's TVET division, MoMP.

However, because of my position as the DGVT at the MoMP while, as mentioned in Section 2.3, none of the 15 HEIs which are under the MoMP were sampled for this study to avoid potential sample selection bias (Deschacht & Goeman, 2015; Shringarpure & Xing, 2014), particularly self-selection bias (Zobac, et al. 2014). In addition, the 15 HEIs, which are under the MoMP, do not offer logistics programmes. The MoH and the MoD were also excluded because of their lack of a logistics programme.

## 3.5 Research Instrument and Data Collection

This study presents three different samples (CDs from HEIs, MMs and LC employees). A Mixed Method Research Design (MMRD) was used to obtain the data in order to meet the ultimate goal of the multiple research questions (Schoonenboom & Johnson, 2017).

The design focuses on the use of quantitative and qualitative data sets in the collection, analysis, and eventual mixing of results, as shown in figure-4. Three forms were prepared: interview questions for CDs and questionnaires for MMs and employees. These forms' questions vary between quantitative data showing numbers with percentages on one side, while qualitative data showed the descriptive answers are on the other side.

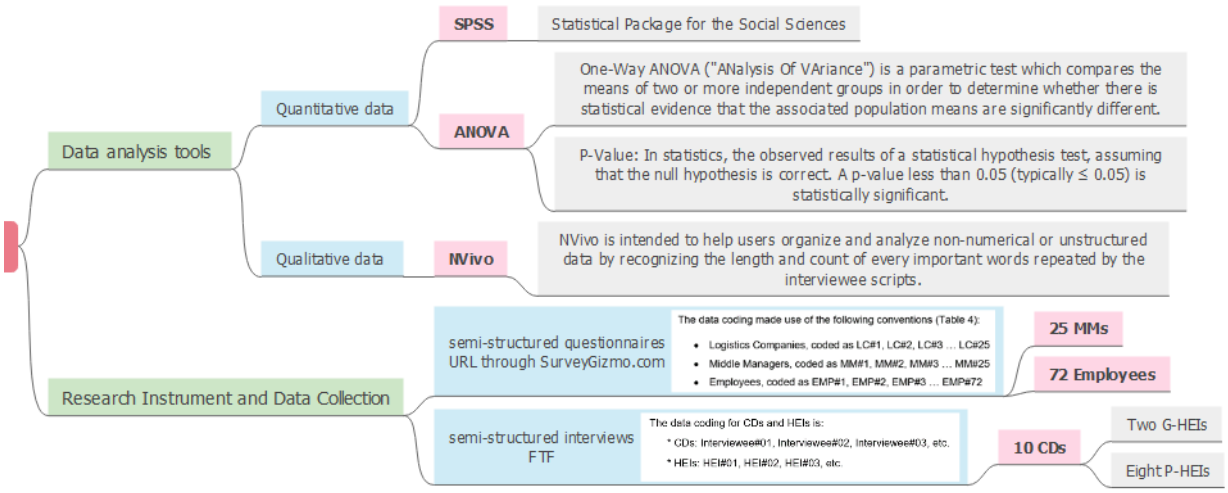



Figure 4: Data collection tools

### 3.5.1 Logistics companies' questionnaire

The questionnaire for logistics companies, which was designed for 25 mid-level managers (MMs) and 72 rank-and-file employees (EEs), had been pilot tested on five MM and five EMP samples. Based on the findings of the pilot study, the two questionnaires were revised and the final copies were prepared in hard copy and the questionnaires were posted online at SurveyGizmo.com with unique links through which the questionnaire could be accessed by the participants (Table 3).

| Target Respondents | Access Link |
|---|---|
| MM | https://www.surveygizmo.com/s3/4835529/Middle-level-Managers |
| EMP | https://www.surveygizmo.com/s3/4835508/Employees |

Table 3. Access links for two respondent groups (Appendices B & C)

In relation to reaching the logistics companies, the best way possible in terms of effectiveness and efficiency became a new challenge as anticipated in Chapter 2. However, ASYAD (2019b), being an expert in Omani logistics and the leading government company for logistics, helped significantly in finally contacting 30 logistics companies in Oman. Pure logistics companies consist of those corporations operating either (a) solely in logistics services with no other business activities undertaken or (b),

a dedicated branch for logistics operations and are dedicated solely to logistics tasks and activities. Every logistics building has to include stand-alone facilities to cover logistics tasks and perform the functionality at the level of compliance of a logistics building to host a certain type of logistics activity (Baglio, et al. 2018) as well as meeting the quality requests desired by their customers (Raut, et al. 2018).

For example, LC#16, a large, renowned pharmaceutical company in Oman, exemplifies a B-type logistics company because of its fully dedicated logistics branch that handles storage and transport of drugs to its pharmacy outlets in the Sultanate. The building houses the cooling storage facilities set at temperatures appropriate for different drugs and essential medical equipment needed for drug protection in a very high-quality environment (Kokilam, et al. 2015). It has a number of layers in its management hierarchy, consisting of several departments. However, its sample in the questionnaire consists of 1 MM, who works as a commercial agent in the warehouse department, and four EMPs who work as a system analyst (1 EMP), a computer engineer (1 EMP), and storekeepers (2 EMPs) respectively.

A week later, the results showed that five LCs did not respond, and of the questionnaires answered online, two MMs provided partial answers and 25 MMs provided complete answers. Regarding the completed answers found in the 25 MM questionnaires, the respondents belonging to 25 LCs. Consequently, only the 25 MM questionnaires from 25 LCs were admitted as study samples. The corresponding process took place for the EMP respondents resulting in 72 EMP questionnaires from the same 25 LCs. The MM and the EMP that belong to the same LC were matched for the study (Table 4).

The data coding made use of the following conventions (Table 4):

- Logistics Companies, coded as LC#1, LC#2, LC#3 … LC#25
- Middle Managers, coded as MM#1, MM#2, MM#3 … MM#25
- Employees, coded as EMP#1, EMP#2, EMP#3 … EMP#72

| Logistics Company Code | Middle Manager Code | Employee Code (Participants) |
|---|---|---|
| **LC#01** | MM#01 | EMP#01 – EMP#04 (4) |
| **LC#02** | MM#02 | EMP#05 – EMP#06 (2) |
| **LC#03** | MM#03 | EMP#07 – EMP#09 (3) |
| **LC#04** | MM#04 | EMP#10 – EMP#11 (2) |
| **LC#05** | MM#05 | EMP#12 – EMP#14 (3) |
| **LC#06** | MM#06 | EMP#15 – EMP#17 (3) |
| **LC#07** | MM#07 | EMP#18 – EMP#21 (4) |
| **LC#08** | MM#08 | EMP#22 – EMP#23 (2) |
| **LC#09** | MM#09 | EMP#24 – EMP#25 (2) |
| **LC#10** | MM#10 | EMP#26 – EMP#28 (3) |
| **LC#11** | MM#11 | EMP#29 – EMP#30 (2) |
| **LC#12** | MM#12 | EMP#31 – EMP#32 (2) |
| **LC#13** | MM#13 | EMP#33 – EMP#34 (2) |
| **LC#14** | MM#14 | EMP#35 – EMP#36 (2) |
| **LC#15** | MM#15 | EMP#37 – EMP#40 (4) |
| **LC#16** | MM#16 | EMP#41 – EMP#44 (4) |
| **LC#17** | MM#17 | EMP#45 – EMP#47 (3) |
| **LC#18** | MM#18 | EMP#48 – EMP#49 (2) |
| **LC#19** | MM#19 | EMP#50 – EMP#52 (3) |
| **LC#20** | MM#20 | EMP#53 – EMP#57 (5) |
| **LC#21** | MM#21 | EMP#58 – EMP#63 (6) |
| **LC#22** | MM#22 | EMP#64 – EMP#66 (3) |
| **LC#23** | MM#23 | EMP#67 – EMP#68 (2) |
| **LC#24** | MM#24 | EMP#69 – EMP#70 (2) |
| **LC#25** | MM#25 | EMP#71 – EMP#72 (2) |
| **25 LCs**[1] | 25 MMs[1] | 72 EMPs[1] |

[1]Total sample for each sampling group

Table 4. Sample codes for the three sample groups surveyed by questionnaire

### 3.5.2 Higher Education Institution Interviews

The HEIs are divided into two broad categories: government HEIs (G-HEIs) and private HEIs (P-HEIs). One major government HEI is Sultan Qaboos University (SQU), which is overseen by the University Council, the chair of which is Her Excellency the Minister of Higher Education. As of the latest school year, it has a total population of 15,357 students.

In effect, the study focused on the G-HEIs and P-HEIs, which offer their respective logistic programmes. The MoHE reported regulating and supervising eight HEIs with logistics programme offerings. The ninth HEI under the MoHE is SQU. Each of these HEIs was represented in the CD group. The tenth CD came from the one of the G-HEI applied science TCs.

These 10 CD participants were identified as Interviewee#01, Interviewee#02, Interviewee#03, etc. Meanwhile, these HEIs were respectively designated as HEI#01, HEI#02, HEI#03, etc. The initial interviews started with Interviewee#01 on 31 January 2019 and ended with Interviewee#10 on 3 April 2019 (Table 5).

| Group 1 | Data Collection Dates | |
|---|---|---|
| Interviewee Control No. | Interview | Script Approval |
| Interview#01 (HEI#01) | 31 Jan 2019 | 4 Feb 2019 |
| Interview#02 (HEI#02) | 5 Mar 2019 | 24 Mar 2019 |
| Interview#03 (HEI#03) | 6 Mar 2019 | 8 Mar 2019 |
| Interview#04 (HEI#04) | 13 Mar 2019 | 18 Mar 2019 |
| Interview#05 (HEI#05) | 18 Mar 2019 | 25 Mar 2019 |
| Interview#06 (HEI#06) | 19 Mar 2019 | 27 Mar 2019 |
| Interview#07 (HEI#07) | 24 Mar 2019 | 26 Mar 2019 |
| Interview#08 (HEI#08) | 1 Apr 2019 | 9 Apr 2019 |
| Interview#09 (HEI#09) | 2 Apr 2019 | 11 April 2019 |
| Interview#10 (HEI#10) | 3 Apr 2019 | 14 Apr 2019 |

Table 5. CD Group Interview and Script Approval Dates

Interviewees' answers were taken down directly by pen on the questionnaire draft and near the respective questions. Meanwhile, the interviews were recorded using an audio recorder. Both methods of documentation were approved earlier by each participant. All interviewees agreed for me to note down the interview discussions by pen during the interviews (N = 10), while nine of them disapproved of the audio recording, and only one interviewee agreed (N = 1). All interviewees agreed to direct written notation of the interview (N = 10), while nine participants disapproved of the audio recording (N = 1).

Once all the question content feedback modifications were taken down as interview scripts, the questionnaire was revised in the office and sent to the respective interviewees for approval and further modification feedback if necessary. The interview scripts were also sent by email to the respective interviewees. Validation approvals were received from 4 February to 14 April 2019 (Table 5). Each interviewee was allowed to modify their answers before sending their approved transcripts. Interviews proper started only after the final questionnaire and each interviewee approved initial interview scripts.

## 3.6 Validity and reliability of the data methods

Validity and reliability are key characteristics of effective mixed-methods studies. Invalid research is empirically worthless (Cohen, et al. 2011). In effect, validity provides the legitimacy of the study itself and its results and findings. A study must be precise and accurate consistently to be empirically reliable, consequently, it is a *sine qua non* of validity (Cohen, et al. 2011).

Similarly, Taherdoost (2016) has emphasized the close relationship between validity-reliability criteria with the data collection instrument used in a given study as such validity indicates that the research instrument measures what it is intended to measure. Meanwhile, reliability indicates the stability and consistency of the results over time, thereby making the outcomes repeatable. In effect, these empirical tests must also be observed in a pilot testing endeavour, which is an approach selected in this study.

### 3.6.1 Pilot Tests

Pilot testing is very important to indicate the validity and reliability, while its role is to evaluate the clarity and quality of the questions originally prepared and “other research techniques in preparation for a larger study” (Abu-Hassan, et al. 2006, p. 70). It also helps to show that the questions are reliably understandable across each participant in the subgroups while allowing one to add or modify some questions before conducting the actual data collection in order to be more ready “before it is too late” (Bowden, et al. 2002, p. 323). Pilot testing is an important validation process a pre-tester of data collection tools (Williams-McBean, 2019) which affects the quality of the question positively, thereby enhancing “the overall credibility of the study” (p. 1061).

Nevertheless, piloting has indispensable benefits. First, pilot testing can link or assess the integration between the qualitative and quantitative components of the mixed method design (Tashakkori & Creswell, 2007) used in the larger, parallel data collection phase of this study (Secomb & Smith, 2011). Second, it can provide greater depth to the results in the final report. Third, it can refine, not just the question items, but also the entire research protocol (Williams-McBean, 2019). Fourth, and lastly, it can pre-empt effectively potential challenges in the adopted data collection approach (Williams-McBean, 2019).

In this study, three pilot tests were conducted to help establish the validity and reliability of the data collection tools used. The first and second pilot studies involved the paper-type online MMs and employees’ questionnaire. Both questionnaires were posted separately in a unique SurveyGizmo.com web address. Meanwhile, the third pilot study involved the use of interview questions, which tested ten CDs who are currently employed in sampled HEIs. The questions were prepared in a hard copy form.

The two major purposes of pilot testing at the level of the data collection questionnaires used are: (1) refine the questions and (2) detect response patterns from respondents based on their demographic characteristics (Statistics Division, 2010), such as cultural, linguistic, and socioeconomic backgrounds. Thus, the piloting process helped in refining the research instruments. The three samples in the pilot test were excluded in the real data collections processes as shown in Figure-5.

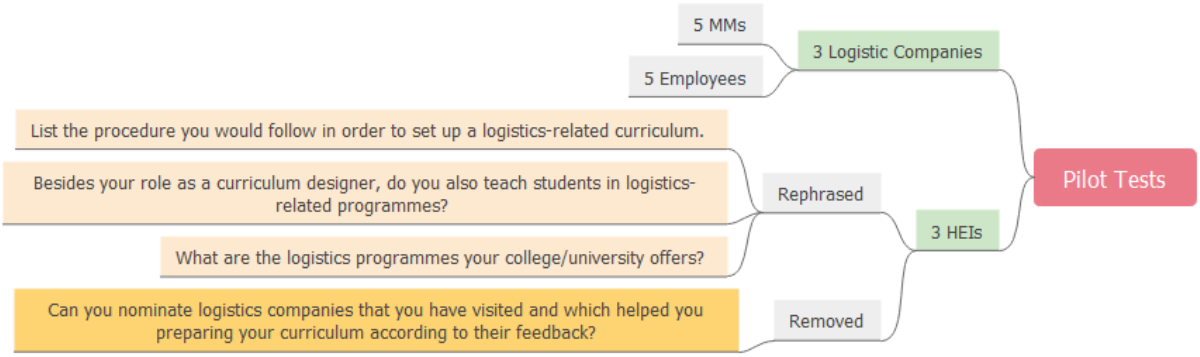



Figure 5: The three samples in the pilot tests

### 3.6.2 Pilot Tests of Logistic Companies

The initial pre-testing phase of the logistics company-based pilot tests involved five MMs from logistics companies and five rank-and-file employees (logistics operative staff) selected from three logistics companies that agreed to participate in the study. The company-appointed key person (CAKP) received the official communications, PIS and CF. Once the selected samples were received and accomplished, the PIS and the CF and minor questions were clarified, then the pilot testing process started with the administration of the online questionnaires to the respective sample groups (Majid, et al. 2017) in three logistics companies. The answers were analysed for content validity with weak questions modified for better clarity and understanding (Noor, et al. 2016; Spence, et al. 2012). After the revised questionnaires were re-administered to the participants, a more in-depth face-to-face (FTF) interview (Irvine, et al. 2012) was conducted with the participants to ensure that they understood the questions clearly.

### 3.6.3 HEI Pilot Tests

Meanwhile, the initial pre-testing phase of the HEI pilot study followed the pilot studies in the three logistics companies. Changes in the interview questionnaire were made quickly during the FTF interview based on the feedback from three curriculum designers' comments and suggestions. In each question, the respondent was asked to determine which questions were easily and clearly understood, which questions

needed to be modified which required another option, and what new question was necessary to add to cover relevant points in the curriculum design. These changes involved structural issues in the questionnaires, which required the rephrasing of these questions. Consequently, three new questions were added to the original interview questionnaire:

*What are the logistics programmes your college/university offers?* This question would help determine the quantity of programmes available in their respective HEI.

*List the procedure you would follow in order to set up a logistics-related curriculum.* This question enquires regarding the procedures being used today among curriculum designers to prepare and design a specific logistics-focused curriculum.

*Besides your role as a curriculum designer, do you also teach students in logistics-related programmes?* This question helps to reveal the curriculum designers' work approaches.

Moreover, two of the three HEIs (n = 2, RFD = 66.6%) participating in the pilot test preferred to delete the question on their LC nomination ("Can you nominate logistics companies that you have visited and which helped you preparing your curriculum according to their feedback?"). These HEIs provided two reasons for preferring to do so: (1) they have strong cooperative relationships with these LCs in logistics curriculum design, and (2) they received financial, technical, and material support in relation to their logistics curricula. Their views were taken into consideration and modified the research instruments accordingly. The pilot test also helped me to modify the questionnaires, thereby helping to reduce redundancy. Moreover, the three CDs were excluded from the real interviews in the data collection process.

## 3.7 Tools and challenges during data collection

In this data collection phase, all targeted entities (10 HEIs and 30 LCs) were handed over to the PIS, CF and the forms of the questions. They were briefed about the targets of the study, and the questions were explained for those who wanted any clarification. The processes of data collection went smoothly with some challenges, for example finding a suitable time for the interviews with the CDs and the geographical

locations of some of the targeted entities, which are far away from my home, including more than 1,000km away, such as the Dhofar governorate.

### 3.7.1 Data analysis tools

Quantitative data was analysed with the help of SPSS statistics by using ANOVA analysis for both samples. Qualitative data was analysed by using NVivo tool designed for this purpose (Figure-4). The structured interview has a certain procedure that requires the scientist to ask the exact same concerns of all individuals without including or removing any one of the items (Castillo-Montoya, 2016). Semi-Structured questionnaires advertise standardization, decrease variability, help with information handling, clear up the meaning of inquiries, as well as being very easy to carry out (Rashidi et al., 2014). The questionnaire made use of a 5-item Likert scale to assess the responses of the participants, which typically removes the response-set predisposition in the research. A Likert range permits scientists to record ordinal actions that help researchers to create clear information (Sullivan, & Artino, 2013). Overall, the research study ensured that validity and reliability were maintained to meet the study inquiries.

### 3.7.2 Challenges during the data collection

Some minor challenges emerged when arranging interviews, such as CDs also being teachers. Therefore, I had to manage a specific time and sometimes after working hours to visit them in order to conduct the interviews. In addition, some HEIs and thus interviewees were far away, so I travelled to some cities located more than 1,000 km away and then had to travel again to the same areas to give the Participant Information Sheet (PIS), the Consent Form (CF) while the questionnaire URL was sent to the targeted LCs.

Overall, the data collection went smoothly and, in general, despite the LCs' apprehension regarding interruptions to the production line by the questionnaire, most LCs cooperated excellently.

## 3.8 Ethical Considerations

All participants were treated ethically and respectfully. Information relevant to their choice to participate in the study was clearly provided; some unclear questions were modified after the piloting test period according to the feedback from the chosen sample. All questions in both questionnaires and interviews were designed to answer the study questions. Ample time was given for participants to review the questions that needed to be answered as accurately and honestly as possible.

I prepared necessary elements such as the Participant Information Sheet (PIS) (Appendix H), Consent Form (Appendix I), the Authorization Letter (AL) from the MoMP (Appendix K), and received approval from the Virtual Programme Research Ethics Committee (VPREC) (Appendix A). Then, I started the development of the interview questions to be posed to the targeted CDs from the HEIs alongside two questionnaires forms for MMs and LC employees. The PIS forms were distributed to all participants in hard copy, which was followed by the distribution of interviews questions to CD participants while the questionnaires were given to the MM and EMP participants both in electronic form and as hard copies.

In summary, the participants were given enough time and information about the study, including the content of the informed consent form with all rights and anonymity requirements while a voluntary withdrawal option was outlined. The data were managed with the utmost confidentiality and kept in safe storage in my office and will be destroyed after five years.

## 3.9 Conclusion

The main objective of the current research is to identify and address the skills gap in the logistics sector in Oman in relation to curriculum design in order to ensure the country has modern logistics education in place and to identify if there are any specific gaps that can be overcome. Subsequently, the research will examine the education, learning, and capacity of the employees to implement their jobs, describing their opinions on how they gained their skills (i.e. whether from the HEIs or LCs) and, finally, their suggestions on the HEI curriculum. The application of both questionnaires, as well as the interviews, constitute a reliable technique in terms of collecting information from the target audience as well as ensuring that the information gathered

will undoubtedly be valid (Zahrabi, 2013) in order to prepare recommendations that may close the gap in relation to the curriculum design aspect.

Both questionnaires permit me to retrieve recommendations from MMs and those employees worrying about the academic curriculum, thereby ensuring that the future generations of employees responsible for logistics can gain access to relevant as well as legitimate professional expertise. The findings and discussion based on the three samples will be analysed in Chapter 4 in order to derive the results and thus build valuable recommendations.

# Chapter 4: Findings

## 4.1 Introduction

In this chapter I describe the findings, procedures and investigation of the data of the three samples (CDs, MMs, and Employees) and their outcomes. I used NVivo-11 to enter the data of the 10 CDs and the qualitative (descriptive) questions for the MMs and employees into the NVivo programme. The first step was I transcribed the participants' scripts from the interviews in a Word document (*.docx); in the second step I merged all participants' files into one single Excel sheet file (*.xlsx), then I imported from Excel to NVivo program through 'External Data' tab within NVivo program.

The chapter includes two main aspects of the research: The Relative Frequency Distribution (RFD) that describes the validation of the certificates and experiences of all participants, and the presentation of the themes that emerged as part of the analysis. These will be followed by five themes. Every theme deals with one sub-question of the study in order to ensure the coherence of the study and important areas to be covered (Figure-6). The related questions from the three samples (10 CDs, 25 MMs, and 72 employees), which belongs to every theme were analysed empirically and interpreted using the tools, described within Chapter 3, in the section entitled: Data Analysis Tools. Additionally, Chi-square is used as a tool designed to analyse different groups and how each group performed in the study to help understand the results of the statistics (McHugh, 2013).

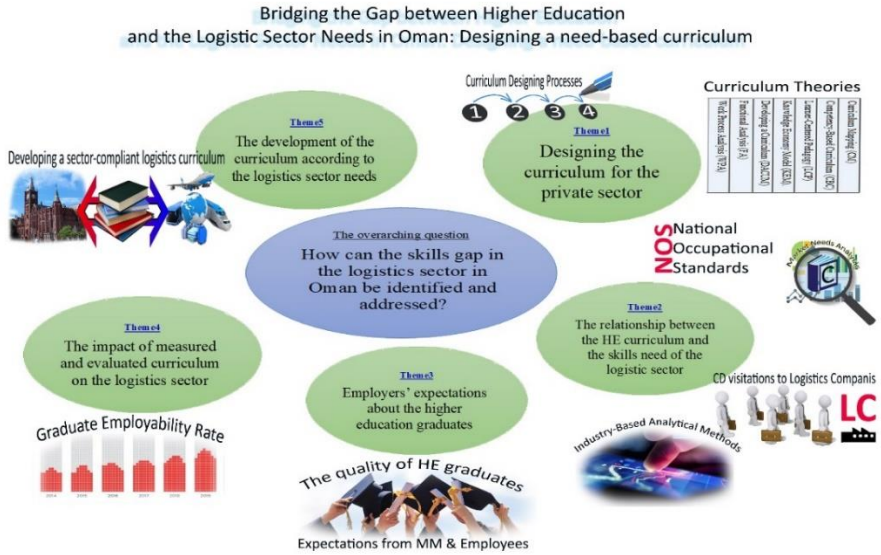


Figure 6. The areas of the findings in themes

## 4.2 Certificates and Experiences of All Participants

The first step was the validation of the study which included validation of the certificates and experiences of all participants (CDs, MMs, and Employees) using Relative Frequency Distribution (RFD). This approach was used as it is capable of comparing meaningfully two groups of unequal size (Weiers, 2010) while providing information on how the raw data are distributed within the different data classes or intervals (Manikandan, 2011). A comparison of the certificates and number of working experiences is displayed in RFD to demonstrate the reliability of the samples used to make accurate statistical findings and conclusions.

### 4.2.1 Findings and Analysis of Certificates

Table 6 shows the RFD of the certificates of the three samples (CDs, MMs, and Employees) from diploma to doctoral certificate. The majority of the CD group hold a master degree (n = 8, RFD = 80%) while the MM and Employee groups have predominantly bachelor degrees (n = 11, RFD = 44% and n = 26, RFD = 36%, respectively). Overall, though, the most predominant DL (≥ 60%) in the CD group has a master degree (n = 8, RFD = 80%).

| Relative Frequency Distribution of the certificates | | | | | | |
|---|---|---|---|---|---|---|
| Certificate | Curriculum Designers | | Middle Managers | | Employees | |
| | Count | RFD | Count | RFD | Count | RFD |
| Diploma | 0 | 0% | 4 | 16% | 11 | 15% |
| Higher Diploma | 0 | 0% | 1 | 4% | 14 | 19% |
| Bachelor | 0 | 0% | 11 | 44% | 26 | 36% |
| Master | 8 | 80% | 8 | 32% | 20 | 28% |
| Doctorate | 2 | 20% | 1 | 4% | 1 | 1% |
| Total | 10 | 100% | 25 | 100% | 72 | 100% |

Table 6. Findings and analysis of RFD regarding certificates

Combining the three samples (n = 107), more participants have only a bachelor degree (n = 37) than a master degree (n = 36). However, the numbers of participants are almost the same, which demonstrates that both certificates predominate in this sample. This is due to the higher sample size in the MM and Employee groups. In terms of RFD, however, participants with master degrees predominate (Figure-7), indicating higher between-group distribution.

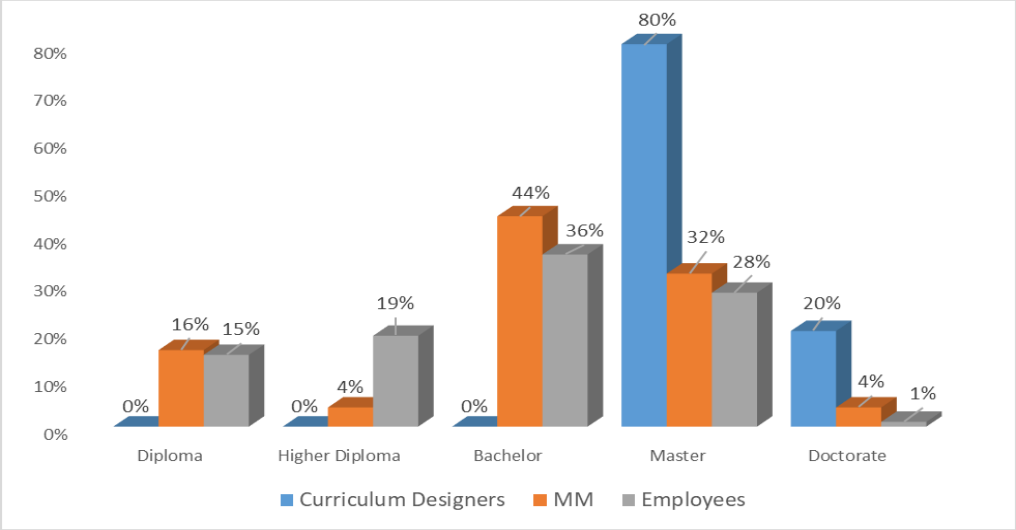



Figure 7. RFD for the three samples' certificates (CDs, MMs and Employees)

### 4.2.2 Findings and Analysis of Experience

The inter-class comparison revealed a diverse experience picture (Table 7). The CD group has the highest experience level (EL) of 11-15 years (n = 3, RFD = 30%), the MM group of 6-10 and 16-20 years (n = 6, RFD = 24%), and the Employees group of 0-5 years (n = 25, RFD = 35%). The high RFD of the CD group, however, may be attributed to its small sample size. Meanwhile, the high RFD of the Employees group is evidently a consequence of its higher sample size and the possibly high turnover rate for this worker group in the logistics sector.

| Relative Frequency Distribution of total years of experience | | | | | | |
|---|---|---|---|---|---|---|
| Period | Curriculum Designers | | Middle Managers | | Employees | |
| | Count | RFD | Count | RFD | Count | RFD |
| 0 to 5 | 0 | 0% | 1 | 4% | 25 | 35% |
| 6 to 10 | 1 | 10% | 6 | 24% | 21 | 29% |
| 11 to 15 | 3 | 30% | 4 | 16% | 12 | 17% |
| 16 to 20 | 2 | 20% | 6 | 24% | 9 | 13% |
| 21 to 25 | 2 | 20% | 4 | 16% | 4 | 6% |
| 26 to 30 | 1 | 10% | 3 | 12% | 1 | 1% |
| 31 to 35 | 1 | 10% | 1 | 4% | 0 | 0% |
| Total | 10 | 100% | 25 | 100% | 72 | 100% |

Table 7. Findings and analysis of RFD in experiences

Majority analysis (at RFD = >15% per class) indicates that the CD group has the highest minimum EL (11 years) while the Employees group has the lowest EL both at the minimum (2 years) and maximum (15 years) levels. The CD group has a predominant experience range of 11-25 years (n = 7, RFD = 70%). The MM group has a predominant experience range of 6-25 years (n = 20, RFD = 80%). Meanwhile, the Employees group has a predominant experience range of 0-15 years (n = 58, RFD = 81%). Actual minimum years of experience for the three samples are 6 years for CD, 5 years for MM, and 2 years for Employees (Table 7).

Meanwhile, total inter-class distribution data indicates the highest EL at 6-10 years (n = 28, RFD = 65%). However, overall relative frequency distribution indicates that the highest EL is at 11-15 years (n = 19, RFD = 63%) or an overall RFD of 18% (19 of 107). This discrepancy between the actual count and the RFD is due to the higher sample size in the Employees group, which is concentrated at the 0-15 years of experience and the far lower sample sizes in the CD and MM groups.

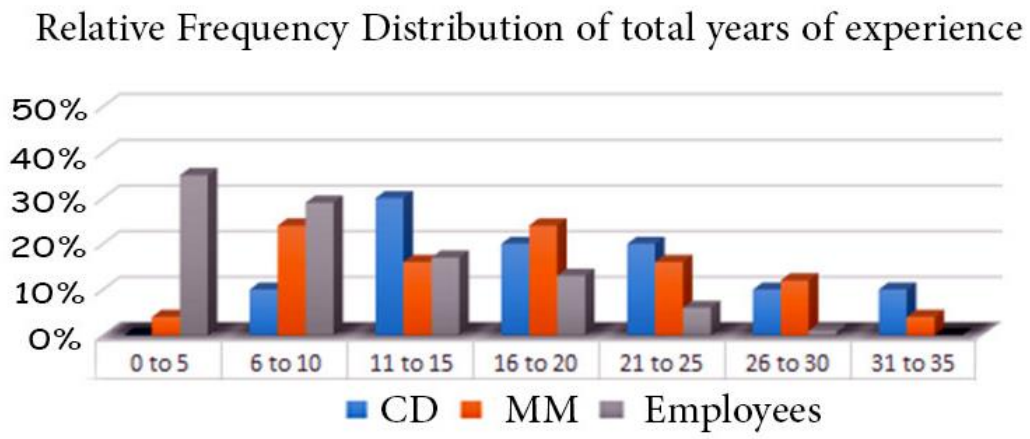



Figure 8: RFD for the three samples' experiences (CDs, MMs and Employees)

The frequency histogram (Figure-8) failed to provide a clear visual difference between EL 6-10 years, 11-15 years, and 16-20 years, which makes it necessary to rely on Table-7 to better understand the data's total experience picture.

