DESIGNING A COMPETENCY FRAMEWORK FOR LOGISTICS EXECUTIVES: THE CASE OF THE READY-MADE GARMENTS MANUFACTURERS IN EGYPT

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Copyright Statement

ABSTRACT

The ready-made garments (RMG) manufacturing industry in Egypt is one of the main industries that supports the Egyptian economy through exports' earnings. Egypt's RMG exports are considerably less in quantity than other RMG exporting countries despite the advantages that Egypt has in terms of availability of high quality raw materials 'cotton', the geographical proximity to main RMG importers and duty free trade agreements. Among the factors found to affect the competitiveness of Egypt's RMG exports are the lack of training, and the lack of skilled labour and management. This research develops a competency framework - a tool that can assist RMG manufacturing companies in Egypt to identify the skills needed for effective job performance and to define the skills deficiencies that would require training. This competency framework focuses on logistics executives in RMG manufacturing companies, as competent logistics executives have been shown to play a vital role in supporting the competitive advantage of organisations. The competency approach had not previously been used in research to identify the competencies needed for logistics executives in any industry, including the RMG industry. Moreover, very little work has been carried out on investigating the skills of logistics executives in developing countries, nevertheless in the Middle East. To create this competency framework, methodological triangulation was used through the use of questionnaires, content analysis and semi-structured interviews. The online questionnaire targeted a sample of logistics executives in RMG companies in Egypt to determine the tasks they consider important for effective job performance. The content analysis was performed on skills-related research to collect the skills and knowledge elements acknowledged in the literature to create logistics competencies. The output of the questionnaire and the content analysis was then used in a semi-structured interview with a senior merchandiser and development manager in an Egyptian RMG manufacturing company to provide an example of a completed competency framework.

This thesis seeks to make an original contribution to knowledge by creating a competency framework template that RMG manufacturing companies in Egypt can use to identify the competencies and detect the skills deficiencies of logistics executives. This contribution would not only benefit the RMG manufacturing companies in Egypt, but it could also be of use to RMG exporters in developing countries which suffer from similar skills and training problems. This research is also a contribution in that it emphasises the role of logistics executives towards supporting Egypt's RMG exports, an angle which has not previously been explored, as earlier research focused on other aspects that supported the competitiveness of Egypt's RMG exports such as trade regulations. Moreover, acknowledging the role of logistics executives in this study could draw the attention of other industrial sectors in Egypt to consider the role of competent logistics executives towards supporting companies' performance.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

		Page Number
Table 5.12:	The Semi-Structured Interview's Questions for Evaluating the Competency Framework	155
Table 6.1:	Tasks Importance in the Function of "Develop Logistics Plan to Meet the Requirements of Customers' Orders"	164
Table 6.2:	Tasks Importance in the Function of "Design Contingency Plans for Logistics Operations"	165
Table 6.3:	Tasks Importance in the Function of "Ensure Compliance of Logistics Operations with the Government's Legislations and Company's Regulations"	166
Table 6.4:	Tasks Importance in the Function of "Identify the Logistics Requirements for the Company's Supply Chain"	167
Table 6.5:	Tasks Importance in the Function of "Improve the Quality of Logistics Performance"	168
Table 6.6:	Tasks Importance in the Function of "Integrate Technology Tools (Equipment/Software) in Logistics Operations"	169
Table 6.7:	Tasks Importance in the Function of "Maintain Safety and Security in Logistics Operations"	170
Table 6.8:	Tasks Importance in the Function of "Manage Logistics Service Providers"	171
Table 6.9:	Tasks Importance in the Function of "Monitor the Environmental Impact of Logistics Operations"	172
Table 6.10:	Tasks Importance in the Function of "Respond to Incidents during Logistics Operations"	173
Table 6.11:	Subjects Respondents Would Study for their job if They Could Return to College	177
Table 6.12:	Tests of Normality (Kolmogrov-Smirnov Test)	179
Table 6.13:	Results of the Sign Test	182
Table 6.14:	Rank of Tasks in the Function of 'Develop Logistics Plans to Meet the Requirements of Customers' Orders'	187
Table 6.15:	Rank of Tasks in the Function of 'Design Contingency Plans for Logistics Operations'	188
Table 6.16:	Rank of Tasks in the Function of 'Ensure Compliance of Logistics Operations with Government's Legislations And Company's Regulations'	188
Table 6.17:	Rank of Tasks in the Function of 'Identify the Logistics Requirements for the Company's Supply Chain'	189
Table 6.18:	Rank of Tasks in the Function of 'Improve the Quality of Logistics Performance'	190
Table 6.19:	Rank of Tasks in the Function of 'Integrate Technology Tools in Logistics Operations'	191
Table 6.20:	Rank of Tasks in the Function of 'Maintain Safety and Security in Logistics Operations'	192
Table 6.21:	Rank of Tasks in the Function of 'Manage Logistics Service Providers'	193

		Page Number
Table 6.22:	Rank of Tasks in the Function of 'Monitor the Environmental Impact of Logistics Operations'	194
Table 6.23:	Rank of Tasks in the Function of 'Respond to Incidents during Logistics Operations'	195
Table 6.24:	The Ranking Order of the Functions	196
Table 7.1:	Elements Resulting from the Content Analysis	203
Table 7.2:	Frequencies of Skills and Knowledge Elements in Academic Articles	205
Table 7.3:	Skills and Knowledge Patterns in Academic Articles	213
Table 7.4:	Frequencies of Skills and Knowledge Elements in Career Guides	217
Table 7.5:	Skills and Knowledge Patterns in Career Guides	221
Table 7.6:	Frequencies of Skills and Knowledge Elements in Interviews	224
Table 7.7:	Skills and Knowledge Patterns in Interviews	228
Table 8.1:	The Generic Framework for Logistics Executives in RMG Manufacturing Companies in Egypt	235
Table 8.2:	An Example of a Complete Framework for Logistics Executives in RMG Manufacturing Companies	237
Table 8.3:	A Complete Competency Framework [*Wagdy Moamen and Partners for Textile Industries and Ready-Made Garments Company*]	241
Table 8.3:	Proficiency Levels Scale	246
Table 8.4:	An Example of a Skills Audit	248

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LIST OF ABBREVIATIONS

ALCOTEXA	Alexandria Cotton Exporters Association
AMA	American Management Association
ANOVA	Analysis of Variance
ASEAN	Association of Southeast Asian Nations
ASP	Application Service Provider
ATC	Agreement on Textiles and Clothing
BEI	Behaviour Event Interview
BLM	Business, Logistics, Management Framework
CEO	Chief Executive Officer
CF	Competency Framework
CIT	Critical Incident Technique
CLM	Council of Logistics Management
CMT	Cut Make Trim
CO_2	Carbon Dioxide
COMESA	Common Market for Eastern and Southern Africa
CSCMP	Council of Supply Chain Management Professionals
EBSCO	Business Source Premier
EDA	Exploratory Data Analysis
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
ETMF	Egyptian Textile Manufacturers Federation
EU	European Union
FOB	Free on board
FP	Full Package
FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GSCM	Green Supply Chain Management
HP	Hewlett-Packard
HR	Human Resources
HRM	Human Resource Management
HTML	Hypertext Markup Language
ISO	International Standardisation Organisation
I.T	Information Technology
JIT	Just-in-Time
KS	Kolmogrov-Smirnov
LSP	Logistics Service Providers
MBA	Master of Business Administration
MCI	Management Charter Initiative
MENA	Middle East North African nations
MFA	Multi-Fibre Arrangement
NAFTA	North American Free Trade Area

NVQ	National Vocational Qualifications
OPM	Office of Personnel Management
OVAE	Office of Vocational and Adult Education
PAFTA	Pan Arab Free Trade Area
POS	Point of Sale
QIZ	Qualified Industrial Zone
QR	Quick Response
RFID	Radio Frequency Identification
RMG	Ready-Made Garments
SCM	Supply Chain Management
SNVQ	Scottish National Vocational Qualifications
STS	Socio Technical System
SWOT	Strengths Weaknesses Opportunities and Threats
TIFA	Trade and Investment Free Trade Agreement
TNA	Training Needs Analysis
TQM	Total Quality Management
UAE	United Arab Emirates
UNESCO	United Nations Educational, Scientific and Cultural Organisation
U.S.A	United States of America
WMS	Warehouse Management Systems
WTO	World Trade Organisation
3PL	Third Party Logistics

PUBLICATIONS ARISING FROM THIS WORK

- *Sara Elzarka, Nicoleta S. Tipi, Nick J. Hubbard and Colin G. Bamford (2008)* 'Creating a logistics competency framework for Egyptian clothing companies' *Logistics Research Network Annual Conference*. 10th – 12th September 2008, Liverpool, United Kingdom.

- *Sara Elzarka, Nicoleta S. Tipi, Nick J. Hubbard and Colin G. Bamford (2009)* 'Skills, Management Knowledge or Logistics Expertise...What Do Logistics Managers in Clothing Companies Really Need?' Unpublished.

CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

The purpose of this introductory chapter is to present an overview of the research, which is depicted in the next nine chapters. This introduction starts by presenting a background on the research, followed by the research aim and objectives and a brief summary of the structure of the thesis.

1.2 RESEARCH BACKGROUND

The ready-made garments (RMG) manufacturing industry in Egypt is one of the main industries that supports the Egyptian economy. Its strategic importance is derived from the industry's large size in terms of export earnings, employment and investments (Magder, 2005; Ghoneim and Pigato, 2006). This strategic position is supported by numerous factors which include the use of Egyptian cotton in manufacturing RMG articles, the geographical proximity to Europe, and the supply of labour (Someya et *al*., 2002; Marello et *al*., 2009; WTO, 2009). In recent years, the Egyptian government had entered into several trade agreements that would grant duty free access to the Egyptian RMG exports such as Qualified Industrial Zones (QIZ) (El-Madany, 2005). However, despite the advantages that the Egyptian RMG industry has in terms of cotton, geographical proximity, supply of labour and duty free agreements, Egypt's RMG exports account for only 0.38% of the global trade in this sector (WTO, 2009).

In the study conducted by Awni (2009) it was emphasised that despite the preferential access that Egypt enjoys to many markets through trade agreements, Egyptian RMG exports are lower than those of other RMG exporters who do not have any preferential access to these markets. Many factors were found to affect the competitiveness of Egypt's RMG exports, one of which is the lack of skilled labour and management (Magder, 2005; World Bank, 2006). Awni (2009) stressed that the low productivity of labour and management is responsible for affecting Egypt's RMG exports in such a way. Tolba (2009) revealed that the low productivity and lack of skills in Egyptian

RMG companies is attributed to the lack of training. This is a crucial issue that was investigated by Helal (2009) who recommended that RMG manufacturing companies in Egypt need to use effective methods to identify skills deficiencies in order to provide the right training which consequently would lead to better work performance.

These studies recognised the existence of skills and training problems in the Egyptian RMG industry which in return affect the competitiveness of Egypt's RMG exports. One of the major limitations of these studies was the fact that they did not provide practical methods or tools by which the lack of skills and training in the Egyptian RMG industry could be resolved. The other limitations were that none of these studies explored the types of skills needed for effective job performance, the techniques to be used to identify the required skills or the methods by which to identify training needs.

Therefore, this research will provide new insights into the issues of skills and training in Egypt's RMG manufacturing companies by developing a tool that will assist RMG manufacturing companies in identifying the skills needed for effective job performance and in defining skills deficiencies that would require training. This tool is the competency framework that defines the competencies required for a certain job using the job profile.

1.3 RESEARCH CONTEXT

This research focuses on developing a competency framework for logistics executives in Egypt's RMG manufacturing companies. A logistics executive, who is also called logistics director, supply chain manager, logistics manager or supply chain director, is responsible for the planning and coordination of enterprise-wide logistics management (Anon, 2010). Competent logistics executives play a crucial role in supporting the competitive advantage of organisations since they can contribute to the corporate competitive strategy, integrate functional areas to deliver customer satisfaction, reduce deficiencies and improve quality (Dapiran, 1992; Rowat, 2008). Thus recognising the lack of skills that exist at management level in RMG manufacturing companies in Egypt and the role that logistics executives can play to support the competitiveness of Egypt's RMG exports, led to the investigation of the competencies that logistics executives need for effective job performance.

The use of the competency approach was recommended by Ferrara and Morvillo (2002) for a complex and an evolving profession like logistics because such professions require an input-based approach which describes the underlying elements that lead to competent performance, instead of an output based approach that describes performance standards.

The competency approach had not previously been used in research to identify the competencies needed for senior logistics managers in any industry, including the RMG industry. A possible interpretation could be that the use of the competency approach limits the results to the industry or the case being studied which might not have been in the interest of researchers who sought generalisation of research findings. In other words, the purpose of their research required the use of methods by which findings can be generalised to be of benefit to a large audience.

Examples of such research include those conducted by Gammelgaard and Larson (2001), Myers et *al*. (2004), and Murphy and Poist (1991; 1994; 1998; 2006; 2007) who targeted a wide sample of logistics executives across industries using different methods to investigate the skills needed for logistics executives. These studies and others sought generalisation of results in order to make the findings useable to educators in designing curricula, professional organisations in planning conferences and professional education; and of course for the logistics executives who can use the findings to identify their own training needs.

But, the lack of consistency that was witnessed in the findings of these studies called for a more defined process or methodology that would clearly justify the competencies needed for the job being studied. Therefore, this research uses the competency approach and focuses on a particular sample which is the logistics executives in RMG manufacturing companies in Egypt to define the skills and knowledge elements needed for effective job performance.

It is also worth mentioning that very little equivalent work on the skills of logistics executives has been carried out in developing countries, including the Middle East, which is why there is a need for research to be conducted on identifying the competencies required for logistics executives in Egypt.

Not only would the competency framework define the competencies required for effective job performance, but it would also be used as a benchmark to determine the training needs of logistics executives in RMG manufacturing companies in Egypt. This would meet the recommendation made earlier by Helal (2009) who stated that RMG companies need to use effective methods to identify skills deficiencies in order to provide the right training. Therefore it is hoped that such a tool would assist Egyptian RMG manufacturing companies in providing the appropriate training that would enhance performance and support the competitiveness of Egypt's RMG exports to the global market.

The following section will present the research aim and objectives that this research will attempt to achieve.

1.4 RESEARCH AIM AND OBJECTIVES

Based on the above section highlighting the training and skills problem in the RMG manufacturing sector in Egypt, the aim of this research is:

To create a generic competency framework that the ready-made garments manufacturing companies in Egypt can use to determine the competencies required for the effective work performance of logistics executives and to use it as a tool to determine their training needs.

To achieve this aim, four objectives have been identified:

1. To define the functions and tasks of logistics executives in RMG manufacturing companies which contribute to effective job performance.
2. To investigate the skills and knowledge elements which create the competencies necessary for effective logistics executives.
3. To create a generic framework for logistics executives in RMG manufacturing companies in Egypt that presents the skills and knowledge elements required for effective job performance.
4. To propose methods by which the competency framework can be used to assess the skills deficiencies of logistics executives in RMG manufacturing companies in Egypt.

1.5 RESEARCH METHODOLOGY

This research follows a deductive-inductive research approach in which both methodological and data triangulations are used. Methodological triangulation is presented in the use of different methods combined to fully understand the topic of study that include questionnaires, content analysis and semi-structured interviews. Data triangulation involves the collection of data for analysis from several sources that include academic journals, career guides and logistics executives in RMG manufacturing companies in Egypt.

A questionnaire is first performed to determine the tasks that logistics executives in RMG manufacturing companies consider important for effective job performance. This online questionnaire targets a sample of logistics executives in Egyptian RMG companies in which they are asked to select the level of importance of each task to effective job performance. These tasks are considered the backbone upon which the competency framework is designed as they will be the basis upon which competencies will be determined.

A content analysis is then performed on skills-related research to collect the skills and knowledge elements that are well acknowledged in the literature to create logistics competencies. The purpose of this content analysis is to overcome the lack of consistency that was witnessed in the findings of skills-related research by collecting all the elements in one source that would serve as a reference from which to select the required elements to perform the stated tasks effectively. The content analysis is performed on academic journals, career guides and semi-structured interviews with logistics executives in RMG manufacturing companies in Egypt.

The output of the questionnaire and the content analysis creates the generic competency framework by the following information:

- The functions and tasks performed by logistics executives in RMG manufacturing companies ranked in order of importance to effective job performance; and

- A source that presents all the skills and knowledge elements which create competencies for logistics executives and from which selection is to be made to complete the generic competency framework.

A semi-structured interview is then conducted with a senior merchandiser and development manager in an Egyptian RMG manufacturing company to seek feedback on the generic competency framework. The interview focuses on seeking the interviewee's opinion on the information presented in the framework i.e. the functions and tasks of logistics executives and the elements that present the skills and knowledge necessary to create competencies. At the end, an actual example of a completed competency framework is provided by the interviewee through the selection of the skills and knowledge elements necessary to perform the stated functions in the framework.

1.6 STRUCTURE OF THE THESIS

The thesis comprises nine chapters as follows:

Chapter One: presents an overall view of the thesis, its background, the research question, aim and objectives and the contribution of the research to knowledge.

Chapter Two: presents a comprehensive overview of the settings and dynamics of the Egyptian RMG manufacturing industry. This chapter will provide a background on Egypt's economy and focuses on the RMG industry, its importance to the country's economy and the factors affecting its competitiveness. This chapter will also present different measures that can support the growth of Egypt's RMG industry with particular emphasis on the role of the workforce especially the logistics executive.

Chapter Three: reviews the literature with respect to four different aspects. The first aspect presents the development of logistics and supply chain management in business and the role of logistics in achieving competitive advantage in order to stress on the importance of addressing the logistics function in this study. The second aspect discusses the business and development trends that influenced the increasing demand for skilled logistics personnel to further justify the selection of the logistics executive to be the focus of this study. The third aspect reviews the methodologies and findings of

research that investigated the skills of logistics executives with the purpose of identifying the gaps that exist in the literature and to consider the methods by which they can be filled. The fourth and final aspect stresses on the importance of training and development of logistics executives to rationalise the development of the competency framework to be used as a tool for training purposes.

Chapter Four: presents the concept, benefits and uses of competency frameworks in organisations. It reviews the different methodologies used in creating competency frameworks to support the choice of the appropriate methodology for the creation of the competency framework in this study. This review presents the process, the strengths and weaknesses of each method. This chapter also discusses the issue of generalisation and provides an overview on the uses of competency frameworks for training purposes in organisations.

Chapter Five: presents the research methodology that is implemented to achieve the aim and objectives of this study. The research follows a deductive-inductive research approach using triangulation whereby both the quantitative and qualitative research methodologies are incorporated. The chapter discusses every stage of the research, explaining the questionnaire design, wording and questions, sampling, pilot test and the validity and reliability of the questionnaire. It also explains the process of content analysis and the semi-structured interviews that were conducted with logistics executives working in RMG manufacturing companies in Egypt.

Chapter Six: presents the analysis of the questionnaire that aims at determining the functions and tasks of logistics executives in RMG manufacturing companies in Egypt. The data provided by this questionnaire are essential for the design of the generic competency framework as they will create the job profile upon which competencies are defined. The first part of this chapter presents an exploratory data analysis (EDA) that provides summarised information about the variables addressed in the study. The second part presents the data analysis which examines the statistical significance of the tasks to be included in the generic competency framework using the Sign Test. The data analysis also includes the ranking of functions and tasks in order of importance to effective job performance using the sum scores.

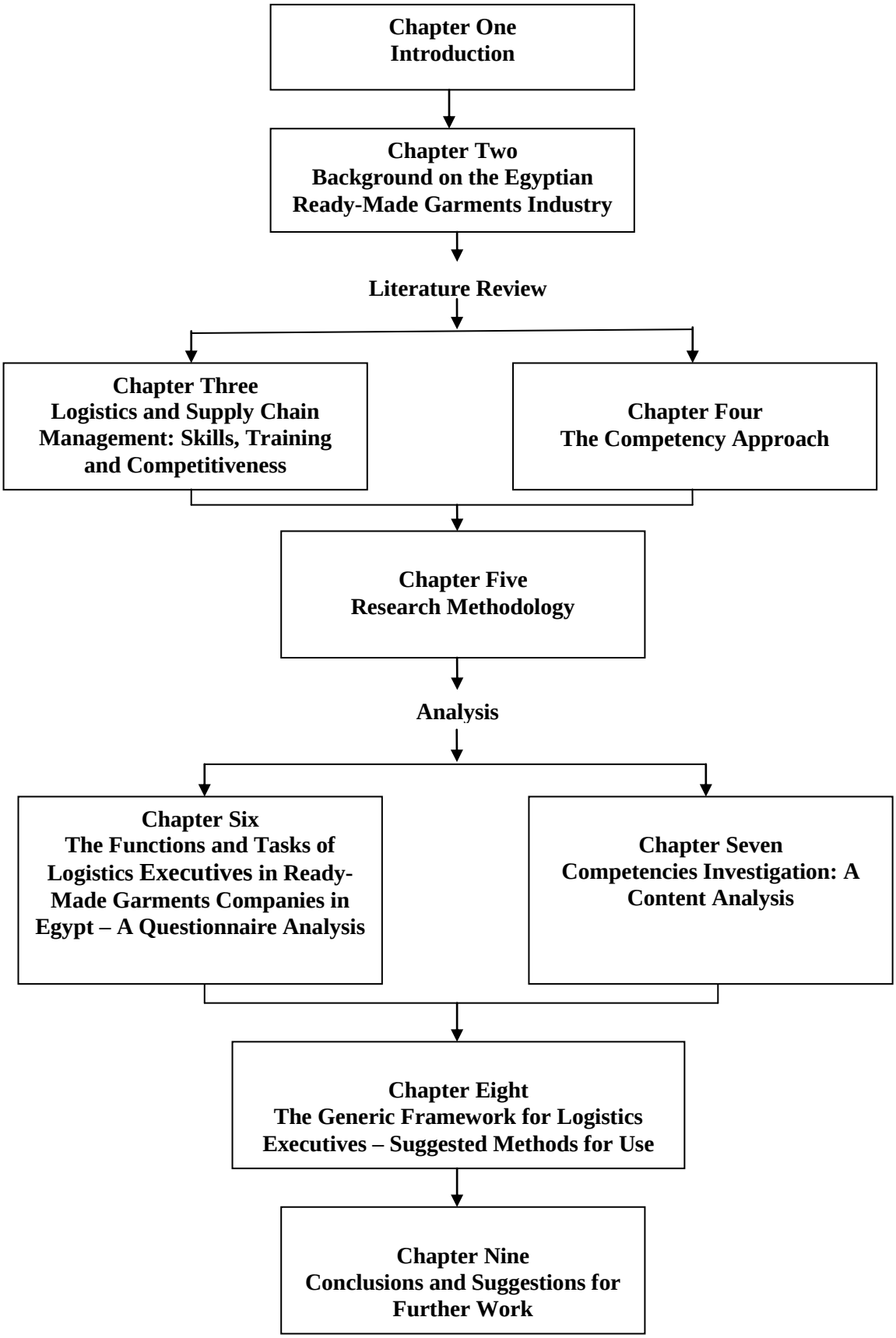
Chapter Seven: investigates the skills and knowledge necessary for competent logistics executives. This investigation is conducted through a content analysis of academic journals, career guides and semi-structured interviews with logistics executives in RMG manufacturing companies in Egypt. The purpose of this content analysis is to provide a reference that includes all the possible skill and knowledge elements that create competencies for logistics executives. This reference can then be used by RMG manufacturing companies in selecting the elements necessary for the effective performance of the stated functions and tasks of logistics executives.

Chapter Eight: discusses the outcomes of the data collected and analysed in the course of this research, and their contribution in creating the competency framework. This chapter also presents the generic framework for logistics executives in RMG manufacturing companies in Egypt which can be used in determining the training needs of logistics executives. A semi-structured interview is conducted with a senior merchandiser and development manager in a RMG manufacturing company in Egypt to seek feedback on the inputs provided by the research to create the competency framework and to provide an actual example of a completed competency framework. Guidelines to complete the competency framework are provided in addition to the method by which it can be used to assess skills deficiencies.

Chapter Nine: presents the conclusions of this research, its limitations and the directions for future research. This chapter also presents the research contribution.

Figure 1.1 illustrates the structure of the thesis.

Figure 1.1 – Thesis Structure



CHAPTER TWO: A BACKGROUND ON THE EGYPTIAN READY-MADE GARMENTS INDUSTRY

2.1 INTRODUCTION

This chapter presents a comprehensive background on the ready-made garments (RMG) industry in Egypt. An overview on Egypt's economy and the role the RMG industry plays in the country's economy is firstly presented to justify the selection of this industry for research. Global competition and the factors negatively affecting the competitiveness of Egypt's RMG manufacturers are thoroughly discussed to provide a comprehensive view of all the different elements that affect Egypt's RMG exports. This chapter also presents different measures that were provided in the literature to support the growth of Egypt's RMG manufacturers that are the contribution of studies on Egypt's RMG industry as well as of other studies conducted on other countries with similar economic conditions. The purpose of presenting these different measures is to demonstrate the presence of possible solutions that can be implemented to improve the competitiveness of Egypt's RMG exports.

However, this chapter particularly focuses on only one measure which is the development of labour and management skills. The role of the workforce in supporting the competitiveness of Egypt's RMG exports is emphasised by presenting the relationship between training and skills on exports performance. A review on research that examined these issues shows that the lack of training and skills are of the major factors negatively affecting Egypt's RMG exports. This consequently supports the aim of this study in addressing these rather important subjects. The chapter concludes by introducing the possible potentials that skilled logistics executives can bring to support the competitiveness of Egypt's exports which consequently rationalise the selection of logistics executives to be the focus of this study.

2.2 BACKGROUND ON EGYPT'S ECONOMY

According to Enders (2007), Egypt's growth performance during 1980-2000 was strong compared to the average emerging market economy, yet, it was well below the high growth rates experienced by emerging market countries in Asia. Egypt experienced a fall in its growth rate during 2001-2005 growing at a slower rate than most of the countries in the North African and Middle East (MENA) region, and below the average growth rate for developing countries (World Bank, 2006). Since 2001 the Egyptian government has been implementing a series of reforms in order to fix the deteriorating domestic economy and strengthen Egypt's position in the international market (Ministry of Foreign Trade, 2003).

The government of Egypt took a number of steps towards trade liberalisation in order to become an active member of the global economy. These steps included the adoption of open market-oriented policies, the promotion of private sector participation in the economy, and the launch of comprehensive economic and social reform programs (El-Mikawy and Ghoneim, 2003; World Bank, 2006). It was believed that trade liberalisation would lead to an expansion of exports and higher and sustainable economic growth rates (Galal and Refaat, 2005).

In the late nineties, Egypt joined the World Trade Organisation (WTO), became a member of regional economic blocs such as the Common Market for Eastern and Southern Africa (COMESA), and made a number of distinguished bilateral trade agreements with some of the important developed economies such as the trade and investment free trade agreement (TIFA) with the United States of America (U.S.A) and, the partnership agreement with the European Union (EU) (Fawzy and Masoud, 2003; World Bank, 2006).

With the increased competition in the world market, Egypt became vulnerable to export displacement by countries such as Turkey and China (The Egyptian National Competitiveness Council, 2006). Turkish and Chinese exports threatened Egypt's exports in the major importing countries in Europe and North America as they were rapidly gaining a higher market share in these markets (The Egyptian National Competitiveness Council, 2006). Consequently, the Egyptian government expressed its urgent need for an appropriate industrial strategy to be implemented through a

comprehensive set of policies in order to avoid losing ground in the export market. These new policies focus on improving Egypt's business environment, increasing the quality of exports, improving the productivity of human resources and attracting foreign and domestic investment (The Egyptian National Competitiveness Council, 2006). These policies had a significant impact on Egypt's exports as it will be illustrated in the following section.

2.2.1 The Importance of Exports to Egypt's Economy

Increasing the level of exports across the industrial sectors is one of the primary goals for the Egyptian government for a variety of reasons. Firstly, increasing the level of exports would contribute to reducing the deficit in the Egyptian balance of payments (Ministry of Foreign Trade, 2003). For instance in the year 2008, the Egyptian government's finance showed that the total expenditure was US$30.27 billion whereas the revenue was US$23.64 billion resulting in a deficit of US$6.63 billion (Central Bank of Egypt, 2009). Moreover, the revenues of exports would assist in lowering Egypt's external debts that reached US$32.1 billion at the end of 2008 (Central Bank of Egypt, 2009). The importance of exports is also illustrated in the increase of production capacity, resulting in the creation of more jobs which can decrease the unemployment level that reached 8.8% at the end of 2008 (Ministry of Foreign Trade, 2003; Central Bank of Egypt, 2009). Figure 2.1 shows Egypt's exports during the period 2001 to 2008 in US$ billion.

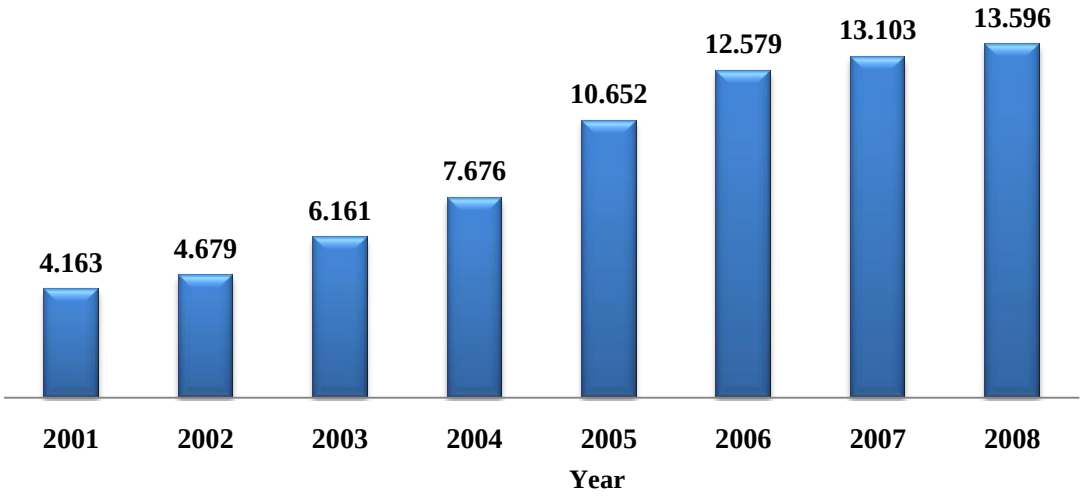


Figure 2.1 – Egypt's Exports 2001 to 2008

Source: Central Bank of Egypt (2003;2006;2009)

Egyptian exports witnessed a remarkable increase from 2001 to 2005 with an average growth rate of 27% per annum (Author based on Central Bank of Egypt, 2003; 2006). Egypt's exports amounted to US$4.163 billion 2001 increasing to US$10.652 billion in 2005 as a result of the trade agreements concluded with a number of countries to grant duty free access for Egypt's exports (Central Bank of Egypt, 2006). The rise in oil prices and the increase in the privatisation of public companies that enhanced both management and products' quality were also responsible for the increase of exports during the previously stated period (Central Bank of Egypt, 2006). Egypt's exports experienced a slow steady increase for the period of 2005 to 2008 with an average growth rate of 8.7% (Central Bank of Egypt, 2009).

2.2.2 Composition of Egypt's Exports

Egypt's exports are divided into five main categories: oil exports, raw materials, semi-finished commodities, finished commodities and other commodities. Table 2.1 shows the key Egyptian exported products in each of the five main categories.

Table 2.1– Egypt's Main Exported Products

Category	Product	Average Value Share in total exports (2000-2008)
Oil Exports	Fuels, mineral oil and products	**40%**
Finished commodities	Rice, preserved and dried vegetables, dried onion, pharmaceutical products, fertilizers, carpets, articles of iron and steel, aluminium articles, ready-made garments and cotton textiles	**38%**
Other commodities	Cement, electronics, ceramics and tractors	**13%**
Semi-finished commodities	Carbon, essential oils, aluminium and cotton yarn	**5%**
Raw Materials	Cotton, potatoes, citrus fruits, medicinal plants, groundnuts and flax raw	**4%**

Source: Ministry of Trade and Industry (2009)

Oil exports and finished commodities had the largest shares in total exports with a mean value of 40% and 38% respectively during 2000-2008 (Central Bank of Egypt, 2009; Ministry of Trade and Industry, 2009). The 'other commodities' category which includes exports such as cement and electronics presented 13% of total exports, while the remaining categories, i.e. semi-finished commodities and raw materials are considered the smallest contributors in Egyptian exports with each 5% and 4% respectively (Central Bank of Egypt, 2009; Ministry of Trade and Industry, 2009).

As stated by the Egyptian National Competitiveness Council (2006), Egypt's finished commodities exports are largely dominated by articles of iron and steel, RMG and cotton textiles. These industries are thus characterised by having a strategic nature to the Egyptian economy not only because they are the largest exported products in the finished commodities exports but also because they are the largest exported products after oil exports (Central Bank of Egypt, 2009).

This suggests that increasing the exports of these three industries could positively support Egypt's economy. Although the oil exports' category as shown in the previous

table has the highest share in Egypt's exports, the Egyptian economy cannot solely depend on it as the principal source of earnings. Reasons include the highly fluctuating oil prices, the increased level of vulnerability to international economic and political events and the fact that oil sources are limited (Egyptian National Competitiveness Council, 2006). Therefore this strengthens the importance to address the industries that produce finished commodities which have positive potentials in terms of exports.

2.3 THE RMG MANUFACTURING INDUSTRY IN EGYPT

As stated in the previous section, it is of prime importance to address the industries which can support Egypt's economy through the positive export potential they have for the global market. The following sections focus on the RMG manufacturing industry in Egypt and its importance to Egypt's economy. Moreover, an overview will be presented on the supply chain of the RMG industry in Egypt as well as its structure in terms of factories and services provided to the global market. Special emphasis will be given to Egypt's RMG exports and the factors affecting its competitiveness.

2.3.1 The Importance of the RMG Manufacturing Industry to Egypt's Economy

Many studies endorsed the view that the RMG manufacturing industry supports Egypt's economy in various ways. According to Nathan Associates Inc. (1999) and Farghally (2008), the RMG industry in Egypt is one of the oldest and most important industries in the Egyptian economy. Adel and Wahba (2003), Magder (2005) and Ghoneim and Pigato (2006) emphasised that such importance is derived from the industry's large size in terms of export earnings, employment and investments.

The international trade statistics published by the WTO (2009) and the Ministry of Trade and Industry (2009), show that the RMG exports in 2008 had a value of US$1551 million and a share of 6.1% in Egypt's total merchandise exports. Furthermore, the industry employs approximately 1.5 million workers or 30% of total employment in Egypt's manufacturing sector which makes it a large employment absorber of skilled and semi-skilled workers (Nathan Associates Inc., 1999; Labib, 2001). In terms of investments, the RMG industry receives on average between US$2 to 3 billion yearly in investments whether by national or foreign investors (Gillani, 2002).

It is worth noting that the strategic position that the RMG manufacturing industry secured in Egypt's economy is supported by a number of factors:

- ✓ The use of Egyptian cotton in manufacturing and its use as a major marketing tool for Egyptian RMG exports (Someya et *al*., 2002; Bowlin, 2005);
- ✓ The low capital required for manufacturing RMG (Abdel Salam and Fahmy, 2009);
- ✓ The geographical proximity to Europe which is the major RMG importing market (WTO, 2009);
- ✓ The high population that provides the supply of workers for this labour intensive industry (Marello et *al*., 2009); and
- ✓ The increasing level of education of the new labour market entrants in which 70% have received at least secondary education that is equivalent to high school diploma in the U.S.A (Marello et *al*., 2009).

Recognising these previously mentioned factors supported the Egyptian government in developing the RMG manufacturing industry by efficiently exploiting the existing advantages through launching several reforms in recent years to increase competitiveness. The most important reforms were concerned with freeing cotton trade and textile export regulations, raising the cotton price paid to the farmers by the state trading monopoly, and the privatisation of some state-owned companies (Nathan Associates Inc., 1999; Magder, 2005).

2.3.2 The Supply Chain of the RMG Manufacturing Industry in Egypt

The supply chain of the RMG industry involves other industries that produce the materials necessary to manufacture the final clothing articles. As described by Lowson et *al*. (1999), the RMG industry has one of the longest supply chains of any consumer goods. This is illustrated in Figure 2.2 that shows the main industries involved in the supply chain of the RMG industry in Egypt.

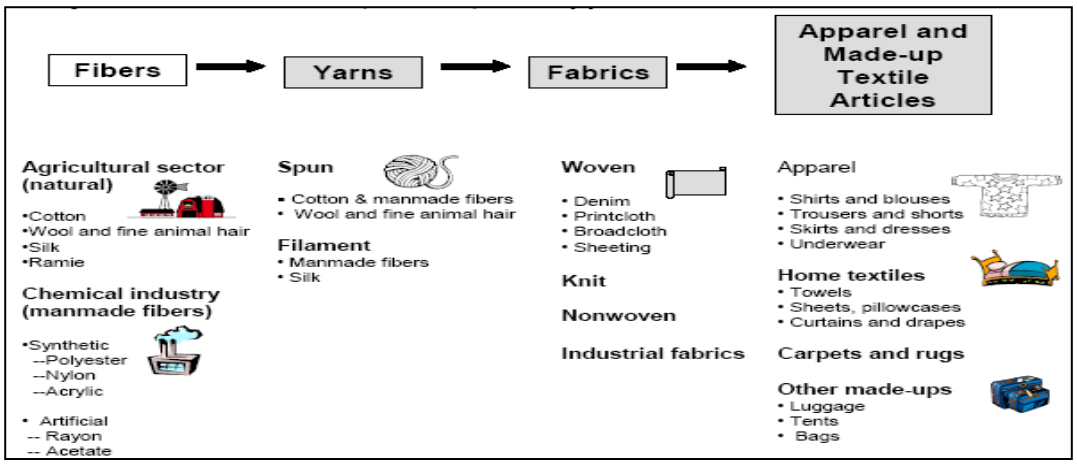


Figure 2.2 – The Main Industries in the Supply Chain of the RMG Industry in Egypt

Source: Freund and Wallace (2004)

The supply chain starts with fibre production which includes two groups: natural fibres (cotton, linen, wool) and man-made/synthetic fibres (nylon, polyester, and acrylic) that are then converted into yarn by spinners (spinning industry). The second industry (weaving) involves the transformation of yarn into fabric/textile by weaving, knitting or a non-woven process. The third industry is the actual (manufacturing) of RMG which uses patterns that are made from design to cut the fabric.

The RMG manufacturing industry is considered the most labour intensive and fragmented part of the sector due to the wide variety of garment articles that can be produced. The last industry (retailing) is the selling of clothing products to the final consumers through a diverse range of retail channels i.e. speciality stores, mass merchandisers, department stores, etc (Sen, 2003).

A great emphasis is given to the last two industries – RMG manufacturing and RMG retailing – because as described by Joshi (2002), they are at the apex of the sector's value chain.

The RMG industry in Egypt is characterised by being one of the very few manufacturing processes that is handled completely within the country starting from the

manufacturing of raw materials until the production of the final RMG articles (American Chamber of Commerce in Egypt, 1998). The Egyptian government believed that establishing an integrated sector can accumulate added value and maximise the benefits gained from the main agriculture crop, cotton (Gierend and Abo el Wafa, 2002).

The establishment of this integrated sector started in the 1960s, when the entire spectrum of the textiles and RMG industries operated under public ownership (American Chamber of Commerce in Egypt, 2005). At the time, rapid growth in textiles and RMG manufacturing encouraged exports mainly to the former Soviet Union and the Eastern bloc countries (American Chamber of Commerce in Egypt, 2005). However, such growth in exports was mainly concerned with the volumes produced and not with quality or capacity utilisation (Labib, 2001; American Chamber of Commerce in Egypt, 2005).

But as the performance and growth of the public factories declined, the need for privatisation was considered urgent to save this important industry. The private sector favoured products with higher value added such as home textiles and RMG which resulted in a successful expansion (American Chamber of Commerce in Egypt, 2005). Figure 2.3 demonstrates the share of the public and private ownership of factories in the Egyptian textile and clothing industry.

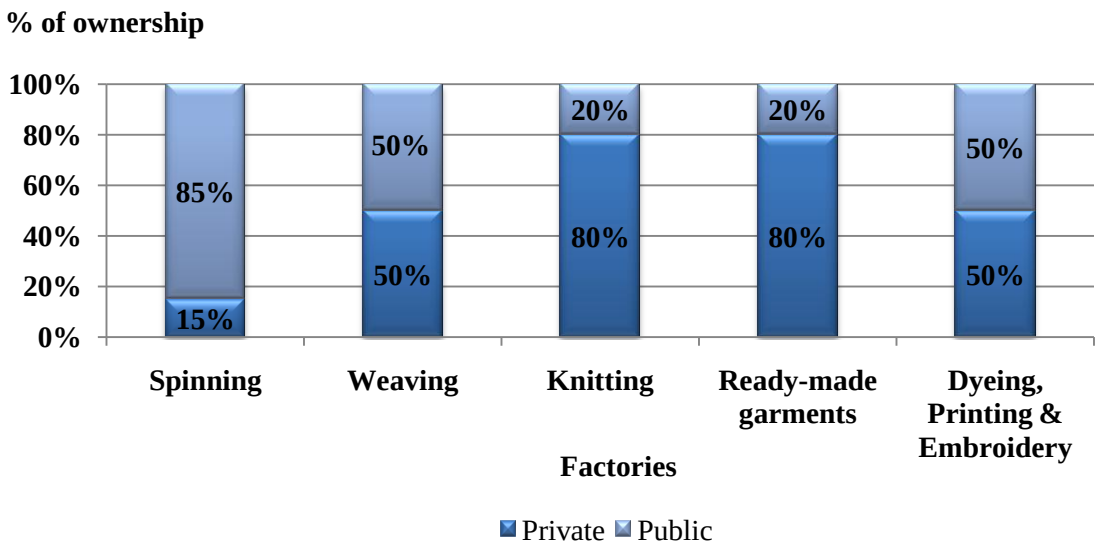


Figure 2.3 - Public/Private Ownership of Factories in the Egyptian Textile and Clothing Industry

Source: Raafat (2006)

According to the Egyptian Textile Manufacturers Federation (ETMF), there are 39 public enterprises, affiliated to the Cotton and Textiles Holding Company and around 4,491 private establishments (American Chamber of Commerce in Egypt, 2005). Privatisation has been implemented as a part of Egypt's economic reform program to overcome management problems as well as to relieve the burden on the government's budget (Raafat, 2006). Privatisation was also seen as a way to face the competition from China and other Asian countries competing in both the local and international markets.

2.3.3 Egypt's Exports of RMG Products

Egypt's RMG exports comprise a variety of products that include men's, women's and children's wear. Figure 2.4 shows the value of Egypt's RMG exports during the period of 2000 to 2008.

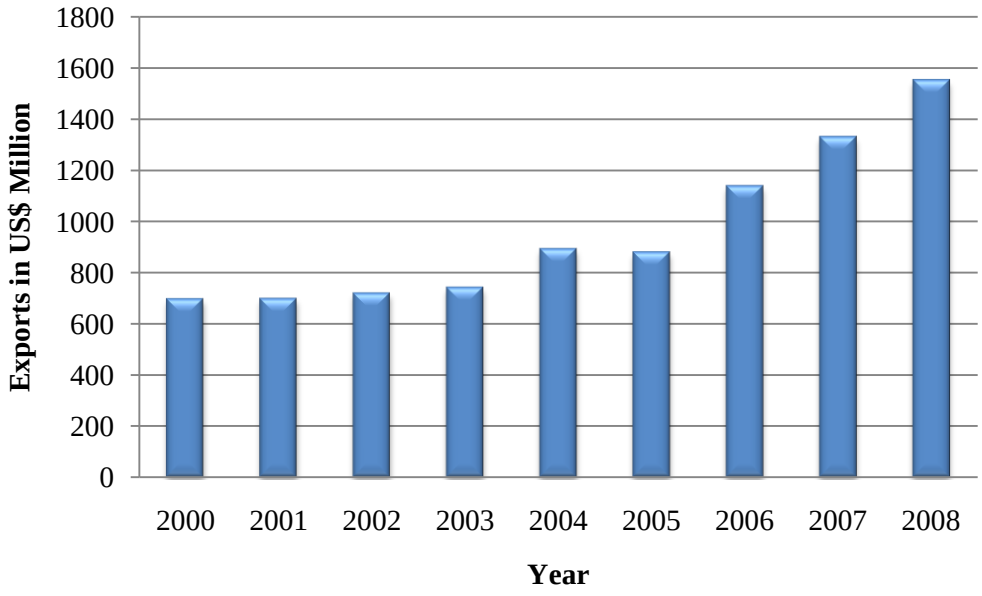


Figure 2.4 – The Value of Egypt's RMG Exports during the Period 2000 to 2008 (in US$ million)

Source: Author based on WTO (2001, 2003, 2006, 2009)

It is clearly illustrated in Figure 2.4 that the value of clothing exports from 2000 to 2004 was slowly increasing and then experienced a slight decrease in 2005 due to the removal of the once imposed trade restrictions on textile and RMG products known as the Multi-Fibre Arrangement (MFA). Textile and RMG trade under the MFA was regulated through bilateral export-restraint agreements between exporting and importing countries where the former granted the latter a certain quota to allow a certain quantity of textile and RMG products within the importing country (Van Dijk, 1996).