### 4.2.3 Validation of Certificates and Experiences of All Participants

The data illustrate the educational and experiential profile of all three sample groups. DL data describe a higher concentration for the CD group at the master degree level, which is consistent with the higher academic requirements for curriculum designers in the Omani higher education system compared to middle managers (MM group) and rank-and-file employees (Employees group). The reliance on RFD, however, helped in validating the relative DL in each group as it relativized the higher sample sizes in the MM (n = 25) and the Employees (n = 72) groups compared to the CD group (n = 10).

Meanwhile, EL data presents a somewhat coherent picture of the realities in the academic and the logistics sectors within the Omani environment chosen for the research study. The CD group demonstrates a realistic distribution of worker experiences from 6-35 years in service with greater concentration in 11-25 years of experience as the greatest experience concentration among academic curriculum

designers. The concentration of middle managers at the middle experience range seems reasonable in academia.

The Employees group also demonstrates a strong concentration in the early (0-10 years) to middle (11-20) range experience levels, indicating a potential high turnover rate in this sector. Knowledge of the job market in the logistics sector could confirm the relatively short work experience of the logistics rank-and-file employees because of high employee turnover. In fact, this group has no member with at least 31 years' experience, which can be found in the CD and the MM groups. Meanwhile, the MM group demonstrates relatively well-distributed experience levels among middle managers, indicating a more stable employment environment in the logistics sector for these workers.

To determine if there statistically significant differences in average years of experience attributable to job title (curriculum designer, middle management, employee) a one-way Anova test was used, and the results are shown in Table 8.

| No. | | Means | | | F Value | Sig. |
|---|---|---|---|---|---|---|
| | | Curriculum Designers | Middle-level Managers | Employees | | |
| **1.** | Experience | 4.20 | 3.76 | 2.21 | 20.447 | 0.000 |

* The mean difference is significant a 0.05 level

Table 8. ANOVA Test of Experience

Table 8 shows that the p-value (Sig.) is smaller than the level of significance α = 0.05 for Experience, which means that there is a significant difference among the respondents in relation to Experience years due to sample type. I conclude that there are statistically significant differences in average years of experience attributable to the variable sample in favour of the category (curriculum designers). In general, all samples have good experience and provide validity and reliability to the answers.

## 4.3 Theme 1: Designing the curriculum for the logistics sector

The study acquired rich data that is useful in determining the process for curriculum design in the private sector. The key question in unearthing this information is Question 20 in CDs, which asked, “List the procedure you would follow in order to set up a logistics curriculum.” These data answered the first question, “How do Omani HE institutions conceptualize the processes of designing curricula for the private sector?”; many transcripts from the interviews conducted with members of the CD group helped to answer the first research question.

Fundamental in the curriculum design process were the characteristics of the curriculum designers, including their years and breadth of experience in academia within and beyond curriculum design. Question 12 helped to provide a glimpse into the experience level that supports effective curriculum designing. Data from the study shows that participating CDs evidently had designed some 55 curricula and had updated, either individually or in a group, 37 curricula, or led to a total production of 92 new curricula, most of which were associated with programmes for the logistics sector. The title focuses on the processes of designing logistics curricula for the private sector in a more coherent but still precise and concise manner.

### 4.3.1 The Curriculum Design Process for the Private Sector

#### 4.3.1.1 Process 1: Prepare the market needs analysis

In Question 20, all members of the CD group agreed that any curriculum design process must begin by undertaking a Market Needs Analysis (MNA). The NVivo shows that it was either directly identified as MNA (CD#01, CD#02), or less precisely so (CD#03 [“Analyzing the job market”]), CD#07 [“Market analysis”], CD#08 [“Identify the need”], CD#10 [“Need analysis”], or indirectly as “carry out benchmarking” (CD#06) or “matching the needs” (CD#09). In Question 26, eight of 10 CD participants recommended company visitation as an approach to use in conducting MNA on the actual needs of the logistics sector. The other two recommended MNA by taking the information from ASAYD.

### 4.3.1.2 Process 2: Prepare data and required competencies for the logistics programmes

In response to Question 32, eight of the 10 CD (RFD= 80%) participants agreed that Omani HEIs must take into account the use of curriculum-specific National Occupational Standards (NOS) that cover specific skills for specific sectors, which, in this context, is the logistics sector. The NOS is believed to define the knowledge, skills, and attitudes necessary to work in the logistics sector, particularly in demonstrating skills and work performance in a healthy work environment. One of the two CDs who responded "No" to Question 32 recommended a benchmarking mechanism with international HEIs. Another participant who noticed the lack of HEI cooperation indicated in Question 29, that the labour market information must be acquired from ASYAD as an alternative to the NOS, being the leading company in the logistics sector. He recommended that the curriculum must be 50% theoretical and 50% applied with information coming either from NOS or from ASYAD. All agreed that sector competencies must be identified.

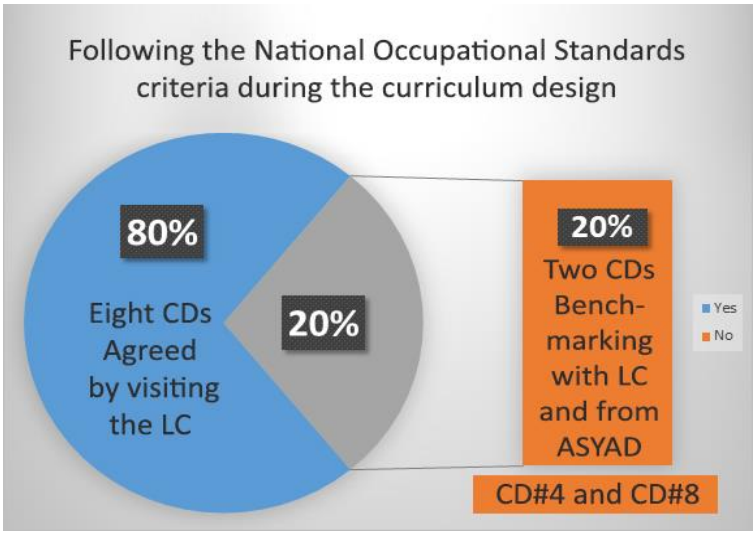



Figure 9. Number of CDs who agreed to use NOS

#### 4.3.1.3 Process 3: Involve the logistics companies in the process

The involvement of logistics companies in the curriculum design processes must be non-negotiable (Ernst & Young Global, 2020; Wu, 2007), providing, in part, an authentic learning environment that brings real elements of work experience into higher education as an essential teaching tool (Abelha *et al.*, 2020). These processes may be implemented in four different ways, either individually or collectively: (1) company visit; (2) grade-based company classification; (3) data collection tool usage, and (4) company personnel engagement.

##### 4.3.1.3.1 Company Visits

Including the initial MNA company visitation, most (n = 8 out of 10, RFD = 80%) CD participants perform company visitations. Half (n = 5, RFD = 50%) of the CD participants visit companies two to five times during the duration of curriculum design (Figure-10). Two participants (CD#4 and CD#8 - RFD = 20%) never visit a company when undertaking a curriculum design. Instead, they consult with ASYAD on the input side as a purposefully selected representative from the logistics sector. The rest of the participants either visit companies once (n = 1, RFD = 10%), 6-10 times (n = 1, RFD = 10%), or more than ten times (n = 1, RFD = 10%).

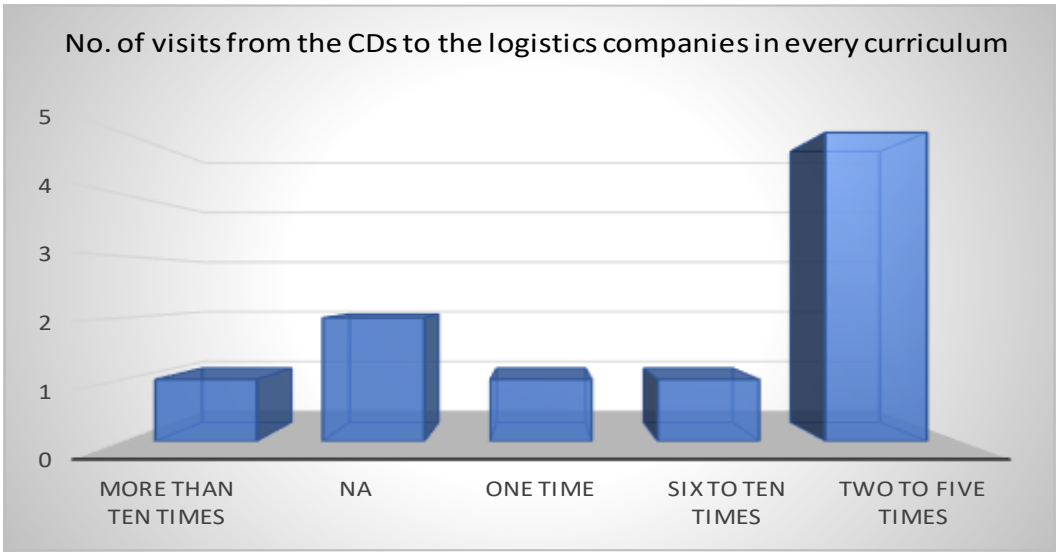



Figure 10. Number of visits implemented by every CDs to design a curriculum

| | Total (n=10) | Yes | No | $\chi^2$ | P-value |
|---|---|---|---|---|---|
| Yes | 8 | 8 | 0 | 10.000 | 0.022 |
| No | 2 | 0 | 2 | | |
| **Total** | **10** | | | | |

Table 9. Relationship between curriculum designers' conviction regarding the extent to which Omani HEIs use NOS

Table-9 shows the degree of the relationship between curriculum designers' conviction of the extent to which Omani HEIs use National Occupational Standards when designing curricula and their visits to the institution to ensure that the curriculum fits with the needs of the private sector. The results show that all curriculum designers who believe that HEIs use National Occupational Standards when they curriculum design visit the institution to ensure that the curriculum fits with the requirements of the private sector. Chi-square was 10.000 and ($P < 0.05$), which means that the difference is statistically significant (McHugh, 2013). In sharp contrast, those who believe that educational institutions do not use National Occupational Standards (CD#4 and CD#8), believe that there is no cooperation between the HEIs and prefer visiting other entities such as ASYAD to provide the required information to them about the logistics sector.

#### 4.3.1.3.2 Grade-Based Company Classification

In response to Question 26b, five of the eight CDs (RFD = 62.5%) indicated that they visit only companies they deemed to be first group (consultancy, international, excellent and Grade-1), which they classify as large companies according to their amount of capital while the minimum start-up capital starts from OMR 100,000 (approx. US$260,000) (IMC Group, 2016, p. 9). Meanwhile, three (RFD = 37.5%) of these participants preferred to visit companies of all quality grades; that is, including those in the second group, namely Grades 2-4, which are all small and medium enterprises (SMEs) with start-up capital between OMR 3,000 (approx. US$7,790) in Grade 4 up to OMR 99,000 (approx. US$ 258,000) in Grade 2 (IMC Group, 2016, p. 9).

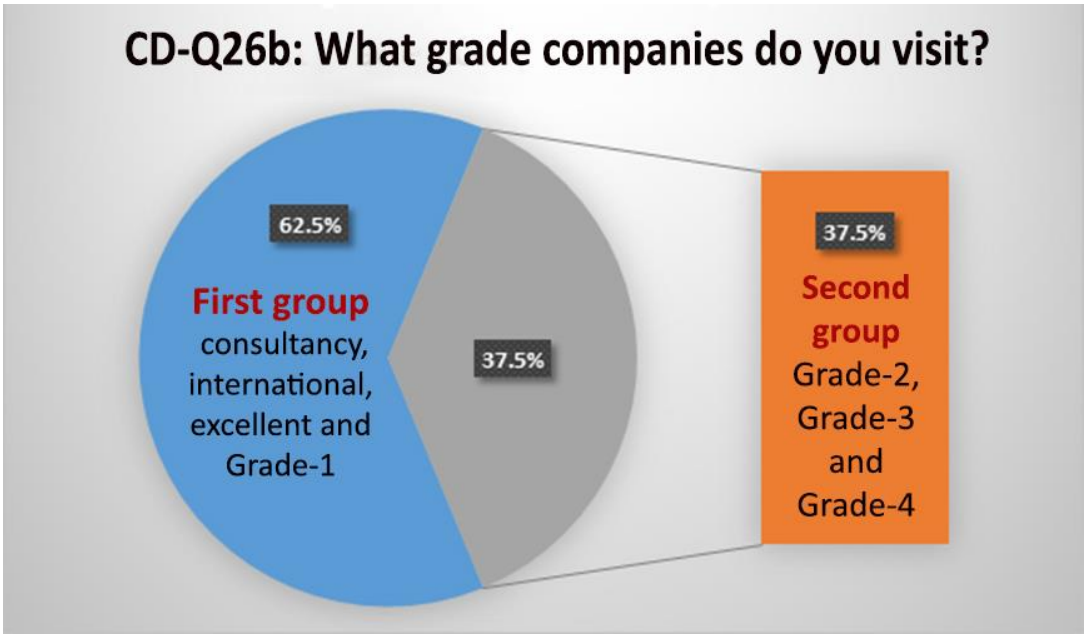



Figure 11. The grade (classification) of visited companies

However, non-selective visitation of companies risks negatively influencing the standard-making function of the curriculum design exercise. The relatively low-quality standards in non high-grade companies will dilute the high-quality standards in high-grade companies, particularly in preparing or updating the current NOS and logistics curriculum. For instance, SMEs tend to merge multiple separate tasks for each employee in their effort to cut down on employee costs, resulting in non-standard occupational descriptions while under-representing the logistics sector. Consequently, these tasks could not be measured accurately and meaningfully for companies in the logistics sector. Also, it is difficult to find middle-managers and every SME, especially the smaller ones as they normally have a little or no hierarchy in their organisation (Farajova, 2019).

The inclusion of SMEs also reflects impracticality in terms of educational development because these companies do not support VET development. Their focus pertains only to “short-term competition”, gravitating inevitably to “lack of relevant training competence” among their employees (European Training Foundation, 2000).

#### 4.3.1.3.3 Data collection tool usage

In response to Question 26c, and by using NVivo programmes to count the number of words used on those questions, CD participants evidently use three tools as shown in Figure-12 when conducting company visitations: survey/questionnaire were used 12 times, interview/discussion were used eight times, and finally the observation was used three times. Taken together, written and interview surveys predominates (n = 20) the preferred data collection tools among the CD participants, indicating their potential capacity to gather more quantity and better-quality data for the curriculum design project.

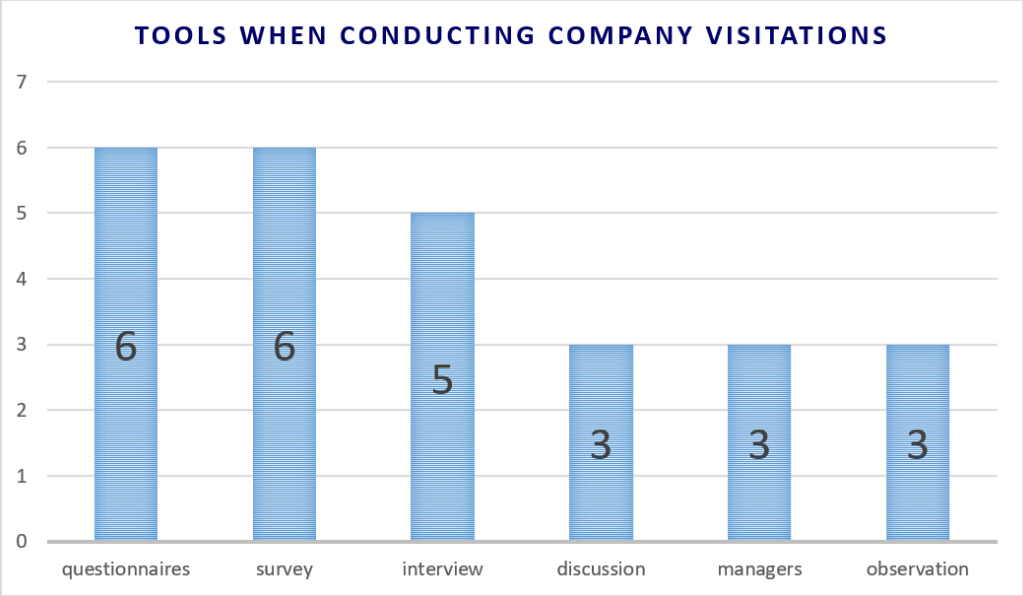



Figure 12: Tools used during the visiting companies

#### 4.3.1.3.4 Company personnel engagement

In response to Question 26c, eight of the 10 CD participants prefer to meet company managers as compared to other personnel. However, some participants had also met with CEOs, HR managers, department heads, and rank-and-file employees. In brief, access to the LCs is made through managers by all Eight CDs.

#### 4.3.1.4 Process 4: Selecting the appropriate method for designing curriculum

Questions 27 and 29 pertain to the selection of the appropriate method to use in curriculum design. The CD participants mentioned an array of ten methods and theoretical approaches they had used (Fig. 10). These methods exemplified in Question 27 are included as work process analysis (WPA), DACUM, and functional analysis (FA). Meanwhile, the curriculum design concepts presented for selection are Knowledge Economy Model (KEM), curriculum mapping, labour market information (LMI), and learner-centred pedagogy (LCP).

In response to Question 27, “How do you design the process in order to achieve the best fit of information for a new or updated curriculum?”, the most favoured method is FA (n = 7) with the WPA as the second most favourite method (n = 6). The emergence of ASYAD, benchmarking, and market analysis demonstrates the presence of a more divergent approach to curriculum design methodology selection. CD#6, for instance, attributed the primary responsibility for conducting studies about the logistics sector to ASYAD and the MoHE, perhaps because of their position and authority within the sector.

In response to Question 29, “How do you make use of the following terminology in your curriculum design?”, the most popular single method is curriculum mapping (n = 6) followed by LMI and LCP. This indicates that, since the answer choices were restricted to four terms, curriculum mapping is more commonly used among CDs than KEM, LMI, and LCP. Nevertheless, five CD participants preferred to use all four proposed theoretical concepts associated with curriculum design.

The most favoured methods, however, are FA (n = 7) and curriculum mapping (n = 7), indicating the concurrent use of these methods for curriculum design in the Omani HE system. FA is one of the most commonly used methods in curriculum development, which has the advantage of establishing a clear link between employment needs and training content, allowing for an understanding of current best practices as well as the trend for needed competencies in the future (Ngamvichaikit, 2017; Lloyd, et al. 2016). Meanwhile, curriculum mapping has been associated mostly with outcome-based learning, work readiness (Wang, 2015), which fit the strategy of Industry-based Learning (Rajibussalim, et al, 2016) and Work Integrated Learning (Ajjawi et al., 2020),

making it a highly relevant approach in curriculum design, particularly when curriculum innovation is intended.

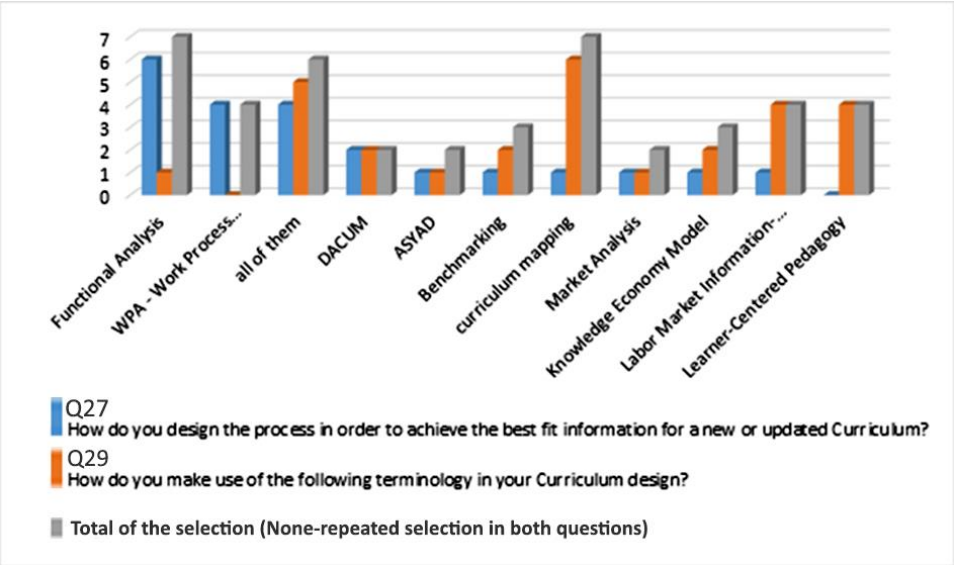



Figure 13. Curriculum methods and theoretical approaches

#### 4.3.1.5 Process 5: Evaluate the outcome of a designed curriculum

The final process in the curriculum design cycle is the evaluation of the success or failure of the newly designed logistics curriculum. In response to Question 36, “How do you evaluate the success or failure of a designed curriculum?”, the respondents described two approaches to outcome evaluation: an outcome-based approach and a process-based one. Four of 10 (RFD = 40%) CD participants specified a survey-based outcome analysis. However, all CD participants were unanimous in looking at the outcome of the new logistics curriculum, which is the increase in the employability rate.

## 4.4 Theme 2: The relationship between the HE curriculum and the skills needs of the logistics sector

The curriculum development process begins with a Market Needs Analysis (Albilehi, et al. 2013). Consequently, a curriculum must be designed to meet these needs (Manivannan & Suseendran, 2017). In the context of the logistics sector,

curriculum design must be capable of creating a curriculum that delivers the knowledge and skills that fit the needs of the sector. In effect, the curriculum must be designed to suit the needs of its stakeholders (Manivannan & Suseendran, 2017) with specific theory and strategies such as authentic learning, work integrated learning, industry-based learning, digital competencies, internships, placements, and job simulations.

The process of curriculum design establishes a strong relationship between the logistics curriculum and the skills actually needed and tasks performed in every work environment in the logistics sector. A logistics curriculum that fills the skills gap in the sector requires a close collaboration between the curriculum designers, the HEIs, and the logistics sector (Tessema & Abejehu, 2017). Strong collaboration in this direction produces well-equipped graduates who fit into the logistics world. This aims to answer Question 2, “What is the relationship between the HE curriculum and the logistics sector’s skills needs?”.

### 4.4.1 HE curriculum and the skills needs of the logistics sector

The response to this question can be found in the answers of all three samples in this study: the CDs, the MMs, and the Employees. The relationship between the HE curriculum and the skills needs in the logistics sector have been established in this study in five ways:

(1) A direct relation between the current logistics curriculum used and the graduates’ finding work in the logistics sector (Question 24);

(2) CD visitations during the curriculum preparation (Question 26);

(3) The use of industry-based best-fit analytical methods (Question 27);

(4) The use of Omani occupational standards, which reflect the logistics industry need or demand supposedly (Question 32);

(5) The CD awareness of the obligatory units to be included in the logistics curriculum (Question 19).

In CD Question 24 (“Do you know what type of jobs your graduates work on after their graduation?”), an almost unanimous affirmation (n = 9, RFD = 90%) came from

curriculum designers. Moreover, the affirmative respondents stated the job titles of graduates who managed to enter the logistics sector, indicating that the curriculum is somehow connected to job market needs in the logistics sector. It also indicates that the CDs conducted visitations in the LCs before preparing the actual curriculum.

The visitation aspect can be confirmed in the responses to three questions: Questions 26, 27, and 32. In Question 26a, a majority (n = 8 of 10, RFD = 80%) confirmed that visits had been conducted before the curriculum preparation step. Most CDS (n = 5 of 8, RFD = 62.5%) visited the LCs “two to five times”. Of the eight CDs, almost all of them (n = 7, RFD = 87.5%) had visited excellent-grade companies although two CDs preferred visiting companies in all grades with another two CDs visiting only global and excellent grade logistics companies (Question 26b).

Meanwhile, in Question 26c, and as shown in Figure -12, the most common data gathering tools used during the visitations, the majority of the participants (n = 6 of 8, RFD = 75%) brought survey questionnaires either for an oral interview or written survey or both. Moreover, in response to Question 26d, CDs targeted all (n = 8, RFD = 100%) managers of either human resources or operations or both. Some also approached chief executive officers (n = 3, RFD = 30%) and department supervisors (n = 2, RFD = 80%). No CDs apparently met with non-manager logistics workers.

Question 27 demonstrates the use of industry-based analytical methods to determine best-fit curriculum theory for the curriculum designing process. Almost all (n = 9, RFD = 90%) CDs do so with almost half (n = 4, RFD = 40%) preferring to use all suggested curriculum theories. Specifically, these processes are work process analysis and functional analysis.

Additional evidence on the HEI consultation of occupational standards when determining the required skills to cover for the logistics sector can be found in response to Question 32 (“Do Omani HEIs take into account, when designing the curriculum, the skills required in the sector and the National Occupational Standards (NOS) criteria?”). A large majority (n = 8, RFD = 80%) agreed so, particularly in using Omani NOS. One CD, who did not agree, preferred using an international benchmarking strategy. Meanwhile, another CD indicated a non-sharing policy for HEIs.

In response to Question 19 posed to the CDs (“Which units should be obligatory for a logistics-related curriculum?”), most of them (n = 8, RFD = 80%) were able to

identify specific subjects that must be included in the logistics curriculum as obligatory units. One participant (CD#08) could not specify logistic subjects for obligatory units, simply referring to so-called “hardcore logistics”. Meanwhile, another participant (CD#06) insisted that an obligatory list of logistics fields of studies could not be fixed at present, indicating the need to benchmark these study units with internationally used subjects. The point appeared to be first ascertaining which subjects are being used globally and choosing from that list the subjects for the obligatory units in a logistics curriculum. Comparatively, MM Question 35 (“If you were to recommend, what specific curricular content would you want a logistics curriculum to contain in relation to this job?”) demonstrated a more concentrated list of unit subjects at one subject per respondent, as opposed to a list of five subjects identified by CDs in Question 19. The limited number of subjects mentioned also appeared consistent with Employee Question 15, whereby only less than half (RFD = 47%) of the logistics employees perceived their current jobs as covered only by 75-100% of their certificate. The majority (13 MM, 52%) of responses to MM-Q32 (“From your experience, how many units from the HEI do you think cover employee skills?”) remarked that the HEI units are covering almost 50% the required skills of LCs. In the same direction, six said almost 75%, four said almost 25%, and one said 100%. On the other hand, only one MM said that the units do not cover the skills. Moving to the employees, most of them (54 employees, RFD = 75%) in their answers to Emp-Q15 (“To what percentage extent do you feel that your certificate covers your current job?”) support the assertion that their HE certificate covered their current job with different percentages (20 Employees stated almost 50%, 30 Employees stated almost 75%, and four stated 100%). In the same direction in Emp-Q27, 50 employees (RFD = 70%) mentioned that the curriculum units cover almost all required skills in the logistics sector (40 Employees stated almost 50%, eight Employees stated almost 75%, and two stated 100%). This indicates that the curriculum units covered the competencies (knowledge, skills, and ability) that are required from the logistics sector.

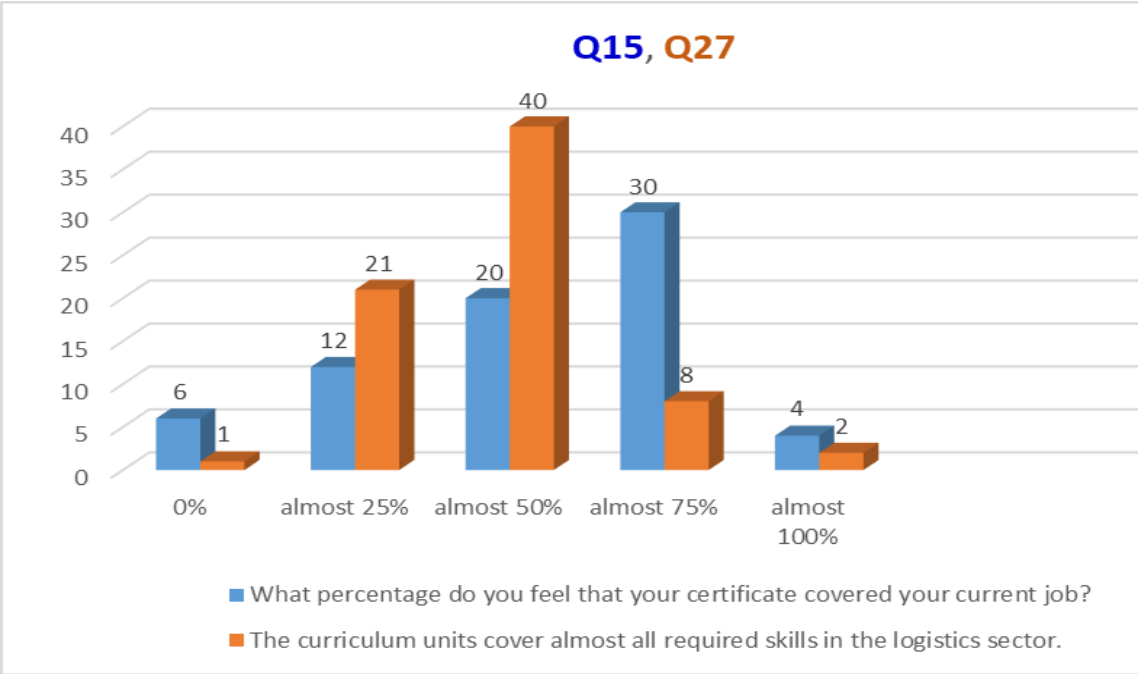



Figure 14. Percentage of respondents stating that the curriculum covers the required skills

## 4.5 Theme 3: Employers' expectations of higher education graduates

In any curriculum development project, the input of end users is crucial (Tessema & Abejehu, 2017; Manivannan & Suseendran, 2017). Consequently, one of the most important questions in the study is "How do employers' expectations about graduate attribute effect on curriculum design and delivery in the higher education sector?". This question aids in understanding the expectations of logistics companies (LC) concerning the quality of higher education graduates entering the logistics sector.

Thus, the main issue to pursue concerns what logistics companies think of and expect from HEIs. Twenty-four questions help the dimensions of the LC input: 16 questions from the MM questionnaire (n = 25) and eight questions from the Employees questionnaire (n = 72). This chapter explores the answer to the above question.

### 4.5.1 Expectations from the Logistics Middle Managers

In response to Question 33 (“Do you agree that there is a gap in the higher education curriculum?”), a large majority of logistics middle managers agreed (n = 20, RFD = 80%). This may mean that the current curriculum used in educating future workers in the logistics sector is incapable of preparing higher education graduates for work in the sector. However, in response to Question 20 (“Do you think HEIs are covering your needs for qualified labour/logisticians?”), slightly more than half of the participating logistics middle managers (n = 13, RFD = 52%) agreed that the HEIs somehow covered the needs of qualified logistics labour. The doubtful outcome (“Somehow”, n = 4, RFD = 16%), although weak, supports this contention.

This outcome somehow contradicts the answers to Q33, which asserted that a well-recognized gap exists in current logistics education. It appears that, in a manner that reconciles both outcomes, the educational gap that exists (Q33 finding) may not be serious enough to undermine the qualifications of logistics workers in the sector (Q20 finding). The negative opinion in Q20 (n = 8, RFD = 32%) constitutes a smaller but strong level of disagreement on the ‘adequate qualification’ issue regarding logistics workers, which conforms with the Q33 observation.

The “Somehow” responses, however, demonstrated some meaningful subjective details that can help improve the current understanding of the actual state of logistics education in Omani HEIs. Respondent MM#6 disclosed a need to provide students with the time to understand logistics information during class hours. This indicates some level of difficulty, if not cognitive disconnect, between the students of logistics in the HEIs and the fundamental concepts in logistical science and technology, which are crucial to workers performing well in the sector.

Conversely, respondent MM#23 disclosed a need to hire good teachers who understand the logistics field, either as an academic field or as an applied technology sector. Evidently, having students with cognitive difficulty in understanding logistics and teachers that are not good educators of logistics co-exist in the HEIs environment. It is, however, unclear which reality precedes the other. Knowing the difference will help to determine which screening mechanism must be established: that of the students with inherent aptitude for logistics education, or that of hiring teachers with strong academic and applied backgrounds in the logistics sector.