After the liberalisation of trade and quota removal, international textiles and RMG trade is governed by comparative advantage and free competition (Chiron, 2004; American Chamber of Commerce in Egypt, 2005). The elimination of the quota system made less efficient producers and preferred suppliers – who mainly belong to developing countries – lose their market shares to former quota restricted countries such as China and India (Nathan Associates, 2001). Consequently this was the main reason for the decrease in Egypt's RMG exports in 2005.

Egypt's RMG exports experienced a remarkable boost from the year 2006 to 2008 as illustrated in Figure 2.4. The Egyptian government, who was aware of the fact that Egypt's RMG exports might not be able to withstand the fierce competition from Asian countries, found it imperative to be involved in trade agreements that would grant the Egyptian RMG exports access to the major markets of RMG importing nations. As a result, the Egyptian government succeeded in becoming part of the following trade agreements:

- *Egypt-EU Partnership Agreement*: This agreement entered into force in 2004 and it forms the legal basis governing relations between Egypt and the EU under the network of Euro-Mediterranean Partnership Agreements between the Union and its partners in the southern flank of the Mediterranean Sea (Raafat, 2006). Under this Agreement Egyptian exports of manufactured goods (including RMG products) to the EU are exempted from tariffs; meanwhile, EU exports of manufactured goods to Egypt are also tariff-exempted according to the lists and time frame specified in the Agreement (Ministry of Trade and Industry, 2004; European Commission, 2007).

- *The Pan Arab Free Trade Area (PAFTA):* Under the PAFTA, Egyptian exports are granted duty free access to PAFTA member countries in the North African and Gulf region (Magder, 2005). To take advantage of the duty free exemptions, Egyptian exports must comply with the PAFTA's rules of origin that stipulate that a minimum of 40% of a product's input must originate from Egypt to be considered as a country of origin (Ministry of Trade and Industry, 2004).

- *Common Market for Eastern and Southern Africa (COMESA)*: It was formed as a part of the Pan-African vision of economic integration of the continent. COMESA member countries are granted duty-free and quota-free trade in goods and services in addition to the free movement of goods, labour and capital (Southern Africa Global Competitiveness Hub, 2007).

- *Qualified Industrial Zones* (QIZ): Under the QIZ agreement, the U.S. government grants Egyptian industrial products free entry into the U.S. customs

territories where these products originated from Egypt and satisfy agreed-upon Israeli content as per predefined rules of origins (El-Madany, 2005). The QIZ protocol that took effect in 2005 has granted a duty free entry for Egyptian RMG products to the U.S. market, the largest import market in the world (El-Fiqi, 2006). Entering the U.S. market without the hindrance of the U.S. customs on RMG which typically ranges from 18 to 34 percent, highly supported Egypt's RMG exports to the U.S. market (El-Fiqi, 2006).

These trade agreements supported the entry of Egypt's RMG exports to the international market, and the remarkable growth in exports as illustrated in Figure 2.4.

It is worth noting that Egypt's RMG exports are based on sourcing operations requested by global RMG retailers. A sourcing strategy refers to the shift of the RMG manufacturing processes to developing countries where the costs of production and labour are low (Rollins et *al*., 2003; Bruce et *al*., 2004; Fernie and Azuma, 2004; Jin, 2004; Tyler et *al*., 2006; Åkesson et *al*., 2007). Sourcing is also referred to as external manufacturing where the RMG manufacturing firms are called 'contractors' or 'suppliers', and the retailer/merchandiser is called the 'outsourcing company' (Bruce et *al*., 2004). Egyptian RMG manufacturers offer two approaches to sourcing options; Cut, Make and Trim (CMT) and Full-Package (FP) (Magder, 2005):

- ***Cut, Make and Trim (CMT):*** in this approach, the RMG retailer provides designs, fabrics and trims and the Egyptian RMG manufacturer (contractor) provides labour and supplies (Phizacklea, 1990). The contractor assembles the final product using the inputs and designs provided by the retailers - including labelling and packaging (Oxborrow, 2000).
- ***Full-Package (FP):*** The contractor company here is responsible for many aspects of RMG production from purchasing the fabric and trim, patternmaking, to full production and packaging for retail sale (Dickerson, 1995).

RMG manufacturing firms in Egypt are now keener on developing long term relationships with global retailers under the FP basis due to the many benefits of FP contracting. Benefits of the transfer of knowledge and technology as well as learning the

foreign retailers' preferences, which include international standards for prices, quality and delivery, all shape the RMG manufacturers' abilities to be in the international standards of the industry (Gereffi and Memedovic, 2003).

It is worth noting that FP operations enabled many Asian countries to become the top exporters of RMG products in the global market, as well as developing from FP contractors to brand-name manufacturing and retailing (Gereffi and Memedovic, 2003; Tokali and Kizilgün, 2004). According to Gereffi (1997) and Mortimore (2002) FP contractors in Taiwan, South Korea and Singapore have already developed into international competitors of their original clients and have become important players in the industry.

Although the majority of Egypt's RMG manufacturers operate under the CMT model, many companies are now developing to run FP production (Zahran, N. personal communication.28 February 2007). Different types of RMG retailers which include designer shops, department stores, and discount chains are contracting on an FP basis in Egypt. Some of these global retailers include Calvin Klein, Tommy Hilfiger, Gap, JC Penny, Wal-Mart and Tesco (Dyetex, 2010).

2.3.4 Egypt's RMG Exports and Global Competition

After examining the value of Egypt's RMG exports and the trade agreements that the Egyptian government secured to grant access for its RMG exports to the international market, it is now important to examine Egypt's relative competitiveness in RMG production compared to other RMG exporting countries. According to Elkatatney (2008) and Ghoneim and Awad (2010), Egypt offers very competitive operating costs compared to major RMG competitors. They stated that Egypt has the lowest cost of labour, electricity, water and building construction as shown in Table 2.2.

Table 2.2 - Operating Costs of Major RMG Competitors

Cost	Egypt	Jordan	Turkey	India	Tunisia	Italy
Labour ($/hr)	0.4	0.9	2.8	0.5	1.2	15
Electricity (cent/KWh)	3.0	5	7.7	8.6	10	9
Water (cent/m^3)	21	180	46	70	156	28
Natural gas (cent/m^3)	25	-	26	24.5	-	21
Building costs ($/$m^2$)	120	200	180	140	400	480

Source: Ghoneim and Awad (2010)

Moreover, as lead times are becoming as important as price, geographical proximity and sailing time to the major RMG importing markets are considered crucial to maintain a competitive position in exporting RMG products (Nathan Associates, 2008). Egypt's sailing time to the U.S. East coast is reported to be 10 days which favourably responds to the U.S. market shifts from a traditional two season retailing mode to six or seven seasons (Nathan Associates, 2008). The sailing time to the U.S. from other RMG exporting countries is significantly longer such as in Jordan (28 days), India (21 days) and China (35 days) (Nathan Associates, 2008; Ghoneim and Awad, 2010).

Elkatatney (2008) also added that export incentive programs such as providing companies with a tax rebate of between 4% and 7% of the 'free on board' (FOB) price of RMG exports is another advantage that supports the competitiveness of Egyptian RMG exports.

In order to give a more comprehensive overview on the position of Egypt's RMG exports in the global market, this section will compare Egypt's RMG exports' performance with other regional competitors having similar economic conditions. China will be included to provide an indication of the share of a major RMG exporter compared with the nations in the comparison. Egypt's RMG exports performance is compared with the set of countries in Table 2.3.

Table 2.3 – Comparison of Egypt's Share in the Global RMG Exports with Other Countries in 2008

Country	Bangladesh	China	Egypt	Jordan	Morocco	Tunisia	Turkey
Share in world RMG trade	3%	33.2%	0.38%	0.35%	1.04%	1%	3.8%

Source: WTO (2009)

The countries chosen for the comparison in Table 2.3 were selected to reflect the performance of different RMG exporting countries in terms of region and development. The set of countries includes China and Turkey which together account for nearly 37% of global exports in RMG (WTO, 2009). Bangladesh is also included to reflect the performance of a lesser-developed, low-wage Asian economy which greatly relies on RMG production that accounts for 81% of its exports (WTO, 2008).

Jordan, Morocco and Tunisia are the regional competitors for Egypt in RMG exports. Tunisia's exports of RMG products are nearly three times the amount of RMG exports as Egypt despite having a population only about 13% the size (CIA, 2009). Similarly, Morocco has a workforce less than half the size of Egypt's but nearly three times its exports (CIA, 2009; WTO, 2009). In addition, Morocco signed a free trade agreement (FTA) with the U.S. in 2004 which further intensifies the competition with Egypt in the U.S. market (Anon, 2008). Jordan is also included not just because it is a regional competitor but also because the Jordanian government signed a QIZ agreement with the U.S. which guarantees duty free access to its RMG exports to the U.S. (World Bank, 2006).

Although the RMG manufacturing industry derives a strategic nature to Egypt's economy due to its large share in the finished commodities exports, and despite the Egyptian government's efforts in leveraging the potential of this industry through trade agreements, investment and privatisation Egypt's RMG exports account for only 0.38% of the global trade in this sector (Author based on WTO, 2009).

Magder (2005) and Abdelsalam and Fahmy (2009) revealed that Egypt's comparative advantage (RCA) in RMG exports, which shows the importance of the country as a supplier of a product to the world market relative to all exporting countries, was relatively low. Moreover, Marello et *al*. (2009) who examined the share of RMG exporting countries in the U.S. market showed that despite the preferential access granted to Egypt's RMG exports, Egypt was not considered one of the top RMG exporters to the U.S. market. They further stated that the top exporters to the U.S. RMG market did not have any preferential access to the U.S. market and were successful in exporting more RMG products than Egypt.

This low share of Egypt's RMG exports in the global market suggests the existence of factors that contribute to such performance. The following sections discuss the factors that affect Egypt's RMG sector competitiveness in the global market and the measures that could be implemented to improve Egypt's RMG exports.

2.4 FACTORS AFFECTING THE COMPETITIVENESS OF EGYPT'S RMG EXPORTS IN THE GLOBAL MARKET

Retailers in major RMG importing markets assess potential sourcing countries using a number of factors which assist them in making their sourcing decision. These factors reflect the country's competitiveness in the RMG sector. The assessment factors include infrastructure and proximity to markets, labour and management, business climate, market access, raw-material inputs, the level of service provided and reliability of supplier (U.S. International Trade Commission, 2005). This section will not assess Egypt's RMG manufacturing industry using the previously mentioned criteria, but it will highlight the factors which could be hindering Egypt in utilising the potential of RMG exports to the global market. Table 2.4 displays in detail the factors and elements of competitiveness for the RMG sector in a country.

Table 2.4 – The RMG Sector: Factors of Competitiveness

Infrastructure and Proximity to Markets	**Labour and Management**
• Roads, ports, rail, and airports for moving goods into and out of the country • Shipping and other transportation times and costs • Proximity to major markets • Access to reliable sources of energy, water, and telecommunications	• Availability of workers • Compensation rates • Labour skills and productivity • Availability of qualified managers, including middle management
	Market Access
	• Preferential access in major markets
Business Climate	**Raw-Material Inputs**
• Political stability • Safety of personnel • Security of production and shipping • Transparent and predictable legal, commercial, and regulatory system • Minimal administrative burden and corruption • Compliance with internationally recognised health and labour standards • Subsidies and tax credits • Free trade zones • Real exchange rates • Market demand and economic growth	• Access to quality and cost-competitive domestic or regional yarn and fabric production • Tariffs on imports of raw materials • Cost and availability of capital to invest in new machinery and purchase raw materials
	Level of service provided and reliability of supplier
	• Reputation for quality and on-time delivery • Existing business networks (supply chain linkages, relationship with customers) • Level of service provided (full-package versus cut, make and trim) • Flexibility and variety in products and lot sizes offered • Lead time and flexibility to respond to quick turnaround orders

Source: U.S. International Trade Commission (2005)

As previously discussed in this chapter, Egypt's RMG manufacturing industry has many advantages which are positively affecting its competitiveness, such as geographical location, preferential access in many markets, availability of workers, types of service provided (CMT and FP) and quality of raw materials. However, many studies have shown that there is a wide range of factors that have a negative impact on the competitiveness of the RMG manufacturing industry in Egypt. The most cited factors in the literature relate to: tariffs and taxes, publicly-owned textiles companies, trade logistics, high labour costs and lack of strong relationship with global retailers as will be presented in the following sections.

2.4.1 Tariffs and Taxes

The Egyptian government protects the RMG manufacturing industry through customs and tax measures relating to the inputs used in RMG manufacturing (Labib, 2001; El-Fiqi, 2004; American Chamber of Commerce in Egypt, 2005). With the constraints imposed by the government on the imported fabrics, RMG manufacturers are sometimes forced to use lower quality domestic materials which reduce the competitiveness of the RMG exports (World Bank, 2006; Abdelsalam and Fahmy, 2009). Thus RMG manufacturers tend to sell their products in the local market rather than the international one as competition is less severe and local buyers are less demanding in terms of quality and fashion than foreign buyers (World Bank, 2006). Moreover, manufacturing activity in Egypt is subject to several forms of customs duties and taxes which also raise production costs rendering the price of the final product uncompetitive (Central Bank of Egypt, 2009).

Abdelsalam and Fahmy (2009) recommended that the Egyptian government should study and follow the successful strategies applied by other global exporters and reduce both the taxes on exports and the customs duties on imported raw materials to increase the competitiveness of Egypt's clothing exports.

2.4.2 Publicly-Owned Textiles Companies

Publicly dominated textiles companies which produce the inputs for the RMG manufacturing companies, suffer from serious problems. Low productivity, outdated technology, poor management and marketing, unsuitable products, excess labour and high prices have a very negative impact on the textiles and RMG industry spectrum in Egypt (El-Fiqi, 2000; Al-Amrousi, 2006). Producing low quality inputs as a result of the abovementioned problems impact the RMG industry in not producing competitive RMG articles and also affect the textiles industry by hindering the exports of textile products to the global market (El-Madany, 2005; Al-Amrousi, 2006). These problems arose due to the unplanned upsizing, deficient management and weak capital investment (American Chamber of Commerce in Egypt, 2005).

2.4.3 Trade Logistics

Although Egypt has the geographical advantage of being located close to the European, North African and Middle Eastern markets, this advantage is somehow weakened by poor infrastructure and transportation. Freight transportation in Egypt is somewhat costly due to relatively high fees and charges in addition to the inefficiency of the firms undertaking such activities (Ghoneim and Pigato, 2006). Moreover, the average clearance time in some Egyptian ports ranges from four to five days compared to two days in regional ports in Morocco, Qatar and the United Arab Emirates (UAE) (American Chamber of Commerce in Egypt, 2005). Some Egyptian ports, as reported by Fawzy and Masoud (2003), suffer from high container prices and slow procedures. Studies have shown that issues related to inefficient road systems, outdated trucks and lack of facilities at ports significantly add to the costs incurred by Egyptian RMG producers (Enders, 2007). Therefore, Ghoneim and Pigato (2006) stressed that there is an urgent need to upgrade port facilities including handling and customs procedures especially if the RMG manufacturing industry is to take advantage of the geographical proximity to Europe. They further added that geographical proximity does not count for much if the lead time in Egypt is much longer than that in other countries. The study by the World Bank (2006) on RMG exporters in the MENA region endorsed the same view and stressed that Egypt needs to take some measures in order to improve its trade logistics as it is affecting its competitiveness in RMG exports. The study recommended for instance the reduction of the number of documents and signatures needed to process imported raw materials for RMG manufacturing.

2.4.4 High Labour Costs

Cheap labour cost has been mentioned in many studies as one of the advantages that RMG manufacturing has in Egypt (Someya et *al*., 2002; World Bank, 2006). However, when compared with other RMG exporting countries, it was revealed that labour costs in Egypt are higher than in India, Indonesia and Turkey (El-Fiqi, 2000). Said (2005) expressed that this higher cost of labour is attributed to the over-manning in the RMG and textile factories. Wahish (2009) further added that productivity per minute among Egyptian workers is almost 50% lower than among top exporters' countries like Bangladesh. She also stated that Egyptian RMG producers suffer an 8 to 15% turnover

of staff per month and 12% absenteeism per day. Other factors that contribute to the higher labour costs are related to the regulatory system (Loza, 2006). Government regulations require factory owners to provide transportation means for workers from their homes to factory location in addition to the deduction of a salary percentage by the government for training (Loza, 2006). RMG producers expressed that the deducted salary percentage by the government for training is considered unjustified cost as the Ministry of Manpower has never trained any employee (Loza, 2006).

2.4.5 Lack of Strong Relationships with Global Retailers

Retailers in the RMG business have gained definite experience and leadership over RMG manufacturers due to their proximity and greater understanding of the market (Joshi, 2002; Hearson et *al*., 2006). They have shaped the way of competition to be based on innovation, new designs and new marketing methods instead of focusing on cost reductions which is solely achieved through innovations in production techniques (Joshi, 2002). One of the factors affecting Egypt's RMG exports' competitiveness in the global market is the lack of strong relationships with large international retailers or brand name merchandisers (World Bank, 2006). The majority of Egypt's clothing exports are of basic, standardised clothing articles which face constant competition from companies in locations where labour is cheaper (Fawzy and Masoud, 2003). Thus in order to strengthen their relationship with large retailers, Egyptian manufacturers would need to develop their abilities in replenishing orders quickly and reducing production costs (Someya et *al*., 2002).

It is worth mentioning that the factors previously discussed may not be the only factors that negatively affect Egypt's RMG exports in the global market. However it can be claimed that they do impact upon the competitiveness of Egypt's RMG products and thus should be addressed by the designated bodies if the RMG industry is to take a better position in the international market.

2.5 MEASURES TO SUPPORT THE COMPETITIVENESS OF EGYPT'S RMG EXPORTS

There is no doubt that the factors discussed in the previous section negatively affect Egypt's chances to be selected as a preferred RMG supplier for global retailers. It is worth noting that the factors previously discussed are in a way common with other developing countries as stated in the report of UNCTAD on the textile and RMG sectors in developing nations (UNCTAD, 2005). However, the regional competitors mentioned previously in Table 2.2, who are also classified as developing nations, have similar problems and weaknesses as those in Egypt and still manage to successfully export triple the volume of Egypt's RMG exports (Magder, 2005; WTO, 2008). As emphasised by Magder (2005), Egypt's regional competitors were able to export more RMG products than Egypt despite having smaller economies and facing similarly high tariffs on imported inputs. It is thus very important to examine the measures taken by these countries that allowed them to overcome the challenges and to export more RMG products to the global market.

As stated by the International Labour Office (2004) and Morocco Textile Association (2009), Morocco and Tunisia recognised that there are two types of factors influencing their RMG sector's competitiveness:

- those which are beyond their direct control such as country infrastructure and governmental policies, and;
- Other factors which are under their direct control such as improving efficiency and management capabilities.

Morocco and Tunisia paid more attention to those factors which are under their direct control and thus were able to increase their exports to the global market (Magder, 2005; Munir, 2005). Hence it is crucial for Egyptian companies to do the same and to look for methods that would differentiate them as suppliers in the global RMG chains by looking at all the advantages they have and those they could build.

Therefore, the following section will present a number of measures that could be implemented by Egypt's RMG manufacturers compiled from studies addressing the Egyptian RMG sector as well as from other studies addressing the RMG sector in other

developing nations with similar conditions to Egypt. The measures presented below include the upgrade from CMT to FP, the adoption of quick response technology, supply chain coordination and management, alignment of logistics responsibilities, knowledge management, benchmarking performance against supplier selection criteria, and developing labour and management skills. It is important to note that these measures are not the only measures that can be implemented by RMG manufacturers in Egypt to increase their competitiveness in the global market, but perhaps they can positively affect their performance and consequently their exports to the international market.

2.5.1 The Upgrade from CMT to FP

As stated earlier, Egyptian RMG manufacturers are looking toward becoming FP contractors which would bring them more benefits than being CMT contractors who are focusing on low value added products. This upgrade from CMT to FP would require RMG manufacturers to focus on improving product quality by investing in training to increase the skill level of workers, improving quality control processes and strengthening linkages to local and foreign suppliers of high quality inputs (Magder, 2005; U.S. International Trade Commission, 2005; Kunz and Garner, 2007). RMG manufacturers in Egypt should however not only aspire toward FP operations but should also work towards developing into brand-name manufacturing and retailing like their counterparts in South East Asia.

2.5.2 The Adoption of Quick Response Technology

In order to compete with the global RMG exporters which are capable of meeting the increasing demands of powerful retailers, Egyptian RMG manufacturers need to develop technological measures and practices, specifically quick response. Point of Sale (POS) and Electronic Data Interchange (EDI) systems allow the transfer of real time information to the different parties involved in the retailer's supply chain in order to facilitate automatic reordering and to allow the RMG manufacturer to manage the retailers' inventories (Sen, 2003). A quick response system would enable the RMG manufacturer to adjust the production of different styles, colours and sizes in response to retail sales during the season which would significantly reduce the cycle times and

decrease risks as well as inventories at each stage of manufacturing and retailing operations (Lowson et *al*., 1999; Al-Zubaidi and Tyler, 2004; Fernie and Azuma, 2005). Under the quick response system, RMG manufacturers would be required to label units, track sales, exchange electronic information on current sales with retailers, and to provide products to retailer's distribution centres in ways that would allow products to be moved efficiently to stores for distribution (boxes marked with computer-scannable symbols concerning contents; shipment of products ready for display in retail stores) (Rosenau and Wilson, 2006). In addition, the adoption of the quick response system by RMG manufacturers is now considered among the crucial factors upon which retailers make their sourcing decisions (Bhutta and Huq, 2002; Teng and Jaramillo, 2005; Åkesson et *al*., 2007). Thus adopting that type of technology not only increases the chances of Egypt's RMG manufacturers to be selected as suppliers, but it also enables the development of long term relationships with RMG retailers who would be keen to keep their relationships with suppliers capable of meeting their exacting demands.

2.5.3 The Improvement of Supply Chain Coordination and Management

Managing the supply chain of the RMG manufacturing industry is a sophisticated and challenging mission as it includes the management of multiple production locations and the delivery of products that have a very short life-cycle to a large number of global retailers (Fernie and Sparks, 1998). This consequently requires robust, connected and transparent networks of partners that include logistics service providers, sub-contractors and suppliers.

The improvements of supply chain coordination and management to meet the retailer's expectations is another important dimension that RMG manufacturers can develop. The breakdown in communication or coordination between entities in the supply chain disrupts downstream operations which adds cost and introduces delays (Oxborrow, 2000; Magder, 2005). RMG manufacturers in Egypt can thus improve coordination with supply chain partners by establishing strong business procedures for working together, increasing partner visibility into their operations and developing longer-term service contracts that increase the predictability of demand as well as price (Author based on Christopher et *al*., 2004). By establishing longer-term partnerships

with tighter linkages, supply chain partners can collaborate on addressing problems that require coordinated, longer-term attention.

2.5.4 Alignment of Logistics Responsibilities

Logistics activities in RMG manufacturing companies in Egypt overlap between different departments which result in the inefficient organisation and implementation of logistics improvements (Zahran, N. personal communication.28 February 2007). The study conducted by CARANA Corporation (2005) on Bulgaria's textile and RMG sector, revealed that the logistics function is also the responsibility of exports, marketing and imports departments which result in the existence of an overlap of responsibilities between these different departments leading to ineffective performance. Thus the study suggested the establishment of logistics departments in clothing firms staffed with qualified employees who are capable of operating and managing logistics activities efficiently and effectively. Egyptian RMG manufacturers could implement this by clearly defining the tasks and responsibilities of the logistics department and ensure that they are not overlapping with the responsibilities of any other department within the company.

2.5.5 Knowledge Management

A study conducted by Chan et *al*. (2007) on RMG manufacturers in Hong Kong, suggests that new knowledge should be acquired by RMG manufacturers who are aiming to increase their exports to the international market. This new knowledge comprises product development management, alteration of product configuration for fitting different market needs, market knowledge and management skills for handling different issues among the diversified ethnic locations (Chan et *al*., 2007). Moreover, they stressed on developing a knowledge management system which would retain the knowledge gained from RMG retailers that contract with RMG manufacturers either on CMT or FP basis.

RMG manufacturers must retain experiential knowledge obtained in the workplace, production process experience, and the development of a sense of product preference. This system would retain this knowledge that could be lost if the RMG retailers transfers to other lower labour cost locations (Chan et *al*., 2007). Thus this strategy

would allow RMG manufacturers to benefit from the experiences gained from dealing with different RMG retailers and would support the accumulation of knowledge which would support in performance development and production upgrading.

2.5.6 Benchmark Performance against Supplier Evaluation Criteria

As shown earlier in Table 2.3, global RMG retailers assess potential sourcing countries according to a set of criteria. Retailers also use another set of criteria to evaluate the performance of potential suppliers/contractors to ensure that their performance level will meet their business goals. This set of criteria is called supplier evaluation models or supplier selection models. Numerous models exist in the literature for selecting potential suppliers in any type of industry, however, Teng and Jaramillo (2005) developed a model that is specific to evaluating the supply chain management practices of RMG manufacturers in order to establish a close buyer-supplier relationship that goes beyond price negotiation. The model consists of five clusters that contain three to five factors each; the five clusters are: delivery, flexibility, quality, reliability and cost (Teng and Jaramillo, 2005). Figure 2.5 illustrates the supplier performance evaluation matrix.

Delivery	Flexibility	Quality	Reliability	Cost
•Geographic location •Freight terms •Trade restrictions •Total order lead time	•Capacity • Inventory availability • Information sharing •Negotiability •Customisation	• Customer service •Certifications • % of on-time shipments • Continuous improvement programs	• Feeling of trust • Country's political situation • Currency exchange • Warranty policies	• Supplier's selling price • Internal cost • Ordering and invoicing

Figure 2.5 – Supplier Performance Evaluation Matrix

Source: Teng and Jaramillo (2005)

Not only is this supplier evaluation model an effective tool for RMG retailers, it is also beneficial for RMG manufacturers. This evaluation model can be used as a benchmarking tool by RMG manufacturers to evaluate their current performance level

and to determine the performance gaps to be filled in order to increase their chances of being selected as potential suppliers for global RMG retailers.

2.5.7 Develop Labour and Management Skills

The skills of labour and management have a direct impact on the productivity levels in the RMG sector (Farghally, 2008; Marello et *al*., 2009). Employees' productivity in the RMG manufacturing business support companies in attaining a higher market share and increasing the level of exports as explained by Marello et *al*. (2009). In Egypt, there is a shortage of skilled management and technical staff in RMG factories as stated by Ghoneim and Pigato (2006). Wahish (2009) added that there is a lack of training for management staff in the RMG industry despite the fact that the provision of training for middle and top management would introduce better planning and control that could increase productivity by 20% in RMG manufacturing companies.

The study of the World Bank (2006) stressed that Egypt as well as RMG exporters in the MENA region should particularly enhance productivity by investing in employee training that would target trade and logistics topics. The logistics function, as stated by Christopher and Peck (1997) and Bruce et *al*. (2004), highly supports the competitiveness of RMG exports in the global market which strengthens the importance of employee training in this area. Additionally, the study conducted by the U.S. International Trade Commission (2005) reported that the lack of skilled logistics managers in Mexico was one of the major reasons causing problems for U.S. importers sourcing from Mexico. This fact further reinforces the necessity of developing qualified staff that is capable of operating and managing logistics in RMG manufacturing companies in Egypt.

After discussing the different measures that could be implemented by RMG manufacturers in Egypt, it could be stated that these measures are in a way connected and related. One interpretation of this could be that if, for instance, management and labour have the required skills, they will be capable of upgrading the companies' performance from CMT to FP, supporting the adoption of new technologies, improving supply chain performance, aligning logistics activities, and keeping and effectively utilising the knowledge gained from RMG retailers. Thus, this draws attention to the

fact that maybe the skills of labour and management have a much deeper impact on RMG manufacturers in Egypt than it is acknowledged in the literature and practice. Therefore the following section will just focus on the skills of labour and management in the RMG manufacturing industry in Egypt and their potential impact on companies' performance.

2.6 THE ROLE OF THE HUMAN FACTOR IN SUPPORTING THE COMPETITIVENESS OF EGYPT'S RMG EXPORTS

As discussed earlier, Tunisia, Morocco and other developing countries succeeded in increasing their RMG exports despite the problems and challenges faced by poor infrastructure and high tariffs. They focused on developing the factors that are under their direct control such as improving efficiency and management capabilities. Therefore this section will provide an overview on the role of skilled labour and management which was stated as one of the possible measures by which to increase the competitiveness of Egypt's RMG exports. The following sections will also examine the relationship between labour productivity and competitiveness with special emphasis on the issues of training and skills in the Egyptian RMG industry.

2.6.1 Labour Productivity and Competitiveness in the Egyptian RMG Industry

The relationship between labour productivity and competitiveness in the RMG industry was explained by Marello et *al*. (2009) when they highlighted the link between productivity and the attainment of high market share. They stated that labour productivity in the RMG industry is affected by the speed with which cutters, sewing operators, and pressers do their production jobs and also by the technical and management skills of supervisors, engineers and managers, who plan, oversee work and effectively fulfil customers' orders. Thus labour productivity in the RMG sector is affected by the skills of both vocational workers and managers.

Marello et *al*. (2009) and Joshi (2002) further explained that when labour and management have the required skills then productivity is increased, unit costs are reduced, wages can be raised and exports and market share can be increased as shown in Figure 2.6.

Figure 2.6 – The Impact of Skilled Labour and Management on RMG Manufacturers

Source: The Author based on Marello et al. (2009)

In general, the issue of labour has been stated as both an advantage and a challenge towards achieving competitiveness in the RMG manufacturing industry in Egypt. It was stated as an advantage because the supply of labour available in Egypt meets the demand of RMG manufacturers while it was stated as a challenge because of the low productivity and lack of skills (Magder, 2005). It was even claimed in some studies that the low productivity and lack of skilled workers in the Egyptian RMG industry are strongly affecting the competitiveness of Egypt's RMG exports to the global market when compared with other RMG exporters (Awni, 2009; Marello et *al*., 2009). It was clearly emphasised in the study conducted by Awni (2009) that despite the preferential access that Egypt enjoys to the U.S. market through the QIZ agreement, Egyptian RMG exports are quite low when compared with other RMG exporters who do not have any preferential access to the U.S. market. He stressed that the low productivity of labour and management is responsible for affecting Egypt's RMG exports in such a way.

Although labour productivity is one of the factors negatively impacting Egypt's RMG exports, it was found that there is a great lack in research addressing this issue. In a review of the literature on the RMG industry in Egypt, many studies were found to cover an array of topics such as chemicals used in RMG manufacturing, pattern designs, the use of cotton through Egyptian history, etc. However, few studies were found to cover the factors of competitiveness in the RMG manufacturing sector that were previously shown in Table 2.4 namely: infrastructure and proximity to markets, labour and management, market access, business climate, raw-material inputs, and level of service provided and reliability of supplier.

Table 2.5 shows the studies conducted on the Egyptian RMG manufacturing industry and the factors of competitiveness covered within these studies. It is clear that the majority of studies examined factors related to market access that is granted to Egyptian RMG manufacturers as a result of the various trade agreements and the factors related to raw materials inputs. Only two studies were found to address the issue of labour and management where the focus of these studies was on recognising the existence of the problem of low productivity especially labour and the recommendations of some measures to be taken by designated authorities and organisations.

Table 2.5 – Studies Conducted on the Egyptian RMG Manufacturing Industry and the Factors of Competitiveness Covered

Author/Year	Title of Study	FACTORS OF COMPETITIVENESS					
		Infrastructure and proximity to market	Labour and management	Market Access	Business Climate	Raw-Material Inputs	Level of service provided and reliability of supplier
Kheir-El-Din and El-Sayed (1997)	Potential impact of a free trade agreement with the EU on the Egyptian textile industry			x		x	
Racha Abdel Hakim (1997)	Effects of the Egypt-EU partnership agreement on the textile industry			x		x	
Sakr and Abdel Latif (2000)	International competitiveness of Egypt's textile industry	x		x			x
Gierend and Abo Elwafa (2002)	The unfinished agenda of cotton sector liberalization in Egypt: simulating the supply of lint cotton and price risks, for the domestic spinning industry					x	x
Fawzy and Massoud (2003)	The future of Egypt's textile and clothing exports in light of new international trading rules			x		x	
Magder (2005)	Egypt after the Multi-Fiber Arrangement: global apparel and textile supply chains as a route for industrial upgrading			x		x	x
Ghoneim and Pigato (2006)	Egypt after the end of the Multi-Fiber Agreement: a comparative regional analysis			x			
Raafat (2006)	Summary on the textile and clothing industry in Egypt						x

Table 2.5 – Studies Conducted on the Egyptian RMG Manufacturing Industry and the Factors of Competitiveness Covered

Author/Year	Title of Study	FACTORS OF COMPETITIVENESS					
		Infrastructure and proximity to market	Labour and management	Market Access	Business Climate	Raw-Material Inputs	Level of service provided and reliability of supplier
Refaat (2006)	Assessing the impact of the QIZ protocol on Egypt's textile and clothing industry			x		x	
World Bank (2006)	Morocco, Tunisia, Egypt and Jordan after the end of the Multi-Fiber Agreement (impact, challenges and prospects)	x	x	x			
Kheir Eldin and Abdel-Fattah (2008)	Textiles and clothing in the Mediterranean region: opportunities and challenges of returning textiles and clothing to GATT disciplines			x			
Abdel salam and Fahmy (2009)	Major variables affecting the performance of the textile and clothing supply chain operations in Egypt						x
Marello et *al.* (2009)	Improving productivity in Egypt's ready-made garments sector		x				

There are various reasons responsible for the low productivity of labour and management in the RMG industry in Egypt. These reasons include: poor management practices, lack of adequate training, lack of motivation, working conditions and lack of incentives (Loiselle, 2009; Marello et *al*., 2009). But one of the primary reasons for the low productivity in Egypt's RMG industry is the lack of adequate training which is discussed in the following section.

2.6.2 Training and Skills in the Egyptian RMG Industry

It was not until the year 2009 that researchers identified the link between low productivity and training within the RMG sector in Egypt. Awni (2009) and Tolba (2009) stated that training is one of the main factors affecting productivity and quality in the RMG manufacturing industry in Egypt. Tolba (2009) confirmed that training in Egypt is minimal and only provided to machine operators at the commencement of their jobs. He also provided a table that shows the frequencies of the provision of training to employees in Egyptian RMG manufacturing companies compared with other RMG exporters' countries. This benchmark is shown in Table 2.6

Table 2.6 – Benchmarking Training in RMG Exporting Countries

Position	China	India	Tunisia	Turkey	Egypt
Machine operator	3	3	1	3	1
Operator assistant	3	3	2	3	0
Supervisor	2	2	2	2	0
Engineer	1	1	1	1	2
Assistant engineer	1	2	3	1	0
Administration assistant	1	1	3	1	2
Administration manager	1	1	3	1	0

(0)None (1) on entry (2) once/year (3) more than once/year

Source: Tolba (2009)

It is worth noting however that Table 2.6 does not account for the duration or the number of hours allocated for training. Such information could have provided a better

comparison on the frequencies and duration of training in the different RMG exporters' countries.

Ongoing training of staff is evidently not common practice in RMG manufacturing companies in Egypt when compared with the other RMG exporters. Table 2.6 indicates the need to provide frequent training across all levels in RMG manufacturing firms in Egypt.

Awni (2009) stressed that RMG manufacturers need to address the issue of the inadequate training of managers and workers. He added that the capacity of any RMG manufacturing company to generate value is primarily determined by the number and quality of its workers and top management. The importance of this fact is that RMG retailers and investors follow value and not just low labour costs. Therefore immediate actions need to be taken otherwise foreign RMG retailers and investors will seek other countries for their sourcing and investment decisions, and consequently threaten Egypt's RMG exports.

Helal (2009) recommended that RMG manufacturing companies in Egypt need to start identifying the skills gaps of its employees through audits and training needs analysis (TNA). He noted that the identification of the actual skills deficiencies is crucial as it plays an important role in the effectiveness of the training provided. If skills deficiencies were not diagnosed properly, the wrong training will be provided resulting in a loss of time, money and effort. Moreover, the employees themselves might lose interest and motivation in pursuing or participating in any training or learning activity as they would not be capable of seeing the benefits of this inappropriate training to their jobs. Helal (2009) also emphasised that after the identification of skills gaps, RMG manufacturers would need to develop demand-led training packages with either local or international organisations in order to guarantee that these packages address the gaps that RMG manufacturers need to fulfil.

Skills identification and training were found to have a direct correlation with export performance. Awni (2009) expressed that RMG manufacturing companies who are capable of identifying the required skills and providing training across the organisation,

are more able to export than other companies who train operators only. It is also worth noting that not only do these companies perform well in terms of exports, but also they are successful in developing loyalty with their workforce (Marello et *al*., 2009).

In conclusion, it could be said that the low productivity of the workforce in the Egyptian RMG industry is a factor that negatively affect the competitiveness of Egypt's RMG exports. One of the possible reasons for the low productivity – as previously discussed in the literature – is the lack of skills which could be a likely result of the very weak provision of training in Egyptian RMG manufacturing companies. This lack of skills could deeply affect the RMG manufacturing industry in Egypt despite the other advantages that this industry possesses. Figure 2.7 presents the possible relationship between the lack of training and the low competitiveness of Egypt's RMG exports as depicted in the literature.

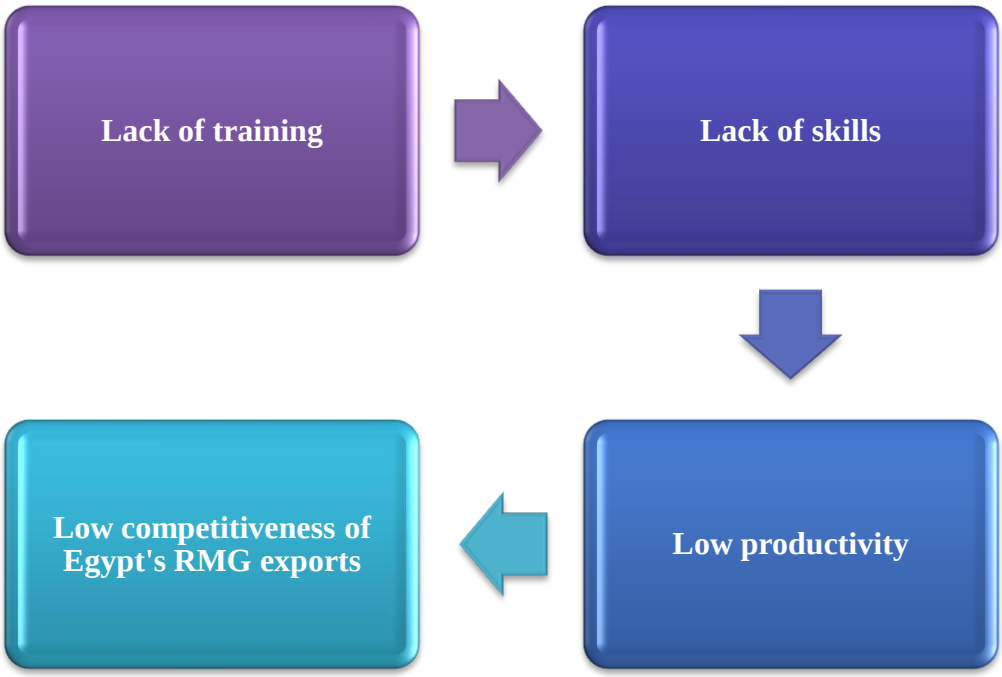


Figure 2.7 – The Relationship between the Lack of Training and the Low Competitiveness of Egypt's RMG Exports

It is worth noting that Figure 2.7 presents a conceptual conclusion of the findings from the literature and it does not imply that this relationship has been empirically investigated neither in previous research nor in this study.

After recognising the great need for training and increasing the skills' levels of the workforce in the RMG manufacturing companies in Egypt, the following section will focus particularly on logistics executives and how their skills can support the competitiveness of Egypt's RMG manufacturing companies.

2.6.3 Focusing on Logistics Executives: Examining Potentials to Support Competitiveness

Effective logistics management in the RMG supply chain has been recognised widely as vital to achieve competitive advantage. The presence of ample examples on international RMG manufacturers and retailers in the literature who were capable of achieving competitive advantage through logistics management such as Benetton and Zara, emphasises the importance of logistics in the RMG industry (Chopra and Meindl, 2004). The interest of academics has also been witnessed in logistics and supply chain practices in the RMG industry to examine a wide variety of topics namely: supply chain models, strategies, suppliers' relations and technology implementation such as in Forza and Vinelli (2000), Rollins *et al*. (2003), Teng and Jaramillo (2005) and Birtwistle *et al*. (2006).

There are many reasons for logistics to be an essential tool towards achieving competitive advantage for RMG manufacturers. Peterson and Ekwall (2007) stated that the RMG business is characterised by rapid fashion changes, tremendous product variety and high competition in the global market. Therefore the need for a logistics system that can manage production and delivery of products to retailers to fulfil the customers' needs at exactly the right time is indeed crucial (Peterson and Ekwall, 2007). If logistics is not managed effectively, damages would affect both RMG manufacturers and RMG retailers. RMG manufacturers would risk losing the relationship with retailers, while the retailers' business can become in jeopardy, facing lost sales, low customer service level as well as the increased risk of selling unsold goods at reduced prices (Abernathy et *al*., 1999; Peterson and Ekwall, 2007).

Thus, the way RMG manufacturing companies manage the flow of goods determines how efficiently, reliably and cost effectively the RMG reach their destination markets. The more capable the RMG manufacturers at meeting delivery deadlines and satisfying the retailers, the more likely they will secure profitable relationships with retailers, increasing exports and profit (Teng and Jaramillo, 2005).

Consequently this draws the attention to those responsible of managing the logistics function in RMG manufacturing companies. Noting the way logistics affects the profitability of RMG manufacturing companies, emphasises the role that skilled logistics executives could play in supporting the competitiveness of RMG manufacturers.

Competent logistics executives can support RMG manufacturing companies to:

- Develop a logistics vision to focus on customer satisfaction (retailers and end-customers) and on how to integrate functional areas to deliver satisfaction (Dapiran, 1992);
- Coordinate with internal and external parties to ensure that logistics operations are effected in a timely and accurate manner (Sutton, 1990);
- Reduce deficiencies in logistics operations to improve quality (Wu, 2007);
- Ensure the efficiency of logistics processes to maximise financial revenue (Miller, 2008);
- Develop strategies that would provide the best solutions for the company, its suppliers and customers (Rowat, 2008); and
- Develop the skills and competencies of logistics employees (Sutton, 1990).

Thus it can be concluded that logistics executives can play a vital role in supporting RMG manufacturing companies to secure profitable relationships with global RMG retailers who are considered the essential gateway to the global market.

It can therefore be claimed that training and skills development of logistics executives are in fact vital to support the competitiveness of RMG manufacturing companies in Egypt. This consequently raises the following questions:

- What competencies should logistics executives have for effective job performance in RMG manufacturing companies?

- What methods should be used to define these competencies?
- What methods should be used to define the training needs of logistics executives?

Review of the literature on the competencies of logistics executives in RMG manufacturing companies in Egypt failed to identify any study that addressed this topic. However, a significant number of studies, mainly conducted in the U.S. and Europe, investigated the skills necessary for successful logistics executives targeting samples from across the different industrial and services sectors. Therefore the following chapter will mainly focus on providing a review of these studies to examine the skills identified for logistics executives and the methods used to identify them. This will consequently assist in answering the first two questions concerned with the competencies of logistics executives and the methods used to identify them. Moreover, the following chapter will review some training and development issues in logistics that will assist in answering the third question which is concerned with the identification of training needs of logistics executives.