In response to Question 21, “Do the curriculum designers from HEI visit your company to ask about your needs and your opinions about their curriculum?”, the outcome may explain the existing disconnect between the logistics curricula in Omani HEIs and the qualification standards in the logistics sector. A small number of manager respondents (n = 9, RFD = 36%) commented on the lack of input on the part of the industry in some curriculum development logistics projects in the HEIs (Thapa, 2018). This explains the education and qualification gap.

However, this finding cannot adequately explain the findings in Q20 and Q33 because the overwhelming majority of the respondents (n = 16, RFD = 64%) did confirm that curriculum developers sought sector input in their logistics curriculum. The outcomes in response to Question 23, “What tools and documents do they use?”, however, confirmed the inputs of the logistics sector using well-arranged forms (n = 3, RFD = 33%).

Meanwhile, in response to Question 34, “What do you feel that they need more to focus?”, more than half of the middle management participants (n = 16, RFD = 64%) preferred that the HEIs focus on improving the curriculum content above anything else. Almost half of the respondents (n = 11, RFD = 44%) preferred that the HEIs establish an on-the-job training period for logistics students as part of their education curriculum (Figure-15). The rest of the middle managers believed that the curriculum designers were qualified to do their job (n = 9, RFD = 36%), that the HEIs must focus on ethical issues and rules (n = 8, RFD = 32%), or that the logistics teachers are unqualified to handle the field (n = 5, RFD = 20%), keeping in mind that some CDs are also active teachers.

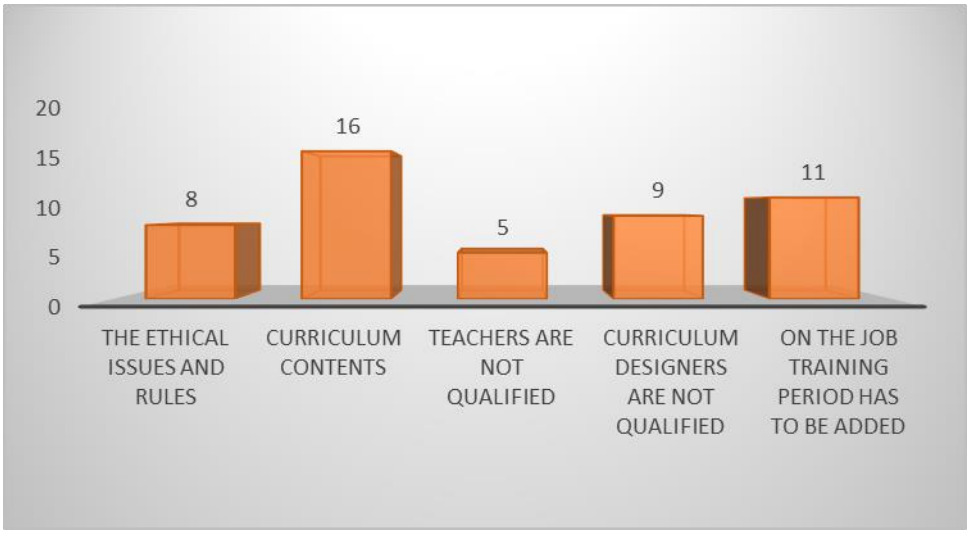



Figure 15. Opinions of LCs about HEIs

### 4.5.2 Expectations of logistics employees

Relevant responses from logistics employee participants were evident in nine questions (Qs 15, 19, 20, 23, 24, 25, 27, 32 and 33). These outcomes represent the sector expectations from the perspective of the logistics workers themselves. Moreover, the data gathered provide the context for the direct application of logistics knowledge and skills in the workplace.

In Q15 (“What percentage do you feel that your certificate covered your current job?”), a large majority (n = 50, RFD = 69%) reported that their higher education certificate covered only 50-75% of their actual job in the logistics sector, representing a gap of 25-50%. A far broader take on the data indicates that around three-quarters (n = 54, RFD = 75%) of the respondents believed that their certificate covered at least 50% of their actual logistics job. Perfect negative responses (0%, n = 6, RFD = 8%), however, are more than perfect positive outliers (100%, n = 4, RFD = 5%).

| ***No.*** | ***Questions*** | 0% | almost 25% | almost 50% | almost 75% | almost 100% | ***Count*** <br> ***%*** |
|---|---|---|---|---|---|---|---|
| 1 | What percentage do you feel that your certificate covered your current job? | 6 <br> 8% | 12 <br> 17% | 20 <br> 28% | 30 <br> 42% | 4 <br> 5% | 72 <br> 100% |

Table 10. Percentage extent to which employees feel their certificates covered their jobs

In the perfect negative respondents, more than a third (n= 2 of 6, RFD = 33.3%) felt, rather strongly, (1) unprepared for a job in the logistics sector upon graduation (Q19), (2) that the curriculum units did not cover almost all the required skills in the logistics sector (Q27), and (3) that no curriculum designer was coming up and asking them about their actual work in the sector (Q32). Only one respondent (RFD = 16.7%) felt confident about their educational preparedness. Meanwhile, more than half of them (n = 4 of 6, RFD = 66.7%) felt strongly regarding the lack of a match between their current tasks in the logistics sector and the academic knowledge they acquired in the logistics higher education as well as not gaining skills in the logistics sector based on their HEI education.

To find out to the extent to which educational qualifications relate to the employees' sense of confidence after graduation and their preference to work in the services sector, a Chi-square test was used as illustrated in Table 11 to answer Q19: Certificate * "I felt confident after graduation, and I preferred to work in the logistics sector".

| | Total (n=72) | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | $\chi^2$ | P-value |
|---|---|---|---|---|---|---|---|---|
| Diploma | 11 | 0 | 0 | 1 | 8 | 2 | 26.986 | 0.042 |
| Bachelor | 26 | 1 | 0 | 13 | 10 | 2 | | |
| Higher dip | 14 | 1 | 0 | 6 | 4 | 3 | | |
| Master | 20 | 1 | 3 | 4 | 11 | 1 | | |
| Doctorate | 1 | 0 | 0 | 0 | 0 | 1 | | |
| **Total** | **72** | **3** | **3** | **24** | **33** | **9** | | |

Table 11. Links between their certificates and employees' confidence

Table 11 shows the extent to which employees feel confident after graduation, their preference for work in the logistics sector, and how this relates to educational qualifications. According to the results, the greatest approval percentage was among the lowest educational qualifications (diploma, bachelor, higher diploma), while the disapproval answers were in the academic qualification (master) category, which shows that those with higher certificates identify more gaps in HE; Chi square was 26.986 and ($P < 0.05$).

Matching the same trend, Q29 regarding employees' perceptions asks if they believe that formal education from any specialization can prepare them for logistics. In

this question we prepared a table showing the certificates (Table 12). It covers Q29: certificate: * “Even if I did not graduate from a logistics education, my formal education prepared me well for my current job”.

### 4.5.3 Analysis of the Employers’ expectations from the CDs questions

In CD-Q26 more than three-quarters of the 10 participants (n = 8, RFD = 80%) visited LCs for their preparatory data collection before preparing or updating any curriculum. Eight CDs (RFD= 80%) answered CD-Q32 that HEIs when designing the curriculum take into account specific occupational standards to cover the skills required in the sector. These results indicate a high prevalence of LC coordination in the process of logistics curriculum development, consistent with the OS.

Meanwhile, CD-Q25 shows that a majority of CDs (n = 8, RFD = 80%) believe that the curriculum actively meets 75% of LS needs, while CD#09 stated 100% and CD#04 stated 50% because the specialization is new and will be applied in the next academic year. However, this percentage was disputed given the relative disparity between MM participants on the supply-demand concordance. In MM-Q20 barely half of the respondents (n = 13, RFD = 52%) expressed that HEIs cover LS needs, while more than a quarter (n = 8, RFD = 32%) expressed a definite “No”.

This outcome reflected the sub-question CD-Q26d (“What targeted staff or employees did you met in the companies?”), which involved coordination with MMs in all majority participants (n = 8, RFD = 80%). Interestingly, these were the same participants who practised LC coordination in Q26. The engagement of the MMs in the curriculum development process represents the incorporation of management expectations in the equation. In effect, the management feedback is incorporated into the curriculum as subjects and units as expected.

Conversely, the two CD participants (RFD = 20%) who were not visiting LCs (i.e. CD#04 and CD#08) revealed important information regarding their refusal to practise LC visitation. Primarily, by using its data, they relied on ASYAD to gather Labour Market Information (LMI) because of its rightly presumed enormous capability as the Oman’s leading government-owned logistics sector company.

This emphasis was found in CD-Q22 for CD#04 (“If you were to design a new logistics curriculum, how do you propose to do it?”) and in CD-Q20 for CD#08 (“List the procedure you would follow in order to set up a logistics-related curriculum”). Both CDs mentioned that the robustness of ASYAD data collection capability could not be surpassed by direct LC interviews. Essentially, the issue is a technical one (i.e. between the concepts of primary qualitative data and secondary descriptive data), which is highly important academically.

| | Total (n=72) | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | $\chi^2$ | P-value |
|---|---|---|---|---|---|---|---|---|
| Diploma | 11 | 0 | 2 | 3 | 6 | 0 | 26.797 | 0.044 |
| Bachelor | 26 | 1 | 3 | 8 | 14 | 0 | | |
| Higher dip. | 14 | 1 | 5 | 5 | 1 | 2 | | |
| Master | 20 | 1 | 4 | 5 | 8 | 2 | | |
| Doctorate | 1 | 0 | 0 | 0 | 0 | 1 | | |
| **Total** | **72** | **3** | **3** | **24** | **33** | **9** | | |

Table 12. Link between certificates and education

Table 12 shows the extent of the relationship of logistics education and regular education regarding working in the services sector. It is clear from the results that approval ratios were greater among higher education qualifications (MA, PhD) while most of the rejected responses were in the minimum educational qualifications category (diploma, bachelor, high diploma); Chi square was 26.797 and ($P < 0.05$).

| | Total (n=72) | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | $\chi^2$ | P-value |
|---|---|---|---|---|---|---|---|---|
| Diploma | 11 | 0 | 2 | 3 | 6 | 0 | 39.453 | 0.001 |
| Bachelor | 26 | 0 | 2 | 7 | 17 | 0 | | |
| Higher dip. | 14 | 1 | 2 | 7 | 3 | 1 | | |
| Master | 20 | 1 | 7 | 4 | 7 | 1 | | |
| Doctorate | 1 | 0 | 0 | 0 | 0 | 1 | | |
| **Total** | **72** | **2** | **13** | **21** | **33** | **3** | | |

Table 13. Link between the certificates and outside-Oman education

In the same direction, Q30 referred to the employees certificates: * “Even if I did not graduate from a logistics education, I learned most of the current skills of my job-

related formal education from the higher education institutions outside Oman". Table 13 shows the extent of the employees' conviction about the futility of logistics education, namely that the skills acquired are from education outside Oman, and how this relates to academic qualifications. It is clear from the results that the highest approval ratios were from those with higher qualifications, while rejection rates were from the lower qualifications; Chi square was 39.453 and P <0.05.

However, logistics employee respondents appeared overwhelmingly neutral (n = 5-6, RFD = 83.3-100.0%) in three expectations, including: (a) on the readiness of Omani higher education to generate qualified graduates for the logistics sector (Q23); (b) on the readiness of higher education outside Oman to generate qualified graduates for the sector; and (c) on whether the curriculum units cover similar skills and tasks required in the logistics sector (Q33).

An interesting point in these findings pertains to the close similarity between Q33 ("almost all required skills") and Q27 ("same skills and tasks"). There is only a minor difference in the degree of curriculum unit cover ("same" vs. "almost all" respectively) and in the delineation of logistics requirements ("skills and tasks" vs. "skills"). However, all of the perfect negative respondents were consistent in their responses, except for Emp#66. In Q27, the respondent strongly disagreed, while in Q33 the same respondent took a neutral stand.

## 4.6 Theme 4. Impact of measured and evaluated curriculum on the logistics sector

In general, measuring impacts and performance is complex and often nuanced (Ebrahim & Rangan, 2014). In education, measuring the impact of the current logistics curriculum in filling the skills gap in the logistics sector and ensuring the employability of those with higher logistics education constitutes a necessary exercise. This is relevant to evaluating the performance of the curriculum and considered as a part of authentic learning within the HEIs in achieving their respective to bring real elements of work experience into higher education as an essential teaching tool.

The approach to such evaluation is, however, difficult to determine because several factors including the attribution of outcomes to the correct cause (Ebrahim &

Rangan, 2014). Hence, Theme 4 focuses on the question, “How can a purposefully designed HE curriculum's effects on the logistics sector be measured and evaluated?”

### 4.6.1 Curriculum Designers’ Opinions

From the perspectives of the curriculum designers, the answer to this question can be found in CD Question 36, the receiving answers were different, and the closest meaning pertains to an increase in the employability rate as a form of HE outcome (Nita, et al., 2018). In answer to Question 36, “How do you evaluate the success or failure of a designed curriculum?”, most respondents (n = 9, RFD = 90%) preferred the use of outcome analysis, particularly focussing on an expected increase in the logistics graduates’ employability rate. This is despite the fact that the term “employability” was mentioned verbatim by only half of the participants (n = 5, RFD = 50%). Despite its variety of definitions (Rowe & Zegwaard, 2017; Bhola & Dhanawade, 2012), “employability” determines the effectiveness of certain graduate knowledge or skills in ensuring work in the logistics sector. Thus, an increase in the graduate employability rate directly assesses the impact of a logistics curriculum (Nita et al., 2018; Rahmat, et al. 2012).

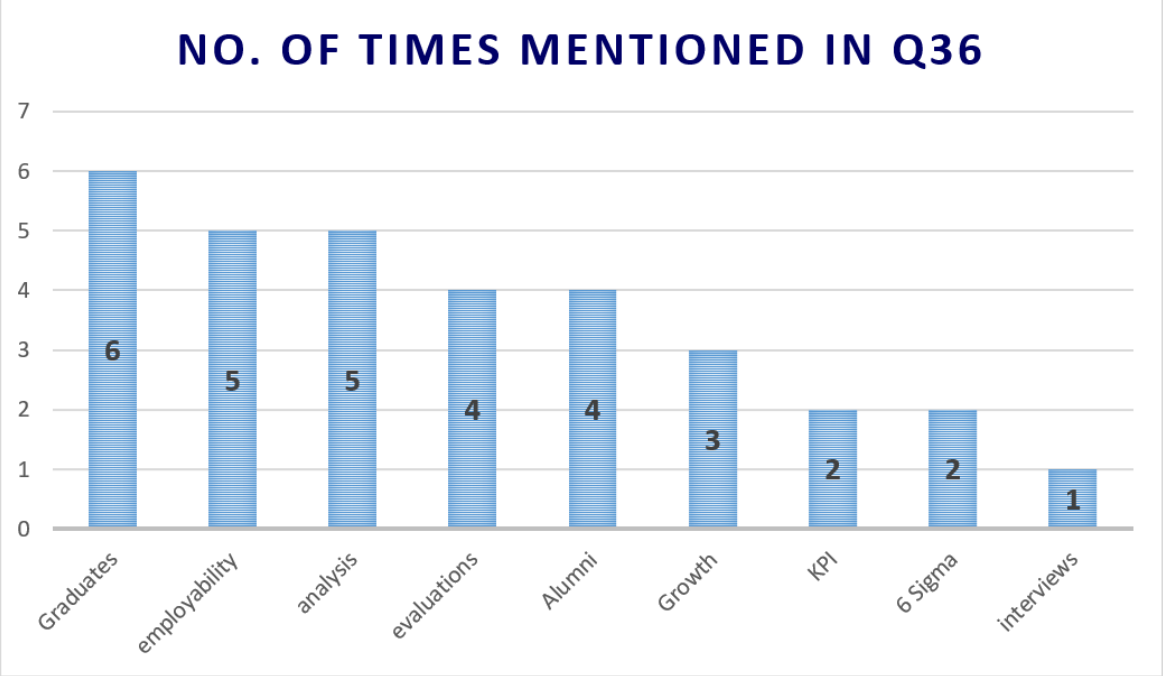



Figure 16. Evaluation the success or failure of a designed curriculum

However, a few respondents (n = 2, RFD = 20%) used some phrases that, relatively speaking, meant the same thing. CD07 used the phrase “graduates getting jobs”. Meanwhile, CD08 used the phrase “getting placed”. Moreover, a slightly higher number of respondents mentioned “outcome analysis” (n = 3, RFD = 30%), either without pointing out employability rate analysis (CD#05 and CD#09) or mentioning employability rate analysis independent of outcome analysis (CD#07). A third (n = 3, RFD = 33%) of these respondents also opted for an alumni survey to gather assessment information about the work environment in logistics companies.

### 4.6.2 Logistics Companies’ Opinions

From the perspectives of the middle managers, the answer to this question can be found in responses to Qs 33-36. Evidently, the primary insights revolve around the observable skills gap between the newly hired and existing workers and the current logistics curriculum. From the perspective of the logistics workers, Employee Questions 7 and 10 provided an observational and relatively subjective assessment of the effect of the current logistics curriculum on graduate employability. Employees are

in a unique position to face directly the challenge of performing as expected in a work environment, namely that HEI-derived learning may not lead to an acceptable level of satisfaction (McDonough, 2017).

In response to Question 33, “Do you agree that there is a gap in the higher education curriculum?”, MM provided direct outcome feedback regarding the effectiveness of the current logistics curriculum in bridging the skills gap in the logistics sector. More than a three quarter (n = 20, RFD = 80%) of middle managers agreed on the presence of a skills gap in the HE curriculum. This form of evaluation is observational in nature and directly derived from industry-based authorities who are involved in overseeing HEI graduates who managed to get into logistics.

In response to Question 34, “What do you feel that they need to focus on more?”, the data was based on the context of the perceived curricular gap as observed by the logistics sector employers and consumers of HEI curriculum products (the graduates). Most middle managers indicated that the HEIs fell short largely in terms of the quality and quantity of logistics curriculum contents (n = 16, RFD = 64%) and the inadequate (or lack of) availability of a job training period as a component of the HE curriculum (n = 11, RFD = 44%). The next and larger feedback pertains to the lack of appropriate logistics curriculum designer qualifications (n = 9, RFD = 36%) and the need to address ethical issues and rules in the curriculum (n = 8, RFD = 32%).

In response to Question 35 (“If you are to recommend, what specific curricular content would you want a logistics curriculum to contain in relation to this job?”), specific feedback from middle managers on the particular curricular contents that must be included enabling a better industry fit for HEI graduates. Unfortunately, the question had a low turnout of information (n = 10, RFD = 40%). However, of those who provided answers, most participants (n = 7, RFD = 70%) indicated specific subjects for inclusion in the logistics curriculum. Most of the curriculum contents which appeared to have a demonstrable gap in the logistics sector centred on warehousing management. This includes subjects such as inventory management (MM#1, MM#04, MM#12, and MM#19), storage management (MM#13), and digital barcoding (MM#04). Other subjects included scale drawing (MM#06), lean management (MM#12, MM#19), and soft skills (MM#10) such as communication ability, job agility, and hard work.

In response to Question 36, “List three recommendations to Higher Education Institutions that reflect your knowledge and skills needs”), a more definite list of curriculum content had been assembled, which middle managers perceived as matching the knowledge and skills needed in the logistics sector. Unfortunately, this question had a moderate turnout of answers (n = 16, RFD = 64%) and some general responses to the questions (n = 4, RFD = 16%).

Of those who identified specific subjects, the subjects include supply chain management (MM#4, MM#15, and MM#21), warehouse management (MM#4, MM#9, and MM#12), barcoding (MM#1), delivery and freight (domestic and international) management (MM#5, MM#15), health and safety management (MM#9), and warehousing management (MM#15). The respondents also identified some soft skills development, including good communication skills (MM#22, MM#23), and computer skills (MM#23). Job training (MM#11, MM#19, and MM#24) is also considered of great significance.

In response to Employee Question (EQ) 25, “My skills in the logistics sector have been gained from my education”, the percentage were equal in the “agree” (including “strongly agree”), “neutral” and “disagree” (including “strongly disagree”), categories each scoring 33.3%. The other way to get employees’ opinion is to ask about the knowledge of newly hired employees as in EQ28, “When receiving a new employee or fresh graduate, we feel that he has a good knowledge of the logistics sector”) the answers were 26.4% “agree” (including strongly agree), 47.2% “neutral” and 26.4% “disagree” (including “strongly disagree”). The analysis of empirical observation of the equal percentage in EQ-25 “agree” “neutral” and “disagree” categories each scoring 33.3%, and in EQ-28 in the equality of the percentage between “agree” and “disagree” is considered unreliable or highly subjective. In fact, caution has been raised regarding evaluation by observation (Ferrazzi, 2012).

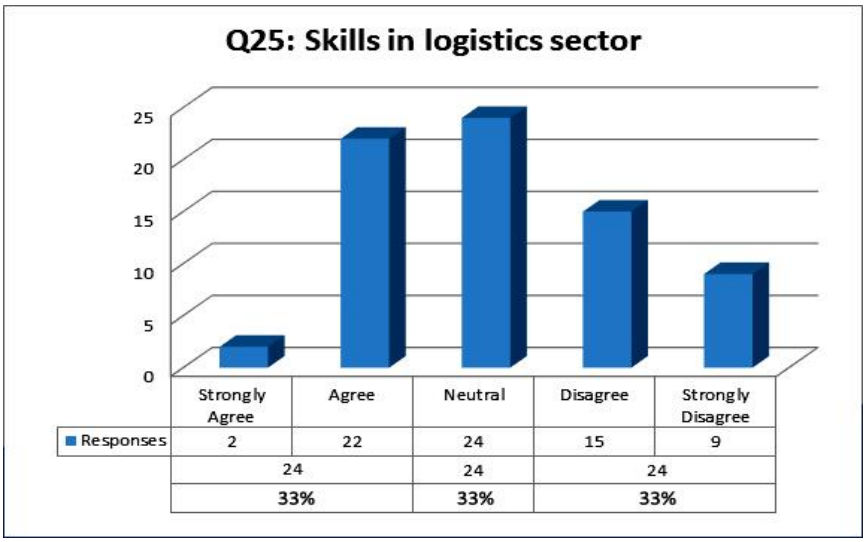



Figure 17. Skills gained from education

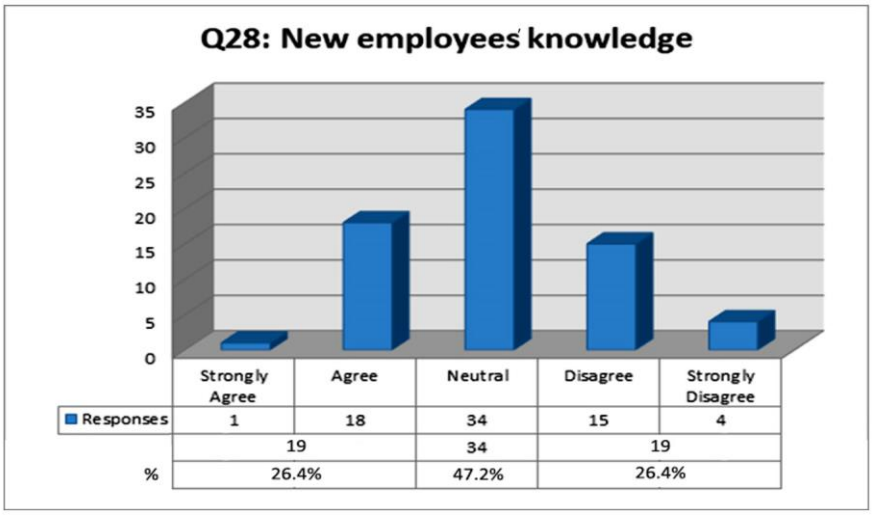



Figure 18. New employees' knowledge of the LS

## 4.7 Theme 5: The development of the curriculum according to logistics sector needs

Curriculum development is as good as the way a curriculum is designed. Finding the "how" in curriculum development constitutes a difficult undertaking because the primary stakeholders of a logistics curriculum are not only HEIs and students (Dalrymple, et al. 2017). An important stakeholder is also the logistics sector itself, which consists of several multinational enterprises (Wang, 2019), most of which are foreign direct investors who made a bet on the Oman economy and have the capacity to support a crucial sector in the contemporary globalized business environment.

However, even if such a mechanism has been identified, embracing it can be as difficult in terms of creating a curriculum that complies fully with the demands and expectations of logistics companies. Several factors play a role in ensuring that the gap in implementing a curriculum development strategy is as challenging as bridging the skills gap itself, be it a community approach (Dalrymple, et al. 2017) or co-creation (Bovill & Woolmer, 2019). Nevertheless, the undertaking must be made. Consequently, Theme 5 must answer the question “How can the HE designers develop curriculum according to the required skills to satisfy the employers in the logistics sector in Oman?” To do so, the perspectives of the CDs constitute the primary source of the answer. However, the inputs of the LC MMs and the LC Employees must be consulted to represent better the user side of the issue.

### 4.7.1 Findings from Curriculum Designers

Direct answers from the CD group can be found primarily in Q17, which emphasizes the relationship between academia and the LC, and Q34, which focused primarily on the practical skills considered relevant to the LC. Meanwhile, some questions, particularly Q19, mentioned specific subjects for inclusion in a curriculum but without specific emphasis on their value to a given LC apart from perceived value in academia. The rest of the CD questions contribute only indirectly to answering the fifth question, including Q36, which identifies the criteria for judging the success or failure of a designed curriculum.

In Q17, a large majority of the participants (n = 8, RFD = 80%) were assured of their ability to identify the curricular components that would create a curriculum that can deliver work fitness in the LC. This, however, indicates that only eight participants can be considered credible to answer the research question based on the fact that only they had been involved in actual curriculum development. This lack of experience determines the perspective backed by experience or theoretical knowledge alone. Descriptive answers in Q17 indicate commonalities in several components, namely: collaboration between academia and industry (CD#01, CD#02, and CD#09); or combined theoretical and practical components, either equally (CD#01, CD#02, CD#05, CD#07) or as practical components providing greater emphasis (CD#06 and

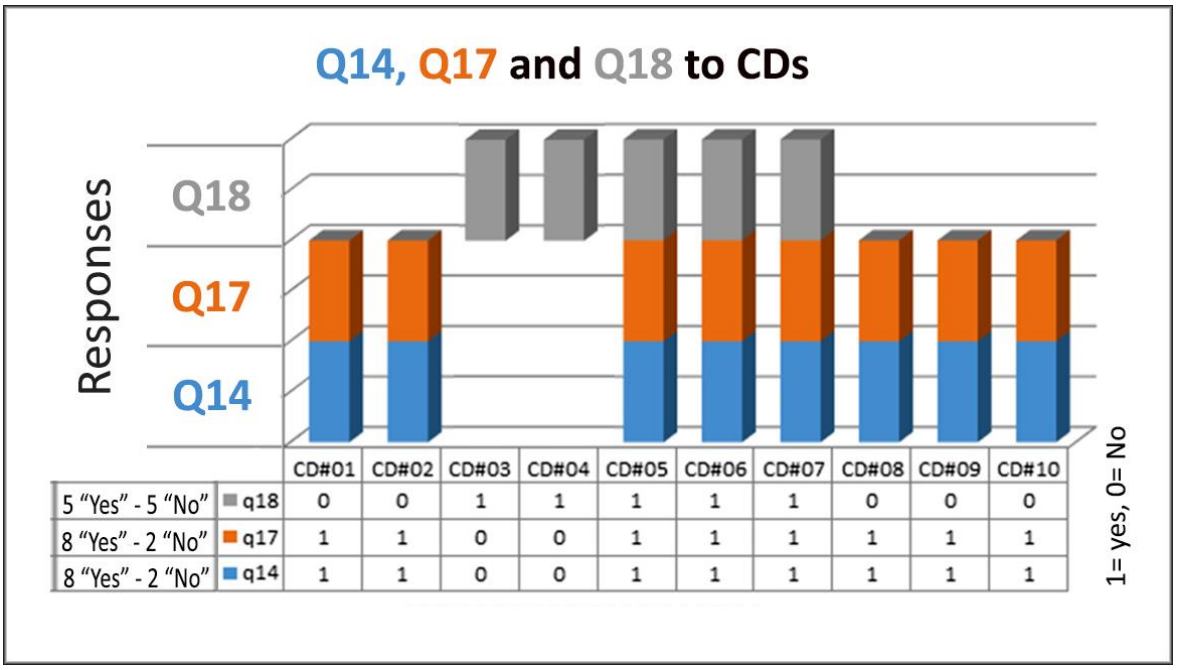
CD#08). The nature of this relationship or collaboration was indicated in Q34 (“Can you list the contents or other elements to be included/covered for the purpose of skill creation relevant to the job roles in the sector?”) by CD#08, such as hiring logistics industry experts as teachers or teachers acting as industry consultants.

Meanwhile, some participants mentioned specific study areas for practical competencies, including procurement, transport, supply chain, warehousing, and port operations (CD#01, CD#05, CD#07, and CD#10). However, a more detailed list can be found in the responses to Q19 (“Which units should be obligatory for a logistics-related curriculum?”) and Q34 (“Can you list the content or other elements to be included/covered for the purpose of skill creation relevant to the job roles applicable in the sector?”). Some of these subjects were also mentioned in response to Q34, particularly by CD#05. Nevertheless, three different subjects had been impressed as highly relevant and necessary both in the present and in the future, namely, IT, mathematics, and cyber-security (CD#09, CD#10, and CD#03).

One participant mentioned the need for “soft skills” in response to Q17 (CD#01) while two interviewees did so when answering Q34 (CD#01 and CD#02). Moreover, these two participants in Q34 agreed to the demarcation between ‘practical’ skills and ‘soft skills’. However soft skills are defined, they were seen as complemented by the need for the required logistics knowledge and practical skills. Nevertheless, Bak, et al. (2019) have defined soft skills as non-technical and non-functional behavioural skills, including communication, initiative, negotiation, and planning skills respectively. They are also descriptively opposite to hard skills, which are technical and functional skills.

One of the interesting findings is the answers to CD-Q18, “Do you think it is possible to turn a general management programme into a logistics programme?”. Five CDs (RFD = 50%) mentioned that they agree that it is possible to turn a general management/engineering programme into a logistics programme, showing that half of the CDs state that it is not necessary to recruit logistics graduates for logistics companies so they can also employ non-logistics graduates from management or engineering programmes and prepare them to work in logistics programmes. This finding shows that, according to CD-Q14, the five CDs who said it is possible to turn a general management/engineering programme into a logistics programme are also involved in the development of curricula with components relevant to the development

of competencies for HE students. The same CDs agreed in response to Q17 that turning any programme into logistics could be done by linking graduates to the industry or to add some units to the other programmes to convert them to logistics programmes. With no exception, all five CDs suggested in response to the recommendation question (Q35) that this issue has to be resolved by establishing a committee to liaise between HEIs and LCs.




| | | CD#01 | CD#02 | CD#03 | CD#04 | CD#05 | CD#06 | CD#07 | CD#08 | CD#09 | CD#10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 "Yes" - 5 "No" | q18 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 8 "Yes" - 2 "No" | q17 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 "Yes" - 2 "No" | q14 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |

Figure 19. Curriculum development according to logistics sector needs

### 4.7.2 Findings from the Logistic Companies

From the perspective of the LCs, the MM and the EMP groups also provide some answers to the research question. The input of the LC middle managers in answering this question is particularly important because more than half of them (n = 13, RFD = 52%) manage employees handling all-logistics functions. Moreover, a fifth (n = 5, RFD = 20%) of them manage 70-90% of employees handling logistics functions. Thus, a large majority (n = 18, RFD = 72%) of the participants have significant experience in managing logistics employees. However, most of the responses from this group pertain to the "what" issue instead of "how". Nevertheless, indirect answers to the question can be found in response to Qs 21, 22, and 25, namely, which findings CDs considered as important to curriculum design and development.

Answers to Q21 (“Do the HEI curriculum designers visit your company to ask about your needs and your opinions about their curriculum?”) indicates that more than half (n = 16, RFD = 64%) of curriculum designers failed to get logistics industry input when developing logistics curricula. In response to Q22, of those who did make a visit for industry coordination (n = 9, RFD = 36%), more than half (n = 6 of 9, RFD = 67%) do so only once a year. Only a small exemplary number (n = 3, RFD =33%) of curriculum designers performed coordination visits at least thrice a year.

Figure-20 shows that in response to Q25 regarding the time CDs spend in LCs during each visit, most CDs stayed only for one hour per visit. A minority (n = 3, RFD = 33%) stayed for four hours or more. These findings are despite the strong enthusiasm and cooperation (n = 7, RFD = 77.7%) from the LCs for coordination visits and engagement with their logistics employees as indicated in Q24 (“Do you allow them to sit with the employees to ask about job tasks and details?”).

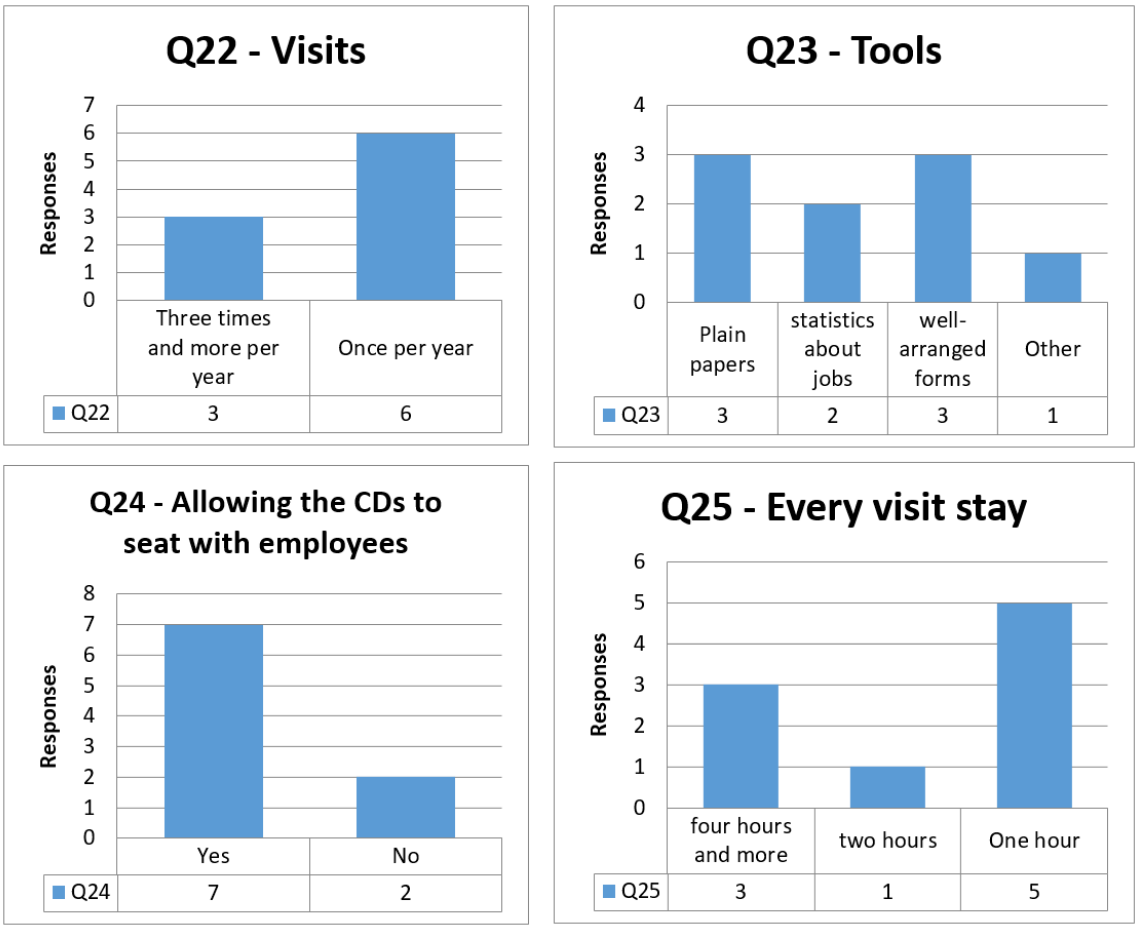



Figure 20. LC opinions regarding CDs’ visits

Meanwhile, the answers from LC Employees are similar to those of MMs, namely they provide only indirect answers to the research question. These answers also talked about the “what”, not the “how”. This included graduate preparedness to work in LCs (Q1), impressions of Omani higher education’s readiness (Q5), the gaining of logistics skills from higher education (Q7), and current curriculum units covering all required skills in the sector (Q9). On the work-level assessment side, respondents also stayed with the “what” (both knowledge and skills), namely impressions of good knowledge from logistics graduates (Q10) and curriculum units as covering required logistics skills and tasks (Q15).

This focus on the “what” from the LCs’ perspectives indicate a prevailing concern with logistics graduates’ knowledge and skills and their potential new employees. Logistics companies are not very concerned with how the curriculum is designed. They are more concerned regarding the outcome of that curriculum in terms of worker knowledge and skills. Indirectly, Q15 (“The curriculum units cover the same skills and tasks required from the logistics sector”) reflected clear objectives, namely that the HEIs must strive to develop the “how”. Thus, findings from the LCs reflect a goal for curriculum development and design.

| Emp-Q15 (“The curriculum units cover the same skills and tasks required from the logistics sector”) | | | | |
|---|---|---|---|---|
| **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** |
| 1 | 19 | 37 | 14 | 1 |
| 20 | | | 15 | |
| 27.8% | | 51.4% | 20.8% | |

## 4.8 Conclusion

The evaluation of the validation of certificates and experiences of all participants (CDs, MMs and Employees) was undertaken In Chapter 4 and the responses given in the interviews and questionnaires were analysed in order to generate the findings and analyse them in a deeper way. The data regarding the validation of certificates and experiences of all participants (CDs, MMs, and Employees) led to a relatively believable and feasible picture of the educational and experiential profile of all three sample groups.

The chapter included a brief explanation on how RFD was used for the validation of the certificates and experiences of all participants. Then, the chapter presented a

review of the five themes that are relative to the study's five sub-questions; in the first theme "Designing the curriculum for the logistics sector" the extract showed that the study had generated five processes in logistics curriculum design that had a clear focus on employability outcomes in the logistics sector using curriculum theories and Market Need Analysis (MNA), and the link between the industry with the curriculum is essential through curriculum strategies such as authentic learning, work integrated learning, industry-based learning, digital competencies, internships, placements, and job simulations. The main finding of this theme is that the most favoured curriculum design methodology includes functional analysis and curriculum mapping. In relation to the second theme, "The relationship between the HE curriculum and the skills needs of the logistic sector", the findings from the three samples came by the end with five evidences regarding the relationship between the HE curriculum and the skills needs of the logistics sector. These evidences include: (1) a direct relationship between logistics curricula and job offers; (2) preparatory CD visitations; (3) industry-based analytical methods; (4) the use of Omani occupational standards; and (5) CD awareness of the obligatory logistics units. Regarding the third theme "Employers' expectations about higher education graduates", the findings from the two samples (MMs and Employees) reflecting the employers' side, the expectations from logistics companies appeared to agree regarding the competency gap between logistics students and the logistics sector's work demands.

There is also an apparent lack of reasonable consultation with logistics employees in the current approach to curriculum design. Logistics middle managers seemed to perceive that the education gap that has existed in Omani HEIs might not be serious enough to undermine the qualifications of logistics workers in the sector, while the logistics employees considered a higher education certificate to have covered only up to three-quarters of their actual job in the logistics sector, representing a gap of almost 50%. An interesting finding concerned the employees who viewed the coverage capability of the logistics certificate as entirely negative. They viewed the graduates and curriculum as unprepared to take on actual tasks in the logistics sector, confirming the gap observed by the majority of respondents. Neutral respondents also overwhelmingly considered Oman, like other logistics institutions outside Oman, as unprepared to develop students for the logistics sector. They recommended that active logistics workers must be asked for inputs when curriculum designers develop a

logistics curriculum. The fourth theme, “The impact of measured and evaluated curriculum on the logistics sector”, illustrates that most MM respondents preferred the use of outcome analysis, particularly centring on an expected increase in logistics graduates’ employability rates. Meanwhile, logistics employees tend to be almost equally divided in their observations concerning the role of higher logistics education in their preparedness to work in the logistics sector. Results indicate a perceivable difficulty on the part of non-managerial employees regarding generating a clear and unified assessment of skill gaps or skills fitness for themselves as well as for newly employed workers. In effect, the assessments of the middle managers appeared more reliable than those of the employees.

On the same theme, the curriculum designers were almost unanimous in the value of outcome analysis, particularly the positive change of employability rate, as an effective method in assessing the impact of the current logistics curriculum in filling the workforce needs of the logistics sector. Moreover, this allows for an outsider view on the potential of logistics graduates to fill the need of the sector for employees with the correct set of knowledge and skills to delivery corporate profitability. The last and fifth theme, “The development of the curriculum according to the logistics sector needs” reflects that developing a sector-compliant logistics curriculum is primarily a concern of higher education, which the logistics companies expect the latter to do competently. The majority of curriculum designers (80%) expect that they know what needs to be done (the “how”) to accomplish the task and satisfy the sector’s expectations. From the perspective of the LCs, 16 MM (RFD = 64%) indicated that the CDs failed to get the input of the logistics industry when developing logistics curricula, and of those who did make a visit for industry coordination (n = 9, RFD = 36%), more than half (n = 6, RFD = 67%) do so only once a year.

Only a minor exemplary number (n = 3, RFD =33%) of curriculum designers performed coordination visits at least thrice a year, and half of them think that it is possible to turn a general management programme into a logistics programme by adding some units and specifying the required units has to be completed by establishing a committee consisting of HEIs and LCs. Meanwhile, the answers from LC Employees are similar to those of MMs. This focus on the “what” based on the LCs’ perspectives indicate a prevailing concern with the knowledge and skills of logistics graduates and potential new employees. Logistics companies are not very concerned

about how the curriculum is designed. They are more concerned about the outcome of that curriculum in terms of worker knowledge and skills. Indirectly, Q15, “The curriculum units cover the same skills and tasks required from the logistics sector”, reflected clear objectives to which the HEIs must strive to achieve in order to develop the “how”. Thus, the findings from the LCs outline the goals for curriculum development and design.

# Chapter 5: The Discussion

## 5.1 Introduction

Chapter 5 discusses the findings based on the study questions, which are divided into themes to provide insights into a competitive and effective logistics sector curriculum (Zhang & Qian, 2019). Every theme covered one research question as displayed in this chapter.

The discussion includes a more in-depth literature and analysis of empirical evidence retrieved from the quantitative and qualitative data to describe the role of ASYAD in designing the occupational standards as the basis of curriculum design, the MoHE regulations for granting licenses to academic programmes at HEIs.

## 5.2 Discussion Theme 1: Processes of curriculum design for the logistics sector in Oman

In this theme I examined the development of a curriculum that meets private sector needs addresses the research question: “How do Omani HEIs conceptualize the processes of designing curricula for the private sector?”.

### 5.2.1 Introduction

The findings illustrated that five processes are followed in logistics curriculum design and have a clear focus on employability outcomes in the logistics sector: preparation of data for the required competencies in logistics programmes, participation of the logistics companies in the design process, curriculum design method selection and curriculum design outcome evaluation. Close sector involvement in market needs analysis and functional job data gathering is considered a prerequisite for the process that may help in designing the curriculum. The findings showed that the most favoured curriculum design methodology by the CDs includes functional analysis and curriculum mapping as illustrated in chapter four (4.3.1). The most important trend for the CDs is to improve the curriculum quality in accordance with the logistics sector’s needs (ECDVT, 2012), which will increase the employability rate for

logistics graduates, which is one of the primary key indicators for their success (Cleary et al. 2007; Ferns, et al 2019).

### 5.2.2 Analysis of the five processes

There was consensus among CDs on curriculum development that the five-process model reflects the ADDIE model closely (Cheung, 2016; Kurt, 2017). ***Processes 1*** and ***2*** reflect the analysis phase of the ADDIE method. ***Processes 3*** and ***4*** also reflect the ADDIE design phase. Meanwhile, ***Process 5*** pertains to the evaluation and implementation phases of the ADDIE method as described in the processes of designing the curriculum (2.9.2).

In ***Process 1***, as analysed (4.3.1.1) all CDs agreed that any curriculum design process must begin with the undertaking of a Market Needs Analysis (MNA) (Albilehi, et al. 2013). The MNA is essential in order to engage logistics company requirements for their prospective employees, which directly addresses, corrects the ongoing skills gap in the sector and "continue to update the relevant curriculum" (Kartika, et al. 2019, p. 248)

***Process 2***, as indicated (4.3.1.2) the majority of the CDs (80%) agreed that Omani HEIs must ensure that the resulting logistics curriculum conforms with the National Occupational Standards (NOS) (Ho, 2013; McKinnon et al., 2017). Two CDs (CD#04 and CD#08) disagreed and believe they can build a curriculum from sitting down with the logistics sector staff, without using the NOS as a basis for curriculum preparation and suggested taking information about the logistics sector from ASYAD as base information to build a curriculum. The lack of consensus among curriculum designers on the second process highlighted some shortages in the implementation of the process on the part of all designers.

First, following NOS will help to build a curriculum that fits the needs of Omani logistics, while utilizing the existing regional advantages of logistics firms (Goldrick-Kelly, & Nugent, 2019), thereby helping to bridge the current skills gap. Second, although the logistics educational literature is essentially similar globally, specific skills and knowledge requirements are localized and often defined by local contexts such as local transport systems (e.g. fragmentation and type), lack of foundational educational preparation, and regulatory frameworks (McKinnon et al., 2017). Third, the lack of

information sharing between the HEIs and the LCs has resulted in enormous difficulty in generating NOS to effectively address the current skills gap in the logistics sector (McKinnon et al., 2017). Both CD participants agreed that this problem was a serious barrier in using NOS as a benchmark for an Omani logistics curriculum. One of the two CDs mentioned that it is better to use international programs such as CILT as it has worldwide reputation in the logistics sector (CILT, 2020a). However, the barrier cannot be fully addressed using international logistics curricula and must be further adjusted through regulatory intervention. The Ministry of Higher Education and ASYAD are in the best position to address this barrier and establish cooperation and coordination between Omani HEIs and LCs (Manivannan & Suseendran, 2017; Tessema & Abejehu, 2017).

The majority of the CDs, however, found no barrier in terms of HEI-LC linkages, indicating that, at least in their respective HEIs, a reasonable linkage with Omani LCs must exist. It also demonstrates that this cooperation may be used, if not yet, to create a NOS for the logistics sector in Oman (McKinnon et al., 2017). ASYAD is taking a lead role in developing the NOS for the logistics sector in coordination with the Occupational Standards and Testing Centre of the Ministry of Manpower and the Omani Society for Petroleum Services (OGL, 2016).

In ***Process 3***, in-depth data (4.3.1.3) was presented four different ways: (1) company visits; (2) grade-based companies qualifying for development participation; (3) use of data collection tools; and (4) company personnel engagement mode. The majority of CD participants (8) perform the visits, while two of the CDs do not visit. Also, of those who perform the visits, more than half (n = 5 out of 8, RFD = 62.5%) of the visiting CDs screened out LCs that have less than “first group” (consultancy, international, excellent and Grade 1) as a classification of the volume and the capital of high-grade companies in Oman (IMC Group, 2016, p. 9). The other three CDs visit any grades company, even small companies, which are less than “global and excellent grades” during the curriculum design processes. Prioritizing high-grade companies increase the quality of the selected data, as high-grade companies have quality assurance systems and usually follow NOS (Laur-Earnst, et al. 2000) as a basis for their curriculum design. Another reason is that high-grade companies employ 96% of Oman employees' total number and have a greater commitment to the Omanization program, especially the HEIs, who make up 97% of students (NCSI, 2020). The

empirical analysis showed that half of the CDs don't visit high-grade or visit any grade of companies, including SMEs, which negatively affected the designing processes. Low-grade companies usually employ multitasking employees to cut down on salary costs (Dzubak, 2008; Otto, et al. 2012), it is more difficult to evaluate the competencies of multitasking employees, which is expected negatively impacting the level of detail needed to effectively design curriculum (Maupa, et al. 2019).

The other two ways, which are the “use of data collection tools” and “company personnel engagement mode” are met as indicated in Figure-12 ‘Tools used during the visiting companies,’ illustrating that the best data collection tools used during the LCs visits are questionnaires (table-4 in 3.5.1) and interviews (table-5 in 3.5.2), with all CDs meeting the MMs in the LCs during their visits. Still, since two CDs do not perform visits and three CDs visit all grades, this indicates that only half of the total number of CDs visit convenient LCs; as it was explained in the previous paragraph regarding the importance of visiting high-grade companies as they have more commitment to employment and follow quality assurance systems and usually follow NOS (Laur-Earnst, et al. 2000).

Company visits and prioritizing companies from high to lower grades will allow the CDs to, respectively, improve job description standardization in the logistics sector, evaluate the required competencies, review the quality of the education, and evaluate the return on investment and employability percentage for HEIs (Ferns et al., 2019). The company visits are essential in the design of the curriculum processes to analyse the required skills to design and update the curriculum (Kartika et al., 2019); it is evident that the targets of the visits are not met in ***Process 3*** because half of the visits are either not implemented or implemented in relation to inconvenient companies. In addition, the majority who visit companies do not know about the “Gulf Arab manual common vocational classification and description” that defines the classification of occupations and job descriptions in Oman that can be easily accessed on the National Center for Statistics and Information (NCSI) website (NCSI, 2019c).

In ***Process 4***, empirical evidence in figure-13 within 4.3.1.4 is provided with quantitative data on functional analysis (n = 7, RFD = 70%), curriculum mapping (n = 6, RFD = 60%), and work process analysis (n = 5, RFD = 50%). Some CDs use two or all of these methods in their company visits. Using one or more curriculum theories

helps to add more quality and derive the benefits of merging them. Combining the various theories enables a much richer perspective in terms of understanding the learning situation (Akerlind, et al. 2014; Jorgensen & Larkin, 2015).

In ***Process 5***, where critical analysis is made on the evaluation of the outcome of a designed curriculum (4.3.1.5) and based on the given opinions of the CDs as depicted in 4.6.1, it is evident that all CDs agreed that the employability rate constituted the most important evaluation factor in the success of the logistics curriculum. This finding demonstrates two important facts in curriculum development. First, the success of the curriculum relies on the success of its graduates in the labour market, which is directly measured in their employability rate. Second, the employability rate reflects the capacity of the logistics curriculum to address Oman's logistics sector's skills gap.

### 5.2.3 Summary of Theme 1

CDs closely followed the ADDIE model, but the analysis of the CDs' answers shows that the mismatch of the curriculum and the needs of the logistics sector may happen for a variety of reasons. Only half of the total CDs visit the convenient LCs, some CDs are not visiting LCs, some do not follow NOS, and others are new curriculum designers as they were teachers before their HEIs commanded them to design logistics curricula. The development of NOS between the education system and employers according to the labour market needs increases the possibility to inform the education system of the existing qualifications that fit labour market needs and improve the assessment and recognition system for competencies (Andriušaitienė, 2018, p. 90). Most CDs agree that the curriculum conforms with the NOS but that it is not universally accepted. It is essential to design the curriculum by benchmarking with the NOS, other HEIs implementing logistics programmes and thus, according to the MNA, closing the skills gap effectively to provide a high-quality logistics education (McClarty & Gaertner, 2015). CDs and LCs have to work together with Stage 3 of ADDIE 'Design' as a main part of following specific strategies such as authentic learning (Abelha et al., 2020), IBL (Rajibussalim, et al, 2016) and WIL (Ajjawi et al., 2020), to design a curriculum according the LS needs. In contrast, the role of designing the NOS and

curriculum has to be supervised and regulated by ASYAD and the MoHE as they are the main government regulators for the logistics sector and HE system.

## 5.3 Discussion Theme 2: Relationship between the HE curriculum and the Omani logistic sector's skill needs

In this theme I examined the link between the HE curriculum and the skills demanded in the logistics industry covering the research question "What is the relationship between the HE curriculum and the skills need of logistics sector?".

### 5.3.1 Introduction

Logistics practitioners are in the right position to help academics deliver a needs-based logistics curriculum (Daud, et al. 2012). Based on data from three sampling groups (CDs, MMs and employees) from Chapter 4, there are five types of relationships between the HE curriculum and the Omani logistic sector's skill needs: (1) a direct relationship between logistics curricula and job offers; (2) preparatory CD visitations; (3) industry-based analytical methods; (4) use of Omani occupational standards; and (5) CD awareness of obligatory logistics units.

The relationship and cooperation between CDs and LCs generate a logistics curriculum with best-fit curricular units in order to meet the sector's skills needs (Manivannan & Suseendran, 2017; Tessema & Abejehu, 2017) and provide a competent graduate with transferability of competency (Scott et al., 2019; Lowden et al., 2011). This strategy permits industry stakeholders, particularly the employers, managers and workers, to provide inputs into logistics curriculum content (Thapa, 2018). This relationship will be discussed in this section from the perspective of the classification of companies (high-grade or low-grade) to understand the working task quality (Dzubak, 2008; Otto, et al. 2012), and visits, then from the perspective gained by applying human and social capital theory.

### 5.3.2 Relationship between CDs and LCs from the perspective of classification of companies and visits

Curriculum design remains disconnected from industry demand (Lazányi, 2015; Levy, 2013). This disconnect must be closed by HEIs (Almaleh, et al. 2019; Fisher & Scott, 2011) to decrease the skills gaps and mismatches between graduates and job requirements; amidst these skills gaps and mismatches (perhaps even because of these), building ongoing relationship between HEIs and the logistics sector is even more significant to "both parties' insights about how to improve the efficiency" (Burrowes, et al. 2014, p.23) through activating curriculum strategies such as authentic learning, work integrated learning, industry-based learning, digital competencies, internships, placements, and job simulations to integrate theory and practice in authentic workplaces as a main part of building the knowledge in the workplace as part of learning (Abelha et al., 2020). The outcomes in the three samples (CDs, MMs and employees) demonstrated the importance of boosting the partnership between the HEIs and LCs. Satorres Martinez, et al. (2019) have stated that strengthening the forms of cooperation between HEIs and companies around the world will involve developing new teaching and learning methodologies (p. 8114), while promoting industrial engagement through curriculum design development and strategies, thereby leading to the "opportunity for companies to access expertise in the HEIs" (p. 8118). The data from ***Theme 2*** in Chapter 4 indicates awareness of an interdependent relationship between the HEI and logistics sector players to generate a logistics curriculum with best-fit curricular units in order to meet to the sector's skills needs (Manivannan & Suseendran, 2017; Tessema & Abejehu, 2017). This relationship may be initiated based on CDs' knowledge about the specific needs of a LC job which is the result of the CD's personal relationship with graduates, as knowledge and skills levels are requisite to engage in better human capital development (Karoly, 2010, p. 37). In addition, the visitation practices gained by CDs' insights into LC needs helped them to design the logistics curriculum and prepare specific units consistent with LCs' required skills, which is expected to increase the employment opportunities for logistics graduates.

The answers to Q17 emphasize the relationship between academia and the LC, while Q34 focusses primarily on the practical skills considered relevant to the LC and

observes the ability of the CDs to identify the curricular components that would create a curriculum that can deliver work fitness in LCs. Both questions indicated several components about the relationship between HEIs and LCs such as combined theoretical and practical components, either equally or as practical components providing greater emphasis. The majority of the CDs agreed that turning any programme into one focused on logistics could be done by linking graduates to the industry or adding some units to the other programmes to convert them to logistics programmes (Figure-19) such as the example of the Curtin University of Technology (CUT) in Australia when they established a logistics program that fits the needs of the oil and gas sector.

Visiting the LCs by the HEIs through their CDs and involving LCs in curriculum design is essential to strengthening relationships, improving cooperation and teamwork (Steingraber & Bampton, 2017) and supporting individual performance (Quintero, 2017) and may help building a LLL environment (Kotzab, et al, 2018) when the discussion is going on between CDs and MMs. The majority of the CDs (n=8; RFD= 80%) stated that they visit the LCs before they start designing the curriculum. In contrast, only 9 MMs (RFD = 36%) agreed that the CDs visit their companies to gather information that may help them in designing the curriculum. The disparity between the MMs and CDs' reports cannot be explained directly from the data acquired. However, this mismatch may be accounted for in the five LCs that did not decide to participate in the questionnaire. Sampled CDs may have visited these five LCs while not visiting the selected 25 LCs. The other probability to substance the trend from the data is moving from the percentage to numbers, so 8 CDs from the HEIs perform visits to the LCs, and 9 LCs receive the CDs during their visits, which indicates that there is a match between the HEIs' visits to the LCs, especially given that more than the half of the MMs in Q20 (n= 13; RFD: 52%) think that that the HEIs are covering their needs for qualified labour/logisticians.

### 5.3.3 Relationship between CDs and LCs from the perspective of human and social capital theories

Central to *Theme 2* in 4.4, outcomes are the probability of the discrepancy between MM reports on the visitation level of CDs and those of participating CDs. This led to an apparently inadequate number of CDs providing attention to engaging high-grade LCs. These shortcomings could account for the visitation discrepancy reported by MM participants, reflecting the skills gap in the logistics sector vis-à-vis curriculum development or HEIs' redesign efforts.

Gillies (2015) has pointed out that HCT has been controversial given its reductivist perspective on human beings, conceptualizing humans as mere capital goods while ignoring their intrinsic worth. It fails to account for the role of motivation in human behavior, reflecting outcome inequalities, particularly individual shortcomings associated with their choices or capital returns. Thus, HCT can help explain the discrepancies between MM and CD reports. In effect, the discrepancy could be attributed to the differences in the motivations of CDs in choosing to focus on the classifications of high-grade LCs or a wider sample of LCs, including lower grade LCs and perhaps through SCT and the extent of their relationships with their partners (Rogosic & Baranovic, 2016) in LCs Regardless of the classifications of the LCs. The MMs samples in the study were from the high-grade LCs only, which resulted from the mismatch between the two results.

There is an inherent difference that exists in CDs regarding the idea of the correct sampling of candidates for curriculum design inputs. A majority of CDs believe that the appropriate samples for data gathering were high-grade LCs. Meanwhile, empirical evidence has shown that a minority (three CDs) of LCs believe that sampling should cover all LCs and should not be restricted to high-grade LCs. This means that the majority of CDs operate from the perspective of HCT while a minority embraces SCT's broader scope.

Conversely, SCT tends to explain the decision for low selectivity in engaging LCs for the minority of CDs. From the social capital perspective, the differences in LC quality grading also reflects the inequality of social variables accepted as relevant in SCT, thereby explaining the discrepancy between the MM and CD reports. Under SCT, social factors are considered more valuable than rational factors (Stocke et al., 2019). Thus, the choice for a broader sampling of LCs in the minority of CDs reflects SCT's assumptions closely.

### 5.3.4 Summary of Theme 2

*Theme 2* outcomes demonstrated the general agreement between CDs to prioritize the sampling of high-grade LCs for data gathering in the logistics curriculum design process and the common use of industry-based analytical methods to identify best-fit information from the LCs. The most preferred methods include work process analysis (Spöttl & Loose, 2019) and functional analysis (Ngamvichaikit, 2017).

High-grade LCs provide better data for curriculum design than lower grade LCs (Maupa, et al. 2019). In effect, the use of high-grade LCs reflected a more subjective (i.e. purposive) dimension of the curriculum design process from the perspective of logistics CDs. Meanwhile, the use of all-grade LCs reflects a more objective (i.e. statistical) dimension in the data-gathering phase of the curriculum design process. The current curriculum design process for logistics HE in Oman demonstrates a subjective approach to LC selection. The CDs design the curriculum according to their knowledge and expertise line with the objectives of the HEI in which they work at the appropriate time to further increase the productivity of organizations (Kucharþíková, et al. 2015, p. 49), and not through a unified system between HEIs.

## 5.4 Discussion Theme 3: Employers' expectations of HE logistics graduates

This theme targets the LCs' expectations of HE graduates is related to the research question "How do employers' expectations regarding the attributes they expect of graduates effect on curriculum design and delivery in the higher education sector?".

### 5.4.1 Introduction

*Theme 3* in Chapter 4 (4.5) demonstrated an important perceptual gap regarding the contribution of higher logistics education from HEIs in relation to workers' qualifications in the logistics sector. The majority of MM in Q33 (n = 20, RFD = 80%) mentioned that there is a gap in the higher education curriculum; this may mean that from the MMs' perspective that the current curriculum used in educating future workers in the logistics sector is incapable of preparing higher education graduates for work in the sector. Moving to the employees' side, the majority (n = 50, RFD = 69%) reported that their higher education certificate covered between 50-75% of their actual job in the logistics sector. The empirical evidence from the findings has illustrated a divergence of perception from the two samples (MM and Employees) from the LCs has important implications regarding how the logistics education gap has affected functions in the logistics sector.

### 5.4.2 Employer expectations regarding HE logistics graduates

*Theme 3* concentrates on the sub-question on employer expectations regarding HE delivery (i.e. "How do employers' expectations of graduate attributes effect on curriculum design and delivery in the higher education sector?"). From the two samples (MMs and Employees), LCs appeared to agree that there were competency gaps between the knowledge of the students being hired and the expectations of the logistics sector. There is also an apparent lack of reasonable consultation with logistics employees in the current approach to curriculum design. Employees who have the

lowest educational qualifications (diploma, bachelor, higher diploma) agreed that their higher education certificate covered their competencies in LCs, while the disapproval answers were drawn from the academic qualification (master) category, which shows that those with higher certificates identify more gaps in HE as displayed in 4.5.2.

The logistics middle managers seemed to perceive that the educational gap that existed in Omani HEIs might not be serious enough to undermine the qualifications of logistics workers in the sector. Meanwhile, logistics employees considered a higher education certificate to have covered only up to three-quarters of their actual job in the logistics sector as shown in 4.5.2, representing a gap of up to 50%. The interesting finding related to the employees who viewed the coverage capability of the logistics certificate as completely negative. They perceived the graduates and the curriculum as unprepared to take on actual tasks in the logistics sector, confirming the gap observed by the majority of respondents.

To analyse the perception of the employers' side, it is important to start the discussion about how the HEIs are dealing with the LCs as the main employers of HE logistics graduates. Even the average of CD-Q25 indicated that they believe the curriculum actively meets 75% of LS needs, but the mismatch between the curriculum and the needs of the logistics sector may be due to a variety of reasons as indicated in *Theme 1 in 4.3*; only half of the total CDs visit the convenient LCs (high-grade companies), some CDs are not visiting LCs, some do not follow NOS, and even some are new curriculum designers as they were teachers before their HEIs instructed them to design logistics curricula.

In regards to consistency with NOS, the study demonstrates that the general perception in the HEIs and among CDs is that the Omani system registers all occupations in the Public Authority of Manpower Register (PAMR, 2019) and classifies them in terms of job descriptions with GAMCVCD. The GCC Statistical Center (2017, p. 18) assumes the responsibility to develop and update the GAMCVCD, which is approved by the GCC countries allowing for an efficient regional movement of workers between GCC countries as they use the same GAMCVCD, and may facilitating a successful recruitment programme for logistics companies (Bredgaard, 2018).

Unfortunately, CD participants (80%) have mostly not used the GAMCVCD and PAMR database when preparing for logistics curriculum development despite the ease

of access to this service through a registration process (PAMR, 2019). This indicates that the current mind set of CDs may have contributed to Oman's skills gap. In addition, logistics CDs are not involved as members of the Omani Qualification Framework (OQF), listing their capabilities in specific levels compatible with the OQF (Oman Academic Accreditation Authority, 2019) to understand clearly the standards of listing logistics competencies (KSA) and other courses such as CILT.

The above analysis from the HEIs has shown that more than three-quarters of CDs (80%) visited LCs for their preparatory data collection before preparing or updating any curriculum after coordination with MMs in LCs, and the same percentage believe that the curriculum actively meets 75% of LS needs. In effect, the majority of the CD participants relied on a purely academic approach to gathering their pre-design data in the curriculum development process, relying on primary over secondary data from ASYAD or MoHE. On the other hand, the results have illustrated that the majority of CDs mostly did not use the PAMR and GAMCVCD database when preparing for logistics curriculum development. The second result underlines that CDs had no membership of the committees engaged in the development of KSA competencies consistent with the Omani Qualification Framework (OQF), listing their capabilities in terms of specific levels compatible with the OQF to meet the validation criteria (OAAA, 2018, p. 24).