2.7 CHAPTER SUMMARY

This chapter presented a comprehensive overview of the RMG manufacturing industry in Egypt and its importance to Egypt's economy which is reflected in the value of exports, employment and investments. Special emphasis was given to Egypt's RMG exports' performance in the global market by comparing its share of exports with regional competitors. It was found that although the regional competitors are facing the same drawbacks found in Egypt which relate to infrastructure and governmental policies, they were successful at exporting more than double Egypt's RMG exports. A discussion of the key factors which are negatively affecting the competitiveness of Egypt's RMG exports was provided in addition to the measures that could be implemented by Egyptian RMG manufacturing companies to improve performance.

This chapter focused on the role of the workforce in supporting the competitiveness of Egypt's RMG exports. It was revealed that the low productivity of the Egyptian workforce is one of the principal factors negatively impacting Egypt's RMG exports. It was also found that this low productivity is contributed to the lack of skills and

training in Egyptian RMG manufacturing companies. The chapter concludes by emphasising the role that competent logistics executives can play to support the competitiveness of RMG manufacturers and by stressing on the importance of their training and skills development. The following chapter will further emphasise the importance of skilled logistics personnel to organisations seeking competitive advantage and it will focus on reviewing the studies which investigated the skills required for logistics executives.

CHAPTER THREE: LOGISTICS AND SUPPLY CHAIN MANAGEMENT: SKILLS, TRAINING AND COMPETITIVENESS

3.1 INTRODUCTION

Logistics and supply chain management (SCM) have been significant areas of interest among business organisations for some years and RMG manufacturing companies are no exception. Many companies have succeeded in securing strong positions in today's global market due to their best practices in logistics and SCM which have become evident tools towards competitiveness. The concepts of logistics and SCM are not new to modern business and they have actually existed throughout history but under different titles and approaches. It was not until the free trade movement and globalisation that companies truly recognised the contribution of logistics and SCM to face the escalating competitive pressures and increased performance requirements. In recent years, there has been a growing awareness of the critical role played by people in the context of supply chain success. The skills and knowledge of employees are now recognised as a tool to leverage supply chain performance and ultimately the organisation's competitiveness in the markets.

This chapter starts with an overview on the concepts of logistics and SCM to understand the activities and dynamics that influence strategies and management. The integration of logistics in the different modes of competition is also discussed to emphasise its role towards achieving competitive advantage and to emphasise the importance of addressing the logistics function in this study. Moreover, this chapter discusses the business and development trends that have influenced the increasing demand for skilled logistics personnel to further justify the selection of the senior logistics manager to be the focus of this study. Consequently a thorough review on the skills of logistics managers is conducted by highlighting the findings of studies which focused on investigating the skills of logistics managers and the methods used to identify them.

This review assists in identifying the gaps that exist in the literature and in considering the methods necessary by which they can be filled. The chapter concludes by stressing on the importance of training and development of logistics managers to rationalise the development of the competency framework to be used as a tool for training purposes.

3.2 BACKGROUND ON LOGISTICS AND SUPPLY CHAIN MANAGEMENT

This part presents a basic background on the concepts of logistics and SCM by tracking the development, definitions, and the key business practices and strategies that have evolved with the development of both concepts.

3.2.1 Logistics Management

Logistics is generally known as the movement of goods from one place to another, but it was not until mid1980s that the term logistics had become more popular to the business arena (Cavinato, 1982; Langley, 1986; Lummus et *al*., 2001).

The 1980s could be described as an era of maturity for logistics which is demonstrated by the emphasis on customer service and the recognition of the positive impact well-managed logistics operations have on cash flow by the reduction of order cycle time (Bowersox, 1983; Langley, 1986; Stock and Lambert 2001). In addition, professional associations such as the Council of Physical Distribution Management which was renamed in the 1980s to become the Council of Logistics Management (CLM) took a more distinctive role in clarifying and promoting the concept of logistics and restating its definition of logistics to become:

> "Logistics is the process of planning, implementing and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements".
> (Council of Logistics Management 1986, cited by Langley 1986, p.5)

The definition is clearly presenting the spectrum of the logistics process incorporating both the inbound and outbound movement of materials and goods as well as stressing

on the coordination of the process to achieve the required customer service level. Figure 3.1 shows the logistics activities.

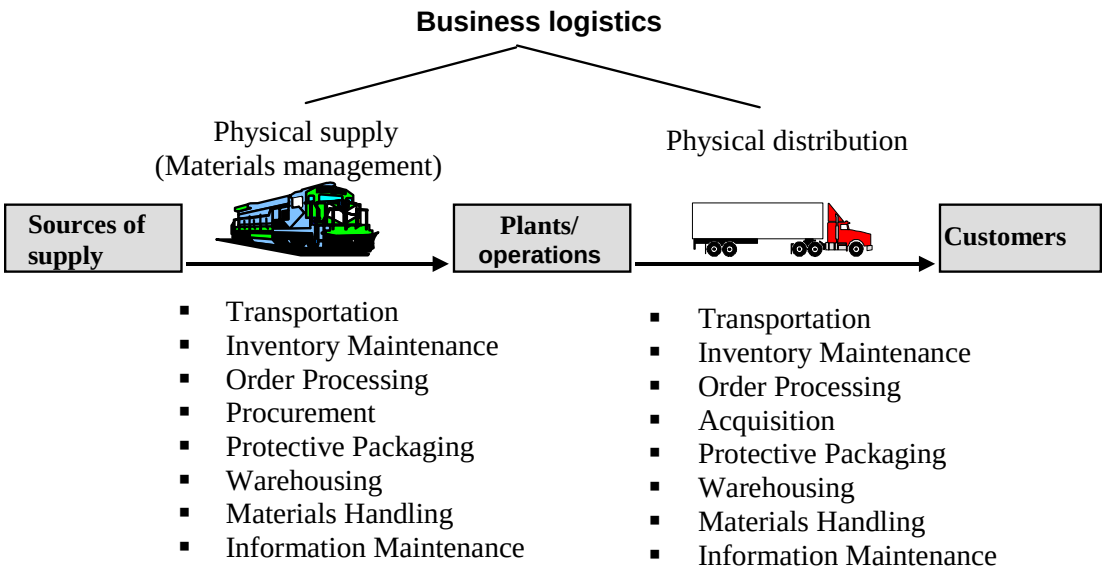


Figure 3.1 – Logistics Activities

Source: Ballou (2004)

Vital areas of research during the 1980s focused on the managerial aspects of logistics management targeting the strategic level. For instance, Capacino and Rosenfield (1984) explained the three stage process that companies should follow for strategic logistics planning:

- ***The first stage*** is to search for methods by which to 'leverage' logistics i.e. how to use logistics to differentiate the company;

- ***The second stage*** is to involve physical distribution managers in evaluating the impacts of the proposed corporate plans; and

- ***The third stage*** is to develop a strategic logistics plan that would support the corporate plan and all the functional areas to perform in the most efficient way.

They have further emphasised a number of analytical tools to be used for strategic logistics planning namely: logistics cost analysis, decision-support models, traditional

manufacturing strategy tools, the Shapiro grid framework and cost-service trade-off curves.

It is also worth mentioning that the 1980s witnessed the recognition of logistics being of true strategic importance and a means towards developing competitive advantage. South (1981) discussed competitive advantage in business performance and stated that "competitive positions are determined by manufacturing process, distribution approaches and product offering" (South, 1981, p. 16). He also showed that competitive advantage is achieved through:

- Concentration on particular market segments;
- Offering products that differ from competitors; and
- Using alternative distribution channels and manufacturing processes.

Although South (1981) did not explicitly state that logistics management could contribute to achieve competitive advantage, he referred to some terms including 'distribution channels' and 'manufacturing process' that are connected with logistics management. Shapiro (1984) discussed a number of modes of competition and the aspects in which logistics can leverage towards achieving competitive advantage. Table 3.1 shows three different modes of competition (product innovation, customer service and cost leadership) and the contribution of different logistics aspects in achieving the set goals.

Table 3.1 – Modes of Competition and Logistics Integration

Chosen modes of competition	Product Innovation	Customer Service	Cost Leadership
Goals of logistics system	- Availability - Flexibility to volume shifts - Flexibility to product changes - Ability to handle small orders - Ability to handle unpredictable order frequencies	- Rapid delivery - Consistent delivery - Availability - Flexibility to customer changes	Minimum cost with an 'acceptable' service level
Focus of planning	Line management	Line management	Staff
Procurement	Seek vendors who can ensure: - Supply continuity - Quality - Flexibility to changes in specifications	Seek vendors who can ensure: - Consistent delivery - Full-line availability - Responsiveness	- Make maximum use of volume purchase economies - Centralised purchasing organisation - Seek vendors offering low prices
Inventory policy	Tension between the need for high safety stocks kept locally to ensure availability and the need to keep inventories low to retain flexibility and guard against obsolescence: a compromise between these two extremes is required; the form of that compromise will depend on a variety of technological, physical, economic and competitive factors; most important are pace of product change and competitive intensity	For the company that produces to inventory, local inventories will be required for 'market presence' and rapid, consistent delivery.	Investment in inventory at minimal levels that ensure acceptable service.

Source: Shapiro (1984)

One of the key contributors to the role of logistics in supporting companies' competitive advantage was Michael E. Porter who introduced the value chain concept which provides a framework for organisations to develop competitive strategies (Porter 1985; Stock and Lambert, 2001). He included inbound and outbound logistics as key components of marketing strategy which created a major awareness about the role of logistics in creating and maintaining competitive advantage.

Additionally, Langley (1986) stated the view that logistics has been increasingly used by companies to develop competitive advantage whether by lowering the unit cost or by achieving differentiation in the marketplace. Christopher (1988) endorsed Langley's (1986) view and clarified that logistics management is a major source of competitive advantage, not only because of its potential in reducing costs, but also because of its ability in capturing market share through enhanced service. He further explained that:

> "The goal of logistics strategy is to link the market place, the distribution network, the manufacturing process and the procurement activity in such a way that customers are serviced at higher levels and yet at lower costs".
> (Christopher, 1988, p.204)

It is also important to note that the 1980s witnessed an increased interest in the use of computers and information technology in logistics management. Hollier (1988) actually argued that the "single most important driving force behind the growth of the logistics concept is the rapid development in information and communication technology" (Hollier, 1988, p.13). The rationale behind the interest in the use of computers and information technology in logistics is because of the computers' ability in integrating logistics activities more effectively, which allowed cost trade-off decisions to be made more quickly and optimally (Stock and Lambert, 2001). This consequently reflected on logistics efficiency and its capability in achieving competitive advantage for companies (Porter, 1985). Kerr (1989) also emphasised the role of Electronic Data Interchange (EDI) in providing opportunities for logistics managers to gain control over the flow of material which can result in significant cost reduction and possible implementation of Just-in-Time (JIT) manufacturing.

With the start of the 1990s, logistics management became more complex as activities were no longer limited to a national operational level. Companies become global and

develop through the extension of markets which increased the need for reducing costs through economies of scale in purchasing, production and also through focused manufacturing and/or assembly operations (Hollier, 1988; Braithwaite and Christopher, 1991; Piasecki and Wolnicki, 2004). Braithwaite and Christopher (1991) concurred that the complexity of logistics management for global companies is magnified due to the increasing range of products, shorter product life-cycles, marketplace growth and the number of supply/market channels. The view of Capacino and Britt (1991) was also typical regarding this issue, stating that problems in global logistics are relating to elements such as longer distance and lead times, the involvement of more parties, the necessity of more data and knowledge, the high costs level and most importantly there are greater penalties for error. Thus the role of the global logistics strategies is centred on achieving the optimal cost and service performance mix that would embrace the challenges and elements mentioned and permit companies to achieve effective performance (Capacino and Britt, 1991).

The complexities of global logistics management were responsible for the emergence of third party logistics (3PL) which are external companies who perform the logistics activities that have been traditionally performed within the organisation (Sheffi, 1990; Lieb, 1992; Bardi et *al*., 2003). The use of 3PL companies or outsourcing the logistics functions was acknowledged by companies engaged in the international market due to a number of reasons like labour cost savings, specialisation, and asset as well as cost reduction (Bardi and Tracey 1991; Lieb 1992; Mensik, 2004).

There is no doubt that the development witnessed in logistics management over the years has supported companies in setting more defined strategies that allow them to operate competitively in the ever changing international business settings. However, achieving a rather strong position in the international market would have not been possible to accomplish without the integration of all parties starting from the sources of supply until reaching the end customers. This integration is well-known in practice and literature as supply chain management (SCM).

3.2.2 Supply Chain Management

The term SCM arose in the late 1980s and came into widespread use in the 1990s (Hugos, 2003). The fierce competition in the global markets, the decreasing life cycles of products, and the heightened expectations of customers have directed organisations towards investing and focusing attention on their supply chains (Simchi-Levi, 2003; Quayle, 2006). Ever since, many attempts were made to define the concept of SCM; Macbeth et *al*. (1989) and Ellram (1990) suggested that SCM is an integrative philosophy to manage the total flow of a distribution channel from the supplier to the ultimate user. Other practitioners and academics, until recently, viewed SCM as a synonymous term to logistics where the only difference is in the setting of the concept i.e. logistics is performed inside the firm whereas SCM is the logistics performed outside the firm to include customers and suppliers (Frazelle, 2001; Stock and Lambert, 2001; Goetschalckx *et al.*, 2002; Hugos, 2003). Of similar view, Christopher (1998) argued that SCM is an extension of the logic of logistics by justifying that while logistics management is concerned with optimising flows within the organisation, SCM recognises that internal integration is not sufficient and for this reason customers and suppliers are included. However, he further emphasised that the focus of SCM is on the management of relationships to achieve profitable outcome for all parties in the chain.

Thus for the purpose of setting standardised definitions of both logistics and SCM, the Council of Supply Chain Management Professionals (CSCMP) – formerly the Council of Logistics Management (CLM) - the leading organisation of supply chain practitioners, researchers and academics, has defined SCM as following:

> "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies".
>
> (CSCMP 2007 cited by Ballou 2007, p.338)

In addition, CSCMP provided a new definition for logistics to be:

> "Logistics management is that part of SCM that plans, implements, and controls the efficient forward and reverse flow and storage of goods, services, and related information between the point of origin and point of consumption in order to meet customer requirements".
> (CSCMP 2007 cited by Ballou 2007, p.338)

It is clear from these two definitions that logistics management is regarded as a part of SCM that is concerned with the activities involved with the movement of goods, services and information across the supply chain, while SCM focuses on procurement and conversion (production), in addition to coordinating and building relationships among channel members. Figure 3.2 illustrates the evolution of supply chain management.

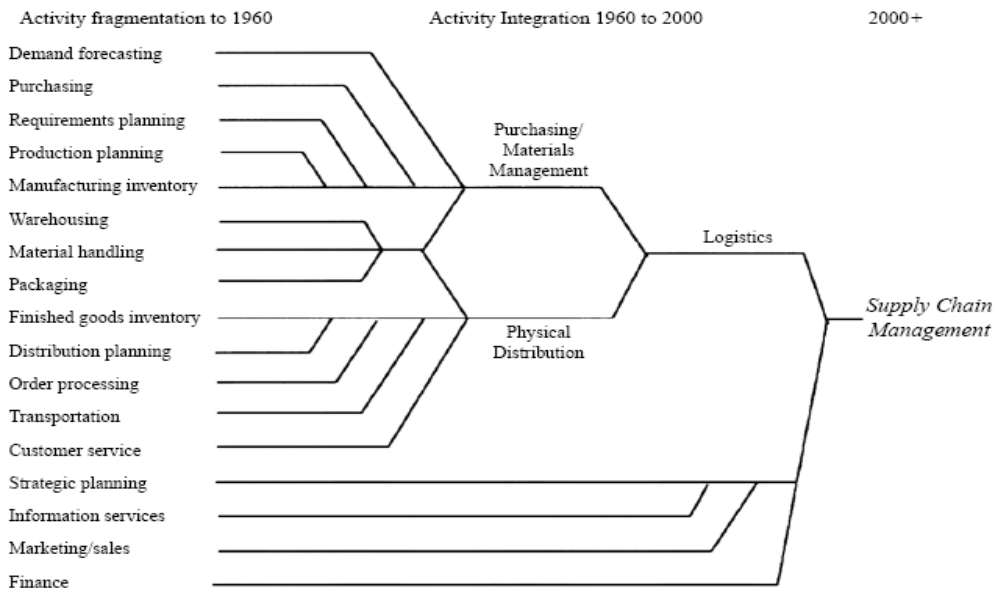


Figure 3.2 – The Evolution of Supply Chain Management

Source: Ballou (2007)

It is believed that the integration of supply chain members and the exchange of real-time information can achieve more profitable outcome for all the parties involved in the chain (Christopher, 1998; Stock and Lambert, 2001; Waters, 2006). The integration between supply chain members involves cooperation, information sharing, trust, partnerships, shared technology and a shift from managing individual

functional processes to managing integrated chains of processes (Akkermans et *al*., 1999). This integration can improve both profit potential and competitive position since visibility of operations would allow chain members to be more responsive to the market, more efficient in capital utilisation, reduce inventory, improve quality and shorten product development cycles (Bardi et *al.*, 2003; Power 2005; Samaranayake, 2005; Fawcett et *al*., 2008).

After reviewing the development that occurred in logistics and SCM over the years which demonstrated the significant role they play towards achieving competitive advantage, endorses the importance of logistics as a strategic weapon for all types of businesses including the RMG manufacturing sector. The increasing range of RMG products and the shorter product life-cycles intensify the competition in the RMG industrial sector which consequently strengthens the importance of sound logistics management. Whether the goal is towards achieving product innovation, cost reduction or customer service, logistics must be effectively integrated in corporate plans. This in turn will require competent logistics managers who will be capable of designing strategies that integrate logistics in all the functional areas to support corporate plans while taking into consideration the challenges faced in the global market. The following sections will examine the role of human resources in logistics and SCM performance and factors that increase the demand for highly skilled calibres.

3.3 THE HUMAN FACTOR AND SUPPLY CHAIN PERFORMANCE

Organisations have two types of resources i.e. tangibles and intangibles which are used to efficiently and effectively make products that are valuable in the market (Barney, 1991). Human resources, which include the skills and knowledge of employees, is one of the most important intangible resources an organisation has (Hunt and Morgan, 1996). Skills and knowledge of individual employees are tools that can be used to increase the ability to efficiently and effectively make products and enhance organisation performance (McClelland 1973; Goleman 1998; Sandberg 2000). As Wu (2007) explained, the intangible assets (skills and knowledge) are the means by which the tangible resources of a business are leveraged. He also added that knowledge is becoming an important production factor alongside equipment, capital and raw materials in today's knowledge-based economy.

In the supply chain context, employees are indeed a crucial factor to successful supply chain performance. Quinn (2004) emphasised that there are three critical elements that need to be kept in balance to achieve supply chain success: people, process and technology. However, he stressed that although it could not be decided which of these elements is the most important to supply chain success, he added "you can't do anything without the right people" (Quinn, 2004, p. 3). Van Hoek et *al*. (2002) also added that the 'people dimension' is particularly critical to achieving supply chain objectives. Quayle and Jones (1999), Skjoett-Larsen (1999), and Mangan and Christopher (2005) were of similar opinion and stated that logistics managers and supply chain managers play an essential role in ensuring the continuous competitiveness and success of firms.

Thus why are employees so important to successful supply chain performance? As SCM has become an active factor for changes in the way products and services are developed as well as the methods by which they are brought to market to satisfy customers' needs, the importance of the human factor is pursued to achieve new levels of SCM performance (Gattorna, 2003). Employees who are innovative and flexible, who can adapt to change and have a broader set of skills, significantly influence the firm's capabilities in productivity improvements, greater efficiencies, increased market share, increased profits and business excellence (Gammelgaard and Larson, 2001; Gattorna, 2003 and Wu, 2007). Tromba (2005) stated that strengthening a firm's intangible human assets will strengthen and sustain its impact as a supply chain leader. Moreover, employees who have sufficient knowledge of every procedure and the ability to monitor the entire supply chain process would be able to provide services that meet more than the customer expectations (Wu, 2007).

3.3.1 Factors Influencing the Demand for Skilled Logistics Managers

The literature presented a number of factors that support the vital presence of skilled logistics managers in SCM. These factors are grouped into two main categories: business trends and development trends. The first category 'business trends' includes globalisation, outsourcing, the continuous development of information technologies, total quality management, agile SCM and quick response, and environmental sustainability. The second category 'development trends' includes learning organisations, skills requirements and learning technology.

3.3.1.1 Business Trends

This section describes the different elements influencing change in the business environment over recent years. These changes in turn had an impact on SCM and a need for more skilled human resources capable of operating in this sophisticated environment.

- **Globalisation**

  In today's environment, SCM has to be labelled ***global*** *SCM* as raw materials are sourced from all over the world, and finished goods are assembled, distributed and shipped to foreign markets (Chopra and Meindl, 2004). As the global marketplace continues to expand with the development of trade agreements, and the opening of new markets, international logistics has become the means for strategically integrating global supply chains (Wood et *al*., 2002; Waters, 2006). The ultimate challenge however faced by companies in managing global supply chains is to continually search for innovative ways by which costs can be lowered and service can be enhanced (Christopher, 2005; Mangan et *al*., 2008). Moreover, companies have to respond to the international customers' expectations and deliver the products where and when they are demanded; otherwise they risk market obsolescence and loss of market share (Hill, 2008). This is especially true because trends and business elements are not the same in every market and consequently, the background and knowledge of international business practices (international finance, political science, international customs and cultures) are deemed necessary for those involved in global supply chains (Stock and Lambert, 2001; Gourdin, 2006).

- **Outsourcing**

  As organisations now focus on their core competences, they tend to outsource various types of activities such as manufacturing, logistics, distribution and marketing (Stock and Lambert, 2001). This philosophy allows the more efficient and effective use of resources towards developing the organisations' core competences, but at the same time raises the challenges of managing some of the organisation's functions outside the organisation's boundaries and direct control (Barrar and Gervais, 2006). In a logistics context, managing sub-contractors and logistics providers imposes a number of responsibilities on logistics managers, such

as monitoring performance levels and ensuring that the organisation's objectives are met in an effective manner. These responsibilities become even more complex when managing these providers in foreign markets.

- **The Continuous Development of Information Technologies**

Information has always been central to the efficient management of logistics but now, enabled by technology, it is providing the driving force for competitive logistics strategy (Tilanus, 1997; Stock and Lambert, 2001). Leveraging the power of technology has facilitated a move toward real-time visibility and optimisation of the supply chain (McClellan, 2002). The internet offers solutions for companies to overcome traditional logistics problems by: providing real-time information on inventories, enabling single data entry to minimise human errors, providing a real-time online ordering function and multi-level password control so that different functions can have different access levels and controlled by the authorised people (Gunasekaran and Ngai, 2003; Christopher, 2005). In addition, the use of Enterprise Resource Planning (ERP) systems, which link the operations of the business, such as production and distribution, with the supplier's operations on the one hand and the customer on the other, enabled information to be shared more easily and encouraged a more process-driven approach to conducting business (Ptak and Schragenheim, 2004; Rushton et *al*., 2006). Therefore companies can link the replenishment of products in the marketplace with their upstream operations and those of their suppliers through the use of shared information and thus converting supply chains into demand chains as the system responds to known demand rather than anticipating that demand through forecasting (Chorafas, 2001; Christopher, 2005). This is especially witnessed in the RMG sector where RMG manufacturers automatically replenish the RMG retailers with products based on Point of Sales (POS) information that is based on actual customer demand (Peterson and Ekwall, 2007). In this I.T era, logistics managers need to have the knowledge necessary to propose, select or provide opinions on I.T tools for the logistics function while considering its impact on the business and the costs involved in implementation and employees training. The logistics manager needs to have the knowledge that would allow the full exploitation of the proposed tools in order to justify the investment

made in its purchase and implementation. Moreover, a logistics executive needs to take into consideration the impact of implementing technologies on the workforce.

According to Butcher (2007), the socio-technical system (STS) theory principles should be implemented in order to balance between the capabilities of the workforce and the technical system. The STS theory is centred on four main principles: joint optimisation of the technical and social system, quality of work life, employee participation in system design and semi autonomous work groups (Mangan et *al*., 2008). The balance between the workforce and the technical system is crucial as Braveman (1974) in Butcher (2006) stated that automation is criticised of demotivating and deskilling the workforce because it relinquishes process control from the workforce to management. Therefore the principles of STS theory should be carefully implemented in order to gain the anticipated benefits of the technologies applied (Butcher, 2007). It is also worth noting that following STS principles result in delivering a sustainable process improvement because "workers are typically multi skilled; broadening their skill sets to cope with administrative, leadership and decision-making scenarios" (Butcher, 2007, p.17).

- **Total Quality Management**

Total Quality Management (TQM) is an operational philosophy committed to customer satisfaction and continuous improvement (Oakland, 1993; Kanji and Asher, 1996). An organisation implementing TQM requires quality in all aspects of the company's operations, with things being done right first time, and defects and waste eliminated from operations (Dahlgaard et *al*., 1998; Bank, 2000). TQM has a customer-first orientation where customer satisfaction is seen as the company's highest priority. Hence, TQM and logistics share the same ultimate goal: customer satisfaction. TQM impacts supply chain management in that everyone involved in the chain must understand his role in delivering a level of quality to all the parties involved (Stock and Lambert, 2001). In other words, TQM is a process that involves logistics activities in the supply chain and utilises a systematic, integrated, organisation-wide perspective for satisfying the customer (Bardi et *al*., 2003). Furthermore, Bowersox and Daugherty (1995) and Mentzer et *al*. (2001) stated that by delivering customer value through quality logistics service, organisations can

gain competitive positioning in areas that cannot be easily imitated by competitors such as pricing and promotion.

Adopting TQM principles into organisations is important, not only because of streamlining activities for customers' satisfaction, but also because the ISO certificates (International Standardisation Organisation) are considered an essential passport for entering many markets around the world as they are perceived as an international proof of excellence and compliance with international standards (Hill, 2008). Usually there are specialised departments within organisations that implement and monitor TQM processes, but the knowledge of this system is required to be known by everyone in the organisation, including those involved in logistics in order to incorporate TQM principles in operation and decision making (Novack et *al*., 1993).

- **Agile SCM and Quick Response**

Among the new concepts that appeared in the last decade to rapidly satisfy the needs of end consumers are 'agile supply chains' and 'quick response'. An agile supply chain reflects the ability of the entire chain to rapidly align the network and its operations to the dynamic requirements of the demand network (Bruce, 2004; Ismail and Sharifi, 2006). An agile manufacturing system can rapidly shift among product models or between product lines in real-time response to consumer demands (Youssef, 1994). An agile approach to SCM is recognised as a winning strategy for growth if not a basic one for survival in certain business environments like the RMG sector (Ismail and Sharifi, 2006). In order to be agile, a supply chain must be market sensitive i.e. to respond to real time changes in demand and to use I.T to both capture data from buyers and share it with suppliers to respond immediately to the arising demands (Christopher, 2005). Also, shared information between supply chain partners is required in order to ensure process alignment through collaborative alliances, joint product development, common systems and ultimately a higher level of network synchronisation (Bruce, 2004; Christopher, 2005).

A quick response (QR) logistics strategy is adapted into the agile supply chain process and it is widely known as a retail sector strategy that aims to improve

inventory management and efficiency while speeding inventory flows (Stock and Lambert, 2001; Gattorna, 2006). QR is mostly implemented between manufacturers and retailers where it has the utmost impact on logistics operations (Fernie and Sparks, 2004). For instance, pre-ticketed products or 'floor-ready merchandise' are directly shipped to stores to be put on display for customers, eliminating storage and processing costs (Stock and Lambert, 2001). Agile SCM and QR are very popular in the RMG supply chain as indicated by Christopher (2000), Fernie and Azuma (2004), and Peterson and Ekwall (2007) which consequently demands logistics calibres who are characterised by a high level of flexibility, capable of working under pressure and who have strong problem solving skills (Frazelle, 2001).

- **Environmental Sustainability**

In the last few years, expressions that include green logistics, reverse logistics, carbon footprint, renewable energy and biodegradable materials signify the concern of the global community in sustaining the environment. This heightened awareness of the relationship between business and the environment has a direct impact on SCM to become green supply chain management (GSCM). Srivastara (2007) explains that:

> "GSCM is integrating environment thinking into supply chain management and it includes product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end-of-life management of the product after its useful life".
>
> (Srivastara, 2007, p. 54)

The integration of the green principles into SCM is significant to environmental sustainability as transportation for instance is responsible for 14-20% of global Carbon Dioxide (CO_2) emissions, where road transport accounts for 74% of this (O'Sullivan, 2008). Moreover, governments, specifically in Europe and the U.S. are starting to take a central role in initiating legislations that would govern the organisations' practices towards the environment (Khiewnavawongsa and Schmidt, 2008). For example, the government in the U.S. will be initiating legislation that

would require companies to implement standardised methods for determining their carbon footprint where such data will be disclosed at the consumer and industrial purchase level (Schneiderman, 2009). Figure 3.3 shows the integration of green principles into supply chain management.

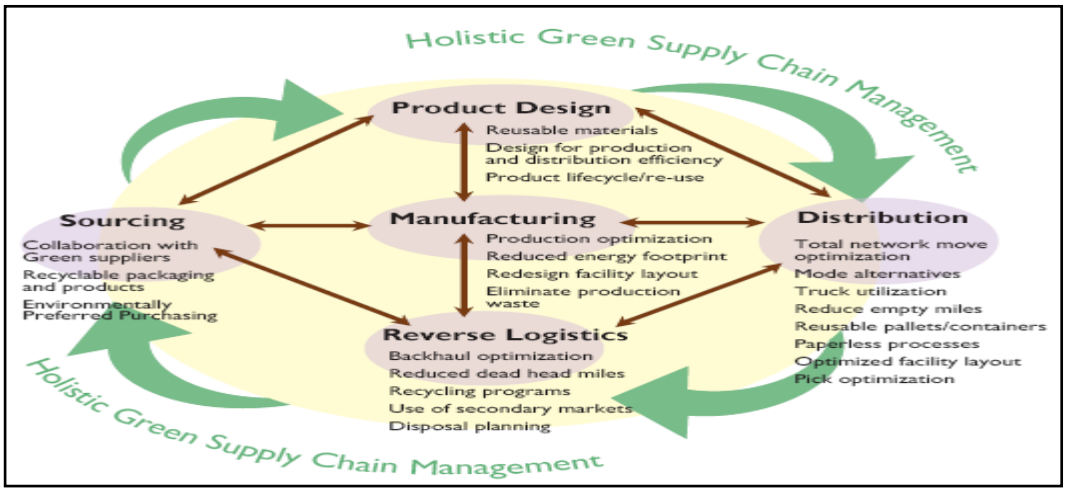


Figure 3.3 – Holistic Green Supply Chain Management

Source: CSC (2008)

It is worth noting that global RMG retailers such as H&M, Marks and Spencer, Next and many more around the globe understood how environment sustainability became an area of concern to today's consumers and they have used it as a powerful marketing strategy to secure competitive advantage in the market (De Brito et *al*., 2008). This is in turn poses challenges to RMG suppliers who are now required to comply by the rules initiated by 'green' RMG retailers in integrating green principles in their SCM as an essential condition towards sustaining their business relations (De Brito et *al*., 2008). As a consequence, logisticians and supply chain managers in RMG suppliers or manufacturers are requested to create strategies and make the necessary trade-offs that would both support the organisation's profitability and environmental responsibility (Schneiderman, 2009).

After highlighting the business trends that impact SCM, it can be concluded that in a way they are all interconnected together and that the presence of one definitely supports the presence of the others. Globalisation is the main frame that supports logistics and SCM activities all over the globe as well as the development of I.T without which

managing global activities, agile SC or QR would have been a rather difficult mission to accomplish.

3.3.1.2 Development Trends

Trends emerged over the years relating to employee development in organisations due to the wide spread recognition of the direct relationship between employee development and performance. These trends are:

- **Learning Organisations**

  A learning organisation as defined by Granville (1996, p.41) "is an organisation that is skilled in creating, acquiring and transferring knowledge and then modifying its behaviour to reflect new knowledge and insights". Tracey and Smith-Doerflein (2001) and Ellinger et *al*. (2002) expressed that the principal of the learning organisation concept lies in the fact that by developing the employees' learning skills and linking their knowledge, there will be an impact on improving the organisation's performance. Within the learning organisation, managers develop systems thinking, information sharing and teamwork (Drew and Smith, 1998). Logistics learning in organisations has received attention in the literature (e.g. Fawcett et *al.*, 1996; Drew and Smith 1998; Ellinger et *al*., 2002; Flint et *al*., 2005). Within a supply chain context, Spekman et *al*. (2002) and Bessant et *al*. (2003) suggested that further benefits can be gained from learning among the wider entity of the supply chain and it can result in both cost reductions and revenue enhancing opportunities. It has also been suggested that the adoption of learning principles in organisations may assist in leveraging the knowledge, skills and abilities of logistics managers (Ellinger et *al.*, 2002). The rationale lies in the fact that as logistics managers are constantly interfacing with the external environment, they are capable of capturing new knowledge which can be integrated into the organisation (Esper et *al*., 2007). Moreover, learning new logistics tactics and strategies could support the organisations' competitive advantage in the market (Esper et *al*., 2007).

- **Skill Requirements**

There is a significant demand for skilled employees for SCM as skills have been shown to impact upon SCM performance (Hunt and Morgan, 1996; Razzaque and Sirat, 2001; Stock and Lambert, 2001; Trunick, 2005). Skill requirements for individuals involved in SCM will continue to increase in response to not only the rapid technological change but also to cope with the trends altering the business environment (Cappelli and Rogovsky, 1994; Kirby, 2003; Granville, 2003). Many authors have noted that there is a significant skill shortage in SC employees as their skills are not developed continuously to match the rapid life cycle of knowledge (Granville, 2003; Myers et *al*., 2004; Smyrtis, 2005). Thus in such a dynamic environment, continuous skills development is necessary for employees to effectively operate supply chains (Sarana, 2006).

- **Learning Technology**

Corresponding to the dynamically changing environment, technology provided solutions for employees involved in SCM and logistics in order to update their skills and knowledge and to cope with the challenges posed by the globalised economy (Neumann et *al*., 2001). The integration of technology with learning, reached out to organisations' and individuals' training needs through e-learning. This method of training has the advantages of being easily accessible, affordable and convenient to suit the different time and place requirements (Burcher et *al*., 2005).

Based on the three previously discussed development trends, it can be concluded that learning organisations can leverage their logistics performance by logistics managers who are capable of capturing new knowledge through constant exposure with the external environment. However this would not be realised unless these managers have the skills required to take advantage of this knowledge, raising the importance of training which is now made available through learning technologies. The next section will provide an insight into the logistics profession and the job responsibilities associated with it.

3.3.2 The Logistics Profession

Careers in supply chain management and logistics are many; ranging from global supply chain executives to local truck drivers. Jobs in logistics are divided into two

main categories: managerial and vocational. Table 3.2 shows examples of managerial and vocational jobs in logistics.

Table 3.2 – Examples of Managerial and Vocational Jobs in Logistics

Managerial	Vocational
Consultant	Driver (light and heavy) vehicles
International Logistics Manager	Loader
Inventory Control Manager	Forklift driver
Logistics Manager	Packer
Purchasing Manager	Stock coordinator
Transportation Manager	Yardmaster

Source: CLM (1998) and Skills for Logistics (2009)

This study focuses only on the managerial career – particularly the job of the senior logistics manager. According to CLM's careers in logistics guide, a senior logistics manager is responsible for overseeing a number of logistics functions which include warehouse and distribution operations, forecasting, planning, logistics systems, customer service and purchasing (CLM, 1998). A logistics manager is responsible for managing logistics personnel in performing day-to-day operations as well as overseeing teams that analyse strategic and tactical processes and costs. He is also responsible for negotiating with suppliers, partners and customers for services and coordinating relationships with logistics service providers. Other responsibilities include managing order fulfillment process from order taking through delivery and ensuring continuous process improvement. Sutton (1993) further added that the responsibilities of a senior logistics manager take account of financial budgeting, staff training and motivation and managing the company's assets.

In other words, a senior logistics manager (or logistician) is in charge of coordinating all the activities to guarantee that the customer's needs are satisfied. According to Rowat (2008), logisticians are responsible of ensuring that the 'five rights' are in place:

- The right goods are available;
- In the right place;
- At the right time;
- In the right quantity and quality;
- At the right price.

Rowat (2008) further added that logisticians are also responsible for developing strategies that would provide the best solutions for the company, its suppliers, and customers while considering the external factors such as international events (natural disasters, wars) and environmental pressures (carbon footprint).

There is always a high demand on logistics personnel at all levels (Cole, 2009; Jackson, 2009). According to Jackson (2009) the demand on logistics employees is still high despite the global economic recession because "companies need logistics experts just as much when business is rough as when it is robust" (Jackson, 2009, p.3). The next sections will thoroughly examine different studies that investigated the skills required for logistics managers in order to successfully perform their responsibilities within their organisations.

3.4 LOGISTICS AND SUPPLY CHAIN MANAGEMENT SKILLS

In response to the emerging business and development trends discussed in the previous section; academics, practitioners and professional associations investigated the necessary skills required for people working in logistics and SCM, specifically logistics managers. Few authors focused on investigating the skills of logistics managers through in-depth investigation such as Gammelgaard and Larson (2001), and Murphy and Poist (1991; 1994; 1998; 2006; 2007). Therefore the following section will thoroughly examine the work of these authors by focusing on the methodologies used in their investigations and presenting their findings. The findings of other studies will also be highlighted in the following sections.

3.4.1 The BLM (Business, Logistics, Management) Framework – Murphy and Poist

The BLM framework developed by Poist in 1984 lists all the desired skills which logistics executives should possess. The framework lists eighty three skills under three main categories:-

- ***Business skills [33 entries]:*** This category comprises knowledge that are directly related to business such as marketing and accounting, as well as knowledge indirectly related to business like sociology and public relations.

- ***Logistics skills [18 entries]:*** This category comprises the skills pertaining to the know-how of the actual logistics functions and the educational knowledge in these functions which include transportation, warehousing, forecasting etc.
- ***Management skills [32 entries]:*** This category is divided into three groups; traditional, non-traditional and personal skills. Traditional skills refer to the basic management functions i.e. planning, organising, leading and controlling. Non-traditional skills include time management and ability to adapt to change. Personal skills refer to unique attributes of managers such as assertiveness and personal grooming.

The framework was updated to include seven more skills in the 'business' and 'management' categories totalling the number of skills to be ninety as a result to the macro environmental changes that emerged during the 1990s (Murphy and Poist, 2006). Although the method through which this framework has been created is not clear, it is the largest framework found in academic literature to list all the skills that a senior logistics manager should possess. Table 3.3 presents the skills in the BLM framework.

Table 3.3 – The Business, Logistics, Management (BLM) Framework

Business Skills	Logistics Skills	Management Skills
Accounting	Customer service	Adapt to change
Business and government	Facilities location	Analytic reasoning
Business and society	Forecasting	Assertiveness
Business ethics	International logistics	Computer expertise
Business history	Inventory management	Decision making ability
Business law	Logistics information management	Delegate
Business strategy	Logistics-related regulations	Enthusiasm
Business writing	Materials handling	Foreign languages
Computer science	Order management	Interpersonal relations
Economic geography	Packaging	Listen and empathise
Electronic commerce	Parts and service support	*Manage customer relations*
Entrepreneurship	Personnel movement	*Manage supplier relations*
Financial management	Production scheduling	Managerial control
Foreign languages	Purchasing	Motivate others
General business administration	Return goods handling	Negotiate
Human resource management	Salvage and scrap disposal	Operational logistics tasks
Industrial engineering	Transport and traffic management	Oral communication
Industrial sociology	Warehousing management	Organise
Information systems management		Outgoing personality
Insurance and real estate		*Personal creativity*
International business		Personal dress
Labour relations		Personal grooming
Macroeconomics		Personal integrity
Marketing management		Persuasion
Microeconomics		Plan
Organisational psychology		Quantitative expertise
Procurement		*Recruit/hire*
Production management		Self-confidence
Public relations		Self-motivation
Quantitative methods		Statesmanship
Regional planning		Supervise others
Speech communication		Systems concept
Statistics		Time management
Supply chain management		Train/mentor
Transport engineering		Visualise future threats/opportunities
Transportation and logistics		Written communication

Note: The skills in italics are newly added to the BLM framework

Source: Murphy and Poist (1998)

Murphy and Poist used the BLM framework to examine the skills needed by logistics managers by conducting several studies in which they have investigated the opinions and perspectives of different experts such as practitioners, recruiters and educators as shown in Table 3.4. In these studies, the BLM framework was used to construct questionnaires in which respondents were asked to rate on a five point Likert scale the degree to which the stated skills are important to their jobs. The samples targeted logistics managers from a wide variety of industries and included organisations of all types and sizes. The data derived from the questionnaires allowed the ranking of items under each category to reflect the importance of each item towards job performance. It is also worth noting that although the BLM framework was originally developed in the USA, it was empirically investigated in a study by Razzaque and Sirat (2001) in Singapore and Malaysia as mentioned in Table 3.4.

Table 3.4 – BLM Framework Research – 1990 to 2008

Author/Year/Country	Topic and Findings
Murphy and Poist, 1991a, USA	Examines the skills of senior level logisticians from the perspective of ***executive recruiters***. The study revealed that management skills were the most important followed by logistics skills and then business skills.
Murphy and Poist, 1991b, USA	Examines the skills of senior level logisticians from ***practitioners***' perspective. The findings were similar to the previous study.
Murphy and Poist, 1994, USA	Compares the views of ***executive search firms, logistics practitioners*** and ***logistics educators*** regarding the relevant skills needed by senior level logistics executives. Again, the findings were the same as the previous studies. However special emphasis was given to traditional skills that were regarded as the foundation upon which the other skills can be developed.
Murphy and Poist, 1998, USA	Examines the skills of senior level logisticians from ***practitioners***' perspective taking into considerations the changes that occurred in the business environment since the first study that was conducted in 1991. Management skills again were on top especially the traditional ones. Logistics skills were the next in importance where non-traditional logistics activities which are viewed as more modern and may or may not be part of logistics depending on the firm (e.g. customer service, distribution communication) were ranked highly. The least important skills were those belonging to the business category.
Razzaque and Sirat, 2001, Singapore	Investigates the skill requirements of senior level logistics managers in countries where logistics is an emerging discipline. This is considered a cross-cultural survey on skill requirements as perceived by the logistics practitioners themselves in Singapore and Malaysia. The findings were consistent with the findings of the previous studies and the emphasis was more on the traditional activities in all three categories.

Table 3.4 – BLM Framework Research – 1990 to 2008

Author/Year/Country	Topic and Findings
Murphy and Poist, 2006, USA	Examines the skill requirements for both ***senior*** and ***entry level logistics managers***. Although the findings were similar to former studies, the difference lay in the perceived importance of the individual items within each skills category to match the differences in the scope of responsibilities of senior and entry level logistics managers.
Murphy and Poist, 2007, USA	Compares the results of the 1991 study that investigated the skill requirements of senior level logistics managers from the perspective of ***executive recruiters*** with present requirements. The results of the study show consistency as well as change from the findings of the 1991 study. The consistency is found in the top importance of management skills followed by logistics skills in which the latter showed a strong overlap between the top five logistics skills in 1991 and 2007. The change is expressed in the special emphasis that was found to promote a more supply chain orientation for logistics managers where supply chain management and production management were ranked among the top five in the business skills.

It is clear from the previous table that all the studies focused particularly on senior level logisticians. The reason for interest in this particular management level is because logistics – as emphasised in the previous sections of this chapter – is of strategic importance to organisations and strategy is determined by top management. Therefore it is very crucial that senior level logistics managers have the necessary skills that will support their organisations to compete more effectively in the business environment. The findings of the different studies presented in Table 3.4 all lead to the same conclusion that logistics managers are to be managers first, logisticians second which emphasises the importance of management skills for senior logistics managers. Sheffi and Klaus (1998) and Mangan et *al*. (2001) also believed the same, stating that logistics managers need a higher level of managerial capabilities more than the basic operational abilities.

The objectives of the studies listed in Table 3.4 were not limited to identify the required skills for logistics managers, but also to provide a framework that could be used in many different ways by the parties that have interest in this topic such as logistics managers, employers, educators and professional organisations. Logistics managers can benefit by having a good insight into their career development in terms of planning and deciding on targeted subjects for continuing education (Murphy and Poist, 2007). Educators specialising in logistics and SCM can plan and design curricula for students as well as provide continuing education and executive development programs for the managers already in the profession. Moreover, professional organisations can use the findings of the mentioned studies for planning annual conferences, distance learning programs and internet seminars (Murphy and Poist, 2007).