The empirical results of the above discussion about the CDs, such as the reasons for the mismatch between the curriculum and the needs of the logistics sector, most of the CDs did not use the GAMCVCD and PAMR database when preparing logistics curriculum development. They are not involved as members of the Omani Qualification Framework (OQF); Even some of the CDs are not visiting the LC to brings real elements of work experience into higher education as an essential teaching tool (Abelha et al., 2020) as part of authentic learning or Industry-based Learning to integrated learning strategy that integrates theory and practice in authentic workplaces (Rajibussalim et al., 2016) to prepare students for the workplace (Ajjawi et al., 2020). All of these points confirmed the employers' perception that there were competency gaps between the knowledge of the students being hired and the expectations of the logistics sector.

### 5.4.3 Understanding employers' expectations about HE logistics through the lens of HCT and SCT theories

In *Theme 3 (4.5)* the primary findings focus on the general disparity among CDs regarding the concordance between their logistics curricula and LC expectations. This perception was disputed in the weak expectations of MM participants who represented LC expectations. The disparity is expected when viewed through the lens of HCT as the two samples (CDs and MMs) reflect two different situations (Rauthmann, 2016). Both samples have their own "perceptions of opportunities for attaining goals" (Bergman, et al. p. 259). The CDs target is to design a need-based curriculum, while the MMs to receive work-ready graduates to serve the industry (Rajibussalim, et al, 2016).

The behaviours and perceptions of CD participants, which represent their HEIs, appear consistent with the view of Gillies (2015) that HCT's central assumption is centred on the promotion or presumption that education is a key instrument in boosting economic growth. This emphasis on the intellectual often de-emphasizes the value of physical labour, which creates a problem.

First, this theory devalues physical labour over academic knowledge and humanness over capital goods (Gillies, 2015) or economic devices (Fitzsimons, 2018), as indicated about the number of visits and the classifications of the LCs.

Second, the perceptual gap between the HEIs and LCs (i.e. between CDs and MMs) demonstrates a potential difference in the capital perspective of both institutions. The HCT has illustrated that the HEIs emphasize the philosophy of focusing on designing the curriculum by determining the needs of the logistics sector from an academic perspective and identifying the units that serve this trend without an awareness of the requirements of the real logistic sector. On the other hand, the LCs appear to be more humane in emphasis, cultivating more operational effectiveness on the part of their logisticians, not from their academic certificates but, perhaps, from their physical labour skills and daily work tasks within the LCs.

Instead, the LCs focused on social reproduction in an economic setting, which is consistent with SCT's propositions (Rogosic & Baranovic, 2016) that some authors

indicated, proving that when connecting education with individuals, social capital can function as a means of social reproduction (p. 95), facilitating social reproduction (p. 81), and indicating that economic and cultural capital are significantly related to educational achievements (p. 95). LCs have to develop their logisticians into effective workers through implementing LLL by activating in-house training and curriculum strategies (e.g. Authentic Learning, Work Integrated Learning, Industry-based Learning) The orientation to LLL will help companies operating in the logistics sector reduce the gap in the skills of graduates of higher education institutions and achieve the goals of the company. This line of worker development and capital enhancement includes areas (e.g. personality development) that may not be effectively addressed within HE (Abrar-ul-haq et al., 2015), thereby emphasizing social success in general, not mere educational achievement (Stephany, 2019) while simultaneously supporting potential educational success.

These findings imply that the philosophical underpinnings of HEIs contrast with those of LCs in an entirely unexpected manner. Where LCs are supposed to emphasise workers as economic tools, which is consistent with HCT and HEIs' standpoints, they instead embraced SCT, emphasising the social success of logistics workers within or outside working hours. Evidence shown that LCs achieved this feat through activation the lifelong learning and assign a teamwork in the LCs to provide a continuous learning environment on the job (Kotzab, et al, 2018). While there is interest expressed by the LCs in developing HE graduates, more attention is needed to adjust the academic curriculum to suit the logistics sector's requirements, through the use of LLL for their employees.

### 5.4.4 Theme 3 Summary

The CD outcomes under *Theme 3* demonstrate a curriculum design process that is faithful to their academic backgrounds, utilizing MNA as a tool for establishing

LC needs with verification through MM consultations. However, MM outcomes showed that HEIs still fell short of LC expectations. Evidently, this gap may be attributed to the failure of CDs to use PAMR and GAMCVCD as indicated in 5.4.2, which are considered strong sources of the industry's functional expectations of logistics workers. Failure to access the NOS information regarding the logistics sector on ASYAD's website appears consistent with this use failure.

Moreover, the HEIs may have missed the social component of curriculum development, which may support the HCT perspective but is inconsistent with the SCT-guided assumptions of LCs as discussed in 5.4.3. This is another gap and may be considered a fundamental absence in the current HCT-driven logistics curriculum in Oman’s HE system, potentially representing the 32% gap from MM-Q20 that HEIs may not address satisfactorily without realizing the differences in capital theory between them and LCs.

## 5.5 Discussion Theme 4: Impact of the measured and evaluated curriculum in the Omani logistics sector

This theme measures the effect of the curriculum on the logistics sector addressing the research question “How can a purposefully designed HE curriculum's effects on the logistics sector be measured and evaluated?”.

### 5.5.1 Introduction

This theme showed up in three findings in Chapter 4. First, the MM participants, who represented the LC management, clarified that the observed skills gap between higher logistics education graduates and the logistics labour market appeared to result from incomplete curriculum content in the main part of instructional materials. Instructional materials which are part of the curriculum (Remillard & Heck, 2014, p. 6) are most effective at increasing student achievement (Chingos & Whitehurst, 2012, p. 18) in order to meet education’s quality and targets.

Second, logistics employees indicated that employees perceived a major difficulty in assessing their skills gaps or fitness to perform functional tasks in the sector, both for newly hired and tenured workers as analysed in empirical observation in 4.6.2 with EQ-25 (Figure-17) and EQ-28 (Figure-18). Their ability to assess their skill gaps is known for its high levels of subjective bias compared to employer assessment (McGuinness & Ortiz, 2016; Ferrazzi, 2012).

In fact, caution has been raised regarding evaluation by observation (Ferrazzi, 2012) or by emotional perceptions which are sometimes biased by non-academic factors (Lafuente, et al. 2012, p. 520) such as LCs’ workplace environments, their salary levels, or by comparing themselves to other sectors with higher salaries such as medicine or science, and even in the same sector with their colleagues who work in higher-grade companies that are usually given higher salaries as part of high income levels and quality in these types of companies (Maupa, et al. 2019; Xu, et al. 2018, p.2)

One of the probabilities for the divergence of answers in the questionnaires is that some of the graduates were not doing well in the ways they expected at university (Lafuente, et al. 2012, p. 527) so they passed with the lowest marks and faced challenges to understand the real work in the logistics sector. They did not meet the

required skills in LCs, which affected their feedback in the questionnaire. Dacre Pool and Qualter (2013, p. 215) have stated that graduate feedback might be derived from self-efficacy, which means the assessment of confidence in one's emotional competence, which helps in building perceptions of career satisfaction (p. 221).

Third, the HEI-affiliated CD participants almost unanimously agreed on the value of outcome analysis as empirically discussed in 4.6.1 (CD-Q36), particularly the positive change in the employability rate as an effective method in assessing the quality of the logistics curriculum through its impact on the sector's work environment, thus improving the filling of the sector's workforce needs. In a sense, employability reflects worker marketability based on four major employability skills: academic, connectivity, personality management, and exploration skills respectively (Rahmat et al., 2012).

### 5.5.2 Perspectives of Omani HEIs and LCs on curriculum quality

In *Theme 4* more than three-quarters (n = 20, RFD = 80%) of the MM participants agreed to the existence of a skills gap as a result of the current structure of the HE logistics curriculum. Some of these middle managers recommended that content must be added to the curriculum, including a composite of academic subjectsm technical skills, soft skills, and workplace development. Moreover, the MM participants felt that this skills gap resulted from a curriculum design failure, job training period as a component of the HE curriculum, and the unavailability of a job training period as a component of the HE curriculum. Furthermore, more than one third indicated that the curriculum needs to address ethical issues and rules in the curriculum.

The CD participants, however, disagreed and insisted that they had followed optimally the curriculum design process. This indicates a lack of understanding of the actual effect of the curriculum while refusing to face the reality reflected in the assessment of graduates by sector representatives, namely MMs as described in details in the answers to questions 33-36 in '4.6.2 Logistics Companies' Opinions'. In contrast, curriculum designers believe that the employability rate constitutes the best measure of the HE curriculum's effectiveness and success, at least in general for private industry and in particular for the logistics sector. This constitutes a positive aspect of the HEI curriculum design process reflects similar findings of Rahmat et al.

(2012) and Nita et al. (2018) that indicate the strong relationship between employability and graduates' skills and the demands of the job market for dynamic curriculum design.

From the regulatory perspective, a panel of two external reviewers has been tasked to review the HE logistics programmes proposed to the MoHE for implementation (Ministry of Higher Education, 2014). The licensing application form (Academic Program License Application [APLA] Form), however, contains no requirement for the conduct of CD visits to logistics companies to help establish the sector's need for specific skills. LC visitation is a crucial data gathering mechanism that helps establish with great certainty the actual, not theorized, needs of the logistics sector by directly engaging with sectorial representatives, such as MMs.

Moreover, LC visitation helps the CDs to understand the job market better, appreciate job details more clearly, obtain direct feedback on graduate performance in the workplace, and even implement evaluation activities or use of sophisticated methods such as six sigma that can improve graduate outcomes. It is also consistent with global practices whereby isolationist curriculum development is "becoming less common" (UNESCO-International Bureau of Education, 2013) and employer inclusivity more common (Tibbitts, 2015). Unfortunately, a fifth of CDs refuse to conduct LC visits (n = 2, RFD = 20%) on the basis that the MoHE's literature review and ASYAD provide better information.

The closest requirement for the conduct of LC visits from the MoHE is contained in Appendix F, which asks the HEIs to fill in and submit the Academic Program License Application (APLA) form when they apply for an academic program license in order to prepare a feasibility study exploring "the need of the labour market for the proposed programme". This requirement has a subtle implication for CDs to conduct visitations to the targeted companies such as logistics. However, such a process may be skipped in favour of a literature review type of study, which will miss much information acquired through LC visits. In effect, the lack of an implicit requirement for LC visits and curriculum evaluation makes these activities essentially optional and subject to HEIs' discretion. The visits of the HEIs are important, especially to the LCs in the same area, and offer the advantage of developing ideas from the same geographic area (Suñé & de Armas Urquiza, 2016, p.335).

The above deficiencies point towards an essential source of the skills gap developed through the current approach to curriculum design and development. First, LC MMs consider logistics graduates as inadequately prepared to take on tasks in the sector at the expected production capacity. Second, the remaining HEI curriculum designers did not realize the limitations of their approach to curriculum design and development, except for their awareness of the efficacy of employability rate as a measure of the curriculum's success in filling the skills gap. Third, the licensing application review process lacks crucial information that ensures accurate and extensive sourcing of data on LC needs and the importance for CDs to visit the LCs in the same geographic area to develop ideas and insights (Suñé & de Armas Urquiza, 2016, p.335) which helps to design the curriculum in better way.

Furthermore, the expected link and collaboration between the HEIs appeared to be non-existent. In CD Q32 ("Do Omani HEIs take into account specific occupational standards to cover the required skills in the sector when designing the curriculum?"), such a gap had been noticed by the empirical percentage that (50% of the CDs) particularly in sharing information about the logistics sector (CD#04 and CD#05). This resulted in a decision to benchmark curriculum design with international standards instead (CD#02, CD#03, and CD#04). The Academic Programs in Private Higher Education Institutions 2018-2019 booklet (Ministry of Higher Education. 2019c) shows only two HEIs are implementing CILT. One implement Logistics Management in collaboration with Breda University of Applied Sciences, Netherlands. The other seven HEIs are not clear if they implement international logistics programs such as CILT, Supply Chain Innovation, European Logistics Association (ELA), or even if they collaborate or are affiliated with any logistics international body.

This gap existed amidst common knowledge of the disconnect between HEIs and LCs. In fact, CD Q33 ("Do you think that HEIs, in general, are covering the need for qualified labour in the private sector?") confirmed this missing link (n = 5, RFD = 50%), which had resulted in the skills gap (e.g. CD#04). One curriculum designer (CD#01) recommended that HEIs study the logistics sector. Another CD (CD#09) mentioned that the HEIs are still trying to catch up with their obligation to cover LCs' needs.

### 5.5.3 The perspectives of curriculum quality through the lens of HCT and SCT

MoHE, as a government regulator must establish a clear rule in the APLA form for the HEIs to conduct visits to the targeted companies in curriculum design processes as well as links between the NOS and the curriculum. Making things standardized will help to measure all the steps of curriculum design and reduce the freedom of the CDs to choose any appropriate method they think is right, as academic freedom is claimed to create a lack of responsiveness to the needs of external stakeholders and an unwillingness to collaborate with actors in other forms of organisation (Epure, 2017, p. 340).

Within HCT, the assumption that human capital is an economic element seems to influence HEIs' focus on high graduate quality based on academic standards, confirming that individual skills are an important source of economic productivity and that these skills can be strengthened through training and education (Miller et al., 2015, p. 931). Consequently, the focus of the HEIs has been on a purely academic approach, not industry standards. The incompatibility between the HEIs and LCs' feedback has led to the erection of walls instead of bridges. In SCT this HEI isolationist tendency is referred to as "homophily", namely the tendency for a specific social unit to connect only with others of the same group (Vaughan et al., 2014) or so-called *ivory tower* isolationism.

Vaughan et al. (2014) have stated that the isolationist tendency in SCT might happen in a specific social unit to connect only with others of the same group. In the HEIs it occurred in even greater isolation. There is no connection between the HEIs themselves, which reinforces the *ivory tower* theory that the HEI is disconnected from the real world (Farkas & Duffett, 2010, p. 21). HEIs will find it challenging to engage in collaboration with LCs until they establish a network between the HEIs themselves. However, evidence stated that CD#01 mentioned in CD-Q16 that the HEIs needs more collaborations between themselves and CD#02 pointed out in response to CD-Q32, a "big gap" already exists even "between HEIs themselves", and CD#03 in CD-Q35 recommends collaboration among the colleges and universities as one of the main standards for designing logistics programs. This finding indicates that, even within the HE industry, isolationism is real, thereby explaining the inherent resistance of HEIs to collaboration with industry employers. CD#10 suggested "In spite of competition

among the HEIs, healthy relationship has to be maintained and the HEI's intervention is needed in this regard; HEIs have to coordinate with the MOHE as well", and there is a consensus on the part of all CDs regarding collaboration as reflected in the use of the word "benchmarking" 20 times either in relation to HEIs, international colleges, or NOS.

An important question appears in the discussion; if the CDs believe in benchmarking and collaboration between HEIs to design a corporate curriculum (Kessels and Poell, 2004), thus increasing knowledge productivity, then why do CDs not start this benchmarking and collaboration? Interesting answers to this question can be found in some of the CDs' responses to Q32 ("Do Omani HEIs take into account specific occupational standards to cover the required skills in the sector when designing the curriculum?"). CD#04 stated that "I don't know why the other HEIs are not sharing their knowledge." CD#08 mentioned "no cooperation between the HEIs", CD#07 remarked "HEIs need to make strong collaboration and look into what skills are required for the logistics sector in Oman", and finally CD#09 observed that "HEIs can certainly render needed support if they work together." These answers indicate the importance of collaboration between the HEIs to design a quality curriculum that fits the needs of the logistics sector, especially the collaboration will help HEIs to "achieve common or compatible goals" (Abreu & Camarinha-Matos, 2010, p.109).

### 5.5.4 Summary of Theme 4

Empirical Evidence indicates that some HEIs' efforts led to a growing trend in their collaboration with industry employers. The impetus behind measuring and evaluating the logistics curriculum demonstrates an adoption of good processes unleashed at least in these HEIs. However, some CDs continued to refuse to visit LCs for data gathering missions, indicating both the sustained existence of a traditional perspective on curriculum development and their efforts to keep up with the dynamic developments in the logistics sector. This *ivory tower* situation occurred in a regulatory environment where the MoHE has failed to recognize the need for licensing criteria that support company visits during curriculum development or redesign.

Moreover, despite the encouraging developments, *Theme 4* reflected the continued isolationist policy of HEIs in relation to curriculum, specifically between each other and with logistics employers. This indicates a need for HEIs to reform their collaborative policy as a matter of overall attitude towards working with competitors in their industry and with product users in the private industry in general and the logistics sector in particular.

## 5.6 Discussion Theme 5: Development of the ideal curriculum according to the Omani logistics sector's needs

The theme focuses on the development of the curriculum as per logistics needs as related to the research question "How can HE curriculum designers develop curricula according to the skills required to satisfy employers in Oman's logistics sector?".

### 5.6.1 Introduction

*Theme 5* in Chapter 4 (4.7.2) demonstrates that the curriculum designers and logistics companies agreed that a sector-based logistics curriculum must combine theoretical and practical components in building logistics competency for graduates that can deliver according to the expectations of the sector. The mechanism (the "how") of developing a sector-compliant logistics curriculum is primarily a concern of higher education, which the logistics companies expect academia to do competently. The majority of CDs (80%) expected that they know what needs to be done (the "how") to accomplish the task and satisfy the sector's expectations. Moving to the MMs in the LCs, the same percentage (80% of MMs) stated that there is a gap that results in the current logistics curriculum failing to satisfy their logistics organization's expectations. The discussion will illustrate the different opposite expectations in detail.

Moreover, the CDs also appeared to know the "what," which is the most important concern of the logistics companies. Both the curriculum designers and the logistics companies believed that "what" must consist of a combination of the theoretical and practical components of logistics competency building in a distribution that is equal for

either component. The answers of CD-Q17 and CD-Q34 in 4.7.1 and 5.3.2 indicated that a number of curriculum designers felt that greater emphasis must be given to practical components rather than the theoretical, and half of them think that it is possible to turn a general management programme into a logistics programme by adding some units while specifying the required units that have to be done by establishing a committee consisting of HEIs and LCs.

### 5.6.2 Methods to design an ideal curriculum fitting Omani LS needs

A skills gap exists in all industries in all countries around the world, including in developed nations (McKinnon et al., 2017; King, et al. 2016). However, this gap tends to be unique in every nation because of each country's particular situation and social and cultural context (Benbow & Hora, 2016). Consequently, each nation must study its unique gap profile to address this more effectively. This aspect of *Theme 5* explores the possibilities whereby HE designers develop a curriculum that extends the skills capable of satisfying the requirements of employers in Oman's logistics sector. Perhaps the key to these possibilities is a good understanding of the relation between HEIs and the MoHE and ASYAD.

Empirical evidence from *Theme 1 in 4.3 and 5.2* indicated that even though CDs assume that they follow the right curriculum design processes, a skills gap continued to exist in the curriculum, making it incapable of delivering graduates that the LS expects to possess the skills needed to contribute to tasks within the sector. Thus, as earlier indicated, little cooperation exists between HEIs in the area of curriculum development, particularly in curriculum design as observed by CD#04 in Q31 and CD#02 in Q32. This is also demonstrated in the responses to four questions (Q30, Q31, Q32 and Q33) from the CD questionnaire. In Q31, two CDs (CD#02, CD#06) observed this lack of cooperation between academia and industry, which resulted in a failure of LCs to provide input in the developed curriculum. Similar impressions resurfaced in Q32 (CD#02, CD#07) and Q33 (CD#02, CD#04). In Q32, benchmarking for new logistics curricula used international programmes as a tool for quality (Tasopoulou & Tsiotras, 2017, p.3) instead of obtaining inputs from LCs in Oman as noted by CD#02, CD#03, and CD#04 such as CILT or supply chain management (SCM) programs. Co-attendance of HEI and sector representatives occurred but not at the point of real cooperation (CD#07). Moreover, even among those who gathered suggestions from LCs (CD#01 and CD#03 in Q31), there was an observed need for the logistics curriculum to be adjusted to fit the needs of LCs at the qualification framework level.

The Oman Qualification Framework project is an effective venue for inter-HEI collaboration between stakeholders (Bjørnåvold & Pevec-Grm, 2013, p.91), and is used to develop occupational profiles based on employment inputs (Bjørnåvold &

Pevec-Grm, 2013, p.46). All CDs indicated that they were not engaged in the development of KSA competencies consistent with the Omani Qualification Framework (OQF); these gaps resulted from their inability to include their course qualifications (including units or modules) in the OQF requirements through the listing process which allows for the allocation of an OQF level, namely, an “evaluation of the learning outcomes and assessment of the units/modules/courses that comprise the qualification” (OAAA, 2018, p. 7). CDs have to be involved in the processes of listing logistics programmes in OQF to meet the validation criteria (OAAA, 2018, p. 24).

The empirical evidence analysis through NVivo noted that CDs mentioned ASYAD 16 times and the MoHE 14 times (either in full or in initials), or 30 times for both government agencies. This finding indicates that the HEIs believe in ASYAD and MoHE leading future improvements of curriculum design. The MoHE can support HEIs to develop better curricula with realistic implications to meet industry needs, at least reflecting the expectations of each industry such as the logistics sector. Suppose they add the visiting procedure element to the APLA form for CDs to visit logistics companies to design a need-based curriculum following a specific strategy as indicated in chapter 2 (2.9.6.1). In that case, this will gradually narrow and hopefully eventually close this gap. Meanwhile, ASYAD is expected to provide sector analytics, which HEIs can use to understand the needs of workforce employees in the logistics sector where ASYAD belongs and is a prime mover.

### 5.6.3 The perspectives of the ideal curriculum according to the Omani logistics sector's needs through the lens of HCT and SCT

In a sense, the lack of cooperation between HEIs and LCs reflects the same lack of cooperation between the MoHE and ASYAD in curriculum development for higher logistics education and will affect negatively the design of best-fit curriculum for the LS (Manivannan & Suseendran, 2017; Tessema & Abejehu, 2017). Both agencies have the financial and political power of government institutions (Babic, et al. 2017; Reich, 2009), which, if needed, can compel HEIs and LCs to collaborate directly with each other and indirectly through the mediation of the MoHE and ASYAD. MoHE and ASYAD can also coordinate with the Ministry of Manpower and the Public Authority of

Manpower Register to generate a unified big data database in the logistics sector that is accessible by HEIs and LCs.

In effect, both types of institutions have to make things happen and correct problems where either HEIs or LCs fail to do so alone; the best solution is creating a cooperation and collaboration committee with representatives from HEIs and LCs, an initiative consistent with this collaborative goal. These four stakeholders can work together in standardizing worker and curriculum qualifications through the OQF (OAAA, 2018). The lack of cooperation between HEIs had been highlighted because of the embrace of HCT by academic institutions. Miller et al. (2015) have noted that human capital, as determined by selective schools, exerts a strong influence on work performance due to the increasingly meritocratic selection of graduates. On the other hand, Hargreaves (2001, p. 490) have argued that SCT is very important between people – and thus between the HEIs – as it builds a level of cultural trust in terms of increasing collaboration and in the structural aspect in relation to building networks with strong ties that embed people.

Since HCT can be enhanced by training and education (Miller et al., 2015; Zhang, 2012), LCs appeared to have confidence in raising their employees' work performance as part of a lifelong learning trend. LCs train and prepare graduates to be professional logisticians (MM = 19; RFD 76% in Q19), accepting the students to be trained in the OJT phase (MM = 20; RFD 80% in Q26), and the average of 66% (1-MM = ‘0%’; 3-MM = ‘almost 100%’; 2-MM = ‘almost 25%’; 6-MM = ‘almost 50%’, and 13-MM = ‘almost 75%’) of the MMs in Q29 feel that their present company trained their employees with logistics knowledge and skills, which are necessary to engage in better human capital development (Karoly, 2010). These answers might indicate that the LC accept lower quality graduates and take the responsibility to train them to be professional logisticians. From the lens of SCT, the LCs have to strengthen the collaborative network with all stakeholders, including HEIs that may increase survival chances in the market and reach the compatible goals. (Abreu & Camarinha-Matos, 2010, p.109).

Thus, from the perspective of involving the employees in training or internship period to prepare students for the workplace (Spowart, 2011), the LCs participation in such government projects as OQF becomes unnecessary and less beneficial to their bottom line (at least in the short-term) to be justifiable for the time and effort required

in sending their representatives to the OQF committees. It also explains that, unless the HEIs initiate collaborative engagements, LCs thrive under sectorial silos.

The role of the MoHE is essential in including SCT in terms of bringing all HEIs together, including logistics sector CDs, to work towards exchanging experiences and challenges and in terms of designing a need-based curriculum that simulates the labour market. Tonkaboni, et al. (2013) have stated that higher education is “a powerful producer of social capital” (p. 40). Given the OQF project’s collaborative nature and when considering the application of SCT, common and/or compatible goals could be achieved (Abreu & Camarinha-Matos, 2010, p109), from the answers of the CDs in the logistics sector, not all HEIs in Oman appeared to agree on SCT essentials.

In the same vein, due to the influence of HCT, HEI might adopt a capacity building approach when they establish a collaborative network between HEIs (Escarré Urueña, 2016, p. 2) to modernize the curriculum according to the country’s needs (p. 86). Designing the curriculum has to be done according to seven attributes (NCSTE, 2001); they can be considered as the criteria of the success or failure of a designed curriculum. The curriculum design must be purposeful, follow an explicit process/theory, generate creativity, have multi-level compatibility, be systematic and empowered to respond constantly to changes in workplace realities, not merely in the academic environment (NCSTE, 2001). The attributes will be achieved successfully given collaboration between the HEIs and LCs.

ASYAD works to regulate the logistics sector and publicize and market the logistics sector by attracting international companies to invest in the Sultanate of Oman. Their efforts are apparent through their official website (https://www.asyad.om/). However, the site does not clarify that the initiatives were undertaken by ASYAD internally and that teams were formed to prepare NOS from which the curricula simulating the labour market can be drawn; as stated by the CEO of ASYAD (IRU, 2018), building human capacity and skills which will help to achieve SOLS’ vision is a primary objective in order to achieve an additional 220,000 workers by 2040 (Ministry of Transport and Communications, 2015; World Economic Forum, 2012). Even the ASYAD website does not show their NOS-related efforts. Still, both CDs and MMs rely on ASYAD to take the information and consultation of the LS, which indicates that ASYAD works well in HCT as it has a well-qualified team that provides

the information and consultation required for the sector which, along with SCT, can bring together HEIs and LCs (OGL, 2016).

As an agent of social welfare and its institutions such as the MoHE and ASYAD, the government better supports SCT, breathing its principles into each of its institutions (Myeong & Seo, 2016) to build a relationship between the HEIs and LCs. Thus, the behaviour of the MoHE and ASYAD has to work towards SCT becoming a part of government social policy.

### 5.6.4 Summary of Theme 5

The majority of CDs continued to ignore the collaborative nature of curriculum development, which can be reasonably attributed as the underlying cause of the persistent gap between what the logistics sector needs and what higher education in Oman can provide. However, it is erroneous to think that such a gap exists only in Oman, as it is globally, including in developed nations (McKinnon et al., 2017; King et al., 2016). In fact, it is a phenomenon that bedevils all nations worldwide (Asthana, 2012; Burrowes et al, 2014; Schramm & Mulvey, 2016; Wagner, et al. 2019).

CDs are not involved in the OQF committee, while involving them helps to build a collaborative team to exchange valuable information about the logistics sector and to design the curriculum according to seven attributes (NCSTE, 2001). ASYAD and the MoHE have to work together to involve the CDs in both OQF and NOS to build a strong team that can design a needs-based curriculum that fits the logistics sector (Kotzab, et al, 2018; Steingraber & Bampton, 2017).

The implications, however, based on questionnaires are clear. Logistic companies rely on themselves to train HEI graduates and thus might find it unnecessary to cooperate with the CDs, as they take responsibility for closing the academic gap. Its behaviour indicates that it is willing to improve on HE graduates' limited skills given their skills and educational gaps. As discussed in section 5.6.3 when answering the MM questions Q19, Q26 and Q29, LCs seem to see the merits in utilizing LLL, as they place focus on in-house training to improve their employees' work performance within their workplace contexts, but sometimes it is a waste of time and resources. HEIs have to cover the logistics sector's needs and design the best fit

curriculum; thus, the burden of bridging the skills gap is fully on the side of the HEIs. In a sense, HEIs produce, thus they deal with the skills gap as a matter of professional obligation and accountability. Establishing a committee consisting of HEIs and LCs will help to design a better-quality curriculum and bridge this gap.

## 5.7 Conclusion

Chapter 5 discussed the five themes more deeply; every theme came with specific analysis and will help to build strong recommendations for all stakeholders to overcome the limitations of the skill gap in the curriculum. The findings from the three samples (CDs, MMs, and Employees) helped in understanding the existing relationship between the HEIs and LCs. For HEIs, the findings and discussion have shown how the CDs design their curriculum and what theories and processes they follow, and their perceptions and opinions on the logistics sector from the curriculum design aspects to discover the gap between HEI graduates and logistics sector requirements in designing curriculum aspects. On the other side, the perceptions and opinions of MMs and employees are significant in building general ideas about their existing connections with CDs. ASYAD and the MoHE have to play an essential role in organizing the logistics sector to provide a needs-based curriculum.

In addition, though the main stakeholders in the logistics sector (the three samples, MoHE and ASYAD) follow specific processes to prepare a curriculum that fits the needs of the logistics sector, consequently producing competent graduates, the findings show that there is a gap and that freshly graduated students from HEIs are not competent to work in the logistics sector. The main findings were that SCT has to be considered as there is no specific relationship between the CDs in HEIs while their relationship with the logistics companies are not working as expected. On the other hand, the MoHE did not make HEI visits to LCs compulsory, which affected curriculum design negatively. The above findings reflect the lack of a specific network between all stakeholders and no particular website can provide NOS and curricula as an open resource; these all-affected curriculum design as well as impacting on the quality and competencies of logistics graduates.

# Chapter 6. Conclusion and Recommendations

## 6.1 Introduction

This chapter will highlight the outcomes of the five themes in the discussions from Chapter 5 based on the findings and analysis of the data in Chapter 4. The outcomes will help to build the recommendations to three main parts, namely, samples, stakeholders and future research.

Humans usually conduct scientific research that involves participants whose responses contain a certain level of bias. While researchers have to implement certain delimitations to ensure that the results are valid and reliable, a few limitations usually remain in every scientific inquiry. The current research is not excluded from these tendencies. It has its strengths and limitations that have to be taken into account before using this research as a source for future inquiries, and this chapter will include some of these strengths and limitations.

The chapter will include recommendations for other CDs who may face similar challenges with other economic sectors, and also some recommendations for future researchers who are interested in similar topics involving stakeholders such as the MoHE and ASYAD. Ministry of Education recommends at pre-high school certificate levels to include logistical skills within the curriculum to encourage and guide the students to choose the logistics sector as a part of guidance between educational achievement and career development.

## 6.2 The main outcomes of the discussion

This section summarises the findings and discussions of the five themes. The outcomes of the discussion will help to build the recommendations which are divided into three main parts as mentioned previously.

***Theme 1 "Designing the curriculum for the logistics sector"***

CDs are the only designers of the curriculum; they have to follow specific processes, curriculum design theory, and use particular tools. Findings and discussions have illustrated that only half of the total CDs visit the convenient LCs, some CDs do not visit LCs, others do not follow NOS, and some are even new curriculum designers as they were teachers before their HEIs commanded them to design logistics curricula. CDs and LCs have to work together as part of authentic learning, work integrated learning or industry-based learning in designing the NOS and curriculum as a main collaboration trend. ASYAD and the MoHE have to assume the responsibility to supervise and regulate the collaboration as they are the main government regulators for the logistics sector and HE system in Oman.