Finally, there is one major aspect to criticise in the BLM framework. Murphy and Poist did not provide specific definitions of the items under each skill category and this affects the standardisation of the framework as the meaning of each item could be perceived differently by different people. For instance, there is no clear distinction between ‘speech communication’ in the business skills category and ‘oral communication’ in the management skills category which poses the question of how respondents in the different studies were capable of differentiating between them and providing a rating for each according to their importance for job performance.

Similarly, the difference is unclear between 'computer science' in business skills and 'computer expertise' in management skills. Thus the provision of clear definitions might have highlighted the difference between these terms. Furthermore, the newly added skills 'manage supplier relations' and 'manage customer relations' in the management skills category, can be regarded as integrated aspects with 'purchasing' and 'customer service' respectively in the logistics skills category. This could be perceived as a redundancy of items which in turn can influence the results of the questionnaires conducted using the BLM framework.

3.4.2 Supply Chain Management Skills for Logisticians – Gammelgaard and Larson

Gammelgaard and Larson (2001) recognised that SCM might have implications on the skills needed for logistics managers. Therefore, they investigated the skills that logisticians need for SCM by conducting a survey containing forty five skills that were based on the findings of previous studies namely Murphy and Poist (1991), Borin and Watkins (1998), Gibson et *al*. (1998), Presutti (1999); and Giunipero and Pearcy (2000). The survey targeted practitioners, researchers and educators in the USA who were asked to rate the importance of the skills on a ten points scale. The results of the survey revealed that logisticians in order to practice SCM successfully must have thirty eight skills that have received a mean rate of 7 or more. By conducting factor analysis, the authors defined three distinct skills construct to categorise the thirty eight important skills. These three constructs are: interpersonal/managerial basic skills, quantitative/technological skills, and SCM core skills which are presented in Table 3.5.

Table 3.5 – Supply Chain Skills for Logisticians

Interpersonal/Managerial Basic Skills	Quantitative/Technological Skills	Supply Chain Management Core Skills
Ambition	Database ability	Ability to see the 'big picture'
Critical reasoning	IT systems development	Change management
Decision making	Computer programming	Confidence
Ethical awareness	Quantitative methods	Conflict management
Listening	Software knowledge	Cross-functional awareness
Motivation	Spreadsheets abilities	Foreign language
Organising	Statistical analysis	Knowledge of the industry
Presentation skills		Leadership
Prioritising		Negotiation
Problem solving		Organisational culture awareness
Self-directed learning		Project management
Self-discipline		Selling
Speaking/oral communication		Supply chain awareness
Time Management		Teamwork
Training		Knowledge of latest technology
Writing/written communication		

Source: Gammelgaard and Larson (2001)

As it is clearly shown in the previous table, a significant emphasis is given to quantitative/technological skills by allocating a specific category addressing only this type of skill which was not perceived before having the same level of importance in previous studies investigating skills. However, many authors mentioned the importance of technological skills for logisticians because these skills enable the synchronisation of activities as well as creating relationships that strengthen the supply chain (Williams and Currey, 1990; Buxbaum, 1995; King, 1995; Cooke, 2000; Stock and Lambert, 2001; Giunipero et *al*., 2006).

The other two categories 'interpersonal/managerial basic skills' and 'SCM core skills' are principally management skills which once more reinforce the importance of management skills in the field. Although the skill category 'SCM core skills' may imply specific know-how skills for SCM, it actually presents management skills which are regarded essential to logisticians for SCM. The findings of the study are consistent with

the opinions of other authors who also stated that logisticians should be equipped with a higher degree of managerial talent in order to set up supply chains (Sheffi and Klaus, 1997; Le May et *al*., 1999; Mangan et *al*., 2001; Christopher, 2004; Giunipero et *al*., 2006).

Gammelgaard and Larson (2001) also conducted five case interviews with logistics managers in Denmark to validate the survey results. The interviews asked respondents to describe their job responsibilities, and the knowledge and competencies required to perform them. The authors noted that many of the skill areas mentioned in the interviews were highly rated by survey respondents which supported the validity of the survey results.

It is worth noting that Murphy and Poist, and Gammelgaard and Larson were not the only authors who investigated the topic of logistics skills. Table 3.6 presents an example of research on logistics skills and the major outcomes.

Table 3.6 – Examples of Research on Logistics Skills

Author(s)/year	Title of Research	Major Outcome
Sutton (1993)	The role of the logistics manager/director	Logistics managers must be kept abreast of seven key knowledge areas: supply, tariffs, industrial challenges, cost pressures, wages pressures, legal requirements, and health and safety.
Poist et al. (2000)	Preparation of logistics managers for the contemporary environment of the European Union	Three tiers of skills are identified in order of priority for logistics managers: (1) Communication, adaptability/flexibility capability, and multi-functional capabilities, (2) leadership and interpersonal skills (3) functional/technical skills.
Mangan et al. (2001)	Education, training and the role of logistics managers in Ireland	Areas of potential benefits for logistics managers include: logistics and SCM, IT, warehouse management, distribution and transport management, negotiations, quantitative and qualitative core skills.
Van Hoek et al. (2002)	Managers in supply chain management, the critical dimension	The ability to influence has a great impact on many aspects of supply chain managers and leaders which include problem solving, recognition, organisation and leadership.
Giunipero et al. (2005)	Purchasing/supply chain management flexibility: Moving to an entrepreneurial skill set	The purchasing/supply management flexibility skills set comprises: risk management, interpersonal communication, influencing and persuasion, planning, decision making, internal motivation, and creativity.
Mangan and Christopher (2005)	Management development and the supply chain manager of the future	Key knowledge areas and competencies/skills required by logistics and supply chain managers are: (1) General: finance, IT, management/strategy (2) Logistics/SCM specific: operations/SCM, focus on processes/flows, legal, security and international trade, multimodal logistics, logistics in emerging markets (3) Competencies/Skills: analytical, interpersonal, leadership, change management, project management.
Giunipero et al. (2006)	Supply management's evolution: key skill sets for the supply manager of the future	Supply chain managers are required to align their skills with trends impacting the function. The skills are: strategic planning, team building, decision making, broad financial skills, communication and technical skills.

3.4.3 Findings from the Literature Review on Logistics Skills

The previous examination of the literature on logistics and supply chain skills reveals some important findings that will assist in shaping the design of this study:

- Nearly all the studies examined were performed in developed countries i.e. U.S.A and Europe, very few were conducted in Asia, and none in Africa or the Middle East region. This shows the absence in research that addresses the skills of logistics managers in developing countries and strengthens the purpose of this research.
- All the studies reviewed did not address logistics managers in particular industrial sectors but rather examined samples of logistics managers across a variety of sectors in order to generalise results. It would be interesting to examine the implications that a specific industry – like the RMG manufacturing sector - might have on the skills of logistics managers, and to compare the findings with those of other skills related research.
- Seeking the opinions of practitioners, recruiters and academics proved to be a common and an effective approach as it combines the different perspectives of expertise towards defining the skills required for logistics managers and thus avoiding bias.
- There is a lack of consistency in defining the categories upon which the logistics manager's skills are grouped. For instance, Poist (1984) identified 'business', 'logistics' and 'management', Gammelgaard and Larson (2001) identified 'interpersonal/managerial', 'quantitative/technological' and 'SCM core skills' and, Mangan and Christopher (2005) identified 'general', 'logistics/SCM specific' and 'competencies/skills'.
- The studies examined did not explicitly show the connection between the job responsibilities of logistics managers and the implications they have on the skills required.
- There is a significant variance in the number of skills addressed within each study. One interpretation of this could be the depth of the investigation that each researcher aimed to fulfil.

- The use of triangulation that was portrayed in the different data collection methods that include literature reviews, surveys and interviews proved to be effective to validate the results in a number of studies.
- Researchers differ in the priorities they set for the required skills for logistics managers. The existence of such differences can be attributed to a number of reasons:
    - the managerial levels in the samples examined;
    - the country where the research was conducted;
    - the time the research was conducted;
    - the level of logistics expertise in the samples examined;
    - the focus of the research on either current or future skills requirements; and
    - the nature of the managers' job settings whether locally or internationally oriented.

  Therefore, it can be concluded that it is not possible to provide a universally standard set of skills for logistics managers as such skills are highly influenced by the previously stated reasons.

Concluding the literature on logistics skills, it can be stated that logistics is a profession that is highly influenced by external forces that shape the dynamics of the marketplace. Consequently those involved in such a profession, need to be constantly trained and developed to cope with such changes. The following sections will stress on the importance of training and development for logistics managers in addition to highlighting some of the key training elements.

3.5 TRAINING IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

The dynamic nature of logistics and SCM increases the necessity of continuous education and learning that are acquired through training (Kisperska-Morón, 2006). Best practice companies regard training and human resource development as a strategic need, not as an optional budget item which can be reduced over the years (Gowen and Tallon, 2003).

In the earlier studies conducted by Ernst and Whinney (1987) and Bowersox et *al*. (1989), it was recognised that human resource development directly impacts the success of SCM practices and is a critical factor in achieving logistics excellence. The studies examined a large number of organisations to determine the competencies which result in superior logistics performance and consequently identified human resource development as directly impacting the success of SCM practices. Moreover, they have identified that organisations regarded as excellent in SCM practices have a strong emphasis on the training of its employees.

Sarana (2006) cited that the value of educating staff is reflected in reducing uncertainty and optimising logistics activities. Granville (1996) also expressed that the skills/knowledge acquired by training, results in value-adding employees who can leverage the organisation's logistics potential which is a major component of business strategy. Tracey and Smith-Doerflein (2001) further described that "the better the organisations are at providing learning, the more valuable their training programs, the more effective their employees and the more successful their supply chain" (Tracey and Smith-Doerflein, 2001, p.101).

The study conducted by Gowen III and Tallon (2003) revealed that the four dimensions of sustainable competitive advantage in supply chains which are - value added, rareness, imitation cost barrier, and organisational structure for implementation – are activated by employees' training as well as managerial support. Stock and Lambert (2001) also stated that training for logistics employees has been shown to improve individual performance, morale, company loyalty, efficiency and effectiveness. They have also added that organisations with comprehensive training programs are more capable of providing a higher level of customer service, retaining employees for longer periods and achieve greater overall profitability.

Granville (2003) stressed that companies must be very aware of the costs associated with badly managed logistics training i.e. ignorance costs and lost opportunity costs. Examples of such costs include the cost of shipping wrong products, cost of loss/damage, and cost of premium transport to replace. He also stated that the costs of lost opportunities are reflected in the profit impact of the lost revenues from

cancellation of orders or lost business, as a result of the actions of the logistics department e.g. not delivering on time or not having stock available. Therefore he suggests that companies must not regard training costs as unnecessary expenses because the effect of the lack of training or badly organised training can negatively impact the business. Jackson (2009) also agrees with Granville (2003) and he pointed out that while it seems necessary to cut training budgets, especially during recession periods, well trained staff with recognised qualifications and skills can make the difference between winning and losing contracts and can have a direct influence on a business' bottom line. Moreover, Collier et *al.* (2007) identified that companies which do not train their logistics employees are two and a half times more likely to fail in the market as these companies would not have the skills and flexibility to compete successfully.

Thus it could be said that training not only has a positive impact on developing the logistics' personnel's careers, but it also has a great impact on the organisations' performance and profitability in the market. This consequently supports the purpose of this study in stressing on the importance of training logistics managers who work in RMG manufacturing companies to support the competitiveness of Egypt's RMG exports in the global market. The following sections will highlight the different types of training in logistics as well as the challenges faced in training logistics employees.

3.5.1 The Areas of Training and Development in Logistics

There are numerous types of training that are used in logistics. The reason for the existence of different types is to suit the different demand in terms of training needs, cost and time. Table 3.7 outlines the types of logistics training.

Table 3.7 – Types of Logistics Training

Types	Definition
Internal training/ In-house training	• For undergraduate or graduate apprentices. • Training is run for employees upon entry and is concurrent with attendance on external courses. • It includes induction course and special work assignments.
In-house training with external trainer	• It targets members of the logistics function. • Courses are intensive and of short duration. • They develop knowledge and skills, and influence attitudes and encourage cooperation. • It involves case studies and role-playing exercises.
Formal education	• Courses can be part-time or full-time. • They are provided by universities and professional bodies. • They cover undergraduate/postgraduate degree courses and specific courses. • They provide general education in business aspects and more specified education in logistics management and the techniques used in the field.

Source: *Quayle and Jones (1999), Mangan et al. (2001) and Stock and Lambert (2001)*

Burcher et *al*. (2005) stated that busy managers face a challenge in staying up to date with the new knowledge in logistics and SCM, and suggested that memberships of professional associations could support their knowledge enhancement in specific areas.

Individuals working in logistics and SCM are developed to use tools, techniques and strategies that would enable the development of proficient employees. Table 3.8 presents the main areas of logistics employees' development and their outcome.

Table 3.8 – Areas of Logistics Employees' Development and Their Outcome

Areas of Employee Development	Outcome
The use of new technologies	- Becoming computer literate. - Acquiring the ability to analyse data. - Acquiring knowledge of statistics, drawing conclusions, solving problems and presenting recommendations.
Learning to learn	- Effectively using information. - Modifying their behaviour. - Identifying new opportunities.
Developing into relationship managers	- Cultivating an ability to cooperate rather than compete through interpersonal, teamwork and communication skills.
Functioning in a dynamic environment	- Growing toward self-management. - Sharing information and ideas. - Thinking in terms of system performance. - Becoming more adaptive and creative.

Source: Adapted from Tracey and Smith-Doerflein (2001)

Bowersox et *al*. (2000) emphasised that one of the mega trends revolutionising logistics and SCM relates to the shift from individual employee skill training to develop knowledge-based learning. They further explained that employee skill development must be in the context with the overall process in terms of 'objectives, dynamics and measurements'. A truck driver for instance must not only be skilled in driving, but also he needs the knowledge on how he fits into the logistical process (Bowersox et *al*., 2000). A similar point is clarified by Cole (2009) where she stated that logistics needs "T-shaped people, with the vertical bar representing functional capability in their jobs and the horizontal cross-bar being an ability to think broadly about the economic context of the company, its customers and the end-to-end supply chain" (Cole, 2009, p. 16). Table 3.9 shows the key training elements for the operational staff, middle management and senior management in logistics.

Table 3.9 – Key Training Elements for the Operational Staff, Middle Management and Senior Management in Logistics

Operational Staff	Middle Management	Senior Management
Focus on general logistics skills and in-depth understanding of 2-3 operational areas	Focus on overall understanding of the segment	Focus on overall understanding of the segment and leadership
- Process & systems knowledge. - Data collection & systems input capability. - Problem solving skills. - Continued manual ability. - Customer relation and communication skills. - Health and safety training.	- Analytical capability & process improvement. - Systems application and related knowledge. - Regulatory knowledge. - Planning and forecasting skills. - Cost saving and optimisation skills.	- Contract management. - Regulatory knowledge. - Negotiation skills. - Vendors relation/ management. - Performance measurement and quality management. - Process & change management. - Global coordination and impact analysis skills.

Source: Confederation of Indian Industry (2007)

It is clearly presented in the previous table that the areas for training are different across the three different managerial levels in logistics which reflect the job responsibilities for each level.

Cole (2009) added that those who emerge from blue-collar jobs to managerial positions in logistics need management training, while those who enter the organisation at graduate level and become immediately responsible in managerial positions need training on operational knowledge. She also stated that managers must transform from tacticians who implement strategy to leaders who envision it, which consequently requires a broad understanding of other organisations' operations including suppliers and customers.

3.5.2 Challenges of Training and Development in Logistics

In order to provide training activities that would meet the company's needs and objectives, it is important for those responsible for planning and conducting training activities for logistics employees to be aware of the potential challenges they may face in the provision of training. Palšaitis and Bazaras (2007) stated a number of 'problematical points' that may arise in the logistics training process which are illustrated in Figure 3.4.

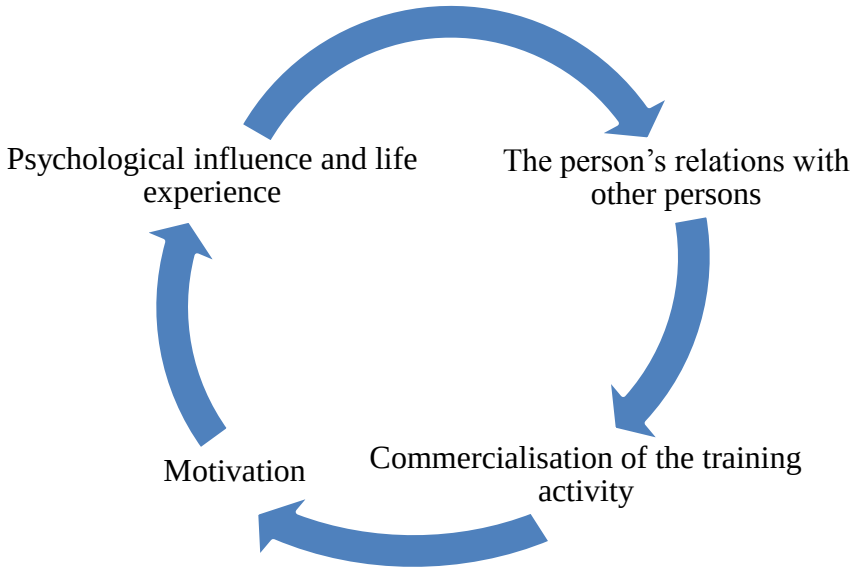


Figure 3.4 – Problematic Areas in the Training Process of Logistics Employees

Source: Palšaitis and Bazaras (2007)

The authors stated that the 'psychological influence and life experience' challenge can be the result of problems arising from the person's life positions and the influence of the environment on him. 'The person's relations with other persons' specifically reflect the relationship between the trainees and trainers. A problem could arise at this point when the trainer is much younger than the trainees who in turn could create a barrier towards the training process because of their stereotypical thinking. The authors added that such a barrier can make the training process impossible even though the trainer is competent enough. The third challenge 'commercialisation of the training activity' refers to the numerous training courses offered by consultancy and training firms which highly depend on non-formal education methods. The problem of offering such training courses is that they often do not convey systematic knowledge in addition to the

misconception of trainees that they will become competent once the training course fees are paid. The final challenge stated by Palšaitis and Bazaras (2007) is motivation. Trainees can be motivated only when they fully understand the benefits from knowledge gained during training events. Trainees' motivation is negatively affected by a number of problems: insufficient teaching methodology, insufficient flexibility, and poor understanding of the knowledge's benefits in real work settings.

Another critical point that Palšaitis and Bazaras (2007) emphasised is the problem with the transformation process of data into knowledge. They firstly explained that data are transformed into information which then creates knowledge. The problem that occurs in logistics training is that many consultancy and training firms stop at the point of providing information and they do not guide trainees on how to transfer the information gained into knowledge to be applied in their workplace. The purpose of any training events is to enable trainees to utilise knowledge in the creation of added value for the trainees' business. Therefore companies must take this point into consideration in the provision of training activities for logistics employees.

Cole (2009) identified that in logistics "every promotion should bring more training" (Cole, 2009, p. 19). This statement is a challenge in training and development in logistics because the higher in position a person's gets, the more difficult it becomes to allocate time for training. However, time is not the only challenge, because as people succeed in acquiring higher positions, the lesser their needs become towards training due to their beliefs that they are experienced enough and training is not a necessity. This is a misconception that unfortunately the majority of managers believe and this is the reason why training senior managers is a challenge.

According to a study by the Confederation of Indian Industry (2007) one of the key challenges in training in logistics is the creation of demand for training. The authors stated that despite the gap which might exist in logistics skills, the people who require training are reluctant towards training and do not have the incentive or inclination to be trained. Such reluctance is attributed to their belief that they would not attain any immediate benefits from training that are worth the time taken away from their earning time. Moreover, middle management and supervisory levels in logistics share a

common disinterest for getting trained on the latest practices in logistics due to the prolonged period of working in traditional ways which makes it challenging for them to upgrade their skills. Therefore the authors suggest that companies need to develop more credibility and to enhance perception of the utility of training for logistics personnel by implementing innovative training practices. Another suggestion is concerned with the provision of monetary and progression incentives for employees who get trained which would encourage enrolment on training events.

The previous section discussed some challenges faced in the training process of logistics employees which should be well considered by those responsible for the training function in order to successfully attain the aspired goals from the training activities.

3.6 CHAPTER SUMMARY

This chapter provided an overview on the development of logistics in business and its vital role in supporting the different competitive strategies implemented by organisations to compete in the different markets. The role of logistics managers is emphasised as a result of their contributions towards corporate competitive strategies and the different business and development trends that increased the demand on skilled logistics managers. A review on the studies that investigated the skills required for logistics managers was presented by highlighting their methodologies and findings. The chapter concluded with a review on the importance of training logistics employees towards organisations' performance and the challenges faced in the process of training.

The literature review on the issues mentioned previously revealed some noteworthy information for the design of this study. The lack of consistency in defining the skills required for logistics managers and the variance witnessed in skills related research calls for a structured method to determine the skills needed for logistics managers to work effectively. Moreover, the importance of training for logistics managers and its impact on organisations' performance draws attention to examine the basis upon which skills deficiencies are identified. Therefore the next chapter will examine the competency approach proposed by Ferrara and Morvillo (2002) as a method that defines the skills needed to perform jobs and that can be used as a tool to determine training needs.

CHAPTER FOUR: THE COMPETENCY APPROACH

4.1 INTRODUCTION

In the previous chapter, the skills and training of logistics managers were shown to have a direct influence on organisations' competitiveness. This chapter will draw upon these two crucial aspects and will present the competency approach as a method to determine the skills and knowledge (competencies) needed for senior logistics managers to perform their job effectively. These competencies create a framework – called a competency framework - which in turn can be used as a reference for organisations to conduct training needs analysis and to guide the identification of skills deficiencies. Consequently this will support organisations in planning and providing suitable training, eventually leading to better performance and competitiveness.

This chapter starts by highlighting the concept, benefits and uses of competency frameworks and the common terms used throughout the study. A review of the methodologies used in creating competency frameworks is presented to support the choice of the appropriate methodology that will fulfil the aim and objectives of this study. This review presents the process, the strengths and weaknesses of each method. This chapter also discusses the elements that raise criticism on competency frameworks specifically the issue of generalisation in order for these elements to be considered in creating the framework. Finally, the use of competency frameworks for training purposes in organisations is presented to explore the possible methods by which the designed framework can be used for the training purposes of senior logistics managers in Egyptian RMG companies.

4.2 COMPETENCY FRAMEWORKS

A competency framework (CF) is a renowned practice in human resource management (HRM) that was developed approximately fifty years ago (Mansfield, 2000). A competency framework (or model) is a descriptive tool that identifies the knowledge, skills, abilities, and behaviour needed to perform effectively in an organisation or in a

specific job group (Lucia and Lepsinger, 1999). The interest in competency frameworks increased when it became one of the approaches through which organisations can achieve competitive advantage by acknowledging the importance of human competencies to organisations' success (Spencer and Spencer, 1993; McLagan, 1996). A CF, as explained by McLagan (1996), can be used as a tool for planning and improving HRM systems such as recruitment and selection, training, assessment and career pathing.

The competency approach was proposed by Ferrara and Morvillo (2002) as a method to define the skills and knowledge needed for the logistics profession. In their investigation on training in logistics and freight transport in Europe, they examined a number of techniques for training needs analysis (TNA) that included: the Delphi technique, repertory grid, SWOT analysis and job analysis. They concluded that in order to accurately define skills deficiencies, organisations need to develop a feasible reference upon which to measure performance and detect deficiencies. They proposed the use of the competency approach that uses the job profiles or the functions and tasks of logistics personnel to define the skills and knowledge needed for effective job performance. Appendix 1 shows an example of a competency framework for an HR developer in the automotive industry.

Ferrara and Morvillo (2002) justified that a complex and an evolving job like logistics requires an input-based approach i.e. to describe the underlying elements that lead to competent performance instead of an output based approach that describes performance standards. The views of Ferrara and Morvillo (2002) were previously emphasised by John Flanagan in 1950s and David McClelland in the 1970s who both promoted the use of CF for all jobs and not just for complex or challenging jobs like logistics (Rothwell and Lindholm, 1999; Draganidis and Mentzas, 2006).

Despite the suggestion made by Ferrara and Morvillo (2002), the search for a CF for the logistics profession, specifically logistics managers has yielded no positive results. However, the search revealed the existence of many CFs that targeted different professions such as architects, doctors, teachers and nurses which were created and implemented in developed countries that include Australia, U.S.A and U.K.

This in turn emphasises the gap in literature that the study is attempting to fill through the design of a CF for logistics managers in RMG manufacturing companies in Egypt.

The following section will present the uses and applications of CFs in organisations, followed by a highlight on the terms which will be used throughout the study.

4.2.1 Benefits and Uses of Competency Frameworks

The widespread use of CFs is attributed to the benefits they bring to organisations, particularly the provision of a common language across the organisation and the adoption of change as demonstrated in the following sections (Mansfield, 2000). Users of CFs include businesses, governmental authorities, and not-for-profit organisations i.e. hospitals, universities and even international organisations such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Competency modelling helps in the communication of a company's strategic intentions and gives organisations a 'common language' in the form of a conceptual framework to discuss the different aspects of HRM (Mansfield, 2000; Viitala, 2005). In staffing, competencies are used to select and promote employees whereas in HR development they are used to identify and close the gaps in the employees' capabilities by providing suitable training and development (Rowe, 1995, Hauenstein, 2000). In performance management, competencies and results are evaluated to examine how a job was done according to the results achieved (Fletcher, 1997). Thus a CF gets everyone pointed in the same direction across the different functions and it helps everyone in the organisation to be more effective (Green, 1999; Armstrong, 2006). Table 4.1 shows the potential uses of CFs.

It is also worth noting that according to the Competency and Emotional Intelligence 2003/4 survey in Armstrong (2006) revealed that the top four uses of competencies were as follow:

1. Performance management – 89%.
2. Training and development – 85%.
3. Selection – 85%.
4. Recruitment – 81%.

The use of competency frameworks in training and development will be further discussed in section 4.5.

Table 4.1 - The Potential Uses of Competency Frameworks

- ***A framework for restructuring a role.***
- ***A framework for assessing performance of individuals and groups.***
- ***A framework for improving work processes.***
- ***A framework for conducting a skills audit.***
- ***A framework for conducting training needs analysis.***
- ***A framework for recruitment.***
- ***A framework for career development.***
- ***A framework succession planning.***
- ***A framework for a new reward system.***
- ***A framework for identifying mobility of employees across the organisation.***
- ***A framework for linking internal assessment to external accreditation.***
- ***A framework to define requirements for a new role or area of business.***

Source: *Fletcher (1997)*

Another benefit that CFs bring to organisations is the facilitation of change i.e. refocusing the organisation on new considerations in the organisation's business environment and directing the workforce to acquire the competencies required to cope with these changes (Armstrong, 2006; Abuquayyas, 2007). Organisations encounter major transformations over time such as structural change, strategic planning or cultural change which is supported by management education, quality circles and mission-philosophy statements that consume a lot of time and do not help the organisations become more competitive (Boam and Sparrow, 1992). The reason for their failure is simply because these large scale change programmes fail to change individuals' behaviour (Boam and Sparrow, 1992). Thus the competency approach facilitates the change in individuals' behaviour which effectively embraces the new organisational

changes. As described by Mansfield (2000), CFs work well as "vehicles for driving organisational change" (Mansfield, 2000, p.4).

Therefore it can be concluded that the use of CFs would not be limited to being a reference upon which organisations can determine training needs, but also it can assist organisations in a variety of HRM functions which include recruitment, succession planning, career development and more. CFs can also be of great use in supporting change in organisations by directing the workforce towards the acquisition of new competencies. The following section will present the definitions of the terms which will be used throughout the study.

4.2.2 Definitions

The term 'competency' has been criticised that it suffers from conceptual ambiguity and lack of consensus about its precise definition among experts (Armstrong, 1995; Schippmann et *al*., 2000; Iles, 2001; Moore et *al*., 2002). It has been defined in the literature from several points of view, and according to Strebler et *al*. (1997), the term has no single widely accepted definition.

A review of the literature by Burgoyne (1993) as cited in Lin (2005) shows that a variety of scholars and practitioners have defined the term 'competency' according to several perspectives:

- Psychologists were concerned with the concept as a measure of ability (Sternberg and Kolligian, 1990) and whether the obvious performance of a person represented his underlying traits.
- Management theorists applied a functional analysis to determine the methods by which organisational goals are to be achieved through improved individual performance (Burgoyne, 1993).
- Human resource managers viewed the concept as a technical tool to implement strategic direction through the tactics of recruitment, training, assessment, promotion and personnel planning (Burgoyne, 1993).
- Politicians involved in the political process such as in Trade Unions, particularly in the U.K. and Australia, have used the concept as means of improving the efficiency of the labour market. *The NVQ/SNVQ competences* refer to the National Vocational

Qualifications (NVQ) and Scottish National Vocational Qualifications (SNVQ) which were developed in the U.K. to specify the minimum standards for the achievement of set tasks and activities (Fletcher, 1997; Armstrong, 2006).

Hoffmann (1999) suggests that the meaning of competency "emerges from the required application of the concept as it relates to human performance" and that it "shifts according to the context of its use and requirements of the user" (Hoffmann, 1999, p. 277 and p.281). Therefore, for the purpose of this study, ***competency*** would refer to the inputs of different elements that relate to knowledge, skills or attributes (traits/characteristics) which are associated with effective job performance (Hartle, 1995; Ferrara and Morvillo, 2002; Garrett-Owens et *al.*, 2003; Sim, 2008).

In an attempt to provide further refining to the term, Spencer et *al.* (1990) categorised competencies into *essential* competencies and *differential* competencies as shown in Figure 4.1.

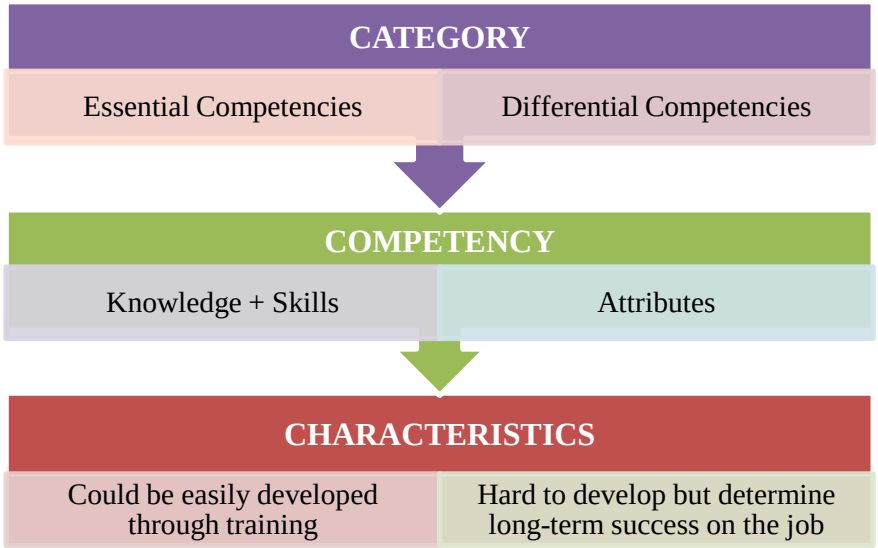


Figure 4.1- Essential and Differential Competencies

Source: Author based on Spencer et al. (1990)

Essential Competencies comprise knowledge and skills which are needed by everyone in a specified job, and they could be developed through training and are relatively easy to identify. *Differential Competencies* include attributes i.e. traits and motives, which

distinguish superior performance from average performance. They are generally hard to develop although a valid competency-development methodology can support the definition of these attributes, its measurement and reward.

It was noted in the literature that some authors use 'competence' to refer to 'competency' although they are both different (McBeath, 1990; Brown, 1994). Burgoyne (1988) provided a clear distinction between competence and competency by explaining that *competence* (plural competences) is the expression of performance at work in output terms whereas *competency* (plural competencies) describes the inputs which help achieve successful performance at work. In other words, ***competences*** are about the work and its achievement while ***competencies*** are about the people who do the work (Fletcher, 1997).

This study will focus on the 'essential' competencies i.e. the skills and knowledge that are necessary for effective job performance. ***Skills***, in this regard, refer to any combination of mental and physical qualities that is useful in a work context and need considerable training to acquire (More, 1980). Skills are also perceived as a particular talent like the ability of making effective presentations or conducting successful negotiations (Tucker and Cofsky, 1994). According to Proctor and Dutta (1995) a skill refers to a goal-directed, well-organised behaviour that is acquired through practice and performed with economy of effort.

Knowledge, as defined by Winterton et *al*. (2005), refers to the theory, concepts, and tacit knowledge gained as a result of the experience of performing certain tasks. Knowledge either describes the general knowledge that is needed irrespective of any occupational context or specific knowledge that is specific to a sector or particular group of occupations (Winterton et *al*., 2005). Klieme et *al*. (2004) claim that higher competency levels are characterised by the increased processing of knowledge, in a way that at higher levels, knowledge is converted to skills.

Hence, this study will later attempt to investigate the skills and knowledge elements required to create the competencies necessary for senior logistics managers to achieve effective job performance. This investigation would lead to the creation of a CF which

can then be used as a reference upon which RMG manufacturing firms can determine the skills deficiencies and the training required for senior logistics managers. The following section will provide an overview on the methodologies that organisations can follow to create CFs. This overview will also assist in the selection of the suitable methodology for the creation of the CF in this study.

4.3 METHODOLOGIES OF COMPETENCY FRAMEWORK DESIGN

Research conducted on CF design over the past thirty years has resulted in the provision of guidelines or methods for the organisations wishing to design a CF. There are numerous methods in the literature from which organisations can select the most appropriate to suit their intended goals. The literature revealed that the methods used in designing CFs are: the traditional method, the strategy based, the value based and the practical method.

4.3.1 The Traditional Method

The 'traditional' or 'classic' method of CF design refers to the *research-based* approach made popular by the late David McClelland (1973) and by Spencer and Spencer (1993). This method, which is also called the 'job-based' approach by Cardy and Selvarajan (2006) is essentially based upon behavioral research on high-performance employees in a particular job (Briscoe and Hall, 1999). It aims to identify the criteria or measures that identify superior performers from average performers in the job to be studied (Spencer and Spencer, 1993). The process involves the interview of the top performers using a *behavioral event interview* (BEI) which is an in-depth interview technique that is the 'distinguishing symbol' of the research-based method. This technique includes probes that yield data about the interviewees' personality and what they think about, feel, and want to accomplish in dealing with a certain situation (Spencer and Spencer, 1993). This allows the interviewer to measure competencies such as achievement motivation or logical ways of thinking and solving problems. There are also other techniques used to collect such data like expert panels, surveys, job/task analysis and direct observations. Table 4.2 describes the advantages and disadvantages associated with the various techniques of data collection in the process of designing a CF.

Table 4.2 – Advantages and Disadvantages of Data Collection Techniques in the Classic Method of Competency Framework Design

Method	Definition	Advantages	Disadvantages
Behavioural Event Interview [BEI]	In-depth interview technique includes probes that yield data about the interviewees' personality.	- Empirical identification of competencies different from those generated from other data collection methods. - Generate data for assessment, training and career pathing.	- Time and cost. - Expertise requirements. - Impractical for the analysis of many jobs.
Expert Panels	A group of experts that include supervisors, outside experts or HR professionals who are asked to prioritise the characteristics which are important to job success.	- Quick and efficient collection of valuable data.	- Omission of critical competency factors for which panel members lack psychological or technical vocabulary.
Surveys	Expert panel members and job holders rate competency items according to their importance in effective job performance and then a statistical analysis of their ratings provides a numerical ranking of skills according to importance for effective performance.	- The quickest and cheapest collection of sufficient data for statistical analysis. - It allows employees to have an input and builds consensus for study findings.	- Data are limited to the items included in the survey.
Job/Task Analysis	Employees are requested to list in great detail each task or action the jobholder performs in a given period of time.	- Produces very complete job descriptions. - Can validate data collected by other methods.	- Provides characteristics of the job rather than those of the people who do the job well. - Task lists tend to be too detailed to be practical.
Direct Observation	Employees are directly observed while performing critical job tasks and their behaviors are coded for competencies.	- A good way to identify or check competencies suggested by panel, survey and BEI data.	- Expensive

Source: Author based on Spencer and Spencer (1993)

Responses collected using any of the data collection methods mentioned in Table 4.2, are then analysed and validated by different methods; for instance, in the 'concurrent cross-validation', the BEI is conducted on a second sample of people to measure whether the competencies outlined in the framework signifies top performers from average performers in the second sample (Spencer and Spencer, 1993). Another validation method is the 'predictive validity' in which employees are trained using the competencies identified in the framework and then examined to see if these employees actually perform better in the future (Spencer and Spencer, 1993). Figure 4.2 shows the process of developing a CF using the research-based method.

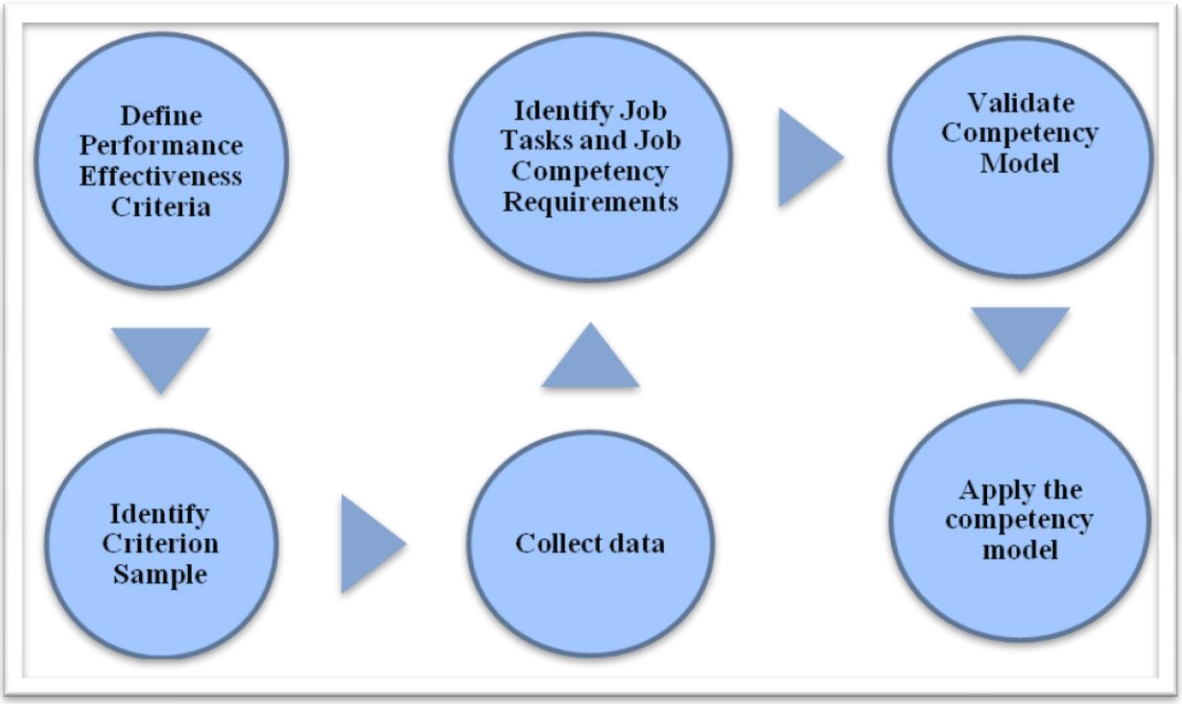


Figure 4.2 – The Six Steps Process of the Research-Based Method
Source: Author based on Spencer and Spencer (1993)

The principal advantage of the research-based method is that the resulting competencies are related to validated behaviours empirically correlated with successful performance in a particular organisation (Briscoe and Hall, 1999). Also the use of BEIs which greatly rely on the involvement of executives leads afterwards to greater enthusiasm for the implementation of the competencies (Green, 1999).

However, the research-based approach has been criticised for a number of reasons, where the most common criticism as expressed by Briscoe and Hall (1999) is that the

research-based approach focuses on past or current behaviour of executives to develop future competencies. Their criticism was supported by the fact that the future has such an ambiguous nature that prevents one from knowing whether the current ideal performers will be able to cope with the requirements of future performance. In addition, Dalton (1997) endorsed the view that, as the creation of a research-based CF is costly; the organisation becomes attached to it even when conditions change. Other authors were also sceptical about the extent to which this method can actually identify competencies which cannot be measured or observed reliably (Rothwell et *al*., 1999). But, Cardy and Selvarajan (2006) pinpointed that the competencies developed using this approach are considered to be 'static' in nature since the competencies reflect the performance of the current job and are based on the assumption that the current job will not dramatically change. Therefore they suggested that this approach in competency modelling should be used when addressing a "stable and relatively unchanging context" (Cardy and Selvarajan, 2006, p. 243). This remark implies that the research based approach may not be the suitable method to develop a CF for logistics managers because as stated previously by Ferrara and Morvillo (2002), logistics is a complex and evolving job which contradicts with Cardy and Selvarajan's recommendation.

Although the classic method in CF design is considered the most popular, other methodologies have been developed in recent years to match the dynamic nature of today's business environment and to overcome the flaws of the classic method, namely the ones related to cost and time. It is worth mentioning that all other methods integrate parts of the process of the research-based method outlined in Figure 4.2, but modifications were made to suit the goals of each approach.

4.3.2 The Strategy-Based Approach

The 'strategy-based' or the 'future' approach creates competencies based on the mission and future strategic direction of the organisation (Cardy and Selvarajan, 2006). This method was developed by organisations as a response to the quickly changing business environment and the increased competition in the market (Cardy and Selvarajan, 2006). Yet, the core strength of this method, which is the ability to respond to an unknown future, is also considered its point of weakness (Briscoe and Hall, 1999).

Therefore, the success of this approach highly depends on three main elements: (1) the efficacy with which a company forecasts the future, (2) the appropriateness of the resulting strategy to that future and (3) the degree to which inferred competencies support strategic performance (Briscoe and Hall, 1999).

The process of developing a CF using the strategy-based approach combines several groups (managers, academics and stakeholders) to outline the future skills needed within the company's strategy (Briscoe and Hall, 1999). In addition, interviews and surveys are used for executives who are requested to outline the company's strategic direction and challenges, as well as their roles and related skills in the change. Some companies also use external consultants' competency databases to predict required competencies based upon organisations that have passed through similar strategic stages.

Since this approach depends on the firm's strategy, the CF will change each time the firm's strategy is changed to cope with the new forecasted challenges of the business environment. This gives the firm a significant strength in effectively responding to the changing market environment and to stay ahead of competition. This approach may be suitable if the CF is developed for a certain organisation with a specific strategic direction but would not be suitable if the CF focuses on a particular job within an industry where each company has different goals and strategies. Therefore, the strategy based approach would not be appropriate for the creation of the CF for senior logistics managers in RMG manufacturing companies in Egypt.

4.3.3 The Value-Based Approach

In the value-based approach, competencies are developed based on the values that the company wants to be known for and promote (Cardy and Selvarajan, 2006). Some companies prefer to use this approach in competency modelling since the focus on values, as stated by Collins and Porras (1994), can offer a stable anchor for organisations operating in turbulent environments. Briscoe and Hall (1999) concurred with Collins and Porras (1994) that values can actually provide strategic stability and direction across long periods of time for the organisation.

The competencies developed using a value-based approach focus on the process of work in the organisation to clearly establish a strong organisational culture of how work should be carried out. Hence, the value-based approach can be effective in developing ethical competencies which, as cited by Spurgin (2004), may include knowledge of ethical philosophy, awareness of business ethics issues and the ability to critically evaluate arguments on business ethics issues. Cardy and Selvarajan (2006) further added that the use of the right values as guiding competencies enable employees to make ethical choices even in situations that are "ambiguous or were not anticipated with regulations" (Cardy and Selvarajan, 2006, p. 242). Examples of well-known organisations applying this approach are Hewlett-Packard (HP) and Johnson & Johnson (Briscoe and Hall, 1999).

A key characteristic of the competencies developed by the value-based approach is that they are simplified i.e. they constitute a rather shorter list than the other competencies developed using the other approaches. This characteristic is an advantage as the "shorter the competency inventory, the more likely the competencies are to be used" (Briscoe and Hall, 1999, p. 46). The process of developing the CF includes very structured dialogue processes aimed for top executives to simplify statements made by a single Chief Executive Officer (CEO) or lists generated by HR committees (Briscoe and Hall, 1999).

The principal flaw of the value-based approach is that it does not reflect a systematic process like the research-based or the strategic-based approaches (Spurgin, 2004). Moreover, a value-based approach may not lead to competitive advantage in the short run as the focus is on the organisations' core values and not on profit or competitive advantage (Collins and Porras, 1994). Table 4.3 shows the advantages and disadvantages of the research-based, the strategy-based and the value-based approaches of CF design.

Table 4.3 – Advantages and Disadvantages of the Major Competency Modelling Approaches

	Research-Based Approach	Strategy-Based Approach	Value- Based Approach
Advantages	- Grounded in actual behaviour. - Air of legitimacy. - Involves executives heavily via interviews.	- Competencies based upon future not past. - Focuses executives on learning new skills. - Can support organisational transformation efforts.	- Competencies can have strong motivating power. - Values can provide strategic stability and direction across long periods of time.
Disadvantages	- Based upon past not future competencies. - May omit intangible and immeasurable competencies. - Expensive in terms of time, effort and human resources.	- Anticipated future may prove inaccurate. - Competencies based upon speculation instead of actual behaviour.	- The wrong values may lead to misguided competencies. - Can be difficult to translate into actual behaviour. - Competency development process can lack rigor.

Source: Briscoe and Hall (1999)

4.3.4 The Practical Method

The previously discussed methods may be perceived as complex and unappealing methods for organisations wishing to develop a CF for the entire organisation or for specific roles. Whiddett and Hollyforde (2003) and Armstrong (2006) described the 'practical' method of developing CFs which they consider simple as it aims at specifying the knowledge and skills elements needed for a specific role and it does not involve complex methodologies or procedures. The practical method is summarised in four steps as shown in Figure 4.3.

Figure 4.3 – The Practical Method in Developing Competency Frameworks

Source: Author based on Whiddett and Hollyforde (2003)

The first step *preparation* covers the main considerations when preparing a CF. This includes the involvement of key people such as managers and employees, the clarification of the purpose for which the framework is developed, planning the project and putting the data gathering/analysis team together (Whiddett and Hollyforde, 2003; Armstrong, 2006). The second step *collecting information* is described as being the most "lengthy and time-consuming" part of creating the framework (Whiddett and Hollyforde, 2003, p.33). This step is centred on three things: the choice of analytical techniques, data gathering and the preparation of data for analysis. The authors recommended the use of three to four different job-analysis techniques as this procedure serves as a checking device for the data which in turn prevents irrelevant elements being included in the framework. A typical combination of techniques includes interviews, questionnaires and group sessions. For example, when collecting information about important activities within jobs, structured techniques such as interviews or questionnaires are more effective (Whiddett and Hollyforde, 2003). For the data gathering process, information can be collected from many documents such as business plans, training documents, job descriptions, etc. The preparation of data for analysis simply involves coding the data which will make it easier to manage and analyse.

The third step *compiling the framework* includes the data analysis, drafting and validating the framework followed by revising and finalising the competencies. Data analysis here reflects the matching of job tasks with the desired competencies. Such an analysis can be done by either the group of people involved in the creation of the framework, or by undertaking this process in the form of a questionnaire involving a larger number of employees. After implementing either method, a draft of the

framework is prepared and then validated. The validation of the framework can be undertaken by:

- Getting feedback on the perceived relevance of the competencies for individual jobs; or
- Getting feedback on the language used within the framework; or
- Assessing how well the competencies discriminate between effective and less effective performance.

After validation, the framework is then modified based on the feedback from the validation stage. It is also suggested that at this stage, provision of the competencies' definitions is desired. The final step *rolling out the framework* refers to launching and implementing the framework in the organisation and integrating competencies into processes. However it is worth noting that launching the framework and making it available does not guarantee that the framework will be implemented. Thus, users must be trained on the use and interpretation of the competencies (Armstrong, 2006).

The practical method appears to be the most suitable for designing the CF for senior logistics managers as it avoids the disadvantages that exist in the other methods presented in Table 4.3. Moreover the use of different job-analysis techniques in the data collection process supports the rigour of the practical method. Also the validation process can be easily undertaken through any of the three ways mentioned previously. Therefore the practical method will be used in this study and it will be further explained in the following chapter.

It is worth noting that some of the organisations wishing to implement a CF do not necessarily need to develop their own framework or to create it from scratch. Rothwell and Lindholm (1999) and Abuquayyas (2007) stated that an organisation which does not have the required resources to create its own CF from scratch can simply borrow a CF available from another organisation. This is done when an organisation purchases competency modelling software programmes from external vendors and apply them randomly to the organisation's employees without any tailoring to match the organisation's culture or market conditions (Rothwell and Lindholm, 1999). But there are also other organisations which tailor these software programmes to

be suitable for use in the corporate culture that is adopting it to ensure its rigor and proper utilisation (Rothwell and Lindholm, 1999).

Table 4.4 displays some of the studies that focused on developing or implementing the CF approach on different business sectors for a variety of purposes (training/recruitment/etc).

Table 4.4– Studies Implementing the Competency Framework Concept

AUTHOR(S)	FOCUS OF STUDY
Cowling et *al*. (1999)	- Developing a CF to support training in evidence-based healthcare in the U.K.
Brophy and Kiely (2002)	- Outlines the process of developing a CF for use by middle managers of three star Irish hotels.
Serpell and Ferrada (2007)	- Creating a CF for training, developing and certifying construction supervisors in Chile and other developing countries.
Vakola et *al*. (2007)	- Research project on a leading Greek bank. It describes how CF was developed, how it facilitated strategy implementation and change by supporting communication and incorporation of new behaviours.
Brownell (2008)	- Identifying the competencies hospitality unit leaders perceived critical for career development in the cruise ship context.
Patanakul and Milosevic (2008)	- Developing a CF for effectiveness in managing multiple projects in high velocity industries (hardware and software development).
Spencer et *al*. (2008)	- Determining the competencies required to be a successful CEO in India. The study focused on public sector leaders and included large Indian businesses. The study makes significant contributions for selection, succession planning and leadership development for successful CEO positions.
Ricks Jr. et *al*. (2008)	- To identify the skills and competencies required for the sales trainers.

4.4 CRITICISM AND THE ISSUE OF GENERALISATION

In addition to the criticism expressed of the different methods used to develop a CF, some authors appeared to be sceptical of the entire concept of CF and advised being cautious about its usage.

Dwyer (2008) stated that competency frameworks which confuse tasks with competency are complex and difficult to administer, and as a result are difficult to communicate to employees. As for generic competencies lists, Burgoyne (1990) and, Bartlett and Ghoshal (1997) expressed that they are not convinced that lists of managerial competencies have universal application regardless of culture and economic conditions. Collin (1989) also argued that it is pointless to design CFs which capture management skills and competencies in a mechanistic, reductionist fashion. Another criticism was also expressed towards the Management Charter Initiative (MCI) in the UK, where Thorpe and Holman (1997) expressed that it overlooks factors thought to be important in managing which are difficult to describe or reduce to behavioural terminology. In addition, Hirsch and Bevan (1988) argue that although a common competence language may be used in different organisations, the language only exists in terms of common words but not in terms of shared meaning. This is very evident from the lack of consensus on providing a common meaning for the word competency itself.

Another debate which has also been noted in the literature relates to the generalisation of CFs. The principal question for this debate is whether it is possible to define lists of competencies that can be generalised across organisations or not. Stuart (1983) firstly suggested that all CFs aspire to have the following qualities:

- Generalisation (across different contexts);
- Simplicity (comprehensible and useable); and
- Accuracy (an approximation to the truth).

However, according to Stuart et *al.* (1995), the qualities previously described may be unachievable because in practice it is only possible to create a framework which possesses at maximum, two out of three desirable qualities. Therefore they further emphasised that frameworks may be:

- Generalizable, simple but inaccurate and thus face the risk of being perceived as "interesting but not relevant to us" (Stuart et *al*., 1995, p.69), which will limit its use and implementation;
- Simple, accurate but specific where such frameworks are viewed as "relevant and useable here but could not be applicable elsewhere" (Stuart et *al*., 1995, p.69) and consequently limiting its widespread use; or
- Generalizable, accurate but complex which is judged as "impressive but impracticable" (Stuart et *al*., 1995, p.69) and triggering user resistance.

Thus Stuart et *al.* (1995) recommended that CFs designers have to accept the real boundaries of attainment because "designing a framework that is generalizable, simple and accurate is just unattainable" (Stuart et *al*., 1995, p.69). Therefore in creating the CF for logistics managers in RMG manufacturing firms in Egypt, the aim would be to design a framework which is 'simple, accurate and specific' because:

- ✓ Ensuring simplicity is crucial in order to encourage the implementation and use of the framework;
- ✓ Accuracy would be achieved through targeting the relevant data sources and implementing the right data analysis methods; and
- ✓ Specific by focusing only on the functions and tasks of senior logistics managers within the targeted industry.

These issues will be further explored in greater details in chapter five. The following section will focus on how CFs can be used for different training purposes in organisations.

4.5 THE USE OF COMPETENCY FRAMEWORKS FOR TRAINING PURPOSES

As previously stated in this chapter, CFs assist organisations in various HRM functions and since the essential purpose of examining the competency approach is for TNA, this section will just focus on the methods by which CFs can be used for training purposes in organisations.

According to (Weightman, 1994), the process of creating a CF for the organisation which develops a list of competencies and assesses the required ones will do little to improve the performance of employees in the organisation. Performance improvement is achieved only if these assessments are used to help employees develop through the provision of the required training activities.

For the purposes of training, a competency is a cluster of knowledge and skills elements that correlates with effective job performance. These elements can be measured and evaluated, and can be improved through training (McLagan, 1983; 1989; 1996). This definition of competency includes only the elements that can be trained and it does not include traits which are characteristics of human behaviours that cannot be easily changed through training (Berge et *al.*, 2002).

CFs can highly contribute in the different stages of the process of training employees (Antonacopoulou and FitzGerald, 1996; Donovan and Whitehouse, 1998; Hauenstein, 2000; Whiddett and Hollyforde, 2003; Marrelli et *al*., 2004; Grzeda, 2005; Vakola et *al*., 2007) such as in TNA, structuring training and development plans as well as designing and structuring training and development events.

4.5.1 Using Competencies in Training Needs Analysis

As stated earlier, organisations identify training needs by reviewing employees' performance against a benchmark. A competencies list can serve as the benchmark against which the organisation can assess the need for training by determining the gaps in the knowledge and skills of employees (Marrelli et *al*., 2004; EIEL, 2007). This can be achieved by conducting a *skills audit* - also called knowledge and skills assessment – which is a snapshot of the current competency levels in a particular business unit (Whiddett and Hollyforde, 2003). Its main objective is to identify the training needs by comparing the current competencies with those required now or in the future (Weightman, 1994). This will allow companies to determine exactly the training needs in particular areas which consequently save wasteful expenditures on unnecessary training (Bratton and Gold, 2007).

CFs are used to structure the skills audit questionnaires which provide lists of knowledge and skills against which employees rate themselves (Weightman, 1994). The skills audit questionnaires can be issued to either employees, where they consider their own skills or the skills of their colleagues in general, or to line managers who consider the skills of their teams (Rothwell and Lindholm, 1999). The use of skills audit questionnaires was noted in the literature such as in Donovan and Whitehouse (1998), Hauenstein (2000) and Dwyer (2008).

There is also the *career-development interview* which is a structured discussion about the employee's aspirations and prospects in terms of progression from job to job in a way that will maximise the employee's current competencies and open up opportunities to develop competencies that will be useful in the future (Whiddett and Hollyforde, 2003). Competencies contribute to the career-development interview because considering known areas of strength in competencies can guide employees into a broad range of job opportunities (Dwyer, 2008). For example, a person who has strengths in leadership may have a wide range of opportunities in jobs that may not necessarily fall into his area of expertise but draw on those leadership skills (Whiddett and Hollyforde, 2003).

Additionally, CFs can help in identifying whether the employees' need is for training or development. If a person for instance needs to do a particular activity and he neither knows what to do nor how to do it; then a training need is required, but if he knows what to do and how to do it; then a development need is required (Fletcher, 1997).

4.5.2 Using Competencies in Structuring Training and Development Plans

In order to meet the training and development needs of employees, plans and programmes must be structured to outline the learning objectives that the employees need to achieve. The method by which the learning objectives are to be achieved is through constructing a plan of action that include events and activities to help employees develop the skills required to raise the performance of both the employees and the organisation (Whiddett and Hollyforde, 2003).

At an organisation level, training and development focus on the progress of employees to a skill level within an organisation rather than within a specific job. For example, *management training programmes* through which long-term training and development needs are addressed (Donovan and Whitehouse, 1998). Competencies can assist in structuring an organisation-wide training and development programme because they describe knowledge and skills needed to meet the organisation's need; and consequently training and development events and activities can be selected to focus on achieving the described knowledge and skills (Rothwell and Lindholm, 1999; Hauenstein, 2000). Moreover, CFs can be used to structure long-term training and development programmes. These are popular in the case of junior managers who have a long-term development programme, enabling them to acquire the knowledge and skills to gain the required competencies of senior managers (Rowe, 1995; Abuquayyas, 2007).

At an individual level, training and development plans for employees are based on the need to develop skills for their own job or to meet the demands of an organisation's or profession's training and development programme (Whiddett and Hollyforde, 2003). Again, CFs can assist in determining the learning objectives in addition to helping both the individual and the line manager to focus on what they expect to be different when learning has successfully taken place (Whiddett and Hollyforde, 2003). Table 4.5 illustrates an example of the learning objectives and action plan of an employee who needs to learn some customer service techniques.

Table 4.5 – Example of Learning Objectives and Action Plan

Learning Objectives for Chris Smith – Customer Service
Learning objectives
- To enhance customer services through the use of customer feedback - To respond appropriately to customer requests - To communicate effectively with customers.
Action plan
- Attend customer service techniques workshop by end of June - Attend workshop on how to use the customer feedback process by end of July - Work alongside team leader to develop telephone skills - Invite team leader to attend at least three customer meetings with you over the next two months for support and feedback - Meet with line manager once a fortnight for support and to discuss progress - Update line manager on how you have used information from the customer feedback process to improve customer service by the end of October.
Success criteria
- Improvement in customer satisfaction survey results - No justified complaints from customers.

Source: Whiddett and Hollyforde (2003)

It is necessary at this point to stress the importance that the training and development plan should aim to ensure that employees have the necessary techniques and development opportunities to demonstrate the knowledge and skills learned. This means that development activities (such as on-the-job coaching and simulations) enable the knowledge and techniques learned to be practised in a variety of appropriate situations.

4.5.3 Using Competencies in Designing and Selecting Training and Development Events

After structuring the training and development plan, events and activities need to be designed to meet the learning objectives the plan is set to address (Marrelli et *al*., 2004). According to Hauenstein (2000), CFs help companies in evaluating the relevance of existing training opportunities as well as determining future training program objectives and content. Thus, it is important at this stage to differentiate between training events and development events. Training events contain activities in which the employee learns something new, whereas development events contain activities in which learning is put into practice to develop skill and expertise (Whiddett and Hollyforde, 2003).

Training and development events can be highly structured i.e. a training course or development centre or informal i.e. on-the-job activities (Patterson et *al*., 2000).

Competencies can assist in defining the structure of the materials which will be used to address the learning objectives of the event by assessing the current competency level of participants using a pre-event questionnaire (Hauenstein, 2000). This is a vital issue in preparing event materials as too complex or too simple materials will not interest the participants and thus the learning objectives would not be achieved (Rothwell and Lindholm, 1999). Moreover, CFs can help to ensure that training and development events are realistic by relating to behaviours from situations encountered in the organisation which reflect what is happening in that organisation (ILO, 2008).

Furthermore, CFs can be used to determine the appropriate training and development activities by matching events and activities against each competency level and skill indicators (Hauenstein, 2000; Marrelli et *al*., 2004; ILO, 2008). Table 4.6 shows an example of events and activities to meet training and development needs.

Table 4.6 – Example of Events and Activities to Meet Training and Development Needs

Training & Development Need: Uses appropriate planning to succeed in own role		
Suggested training events:		
How to make use of a diary	Workshop	½ day on-site
Objective-setting	Workshop	½ day on-site
Time management	Course	2 days off-site
Planning techniques	Course	2 days off-site
How to prioritise	Distance learning course	Estimated 5 hours

Source: Whiddett and Hollyforde (2003)

Making a development directory can be time consuming and may require constant review to ensure that it remains valid.

Hence, CFs provide examples of knowledge and skills that inform the benchmarks against which performance is compared to identify training and development needs as

well as defining the structure, design and selection of events and activities that focus on providing the information, techniques and practice situations to achieve these skills. Therefore, the use of CFs can improve training and development within organisations if it is carefully put into practice by skilled people who can design, deliver and support the events and activities.

4.6 CHAPTER SUMMARY

This chapter provided a review on the literature related to CFs by defining the concept, its uses and benefits to organisations. Distinction between the different terms that include competency, competence, skills and knowledge was made by examining the different definitions presented in the literature and those which will be used in this study. A thorough review of the different methodologies used to create CFs was provided in addition to the advantages and disadvantages related to each method. The practical method in creating CF was selected to design the CF for senior logistics managers as it avoids the disadvantages presented in the other methods and it incorporates techniques that support its rigour. This chapter also emphasised the criticism expressed in the literature towards CFs and the issue of generalisation. Finally the use of CFs in training and development was comprehensively explored in order to outline the different methods by which organisations can benefit from CFs in training and developing employees.

The review on the previously stated issues assist in setting the methodology that this study will implement to design the CF for senior logistics managers in RMG manufacturing companies in Egypt as will be presented in the next chapter.

CHAPTER FIVE: RESEARCH METHODOLOGY

5.1 INTRODUCTION

The review and discussion that were conducted in the previous chapter on the different methodologies used in creating competency frameworks supported the selection of the appropriate methodology to create the competency framework for this study. The practical method in creating competency frameworks previously presented by Whiddett and Hollyforde (2003) and Armstrong (2006) is the one which will be implemented as presented in this chapter. In this method, different research methods and techniques are implemented to ensure the rigour of the study.

This chapter first starts by the scope of research that emphasises the sequential development of the aim of this study, upon which the research philosophy, approach and strategies are selected. The research follows a deductive-inductive research approach using triangulation whereby both the quantitative and qualitative research methodologies are incorporated. The chapter thoroughly discusses the process and techniques used in creating the for the competency framework of logistics executives in RMG manufacturing companies in Egypt: questionnaires, content analysis and semi-structured interviews. Questionnaire design, wording and questions, sampling, pilot test and the validity and reliability of the questionnaire are covered in this chapter. The chapter concludes by presenting the process of content analysis and the semi-structured interviews that were conducted with logistics executives working in RMG manufacturing companies in Egypt.

5.2 SCOPE OF RESEARCH

The logistics function and the role of the logistics executive towards organisation competitiveness were well acknowledged in the reviewed literature in chapter three. It is therefore safe to claim that logistics executives in RMG manufacturing companies in Egypt could play an important role towards these organisations' competitiveness subject to the presence of the required skills that would enable them to contribute to the

organisations' strategies and influence performance. Although the literature did not show the presence of any research that investigated the skills needed for logistics executives in RMG manufacturing firms, a considerable amount of research was found to investigate the skills needed for logistics managers in general with no special emphasis on particular industries in which these managers are operating. Moreover, these studies showed high variance and lack of consistency in the identification of the skills required by logistics managers. This consequently leads to the need for an investigation to define the skills needed for logistics executives in RMG manufacturing firms.

Ferrara and Morvillo (2002) proposed the use of the competency approach that uses job profiles to determine the skills and knowledge (competencies) required for effective performance. This competency approach creates a competency framework (CF) which can consequently be used as a reference to determine the training needs of logistics executives. Therefore creating a CF for logistics executives in RMG manufacturing firms in Egypt would satisfy the skills investigation need identified earlier and would also serve as a tool to determine training needs.

Therefore, this study would aim at designing a model for a CF that RMG manufacturing firms in Egypt can use to determine the required competencies of logistics executives within their companies. This framework would aim at:

- Assessing the functions and tasks performed by logistics executives in RMG manufacturing companies in Egypt; and
- Providing a compiled reference of the skills and knowledge elements necessary to create competencies for logistics executives and their definitions.

By having these two essential pillars of a CF available, the RMG manufacturing company would only have to select from the skills and knowledge reference provided the elements they consider necessary for the effective performance of the stated tasks. This study would also aim at providing the guidelines necessary for RMG manufacturing companies to complete the CF and the method by which it can be used to assess the training needs of logistics executives.

To create this CF, a methodology needs to be selected to outline the plan for data collection and analysis. The criteria upon which a methodology is selected involve the consideration of the study's objectives and the possible constraints and challenges that can be encountered in collecting data. Thus the practical method provided by Whiddett and Hollyforde (2003) and Armstrong (2006) that was discussed in chapter four will be used to create the CF. This method is used because the study aims at creating an industry wide CF which will be very challenging using any of the other methodologies presented in chapter four since they are mainly designed to be implemented for individual organisations. Table 5.1 shows the practical method of creating the generic CF for logistics executives in RMG manufacturing firms in Egypt. The use of different research techniques to create the CF is evident in Table 5.1 which is consistent with the methodologies found in skills related research that showed the reliance of authors on the use of multiple research techniques to attain their findings i.e. literature review, surveys, interviews and case studies.

Table 5.1 – Process of Creating the Competency Framework

Preparation	❖ Literature review on the skills of logistics managers. ❖ Literature review on competency frameworks.
Information Needed	❖ To create the framework two essential pieces of information are required: (1) The functions and tasks of logistics executives in RMG manufacturing firms in Egypt which contribute to effective job performance. (2) The skills and knowledge elements that create competencies for logistics executives.
Data Collection – Part 1	❖ To collect information on the tasks and functions that contribute to effective job performance, a questionnaire is conducted on a sample of logistics man executives in RMG manufacturing companies in Egypt to determine the degree to which the provided tasks contribute to effective performance.
Data Collection – Part 2	❖ To collect information on the skills and knowledge that create competencies for logistics executives a content analysis is conducted on academic articles, career guides and semi-structured interviews with logistics executives in Egyptian RMG manufacturing companies. This information will provide a structure or reference from which to select the elements needed to perform the functions of logistics executives in RMG manufacturing companies in Egypt.
Compiling the Framework	❖ The analysis of the data collected from the questionnaires focuses on ranking the functions and tasks in order of importance to emphasise the functions that contribute to effective job performance and whose skills should be a priority to develop. ❖ The analysis of the data collected from the content analysis focuses on categorising and defining the skills and knowledge elements and on presenting patterns of skills and knowledge elements required for logistics executives.
Presenting the Framework	❖ The generic framework for logistics executives in RMG manufacturing companies in Egypt is presented. ❖ A semi-structured interview is conducted in a RMG company to seek feedback on the framework and to provide an example of a complete framework for an actual RMG manufacturing company.

Each step of this process will be discussed in further detail in the following sections in addition to the rationale of using the different data collection and analysis techniques. The next section will discuss the research philosophy and strategies implemented in this study.

5.3 RESEARCH PHILOSOPHY

There are two types of research philosophy in the literature: positivism and phenomenology (Creswell, 2003; Saunders et *al.*, 2007). These two philosophies present different views in the way knowledge is developed through research. The positivistic (also known as quantitative) philosophy seeks to identify hypotheses about relationships between variables from a theory that are consequently tested through the collection of data on the studied variables and the identification of relationships by applying statistical tests (Creswell, 2003). The phenomenological (also known as qualitative) philosophy aims at understanding human behaviour from the participant's frame of reference (Robson, 2002). Following the phenomenological philosophy, researchers focus on understanding meaning and context, and developing ideas through inductive reasoning (Easterby-Smith et *al.*, 2002). The major difference between the two philosophies is that the aim of the positivistic (quantitative) is to generalise from a sample of a population whereas the aim of phenomenological (qualitative) philosophy is to generate theory or explore new ideas (Creswell, 2003).

The research question(s) to be answered influence the choice on the research philosophy to be used (Collins and Hussey, 2009). Table 5.2 shows the key features of the positivist and phenomenological philosophies.

Table 5.2 – Key Features of the Positivist and Phenomenological Philosophies

	Positivist Philosophy	Phenomenological Philosophy
Basic beliefs	- The world is external and objective. - Observer is independent. - Science is value-free.	- The world is socially constructed and subjective. - Observer is part of what is observed. - Science is driven by human interests.
Researcher should	- Focus on facts. - Look for causality and fundamental laws. - Formulate hypotheses and then test them.	- Focus on meanings. - Try to understand what is happening. - Develop ideas through induction from data.
Preferred methods include	- Operationalising concepts so that they can be measured. - Taking large samples.	- Using multiple methods to establish different views of phenomena. - Small samples investigated in-depth or over time.

Source: Easterby-Smith et al. (2002)

Creswell (2003) denoted that the phenomenological philosophy has actually appeared as a result of the criticisms of the positivistic philosophy and Saunders et *al.* (2007) expressed that the social world of business and management is too complex to lend itself to theorising by definite laws in the same way as the physical sciences. Thus, most research projects actually combine the positivist and phenomenological philosophies in order to maximise the strengths and minimise the weaknesses related to each philosophy (Easterby-Smith et *al.*, 2002). The key strengths of the phenomenological philosophy and its qualitative methods are presented in the fact that they enable the researcher to make interpretations, generate new theories and provide more depth to the project being studied (Easterby-Smith et *al.*, 2002; Zikmund, 2002). However, the weaknesses of this philosophy are related to cost, time-consumption and sometimes data interpretation (Collins and Hussey, 2009). The strength of positivism is portrayed in its ability to generalise results to a wider population, but its weakness is mainly related to its abstraction in investigating the relationship between variables (Creswell, 2003). Therefore, the choice of either philosophy should be based on the

research questions and objectives that are addressed by the researcher. Figure 5.1 presents the methodologies used in the positivist and phenomenological philosophies.

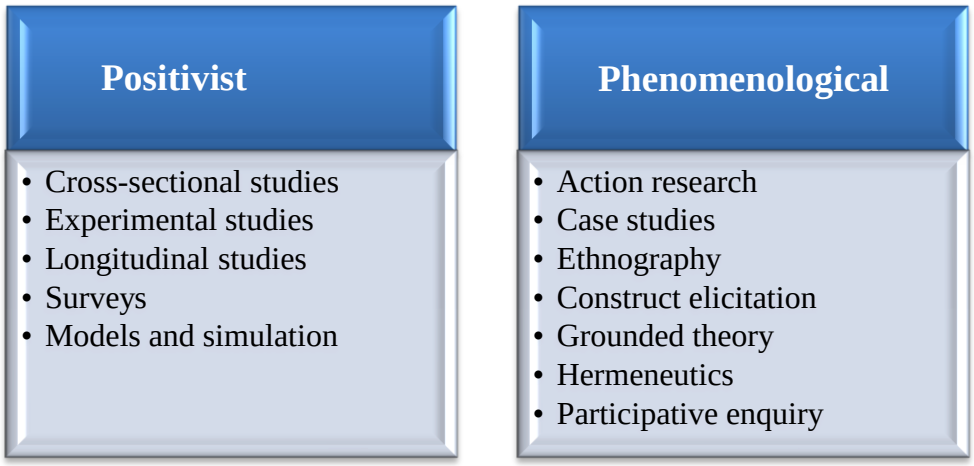


Figure 5.1 – Methodologies used in the Positivist and Phenomenological Philosophies

Source: Collins and Hussey (2009)

Näslund (2002) and Mangan et *al*. (2004) stated that the majority of logistics research adopts a positivistic philosophy and urged logistics researchers to use methods that provide middle ground between the two philosophies. Dun et *al.* (1993), Ellram and Siferd (1994) and Samuel (1997) also indicated that the majority of empirical research in logistics management focuses on quantitative research methods where a lot of emphasis is put on the use of models, simulation and statistical testing. Mangan et *al*. (2004) recommended triangulation or the use of a combined qualitative and quantitative methodology in order to provide multidimensional insights into logistics research. Mentzer and Kahn (1995) and Näslund (2002) also had the same opinion and emphasised that it is necessary to combine quantitative and qualitative methodologies in order to develop logistics research. Therefore, considering the study's objectives, the findings from the literature review and the previously stated opinions on methodologies in logistics research, a combination of both philosophies is implemented in this research which will be further explained in the research approach in the following section.

5.4 RESEARCH APPROACH

Easterby-Smith et *al*. (2002) emphasised that it is important for researchers to determine the approach to be adopted in their research projects for three reasons:

- It allows researchers to take a more informed decision about their research design i.e. the types and sources of data as well as the methods of data analysis;
- It enables researchers to think about which research approaches will help them in answering their research questions and which will not; and
- The knowledge of different research approaches enables researchers to adjust their research design to cater for constraints.

Two main research approaches exist in the research discipline: deductive and inductive. The deductive approach – following the positivist philosophy – involves the development of a theory which is subjected to a rigorous test (Maylor and Blackmon, 2005; Saunders et *al.*, 2007). The distinctive characteristics of deduction include the search to explain causal relationships between variables, measuring concepts quantitatively and the use of sufficient samples to generalise results (Maylor and Blackmon, 2005; Saunders et *al.*, 2007). The inductive approach – following the phenomenological philosophy – involves the detection of patterns, themes and categories in data that result in findings or theories merging out of the data (Patton, 2002; Lancaster, 2005). Table 5.3 shows the major differences between the deductive and inductive approaches to research.

Table 5.3 – Major Differences between Deductive and Inductive Approaches to Research

Deduction emphasises	Induction emphasises
- Scientific principles	- Gaining an understanding of the meanings humans attach to events
- Moving from theory to data	- A close understanding of the research context
- The need to explain causal relationships between variables	- The collection of qualitative data
- The collection of quantitative data	- A more flexible structure to permit changes of research emphasis as the research progresses
- The application of controls to ensure validity of data	- A realisation that the researcher is part of the research process
- The operationalisation of concepts to ensure clarity of definition	- Less concern with the need to generalise
- A highly structured approach	
- Researcher independence of what is being researched	
- The necessity to select samples of sufficient size in order to generalise conclusions	

Source: Saunders et al. (2007)

This study will follow a deductive-inductive research approach where the research will first start with the deductive approach that will assist in the formulation of theory upon which the CF is created. The deductive approach will add rigour to the CF through the questionnaire which will be further explained in section 5.6. The inductive approach will focus on the extensive examination of the relevant sources of data relating to logistics skills in general as well as logistics skills within the RMG manufacturing industry. This inductive approach will identify the concepts and patterns necessary to design the CF.

According to Kovács and Spens (2005) logistics research is interdisciplinary and for this reason various methods are used in logistics research ranging from mathematical modelling and simulation to surveys and interviews. *Qualitative* techniques refer to any data collection technique that generates non-numerical data such as interviews, while

quantitative techniques refer to any data collection technique that generates numerical data such as questionnaires and surveys (Saunders et *al*., 2007). Figure 5.2 describes the research design of this study.

Figure 5.2 – The Research Design of the Study

Source: Creswell (2003)

The research starts with quantitative data collection which is performed by the use of a questionnaire to determine the tasks that logistics executives in RMG manufacturing companies in Egypt consider important for effective job performance. These tasks serve as the backbone upon which the CF is designed. The analysis of this questionnaire aims at testing the significance of the tasks under each function to be included in the CF and aims at ranking the significant tasks and functions in order of importance to effective job performance. This ranking will serve as an indicator for RMG manufacturing companies to set priorities for the skills and knowledge elements that would require training. The qualitative data collection aims at compiling a point of reference that would include the skills and knowledge elements acknowledged in the literature to create logistics competencies. This qualitative data collection is conducted through a content analysis of relevant texts and semi-structured interviews which are further explained in sections 5.7 and 5.8. Qualitative data analysis is then performed to draw patterns and make inferences on the skills and knowledge elements revealed. At the end, the interpretation of the entire analysis is performed to create the CF and to provide guidelines for RMG manufacturing companies in Egypt on completing the CF in addition to the method by which the CF can be used to determine training needs.

5.5 TRIANGULATION

The use of the different data collection methods as stated in the previous section shows the use of triangulation in this study. Denzin and Lincoln (1998) and Amaratunga et *al*. (2002) stated that triangulation is the use of multiple methods i.e. qualitative and quantitative in the study of the same object. The main purpose of using triangulation is to avoid the errors which may arise from the use of one method (Patton, 2002). The effectiveness of triangulation, as explained by Jick (1979), is based on the fact that the weaknesses in each single method will be compensated by the counter-balancing strengths of another. Denzin (1989) identified four types of triangulation:

- ***Data triangulation***, by using different sources of data.
- ***Investigator triangulation***, by assigning multiple researchers for the same phenomenon.
- ***Theory triangulation***, by using multiple perspectives to interpret data.
- ***Methodological triangulation,*** by using different methods to study a single problem

The reason to use triangulation in this research is closely related to the issue of validity (Yin, 1994; Creswell and Clark, 2007). While in the natural sciences findings are validated by the replication of the original experiment, in social science – such as transport and logistics research – validation is attained through triangulation where different methods are used to produce the same findings (Banomyong, 2000). Table 5.4 shows the use of triangulation in a number of logistics and supply chain management research.

Table 5.4 – Triangulation in Logistics and Supply Chain Management Research

Author(s)	Purpose of Study	Triangulation
Murray (1996)	An evaluation of the role and skills of successful distribution professionals.	Content Analysis Interviews Focus Group Questionnaire
Gammelgaard and Larson (2001)	An examination of the skills needed by logisticians for supply chain management.	Survey Case study Interviews
Svensson (2001)	An exploration into the linkage between firms' outsourcing activities and the occurrence of supply chain disruptions in the automotive industry in Sweden.	Case Study Mail survey
Mangan and Christopher (2005)	An examination of the challenges for supply chain managers' development that evolve when organisations seek to close the gap between current capabilities and those required for future success.	Focus Group Interviews Surveys Case Study
El-Nakib (2008)	Assessing the feasibility of establishing Egyptian RDCs in the Common Market for Eastern and Southern Africa (COMESA)	Interviews Questionnaires

In this study, two types of triangulation are used:

1. *Methodological triangulation* – Different methods are combined to fully understand the topic of study – questionnaire, content analysis and semi-structured interviews.
2. *Data triangulation* – Data are collected for analysis from academic journals, career guides and logistics executives in RMG manufacturing companies in Egypt.

Table 5.5 shows the methods of data collection and sources of data used in the study to create the CF.

Table 5.5 – Methods of Data Collection and Sources of Data to Create the Competency Framework

Data Collection Technique	Data Sources	Output
Questionnaire	- Logistics executives in RMG manufacturing companies.	- To determine the tasks that logistics executives consider important to effective job performance.
Content Analysis	- Academic journals. - Career guides.	- To determine the skills and knowledge elements creating logistics competencies acknowledged in the literature.
Semi-Structured Interviews	- Logistics executives in RMG manufacturing companies.	- To examine the skills and knowledge elements required for logistics executives in RMG manufacturing firms and compare findings with the content analysis of academic journals and career guides. - To seek feedback on the CF.

Each data collection technique and the related data sources will be further explained in the following sections.

5.6 QUESTIONNAIRE

A questionnaire is a printed set of questions where respondents are either checking one choice from several possible answers or by writing out an answer (Thomas, 2003). A questionnaire targeting a sample of logistics executives in RMG manufacturing companies in Egypt is used in this study to achieve four essential purposes:

- Attain consensus on the functions and tasks of logistics executives in RMG manufacturing companies in Egypt;
- Determine the functions and tasks that logistics executives consider important for effective job performance;
- Provide a profile on logistics executives in RMG manufacturing companies in terms of job titles, years of experience, qualifications, etc; and
- Highlight some training related issues.

It is important to note that the questionnaire is not addressing a specific management level within the logistics function i.e. entry, middle or senior as in other skills related research that was reviewed in chapter three. This is primarily due to the lack of information on the managerial hierarchy within the logistics function in RMG manufacturing companies in Egypt. Therefore the term 'logistics executive' was used in order to accommodate the differences which might be present in the management of the logistics function within RMG manufacturing companies in Egypt. Moreover, in order to clarify that the respondents to the questionnaire are those who are involved in the logistics function, the cover letter sent to the sample clearly stated that the respondents should be responsible for any or all of the following:

- Managing logistics activities (transportation, warehousing, inventory management, etc).
- Managing logistics contractors (shipping companies, freight forwarders).
- Monitoring the fulfilment of customers' orders.
- Managing the exports activities.

Denscombe (2007) explained that a questionnaire is the most appropriate method to use when a large number of respondents in many locations need to be reached and when what is required tends be straightforward information. As described by McClelland (1994), the use of questionnaires has several advantages:

- Questionnaires are a non-intrusive means of gathering feedback as opposed to other data collection methods such as interviews, focus groups and on-site observations;
- They can be administered to a large population since they do not require respondents from different geographical locations to assemble in one place; and
- Bias is minimised – compared with other means such as in interviews, where bias can simply appear as a result to the manner in which questions are posed by the interviewer and perceived by the respondent.

However questionnaires also have some disadvantages which include the need for follow-up procedures for non responses and the inability of instant questions' clarification for respondents (Sekaran, 2003). The questions' purposes, formats and wording used in the questionnaire will be further explained in the following section.

5.6.1 Questions' Purposes, Formats and Wording

The questionnaire is divided into three sections (see Appendix 2 and 3):

Section One: ***General Questions*** – This section aims at providing a profile of logistics executives in RMG manufacturing companies in Egypt. This section consists of five questions that aim at collecting general demographic information about respondents which include names, years of experience, job titles, qualifications, the industrial zone where the company is located and the company's type of ownership.

Section Two: ***Logistics Executives' Tasks*** – This section has two essential purposes, the first is to attain consensus on the functions and tasks of logistics executives in RMG manufacturing companies in Egypt, and the second is to determine the functions and tasks that logistics executives consider important for effective job performance. To design a valid and reliable CF, it is necessary to define the tasks of the logistics executive in RMG manufacturing companies. The search for the tasks and functions of logistics executives in RMG manufacturing companies through examining previous research, job descriptions and job adverts showed a paucity of information required to create the CF. Therefore, since the tasks and functions of logistics executives are transferrable i.e. they can be applied in any industry, the study adapted the information provided by *The U.K.'s Skills for Logistics – The National Occupational Standards for Logistics Operations Management* and *The Career Cluster Resources for Transportation, Distribution and Logistics* published by the U.S. department of labour. These two sources provided detailed information on the tasks and responsibilities of logistics executives. Based on the themes emerging from RMG job descriptions, ten functions were identified for logistics executives in RMG manufacturing companies where the tasks for each function were adapted from the two previously mentioned sources.

This section of the questionnaire consists of ten questions where each represents a function with related tasks performed by logistics executives. The number of tasks under each function ranges from five to twelve depending on the requirement of each. Respondents were asked to decide on the degree of importance of the tasks listed under each function to effective job performance using a five point Likert scale (1= not at all

important, 2 = of little importance, 3 = of average importance, 4 = important, 5 = very important).

The participation of the targeted sample in completing the questionnaire would consequently imply their approval and agreement on the information provided and that the functions and tasks actually reflect the responsibilities of logistics executives in RMG manufacturing companies. In addition, the ranking they provide for the stated tasks would assist in determining the tasks and functions which are important to effective job performance and thus can be used as an indicator towards determining training needs.

Section Three: ***Training*** – This section comprises five questions providing insights into training practices in RMG manufacturing companies in Egypt and exploring the topics that respondents would like to study if they could return to college for a year. Question format and wording is a very crucial issue in questionnaire design since it has a direct impact on the validity and reliability of the questionnaire (Saunders et *al*., 2007; Sue and Ritter, 2007). Cooper and Schindler (2008) added that the bias caused by question wording exceed those caused by sampling or the methods by which the questionnaire is conducted. Therefore, questions were revised several times to reduce the level of word difficulty by simplifying the terminologies used in the logistics and supply chain management discipline to the common expressions used within the operational settings of logistics executives in RMG manufacturing companies in Egypt. The wording of the questions was also further revised in the pilot survey as explained in section 5.6.4.

The use of open-ended questions and closed-ended questions is integrated into the three parts of the questionnaire in order to collect the data that each part aims for. Open-ended questions are those answered in the respondent's own words and where response options are not provided (Sudman and Bradburn, 1982; Sue and Ritter, 2007). The use of open-ended questions has a key advantage as stated by Sudman and Bradburn (1982). This advantage is presented in giving respondents the opportunity to fully express their opinion using the language which is comfortable to them and here the researcher can benefit from the rich and quotable material that can add great value to the

research project. However, open-ended questions are best used in semi-structured interviews and relatively less used in self-administered questionnaires as expressed by Saunders et *al*. (2007) and Sue and Ritter (2007). The reason for this fact is simply because in semi-structured interviews, respondents (interviewees) are required just to talk and narrate their answers to the interviewer who is responsible for taking notes of the interviewee's answers. Whereas in self-administered questionnaires, respondents have to write the answers themselves, a task that a lot of people may find difficult. Couper et *al.* (2001) and Reja et *al*. (2003) in Sue and Ritter (2007) found that item nonresponse in online questionnaires was higher for questions with open text boxes than those with a list of provided answers. However, they have also found that the responses that were provided for open-ended questions tended to have a higher degree of validity since respondents did not have to select an answer from the list of responses provided by the researcher.

Therefore, in order to secure a good response rate and not to discourage respondents, the use of open questions was limited to three questions and was only used in the case where the provision of predetermined list of responses presents bias. Moreover, open-ended questions were only limited to those requiring a short answer. Thus the use of open-ended questions in the questionnaire was to attain the following objectives presented in Table 5.6.

Table 5.6 – The Purpose for Using Open-Ended Questions

Question	Purpose
What is your job title?	There are numerous job titles that refer to logistics executives. Thus the question aims at collecting the most common job titles used that refer to logistics executives in the RMG manufacturing firms in Egypt.
If your answer is No to the question (do you need training to be effective in your job?) please state the reasons.	This question aims at providing insight into the reasons why logistics executives do not think that they need training to be effective in their jobs in order to track the causes responsible for such opinion. It could provide valuable information to be considered in recommending the methods by which the competency framework is to be used for training and development of these executives.
If you could go back to college for a year, what five topics do you think would be most useful for you to study to be effective in your job?	The responses to this question would support the design of the competency framework as it will provide information on topics of relevance to the logistics executives' jobs.

Closed-ended questions provide respondents with a list of possible responses to choose from (Sekaran, 2003). These questions are widely used because, according to Sue and Ritter (2007), they are easy to answer, familiar to most respondents and they provide reliable measurement. Oppenheim (1992) also stated that the use of closed-ended questions has many advantages as it facilitates the processing of data, testing specific hypotheses and it makes the comparison of the different groups' responses easy.

The formats adapted in this questionnaire include dichotomous, multiple choice and rating scales. The dichotomous format was used in questions that present two possible answers (Cooper and Schindler, 2006; Sue and Ritter 2007). The dichotomous format was used in questions number one and three in section three. Some researchers debate whether to include 'don't know' option among the answers' options in dichotomous questions as respondents may not have the answer to the question especially if the question is knowledge-based (Sudman and Bradburn, 1982; Sue and Ritter, 2007). Moreover, other researchers claim that providing the 'don't know' option provides valid data (Sue and Ritter, 2007). Thus in this questionnaire, the 'don't know' option was

only included in question three in section three (training) where respondents are asked whether they need training to be effective in their jobs. This option was included in this question because respondents might not really know the answer and also to provide valid data.

The multiple choice questions format is used when there are more than two possible answers to the question asked (Cooper and Schindler, 2008). This format is used in five questions where the answers provided were exhaustive and mutually exclusive as stated in Zikmund (2002), Sekaran (2003) and Saunders et *al*. (2007). The category of 'other – please state' was also included because as mentioned in Cooper and Schindler (2008) the provision of all possible answers can be tiresome and also to provide respondents with an acceptable alternative for all other options. Multiple choice questions are known of being easy to respondents, therefore in order to encourage respondents to answer the questionnaire, four of these multiple choice questions were used in section one.

The last format of the closed-ended questions in this questionnaire is the rating scale. The Likert scale is the most common approach used in asking respondents how strongly they agree or disagree with a set of statements on a five point scale (Saunders et *al*., 2007). The five-point Likert scale is used to ask respondents to rate the degree of importance of the provided tasks statements to effective job performance. The Likert scale is used because it is easy, quick to construct, more reliable and increases the types of statistical analyses that can be performed (Pallant, 2007; Cooper and Schindler, 2008). The five point scale was used because as Fink (1995) stated, the use of four or five points scale in a self-administered questionnaire is preferred in order not to confuse respondents with many options. Moreover, Gael (1983) recommended use of the Likert scale in studies examining task importance. This questionnaire is self-administered and is conducted using the internet as explained in the following section.

5.6.2 Questionnaire Design and Administration

The design of a questionnaire is determined by two criteria as stated by Saunders et *al*. (2007): the way it is administered and the amount of contact the researcher has with the respondents. For this reason questionnaires are divided into two main types: self-

administered and interviewer-administered. Figure 5.3 shows the types of questionnaires that exist in research literature.