***Theme 2 "The relationship between the HE curriculum and the skills need of the logistics sector"***

The study established a consensus between the majority of the CDs in prioritizing the high-grade LCs to gather data used in logistics curriculum design. Based on the HCT national perspective, the high-grade LCs are more accurate and offer better data for designing the logistics curriculum as compared to all-grade LCs. Using low-grade LCs was a core objective dimension in extracting data to use in the curriculum designing and implementation process (Khan, 2011). Therefore, this suggests that the current curriculum designing for HEI logistics shows a highly subjective LC selection approach. However, this does not always show the skills gaps in the logistics

management sector if all-grade LCs are visited and not filtered well to ensure their quality and that they are not assigning multitasking roles to employees to cut down on salary costs (Dzubak, 2008; Otto, et al. 2012) as HCT asserts that human skills are important capital resources in delivering economic productivity (Miller, et al. 2015; Brennan, King, & Lebeau, 2004).

***Theme 3 "Employers' expectations about higher education graduates"*** The empirical evidence from the CD outcomes illustrated faithful curriculum design processes in HEIs using MNA to establish LC needs with verifications. Nevertheless, the MM findings disputed CD outcomes by showing that HEIs did not meet LC expectations. Apparently, this gap may arise from the CDs' failure to use GAMCVCD, PAMR, and given they are not involved as members of the Omani Qualification Framework (OQF), which serves as strong sources of functional expectations by logistics employers of its workers. All of these points confirm the perception of the employers' side that there are competency gaps between the knowledge of the students being hired and the expectations of the logistics sector. Another limitation derived from the discussion of this theme is that it may have missed the curriculum development social component which supports the HCT perspective, which in turn stresses the value of individual education as the most effective tool in accruing material advantages for the Omani citizen, thereby helping the economy to grow. In effect, missing SCT means reducing the participation of individuals and depleting their knowledge of HCT which affected the Employers' expectations regarding higher education graduates

***Theme 4 "The impact of a measured and evaluated curriculum on the logistics sector"***

I examined the interconnection between the logistics sector and the impact of the evaluated and measured curriculum. Evidence indicates that some HEIs' efforts led to their growing trend in terms of collaboration with industry employers. The impetus behind measuring and evaluating the logistics curriculum demonstrates an adoption of good processes, at least in these HEIs. While the results highlighted encouraging more developments, this theme identified a HEI isolationist policy concerning the curriculum. Therefore, this shows why HEIs should reform collaborative policy to improve the competitiveness of the higher education curriculum to groom and develop quality human graduates. As a result, this will help to overcome the logistics industry's skills gap. It will also improve Oman's labour market competitiveness with other countries. There is a need for HEIs to work together to reform their collaborative policy as a matter of overall attitude and to help the logistics sector design the best fit curriculum. Collaboration builds competent graduates and raises the satisfaction of all stakeholders.

***Theme 5 "The development of the curriculum according to the logistics sector needs":*** According to the results, CDs who are acting for the HEIs that implement logistics programmes in Oman are not involved in the OQF; involving them is necessary to help build a collaborative team to exchange valuable information about the logistics sector. On the other hand, logistic companies rely on themselves to train HEI graduates and thus might find themselves unnecessary to cooperate with the CDs, as they took the responsibility of closing the academic gap. ASYAD and MoHE have to work together to involve the CDs in both OQF and NOS to build a strong team that

can design a needs-based curriculum that fits the logistics sector. The findings show that the failure to address the professional gaps in the logistics industry underline that the HEIs have to revise their system to meet the LS requirements, to address the gap precisely, the CDs, MMs and employees have to establish a specific network and sit together to overcome their challenges and cooperate in designing a needs-based curriculum that will help to design a better-quality curriculum and bridge the skills gap. Designing a precise curriculum has to be done according to seven attributes (NCSTE, 2001); they can be considered as the criteria of the success or failure of a designed curriculum. The curriculum design must be purposeful, follow an explicit process/theory, generate creativity, have multi-level compatibility, and be systematic and empowered to respond constantly to changes in workplace realities in the, not merely in the academic environment. The attributes will be achieved given collaboration between the HEIs and LCs.

## 6.3 Strengths and Limitations of the Study

Every research has strengths and limitations, which usually depend on a variety of reasons, such as the availability of sources might be scarce, there may be a lack of data, or the problem's complexity might prohibit an in-depth study. Researchers have to evaluate their ability to access necessary data and resources prior to conducting the study in order to omit many limitations and prevent threats to validity and reliability (Queirós, et al. 2017).

### 6.3.1 Strengths

The research has several strengths. First of all, the study recruited a diverse set of participants. By involving different groups of participants, the study provided an in-depth review from different sample points, based on the data collected. The multiplicity

of perspectives allowed for a more comprehensive view of the context. The current research problem requires a multifaceted analysis, which could be attained by recruiting three types of participants. Involving the three types of participants will help to get feedback from many perspectives (HEIs and LCs), which will help the MoHE and ASYAD to better organize LS by designing a needs-based curriculum and reaching the goals of increased employment of the graduates and meeting the vision of SOLS2040. Secondly, the study uses many types of information from the interviews and questionnaires such as numbers, percentages, curriculum theories, expectations and recommendations through descriptive texts. While the application of each of these designs separately is a viable practice, it is widely understood that quantitative and qualitative designs complement each other (Shorten & Smith, 2017). Analysing the empirical data allows me to identify the relationship between the three samples, while qualitative information allows one to explain this relationship (Devesh, et al. 2020). Thus, the study can explore the phenomenon as well as interpret it. Thirdly, the involvement of several data analysis methods is also a major strength. The study used Anova, the SPSS package and NVivo qualitative data analysis software. Different types of analysis could potentially improve the validity of the research. Finally, the study used new and updated data by collecting and accessing the ASYAD database regarding both HEIs and LCs while the MoHE provided information on the Guidelines for Academic Program Licensing (GAPL) used to evaluate the HEIs' curriculum design.

### 6.3.2 Challenges and Limitations

I faced many challenges during the conduct of this research and two limitations. Challenges can be considered as minor limitations, such as I have conducted the study by myself without any additional help, financial resources, and with limited access to

the sources. Consequently, the study required a substantial amount of time, especially regarding recruitment, obtaining the permissions, and actual testing (Velte & Stawinoga, 2017). In addition, the targeted HEIs and LCs are located in four governorates in Oman, namely, Muscat, Dhofar, Al Batinah South, and Al-Buraimi. These locations were far away from my home in Muscat, including the Dhofar governorate which is more than 1,000km away, or Al-Buraimi which is far more than 400km in the opposite direction. In addition, it was not easy to find a suitable time to conduct FTF interviews with the CDs, who also work as teachers, while I had to manage a specific time and sometimes after working hours to visit them in order to conduct the interviews.

The first limitation with the study was identified during the pilot conducted prior to the data collection process. Two curriculum designers (CDs) out of three refused to answer one of the questions, which was critical to the research ("Can you nominate logistics companies that you have visited and prepared your curriculum according to their feedback?"). Since the study aims at determining the quality and efficacy of the current curriculum in logistics, it was critical to find out if those who develop this curriculum consider the points of view of the employers in the logistics market. According to the reasons provided by the CDs, the question above might potentially jeopardize their relationship with the logistics companies, as they receive material, technical, and financial support from these firms. Even though the participation in research is anonymous, CDs chose to avoid answering the question. From the study's point of view, this aspect creates a limitation; data analysis is easier if the names of the logistic companies that deal with HEIs were known, thus making it easier for me to visit predetermined logistic companies and to analyse the data more accurately. Its

lack of availability made me focus on all logistic companies in the four governorates that include the ten HEIs that implement logistics programmes.

The second limitation was that through communication with the management of the HEIs, it became clear that it is difficult to identify more than one CD in every HEI to provide additional views for analysis and come up with more accurate results and recommendations. It was difficult to identify two or more designers in every HEIs; the reason is that most HEIs choose the most efficient teacher in every sector and assign them the task of designing the curricula. Few of them have several curriculum designers in the same sector.

As a researcher, I recognized this early and chose the HEIs who have two CDs to conduct the pilot test interview with the first CD and the real interview with the second one. On the positive side, I covered as a researcher ten HEIs representing ten HEIs in the Sultanate of Oman at a percentage of (100%). They have the qualifications and sufficient expertise to provide accurate information to achieve the study's objectives.

## 6.4 Recommendations

Interviews and questionnaires are implemented in two types of entities (HEIs and LCs) cover three samples (CDs, MMs, and Employees). Two government entities are responsible for organizing the two types of entities, first the Ministry of Higher Education (MoHE) as the primary regulator for the HEIs, second, ASYAD as a leading government company for implementing the logistics vision for the coming 20 years (SOLS2040).

In this section and from the findings and discussions, I present some recommendations, which will be divided into three main sections, first recommendations regarding the three samples, second concerning the stakeholders,

and third in relation to future research (Figure-21). These recommendations may help in bridging the gap between higher education and the logistic sector's needs in Oman by designing a needs-based curriculum.

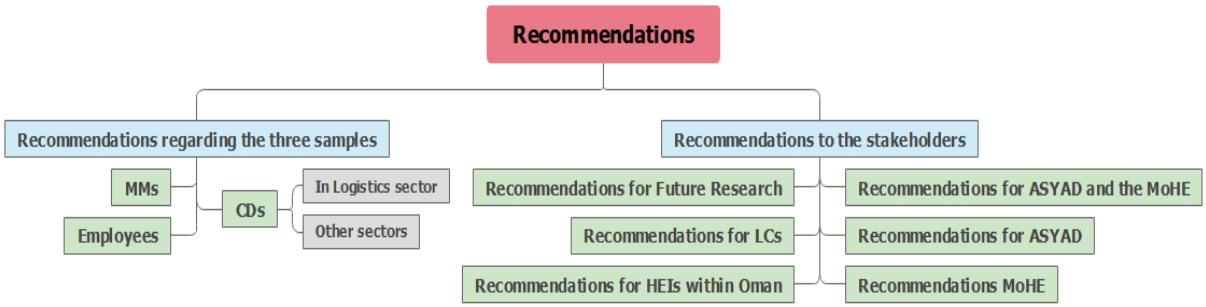



Figure 21: Recommendations

### 6.4.1 Recommendations regarding the three samples

CDs, MMs, and Employees are the main samples of the study; this section will cover the recommendations derived from the findings and discussions in order to bring together all valuable information regarding them and then suggest some guidance that may help to reduce the skills gaps in terms of the curriculum.

#### 6.4.1.1 Recommendations to the Curriculum Designers

Curriculum designers for all sectors must design a need-based curriculum according to the different sectors in the labor market. In this context, the following recommendations were divided into two parts, the first belonging to curriculum designers in the logistical sector, and the second for curriculum designers, in general, to benefit from the study in terms of how to deal with other economic sectors and reduce the skills gap.

##### 6.4.1.1.1 Recommendations to CDs in the Logistics sector

Ten HEIs implement logistics programmes in Oman; the CDs in these HEIs need some support and collaboration from their management, ASYAD and the MoHE. The

support and collaboration will be covered in the section “Recommendations to the stakeholders”. This part will cover the direct recommendations to the logistics CDs:

- **Enhance the notion of social capital:** by discussing with their management to establish a social capital network with other CDs associated with the logistics sector, represent HEIs in the OQF committees, MNA, and needs-based NOS and analyse the development of the labour market to design the curriculum that fits the LS.
- **Implement visits to the logistics companies:** even though the GAPL under the Directorate General of Private Universities and Colleges in the MoHE does not include visits to the targeted sector, CDs have to implement the visits to the LCs and meet both the MMs and employees to get their feedback regarding the curriculum and prepare the requirements for updating the curriculum according to new skills and tasks required in the logistics sector. The other benefit of visits is to establish a relationship for future cooperation in terms of OJT and employment trends. Visits must prioritize the high-grade LCs and ensure that all targeted companies have good management such as exercising criteria in standardizing their job requirements so that logistics tasks and skills are not mixed with non-logistics tasks and skills in any employee.
- **Curriculum design theories:** the study demonstrated that the three most preferred methods are functional analysis, curriculum mapping, and work process analysis. Some CDs use two or all of these methods in their company visits. Using one or more curriculum theories helps to add more quality and derive the benefits of merging them. Combining the various theories and tools enables a much richer perspective in terms of understanding the learning situation (Akerlind, et al. 2014; Jorgensen, & Larkin, 2015). Moreover, CDs have

to develop a guide or booklet to the logistics students on all information available about the logistics sector to show how the curriculum is designed to ensure practical and applied learning is included in the programme; and the students are ready to know what they will face in the LCs during OJT and the real work after the are graduated and recruited.

- **Design the curriculum based on the jobs database:** CDs need to revise and access the Public Authority of Manpower Register (PAMR) and Gulf Arab Manual Common Vocational Classification and Description (GAMCVCD) to better understand Oman's occupational and job structures. Understanding the job database is important for all CDs during the process of designing the curriculum as part of preparing graduates for jobs that are specifically targeted in the Oman logistics sector.

#### 6.4.1.1.2 Recommendations to CDs in general

The skills gaps in curriculum aspects may exist in other sectors as well, not just in the logistics sector; the study can be considered as a role model to all CDs, not in the logistics sector, but all economic sectors. This section describes some recommendations for practice that could be used by other CDs within the broader academic community who may be facing similar challenges:

- **Enhance the notion of social capital:** Every CD has to ensure that building a social capital network with other CDs who are associated with the same sector is very important. This trend includes collaborations with other CDs in the preparation of OQF, MNA, and needs-based NOS. It analyses the development of the labour market to design the curriculum that fits the private sector's needs.

- **Implement visits to the targeted companies:** even though the GAPL under the Directorate General of Private Universities and Colleges in the MoHE does not include visits to the targeted sector, CDs have to implement the visits to those sectors that they design the curriculum for and meet both the MMs and employees to get their feedback on the curriculum and update the curriculum according to the new skills and tasks required by that sector. The other benefit of visits is to establish a relationship for future cooperation in relation to OJT and employments trends. Visits must prioritize the high-grade LCs and ensure that all targeted companies have good management such as exercising criteria in standardizing their job requirements so that tasks and skills are not mixed with unrequired tasks and skills in any employee.
- **Curriculum design theories:** the study covered seven curriculum design theories: Curriculum Mapping (CM), Competency-Based Curriculum (CBC), Learner-Centered Pedagogy (LCP), and Knowledge Economy Model (KEM), Developing a Curriculum (DACUM), Functional Analysis (FA), and Work Process Analysis (WPA). In addition, some strategies of the curriculum embodiment in the logistics sector were covered, such as authentic learning, graduate employability, work-integrated learning, industry-based learning, digital competencies, internships, placements, and job simulations. Every theory has its advantages, while CDs can choose which one is appropriate to them with the right strategy. Moreover, they can use one or more curriculum theories to add more quality and derive the benefits of merging them.
- **Design the curriculum based on the jobs database:** CDs need to revise and access to the Public Authority of Manpower Register (PAMR) and Gulf Arab Manual Common Vocational Classification and Description (GAMCVCD) to

understand Oman's occupational and job structures better. Understanding the jobs database is important to all CDs during the process of designing the curriculum as part of preparing the graduates for jobs that are targeted specifically in Oman.

- **Using the forms of questionnaires and interview questions:** Curriculum designers can take advantage of the forms that were used in the questionnaire and interviews, which are available in Appendices B, C and D. CDs can do the modifications according to the nature of each programme, add and delete questions according to the planned goals and objectives.

#### 6.4.1.2 Recommendations to the MMs

MMs are the link between LCs and HEIs. They manage the administrative aspects of logistics companies, follow up their employees, and evaluate their daily work. Some recommendations have been prepared for MMs to facilitate the tasks of CDs when communicating and cooperating with them in preparing the curriculum's next stage.

- **Enhance the notion of social capital:** MMs have to collaborate with CDs during their company visits. Collaboration has to include employees explaining the current situation and the challenges they face in relation to the skills gap after they have graduated and joined the LC workforce. All of this information will help CDs to design a curriculum that fits the private sector's needs.
- **Allow the CDs to seat with the employees:** this will provide chances to design a need-based curriculum, because the employees as the main "product" of the curriculum, their opinions are essential to be taken and analysed for adding more quality during the design of the curriculum.

- **Participate in activities:** such as the workshops that are organized by MoHE, ASYAD, PAMR, and allow the employees to attend as well to enrich the workshops with the updated information about the sector.
- **Assigning teamwork to employees:** Curricular contents may not qualify for robust logistics preparation. However, if worker output passes operational standards and meets the company's targets even if he/she works with a team, then any educational gap has no practical (i.e. operational) value. The employee perspective can be more prone to an academic-type measurement of their readiness for logistics job performance because employees have a keen awareness of the deficits of their HE, which may not be fully useful in logistics work performance, while assigning HE graduates to work with teams helps them to understand better the tasks, provide more satisfaction and performance (Ruch, et al. 2018).

#### 6.4.1.3 Recommendations to Employees

Employees are the main product of the study; their opinions are essential in order to add more quality during the curriculum design. The study came out with some recommendations that will facilitate the task of preparing the curriculum in collaboration with CDs:

- **Provide all information required by the CDs during their visits:** providing information either verbally or through filling in the questionnaire will help the CDs to evaluate the daily tasks within the companies while adding more quality during the curriculum design.
- **Participate in activities:** participation after receiving consent from the MMs is very important including sitting with the stakeholders such as the workshops

organized by the MoHE, ASYAD, PAMR while also allowing the employees to attend. This will enrich the workshops with updated information about the sector.

### 6.4.2 Recommendations to the stakeholders

This section will cover the main recommendations to stakeholders such as the MoHE, ASYAD, HEIs, and LCs. Some recommendations are mentioned above in the three samples, and they will be rewritten from the perspective of the stakeholders. Some recommendations are not mentioned above but they are derived from the discussions, especially those targeting the MoHE and ASYAD.

#### 6.4.2.1 Recommendations for ASYAD and the MoHE

Government institutions, such as the MoHE and ASYAD, play a crucial role in initiating sustainable collaboration between HEIs and the logistics sector players. These stakeholders may not take the initiative left on their own, or at least not as fast as necessary to support the rapid development of the logistics sector in Oman. Some recommendations belong to the MoHE and ASYAD, as the MoHE supervises the HEIs and ASYAD supervises the LCs, therefore, most of the recommendations of this part have to be done collaboratively between the two entities to reach the targets, consequently, some recommendations must be emphasized.

- **Prepare a meeting to set the tasks:** Both ASAYD and the MoHE have to sit together and discuss the tasks of supervising the HEIs and LCs, and divide the tasks between them to reach the targets of the HE system in Oman and the vision of SOLS2040 as follows:

- **Establish a committee from HEIs and LCs:** The committee will include some government agencies (suggested: ASYAD, MoHE, Oman Chamber of Commerce & Industry, and MoMP), while CDs from HEI and MM from the LC, and some very selective employees who have a broad vision and can suggest insightful ideas to the committee. The role of the committee is to prepare the MNA and need-based NOS must be created (or an existing one thoroughly reviewed) if the resultant jobs are to address the current skills gap in the logistics industry in Oman, design a curriculum according to the needs of the logistics sector to reduce the lack of cooperation between academia and industry, and analyze the development of the labour market to design the curriculum that fits the LS. Technological developments in the logistics sector can be rapid; one of the tasks of that committee is to gather data on these developments which must be done so regularly all year round until the next scheduled re-design of the current logistics curriculum. Ongoing data gathering must include questionnaires distributed to logistics companies to reflect the adoption of developments in their ongoing work requirements. This will ensure that students have a highly current logistics curriculum. The outcomes and results of the committee have to be available through a specific website as a reference for all stakeholders.
- **Conduct regular workshops:** The MoHE and ASYAD must conduct regular workshops, such as curriculum enrichment and curriculum implementation reviews, to bring together the relevant HEIs and some if not all LCs to discuss issues that enhance collaborative engagement on common concerns, such as related curriculum contents and skills

relevance in the sector. Another workshop can be done on the OQF and Public Authority of Manpower Register (PAMR) database; the target of this workshop is to educate CDs and HEIs on these curriculum development elements: the findings have shown that a majority of CDs knew little if anything about the value of using the OQF and PAMR database. This recommendation includes a unique emphasis on the value of the ASYAD data in informing logistics curricula. Data collection problems, such as improperly filled in questionnaires, (e.g. the titles of the occupations, the descriptors of OQF levels, etc.) may not be crucial if these sources of data are utilized intelligently.

#### 6.4.2.2 Recommendations for ASYAD

ASYAD is considered as a primary regulator for the logistics sector. In spite of this, there are some recommendations integrated with MoHE, while ASYAD has to take the lead on some recommendations. The recommendations must be made to initiate improvements in the current process of curriculum development for HEI logistics students.

- **Develop an open resource website:** an open resource website has to be prepared providing all required information on the NOS and curriculum. The website has to be dynamic and note where the logistics environment changes day-to-day (Gonzalez, et al. 2011).

#### 6.4.2.3 Recommendations MoHE

The results from Findings and Discussion based on the MoHE merit some recommendations.

- **Modifications on the Guidelines for Academic Program Licensing (GAPL):** the GAPL under the Directorate General of Private Universities and Colleges in the MoHE has to be modified by making CDs' visits to the LCs compulsory and included in the mechanism. Areas of inclusion into the current mechanism includes the requirement for LC visits during the curriculum development process, which may be reflected in the feasibility study or a separate report, and the creation of a unified form that addresses crucial elements in terms of the closure of the skills gap in Oman's logistics sector. This might include ASYAD and the MoHE establishing a committee to design a NOS and curriculum according to LS needs as one of the study's recommendations. Visiting those LCs nearby HEIs helps to understand more deeply the jobs and tasks in those locations and choose the right program or even to develop short courses for the targeted companies as a main aspect when designing a needs-based curriculum to bridge the gap between HE and LCs (May, et al. 2012). The other benefit of visits is to establish a relationship for future cooperation in relation to OJT and employments trends. Improvement of the five-process method must be undertaken to include an implementation phase to ensure that the process is complete in its inherent flow. The implementation phase must necessitate adding CDs' visits to the unified forms. Thus, as a matter of policy, the MoHE must grant licenses for HEI logistics programs but only for those that involve LC visits.
    - **A reorientation workshop for CDs** must be conducted for a shift in the underlying capital perspective. The CDs must move from a purely HCT mindset to an SCT mindset to better understand the social heart of Omani LCs. Evidently, despite the dehumanizing environment in global industries, Omani LCs appeared to espouse a socially-oriented attitude towards their workers.

#### 6.4.2.4 Recommendations for HEIs within Oman

Based on the findings and discussions regarding the HEIs, some recommendations become necessary in relation to all universities and colleges:

- **Prioritize the visits to high-grade LCs.** However, from the perspective of job-requirement standardization, the use of high-grade LCs can approximate reasonably standardized logistics job descriptions. Thus, since this study assumes that “first group” (consultancy, international, excellent, and Grade-1) companies can provide better job description data in terms of information quality and logistics standardization, the majority of CDs are assumed to have made a better choice in selecting only high-grade LCs. On the other hand, visits to the ‘low-grade’ (Grades 2-4) companies can be implemented with specific conditions such as good management in terms of exercising criteria in standardizing their job requirements, so that logistics tasks and skills are not mixed with non-logistics tasks and skills in any employee, and both in employees designated as logistics or non-logistics. Prioritizing companies from high to lower grades will allow the CDs to improve job description standardization in the logistics sector in relation to the design of a logistics higher education curriculum. Thus, CDs are strongly advised to confine the gathering of preliminary data from high-grade LCs during the curriculum design.
- **Embrace the notion of social capital:** Higher education institutions in Oman must start to embrace the notion of social capital, not from the perspective of educational elitism, but from the standpoint of collaboration and multi-sectorial engagement, particularly with the government agencies and their served industries, such as the logistics sector. This chance may start with the sending

of curriculum designers to represent HEIs in the OQF committees, particularly those associated with the logistics sector.

- **Establishing a collaborative network:** Each HEI must open itself up to collaborative work with other HEIs, thereby creating a collaborative network. This network must be connected at least to ASYAD and MoHE, and preferably to the LCs. This network is crucial in establishing more sector-accurate occupational standards and curriculum-development source databases. Curriculum design must embrace HCT as its priority perspective concerning standardized job requirements. It supports a highly selective basis for LCs' data gathering.

#### 6.4.2.5 Recommendations for LCs

Based on the findings and discussions regarding the HEIs, some recommendations become necessary for LCs:

- **Establishing a collaborative network:** Each LC must build a network with ASYAD and HEIs. This network is crucial in establishing feedback information to the HEIs to prepare an excellent curriculum that fits their needs.
- **Allow the CDs to sit with the employees:** this will provide chances to design a need-based curriculum, because as the employees are the main "product" of the curriculum, their opinions are essential and need to be analyzed to add more quality during the curriculum design.
- **Human Capital Development:** HCT stresses heavily the value of individual education as the most effective tool in accruing material advantages for the Omani citizen. It is important to develop the company's employees in the relation to logistical tasks on a regular basis. It is not recommended to rely on

the skills of HEI graduates only. Still, it requires the provision of training for employees as part of the development of HCT as a permanent orientation in order to develop and strengthen the capacity building that meets the goals of the company while achieving the logistics targets.

### 6.4.3 Recommendations for Future Research

The current study covered many aspects of the curriculum design in the logistics sector. Yet, some areas still need to be studied in-depth, such as exploring the curriculum units and teaching materials. They can be provided to the LCs, then they can be asked for their feedback on the teaching materials and the suggested modifications. This will help to understand precisely the curriculum and the changes required to enhance its quality.

There are different curriculum theories and ways of designing them for students. Therefore, future studies have to explore different types and methods of curriculum design and evaluate which one of the secondary theories is suitable for the logistics sector; this work has to be done by assessing how the graduates are competent in their duties in LCs after they are recruited. The feedback from LC MMs is essential to evaluate the quality and theory followed. Specific forms have to be prepared for this; getting feedback from the LCs about the graduates is necessary, then there is a need to assess the type of the curriculum theory they have studied, and finally, notes and observations must be made based on the results.

The comparison between the demands of the logistics employees' skillsets could be compared to the skillset developed by the current curriculum. For instance, another area of research is big data analytics in logistics and its application in

education (Wang, et al. 2016). Researchers can also expand their area of investigation and geographic territory to conduct comparative studies; this can include more interviews with the MoHE to understand more about their supervision system in HEIs. This could be done with ASYAD, which may lead to the construction of data-based theory, thereby arriving at a new-grounded theory (Morse, et al. 2016).

Finally, researchers can also conduct research within the scope of the Ministry of Education at pre-high school certificate levels for CDs or even in the guidance and counseling department to enhance students' logistical skills by introducing units in the general education curriculum that may help prepare students before they complete their secondary school and as an aspect of the guidance between educational achievement and career development. Research done by Hanover Research in some American schools about the role of counsellors and strategies in closing the gaps including the curriculum (Hanover Research, 2019) have recommended school counselors use a variety of assessments such as updating the curriculum "including developmental, prevention and intervention activities and services that measure the desired student competencies and the impact on achievement" (p. 11) to close the gaps and employ career management for the students to achieve "future career success and satisfaction" (p. 20) for the benefit of meeting the logistics sector's needs according to the vision of SOLS2040.

## 6.5 The impact of the research on personal development

As a researcher, I worked to organize all academic procedures and requirements to achieve research objectives and to identify the skills gap in the logistics sector on the aspect of curriculum design. In the process, I could find answers to the research questions. Through my work as a General Director for Vocational Training

and supervising eight vocational colleges, as well as my supervision of the Curriculum and Evaluation Department that directly follows my department, paved the way in the research engagement and practice as most of my subordinates are specialists in the curriculum development of various specializations. While doing my research on “Bridging the Gap between Higher Education and the Logistic Sector Needs in Oman: Designing a need-based curriculum”, scientific methods were applied in order to investigate all the components of the curriculum systematically to enable myself in proposing the suggestions for the reduction of the skills gap. Thus, my engagement with the curriculum designers nurtured my thinking process and paved the way to develop my might and mettle concerning the curriculum aspects in practice. My engagement in this research widened my knowledge in the acquisition of the modern concepts and the characteristics of the curriculum design as the curriculum is continuously evolving based on the needs of the educational domain where it has to create total learning experiences that suit the needs of Oman.

By conducting this research, I had the opportunity to discover the gap between Oman's logistics sector's needs and the current state of curriculum design in the country’s HEIs. The research may also assist in making recommendations to HEIs and logistics companies (LCs) that may lead to increased collaboration between the logistics and HEI sectors while improving curriculum design processes. The recommendations may enhance progress towards Omanisation within the logistics sector as well as in the logistics sector in Oman itself. They may also help to provide more competent graduates in the logistics sector to serve the country and grow the economy, as Oman is targeting this sector to diversify its income.

The study may have a positive economic impact by increasing the efficiency of the graduates by designing a needs-based curriculum and making them more

accepted by LCs due to their high quality. In the same vein, this may help Omani LCs to understand local job seekers better while participating in the curriculum design process.

My engagement personally with the methodologies and methods within the study, and interaction with the HEIs and LCs, improved my practice on how to evaluate the skills gaps on curriculum using forms and programs such as SPSS package to analyze the quantitative data, NVivo software to analyze the qualitative information and SurveyGizmo as an online survey platform.

This research is beneficial in practice as it can be used as a specific model for the curriculum designers in the other disciplines and branches like in engineering, industrial, agricultural and marine sciences which are under my direct supervision in the Ministry of Manpower. Hence, this research is very useful in practice curriculum designers and specialists not only in the government sector but also in the private sector colleges and universities.

It is apt to admit the fact that by undertaking this research, there is personal development too. The research skills such as reporting, data collection, data analysis, evaluation of the available literature for better understanding, interviewing the personnel involved in curriculum design, planning and scheduling, and primarily the skills of critical thinking and critical analysis. Besides, the development of curricula, preparing studies, and identifying the gap in curricula will improve the work of the General Directorate of Vocational Training, and will achieve high Key Performance Indicators for the Directorate after studying the employment of faculties' outputs in the private sector, and an increase in the extent of employers 'satisfaction with them, and thus the rate of their employment. Therefore, it is a fact that this research enhanced my skills and the horizon of knowledge in practice in implementing my roles and

responsibilities where I am directly involved in the curriculum development implementation of vocational specializations.

## 6.6 Conclusions

The study is divided into six chapters: introduction, literature review, methodologies, findings, discussions, and conclusions, including recommendations. Every part is prepared and organized for a specific purpose, as explained in the introduction to each.

The objectives of the study identified and addressed the potential reasons and implications of the skills gap between the needs of the logistics sector in Oman and the current curriculum available through programmes offered by the HEIs. The findings and discussion attempted to understand: the way that Omani HEIs conceptualize the processes of designing curricula for the private sector; the relationship between the HE curriculum and the skills need of the logistics sector; the employer expectations for logistics graduates on curriculum design and delivery in the higher education sector; the impact of a purposefully designed HE curriculum on the logistics sector; and the way HE curriculum designers develop a curriculum according to the skills required to satisfy employers in the logistics sector in Oman.

The study indicated some gaps in the curriculum design processes, the importance of exploiting SCT and HCT by stakeholders to bridging the gap between higher education and the logistics sector needs in Oman based on designing a need-based curriculum to reduce the skills gap. Reducing the gap will undoubtedly help to increase the quality of higher education graduates, the acceptance of logistics companies by graduates, and thus achieve profits for companies as well as reaching the goals of the Sultanate of Oman Logistics Strategy 2040, in order to help the Omani

economy to diversify sources of income and achieve an advanced position in terms of sustainable development indicators.