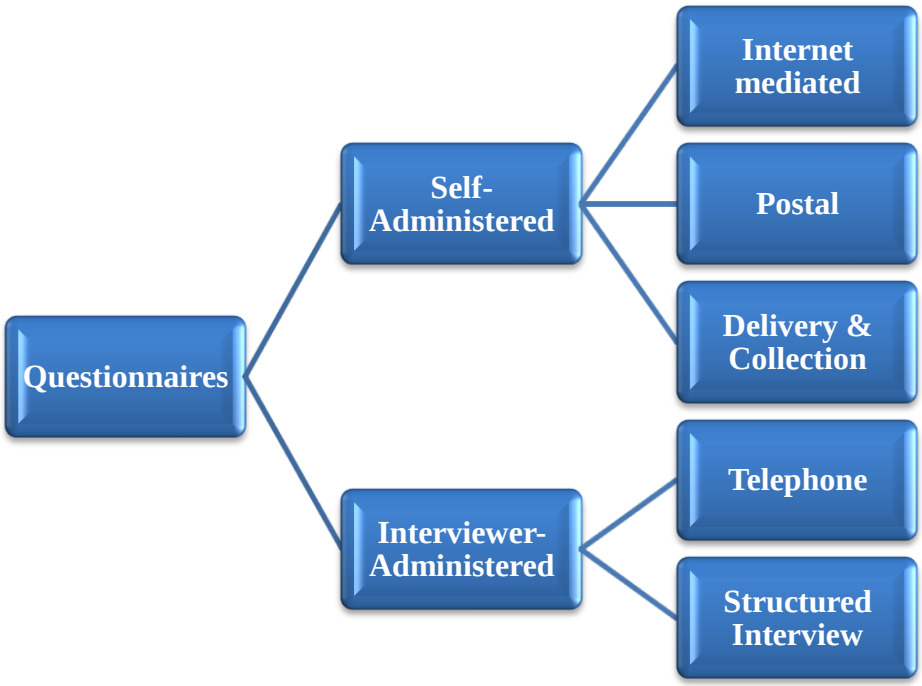


Figure 5.3 – Types of Questionnaires

Source: Saunders et al. (2007)

A self-administered questionnaire is a data collection instrument that collects information from people who complete the instrument themselves (Bourque and Fielder, 1995). The interviewer-administered questionnaire - also known as structured questionnaire - is when the interviewer (researcher) records the answers on the basis of each respondent's answers (Saunders et *al*., 2007).

Each of the types shown in Figure 5.3 has advantages and disadvantages, and the choice on a particular approach is influenced by a variety of factors that the researcher needs to consider (Thomas, 2003; Saunders et *al*., 2007). For this study, the internet mediated self-administered questionnaire is used for a number of reasons:

- *Geographic Coverage within a Sample Population:* The questionnaire targets logistics executives in RMG manufacturing firms located in four industrial zones areas which are: Alexandria, Greater Cairo, Middle Delta Governorates

and Suez Canal Area. The internet based questionnaire thus allows the questionnaire to be sent to respondents in these four industrial zones, in contrast with interviewer-administered questionnaire that tends to be restricted to a defined geographic area. In addition, the internet based questionnaire enables the respondents to complete the questionnaire at their convenience rather than having to make a commitment to an interviewer for a specific length of time – which might not be convenient in their work schedule (Schmidt, 1997; Smith and Leigh, 1997).

- *Cost*: The greatest advantage of self-administered questionnaire is its lower cost compared to the other methods (Bourque and Fielder, 1995; Robinson, 2008). The advantage is maximised by the use of the internet that costs significantly lower than sending the questionnaire by post or conducting the questionnaire by telephone (Schmidt, 1997).
- *Timing:* The element of timing comprises two elements: completion time and delivery time. For the 'completion time' element, an internet based questionnaire would usually take two to six weeks to be completed compared with questionnaires conducted by post that would take a longer period (Saunders et *al*., 2007). Moreover, research comparing electronic and postal questionnaires reveals that electronic questionnaires have strong advantages of speedy distribution and response cycles (Swoboda et *al.*, 1997; Yun and Trumbo, 2000). Thus it is more appropriate to use the internet based questionnaire for this phase of the research in order to complete the study within the scheduled time. As for the 'delivery time' element, the internet based questionnaire arrives to all respondents in the sample at the same time (with few exceptions related to wrong email addresses, full mailboxes, or problems with network connections). This fact consequently reduces any potential influence of events outside or unrelated to the study that might influence the potential respondent's opinions (Bourque and Fielder, 1995).

Before discussing the disadvantages or the limitations of conducting an internet-based questionnaire, it is firstly important to distinguish between web-based questionnaires and email questionnaires. Web-based questionnaires are designed using Hypertext Markup Language (HTML) forms that streamline the data collection process and enter

responses directly into a database for analysis (Solomon, 2001). An email questionnaire refers to the questionnaire that is written on word processing software and attached to an email message that is sent to the potential respondents who answer the questions using the same word processing software and send it back to the researcher by email (Denscombe, 2007).

This study uses the web-based questionnaire for the following reasons:

- It facilitates the verification and storage of survey responses using database technology and an HTML user interface compared with the email questionnaires that require the manual transfer and entry of responses into storage (Andrews et *al*., 2003);
- It provides the technical ability to track whether the delivered questionnaire was opened, responded to or/and deleted as well as if the questionnaire was undeliverable (Paolo et *al*., 2002);
- It allows the automatic transformation of raw data into an analysable format such as an SPSS data file or Excel file (Schmidt et *al*., 1997);
- HTML forms allow real time error checking and correction increasing the accuracy of the data collection process (Solomon, 2001);
- The formatting capabilities of HTML allow the creation of easy-to-read and attractive forms that may improve response rates (Solomon, 2001);

But despite the advantages and positive potentials of using web-based questionnaires, there are some disadvantages or challenges that need to be taken into consideration. The principal disadvantage of self-administered questionnaires whether conducted by post or electronically, is the low response rate (Bourque and Fielder, 1995; Litwin, 1995). Some of the reasons that relate to the low response rates are the increased amount of unsolicited non-survey emails, as well as privacy and confidentiality related issues (Cho and Larose, 1999; Couper, 2000; Sheehan, 2001). According to Andrews et *al*. (2003), achieving a high response rate to web-based questionnaires greatly depends on how people are asked to participate in the study. For this reason, a multi-step process was implemented where an email is firstly sent to the respondents requesting participation in the study. After the initial invitation email, the questionnaire's URL was sent by another email that is consequently supported by follow-up reminder emails.

Another disadvantage to web-based questionnaires is the lack of interaction between the researcher and the respondents which does not allow the researcher to probe and prevents the respondents from asking questions to the researcher (Cooper and Schindler, 2008). However this issue was solved through the provision of the researcher's personal contacts that respondents could use to send their enquiries. Some other computer-related disadvantages that the researcher does not have a control upon include internet down time, wrong email addresses, the respondents' email size limitation and the vulnerability of the respondents' computers to viruses which either slow or prevent respondents from undertaking the questionnaire (Cooper and Schindler, 2008; Robinson, 2008).

In order to conduct a web-based survey, it is necessary to select either the use of software programs or the use of web-based survey hosts (also known as application service providers 'ASP') and this choice is essentially based on the researcher's needs and level of technical expertise. Following the criteria outlined by Sue and Ritter (2007) in selecting a web-based survey host, 'surveymonkey.com' was selected to conduct this questionnaire. Surveymonkey.com is one of the best ASPs providing web-based surveys to some of the most popular companies in the Fortune 100. It is also used by undergraduate and postgraduate students in the University of Huddersfield where the researcher has participated in some of these surveys and found it very easy and user-friendly.

The criteria provided by Sue and Ritter (2007) are mainly centred on the technical features that the ASP provides and the ways in which they impact the researcher's project. For instance, one element that was of prime importance was to find an ASP that can support the Arabic language and this was among the most important element for selecting surveymonkey.com. Bourque and Fielder (1995) stated that if the targeted respondents' first language is not English, then the questionnaire must be provided in their local language to guarantee an acceptable response rate. This was the case of the questionnaire designed for this study where the questionnaire was written in both the English and Arabic language, and respondents would get to choose the language in which they prefer to answer. Cooper and Schindler (2008) expressed that the provision of a questionnaire in multiple languages can be challenging and time intensive.

However, doctoral research in a variety of disciplines addressing case studies or specified samples in Arab countries, found the translation of questionnaires into Arabic to be very valuable to ensure the reliability and validity of data collected such as in Yousef (2003); Salamah (2006) and Ahmad (2007).

Another important element in choosing an ASP is the cost of conducting the questionnaire. Surveymonkey.com offers a very competitive rate for providing a range of different features relating to overall questionnaire appearance, question format as well as managing respondents (emails and tracking). Moreover, surveymonkey.com provides the data collected in a variety of formats to accommodate the needs of researchers in analysing the data using their statistical software package of choice such as SPSS or Microsoft Excel.

5.6.3 Sampling

Since the questionnaire is web-based and the invitations to participate in the study were sent by email, the researcher considered sending the questionnaire to every RMG manufacturing company in Egypt listed in the database of the Egyptian Chamber of Textile Industry. This process of collecting data from every possible case is referred to as census (Saunders et *al*., 2007). However, the database did not comprise email contacts for all the companies listed, which makes the process of contacting all the companies by other means such as by post or fax, both time and money consuming. Therefore, the sampling technique was used to select cases from the population of the RMG manufacturing companies in Egypt. A sample, as defined by Fink (1995), is a subset of a larger group called a population. The sampling process is the selection of a sufficient number of elements from the population so that the study of the sample would make it possible to generalise the results to the population (Fink, 1995; Sekaran, 2003). The two major types of sampling designs are probability and non-probability sampling (Henry, 1990; Tryfos, 1996; Saunders et *al*., 2007). In probability sampling, every member of the target population has a known, nonzero probability of being included in the sample (Lohr, 1998). It implies the use of random selection where subjectivity is eliminated in choosing the sample (Fink, 1995). In non-probability sampling, samples are chosen subjectively where each member of the population does not have a known chance of being included (Cooper and Schindler, 2008). Non-probability samples are

mostly used in case study research, and not in research seeking to address objectives that require statistical inferences about the characteristics of the population (Patton, 2002; Saunders et *al*., 2007).

Therefore, since the study aims at creating an industry-wide CF for logistics executives, it is very important to select a representative sample of the population of RMG manufacturing companies in Egypt to determine the tasks that logistics executives consider important to effective job performance. Thus, probability sampling would be the technique to satisfy the study's objective in generalising the results of the questionnaire to the entire population of the RMG manufacturing companies in Egypt. Stratified random sampling was applied in which the population was divided into subgroups called 'strata' and then a random sample is selected from each subgroup (Fink, 1995). This ensures that each strata is represented proportionally within the sample (Henry, 1990; Saunders et *al*., 2007).

RMG manufacturing companies in Egypt are dispersed over four geographical areas which are: Alexandria, Greater Cairo, Middle Delta Governorates and Suez Canal Area. The Greater Cairo area comprises 52% of the total population of RMG manufacturing companies, followed by Alexandria 24%, then the Middle Delta Governorates and the Suez Canal Area, comprising 16% and 8% respectively (The Egyptian Chamber of Textile Industries, 2009). Thus in order to ensure that companies located in these four locations are well represented in the sample, and not missed by using simple random sampling, the stratified random sampling design was used. A directory of all the RMG manufacturing companies in Egypt was acquired from the database of the Egyptian Chamber of Textile Industries where this directory constituted the sample frame from which elements were selected.

As mentioned earlier, the directory of the RMG manufacturing companies in Egypt did not comprise a complete list of email contacts for every company listed in the directory. Therefore after randomly selecting elements from each strata i.e. geographical location, the questionnaire's cover letter (see Appendix 4 and 5) was sent either by email or by fax (in case where the email contact was not available) to invite participants to answer the questionnaire. Invitations were not limited to companies which have email contacts

in order to avoid bias and to ensure that elements from the population are given an equal opportunity to be present in the sample.

Table 5.7 shows the number of selected elements in the sample for each geographical area and the number of responses received.

Table 5.7 – Distribution of Sample Elements and Responses Received

Geographical Area	Number of Companies Contacted	Number of Responses Received	Percentage of Responses Received	Number of Useable Responses	Percentage of Useable Responses
Greater Cairo	308	101	32.8%	93	30.2%
Alexandria	142	54	38%	50	35.2%
Middle Delta Governorates	95	35	36.8%	32	33.7%
Suez Canal Area	47	14	29.8%	14	29.8%
Total	**592**	**204**	**34.5%**	**189**	**31.9%**

As shown in Table 5.7, the response rate is approximately 32%. The reasons for this response rate could be attributed to:

- The culture of Egyptians and their reluctance to participate in research studies; and
- The unwillingness of executives to spare the time to complete the questionnaire.

However, this response rate could be considered an acceptable rate compared with other studies such as in Abdel Salam and Fahmy (2009) who also conducted a questionnaire that targeted senior managers in RMG manufacturing firms in Egypt where the response rate was only 12.5%.

5.6.4 Pilot Testing

The pilot test is an integral part in the process of conducting a questionnaire (Punch, 2003; Brace, 2004). A pilot test allows the identification of errors in a questionnaire's content and presentation which are consequently corrected before the survey is mass

produced or used more widely to gather real data (Litwin, 1995; Webb, 2000). As expressed by Brace (2004), a pilot should address the following points:

- Do the questions sound right?
- Do respondents understand the questions?
- Have any ambiguous questions, loaded or leading questions been included?
- Can respondents answer the questions?
- Does the questionnaire flow logically?
- How long does the questionnaire take?
- Have mistakes been made?

Two types of pilot testing were preferred before conducting the questionnaire: informal and formal. In the informal pilot, the questionnaire is distributed to a number of colleagues to identify timing, wording and routeing errors (Chisnall, 2001; Brace, 2004). Although colleagues may not be the ideal sample to test the questionnaire, they are more likely to detect errors in questions, especially when they have the knowledge of questionnaire design (Brace, 2004). An informal pilot is the minimum that any questionnaire should undergo and the participation of four to six colleagues is sufficient (Brace, 2004). A first draft of the questionnaire was distributed to five colleagues at the College of International Transport and Logistics in the Arab Academy for Science and Technology in Egypt. Involving colleagues in this process adds great value because they have the experience in conducting questionnaires within the Egyptian industrial sector and have the capabilities in determining the elements which might encourage or discourage respondents from participating in the questionnaire. General comments on the questionnaire's Arabic cover letter included some spelling mistakes and the wording of a small number of sentences. As for the questionnaire itself, all colleagues agreed that the questionnaire was too long and thus the provision of the reward or prize mentioned in the cover letter would encourage respondents to participate.

Another important comment on the questionnaire related to the language element. Colleagues suggested to either conduct the questionnaire in the English or Arabic language and not both where respondents make the choice of answering to either language. They pointed that people would feel more comfortable in reading a language they fully understand which will consequently support the validity of data collected.

Moreover, conducting a questionnaire in two languages might constitute some problems in the data analysis part where responses from both questionnaires are to be merged together. Therefore, the questionnaire was conducted in the Arabic language only to ensure the validity of data collected.

The formal pilot replicates the main questionnaire but on a small scale. The formal pilot targets 10% of eligible respondents from the actual sample size, which is equal to fifty companies. The purpose of the formal pilot is to examine the response rate and to perform data analysis to confirm that the questions asked are delivering the data required (Punch, 2003; Brace 2004). A time period of two weeks was set to conduct the pilot, where a reminder was sent to non-respondents after the first week. The questionnaire (both in the English and Arabic languages) was sent to fifty companies; forty one companies were contacted by email whereas the remaining nine companies were contacted by fax. Twelve responses were received within the first week of sending the questionnaire. After the reminder sent at the end of the first week to non-respondents, four more responses were received, totalling the pilot's respondents to be sixteen companies. Table 5.8 illustrates the number of responses per geographical areas.

Table 5.8 – Number of Pilot Responses per Geographical Area

Geographical Area	Sent	Percentage of questionnaires sent	Received	Percentage of responses received
Greater Cairo	26	52%	8	30.8%
Alexandria	12	24%	6	50%
Middle Delta Governorates	8	16%	1	12.5%
Suez Canal Area	4	8%	1	25%
Total	**50**	**100%**	**16**	**32%**

Thus the response rate for the pilot is 32%. It is worth noting that fourteen of the respondents chose to answer the Arabic questionnaire while only two respondents chose the English version. This emphasised the recommendation made earlier by colleagues in the informal pilot to only conduct the questionnaire in the Arabic language.

The pilot respondents also commented on the questionnaire length, by stating that it is too long.

Therefore, the questionnaire was reviewed and edited after conducting the informal and formal pilots which provided valuable feedback to further refine the questionnaire instrument.

5.6.5 Validity and Reliability of the Questionnaire

The characteristics of a good measurement tool as described by Cooper and Schindler (2008) are defined by its validity and reliability. Sekaran (2003) stated that validity and reliability of the measure demonstrate the scientific rigour that has gone into the research study. Validity, as defined by Sekaran (2003), refers to "testing how well an instrument that is developed measures the particular concept it is intended to measure" (Sekaran, 2003, p.206).

There are three major forms of validity: content validity, criterion-related validity and construct validity (Cooper and Schindler, 2008). Content validity refers to the extent to which the questionnaire provides adequate coverage to the aims of the study (DeVellis, 1991; Cooper and Schindler, 2008). As stated by Litwin (1995), assessing the content validity involves a review of the questionnaire contents in order to ensure that it includes everything it should and does not include anything it should not. Cooper and Schindler (2008) also stated that determining content validity is judgemental and can be undertaken in different ways. Another way involves the use of a group of persons to determine how well the questionnaire meets the standards.

The criterion-related validity refers to the success of measures used for prediction or estimation when the researcher wants to predict an outcome or estimate the existence of a current behaviour or condition (Cooper and Schindler, 2008). Construct validity as explained by Litwin (1995) is a measure of how meaningful the instrument is in practical use. Construct validity is assessed by tracking the performance of the instrument scale over years in different settings, which in some research cases is difficult (Litwin, 1995).

This research used the content validity as mentioned earlier in the form of the informal pilot where the questionnaire was sent to colleagues to get their feedback on the questionnaire's cover letter, wording, questions and length. Moreover, the task statements used in the formulation of functions in section two of the questionnaire were adapted from published sources – National Occupational Standards for Logistics Operations Management and the U.S department of Labour – whereby the validity of these statements have been established.

Reliability as defined by Sekaran (2003) tests "how well consistently a measuring instrument measures whatever concept it is measuring" (Sekaran, 2003, p.203). Thus, validity is concerned with whether the researcher measures the right concept and reliability is concerned with the stability and consistency of measurement. Reliability is assessed by three methods: test-retest reliability, parallel forms and internal consistency reliability (Sekaran, 2003). Test-retest reliability refers to having the same respondents complete a questionnaire at different points in time to examine how stable the responses are (Litwin, 1995). This method of reliability was not used in this research because of the time limitation and also respondents might not be willing to answer the questionnaire twice. Parallel forms reliability involves the creation of two parallel forms by creating a large set of questions addressing the same construct and then randomly dividing the questions into two sets (Trochim, 2006). The researcher then administers both sets to the same group of people and then calculates the correlation between the two forms to estimate reliability (Trochim, 2006). This method was also not used in this research because a large amount of items would have to be generated to reflect the same construct and this would not be possible with the time limitation.

Therefore the only possible method by which it was possible to measure reliability was through the use of the internal consistency reliability. This method of measuring reliability shows how well the different items measure the same issue or variable (Litwin, 1995). The internal consistency reliability is measured by calculating Cronbach's coefficient alpha which is a reflection of how well the different items complement each other in their measurement of different aspects of the same variable (Litwin, 1995). Table 5.9 shows the reliability coefficient of the ten questions used to

describe the function and tasks of logistics executives in RMG manufacturing companies.

Table 5.9 – Cronbach's Alpha for the Multiple Item Questions in Section Two of the Questionnaire

Function	Number of Tasks	Reliability Coefficient
Develop logistics plans to meet the requirements of customers' orders	11	0.667
Design contingency plans for logistics operations	5	0.748
Ensure compliance of logistics operations with government's legislations and company's regulations	6	0.858
Identify the logistics requirements for the company's supply chain	10	0.859
Improve the quality of logistics performance	10	0.873
Integrate technology tools in logistics operations	10	0.866
Maintain safety and security in logistics operations	6	0.764
Manage logistics service providers	12	0.854
Monitor the environmental impact of logistics operations	10	0.925
Respond to incidents during logistics operations	6	0.870

The closer the Cronbach's alpha coefficient gets to one, the better the scale and instrument (Bryman and Cramer, 2001). The generally agreed upon lower limit for Cronbach's alpha is 0.70. and it may decrease to 0.60 in business and management studies (Cooper and Schindler, 2008). Thus as shown in the previous table, the coefficient alpha exceeds 0.6 which indicates the reliability of the items within each function.

5.6.6 Limitations of the Questionnaire

There are some challenges and limitations of the questionnaire as explained below:

- The directory of RMG manufacturing companies in Egypt provided by the Egyptian Chamber of Textile Industry was not good as expected. The missing email contacts for some companies obliged the researcher to contact them by another means e.g. Fax, which is more expensive and can negatively affect the response rate as respondents may be reluctant to copy the questionnaire's website from the sent fax to their computers. Also the directory

did not provide any other information such as company size which would have been a great element in stratifying the sample.

- The length of the questionnaire as noted in both the informal and formal pilots is another limitation. The length of the questionnaire is attributed to the detailed task statements described under each function in section two. It was feared that summarising task statements to short sentences might not clearly convey the meanings they are intended to deliver and that was the reason for providing full statements. The length of the questionnaire can discourage respondents from completing the questionnaire but as a solution to this limitation, a prize draw was mentioned to attract respondents.

5.7 CONTENT ANALYSIS

Due to the high variance and lack of consistency that was revealed in the findings of research that examined the skills of logistics managers, it was necessary to perform an examination of the relevant literature to create a reference that would include the skills and knowledge necessary to create logistics competencies. This reference is necessary to complete the CF as RMG manufacturing companies will use it in selecting the elements necessary for logistics executives' competencies.

Content analysis is a method that aims at the objective, systematic and reliable study of published information (Ellinger et *al*. 2003; Krippendorff, 2004). Content analysis is used as a tool to determine the presence of certain words or concepts within texts and consequently determine the key ideas and themes in publications (Cullinane and Toy, 2000). Employing the content analysis method is deemed necessary as it allows the thorough review, collection and analysis of the available published materials that are relevant to the research study.

The use of content analysis is not popular in logistics research. This might be due to the fact that the majority of logistics research as pointed by Spens and Kovács (2005; 2006); and Craighead et *al*. (2007) tends to have a more quantitative approach and where the application of a qualitative approach is limited and primarily dominated by the case study design. However, Murray (1996) applied the content analysis method in his research in order to get a preliminary investigation into the skills and knowledge of

distribution managers. He performed a content analysis on a number of sources which included job advertisements, career guides as well as focus groups. This method proved to be successful because it was regarded as a solution to the lack of literature in detailing the skills required for successful distribution professionals.

Before discussing the process of performing a content analysis, it is first necessary to present the sources of data that were selected for analysis as presented in the following sections.

5.7.1 The Analysed Sources

The sources of data used in the content analysis were selected on the basis of their relevance to the research topic. Academic articles, career guides and logistics executives in RMG manufacturing companies in Egypt were selected and the following sections will provide more details on each and the justification of its use in this study.

In the logistics and supply chain management discipline, a wealth of up-to-date knowledge exists in the academic journals. An initial search was conducted on the three leading scholarly journals – *International Journal of Physical Distribution & Logistics Management*, *Journal of Business Logistics*, and *International Journal of Logistics Management.* Studies by Spens and Kovács (2006), Graighead et *al*. (2007) and Svensson et *al*. (2008) addressing the topic of research approaches in logistics management, noted that the three previously mentioned academic journals are the top publications in the field. These authors made this top selection based on the examination of various ranking lists e.g. Harzing (2008) as well as the opinions of independent scholars in the field of logistics management. However, the search in these three journals between the year 2000 and 2008 resulted in an insufficient number of relevant articles. Therefore, the search was expanded to include all the academic journals related to logistics and supply chain management and to expand the time of publication to be between the year 1990 and 2008. The relevance of the chosen articles was based on the presence of any of the following words or combination of words: *logistics manager*, *logistics manager skills*, *logistics skills*, and *logistics competencies*. Table 5.10 shows the academic journals included in the study and the number of relevant articles that were analysed.

Table 5.10 – Academic Journals and Number of Relevant Articles

Academic Journal	Number of Relevant Articles
European Business Review	1
International Journal of Logistics Management	10
International Journal of Logistics management Research and Applications	1
International Journal of operations and production management	1
International Journal of Physical Distribution and Logistics Management	21
Journal of Business Logistics	10
Journal of Enterprise Information Management	1
Journal of Management Development	1
Logistics Information Management	1
Supply Chain Management an International Journal	3
Total	**50**

**Journals are listed in alphabetical order*

Career guides are also considered a valuable source in providing the types of skills and knowledge required for pursuing specific careers. Murray (1996) used career guides in order to analyse the skills and knowledge requirements of graduates entering the distribution industry. He followed the model of Middleton and Long (1990) who used the same method to investigate the skill issues in education and training for careers in marketing. Using career guides in skills and training related studies is useful as these guides provide comprehensive skill statements that clearly outline the elements of the skills mentioned, as well as education requirements and sometimes the personality characteristics desired.

The selection of career guides for this study was based on two main criteria:

- Published by renowned organisations in the logistics and supply chain management discipline; and
- Provide clear and detailed information on the skills and knowledge required for logistics careers.

Thus for this study five career guides were chosen for analysis:

- Career Cluster Resources for Transportation, Distribution and Logistics.
- The Council of Supply Chain Management Professionals' Careers in Logistics.
- CareerOneStop.
- Graduate Prospects.
- The Chartered Institute of Logistics and Transport in the UK's Logistics and Transport Management Career Guide.

The *Career Cluster Resources for Transportation, Distribution and Logistics Guide* is produced by the United States' Department of Education Office of Vocational and Adult Education (OVAE) in an attempt to identify the career opportunities from front-line to professional and managerial careers in transportation, distribution and logistics (OVAE, 2002). This guide provides rich details on the required skills for the chosen career path as well as the skills' elements and measurement criteria.

The Council of Supply Chain Management Professionals (CSCMP) is one of the leading organisations in spreading the logistics and supply chain management knowledge across the globe. *CSCMP's Careers in Logistics Guide* provides a description of seventeen managerial positions that logistics graduates can pursue as well as the skills and knowledge required for each job (CSCMP, 2007).

CareerOneStop is a U.S. Department of Labour sponsored website that offers career resources and workforce information to job seekers, students, and professionals to promote talent development in a global economy. *CareerOneStop* is selected for this study because it provides useful information pertaining to the knowledge, skills and abilities of logistics professionals in addition to a detailed description of the tasks and activities that logistics professionals are more likely to be responsible of (U.S Department of Labour, 2009).

Graduate Prospects is the UK's leading provider of information, advice and opportunities to students and graduates (Graduate Prospects, 2009).

Their online website - *Prospects.ac.uk* - is the UK's biggest graduate careers website which provides employment as well as postgraduate study guides. *Graduate Prospects* is selected for the study not only because it provides a description of the desired skills for the logistics professions, but also because it provides advice on logistics career development.

Logistics and Transport Management is the new career guide produced by the Chartered Institute of Logistics and Transport in the UK that is intended for graduates interested in logistics, supply chain management, transport operations and transport planning (Inside Careers, 2010). The guide offers information on the skills and competencies required for the different career paths in logistics.

It can be noted that the previously mentioned career guides are either published in the U.S. or the U.K because the search on career guides did not result in any other career guides that are published in Egypt or the Middle East that can provide the information needed for the study.

It is worth mentioning that the majority of the texts analysed from the previous sources is mainly addressing general logistics skills regardless of the field where it is applied. Therefore it was imperative to collect data on the logistics skills within the RMG manufacturing sector in Egypt to examine the existence of any commonality or differences between the skills stated in the literature and those needed in the Egyptian RMG manufacturers' setting. This was done by the use of semi-structured interviews which are explained in section 5.8.

5.7.2 The Process of Content Analysis

The process of content analysis as explained by Krippendorff (2004) is composed of six elements: unitising, sampling, recording/coding, reducing data, inferring contextual phenomena from texts, and narrating.

- *Unitising* – refers to the systematic distinguishing of segments of text that are of interest to the research (Krippendorff, 2004). For this study, the *unitising*

process involved the logistics related academic journals, career guides as well as the interviews.

- *Sampling* – refers to "limiting observations to manageable subset of units that is statistically or conceptually representative of the population of interest" (Krippendorff, 2004, p.84). *Purposive* sampling or *relevance* sampling is used in content analysis as it aims at selecting the textual units which only aim at answering the research question (Cullinane and Toy, 2000; Krippendorff, 2004). For this reason, a selection of relevant articles was made from logistics academic journals, highly informative career guides and logistics managers in RMG manufacturing companies.
- *Recording/Coding* – coding the data means dividing the text into small units (phrases, sentences, paragraphs) and assigning a label to each unit where necessary (Krippendorff, 2004; Richards, 2005; Cooper and Schindler, 2008). This label can originate from the exact words found in text, or terms composed by the researcher or a concept in social science (Creswell and Clark, 2007). In this study, Murphy and Poist's BLM framework was used as a point of reference for the terms selected in the analysed materials because it is the most widely used framework in logistics skills related studies such as in Murray (1996) and in Razzaque and Sirat (2001).
- *Reducing data* – is a necessary step in the process of content analysis as the researcher would only be interested in the variables that are more likely to occur in the analysed texts rather than the ones not occurring at all (Krippendorff, 2004). This consequently would allow the more efficient presentation of the data and facilitate the next step in the process which is *inferring* contextual phenomena from texts.
- *Inferring Contextual Phenomena from Texts* – In this step, inferences and conclusions are made on the findings of the content analysis (Krippendorff, 2004). In this study, elements were divided into three categories, their frequencies were recorded and the relationship between the elements was examined.

- *Narrating* – refers to the discussion made by the researcher to "make the results comprehensible to others" (Krippendorff, 2004, p.85). Emphasis on the findings and their contribution to the study are provided in this last step.

The findings of the content analysis are essential to the completion of the CF as the findings would identify the elements that constitute logistics competency.

5.8 SEMI-STRUCTURED INTERVIEWS

Interviews are the primary means of accessing the experience and subjective views from the industry (Rees, 1998). The main purpose of the interviews is to get answers that are relevant to the research objectives (Kvale, 1996; El-Nakib, 2008). There are three main types of interviews (Cooper and Schindler, 2008):

- *Unstructured* interviews – There are no specific questions or order of topics to be discussed, each interview is customised to each participant;
- *Semi-structured* interviews – They generally starts with a defined set of questions and then follows the participant's tangents of thought; and
- *Structured* interviews – They use a detailed set of questions where the interviewer must follow the questions' order.

The use of semi-structured interviews occurred at two different stages in this research. The first use of semi-structured interviews aimed for an in-depth exploration of the logistics skills in RMG manufacturing companies in Egypt as a result of the lack of data and literature in this regard. The second use of a semi-structured interview aimed at seeking feedback on the CF as will be further explained in the following sections.

Purposive sampling, which is a type of non-probability sampling, is employed in selecting the participants for the semi-structured interviews. Purposive sampling enables the researcher to best answer the research questions by just selecting the participants who have experience with the research topic and are capable of providing in-depth information on the different aspects relating to that topic (Creswell and Clark, 2007). The Qualified Industrial Zone (QIZ) directory published by the Ministry of Trade and Industry was used to select participants. This directory provides the contacts information of RMG manufacturing companies under the QIZ agreement that was previously explained in chapter two. Companies under the QIZ agreement are believed

to have ample experience in international operations especially exports to the U.S.A and therefore were selected as the population from which the sample of participants is to be chosen. Eleven companies were randomly selected and contacted by phone and only seven companies agreed to participate in the study.

For the information required for the content analysis, six semi-structured interviews were conducted by phone with six logistics executives where each interview approximately lasted between twenty to thirty minutes. Five of the interviewees were based in Alexandria and one was based in Cairo. The interviewees were responsible of the planning and execution of logistics activities within their companies and their working experiences in logistics ranged between seven to twelve years. The six interviews were conducted on the 25th and 26th of February 2009 and were recorded by taking notes of the statements made by the interviewees. The Table 5.11 shows the questions asked in the interviews and the purpose of each.

Table 5.11 – The Semi-Structured Interviews' Questions for the Content Analysis

Question	Purpose
What are your job responsibilities?	To ensure that the participant is responsible of the logistics activities in the company and is capable of providing relevant information.
What skills/knowledge do you think are needed to do your job effectively?	To examine the skills and knowledge elements that the participants regard as necessary to perform his job effectively.

After designing the CF, the remaining company was used for a different semi-structured interview that aimed at seeking feedback on the CF as shown in Table 5.12. This company was contacted both by email and phone, where the questions and a copy of the CF were sent to the interviewee by email and then the interview was conducted by phone.

Table 5.12 – The Semi-Structured Interview's Questions for Evaluating the Competency Framework

QUESTION	PURPOSE
What do you think of the functions and tasks that describe the responsibilities of the logistics executives in RMG manufacturing companies? Is there any other task or function that needs to be added?	To ensure that the functions and tasks provided in the CF cover the spectrum of responsibilities of logistics executives in RMG manufacturing companies.
Do you think the rank provided reflect the level of importance of each function towards effective job performance? Would you change the order? If so, why?	To examine the possibility of whether the rank of functions would change as a result of other factors or priorities.
Do you think the skills and knowledge elements provided present the whole range of elements which are needed to perform the functions? Is there any other element that should be added?	To ensure that the skills and knowledge elements provided satisfy the requirements of the logistics executive's competencies.
Do you think the framework can be useful for your company to determine the training needs of the logistics executive?	To examine the potentials of using the CF in determining training needs.
Please give your comments on the general structure of the framework in terms of clarity and the language used.	To make any necessary changes to the CF.

While the number of participants in the semi-structured interviews may seem small, it is sufficient for theory-building purposes as the aim of this research is to get in-depth, comprehensive understanding of each participant's perception (Nilsson, 2006). The responses of these interviews are considered valuable inputs for the study as it will assist in providing more precision in defining the elements constituting logistics competency. Riley (1996) also stated that it is common to rely on a small number of informants in this type of research.

5.9 CHAPTER SUMMARY

This chapter presented the different research methods and data collection tools used to create the CF for logistics executives in RMG manufacturing companies in Egypt. The practical method described by Whiddett and Hollyforde (2003) and Armstrong (2006)

was used to create the CF due to its appropriateness to the study's objectives in contrast with the other three methodologies (traditional, value and strategy). The research followed a deductive-inductive approach where triangulation was implemented in the use of different data sources and methodologies. Data triangulation was shown in the use of academic journals, career guides and semi-structured interviews with logistics executives in RMG manufacturing companies whereas methodological triangulation was in the use of questionnaire, content analysis and semi-structured interviews. Sampling, the pilot test, the reliability and validity of the questionnaire were also discussed in this chapter. The next chapter will present the findings of the questionnaire which is the first stage in data collection for creating the CF for logistics executives in RMG manufacturing companies in Egypt.

CHAPTER SIX: THE FUNCTIONS AND TASKS OF LOGISTICS EXECUTIVES IN RMG COMPANIES IN EGYPT - QUESTIONNAIRE ANALYSIS

6.1 INTRODUCTION

Determining the functions and tasks of logistics executives in RMG manufacturing companies presents an essential component to the design of the CF as they will be the basis upon which competencies are defined. The purpose of this chapter is to outline these functions and tasks by analysing the questionnaire that targeted a sample of logistics executives in RMG manufacturing companies in Egypt. This chapter is divided into two main parts: descriptive analysis and data analysis. The first part 'descriptive analysis' consists of an exploratory data analysis (EDA) that aims at providing summarised information about the variables addressed in the study. The second part 'data analysis' has two key objectives. The first is to examine the statistical significance of the tasks to be included in the competency framework by the use of Sign Test. The second objective is to rank the tasks and functions in order of importance by the use of sum scores. The chapter concludes with a discussion on the findings.

6.2 DESCRIPTIVE ANALYSIS

6.2.1 Section One – General Questions

The first section of the questionnaire consisted of five questions that aimed at collecting general demographic information about the respondents: job title, years of experience, qualifications, the industrial zone where the company is located and the company's ownership.

6.2.1.1 Job Title

On the cover letter sent to respondents, it was stated that the respondent to the questionnaire should be responsible for any or all of the following:

- Managing logistics activities (transportation, warehousing, inventory management, etc).
- Managing logistics contractors (shipping companies, freight forwarders).
- Monitoring the fulfilment of customers' orders.
- Managing the exports activities.

The respondent to this questionnaire was not restricted to the persons with the title of 'logistics executive' because from the semi-structured interviews it was found that the logistics functions or activities are mainly the responsibility of exports managers. Figure 6.1 shows the job titles of the respondents who are responsible of the logistics function in ready-made garments (RMG) manufacturing companies.

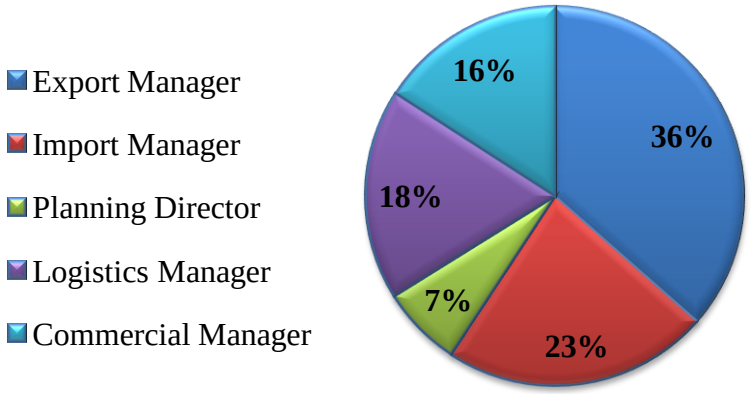


Figure 6.1 - The Respondents' Job Titles

6.2.1.2 The Respondents' Years of Experience in Logistics

Respondents were asked to identify a range for the number of years they have spent working in logistics. The purpose of this question was to examine the respondents' experience level in the logistics field in general because logistics experience is highly transferrable and it is not limited to particular industrial settings. Figure 6.2 shows the number of years that respondents worked in logistics.

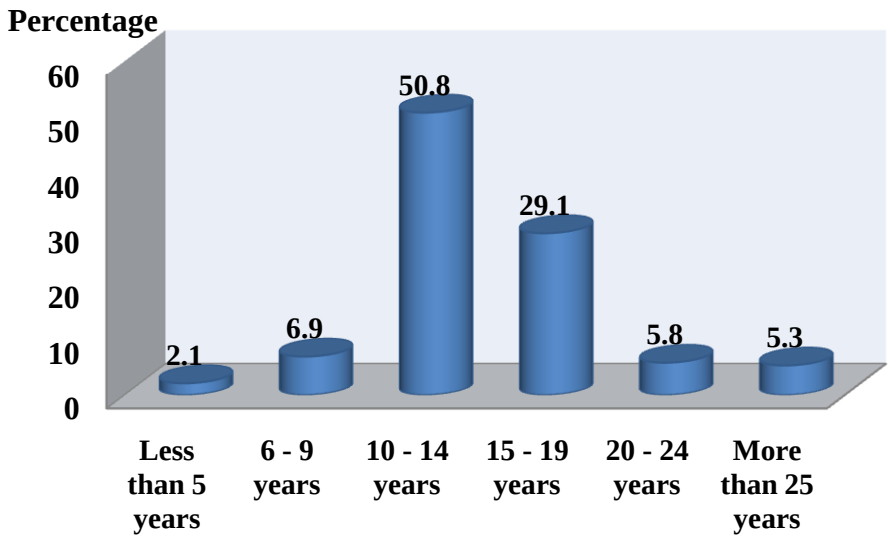


Figure 6.2 – The Respondents' Years of Experience in Logistics

The majority of respondents which represents 50.8% have worked in logistics from 10 to 14 years, which indicates that the respondents appear to be fairly well established in their careers. Respondents who have spent from 15 to 19 years working in logistics represents 29.1% which also indicates that a significant percentage of respondents have a rather long experience in logistics. Therefore, totaling the number of respondents with 10 to 19 years of experience in logistics would result in approximately 80% of the total respondents. This in turn showed that the majority of respondents to this questionnaire had significant experience in determining the importance of tasks that are effective to job performance which are shown later in this analysis.

6.2.1.3 Qualifications of Respondents

Respondents were asked to identify the highest academic qualification they have achieved. Figure 6.3 illustrates the qualifications that respondents have acquired.

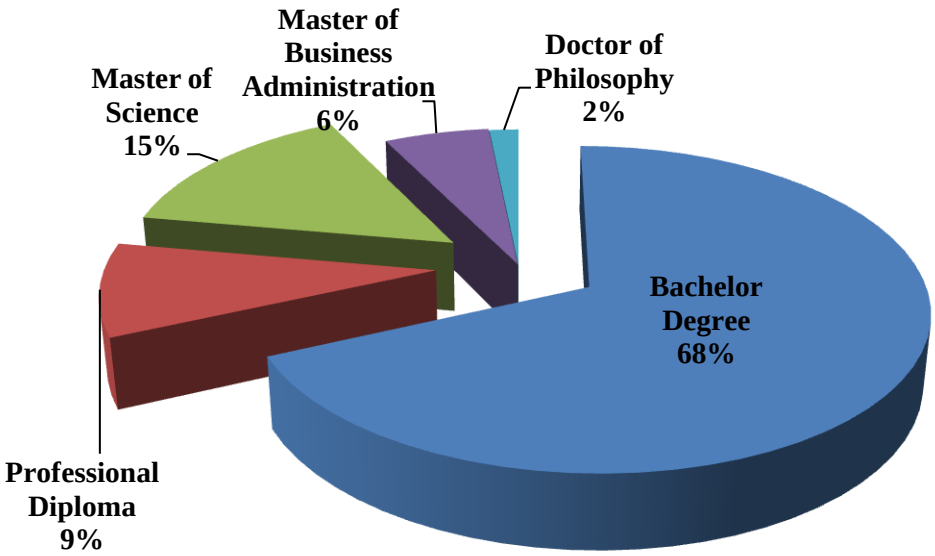


Figure 6.3 – The Respondents' Academic Qualifications

The statement mentioned previously in chapter two by Marello et *al*. (2009) that the labour market entrants in Egypt have an increasing level of education is justified by the percentages shown in Figure 6.3. More than half of the respondents, which is 68.3% have earned a bachelor degree, whereas the remaining 31.7% is distributed among the other qualifications. As for professional diplomas, only 9.5% of the respondents have indicated that this is the highest qualification achieved. For the Masters level, the Master of Science and Master of Business Administration (MBA) were selected respectively by 14.8% and 5.8% of the respondents. Thus the total of respondents with a Master's degree is 20.6%, which again justifies the statement made by Marello et *al.* (2009). Lastly, only 1.6% of the respondents have indicated that they have acquired a Doctor of Philosophy (PhD) degree. One possible interpretation for this small percentage is that people who pursue doctoral studies and who do not belong to the academic field in Egypt are generally rare.

6.2.1.4 Industrial Zone

Respondents were asked to indicate the industrial zone where their companies are located. The main purpose of this question was to ensure the stratification of the sample as previously discussed in chapter five.

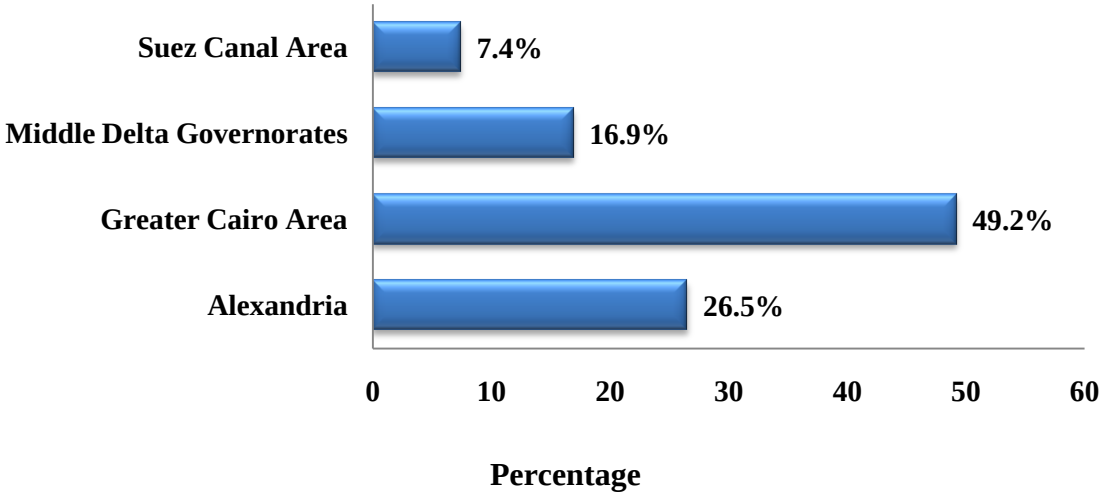


Figure 6.4 – Industrial Zone

It is shown in Figure 6.4 that 49.2% of the respondents are located in the Greater Cairo area followed by Alexandria with 26.5%. Respondents located in the Middle Delta governorates constitute 16.9% while the Suez Canal area represents only 7.4%. The respondents' percentage in all four locations was consistent with the proportion that each area presents in the sample size - Greater Cairo area (52%), Alexandria (24%), Middle Delta governorates (16%) and Suez Canal area (8%) - as it was previously discussed in chapter five (The Egyptian Chamber of Textile Industries, 2009).

6.2.1.5 Company Ownership

The purpose of this question was to examine the ownership of the companies where the respondents work. Figure 6.5 shows the company ownership types of the respondents.

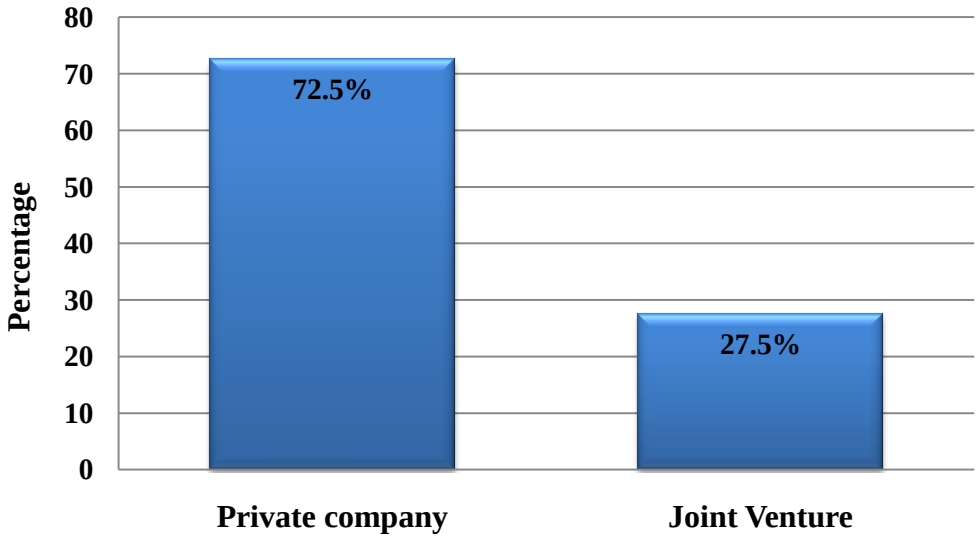


Figure 6.5 – Company Ownership

Although public ownership was included in the choices provided for selecting the type of ownership, none of the respondents selected this answer. This in a way validated the result to this question since publicly owned companies are found in the textiles, the spinning and weaving sector and not in the RMG manufacturing sector. The majority of respondents that represents 72.5% are privately owned, the remainder which is 27.5% belong to joint venture ownership.

6.2.2 Section Two – Logistics Executive Tasks

This section consisted of ten questions where each represented a function with related tasks performed by logistics executives. Respondents were asked to indicate the degree of importance of the tasks listed under each function to effective job performance using five point Likert scale (1= not at all important, 2 = of little importance, 3 = of average importance, 4 = important, 5 = very important). It is worth noting that the descriptive analysis of this section only presents the executives' responses for each task and the percentages of responses given to the various importance levels shown in the Likert scale.

Tables 6.1 – 6.10 show that respondents considered the majority of tasks under each function to be either important or very important to effective job performance while they rarely consider any of being ‘not at all important’ or ‘of little importance’. This consequently indicated that nearly all the tasks under each function are considered important to effective job performance.

Table 6.1 – Tasks Importance in the Function of "Develop Logistics Plan to Meet the Requirements of Customers' Orders"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Monitor communication with customers to obtain information on their requirements for logistics operations.	0%	0%	0%	43%	57%
Supervise the process of providing customers with clear and relevant advice and information on the logistics operations.	0%	0%	5%	44%	51%
Supervise the effective response to the customers' requirements.	0%	0%	0%	50%	50%
Confirm the logistics operations that are required to meet the needs of customers.	0%	4%	2%	41%	53%
Agree with customers on the timings and deadlines for the provision of the logistics operations.	0%	0%	5%	54%	41%
Verify the logistics resources and sequence of tasks required to provide the logistics operations.	0%	2.1%	4.8%	47.6%	45.5%
Review all factors and risks that could affect the schedule.	0%	0%	0%	52%	48%
Monitor the provision of logistics operations against the schedule.	0%	0%	5%	45%	50%
Identify any problems with the schedule, and take the appropriate action to deal with them.	0%	2%	6%	61%	31%
Ensure customers are regularly informed of progress in responding to their requirements.	0%	0%	3%	55%	42%
Respond promptly to any queries or comments raised by customers, and ensure they are dealt with by the appropriate person.	0%	0%	0%	54%	46%

Table 6.2 – Tasks Importance in the Function of "Design Contingency Plans for Logistics Operations"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Review the disruptive events that have previously occurred and the factors that have led to them.	0%	0%	33%	45%	22%
Identify the potential disruptive events that may hinder logistics operations.	0%	0%	5%	74%	21%
Assess the impact of disruptive events on logistics operations.	0%	0%	9%	67%	24%
Develop specific contingency procedures for each potential disruptive event.	0%	0%	19%	62%	19%
Ensure that all relevant people are informed of the contingency procedures.	0%	0%	31%	28%	41%

Table 6.3 – Tasks Importance in the Function of "Ensure Compliance of Logistics Operations with the Government's Legislations and Company's Regulations"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Obtain information on the legislation and regulations that apply to the logistics operations.	0%	0%	8%	35%	57%
Monitor changes in legislation and regulations that could have an effect on logistics operations.	0%	0%	18%	44%	38%
Explain to employees the content of legislation and regulations.	0%	2%	5%	49%	44%
Monitor the work activities of employees to ensure that regulations are followed.	0%	3%	11%	53%	33%
Inform all relevant people (suppliers/subcontractors) of any changes to company's regulations that could affect them.	0%	2%	14%	60%	24%
Identify any problems with compliance, and take the appropriate action to deal with them.	0%	0%	10%	64%	26%

Table 6.4 - Tasks Importance in the Function of "Identify the Logistics Requirements for the Company's Supply Chain"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Work closely with the other departments in the company to align the logistics function with the company's objectives.	0%	0%	29%	52%	19%
Identify the organisations involved in the company's supply chain.	0%	17%	37%	45%	2%
Identify the characteristics of the supplies/products flowing through the supply chain.	0%	23%	48%	28%	1%
Monitor the activities of the main organisations operating in the supply chain.	12%	17%	38%	31%	2%
Identify the available transport modes and routes used, and the way supplies/products need to be stored.	0%	0%	17%	68%	15%
Identify all relevant factors that could affect the use of the logistics resources.	0%	0%	15%	63%	22%
Develop plans to perform the logistics activities to achieve the optimum balance of usage and performance.	0%	2%	14%	59%	24%
Monitor changes in the company's supply chain that could have an effect on logistics operations.	0%	4%	17%	60%	19%
Identify potential opportunities for the company arising from changes in the supply chain.	2%	5%	32%	46%	15%
Identify ways of improving the logistics resources used in logistics operations.	0%	4%	20%	52%	24%

Table 6.5 - Tasks Importance in the Function of "Improve the Quality of Logistics Performance"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Identify the performance measures to be used to assess logistics performance.	2.1%	8%	6.3%	39.2%	44.4%
Establish performance targets for monitoring logistics performance.	2%	0%	3%	45%	50%
Obtain valid and reliable information on the performance of logistics operations.	0%	2%	0%	35%	63%
Identify the logistics performance gaps.	0%	8%	2%	52%	38%
Identify and evaluate the causes of logistics performance gaps.	0%	0%	1.6%	73.5%	24.9%
Determine the potential areas for improvement.	0%	7.9%	7.4%	49.2%	35.4%
Assess potential improvement methods for the logistics operations.	0%	0%	14%	67%	19%
Select and apply the most suitable improvement methods for improving the quality of logistics operations.	0%	0%	10%	48%	42%
Monitor the application of the improvement methods over a period of time.	0%	0%	10%	59%	31%
Identify any problems with applying improvement methods, and take the appropriate action to deal with them.	0%	2%	3%	61%	34%

Table 6.6 - Tasks Importance in the Function of "Integrate Technology Tools (Equipment/Software) in Logistics Operations"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Identify the logistics functions' requirements for technology tools.	0%	0%	22.8%	36.5%	40.7%
Identify the ways in which the technology tools would improve logistics operations.	0%	0%	2.1%	71.4%	26.5%
Set the selection criteria to evaluate potential technology tools.	0%	0%	9%	75%	16%
Select the suitable technology tools.	0%	0%	20%	39%	41%
Monitor the implementation plan of the technology tools.	0%	0%	16%	71%	13%
Ensure that the technology tools are applied efficiently and effectively during logistics operations.	0%	0%	4%	59%	37%
Identify any training needs related to the use of the technology tools.	0%	0%	5%	72%	23%
Check that the employees using the technology tools understand its use and are proficient in its operation.	0%	0%	5%	57%	38%
Monitor the follow up of maintenance schedules of the technology tools.	0%	0%	39%	40%	21%
Approve contingency plans to respond to failures in the technology tools.	0%	0%	21%	65%	14%

Table 6.7 - Tasks Importance in the Function of "Maintain Safety and Security in Logistics Operations"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Observe the implementation of organisational procedures for safety and security within the logistics department.	0%	0%	7%	64%	29%
Monitor changes in safety and security regulations and guidelines, and implement their requirements.	0%	0%	29.6%	39.7%	30.7%
Ensure that manufacturers' and other relevant instructions relating to the safe use of equipment in the logistics department are followed.	0%	0%	8%	54%	38%
Identify promptly any safety hazards and security issues.	0%	0%	14%	54%	32%
Take immediate action to prevent injury, theft, or damage, and give priority to the protection of people over organisational performance.	0%	0%	15%	48%	37%
Respond to incidents affecting safety and security by using the appropriate safety equipment and carrying out the safety procedures specified by the company.	0%	0%	9.5%	51.9%	38.6%

Table 6.8 - Tasks Importance in the Function of "Manage Logistics Service Providers"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Identify the logistics activities to be contracted.	0%	0%	1.6%	41.8%	56.6%
Set the selection criteria of service providers.	0%	0%	0.5%	33.9%	65.6%
Identify the possible service providers to perform the logistics activities.	0%	0%	11.6%	46.6%	41.8%
Identify bid specifications for service providers.	0%	2%	8%	62%	28%
Evaluate bids of service providers.	0%	0%	0%	52%	48%
Select service providers.	0%	0%	8%	53%	39%
Document the evaluation process and selection decision of service providers.	0%	0%	8%	54%	38%
Identify performance compliance requirements in contracts with service providers.	0%	0%	10%	53%	37%
Observe the collection of the service provider's performance data.	0%	0%	17%	49%	34%
Monitor the conduct of the service provider's compliance review.	2%	0%	21%	57%	20%
Review the service provider's performance report.	0%	0%	16.4%	60.3%	23.3%
Inform the service provider of his performance.	0%	0%	24%	63%	13%

Table 6.9 - Tasks Importance in the Function of "Monitor the Environmental Impact of Logistics Operations"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Implement and promote the organisation's environmental policy.	0%	12.2%	21.7%	65.6%	0.5%
Monitor the use of energy and materials to deliver logistics operations.	0%	7.4%	34.4%	57.1%	1.1%
Identify the effects of logistics operations on the environment.	0%	19%	34%	47%	0%
Identify ways to reduce any bad effects on the environment	0%	8%	36%	53%	3%
Identify ways to use energy more effectively and efficiently.	0%	0%	24.9%	74.5%	0.5%
Recycle surplus materials wherever possible.	2.1%	11.6%	42.9%	40.7%	2.6%
Dispose of surplus materials according to the government's legislation and the company's regulations.	0%	10%	33%	32%	25%
Respond to any environmental impact with the appropriate action according to organisational procedures.	0%	11%	26%	62%	1%
Inform the supply chain members (suppliers, subcontractors, etc) of their environmental responsibilities when dealing with the company.	7%	7%	20%	62%	4%
Recommend ways to improve the environmental impact of logistics operations.	0%	8%	28%	56%	8%

Table 6.10 - Tasks Importance in the Function of "Respond to Incidents during Logistics Operations"

TASKS	Not at all important	Of little importance	Of average importance	Important	Very Important
Obtain relevant information on the incident from the appropriate people as soon as they occur.	0%	2%	6%	50%	42%
Identify the factors causing the incident using the appropriate investigation methods.	0%	0%	23%	30%	47%
Implement responses to the incident using the appropriate methods and resources.	0%	0%	5%	50%	45%
Monitor the delivery of the responses, and ensure that they are implemented.	0%	0%	19.6%	33.9%	46.6%
Ensure the requirements of customers are met when incidents occur.	0%	0%	10%	38%	52%
Inform the relevant people of the responses to the incident.	0%	0%	11.6%	47.6%	40.7%

6.2.3 Section Three – Training

This section comprised five questions that aimed at collecting some insights into training practices in Egyptian RMG manufacturing companies and to explore the topics that respondents would like to study if they could return to college for a year.

6.2.3.1 The Attendance of Training Events

The purpose of this question was to examine whether the attendance of training events was a common practice for the sample of logistics executives in RMG companies.

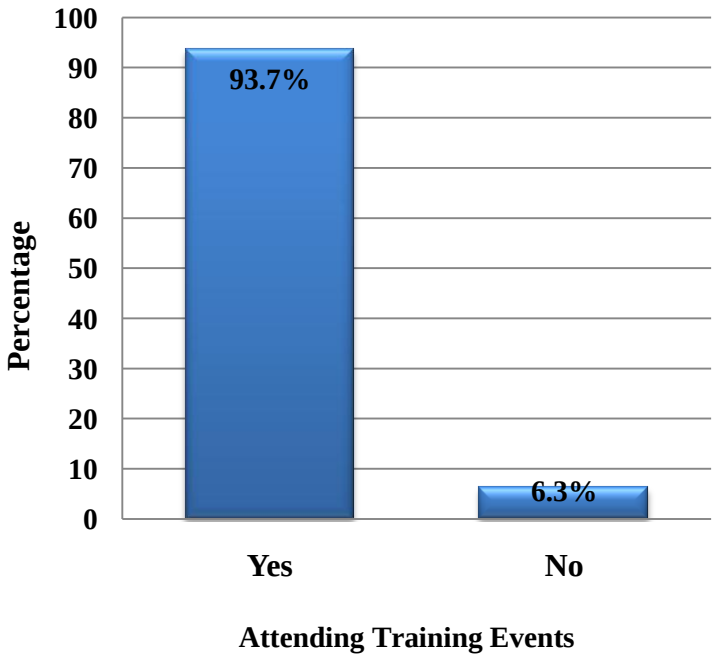


Figure 6.6 – The Attendance of Training Events

As seen in the previous figure, 93.7% of the respondents stated that they attend training events while only 6.3% stated that they do not. This shows that attending training events is a common practice for the examined sample of logistics executives in RMG companies in Egypt.

6.2.3.2 Responsibility of Determining Training Needs

This question aimed at exploring the designated person/department that is responsible for determining the training needs of logistics managers. The answers to this question would support in deciding on the persons/departments to be approached in the RMG manufacturing companies to promote the use of the CF that will be designed.

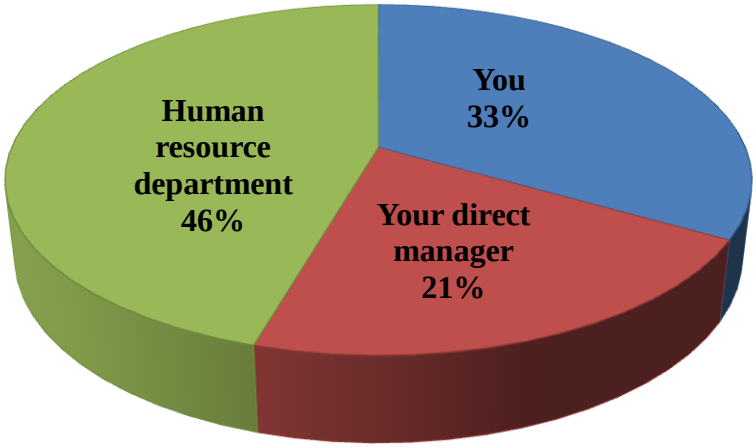


Figure 6.7 - The Responsibility of Determining Training Needs for Logistics Executives

Figure 6.7 shows that the human resources department has the responsibility of determining logistics managers' training needs in 45.5% of the companies responding. The rest of the responses were divided between the logistics manager himself and his direct manager with 33.3% and 21.2% respectively.

6.2.3.3 Training and Effectiveness

This question explored the respondents' opinion on whether training was needed for effective job performance. Figure 6.8 shows the respondents' answers.

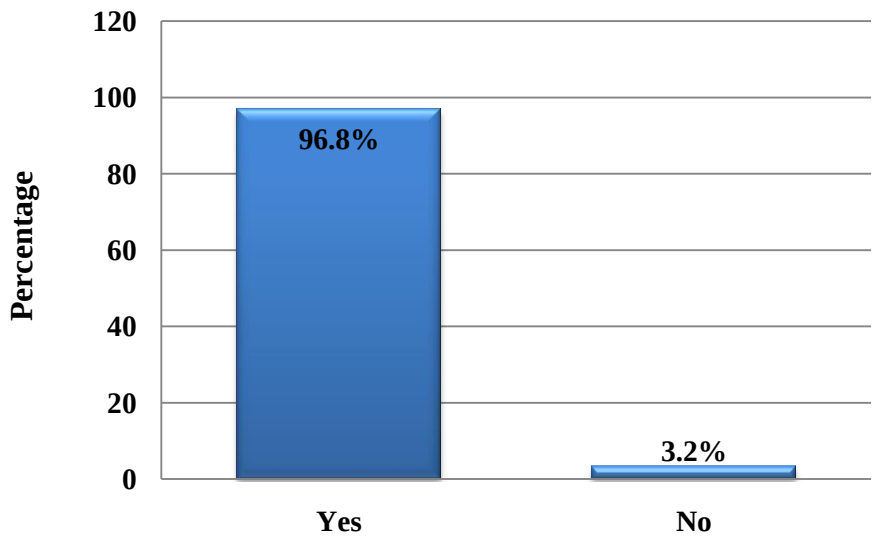


Figure 6.8 – The Need of Training for Effective Job Performance

Figure 6.8 shows that the majority of respondents (96.8%) agreed that they need training for effective job performance, while only 3.2% disagreed. These responses indicated that logistics managers were aware of the impact of training on effective job performance which further supported the aim of this research in providing guidelines for them on the key knowledge and skills areas needed for development.

Respondents who stated that they do not need training for effective job performance justified their answers by stating that:

- They have sufficient experience to do the required job.
- Training events are not useful.

Respondents who claimed that they have sufficient experience to do the required job indicate their possible lack of awareness on continuous learning and development and its impact of job performance. As for respondents who stated that training events are not useful, this draws attention to problems that might exist in the choice of the training events for logistics executives. The reasons could be attributed to the wrong decision pertaining to

the specific areas that need training or in the training providers who deliver the training events.

6.2.3.4 Further Studies

The last question in this questionnaire asked the respondents to list five topics that they think would be most useful for them to study if they go back to college for a year. The responses to this question, shown in Table 6.11, would support the designing process of the CF as it will provide information on topics of relevance to the logistics executives' jobs.

Table 6.11 - Subjects Respondents Would Study for their Job if They Could Return to College

Subject	Count	Percentage	Subject	Count	Percentage
Accounts management	9	5%	**Marketing**	5	3%
Computer	49	26%	**Mathematics**	8	4%
Decision making skills	21	11%	**Negotiation**	58	31%
Economics	28	15%	**Online business**	8	4%
E-marketing	14	7%	**Organisational behaviour**	28	15%
English	91	48%	**Production optimisation**	28	15%
Financial accounting	18	10%	**Project management**	12	6%
Foreign languages	36	19%	**Statistics**	26	14%
Human resource management	35	19%	**Strategic management**	29	15%
Insurance	13	7%	**Supply chain management**	88	47%
International business	36	19%	**Supply management**	13	7%
International shipping	33	17%	**Time management**	99	52%
Logistics	92	49%	**Transport management**	47	25%
Management	14	7%			

Responses have resulted in twenty seven subjects that belong to business, management and logistics knowledge. Subjects that were highly cited by respondents are:

- Time management (52%)
- Logistics (49%)
- English (48%)
- Supply chain management (47%).

When allocating these subjects according to the BLM framework categories which were presented in the literature review – business, logistics, management – it can be noted that the majority of the subjects mentioned by respondents belong to the management category followed by business and finally by logistics knowledge.

6.3 DATA ANALYSIS

Part two of this chapter aims at analysing the data collected by the questionnaire to support the creation of the CF. The data analysis aims at:

- Determining the significance of the tasks to be included in the CF.
- Ranking the tasks and functions in order of importance to set priorities in the CF.

6.3.1 Testing Tasks Significance

The purpose of testing tasks significance is to examine the statistical significance of the tasks under each function in order to decide on either their inclusion or exclusion from the competency framework. However, before selecting the test statistics to be used, the test for normality must be firstly conducted in order to determine whether data are normally distributed or not (Pallant, 2007). Normally distributed data have a symmetrical bell shaped curve which has the greatest frequency of scores in the middle with smaller frequencies towards the extremes (Pallant, 2007). When data are normally distributed, parametric tests such as analysis of variance (ANOVA), regression and Chi-square tests may be used, but when data are not normally distributed, non-parametric tests are to be used. Non-parametric or distribution free tests are used when the assumptions of the parametric test are highly violated, i.e. when the distribution of data is severely skewed (Weaver, 2002; Rumsey, 2007).

The normality of data was assessed using the frequency distribution histograms to examine the symmetry of the data curves on SPSS. The resulting graphs showed that data is skewed to the right which means that data is not normally distributed. Examining histograms can only be used as an indication of the distribution and hence, a more accurate method needs to be used (Gaten, 2000). The Kolmogrov-Smirnov (KS test), which is the principal goodness of fit test for normal and uniform data sets, is conducted using SPSS to test the following hypothesis:

H_o: Data is normal

H_1: Data is not normal

If significance is < 0.05, therefore H_o is rejected and the data tested is not normally distributed. Table 6.12 shows the results of the KS test.

Table 6.12 – Tests of Normality (Kolmogrov-Smirnov Test)

Function	Significance	Decision
Develop logistics plans to meet the requirements of customers' orders.	0.000	Reject H_o
Design contingency plans for logistics operations.	0.000	Reject H_o
Ensure compliance of logistics operations with government's legislations and company's regulations.	0.000	Reject H_o
Identify the logistics requirements for the company's supply chain.	0.000	Reject H_o
Improve the quality of logistics performance.	0.000	Reject H_o
Integrate technology tools in logistics operations.	0.000	Reject H_o
Maintain safety and security in logistics operations.	0.000	Reject H_o
Manage logistics service providers.	0.000	Reject H_o
Monitor the environmental impact of logistics operations.	0.000	Reject H_o
Respond to incidents during logistics operations.	0.000	Reject H_o

The KS test revealed that data is not normally distributed as seen in Table 6.12; where the significance for all the functions mentioned is 0.000. According to Shier (2004), in some cases it might be possible to transform the data to make them follow a normal distribution. Thus some additional procedures were conducted that included computing, transforming and recoding of variables on SPSS to re-test the normality of distribution of data. The KS test was conducted on the newly coded variables and confirmed that the data are not normally distributed. This consequently implies that a non-parametric test will be selected to examine the statistical significance of the tasks within each function.

The sign test is a non-parametric alternative for the one sample *t*-test which is based on the binominal distribution (Rumsey, 2007). It tests hypotheses about the central tendency of a non-normal probability distribution (McClave et *al*., 1998). The sign test is used to test the null hypothesis that is assumed and says that the median of the distribution is equal to a particular fixed value (Lani, 2009).

In this case, the sign test is used to check whether the tasks in each function are significant or not by setting the following hypotheses:

$$\mathbf{H_o: \eta = 3 \text{ (Task is not significant)}}$$

$$\mathbf{H_1: \eta > 3 \text{ (Task is significant)}}$$

As stated by McClave *et al*. (1998) "the one-tailed sign test is conducted by counting the number of sample measurements that favour the alternative hypothesis" (McClave et *al*., 1998, p.280). In this case, the number of responses for each task where respondents identified the tasks as 'important' (Likert scale = 4) and 'very important' (Likert scale = 5) will be counted. In other words, the responses that identified tasks with a value more than 3 (Likert scale = of average importance) are to be computed. This step was performed using frequency tables on SPSS.

McClave *et al*. (1998) further add that the standard normal *z*-distribution can be used to conduct the sign test for large samples. Thus, the test statistic for a large sample sign test for a population median **η** is: (McClave et *al*., 1998; Lind et *al*., 2008)

$$z = \frac{(S - 0.5) - 0.5n}{0.5\sqrt{n}}$$

S = Number of sample measurement greater than 3.
n = sample size
At a 5% level of significance, the Z value = 1.645. Therefore the decision rule is:

If *z* > Z value (1.645), reject H_o and accept H_1

Table 6.13 presents the results of the sign test. It is clearly shown in this table that the *z* value for all the tasks is larger than 1.645 which consequently means that H_o is rejected. Therefore, all the tasks under each function proved to be statistically significant to be included in the CF.

Table 6.13 –Results of the Sign Test

Functions and Tasks			
Develop logistics plans to meet the requirements of customers' orders	**S**	***z***	**Decision**
Monitor communication with customers to obtain information on their requirements for logistics operations.	189	175.1795336	reject H_o
Supervise the process of providing customers with clear and relevant advice and information on the logistics operations.	180	166.1795336	reject H_o
Supervise the effective response to the customers' requirements.	189	175.1795336	reject H_o
Confirm the logistics operations that are required to meet the needs of customers.	178	164.1795336	reject H_o
Agree with customers on the timings and deadlines for the provision of the logistics operations.	180	166.1795336	reject H_o
Verify the logistics resources and sequence of tasks required to provide the logistics operations.	176	162.1795336	reject H_o
Review all factors and risks that could affect the schedule.	189	175.1795336	reject H_o
Monitor the provision of logistics operations against the schedule.	180	166.1795336	reject H_o
Identify any problems with the schedule, and take the appropriate action to deal with them.	175	161.1795336	reject H_o
Ensure customers are regularly informed of progress in responding to their requirements.	184	170.1795336	reject H_o
Respond promptly to any queries or comments raised by customers, and ensure they are dealt with by the appropriate person.	189	175.1795336	reject H_o
Design contingency plans for logistics operations	**S**	***z***	**Decision**
Review the disruptive events that have previously occurred and the factors that have led to them.	127	113.1795336	reject H_o
Identify the potential disruptive events that may hinder logistics operations.	179	165.1795336	reject H_o
Assess the impact of disruptive events on logistics operations.	172	158.1795336	reject H_o
Develop specific contingency procedures for each potential disruptive event.	153	139.1795336	reject H_o
Ensure that all relevant people are informed of the contingency procedures.	130	116.1795336	reject H_o
Ensure compliance of logistics operations with government legislation and company's regulations	**S**	***z***	**Decision**
Obtain information on the legislation and regulations that apply to the logistics operations.	174	160.1795336	reject H_o
Monitor changes in legislation and regulations that could have an effect on logistics operations.	155	141.1795336	reject H_o
Explain to employees the content of legislation and regulations.	176	162.1795336	reject H_o
Monitor the work activities of employees to ensure that regulations are followed.	163	149.1795336	reject H_o
Inform all relevant people (suppliers/subcontractors) of any changes to company's regulations that could affect them.	159	145.1795336	reject H_o
Identify any problems with compliance, and take the appropriate action to deal with them.	170	156.1795336	reject H_o

Table 6.13 –Results of the Sign Test (Continued)

Functions and Tasks			
Maintain safety and security in logistics operations	**S**	***z***	**Decision**
Observe the implementation of organisational procedures for safety and security within the logistics department.	176	162.1795336	reject H_o
Monitor changes in safety and security regulations and guidelines, and implement their requirements.	133	119.1795336	reject H_o
Ensure that manufacturers' and other relevant instructions relating to the safe use of equipment in the logistics department are followed.	173	159.1795336	reject H_o
Identify promptly any safety hazards and security issues.	163	149.1795336	reject H_o
Take immediate action to prevent injury, theft, or damage, and give priority to the protection of people over organisational performance.	161	147.1795336	reject H_o
Respond to incidents affecting safety and security by using the appropriate safety equipment and carrying out the safety procedures specified by the company.	171	157.1795336	reject H_o
Identify the logistics requirements for the company's supply chain	**S**	***z***	**Decision**
Work closely with the other departments in the company to align the logistics function with the company's objectives.	134	120.1795336	reject H_o
Identify the organisations involved in the company's supply chain.	88	74.17953362	reject H_o
Identify the characteristics of the supplies/products flowing through the supply chain.	54	40.17953362	reject H_o
Monitor the activities of the main organisations operating in the supply chain.	62	48.17953362	reject H_o
Identify the available transport modes and routes used, and the way supplies/products need to be stored.	157	143.1795336	reject H_o
Identify all relevant factors that could affect the use of the logistics resources.	160	146.1795336	reject H_o
Develop plans to perform the logistics activities to achieve the optimum balance of usage and performance.	158	144.1795336	reject H_o
Monitor changes in the company's supply chain that could have an effect on logistics operations.	148	134.1795336	reject H_o
Identify potential opportunities for the company arising from changes in the supply chain.	115	101.1795336	reject H_o
Identify ways of improving the logistics resources used in logistics operations.	144	130.1795336	reject H_o
Improve the quality of logistics performance	**S**	***z***	**Decision**
Identify the performance measures to be used to assess logistics performance.	158	144.1795336	reject H_o
Establish performance targets for monitoring logistics performance.	180	166.1795336	reject H_o
Obtain valid and reliable information on the performance of logistics operations.	185	171.1795336	reject H_o
Identify the logistics performance gaps.	171	157.1795336	reject H_o
Identify and evaluate the causes of logistics performance gaps.	186	172.1795336	reject H_o
Determine the potential areas for improvement.	160	146.1795336	reject H_o
Assess potential improvement methods for the logistics operations.	163	149.1795336	reject H_o
Select and apply the most suitable improvement methods for improving the quality of logistics operations.	170	156.1795336	reject H_o
Monitor the application of the improvement methods over a period of time.	170	156.1795336	reject H_o
Identify any problems with applying improvement methods, and take the appropriate action to deal with them.	180	166.1795336	reject H_o

Table 6.13 –Results of the Sign Test (Continued)

Functions and Tasks			
Integrate Technology Tools (equipment/software) in Logistics Operations	**S**	***z***	**Decision**
Identify the logistics functions' requirements for technology tools.	146	132.1795336	reject H_o
Identify the ways in which the technology tools would improve logistics operations.	185	171.1795336	reject H_o
Set the selection criteria to evaluate potential technology tools.	172	158.1795336	reject H_o
Select the suitable technology tools.	151	137.1795336	reject H_o
Monitor the implementation plan of the technology tools.	158	144.1795336	reject H_o
Ensure that the technology tools are applied efficiently and effectively during logistics operations.	181	167.1795336	reject H_o
Identify any training needs related to the use of the technology tools.	180	166.1795336	reject H_o
Check that the employees using the technology tools understand its use and are proficient in its operation.	180	166.1795336	reject H_o
Monitor the follow up of maintenance schedules of the technology tools.	115	101.1795336	reject H_o
Approve contingency plans to respond to failures in the technology tools.	150	136.1795336	reject H_o
Manage logistics service providers	**S**	***z***	**Decision**
Identify the logistics activities to be contracted.	186	172.1795336	reject H_o
Set the selection criteria of service providers.	188	174.1795336	reject H_o
Identify the possible service providers to perform the logistics activities.	167	153.1795336	reject H_o
Identify bid specifications for service providers.	169	155.1795336	reject H_o
Evaluate bids of service providers.	189	175.1795336	reject H_o
Select service providers.	174	160.1795336	reject H_o
Document the evaluation process and selection decision of service providers.	174	160.1795336	reject H_o
Identify performance compliance requirements in contracts with service providers.	171	157.1795336	reject H_o
Observe the collection of the service provider's performance data.	156	142.1795336	reject H_o
Monitor the conduct of the service provider's compliance review.	145	131.1795336	reject H_o
Review the service provider's performance report.	158	144.1795336	reject H_o
Inform the service provider of his performance.	143	129.1795336	reject H_o
Monitor the environmental impact of logistics operations	**S**	***z***	**Decision**
Implement and promote the organisation's environmental policy.	125	111.1795336	reject H_o
Monitor the use of energy and materials to deliver logistics operations.	110	96.17953362	reject H_o
Identify the effects of logistics operations on the environment.	153	139.1795336	reject H_o
Identify ways to reduce any bad effects on the environment.	105	91.17953362	reject H_o
Identify ways to use energy more effectively and efficiently.	145	131.1795336	reject H_o
Recycle surplus materials wherever possible.	82	68.17953362	reject H_o
Dispose of surplus materials according to the government's legislation and the company's regulations.	108	94.17953362	reject H_o
Respond to any environmental impact with the appropriate action according to organisational procedures.	119	105.1795336	reject H_o

Table 6.13 –Results of the Sign Test (Continued)

Functions and Tasks			
Monitor the environmental impact of logistics operations (continued)	**S**	***z***	**Decision**
Inform the supply chain members (suppliers, subcontractors, etc) of their environmental responsibilities when dealing with the company.	125	111.1795336	reject H_o
Recommend ways to improve the environmental impact of logistics operations.	121	107.1795336	reject H_o
Respond to incidents during logistics operations	**S**	***z***	**Decision**
Obtain relevant information on the incident from the appropriate people as soon as they occur.	175	161.1795336	reject H_o
Identify the factors causing the incident using the appropriate investigation methods.	145	131.1795336	reject H_o
Implement responses to the incident using the appropriate methods and resources.	179	165.1795336	reject H_o
Monitor the delivery of the responses, and ensure that they are implemented.	152	138.1795336	reject H_o
Ensure the requirements of customers are met when incidents occur.	170	156.1795336	reject H_o
Inform the relevant people of the responses to the incident.	167	153.1795336	reject H_o

6.3.2 Ranking of Tasks

As it is shown in the descriptive analysis, a large percentage of respondents had nearly the same opinions regarding the level of importance that each task has towards effective job performance. Thus to provide a more precise presentation of the level of importance of each task, the responses given to each task are summed to create a score. Jennings (2001) explained that individual items in a questionnaire can be analysed by counting how many respondents gave a particular response to the item. A subject's score is then tabulated by assigning a numerical value to each of the answers ranging from 1 to 5, and then calculate the sum of numerical values of the answers to all questions (Jennings, 2001). Consequently tasks are ranked in a descending order to reflect the importance level of each task (Rumsey, 2007). In addition, the scores of tasks in each function would be summed to create a score for each function in order to rank the functions as well. Tables 6.14 – 6.21 show the ranks and scores of tasks under each function.

Table 6.14 – Rank of Tasks in the Function of 'Develop Logistics Plans to Meet the Requirements of Customers' Orders'

Rank	Task	Sum
1	Monitor communication with customers to obtain information on their requirements for logistics operations.	864
2	Supervise the effective response to the customers' requirements.	850
3	Review all factors and risks that could affect the schedule.	846
4	Respond promptly to any queries or comments raised by customers, and ensure they are dealt with by the appropriate person.	843
4	Supervise the process of providing customers with clear and relevant advice and information on the logistics operations.	843
5	Monitor the provision of logistics operations against the schedule.	842
6	Confirm the logistics operations that are required to meet the needs of customers.	838
7	Ensure customers are regularly informed of progress in responding to their requirements.	831
8	Agree with customers on the timings and deadlines for the provision of the logistics operations.	825
8	Verify the logistics resources and sequence of tasks required to provide the logistics operations.	825
9	Identify any problems with the schedule, and take the appropriate action to deal with them.	798

Table 6.15 – Rank of Tasks in the Function of 'Design Contingency Plans for Logistics Operations'

Rank	Task	Sum
1	Identify the potential disruptive events that may hinder logistics operations.	786
2	Assess the impact of disruptive events on logistics operations.	785
3	Ensure that all relevant people are informed of the contingency procedures.	774
4	Develop specific contingency procedures for each potential disruptive event.	755
5	Review the disruptive events that have previously occurred and the factors that have led to them.	736

Table 6.16 – Rank of Tasks in the Function of 'Ensure Compliance of Logistics Operations with Government's Legislations And Company's Regulations'

Rank	Task	Sum
1	Obtain information on the legislations and regulations that apply to the logistics operations.	849
2	Explain to employees the content of legislations and regulations.	823
3	Monitor changes in legislations and regulations that could have an effect on logistics operations.	794
4	Monitor the work activities of employees to ensure that regulations are followed.	787
5	Identify any problems with compliance, and take the appropriate action to deal with them.	786
6	Inform all relevant people (suppliers/subcontractors) of any changes to company's regulations that could affect them.	767

Table 6.17 – Rank of Tasks in the Function of 'Identify the Logistics Requirements for the Company's Supply Chain'

Rank	Task	Sum
1	Identify all relevant factors that could affect the use of the logistics resources.	768
2	Develop plans to perform the logistics activities to achieve the optimum balance of usage and performance.	767
3	Identify the available transport modes and routes used, and the way supplies/products need to be stored.	753
4	Identify ways of improving the logistics resources used in logistics operations.	749
5	Monitor changes in the company's supply chain that could have an effect on logistics operations.	742
6	Work closely with the other departments in the company to align the logistics function with the company's objectives.	737
7	Identify potential opportunities for the company arising from changes in the supply chain.	693
8	Identify the organisations involved in the company's supply chain.	626
9	Identify the characteristics of the supplies/products flowing through the supply chain.	579
10	Monitor the activities of the main organisations operating in the supply chain.	554

Table 6.18– Rank of Tasks in the Function of 'Improve the Quality of Logistics Performance'

Rank	Task	Sum
1	Obtain valid and reliable information on the performance of logistics operations.	867
2	Establish performance targets for monitoring logistics performance.	834
3	Select and apply the most suitable improvement methods for improving the quality of logistics operations.	817
4	Identify any problems with applying improvement methods, and take the appropriate action to deal with them.	807
5	Identify and evaluate the causes of logistics performance gaps.	800
6	Monitor the application of the improvement methods over a period of time.	796
7	Identify the logistics performance gaps.	795
8	Identify the performance measures to be used to assess logistics performance.	786
9	Determine the potential areas for improvement.	779
10	Assess potential improvement methods for the logistics operations.	766

Table 6.19 – Rank of Tasks in the Function of 'Integrate Technology Tools in Logistics Operations'

Rank	Task	Sum
1	Check that the employees using the technology tools understand its use and are proficient in its operation.	819
2	Ensure that the technology tools are applied efficiently and effectively during logistics operations.	818
3	Identify the ways in which the technology tools would improve logistics operations.	802
4	Select the suitable technology tools.	796
5	Identify any training needs related to the use of the technology tools.	790
5	Identify the logistics functions' requirements for technology tools.	790
6	Set the selection criteria to evaluate potential technology tools.	770
7	Monitor the implementation plan of the technology tools.	749
8	Approve contingency plans to respond to failures in the technology tools.	744
9	Monitor the follow up of maintenance schedules of the technology tools.	721

Table 6.20 – Rank of Tasks in the Function of 'Maintain Safety and Security in Logistics Operations'

Rank	Task	Sum
1	Ensure that manufacturers' and other relevant instructions relating to the safe use of equipment in the logistics department are followed.	811
1	Respond to incidents affecting safety and security by using the appropriate safety equipment and carrying out the safety procedures specified by the company.	811
2	Take immediate action to prevent injury, theft, or damage, and give priority to the protection of people over organisational performance.	798
2	Observe the implementation of organisational procedures for safety and security within the logistics department.	798
3	Identify promptly any safety hazards and security issues.	790
4	Monitor changes in safety and security regulations and guidelines, and implement their requirements.	758

Table 6.21 – Rank of Tasks in the Function of 'Manage Logistics Service Providers'

Rank	Task	Sum
1	Set the selection criteria of service providers.	879
2	Identify the logistics activities to be contracted.	860
3	Evaluate bids of service providers.	847
4	Select service providers.	815
5	Identify the possible service providers to perform the logistics activities.	813
6	Document the evaluation process and selection decision of service providers.	812
7	Identify performance compliance requirements in contracts with service providers.	808
8	Observe the collection of the service provider's performance data.	787
9	Identify bid specifications for service providers.	784
10	Review the service provider's performance report.	769
11	Monitor the conduct of the service provider's compliance review.	741
12	Inform the service provider of his performance.	734

Table 6.22 – Rank of Tasks in the Function of 'Monitor the Environmental Impact of Logistics Operations'

Rank	Task	Sum
1	Identify ways to use energy more effectively and efficiently.	710
2	Dispose of surplus materials according to the government's legislation and the company's regulations.	703
3	Recommend ways to improve the environmental impact of logistics operations.	688
4	Implement and promote the organisation's environmental policy.	670
5	Respond to any environmental impact with the appropriate action according to organisational procedures.	666
6	Monitor the use of energy and materials to deliver logistics operations.	665
7	Identify ways to reduce any bad effects on the environment.	661
8	Inform the supply chain members (suppliers, subcontractors, etc) of their environmental responsibilities when dealing with the company.	660
9	Recycle surplus materials wherever possible.	624
10	Identify the effects of logistics operations on the environment.	619

Table 6.23 – Rank of Tasks in the Function of 'Respond to Incidents during Logistics Operations'

Rank	Task	Sum
1	Ensure the requirements of customers are met when incidents occur.	835
2	Implement responses to the incident using the appropriate methods and resources.	831
3	Obtain relevant information on the incident from the appropriate people as soon as they occur.	819
4	Inform the relevant people of the responses to the incident.	811
5	Monitor the delivery of the responses, and ensure that they are implemented.	807
6	Identify the factors causing the incident using the appropriate investigation methods.	801

6.3.3 Ranking of Functions

After ranking the tasks in each of the functions described in the previous sections, it was possible to provide a rank for the functions themselves. The sum score of all the tasks within each function is computed to get a total score for each function. However, it was noted that since all functions comprise a different number of tasks, the functions with more tasks had a higher total score than those with fewer tasks. Therefore in order to eliminate the effect of the number of tasks on the function's total score, the following steps were performed:

- Calculating the average for each function = $\frac{\text{Total score of the function}}{\text{Number of tasks in the function}}$

- Calculating the percentage for each function = $\frac{\text{Average of the function}}{\text{Total average of all functions}}$

Table 6.24 – The Ranking Order of the Functions

Rank	Function	Number of Tasks	Percentage
1	Develop logistics plans to meet the requirements of customers' orders.	11	10.77%
2	Respond to incidents during logistics operations.	6	10.51%
3	Improve the quality of logistics performance.	10	10.36%
4	Manage logistics service providers.	12	10.34%
5	Ensure compliance of logistics operations with government's legislations and company's regulations.	6	10.31%
6	Maintain safety and security in logistics operations.	6	10.22%
7	Integrate technology tools in logistics operations.	10	10.03%
8	Design contingency plans for logistics operations.	5	9.87%
9	Identify the logistics requirements for the company's supply chain.	10	8.97%
10	Monitor the environmental impact of logistics operations.	10	8.58%

Ranking the functions as shown in Table 6.24 presents an essential component of the CF as this order would assist in setting priority when determining training needs as it will be further explained in chapter eight.

6.4 DISCUSSION ON THE FINDINGS

The descriptive analysis of this questionnaire provided summarised information on the variables addressed in the study by examining the frequency of responses to the different questions. The examination of frequencies assisted in providing a profile on the respondents and their views on the issues being addressed in the questionnaire.