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## Appendices

## Appendix A: VPREC Ethical Aproval_22_Nov_2018

UNIVERSITY OF LIVERPOOL | ONLINE PROGRAMMES

| | |
|---|---|
| Dear Harib Al-Mahrooqi, | |
| I am pleased to inform you that the EdD. Virtual Programme Research Ethics Committee (VPREC) has approved your application for ethical approval for your study. Details and conditions of the approval can be found below. | |
| Sub-Committee: | EdD. Virtual Programme Research Ethics Committee (VPREC) |
| Review type: | Expedited |
| PI: | |
| School: | Lifelong Learning |
| Title: | A transformative professional development framework for new higher education teachers: Managing the transition from learner to teacher in the Emirati context. |
| First Reviewer: | Dr. José Reis Jorge |
| Second Reviewer: | Dr. Arwen Raddon |
| Other members of the Committee | Dr. Lucilla Crosta, Dr. Marco Ferreira, Dr. Mary Johnson, and Dr. Mariya Yukhymenko |
| Date of Approval: | 22/11/2018 |
| The application was APPROVED subject to the following conditions: | |

| | | |
|---|---|---|
| **Conditions** | | |
| 1 | Mandatory | M: All serious adverse events must be reported to the VPREC within 24 hours of their occurrence, via the EdD Thesis Primary Supervisor. |

UNIVERSITY OF LIVERPOOL | ONLINE PROGRAMMES

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Sub-Committee should be notified. If it is proposed to make an amendment to the research, you should notify the Sub-Committee by following the Notice of Amendment procedure outlined at http://www.liv.ac.uk/media/livacuk/researchethics/notice%20of%20amendment.doc.

Where your research includes elements that are not conducted in the UK, approval to proceed is further conditional upon a thorough risk assessment of the site and local permission to carry out the research, including, where such a body exists, local research ethics committee approval. No documentation of local permission is required (a) if the researcher will simply be asking organizations to distribute research invitations on the researcher's behalf, or (b) if the researcher is using only public means to identify/contact participants. When medical, educational, or business records are analysed or used to identify potential research participants, the site needs to explicitly approve access to data for research purposes (even if the researcher normally has access to that data to perform his or her job).

| | | | | |
|---|---|---|---|---|
| | | | | |

Please note that the approval to proceed depends also on research proposal approval.

Kind regards,

Lucilla Crosta

Chair, EdD. VPREC

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## Appendix B: The questionnaire for the 'Middle-level Managers'

UNIVERSITY OF LIVERPOOL

# The Questionnaire for the

# ⌖ 'Middle-level Managers' ⌖

**Contact Details**

- **My contact details are:**
  Name: Harib Harith Al-Mahrooqi (St. no. H00036955)
  P. O. Box 1970 P. Code 112 Ruwi - Oman
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  Work Address: P.O. Box 413 P. Code 100 Muscat - Oman
  Telephone: +968 24344220

- **The contact details of the Research Participant Advocate at the University of Liverpool are:**
  001-612-312-1210 (USA number)
  Email address liverpoolethics@liverpool-online.com

1

UNIVERSITY OF LIVERPOOL

Dear participant:

Please answer the following questions, if any question is not clear, then, please don't hesitate to contact the researcher.

**Part One: Basic Demographic Questions**

**Personal Details: (Will be hidden during the analysis)**

(1) Full name:_____ Mobile:_____

Email:_____

Company:_____

Address:_____

(2) Age: _____ years

(3) Nationality: _____ Gender: _____ Marital Status: _____

**Important Note: The personal details will be anonymous and hidden; instead, the findings and analysis will be coded as MM#1, MM#2, MM#3 … etc.**

**Professional Details**

(4) Job title / Designation? _____

(5) Department:_____

(6) What is your latest Higher Education Qualification?

Diploma ☐ Higher Diploma ☐ Bachelor ☐ Master ☐ Doctorate Degree ☐

(7) What is your specialization / major _____ (As written in the certificate).

(8) Please, write your Higher Education college/University: _____ from (country) _____.

(9) Please, describe in brief what is your daily work?

_____

_____

_____

_____

(10) What are your total years of experience_____ years?

(11) How long have you been working in this type of job? (Please do not include unrelated jobs.)

(a) Within your present company: _____ years

(b) In your previous employment (with your previous employer): _____ years

**Part Two: Logistics questions**

Dear participant …

The study is targeting to help the logistics companies to prepare better curriculum, and thus better graduates, please, answer the following questions, if you feel that you need more space, then you can use the blank sheet in the last page of this questionnaire.

(12) How many employees are working under your supervision/management?

0 to 10 ☐ 11 to 50 ☐ 50 to 100 ☐ 101 and more ☐

(13) Do all your employees working in logistics skills?

Yes ☐ - No ☐

*(13a) If "yes"then continue to the next question, if "No",* what is the percentage of the logistics employees in your department:_____%

(14) What are the specific job titles of employees under your direct supervision? (Please, write maximum three jobs)

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(15) How are these jobs connected to your department?

Direct supervision from my department ☐ - Indirect supervision from my department ☐

(16) Which one of the above three, you feel that they need more training after recruiting them.

(17) Can you describe what logistics functions/skills those are common to these jobs? *[you can choose more than one answer]*

☐ Logistics Awareness (eg. Knowledge of the industry, Transport regulation knowledge)

☐ General Management (eg. Ability to plan and prioritise, Project management)

☐ Behavioral / Interpersonal (eg. Communication skills, Team work)

☐ Practical works (eg. Materials Handling, following health and safety, Order processing, Spreadsheet)

(18) Can you describe what logistics operations those are common to your department?

*[you can choose more than one answer]*

☐ **Integrated Logistics Support (ILS):** Easy supportable system with a robust customer service (logistic).

☐ **Logistics management**: a part of the supply chain which plans, implements and controls the storage of goods and services.

☐ **Third-party logistics**: involves the utilization of external organizations to execute logistics activities.

☐ **Warehousing:** is the act of storing goods that will be sold or distributed later.

☐ **Transportation**.

☐ **Business logistics**: supplying one's business with materials and shipping out products having the right item in the right quantity at the right time at the right place for the right price in the right condition to the right customer.

☐ **Production logistics**: The term is used for describing logistic processes within an industry.

(19) Do you have an internal system to train your employees and prepare them to be Professional logistician?

Yes ☐ - No ☐

(20) Do you think the Higher Education Institutions are covering your needs for qualified labour/ logistician?

Yes ☐ - No ☐ - somehow ☐ Specify:_____

(21) Do the curriculum designers from HEI visit your company to ask about your needs and your opinions about their curriculum? *[If 'No' then go to the question no. 26, if 'yes' then answer the following questions]*

Yes ☐ - No ☐

(22) How often do they visit you per year?

Once per year ☐ Twice per year ☐ Three times and more per year ☐

(23) What tools and documents do they use?

Plain papers ☐ well-arranged forms ☐ statistics about jobs ☐ other ☐

Specify:_____

(24) Do you allow them to seat with the employees to ask about the job tasks and details?

Yes ☐ - No ☐

(25) For how long the curriculum designers stay in the company in every visit in the process of retrieving the information.

One hour ☐ two hours ☐ three hours ☐ four hours and more ☐

(26) Do you agree for the students from the higher education to be trained in your company in the "On the Job Training" period?

Yes ☐ - No ☐

| *No.* | *Questions* | 0% | almost 25% | almost 50% | almost 75% | almost 100% |
|---|---|---|---|---|---|---|
| 27 | What percentage do you feel that your employees cover the current job? | | | | | |
| 28 | What percentage do you feel that your employees gain better in their work experience than the HE certificates? | | | | | |
| 29 | What percentage do you feel that your present company trained the employees about the logistics knowledge and skills? | | | | | |
| 30 | What is the percentage do you feel the quality of your department can gain in every task? | | | | | |
| 31 | What is the percentage of none logistic graduates to learn from their colleagues within the company? | | | | | |
| 32 | From your experience, How many unites from the HEI do you think that they covers the employees skills? | | | | | |

(33) Do you agree that there is a gap in the higher education curriculum?

Yes ☐ - No ☐

*[If 'No' exceed the next question, if 'yes' then answer the following question]*

(34) What do feel that they need more to focus?

☐ The ethical issues and rules

☐ Curriculum contents

☐ Teachers are not qualified

☐ Curriculum designers are not qualified

☐ On the Job training period has to be added

(35) If you are to recommend, what specific curricular content you want a logistics curriculum must contain in relation to this job?

_____

_____

_____

_____

(36) Please, enumerate three recommendations to the Higher Education Institutions to match your needs of knowledge and skills.

(1)_____

_____

(2)_____

_____

(3)_____

_____

Thank you for participating in this study. The researcher appreciates your contribution because it is highly valuable for the future of higher logistics education in Oman and in the logistics sector. Kindly, as an option, you are requested to provide CV, evidence or related documents if you can to the researcher in the email (kitab11@gmail.com)

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**Blank sheets:** Dear participant, the plank paper is made for you if your answer is longer than the above pages. you can make copies of this paper.

| Question No. | The answer |
|---|---|
| | |
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## Appendix C: The questionnaire for the 'Employees'

UNIVERSITY OF LIVERPOOL

# The Questionnaire for the

# ⌖ 'Employees' ⌖

**Contact Details**

- **My contact details are:**
  Name: Harib Harith Al-Mahrooqi (St. no. H00036955)
  P. O. Box 1970 P. Code 112 Ruwi - Oman
  Mobile: +968 99348811
  Email: harib.al-mahrooqi@online.liverpool.ac.uk
  Work Address: P.O. Box 413 P. Code 100 Muscat - Oman
  Telephone: +968 24344220

- **The contact details of the Research Participant Advocate at the University of Liverpool are:**
  001-612-312-1210 (USA number)
  Email address liverpoolethics@liverpool-online.com

1

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Dear participant:

Please answer the following questions, if any question is not clear, then, please don't hesitate to contact the researcher.

**Part One: Basic Demographic Questions:**

**Personal Details: (Will be hidden during the analysis)**

(1) Full name:_____ Mobile:_____

Email:_____

Company:_____

Address:_____

(2) Age: _____ years

(3) Nationality: _____ Gender: _____ Marital Status: _____

**Important Note: The personal details will be anonymous and hidden; instead, the findings and analysis will be coded as EMP#1, EMP#2, EMP#3 … etc.**

**Professional Details**

(4) Job title / Designation? _____

(5) Department:_____

(6) Please, describe in brief what is your daily work?

_____

_____

_____

_____

(7) What are your total years of experience_____ years?

(8) How long have you been working in this type of job? (Please do not include unrelated jobs.)

(a) Within your present company: _____ years

(b) In your previous employment (The total with your previous employers):

_____ years

(9) What is your latest HE certificate:

Diploma ☐ Higher Diploma ☐ Bachelor ☐ Master ☐ Doctorate degree ☐

(10) What is your specialization / major _____ (As written in the certificate)

(11) Please, write your HEI (college/University): _____ from (country) _____.

(12) Once you employed in your current job, How long it took you to understand your task of work?

_____ months

(13) How many courses have you taken? _____

(14) Can you name at least three of them?

_____

_____

_____

**Part Two: the questionnaire**

**Instruction:** You have two tables, the first one needs to show the percentages, while the second table asks about your opinion in specific issue. Tick the appropriate box to the right of the question item, which closely corresponds to your response on the numbered question items. Please answer each question item as best as you can. There is no right or wrong answer in any of these question items.

| No. | Questions | 0% | almost 25% | almost 50% | almost 75% | almost 100% |
|---|---|---|---|---|---|---|
| ~~1~~ 15 | What percentage do you feel that your certificate covered your current job? | | | | | |
| ~~2~~ 16 | What percentage do you feel that your work experience built your logistics skills? | | | | | |
| ~~3~~ 17 | What percentage do you feel that your present company trained you about the knowledge and skills of your current job? | | | | | |
| ~~4~~ 18 | What is the percentage do you feel the quality of your department can gain in every task? | | | | | |

| No. | Questions | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| ~~1~~ 19 | I felt confident after graduation, and I preferred to work in the logistics sector. | | | | | |
| ~~2~~ 20 | I feel that the current tasks of my job fit the same units I have studied in the HEI. | | | | | |
| ~~3~~ 21 | I feel I want to change my current job to another sector rather than logistics sector. | | | | | |
| ~~4~~ 22 | The current management provided a lot of courses for me to enable me working in the logistics sector. | | | | | |
| ~~5~~ 23 | The higher education in Oman is ready to build qualified graduates for the logistics sector. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| ~~6~~ 24 | The higher education outside Oman is ready to build qualified graduates for the logistics sector. | | | | | |
| ~~7~~ 25 | My skills in logistics sector had been gained from my education. | | | | | |
| ~~8~~ 26 | My skills in logistics sector had been gained from my work experience. | | | | | |
| ~~9~~ 27 | The curriculum units cover almost all required skills in the logistics sector. | | | | | |
| ~~10~~ 28 | When receiving new employee or fresh graduate, we feel that he has good knowledge of the logistics sector | | | | | |
| ~~11~~ 29 | Even if I did not graduate from a logistics education, my formal education had prepared me well for my current job. | | | | | |
| ~~12~~ 30 | Even if I did not graduate from a logistics education, I learned most of the current skills of my job-related formal education from the higher education institutions outside Oman. | | | | | |
| ~~13~~ 31 | I gained at least three-quarters of my job-relevant experience from job(s) in logistics within the logistics sector in Oman. | | | | | |
| ~~14~~ 32 | Some curriculum designers from higher education come and ask me about my actual work | | | | | |
| ~~15~~ 33 | The curriculum units cover the same skills and tasks required from the logistics sector. | | | | | |
| ~~16~~ 34 | I have similarities in knowledge and skills with the other employees with the same job title and job description as mine. | | | | | |

(35) Please enumerate three similarities in knowledge with the other employees with the same job title and job description.

_____

_____

_____

(36) Please enumerate three similarities in skills with the other employees with the same job title and job description.

_____

_____

_____

Thank you for participating in this study. The researcher appreciates your contribution because it is highly valuable for the future of higher logistics education in Oman and in the logistics sector. Kindly, as an option, you are requested to provide CV, evidence or related documents if you can to the researcher in the email (kitab11@gmail.com)

## Appendix D: The interview questions for the 'Curriculum Designers'

UNIVERSITY OF LIVERPOOL

# The Interview Questions for the

# ⌖ 'Curriculum Designers' ⌖

**Contact Details**

- **My contact details are:**
  Name: Harib Harith Al-Mahrooqi (St. no. H00036955)
  P. O. Box 1970 P. Code 112 Ruwi - Oman
  Mobile: +968 99348811
  Email: harib.al-mahrooqi@online.liverpool.ac.uk
  Work Address: P.O. Box 413 P. Code 100 Muscat - Oman
  Telephone: +968 24344220

- **The contact details of the Research Participant Advocate at the University of Liverpool are:**
  001-612-312-1210 (USA number)
  Email address liverpoolethics@liverpool-online.com

1

UNIVERSITY OF LIVERPOOL

Dear participant:

Good day! You are earnestly requested to answer the following questions given in two different parts in five days. You are welcome to contact in case of any queries and clarifications for which the researcher will be glad to clarify. Your efforts in answering these questions are appreciated. Your responses will be used for the survey purpose ONLY which in turn enhance in finding the skill gap in logistics sector.

**Part One: Basic Demographic Questions**

**Personal Details: (Will be hidden during the analysis)**

(1) Full name: _____ Mobile: _____

Email: _____

Company: _____

Address: _____

(2) Age: _____

(3) Nationality: _____ Gender_____ Marital Status: _____

**Important Note: The personal details will be anonymous and hidden; instead, the findings and analysis will be coded as CD#01, CD#02, CD#3… etc.**

**Professional Details**

(4) Job title / Designation?

(5) What is currently your department?

(6) What is the nature of your job (i.e. your largest job scope of responsibility)?

(7) What are your total years of experience?

(8) How long have you been working in this field (HE)?

(a) Within your present institution:

(b) In your previous employment (with your previous employer):

(9) What is your latest Higher Education Qualification:

Diploma ☐ - Higher Diploma ☐ - Bachelor ☐ - Master ☐- Doctorate degree ☐

(10) What is the specialization / major of the latest obtained qualification? (As written in the certificate)

(11) Please, write your Higher Education Institutions:

(College/University) from (Country)

(12) How many curriculum design projects have you participated in your career?

(a) In terms of new curricula designed: (projects)

(b) In terms of curricula updated: (projects)

(13) What are the three most significant projects? (Please write the list at the back.)

**Part Two: Logistics Questions**

(14) Have you been involved in the development of Curricula with components relevant to the development of competencies for students in HE?

Yes ☐ - No ☐

[*If 'Yes'*, proceed to #15.]

[*If 'No'*, proceed to #18.]

(15) Can you list these Curricula here?

(16) In each of these curricula, can you specify which components are essentially logistics in nature?

(17) Can you identify, which of the components of the above Curricula, if combined, would create a Curriculum adequate to develop students fit for work in the sector?

Yes ☐ - No ☐

*If 'yes'*, Please provide details

*If 'No'*, What components are required to be added?

_____

_____

_____

_____

(18) Do you think it is possible to turn a general management programme into a logistics programme?

Yes ☐ No ☐

(19) Which units should be obligatory for a logistics related curriculum?

(20) List the procedure you would follow in order to set up a logistics related Curriculum.

(21) What are the most appropriate methods to achieve all of the above steps?

(22) If you are to design a new logistics curriculum, how do you propose to do it? Please describe your approach.

(23) Any alternative methods to be used? What are your suggestions?

(24) Do you know what type of jobs your graduates work on after their graduations?

Yes ☐ - No ☐

*If 'yes'*, please, enumerate some examples and job titles.

*If 'No'*, can you explain, how do you prepare a curriculum if you don't know where they will work.

_____

_____

_____

_____

(25) Given your expertise in the sector and in logistics education, how much do you believe that the Curriculum actively in place at your College/ University meets the needs of industry and the demand of the required skills in the labour market?

0% ☐ - almost 25% ☐ - almost 50% ☐ - almost 75% ☐ - almost 100% ☐

Please, explain why you have chosen that percentage:

(26) Before preparing or updating any curriculum, do you visit companies to make sure that your curriculum matches the needs of the private sector?

Yes ☐ *[if yes, then answer a, b and c]* - No ☐ *[if No, please go to question no. 26]*

(a) How many times do you visit the companies for every curriculum?

One time ☐ - Two to five times ☐ - six to ten times ☐ - more than ten times ☐

(b) What grade companies do you visit? (Grades 4, 3, 2, 1, Excellent, Global, or Consultant)

(c) What tools or documents do you prepare for the visits?

(d) What are the targeted staff or employees do you meet in the companies?

(e) Do you implement your visits to the logistics companies, which are located in your HEI governorate, outside the governorate, or both?

Within the governorate ☐ - Outside the governorate ☐ - Both ☐

(27) How do you design the process in order to achieve the best fit information for a new or updated Curriculum?

Example: (Work Process Analysis, DACUM, Functional Analysis, … etc) please specify and why.

(28) Have you read "Gulf Arab manual common vocational classification and description", or do you know what the available occupations in the Manpower Registration database are?

Yes ☐- No ☐

(29) How do you make use of the following terminology in your Curriculum design?

- Knowledge Economy Model
- Curriculum Mapping
- Labor Market Information
- Learner-Centered Pedagogy

(30) Are you a member in the committees of development of the Oman Qualification Framework?

(31) Do logistics companies currently offer suggestions of specific skills that will help you in developing a Curriculum that meets their needs? So you can develop your curriculum according to their needs.

(32) Do Omani HEIs take into account, when designing the Curriculum, the skills required in the sector and the National Occupational Standards (NOS) criteria.

Yes ☐ No ☐

Why:

(33) Do you think the Higher Education Institutions, in general, are covering the needs for qualified labour in the private sector?

Yes ☐ No ☐

Explain why you think this is the case:

(34) Can you list the content or other elements to be included/ covered for the purpose of skill creation relevant to the job roles applicable in the sector?

(35) Can you list three recommendations to the HEI to match your needs of knowledge and skills?

(36) How do you evaluate the success or failure of a designed Curriculum?

Thank you for participating in this study. The researcher appreciates your contribution because it is highly valuable for the future of higher logistics education in Oman and in the logistics sector. Kindly, you are requested to provide evidence or related documents if you can for which the researcher will be grateful to you.

## Appendix E: Guidelines for Academic Program Licensing (GAPL) Report

Ministry of Higher Education
Directorate General of Private Universities and Colleges
Department of Programs Supervision

### Guidelines for Academic Program Licensing Report

A Panel of external reviewers is appointed by the Ministry of Higher Education with the purpose of providing field-specific input in the process for licensing of new programs of study. The main tasks for the Panel of external reviewers are to:

- Evaluate relevant documentations submitted by the Higher Education Institution (HEI) to the Ministry of Higher Education in the context of an application for the licensing of a new program.
- Each External reviewer should prepare an individual detailed report to the Ministry of Higher Education describing whether the new program is found to meet the Ministry's requirements for licensing.And that is to be submitted within a month from the day of the authorization.
- In addition to each detailed report, the two external reviewers whom are evaluating the same academic program should prepare an executive summary report combines both findings together and including the following:
  - Strengths of the new program of study
  - Areas of the new program of study needing improvement.
  - Recommendations

(Both external reviewers should corporate with each other in order to submit both; detailed and summary report at the same time)

- In the case of any recommended changes related to the content or the program implementation requirements that the external reviewers finds necessary, it is the job of the Department of Programs Supervision to communicate them with the institution. Then for the external reviewers to ensure the achievement of recommended modifications within a maximum of two weeks by submitting a summary report on the programme and on the amendments made by the institution to the program.

- Job requires full confidentiality and any necessary communication with the institution is done through the Department of Programs Supervision in the Directorate General of Private universities and Colleges.

- The external reviewer carries full responsibility for the protection of the received documents.

- All external reviewers will receive an allowance as it is agreed upon with the Ministry of Finance

(All submitted documents should be in a read only-PDF file format)



(The Program title \ The external reviewer name \ date of submission)

The detailed report is to be written by the external reviewers following the structure outlined below:

(References from the program document should be added according to the findings-if necessary-)

**Report structure:**

1. Program overview
   - 1.1. Program title
     The title of the program is clear and reflects the program content
   - 1.2. Broad and narrow field title and code (OSCED - Oman Standard Classification for Education)
     The submitted documentation accurately identifies the OSCED broad and narrow field title and code for the program
   - 1.3. Aims of the program
     - 1.3.1 The aims of the program are clear and achievable
     - 1.3.2 The aims of the program are aligned with the Institution's Mission, Vision and Objectives
   - 1.4. Rationale - local, regional and perhaps global needs
     The rationale of the program is clearly stated and it meets local, regional and eventually global needs
   - 1.5. Program viability and impact on society
     - 1.5.1 The market research supports the introduction of the new program
     - 1.5.2 The program reflects recent developments in the discipline. It has scope to integrate future developments in the discipline.
   - 1.6. Benchmarking
     The program has been benchmarked against national and international program
   - 1.7. Accrediting body (if any)
     The submitted program of study has been accredited, e.g. in the affiliated university/ elsewhere. State where and by whom if applicable.
   - 1.8. Exit awards, including samples of certificates
     - 1.8.1 The exit awards are clearly stated and reflect the award/program
     - 1.8.2 The samples of certificates included in the submitted documentation provide Unambiguous information about the award

1.9. Awarding institution / body

The name of the awarding institution is clearly stated in the submitted documentation and in the sample certificates

## 2. Programme Structure

### 2.1 Graduate attributes and student learning outcomes

2.1.1 The desired graduate attributes and student learning outcomes are clearly stated and aligned with the aims of the program

2.1.2 The desired graduate attributes and student learning outcomes are provided in a matrix for each module / course

### 2.2 Entry requirements and standards

The entry requirements of the program are clearly stated and suited to achieve the objectives of the program

### 2.3 Completion requirements

2.3.1 The completion requirements of the program are clearly stated

2.3.2 Structure details – presented in a tabulated form indicating levels, modules/courses and credit rating

2.3.3 The graduate attributes are mapped in a matrix of modules/course versus graduate attributes

### 2.4 Curriculum Design

2.4.1 The structure of the program is consistent with the aims of the program

2.4.2 The choice and sequence of modules/courses is appropriate

2.4.3 All important areas of expertise and aspects of the discipline are adequately covered

2.4.4 The program takes into account professional body requirements and industry needs, as appropriate.

### 2.5 Progression rules

Regulations for academic progression from one level to another are clearly stated and adequate

### 2.6 Pathways and optional elements

Different pathways (if any, e.g. specializations) and optional elements (if any, e.g. electives) are clearly described

2.7 Coherence of curriculum

2.7.1 There is a coherent structure and progression in the development and achievement of skills and knowledge

2.7.2 The generic/transferable skills are adequately embedded in the curriculum

2.7.3 The programme addresses ethical issues where appropriate

2.8 Balance of practical and theoretical elements

There is an adequate balance between practical and theoretical elements to achieve the aims of the program

2.9 Alignment with Oman Quality Framework

2.9.1 The awarded degree meets the minimum requirements of Oman National Qualification Framework

2.9.2 Each level accurately is mapped against the minimum requirements of Oman National Qualification Framework

2.10 Staff / body responsible for the design

2.10.1 The staff/body responsible for the design of the programme have the relevant expertise

2.10.2 Has a committee/body internal to the institution has been identified for the monitoring and review of the new programme of study?

2.10.3 A proof that a third party has reviewed the degree plan .

2.11 Teaching and learning methods

2.11.1 Teaching and learning methods are suitable to achieve the intended learning outcomes

2.11.2 Assessment methods are adequate and support the achievement of the intended learning outcomes

2.12 Students

Adequate mechanisms are in place to provide academic advice and support to students who will be enrolled in the program of study

2.13 Module descriptor

The titles of modules/courses reflect their content

2.14 Module/course learning outcomes

2.14.1 The module/course learning outcomes are clearly stated

2.14.2 Module/course learning outcomes are appropriate to the assigned level of the module/course

2.15 Pre- and co- requisites

Each module/course is placed correctly in the programme curriculum

2.16 Module contents (syllabus)

The syllabus of each module/course is appropriately designed to encourage and support the achievement of the intended learning outcomes of the module/course

2.17 Contact hours – lectures, tutorials, practical and independent study hours

2.17.1 The assigned credit points/hours realistically describe the student workload required to achieve the learning outcomes for the module/course

2.17.2 The distribution of time into contact hours and self-study hours is appropriate for the intended learning outcomes

2.18 Assessment criteria and pass regulations

2.18.1 The methods of assessing student's learning is clearly specified and appropriate

2.18.2 The assessment methods support the achievement of the intended learning outcomes at the level of the module/courses

2.18.3 The assessment of student learning cover, where appropriate, theoretical and practical parts of the program

2.18.4 The pass regulations are clearly stated in each module/course descriptor

2.18.5 The standards for assessing knowledge, skills and assigning grades are clearly stated, so as to differentiate between different levels of achievement

2.19 Essential Texts and recommended readings

The reading lists and other sources of information are comprehensive, up to date and relevant to the learning outcomes of the respective module/course

3. Staffing and Resources

3.1 Staffing

The documentation includes a comprehensive staffing plan, including staff number, qualifications, experience and covering academic and support staff in tabulated form ranging over the entire duration of the new programme of study

3.2 Resources

3.2.1 College/department/centre/school offering the programme of study is clearly stated

3.2.2 The documentation includes a comprehensive physical resources plan including (classrooms, laboratories, equipment, software, library, books, journals, and electronic references) in tabulated form ranging over the entire duration of the new program of study.

3.2.3 The documentation includes a comprehensive physical resources plan stating it's suitability for the new programme of study.

4. Management Arrangements

4.1 Management responsibilities and role is clearly identified and stated

4.2 Arrangements for liaison with affiliate partner(s) before and after the start of the program is identified and stated clearly." (e.g. annual visit from the affiliated body, support provided by the affiliated body, programs management at both ends, communication and contact points etc)

**Documents to be provided with the Guidelines for the external reviewers:**

Oman National Qualifications Framework.

OSCED - Oman Standard Classification for Education.

# Appendix F: Academic Program License Application (APLA) Form

Sultanate of Oman
Ministry of Higher Education
Directorate General of Private Universities and Colleges
Department of Programs Supervision

سلطنة عمان
وزارة التعليم العالي
المديرية العامة للجامعات والكليات الخاصة
دائرة الإشراف البرامجي

## استمارة طلب ترخيص برنامج أكاديمي
## Academic Program License Application Form

| General Information about the Institution | | المرجع Reference | بيانات عامة عن المؤسسة: | |
|---|---|---|---|---|
| 1 | Name of the Institution (Institution submitting proposal) | | اسم المؤسسة | ١ |
| 2 | Mission, Vision and Objectives of the Institution | | رؤية ورسالة وأهداف المؤسسة | ٢ |
| 3 | Date of Establishment | | تاريخ التأسيس | ٣ |
| 4 | Academic Credit System (credit Hours –credit Points) | | نوع النظام الأكاديمي للمؤسسة (ساعات معتمدة – نقاط معتمدة) | ٤ |
| 5 | Institution Status regarding Academic Accreditation done by Oman Academic Accreditation Authority | | وضع المؤسسة في الاعتماد الأكاديمي | ٥ |
| **Information about the Proposal:** | | **المرجع Reference** | **بيانات عن البرنامج المقدم :** | |
| 1 | Programme title in *(Arabic and English)* | | مسمى البرنامج باللغتين العربية والإنجليزية | ١ |
| 2 | Brief about the programme (franchise programme, Validated programme, programme designed for the local higher education institution, etc…) | | نبذة مختصرة عن طبيعة البرنامج (برنامج طبق الأصل من الجهة الشريكة- برنامج مصادق عليه- برنامج مصمم لمؤسسة التعليم العالي الخاصة المحلية- أخرى...) | ٢ |
| 3 | Affiliation type (Academic Affiliation/ Academic Cooperation) | | نوع الارتباط (ارتباط أكاديمي/ تعاون أكاديمي) | ٣ |
| 4 | Duration of affiliation agreement/Cooperation agreement/ memorandum of understanding | | مدة سريان اتفاقية الارتباط / اتفاقية التعاون/ مذكرة التفاهم | ٤ |
| 5 | Degree offered: | | مسمى الدرجة العلمية الممنوحة: | ٥ |



| | ☐ Diploma ☐Advanced Diploma ☐Bachelor ☐ Master ☐Post Graduate Diploma ☐PhD (if there is exit, A separate study plan to be attached) | | ☐دبلوم ☐ دبلوم متقدم ☐بكالوريوس ☐ ماجستير ☐دبلوم دراسات عليا ☐ دكتوراه (في حال وجود مخارج توفر خطة منفصلة لكل مخرج على حدة) | |
|---|---|---|---|---|
| **Information about the Proposal:** | | **المرجع Reference** | **بيانات عن البرنامج المقدم :** | |
| 6 | Field of study (according to Oman Standard Classification of Education Framework OSCEF) Issued by Oman Academic Accreditation Authority | | الحقل الذي ينتمي إليه البرنامج (حسب وثيقة التصنيف المعياري الصادرة عن الهيئة العمانية للاعتماد الأكاديمي) | ٦ |
| 7 | Pathways / Minors of the programme | | التخصص الفرعي (المسار) للبرنامج - إن وجد- | ٧ |
| 8 | Study Mode: ☐ Full-time ☐Part-Time | | نظام الدراسة: ☐ كامل ☐ جزئي | ٨ |
| 9 | Proposal Type:<br>☐ New academic programme<br>☐ Addition of new minor for existing programme<br>☐ Adding new credit certificate to an existing programme<br>☐ Merger of two or more programmes<br>☐ Modification to an existing programme<br>Other : ---------- | | نوع الطلب:<br>☐ برنامج جديد<br>☐ إضافة مسار / مسارات جديدة لبرنامج قائم<br>☐ إضافة مستوى آخر (مخرج) للبرنامج<br>☐ دمج برنامجين/ برامج<br>☐ تعديل خطة برنامج قائم<br>أخرى : _____ | ٩ |
| 10 | Proposed time to start the programme | | الموعد المقترح للبدء بتقديم البرنامج | ١٠ |
| 11 | Expected date of first graduation | | الموعد المتوقع لتخريج أول دفعة من البرنامج | ١١ |
| 12 | Language of instruction : ☐ Arabic ☐ English ☐Arabic and English ☐Other (Please specify) | | لغة تدريس البرنامج: ☐ اللغة العربية ☐ اللغة الإنجليزية ☐ العربية والإنجليزية ☐ أخرى (يرجى ذكرها) | ١٢ |
| 13 | Number of credit hours to obtain the degree | | عدد النقاط/ الساعات المعتمدة للحصول على الشهادة | ١٣ |
| 14 | Degree Length (semesters, years): | | المدة الزمنية للحصول على الشهادة (فصول دراسية/ سنوات): | ١٤ |
| 15 | Programme objectives | | أهداف البرنامج | ١٥ |
| 16 | Intended learning outcomes | | مخرجات التعلم للبرنامج | ١٦ |

| | | | | |
|---|---|---|---|---|
| 17 | Expected capacity of students intake in the programme | | الطاقة الاستيعابية المتوقعة سنوياً من الطلبة بالبرنامج | ١٧ |
| 18 | Admission criteria | | شروط القبول بالبرنامج | ١٨ |
| 19 | Programme manager | | المدير / المسؤول المباشر عن البرنامج | ١٩ |
| 20 | Ratio of number of teachers to students in the programme | | نسبة عدد المدرسين إلى عدد الطلبة في البرنامج | ٢٠ |
| **Information about the Proposal:** | | **المرجع Reference** | **بيانات عن البرنامج المقدم :** | |
| 21 | Programme tuition fees (per semester and total fees) | | الرسوم الدراسية للبرنامج حسب الساعات/ النقاط المعتمدة (لكل فصل دراسي وللبرنامج ككل) | ٢١ |
| 22 | Circular evaluation of the programme/minor | | آلية التقييم الدوري للبرنامج أو المسار | ٢٢ |

## Attachments: قائمة المرفقات:

| Attachments | | المرجع Reference | المرفقات | |
|---|---|---|---|---|
| 1 | **For Educational programmes only**: attach the authorized committee approval | | **للبرامج التربوية فقط:** ارفاق موافقة اللجنة المعنية بالإجراءات التنفيذية ببرامج اعداد المعلمين لتأهيلهم بوزارة التربية والتعليم | ١ |
| 2 | **For Health programmes only**: attach the Ministry of Health approval | | **للبرامج الصحية فقط:** ارفاق موافقة وزارة الصحة على طرح البرنامج المقترح | ٢ |
| 3 | **For Franchise programmes only**: A proof from partner institution that it is offering the same programme as the local institution | | **لبرامج الماجستير والبرامج المستضافة فقط:** اثبات من المؤسسة الشريكة أنها تطرح ذات البرنامج الذي ستقدمه المؤسسة المحلية | ٣ |

| Attachments | | المرجع Reference | المرفقات | |
|---|---|---|---|---|
| 4 | **For Master Programmes only**: Evidences of research publications during the last two years of the master programme submission | | **لبرامج الماجستير فقط:** تقديم اثبات قيام المؤسسة بنشر أبحاث علمية في آخر عامين من تاريخ تقديم الطلب | ٤ |
| 5 | Entity Offering degree | | الجهة المانحة للدرجة العلمية | ٥ |
| 6 | Programme prepared by ( body or committee) (CVs to be attached ) | | معدو البرنامج أو الجهة المعدة للبرنامج (ترفق السير الذاتية) | ٦ |
| 7 | Feasibility study to explore the need of the labour market for the proposed programme (according to the standards set in the guidelines to conduct a feasibility study) | | دراسة لحاجة سوق العمل للبرنامج المراد طرحه (وفقاً للمعايير المحددة لذلك في القائمة الاسترشادية لإعداد دراسة الجدوى) | ٧ |
| 8 | Benchmarking against similar national and international programs | | المعايرة المهنية مع برامج أخرى مثيلة داخل وخارج السلطنة | ٨ |
| 9 | Method of calculating teaching hours/ practical, lab and training hours | | تحديد طريقة احتساب الساعات التدريسية وساعات التدريس العملي | ٩ |
| 10 | Learning Outcomes Matrix | | مخرجات التعلم للبرنامج وكيفية توزيعها-في مصفوفة-على المقررات الدراسية | ١٠ |
| 11 | Documented Description of steps and procedures followed by the institution in preparing programme | | التوصيف (الموثق)للخطوات والإجراءات التي اتبعتها المؤسسة في إعداد البرنامج | ١١ |
| 12 | Course description (Include the course main objective, topics, teaching and assessment methods) | | توصيف المواد (يتضمن مختصر الهدف العام للمقرر والمواضيع وطرق التعلم والتعليم والتقويم) | ١٢ |
| 13 | A proof that a third party has reviewed the degree plan | | تقديم ما يثبت قيام جهة خارجية بمراجعة خطة البرنامج | ١٣ |

| Attachments | | المرجع Reference | المرفقات | |
|---|---|---|---|---|
| 14 | A proof that the programme is in line with the national academic qualifications framework in the Sultanate in:<br>• Description of the degree (credit hours/ points.)<br>• Knowledge and information<br>• Cognitive skills<br>• General Competencies<br>• ○Achievement in the programme<br>• Qualities of Holders of the Degree | | تقديم ما يثبت أن البرنامج يتماشى مع الإطار الوطني للمؤهلات العلمية بسلطنة عمان من حيث:<br>• مواصفات المؤهل العلمي (النقاط أو الساعات المعتمدة)<br>• المعارف والمعلومات<br>• المهارات الإدراكية<br>• القدرات العامة<br>• التحصيل في مجال التخصص<br>• مواصفات حامل المؤهل العلمي | ١٤ |
| 15 | A proof that the programme based on international standards | | إثبات استناد البرنامج على معايير دولية معترف بها | ١٥ |
| 16 | Physical facilities and other resources to fulfill needs of the new programme and the timeframe to provide it | | المصادر والمرافق المطلوبة لتقديم البرنامج والخطة الزمنية لتوفيرها | ١٦ |
| 17 | Details of number of classrooms, lecture halls needed when offering the programme | | بيان بالقاعات الدراسية التي يتطلبها تنفيذ البرنامج | ١٧ |
| 18 | Student learning resource center and the library and availability of the books and other resources associated with the new programme | | مركز مصادر التعلم والمكتبة ومدى جاهزيتها بالمراجع والكتب المتعلقة بالبرنامج | ١٨ |
| 19 | Subscriptions to journals, periodicals and internet websites for the programme | | الاشتراكات في الدوريات ومواقع الانترنت العالمية التي ستخدم البرنامج إن وجدت. | ١٩ |
| 20 | Training/Internship Plan | | خطة التدريب العملي | ٢٠ |
| 21 | Assessment methods | | أساليب التقييم | ٢١ |



| Attachments | | المرجع Reference | المرفقات | |
|---|---|---|---|---|
| 22 | Sample of the Certificate (when issued by the affiliate university, the certificate should state that the program was undertaken in the local institution in Oman) | | نموذج من الشهادة الممنوحة<br>للشهادات الصادرة من الجهات المرتبط بها، يجب أن تشير الشهادة إلى أن البرنامج تم طرحه في الكلية المحلية بسلطنة عمان) | ٢٢ |
| 23 | Articulation Pathways | | تقديم ما يثبت أن خريج البرنامج يستطيع مواصلة دراسته للحصول على شهادة أعلى من جامعة معترف بها | ٢٣ |
| 24 | General Graduate Attribute | | تقديم ما يثبت أن المواصفات العامة للخريج التي وضعتها المؤسسة لخريجيها موزعة على المقررات الدراسية للبرنامج | ٢٤ |

| Attachments | | المرجع Reference | المرفقات | |
|---|---|---|---|---|
| 25 | Table of curricula plan | | جدول الخطة الدراسية | ٢٥ |

| Attachments | المرجع Reference | المرفقات |
|---|---|---|
| | | |

| السنة الدراسية | الفصل الدراسي | رمز ورقم المقرر | عنوان المقرر | الساعات التدريسية | النقل الأكاديمي بالساعات المعتمدة/ النقاط/ الوحدات | نوع المقرر Course type | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | اختياري / إجباري | متطلب جامعة/كلية/قسم | المتطلب السابق |
| Year | Semester | Course code& number | Course title | Teaching hours | Course load in (Credits/ points/ units) | Compulsory/optional | University/ college/ department requirement | Prerequisite |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

| ٢٦ | الهيئة الأكاديمية والأكاديمية المساندة المتوفرة بالمؤسسة والمناسبة للبرنامج: | | Academic and Assisting Staff Suitable for Teaching the Programme Modules (currently at the institution | 26 |
|---|---|---|---|---|

| م | الاسم Name | الفصل الدراسي Semester | العدد Number | المؤهل العلمي Qualification | التخصص Specialization | العبء التدريسي Teaching load |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ٢٧ | خطة المؤسسة حول تعيين الكادر الأكاديمي اللازم لاستيفاء متطلبات البرنامج: | | Plan For Recruiting Additional Academic Staff to Fulfill Teaching Requirements of the New Programme (future) | 27 |
|---|---|---|---|---|



| Attachments | المرجع Reference | المرفقات |
|---|---|---|
| | | |

| م | العام الأكاديمي Academic year | الفصل الدراسي Semester | العدد Number | المؤهل العلمي Qualification | التخصص Specialization | العبء التدريسي Teaching load |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

# Appendix G: Statistics on the logistics sector

The database shows that there are 13,836 companies with 29 logistic activities with 80,369 employees, which are divided into the following tables:

## * According to the skills levels

| Omanisation percentage | Total | Expatriates | | | Omanis | | | The skills levels |
|---|---|---|---|---|---|---|---|---|
| | | Total | Female | Male | Total | Female | Male | |
| 30.7% | 1,969 | 1,364 | 53 | 1,311 | 605 | 127 | 478 | Leadership and supervision |
| 52% | 1,872 | 899 | 70 | 829 | 973 | 268 | 705 | Specialist |
| 70.2% | 1,076 | 321 | 20 | 301 | 755 | 160 | 595 | Technicians |
| 36.3% | 11,832 | 7,542 | 70 | 7,472 | 4,290 | 1,270 | 3,020 | Vocational |
| 8.5% | 28,686 | 26,262 | 3 | 26,259 | 2,424 | 60 | 2,364 | Skilled |
| 7.5% | 34,834 | 32,217 | 58 | 32,159 | 2,617 | 160 | 2,557 | Semi-skilled |
| **14.6%** | **80,369** | **68,605** | **274** | **68,331** | **11,764** | **2,045** | **9,719** | **Total** |

## * According to the grade of the company

| Omanisation percentage | Total | Expatriates | | | Omanis | | | Grade of the company |
|---|---|---|---|---|---|---|---|---|
| | | Total | Female | Male | Total | Female | Male | |
| 30.8% | 39 | 27 | - | 27 | 12 | 3 | 9 | International |
| 32.7% | 26,259 | 17,684 | 150 | 17,534 | 8,575 | 1,213 | 7,362 | Excellent |
| 11.9% | 18,627 | 16,415 | 111 | 16,304 | 2,212 | 614 | 1,598 | First |
| 4.5% | 5,805 | 5,545 | 8 | 5,537 | 260 | 89 | 171 | Second |
| --- | --- | --- | --- | --- | --- | --- | --- | Third |
| 2.3% | 20,271 | 19,809 | 5 | 19,804 | 466 | 95 | 371 | Fourth |
| **14.6%** | **80,369** | **68,605** | **274** | **68,331** | **11,764** | **2,045** | **9,719** | **Total** |

## * According to the economic activity (29 logistics activities)

| Omanisation | Total | Expatriates | | | Omanis | | | The logistics activity | The code |
|---|---|---|---|---|---|---|---|---|---|
| | | Total | Female | Male | Total | Female | Male | | |
| 31.6% | 57 | 39 | - | 39 | 18 | 4 | 14 | Shipping Agencies | 461005 |
| 6.6% | 34,414 | 32,138 | 69 | 32,069 | 2,276 | 488 | 1,788 | Trucking of goods and equipment | 492301 |
| 10.6% | 709 | 634 | 2 | 632 | 75 | 18 | 57 | Rental of trucks with driver | 492302 |
| 10.7% | 205 | 183 | 1 | 182 | 22 | 3 | 19 | Carriage of goods by road | 492399 |
| 48.3% | 29 | 15 | 2 | 13 | 14 | 5 | 9 | Transmission of gases and liquids through pipelines (not including water system) | 493001 |
| 42.4% | 1,654 | 953 | 14 | 939 | 701 | 83 | 618 | Maritime and coastal water transport between States for goods | 501201 |
| 100.0% | 3 | - | - | - | 3 | - | 3 | Maritime and coastal water transport between oil and gas states | 501202 |
| 76.6% | 337 | 79 | 4 | 75 | 258 | 31 | 227 | Other activities related to maritime and coastal water transport of goods | 501299 |
| 2.0% | 50 | 49 | - | 49 | 1 | - | 1 | Internal water transport of goods | 502200 |
| 0.0% | 8 | 8 | - | 8 | - | - | - | Air cargo transport | 512000 |
| 31.6% | 19 | 13 | - | 13 | 6 | - | 6 | Refrigerated storage | 521001 |
| 9.7% | 5,692 | 5,142 | 26 | 5,116 | 550 | 110 | 440 | Goods warehouse | 521002 |
| 0.0% | 3 | 3 | - | 3 | - | - | - | Food and Drug Stores and Meat (subject to health inspection( | 521003 |
| 19.0% | 63 | 51 | - | 51 | 12 | 2 | 10 | Other storage activities | 521099 |
| 47.6% | 2,472 | 1,295 | 8 | 1,287 | 1,177 | 34 | 1,143 | Operation (management and maintenance) of cargo terminals in ports | 522201 |
| 40.0% | 50 | 30 | 1 | 29 | 20 | - | 20 | Tow of ships | 522202 |
| 25.3% | 1,490 | 1,113 | 21 | 1,092 | 377 | 37 | 340 | Marine Services | 522203 |
| 82.4% | 1,740 | 307 | 23 | 284 | 1,433 | 212 | 1,221 | Operation (management and maintenance) of cargo terminals at airports | 522301 |
| 12.3% | 29,653 | 26,015 | 79 | 25,936 | 3,638 | 840 | 2,798 | Charging and unloading of goods (regardless of the mode of transport used( | 522401 |
| 10.3% | 78 | 70 | 2 | 68 | 8 | 3 | 5 | Cargo of Ships (or unloading activities) | 522402 |
| 0.0% | 21 | 21 | - | 21 | - | - | - | Shipping and unloading cargo weighing more than 25 kg | 522403 |
| 47.4% | 19 | 10 | - | 10 | 9 | 3 | 6 | Other cargo handling activities | 522499 |
| 76.2% | 651 | 155 | 7 | 148 | 496 | 81 | 415 | Customs clearance offices | 522901 |
| 5.5% | 109 | 103 | 5 | 98 | 6 | 3 | 3 | Other activities related to other transport support activities | 522999 |
| 98.2% | 493 | 9 | 2 | 7 | 484 | 58 | 426 | Postal activities (postal and related services) | 531000 |
| 52.1% | 340 | 163 | 8 | 155 | 177 | 29 | 148 | Mail activities by messenger (non-governmental postal activities) | 532001 |
| 25.0% | 8 | 6 | - | 6 | 2 | - | 2 | Postal Agency | 532002 |
| 0.0% | 1 | 1 | - | 1 | - | - | - | Express Mail Services | 532003 |
| 100.0% | 1 | - | - | - | 1 | 1 | - | Services of renting of post office boxes | 821901 |
| **14.6%** | **80,369** | **68,605** | **274** | **68,331** | **11,764** | **2,045** | **9,719** | **Total** | |

**Appendix H: Participant Information Sheet (PIS) - (MM template)**

UNIVERSITY OF LIVERPOOL

# Participant Information Sheet

## For the

## ⌖ 'Middle-level Managers' ⌖

**Title of Study**

# Bridging the Gap between Higher Education and the Logistic Sector Needs in Oman: Designing a need-based curriculum

**Date:** 29/09/2018
Version Number and Date: Version1, 29/09/2018

UNIVERSITY OF LIVERPOOL

## Preamble (Invitation Paragraph):

Dear participant …
You are being invited to participate in a doctoral degree research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. Please also feel free to discuss this with your friends and relatives if you wish. I would like to stress that you do not have to accept this invitation and should only agree to take part if you want to. The researcher will use a questionnaire either in hard copy or through a web application, the web address (URL) will be provided to you soon by the researcher.

A questionnaire is prepared and will be provided to you, and you will be given at least five days to you to read it; please take your time to read all questions, then check the appropriate box to the right of the question item, which closely corresponds to your response on the numbered question items. Please answer each question item as best as you can. There is no right or wrong answer in any of these question items. Remember when you read the questions that no names whether organization or individual and personal contacts details will reflect on the research paper or be disclosed to the third parties. As a researcher, I highly appreciate your participation, and I would like to emphasize the anonymity of your participation, and will ensure that your personal information and questions posed in the research will be kept private.

Finally, remember that your participation may help to provide positive recommendations to the Logistics sector and may help to provide a better curriculum to the Logistics sector, and thus better graduates for better quality.

Thank you for reading this.

## The Purpose of study:

Logistic companies are facing difficulties in recruiting qualified workers at all levels to meet their demands. Lack of finding qualified workers is becoming a bottleneck for growth in the logistics sector, affecting negatively the trend of Omani Government to increase investment in the sector.
The growth of the logistic sector requires skilled labour at all levels. As a result, the higher education graduates' skills ought to match the logistic sector needs. The higher education has to tune its taught curricula and map them to match the needs of the labour market.
The purpose of this study is to determine the content characteristics of a higher education curriculum for Omani students who planned to work in skilled jobs in Oman's logistics sector. This higher education curriculum is intended to match the need, in knowledge and skills, of the logistics sector. Your current work in the logistics sector plays a crucial role in providing the Ministry of Manpower and the Ministry of Higher Education specific information of your job that will guide the design of a logistics curriculum in the higher education institutions in Oman. Therefore, your participation is highly valuable in the future of the logistics workforce, their competency development in the higher educational institutions, and the success of companies in the logistics sector of Oman. Mixed method research will be used to identify the HE curriculum gaps and the skills needed by the logistics companies in order to propose the right methods to align between the curricula of Higher Education with the logistics companies' needs. The researcher highly appreciates your participation.

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**Selection Criteria (why you have chosen to 'invite take part'):**

The primary reason for your selection as a participant in this study is the fact that you belong to the 20 middle-level managers who are directly supervising the 20 most populated jobs in the logistics sector today in terms of the highest number of employees working in these specific occupations. The secondary reason for your selection is the fact that you have direct access to the following information about the jobs under your direct supervision: (a) detailed job requirements; (b) existing curricula associated with these selected occupations, if available; (c) skill level classification based on company standards; and (d) the employee performance rates in these occupations. From the study design, there will be at least one middle-level managers that were selected for participation in this study from your company, depending on the number of selected occupations found in your company.

**Nature of Participation:**

The study requires the gathering of as complete information as possible about your knowledge of the four job-specific information, as mentioned in the previous section. The researcher of this study is Eng. Harib Harith Al-Mahrooqi, the Director General for Vocational Training at the Ministry of Manpower in Oman. The questionnaire will be given to you for at least five days to read it, please, take your time and read them carefully.

As a participant of this study, you are required to write your contact number and address in the questionnaire for the 'Middle Managers', then to answer all the questions asked to you as completely as you can, based on what you can remember and your daily task and communication with the employees which based on the practical realities of the specific jobs under your direct supervision. Your participation is voluntary, and you are free to withdraw at any time without explanation and without incurring a disadvantage, if the information you provided has not yet been anonymised, you can request that it be removed from the research data. However, once the data has been anonymised, it cannot be removed.

**Main information once you take part:**

As a participant the main information you have to know that you are helping to provide feedback that may help to provide more quality to the curriculum design for the Logistics sector, the Mixed method research will be used to identify the HE curriculum gaps and the skills needed by the logistics companies in order to propose the right methods to align between the curricula of Higher Education with the logistics companies' needs. The researcher highly appreciates your participation.

The questionnaire will help to receive the valuable information from you; the questionnaire is prepared in papers and web application, the only thing you are required is to participate and answer the questions, as a researcher, I appreciate your participation.

**Risks:**

There is no risk expected from the questions; if you feel that you are discomfort from any question, then you can skip it without explanation or withdraw at any time without explanation and without incurring a disadvantage, if the information you provided has not yet been anonymised, you can request that it be removed from the research data. However, once the data has been anonymised, it cannot be removed.

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## Benefits:

Please, remember that your participation may help to provide positive recommendations to the Logistics sector, and may help to provide better curriculum to the Logistics sector, and thus qualified graduates that will add more quality to the logistics sector.

Thank you so much for giving us a time reading the above information, If you are unhappy, or if there is a problem or you have further questions, please feel free to let us know by contacting Principal Investigator Dr. Kathleen to her email: kathleen.kelm@online.liverpool.ac.uk, and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Chair of the Liverpool Online Research Ethics Committee at liverpoolethics@liverpool-online.com When contacting the Chair, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

## Ethical Concerns

- **Permission Granted**
  I, Harib Harith Al-Mahrooqi (St. no H00036955) at UoL, as the researcher is required to complete an ethical approval process before scheduling the questionnaires and collecting the required documents. The whole research is done under the supervision of the University of Liverpool (UoL) as a part of the doctoral degree (EdD) program, and the main permission to start the thesis stage is given by the UoL ethics committee. The other permission should be granted through an Authorization Letter from the MoMP granting permission for all relevant data access, conduct questionnaires, facility use, and use of personal time for research purposes.

- **Potential Conflicts of Interest**
  In order to avoid ethical complications, I, Harib Al-Mahrooqi, as the researcher, avoided choosing a subordinate or immediate supervisor, or someone who is, or might become my student. My participants are neither of these three. The participants are volunteers from logistic companies and able to read the whole information, conduct and withdraw at any time, without explanation. Results up to the period of withdrawal may be used if the participant agrees. Otherwise, the data taken will be destroyed, and no further use is made of them.

- **Confidentiality**
  In all cases, study information will be anonymised, no proprietary information will be shared, and the privacy of the participant will be safeguarded. As a researcher, I assure of non-disclosure of the participants' identities in the research. Additionally, no results of the research will be made publically available without specific approval from the concerned entities and the participant. All the data and documents will be kept in a password protected computer in a safe place which only the researcher will have access to, and it will be stored for at least five years with adequate provisions to maintain confidentiality. If the research procedures might reveal criminal or unethical activity that necessitates a duty to report, then the researcher will follow appropriate ethical procedures in keeping with the UoL and other regulations.

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**Contact Details**

- **My contact details are:**
  Name: Harib Harith Al-Mahrooqi (St. no. H00036955)
  P. O. Box 1970 P. Code 112 Ruwi - Oman
  Mobile: +968 99348811
  Email: harib.al-mahrooqi@online.liverpool.ac.uk
  Work Address: P.O. Box 413 P. Code 100 Muscat - Oman
  Telephone: +968 24344220

- **The contact details of the Research Participant Advocate at the University of Liverpool are:**
  001-612-312-1210 (USA number)
  Email address liverpoolethics@liverpool-online.com

Please keep/print a copy of the Participant Information Sheet for your reference. Please contact me and/or the Research Participant Advocate at the University of Liverpool with any question or concerns you may have.

| Mr. Harib Harith Al- Mahrooqi | 29 / 09 / 2018 |  |
|---|---|---|
| Researcher | Date | Signature |

## Appendix I: Participant Consent Form (MM template)

UNIVERSITY OF LIVERPOOL

Committee on Research Ethics

PARTICIPANT CONSENT FORM

**'Middle-level Managers'**

| | | |
|---|---|---|
| **Title of Research Project:** | Bridging the Gap between Higher Education and the Logistic Sector Needs in Oman: Designing a need-based curriculum | |
| **Researcher(s):** | Harib Harith Nasser Al-Mahrooqi<br>EdD student (St. no. H00036955) | **Please initial box** |

Dear participant,

Please tick ☑ on the coming boxes, if you have any question, please don't hesitate to contact the researcher:

1. I confirm that I have read and have understood the Participant Information Sheet dated 29/09/2018 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline. ☐
3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish. ☐
4. I agree to take part in the above study. ☐
5. The information you have submitted will be published as a report; please indicate whether you would like to receive a copy. ☐
6. I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications. ☐
7. I understand and agree that my participation will be audio recorded and I am aware of and consent to your use of these recordings for the purposes of getting back to the information in the interview once I need to retrieve the information. ☐
8. I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. ☐
9. I understand and agree that once I submit my data it will become anonymised and I will therefore no longer be able to withdraw my data. ☐

| Participant Name | Date | Signature |
|---|---|---|
| | | |

| Name of Person taking consent | Date | Signature |
|---|---|---|
| Mr. Harib Harith Al-Mahrooqi | 29/09/2018 |  |

| Researcher | Date | Signature |
|---|---|---|

**Student Researcher:**
Name: Harib Harith Al-Mahrooqi
Work Address: P. O. Box 1970, PCode 112, Sultanate of Oman
Work Telephone: +968 - 24344220
Work Email: harib.al-mahrooqi@online.liverpool.ac.uk

**Version number and date:**
Version2, 29/9/2018

## Appendix J: Authorization Letter (AL) from MoHE

Sultanate of Oman
Ministry of Higher Education
Directorate General of
Private Universities & Colleges

بسم الله الرحمن الرحيم

سلطنة عمان
وزارة التعليم العالي
المديرية العامة للجامعات والكليات الخاصة

Respected Vice-Chancellors
Respected Deans

Greetings,

Subject: Mr. Harib Harith Al-Mahrooqi

I would like to inform you that **Mr. Harib Al-Mahrooqi** is an EdD student at the University of Liverpool. He is currently writing a thesis titled; *"Bridging the Gap between Higher Education and the Logistic Sector in Oman; Designing a Need-Based Curriculum"*. During the data collection phase, he will require some information from your institutions, specifically the ones that offer degrees in logistics. His data collection methods include interviews and questionnaires.

We kindly urge you to support **Mr. Harib** during his visits to your institutions to collect his data.

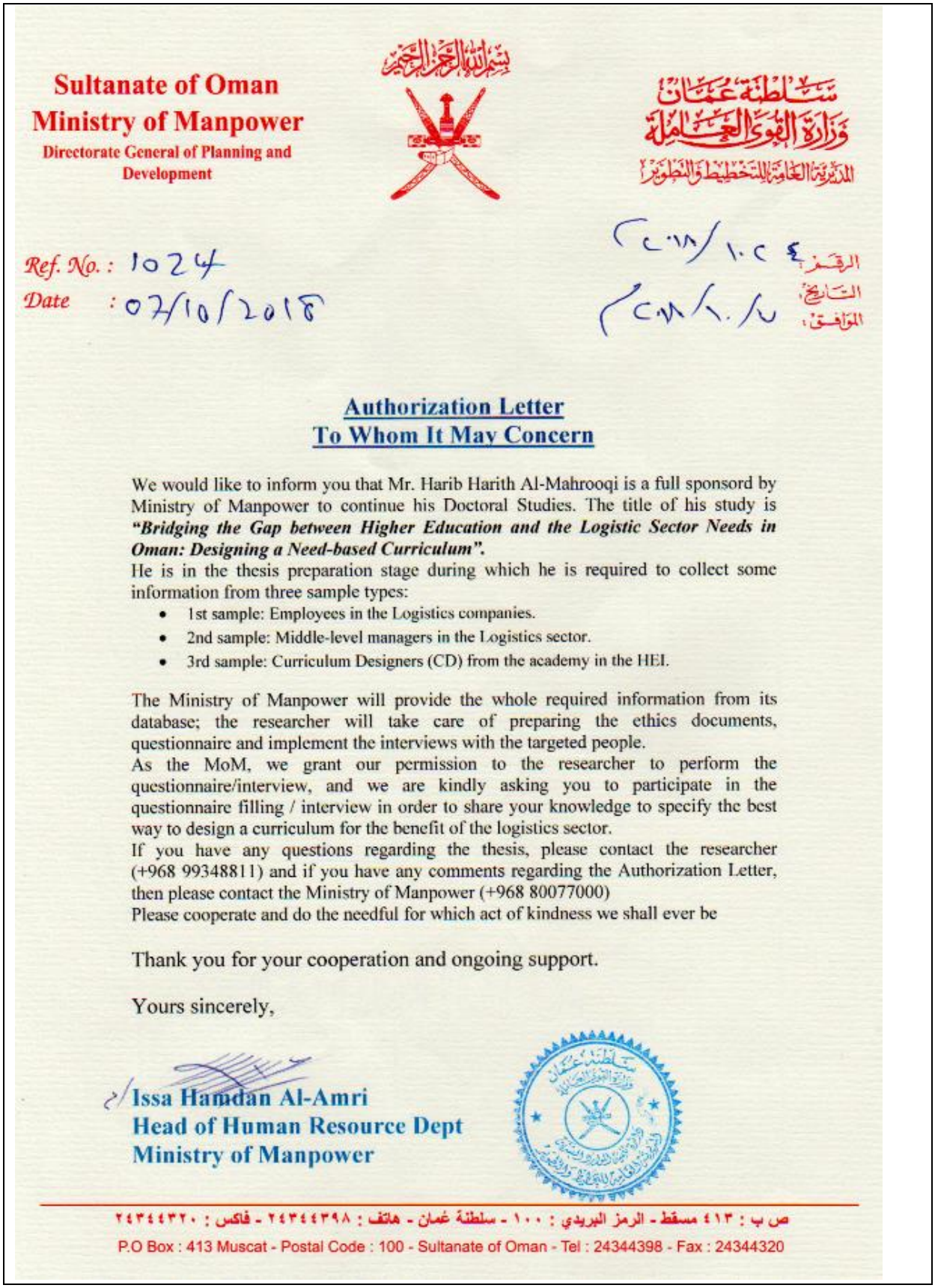
Thank you for your cooperation.

Sincerely,

Badr Saif Al-Kindi
Acting Director General
Directorate General of Private Universities & Colleges

نحو تعليم عالٍ ذي جودة عالية يلبي متطلبات التنمية المستدامة
سلطنة عُمان ص.ب: ٨٢ روي - الرمزالبريدي: ١١٢ - هاتف ٢٤٣٤٠٣٦٨ / فاكس ٢٤٣٤٠٣٦٦
Sultanate of Oman, P.O.Box: 82 Ruwi, PC 112, Tel: 24340368 / Fax 24340366 www.mohe.gov.om

## Appendix K: Authorization Letter (AL) from MoMP



Sultanate of Oman
Ministry of Manpower
Directorate General of Planning and Development

بسم الله الرحمن الرحيم

سلطنة عمان
وزارة القوى العاملة
المديرية العامة للتخطيط والتطوير

Ref. No.: 1024
Date : 07/10/2018

الرقم: ٢٠١٨/١٠٢٤
التاريخ: ٢٠١٨/١٠/٧
الموافق:

**Authorization Letter**
**To Whom It May Concern**

We would like to inform you that Mr. Harib Harith Al-Mahrooqi is a full sponsord by Ministry of Manpower to continue his Doctoral Studies. The title of his study is ***"Bridging the Gap between Higher Education and the Logistic Sector Needs in Oman: Designing a Need-based Curriculum".***
He is in the thesis preparation stage during which he is required to collect some information from three sample types:

- 1st sample: Employees in the Logistics companies.
- 2nd sample: Middle-level managers in the Logistics sector.
- 3rd sample: Curriculum Designers (CD) from the academy in the HEI.

The Ministry of Manpower will provide the whole required information from its database; the researcher will take care of preparing the ethics documents, questionnaire and implement the interviews with the targeted people.
As the MoM, we grant our permission to the researcher to perform the questionnaire/interview, and we are kindly asking you to participate in the questionnaire filling / interview in order to share your knowledge to specify the best way to design a curriculum for the benefit of the logistics sector.
If you have any questions regarding the thesis, please contact the researcher (+968 99348811) and if you have any comments regarding the Authorization Letter, then please contact the Ministry of Manpower (+968 80077000)
Please cooperate and do the needful for which act of kindness we shall ever be

Thank you for your cooperation and ongoing support.

Yours sincerely,

Issa Hamdan Al-Amri
Head of Human Resource Dept
Ministry of Manpower

ص ب : ٤١٣ مسقط - الرمز البريدي : ١٠٠ - سلطنة عمان - هاتف : ٢٤٣٤٤٣٩٨ - فاكس : ٢٤٣٤٤٣٢٠
P.O Box : 413 Muscat - Postal Code : 100 - Sultanate of Oman - Tel : 24344398 - Fax : 24344320