As for the respondents' profile, it was revealed that a number of different titles are used to refer to the designated person responsible of logistics activities in RMG manufacturing companies in Egypt. Such finding would be important in promoting the use of the CF as it will be necessary to include other job titles. In terms of years of experience and the highest academic qualifications achieved, it appeared that the majority of the sample of executives has spent from 10 to 19 years working in logistics with at least a Bachelor degree. This fact - as mentioned earlier - justifies the statement by Marello et *al*. (2009) who stated that the labour market entrants in Egypt have an increasingly high level of education. Nearly half of the respondents work in the Greater Cairo area and around 73% work in privately owned companies.

In section two of the questionnaire, respondents were asked to determine the level of importance of each task to effective job performance. The examination of responses revealed that respondents consider the majority of tasks within each function to be either 'very important' or 'important' while only a very few tasks were regarded as 'of average importance'. These responses indicated that the sample of logistics executives consider most of the tasks to be important for effective job performance which consequently supported the validity of the functions and tasks provided.

Some may argue that the functions and tasks used in this questionnaire could reflect the job profile of any logistics executive regardless of the industry in which he/she is working. This is true as the information that was used to create this profile was adapted from two references that presented information on logistics managers in general. The same could also be said on the themes identified from the job profiles and advertisements. But, the responses collected by the questionnaire that reflected the final layout of the functions and tasks as they were ranked in order of importance, provided a sense of customisation and exclusiveness to these functions and tasks for logistics executives working in RMG manufacturing companies in Egypt. It cannot be claimed however that they could not be applicable to any other industry.

In section three of the questionnaire, respondents were asked a number of questions on the issue of training. It was found that the majority of respondents attended training events – a fact which contradicts with the findings of studies previously reviewed in chapter two on training in RMG manufacturing companies in Egypt. Although the reasons for such contradiction cannot be revealed from the data collected by the questionnaire, such findings support the purpose of this study in that the sample examined already attend training events indicating that it is a normal practice in RMG manufacturing companies. Moreover, nearly 97% of respondents indicated that they need training to be effective in their jobs. This further strengthens the need for the development of the CF which will serve as a tool in supporting these managers, their managers and human resource departments in determining the logistics executives' training needs. Finally, respondents stated some topics that they think would be useful for them to study to be effective in their jobs, if they could go back to college for a year. It was interesting to find that these topics belonged to business, management and logistics knowledge. Such finding means that logistics is a multi-disciplinary job that requires a mix of knowledge and skills to be an effective manager. A fact which justifies the statement by Hoek et *al*. (2002) who stated that a wide range of skills and knowledge is needed to become a successful logistics manager.

The data analysis of this questionnaire primarily aimed at analysing the data in such a way to support the creation of the CF. The first part of the data analysis aimed at determining the statistical significance of the tasks in each function in order to be considered in the design of the CF. The sign test was conducted and revealed that all the tasks in each function are statistically significant to be included in the CF. The second part of the data analysis aimed at providing a rank for each function to reflect the importance of each function to effective job performance. This rank was attained by calculating the sum score of all the tasks in each function. It is worth noting that this ranking allowed the in-depth exploration as to which functions and tasks contribute to effective job performance, an issue that was not explored before in logistics research. Such findings would not only support this research in the design of the framework, but could also provide valuable information to academics and professionals. Finally, by examining the title of each function, it becomes evident how each function requires a mix of skills and knowledge to be performed effectively. This will be further explored in chapter eight.

6.5 CHAPTER SUMMARY

This chapter presented the analysis of the responses collected by the questionnaire that targeted a sample of logistics executives in RMG manufacturing companies in Egypt. The first part of this chapter presented the descriptive analysis which assisted in creating a profile of the respondents and their views on the issues being addressed in the questionnaire. The second part of this chapter presented the data analysis that aimed at analysing the data in a way that would lead to relevant information for the creation of the CF. The analysis primarily aimed at determining the statistical significance of the tasks in each function and at providing a rank for each function to reflect their importance to effective job performance.

It is important to note that although more analysis could have been performed to examine the relationships between the different variables in section one and section three of the questionnaire, this analysis only focused on analysing the data which would directly assist in the creation of the framework. Examining the relationships between the different

variables is beyond the scope of this study, and the essential purpose of including these variables in the questionnaire was to establish a profile of the respondents and to collect some information on their views on the issue of training. The next chapter will present a content analysis to investigate the skills and knowledge elements that create competencies for logistics executives.

CHAPTER SEVEN: COMPETENCIES INVESTIGATION: A CONTENT ANALYSIS

7.1 INTRODUCTION

In order to create the generic competency framework for logistics executives in RMG manufacturing companies, it is essential to investigate in more details the skills and knowledge elements required for competent logistics executives. This chapter presents this investigation through a content analysis of three main sources of information as previously mentioned in chapter five: academic journals, career guides and semi-structured interviews. An overview on how the skills and knowledge elements are categorised in this analysis is firstly presented, followed by the analysis of academic journals, the career guides and the semi-structured interviews. The chapter concludes with a discussion on the findings of the analysis.

7.2 SKILLS AND KNOWLEDGE ELEMENTS

The main purpose of extracting the skills and knowledge elements which are necessary for competent logistics managers from different sources is to ensure that all the elements that were mentioned in relation to the competency of logistics managers, are provided for the creation of the CF. Although the literature provided several references that presented lists of skills and knowledge elements that are necessary for logistics managers, it was not possible to select a single source upon which to create the framework. This is primarily due to the variability that was witnessed in the different sources addressing logistics skills, and also to avoid any bias relating to the population or the setting in which the different studies were conducted. Therefore a content analysis of the relevant sources is conducted not only to present all the elements relating to logistics competency but also to examine the different perspectives of the three sources of information.

The primary aim was to just analyse the academic articles since they comprise the valuable opinions and views of academics, professionals and sometimes even students

on logistics competencies. But career guides and semi-structured interviews were also considered to ensure that the analysis presents all the possible elements that create logistics competencies and also to examine the frequencies of elements within these two sources.

The content analysis of the journals' articles, career guides and interviews, revealed forty five elements relating to the skills required for logistics managers. This list was created by transcribing exactly what was mentioned in the academic articles, career guides and the interviews. All elements were then sorted into alphabetical order to remove duplicates and the list was further refined by merging the synonymous elements together. The detailed methodology for the content analysis is provided in chapter five.

In order to overcome the drawback of the skills related studies reviewed in chapter three that did not clearly distinguish between skills and knowledge, the elements resulting from the content analysis were divided into three categories - skills, business/management knowledge, and logistics knowledge – as shown in Table 7.1. This categorisation was based on the definitions of skills and knowledge by Tucker and Cofsky (1994) and Garrett-Owens et *al*. (2003) previously mentioned in chapter four.

Therefore the 'skills' category refers to the elements that demonstrate particular talent or expertise such as in speaking a foreign language or making effective presentation. The 'business/management knowledge' category refers to the elements that represent body of information in business and management which is required to perform the job. This body of information can be acquired through education or on-the-job experience. The 'logistics knowledge' category refers to the technical elements that represent the information needed to effectively perform logistics functions which is also acquired through education or on-the-job experience.

Table 7.1 – Elements* Resulting from the Content Analysis

Skills	Business/Management Knowledge	Logistics Knowledge
Adaptability	Benchmarking	Customer service
Analytical skills	Change management	Forecasting
Communication	Conflict management	Green logistics
Computer skills	Cross functional operation	Inventory control
Continuous learning	Finance/cost	Materials handling
Decision making	General business	Order processing
Innovation	General management	Outsourcing
Leadership	Human resource management	Purchasing
Negotiation	International business	Reverse logistics
Networking	Knowledge management	Supply chain security
Interpersonal skills	Logistics/supply chain knowledge	Technology tools
Problem solving	Marketing	Transportation
Second language	Production	Warehousing
Teamwork	Project management	
Time management	Quality management	
	Strategic management	
	System thinking	

**Elements are listed in alphabetical order*

As shown in Table 7.1, the skills category consists of fifteen elements, while the business/management knowledge category has seventeen elements, and finally the logistics knowledge category consists of thirteen elements. A list of definitions for these elements is in appendix 6.

Richey et *al*. (2006) and Gavier (2008) agreed that effective logistics managers must have the ability to integrate skills and knowledge in the most desirable mix. In other words, it is the integration of different skills and knowledge that define the logistics managers' competencies. The content analysis revealed forty five individual elements that authors and interviewees described as required for logistics managers. However, the desired mix between these elements i.e. competencies, was not covered in neither the literature review in chapter three nor the sources used in content analysis. Therefore the purpose of this content analysis will not be limited on listing the required

elements for logistics managers but it will also examine the links between the different skills and knowledge which would result in competencies.

It cannot be presumed that the elements within a certain competency have the same impact or the same importance level for effective logistics performance. It is however possible to speculate that some of these elements – with the proper proficiency level – have the ability to distinguish between ordinary and outstanding performers. This argument will be further explored in chapter eight.

To examine the significance of the skills and knowledge elements in Table 7.1, the number of times each element was mentioned in the examined sources was recorded i.e. the academic articles, career guides and interviews. This process would assist in getting a 'feel of the data', examining the relationships between elements and getting more insights into the perspectives of researchers and career experts. It is worth noting that this analysis will not cover all the elements stated in Table 7.1 but it would rather thoroughly examine the top five elements in the three categories. Additional comments will be provided on other elements that the researcher might feel necessary for the context of this study.

7.3 ACADEMIC JOURNALS

As previously mentioned in chapter five, fifty articles were found relevant to be included in the content analysis. Electronic databases - Emerald Journals, Science Direct (Elsevier) and Business Source Premier (EBSCO) – were used to search for the relevant articles published between the years 1990 to 2008. These articles were published in ten different academic journals where the majority of articles were published in the *International Journal of Physical Distribution and Logistics Management*. A list of the articles analysed in this content analysis is provided in appendix 7.

7.3.1 Top Five Skills and Knowledge in Academic Articles

Table 7.2 shows the number of times the skills, business/management knowledge and logistics knowledge elements were mentioned in the analysed articles.

Table 7.2 – Frequencies of Skills and Knowledge Elements in Academic Articles

Skills	Times Mentioned	Business/Management Knowledge	Times Mentioned	Logistics Knowledge	Times Mentioned
Communication	46	Cross functional operation	45	Customer service	46
Problem solving	41	International business	36	Technology tools	46
Teamwork	41	Finance/cost	29	Transportation	35
Computer skills	36	General management	27	Forecasting	28
Analytical skills	33	Human resource management	26	Green Logistics	25
Leadership	31	Quality management	21	Inventory control	20
Continuous learning	28	Strategic management	21	Order processing	20
Negotiation	28	Benchmarking	19	Purchasing	20
Decision making	18	Logistics/supply chain knowledge	19	Reverse logistics	18
Innovation	18	System thinking	17	Warehousing	15
Interpersonal skills	18	Change management	12	Outsourcing	13
Time management	14	General business	12	Materials handling	10
Adaptability	10	Production	12	Supply chain security	3
Networking	10	Conflict management	10		
Second language	5	Knowledge management	10		
		Project management	5		
		Marketing	2		

Communication is the number one skill that was mentioned in the analysed articles. While some of the authors just stated that *communication* is a skill that is necessary for effective logistics managers, other authors justified their statements. Sutton (1990) stated that the importance of *communication* skills for senior logistics managers is derived from their involvement in strategic planning which in turn requires excellent *communication* skills with all the other senior managers. Rinehart and Ragatz (1996) added that logistics managers need to be capable of communicating ideas, organisational policies and human resource instructions effectively. They also emphasised that logistics managers must understand the elements of the *communication* process to evaluate effectively the quality of interactions between the employees and the resulting effect on performance. Bagchi and Virum (1996) particularly stressed that *communication* skills are necessary for securing successful logistics alliances especially with logistics service providers.

Problem solving is also one of the highly cited skills elements in the academic articles. *Problem solving* skills for logistics managers as stated by Lambert et *al*. (2008) are specifically witnessed in developing contingency plans to respond to internal or external events. Bagchi and Virum (1996) added that *problem solving* skills are not just required for managers but also for front line logistics employees who should be capable of identifying and solving problems.

Teamwork which was mentioned forty one times in the analysed articles was highly linked to *cross functional operation* – the number one element in the business/management knowledge category. In turn, *cross functional operation* was linked to other knowledge elements such as *customer service*, *technology tools* and *marketing*. Sutton (1990) explained that the senior logistics manager's responsibilities have direct and indirect influences on most functions within the organisation. This consequently requires a strong *cross functional operation* knowledge that would assist the logistics manager not only in effectively contributing to the other functions' operations but also in getting their support in performing the required logistics operations. This fact was emphasised by many authors as in the course of conducting the content analysis, several elements were intertwined specifically around the *cross functional operation* knowledge.

Lambert et *al*. (2008) discussed the integration of different business/management knowledge elements with logistics knowledge. They explained the integration between *customer service*, *cross functional operation*, *cost*, and *logistics/supply chain management* knowledge. This integration was explained by showing that *cross functional operation* of the logistics manager with the customer service department assists in identifying the revenue implications of logistics performance and how logistics contributes to customer loyalty and profitability.

Lambert et *al*. (2008) also described the integration between *forecasting* knowledge, *inventory control*, *customer service* and *cost*. They stated that logistics managers need to work closely with the sales forecasting team in order to provide information on the logistics assets' capabilities in handling the forecasted volumes; in addition to providing alternatives on the most efficient ways to meet the customers' needs.

Nilsson (2006) commented on the importance of the *cross functional operation* knowledge and how its absence can negatively affect logistics operations. He justified his comment by stressing that logistics managers need to plan demand with marketing and sales in order to avoid uncertainty in planning logistics operations where the lack of information would dangerously affect logistics performance.

The significance of *computer skills* was witnessed in thirty six articles in which some authors just stated that they are needed for logistics managers, whereas others specified the exact areas required. For instance, Gravier and Farris (2008) stated that the proficiency of logistics managers in *computer skills* is no longer limited to the basic use of Microsoft Office software, but rather incorporate the use of the software in the day to day logistics operations, like using spreadsheet skills to solve logistics problems. Skjoett-Larsen (2000) added that *computer skills* are an integrated part of the logistics manager's job since the internet is the dominating factor in business operations, along with the other EDI information relating to sales figures and stock levels.

Analytical skills were mentioned thirty three times in the analysed articles. Mentzer et *al*. (2008) mentioned that logistics managers need *analytical skills* in order to assess organisational integration processes. A link between *analytical skills* and

quality management was highlighted by Novack et *al*. (1993). They stated that the logistics manager's *analytical skills* would contribute to process improvement which is one of the goals of *quality management*. They also added that *analytical skills* combined with the right managerial knowledge would support the logistics manager in making managerial decisions based on the interpretation of analysis.

International business was mentioned in thirty six articles in the business/management knowledge category. It should not be a surprise that *international business* is on the top five elements of this category since the global market is composed of global sophisticated supply chain networks. A knowledge of import and export activities, trade regulations, customs, international economics and cultures are all part of the *international business* knowledge that the logistics manager must have (Mangan and Christopher, 2005).

General management knowledge was noted in twenty seven articles, and it comprises planning, organising, implementing and controlling the activities within the responsibility of the logistics manager that aim to achieve the company's objectives to satisfy its stakeholders (Rao et *al*., 1994). *General management* knowledge, according to Richey et *al*. (2006), also involves assigning responsibilities and determining the degree of decentralisation in operations.

In the business/management knowledge category, *human resource management (HRM)* was mentioned twenty six times in different articles. Van Hoek et *al*. (2002) clearly stated that in order to achieve supply chain objectives, the people dimension must be mastered. Andre (1995) mentioned that logistics managers need *HRM* knowledge to face the challenges imposed by the diverse workforce within the logistics function. People working in logistics do not have the same educational backgrounds and they have either managerial or vocational work positions. Thus such a diverse workforce requires a logistics manager with a very good knowledge of *HRM* not only to manage day to day operations but also to utilise this diversity in enhancing organisational effectiveness. Nilsson (2006) also emphasised the importance of *HRM* knowledge by stating that logistics managers need to understand that the human factor could be "the creator of value or producer of uncertainty" (Nilsson, 2006, p.45). In other words, the

more understanding the logistics manager has for human involvement, the more leverage can be gained in logistics performance and vice versa.

Sutton (1990) added that the importance of *HRM* to logistics managers is simply in the fact that they are responsible for determining training needs for logistics employees. This was further emphasised by Ellinger et *al*. (2002) who stressed that senior logistics managers can invest in the development of logistics personnel by facilitating the acquisition of money and other resources to support work-related learning as well as encouraging employees to identify what they need for future work tasks.

In the logistics knowledge category, *technology tools* were mentioned forty six times. It is important to note that *technology tools* differ from *computer skills* because the former focuses on the specific applications of specialised technology in managing logistics activities. Warehouse Management Systems (WMS) and Radio Frequency Identification (RFID) are two examples of technological applications that are used to streamline the order fulfilment process and enable better communication flow between functions within the company as well as with supply chain partners (Ballou, 2005). Logistics managers need to have the knowledge of *technology tools* in order to be capable of providing input to the assessment of the value of these technologies and the benefits provided to the firm, its customers and suppliers (Rao et *al*., 1994; Lambert et *al*., 2008). Nilsson (2006) also added that a conflict usually arises between logisticians and the IT departments because in some cases, the IT department develops tools that are only understood by IT people and not logisticians. Consequently, this negatively affects the usefulness of the tools developed which further supports the involvement of logistics managers whether in the development or acquisition process of new technology tools. After all, Gavier and Farris (2008) expressed that *technology tools* in logistics support the integration of the different disciplines to bridge the inter-firm gap that would lead to more transparent and effective operations.

Transportation was also among the highly cited elements in the logistics knowledge category where it was mentioned thirty five times. *Transportation* being the principal logistics activity influencing the total logistics cost and performance – as stated by Meixell and Norbis (2008) - is an instrument used by many companies to achieve

competitive advantage. Thus the *transportation* knowledge of logistics managers can influence the effectiveness of the entire logistics function. It is also worth noting that *transportation* knowledge was linked to *outsourcing* as stated in many of the articles analysed because most companies tend to outsource the transportation activity to logistics service providers.

Green logistics is also amongst the highly cited elements in logistics knowledge which was mentioned in half of the articles analysed. Logistics activities – especially transportation – have the greatest impact on the environment, and the growing concern over the environment and energy consumption presents a challenge to logistics managers (Wu and Dunn, 1995). This challenge is further intensified with the growing percentage of consumers in developed countries whose buying decisions are based on the information provided on the products' carbon footprint (Harvey, 2007). Consequently global retailers – in order to meet their customers' expectations of environmental sustainability - started to take serious measures with their suppliers to hold them accountable for their carbon footprint and excess packaging (Neff, 2007). Hence, the knowledge of green logistics gained momentum and significance for logistics managers operating in all types of industries due to the global concern and pressures of global retailers to maintain environmental sustainability.

7.3.2 Highlights on Other Elements – Academic Articles

In the process of examining the skills and knowledge elements in academic articles, it was necessary to highlight some of the other elements that were not on the top five but would be useful at a later stage of the study.

Reverse logistics knowledge in the logistics category was emphasised by a number of authors. Lambert et *al*. (2008) explained that logistics managers provide the data and analytical skills necessary for performing a network analysis with the reverse flow. Skjoett, Larsen (2000) stated that the logistics manager's *reverse logistics* knowledge should be involved early in the product development phase where it is important to consider which materials to use in production in order to minimise consumption of materials and the cost of later separation and recycling components. Logistics managers would also need *reverse logistics* knowledge in making changes to products, such as in

packaging if the returned products proved to be damaged in transit Lambert et *al*. (2008).

Production knowledge is also another important knowledge element for logistics managers as for a given degree of manufacturing flexibility, the appropriate logistics capabilities need to be implemented and managed Lambert et *al*. (2008). Thus logistics managers need to be capable of identifying the logistics capabilities and cost implications associated with the desired degree of manufacturing flexibility.

Supply chain security in the logistics category was only stated three times mainly in articles written by American authors. After the terrorist attack on September 11, increasing security measures are being implemented in various stages of supply chains' operations. Thus the knowledge of *supply chain security* for logistics managers involves many aspects such as the selection of security conscious carriers, shipping via secure ports, meeting packaging security requirements and also providing background on key personnel (Meixell and Norbis, 2008).

The skill of speaking a *second language* was just mentioned five times in the analysed articles. Although English is the universal language for business, some authors stressed on the need for second language skills. For instance, Burcher et *al*. (2005) mentioned that British logistics managers would need the skill of speaking another language due to the growth of business relations in Europe. Wu (2006) in his article on Taiwanese logistics managers; mentioned that the skill of speaking a second language i.e. English is necessary because of the increasing business with the western world. Thus the need of a *second language* is highly influenced by the business opportunities in the global market.

Although not on the top five skills, *leadership* is considered one of the highly cited skills elements. Novack et *al*. (1993) and Van Hoek et *al*. (2002) expressed that logistics managers no longer dictate employees the tasks to be performed and the methods by which they should be accomplished. They stated that logistics managers with good leadership skills identify challenges and assign employees to them, then coach, support and leverage their capabilities rather than control. Practicing leadership in such as way

would enable the logistics manager to enhance his *leadership skills* while at the same time develop other leaders instead of developing followers.

7.3.3 Skills and Knowledge Patterns in the Academic Articles

The purpose of the review conducted in the previous sections was to present the views of authors on the highly cited elements in the skills, business/management knowledge and logistics knowledge categories. This section now examines the relationships that exist between the different elements which in turn result in competencies.

Outlining all the possible relationships between the forty five elements can result in a large number of competencies, which is beyond the scope of this research. Therefore, the following sections will highlight the most frequent skills and knowledge patterns that were noted in the analysed articles.

Van Hoek et *al*. (2002) stated that logistics knowledge is just "a qualifier not a differentiator" (Van Hoek et *al*., 2002, p.119) and that a wide range of skills and managerial knowledge is needed to become a successful logistics manager. Thus the researcher will use each of the logistics knowledge elements as a basis to highlight the skills and business/management knowledge elements associated to them in the literature as shown in Table 7.3. The (x) under the skills and business/management elements indicate the presence of a link with the logistics knowledge elements.

Table 7.3 – Skills and Knowledge Patterns in Academic Articles

Logistics Knowledge	SKILLS															BUSINESS/MANAGEMENT KNOWLEDGE																
	Adaptability	Analytical Skills	Communication	Computer skills	Continuous learning	Decision making	Innovation	Leadership	Negotiation	Networking	Interpersonal Skills	Problem solving	Second language	Teamwork	Time management	Benchmarking	Change management	Conflict management	Cross functional operation	Finance/cost	General business	General management	Human resource mgmt	International business	Knowledge management	Logistics/ supply chain	Marketing	Production	Project management	Quality management	Strategic management	System thinking
Customer service			x	x		x						x	x	x					x	x			x	x		x	x			x		
Forecasting		x	x	x										x	x				x	x				x		x	x	x				
Green logistics			x		x	x	x							x			x		x	x						x	x					
Inventory control		x	x	x															x	x						x		x				
Materials handling			x	x								x							x	x			x			x						
Order processing		x	x	x		x		x				x		x	x				x	x	x		x	x		x	x	x		x		
Outsourcing		x	x			x			x	x		x		x				x	x	x			x	x	x	x				x	x	

Table 7.3 – Skills and Knowledge Patterns in Academic Articles (continued)

Logistics Knowledge	SKILLS															BUSINESS/MANAGEMENT KNOWLEDGE																
	Adaptability	Analytical Skills	Communication	Computer skills	Continuous learning	Decision making	Innovation	Leadership	Negotiation	Networking	Interpersonal Skills	Problem solving	Second language	Teamwork	Time management	Benchmarking	Change management	Conflict management	Cross functional operation	Finance/cost	General business	General management	Human resource mgmt	International business	Knowledge management	Logistics/ supply chain	Marketing	Production	Project management	Quality management	Strategic management	System thinking
Purchasing		x	x			x			x		x			x	x				x	x				x		x		x		x		
Reverse logistics		x	x	x	x	x	x					x		x				x	x	x		x				x		x		x		
Supply chain security		x				x						x		x				x	x	x				x		x						x
Technology tools	x	x	x	x	x	x		x						x					x	x	x		x	x		x		x		x		x
Transportation		x	x	x		x			x			x		x	x				x	x			x	x	x	x				x		
Warehousing		x		x								x		x				x	x	x			x			x				x		x

Table 7.3 shows the most frequent skills and business/management knowledge elements that were linked to the different logistics elements in academic articles. This table presents an illustration of the skills and business/management elements that have a tendency towards influencing logistics competencies. It cannot be concluded that the skills and business/management elements that did not have any link with logistics elements are neither of less importance nor of no link at all. A lot of factors could influence the links between the different elements such as the industry and the market in which the logistics manager is operating. Thus, Table 7.3 is just a reflection on the views of the different authors in the articles analysed.

As it is shown in Table 7.3, *communication skills*, *cross functional operation*, *finance/cost*, and *logistics/supply chain management* knowledge are linked to every logistics knowledge element listed on the left. These links prove that these elements highly affect logistics competencies as shown in the literature. Other elements such as *teamwork*, *analytical skills*, *computer skills*, *quality management* and *HRM* were also linked to the majority of the logistics elements. And as it was stated by many authors, it is the mix between these elements that result in competencies.

Thus the key point here for logistics managers is to understand the competencies required for effective performance while taking into consideration the nature of the industry and the market in which they are operating. Consequently they need to focus on these competencies, to understand the links between the different elements and then develop them in a way that would positively impact their performance.

In concluding the analysis of the academic articles, it could be stated that despite the fact that the analysed articles addressed the skills of logistics managers, the contents analysed did not focus on particular logistics knowledge elements that are described as having higher impacts on logistics competencies than others. However, the analysis showed the views of authors in describing an array of different elements belonging to skills, business/management knowledge and logistics knowledge to become a successful logistics manager.

It is worth noting that the views of the authors are highly influenced by the settings where these studies were conducted i.e. in developed countries where both logistics knowledge and education are far more developed than in other parts of the world. Thus their opinions should be very well addressed and examined in order to investigate the possibilities of following the path they provided in achieving logistics competencies.

7.4 CAREER GUIDES

As stated in chapter five, five career guides were selected for the investigation on the skills and knowledge required for logistics managers. The internet was used to access these five career guides that contained updated information on various career paths including logistics. The five career guides are:

- Career Cluster Resources for Transportation, Distribution and Logistics;
- The Council of Supply Chain Management Professionals' Careers in Logistics;
- CareerOneStop;
- Graduate Prospects;
- Logistics and Transport Management Career Guide

Table 7.4 shows the number of times the skills, business/management knowledge and logistics knowledge elements were mentioned in the analysed career guides.

Table 7.4 – Frequencies of Skills and Knowledge Elements in Career Guides

Skills	Times Mentioned	Business/Management Knowledge	Times Mentioned	Logistics Knowledge	Times Mentioned
Computer skills	5	Finance/cost	4	Customer service	4
Communication	4	Strategic management	3	Transportation	3
Innovation	4	System thinking	3	Outsourcing	3
Problem solving	4	Quality management	3	Technology tools	3
Networking	4	Human resource management	3	Forecasting	2
Continuous learning	3	Cross functional operation	2	Order processing	1
Analytical skills	3	General business	2	Materials handling	1
Interpersonal skills	3	General management	2	Inventory control	1
Decision making	2	Change management	2	Purchasing	0
Leadership	2	International business	2	Reverse logistics	0
Teamwork	2	Project management	2	Supply chain security	0
Second language	2	Benchmarking	1	Warehousing	0
Negotiation	1	Logistics/supply chain knowledge	1	Green Logistics	0
Adaptability	1	Marketing	1		
Time management	1	Production	1		
		Conflict management	0		
		Knowledge management	0		

7.4.1 Top Five Skills and Knowledge in Career Guides

By examining the top five elements in each of the three categories in Table 7.4, it can be easily noted that they are in a way different than those in the academic articles in Table 7.2.

Computer skills top the elements in the skills category followed by *communication*, *innovation*, *networking* and *problem solving* skills. It was noted that 'excellent' and 'effective' were the two adjectives commonly used to describe the *communication* skills needed; which signifies its importance to the logistics manager's job performance.

As for *networking* skills, it was described as maintaining relationships with persons outside the organisation which include customers, public and government (CareerOneStop, 2009). *Problem solving* skills were highly linked with *innovation*, *analytical skills* and *decision making*. It was stated in Prospects (2009) that good *problem solving* skills are needed to support effective *decision making*. While in CareerOneStop (2009) it was mentioned that *analytical skills*, especially mathematical and statistical methods were needed to support *problem solving*.

In the business/management knowledge category, *finance/cost* is the most highly cited knowledge element and being the first one on the top five reflects its importance in the career guides as well as it was in the academic articles. *Strategic management*, *system thinking*, *quality management* and *HRM* are on the top five in this category. Special emphasis was made on *HRM* knowledge particularly on the ability of assessing training needs and preparing training materials for new employees (OVAE, 2002; Prospects, 2009).

In the logistics knowledge category, the top five elements are *customer service*, *transportation*, *outsourcing*, *technology tools* and *forecasting*. Four of these elements were also on the top five in the academic articles, with the exception of *outsourcing*. This fact strengthens the importance of the four common elements to logistics managers. *Transportation* was linked to *finance/cost* and *customer service* as it was stated in CSCMP (2007), that the logistics manager would need to know how to evaluate trade-offs between transportation costs, inventory costs and service levels.

As for *technology tools*, it was noted that it was linked with *continuous learning skills* and *change management*. CareerOneStop (2009) and Inside Careers (2010) stated that logistics managers would need to stay informed of logistics technology advances and apply the appropriate technology to improve logistics processes.

Outsourcing is also another element that was linked with *negotiation*, *performance measures* and *quality management*. *Outsourcing* knowledge includes the management of subcontractor activities, the review of proposals and the development of performance specifications (CareerOneStop, 2009).

7.4.2 Highlights on Other Elements – Career Guides

In the process of examining the skills and knowledge elements in career guides, it was necessary to highlight some of the other elements that were not on the top five in the categories provided.

In two of the career guides, the need for a *second language* was expressed as a skill of very high importance that would add to the value of the logistics manager. In CSCMP (2009) for instance, it was clearly stated that fluency in a foreign language is recommended. However, this statement was not linked to any preferences to particular languages because as it was stated earlier in section 7.3.2; the demand on a specific language depends on the market with which the company has the majority of its business relationships.

Continuous learning skills were also emphasised in both Prospects and CareerOneStop which emphasises that to be successful in logistics, one need to be constantly updated with the development in this discipline. *Continuous learning* – not just in logistics – is a key towards opening perceptions on the methods by which business as well as professional opportunities can be achieved.

Analytical skills were only mentioned in two of the career guides in which there was special attention to the use of statistics and modelling. This was not frequently mentioned in academic articles.

7.4.3 Skills and Knowledge Patterns in Career Guides

As stated previously, the main purpose of the content analysis is to examine the relationships that exist between the different elements. As in Table 7.3, the logistics knowledge elements will be used as a basis to highlight the skills and business/management knowledge elements associated to them in the career guides. However, some of the logistics knowledge elements would lack links with other elements because they were not covered in the statements provided in the career guides. Thus the following logistics elements will not be included in Table 7.5:

- *Purchasing*
- *Reverse logistics*
- *Supply chain security*
- *Warehousing*
- *Green logistics*

In the business/management knowledge category, there were also two elements that were not present in any of the statements in the career guides: *conflict management* and *knowledge management*. Thus these two elements will not be included in Table 7.5.

Table 7.5 shows the relationships between the logistics elements, skills and business/management knowledge elements. The (x) under the skills and business/management elements indicates the presence of a link with the logistics knowledge elements.

Table 7.5 – Skills and Knowledge Patterns in Career Guides

Logistics Knowledge	SKILLS															BUSINESS/MANAGEMENT KNOWLEDGE														
	Adaptability	Analytical Skills	Communication	Computer skills	Continuous learning	Decision making	Innovation	Leadership	Negotiation	Networking	Interpersonal Skills	Problem solving	Second language	Teamwork	Time management	Benchmarking	Change management	Cross functional operation	Finance/cost	General business	General management	Human resource mgmt	International business	Logistics/ supply chain	Marketing	Production	Project management	Quality management	Strategic management	System thinking
Customer service			x						x	x			x					x	x					x					x	
Forecasting				x											x	x			x											
Inventory control		x		x														x	x					x						
Materials handling			x																			x					x			
Order processing			x	x														x					x			x				
Outsourcing						x			x	x									x									x		
Technology tools	x			x													x					x		x						
Transportation		x	x			x				x		x							x			x	x				x	x		

When compared with Table 7.3 that presents the skills and knowledge patterns in academic articles, it can be easily noted that the patterns are quite scattered in Table 7.5. The presence of common skills or business/management knowledge elements in relation with the different logistics elements is not very frequent. This could be attributed to two reasons:

- The statements in career guides are in a way brief compared with the ones provided in academic articles;
- Some skills and knowledge elements were mentioned in career guides but not linked to any particular logistics knowledge element (highlighted in yellow in Table 7.5).

The justification for these two reasons could be because career guides primarily aim at presenting career profiles where the purpose is to present brief, yet comprehensive information for job seekers and college graduates.

Communication skills and *finance/cost* are the two most frequent elements linked to the majority of logistics knowledge elements, followed by *computer skills* and *logistics/supply chain management*. These elements were also among the most frequent elements linked to logistics elements in the analysed academic articles. Consequently, this adds to the importance of these elements towards logistics competitiveness.

7.5 INTERVIEWS

The previously analysed sources of information addressed the skills and knowledge elements required for logistics managers in general with no particular emphasis on specific industries. The academic articles and career guides were also written and published in developed countries with developed industries which might have influenced the skills and knowledge required for logistics managers. Thus it was necessary to examine the views of logistics managers in RMG manufacturing companies in Egypt in order to get a closer insight into their perspectives and determine the commonalities or differences with the two previously analysed sources.

7.5.1 Top Five Skills and Knowledge in Interviews

Semi-structured interviews were conducted with six logistics managers in RMG manufacturing companies where the interviewees were asked to state the skills and knowledge elements that are needed for a logistics manager to be effective in RMG manufacturing companies. Table 7.6 shows the number of times the skills, business/management knowledge and logistics knowledge elements were mentioned in the interviews.

Table 7.6 – Frequencies of Skills and Knowledge Elements in Interviews

Skills	Times Mentioned	Business/Management Knowledge	Times Mentioned	Logistics Knowledge	Times Mentioned
Communication	6	Logistics/supply chain knowledge	6	Customer Service	6
Computer skills	6	Quality management	6	Outsourcing	6
Second language	6	Cross functional operation	5	Technology tools	6
Time management	6	International business	5	Transportation	6
Teamwork	5	Finance/cost	5	Forecasting	5
Problem solving	4	Human resource management	4	Order processing	4
Decision making	4	Conflict management	4	Warehousing	3
Continuous learning	3	General management	3	Supply chain security	2
Innovation	2	General business	3	Inventory control	2
Negotiation	2	Marketing	2	Green logistics	1
Networking	1	Strategic management	1	Materials handling	0
Interpersonal skills	1	System thinking	0	Reverse logistics	0
Adaptability	0	Benchmarking	0	Purchasing	0
Analytical skills	0	Change management	0		
Leadership	0	Production	0		
		Project management	0		
		Knowledge management	0		

As shown in Table 7.6, the top five elements in the skills category that were mentioned by the logistics managers are: *communication*, *computer skills*, *second language*, *time management* and *teamwork*. Three of these elements were also on the top five in the analysed articles and career guides: *communication*, *computer skills* and *teamwork.* This reinforces the fact that these three elements are widely acknowledged as essential to successful logistics managers. *Second language* appears for the first time on the top five in the skills category. Since the main language in Egypt is the Arabic language, a *second language* is necessary for securing business relationships and opportunities in the global market. The interviewees agreed that a second language – specifically the English language – is of a top priority for logistics managers due to their involvement in importing and exporting activities where suppliers, contractors, importers and clients communicate in English. *Time management* is another skill that appears for the first time on the top five in the skills category. The sample of logistics managers interviewed agreed that time is not acknowledged as a valuable asset in Egypt – a fact which renders *time management* a problem that faces logistics managers in performing their jobs. One of the managers explained that the greatest challenge faced by logistics managers is that *time management* is considered an area of deficiency for some of the parties that deal with the company. Consequently this affects the company's performance, specifically logistics performance. Therefore, *time management* is a skill that needs special attention for logistics managers in Egypt in order to be capable of dealing with either internal or external parties whose time management deficiency affects the company's performance.

In the business/management knowledge category, the top five elements are: *logistics/supply chain knowledge*, *quality management*, *cross functional operations*, *international business* and *finance/cost*. Compared with the top five in the analysed articles and career guides, one of these elements appear for the first time in this category: *logistics/supply chain knowledge*. *Logistics/supply chain knowledge* was mentioned by all interviewees as an element that is needed for effective logistics managers. The stress given to this element could be attributed to the fact that logistics and supply chain knowledge in Egypt is fairly new and it was not until recent years that the words 'logistics' and 'supply chain management' began to appear in the Egyptian business environment (Elzarka, 2006). Therefore *logistics/supply chain knowledge* was

addressed as one of the crucial knowledge elements needed for logistics managers in Egypt.

Customer service, *outsourcing*, *technology tools*, *transportation* and *forecasting* are the top five elements in the logistics knowledge category. These five elements were also on the top five elements in both the analysed articles and career guides which consequently support the relevance of these elements to logistics managers.

7.5.2 Highlights on Other Elements – Interviews

In the course of conducting the interviews, two particular elements were emphasised by some of the interviewees that were not on the top five elements discussed previously. The first element is *continuous learning* in the skills category that was mentioned by three of the interviewees. *Continuous learning* was linked to the novelty status of logistics and supply chain knowledge in Egypt which reinforced the importance of *continuous learning skills*. Nasr Zahran (personal communication. 23 January 2009) mentioned that RMG manufacturing companies – especially those engaged in exports to the major RMG markets in Europe and North America – are now more aware of the importance of *continuous learning* skills. He explained that exporting to major markets and competing with other exporters from Eastern Europe and Asia made RMG manufacturing companies in Egypt more aware that continuous learning is the way towards maintaining a competitive advantage in the global market. Haytham Khafaga (personal communication. 30 January 2009) added that despite the importance of *continuous learning skills*, many senior logistics managers lack these skills because as they get older in age, the more reluctant they become towards demonstrating skills in acquiring new knowledge or accepting learning activities. Thus *continuous learning* skills are important for logistics managers in RMG manufacturing companies in Egypt in order to acquire the new knowledge areas in logistics and supply chain management which would have a positive impact on the companies' logistics performance.

The second element is *green logistics* in the logistics knowledge category which was mentioned by only one interviewee. Guzzetti (personal communication. 31 January 2009) explained that *green logistics* – although not currently popular in logistics

practices in Egypt – would gain more importance in the future due to the pressures of global RMG retailers to which Egyptian RMG manufacturing companies export products. He emphasised that one of their major clients in the U.S. requested certain criteria particularly to the use of recycled materials in packaging products. Thus *green logistics* knowledge would be necessary for logistics managers in order to conform to the criteria imposed by global RMG importers.

7.5.3 Skills and Knowledge Patterns in Interviews

Table 7.7 shows the relationships between the logistics elements, skills and business/management knowledge elements as mentioned in the interviews. The (x) under the skills and business/management elements indicates the presence of a link with the logistics knowledge elements.

Some of the logistics knowledge elements would lack links with other elements because they were not mentioned in the interviews. Thus the following logistics elements are not included in Table 7.7:

- *Purchasing*
- *Reverse logistics*
- *Material handling*

In the skills and business/management knowledge categories, there were also some elements that were not mentioned in any of the interviews and are not included in Table 7.7. These elements are: *system thinking*, *benchmarking*, *change management*, *production*, *project management*, *knowledge management*, *adaptability*, *analytical skills* and *leadership*.

Table 7.7 – Skills and Knowledge Patterns in Interviews

Logistics Knowledge	SKILLS												BUSINESS/MANAGEMENT KNOWLEDGE										
	Communication	Computer skills	Continuous learning	Decision making	Innovation	Negotiation	Networking	Interpersonal Skills	Problem solving	Second language	Teamwork	Time management	Conflict management	Cross functional operation	Finance/cost	General business	General management	Human resource mgmt	International business	Logistics/ supply chain	Marketing	Quality management	Strategic management
Customer service	x	x			x		x					x			x					x		x	x
Forecasting				x								x		x									
Green logistics															x					x			x
Inventory control				x																			
Order processing	x	x							x			x		x	x					x		x	
Outsourcing	x			x		x						x			x					x		x	x
Supply chain security				x																x		x	x
Technology tools		x													x					x		x	x
Transportation	x								x			x		x	x					x		x	
Warehousing					x							x		x						x		x	

It is noticed that Table 7.7 presents scattered patterns like Table 7.5 because the statements given by the interviewees were somehow brief and presented links to very few elements. Moreover, some elements were mentioned without the provision of any link to particular logistics knowledge elements such as *continuous learning* skills and other elements highlighted in yellow in Table 7.7. Therefore examining the links between these elements and logistics knowledge elements was not possible.

It is clear in Table 7.7 that the business/management knowledge elements have more links with the logistics knowledge elements than those in the skills category. *Logistics/supply chain knowledge* followed by *quality management* and *finance/cost* are the most frequent business/management elements that have links with logistics elements.

7.6 DISCUSSION ON THE FINDINGS OF THE CONTENT ANALYSIS

Conducting the content analysis on academic articles, career guides and interviews allowed the investigation of the skills and knowledge elements required for logistics managers and to highlight the links that exist between them.

The research did not limit the investigation to the elements solely required for the functions and tasks of logistics executives in RMG manufacturing companies which were identified in the previous chapter. The reason for this was the need to utilise the wealth of information that is available in academic research and to incorporate it in a way that would suit the needs of the population addressed. Therefore the content analysis was performed to investigate the skills and knowledge elements that existed in the academic literature to achieve two main objectives: (1) acknowledging all the elements stated in academic research that create competencies for logistics managers and (2) examining the number of times they were mentioned which was considered as an indicator to their importance and relevance to the logistics managers' competencies.

Opposed to other studies in logistics skills, it was not possible to conclude based on the findings of this analysis that logistics managers are to be 'managers first, logisticians second'. The content analysis of the three different sources did not show specific preferences to the elements of one category over that of another within a specific

source. In other words, it was not found that the elements of the ‘business/management knowledge’ category were mentioned more times than those in the ‘skills’ or the ‘logistics knowledge’ categories and vice versa.

The content analysis which was also conducted on the semi structured interviews with logistics managers in RMG manufacturing companies revealed the absence of some elements that were earlier identified in academic articles. This concluded that if the skills investigation was limited to logistics managers in RMG manufacturing companies to just focus on the elements required for the performance of the stated functions and tasks, many elements would have been missed, probably resulting in unreliable and invalid list of competencies. This consequently supported the decision of conducting the content analysis on academic articles.

The sources analysed did not explicitly present competency statements for logistics managers but rather listed the skills and knowledge elements needed. Academic articles provided the most detailed and comprehensive information on skills and knowledge compared to career guides and interviews, which assisted in exploring and understanding the relevance of the different skills and knowledge elements to the logistics manager’s performance. It is worth mentioning that very few articles comprehensively discussed some of the main technical knowledge elements i.e. the logistics elements, and the skills and knowledge elements associated to them. These discussions were made in the form of providing tasks’ statements that described some of the activities performed by logistics managers.

The focus in academic articles on the topic of logistics managers’ skills was on examining the different views of practitioners, career experts, academics and even students on the skills that logistics managers should possess. They mainly focused on listing the skills required as individual, independent elements to be taken into consideration in the design of job descriptions, in recruitment, and in training programs. However, the majority of these studies did not explore the relationships that exist between the various skills and knowledge elements which in turn are crucial towards achieving competencies. The real strength in understanding competencies lies in the

discovery of the relations and links between the various elements within a competency, subsequently affecting logistics performance.

It is worth noting that in many of the articles analysed, the authors did not clarify the managerial level of the logistics manager they investigated, but their findings were considered in the content analysis. Some may argue that this would affect the validity of the outcomes of the content analysis, but it could be safely claimed that the competencies of logistics managers across the different managerial levels could be similar where the difference would lie in the proficiency levels needed for each managerial level and the priority they have towards work performance. Therefore it could be claimed that the outcome of the content analysis can be used as a reference to identify the skills and knowledge elements needed for logistics managers regardless of their managerial level.

Discovering the links between the different skills and knowledge within a competency plays a great role in the design of effective training programs since these programs would include all the elements necessary to achieve a certain competency. In other words, training programs would be more effective if they comprise the different skills and elements in competencies and not just focusing on a particular skill or a specific technical knowledge element.

The lack of clear competency statements for logistics managers in the analysed sources could be due to the differences that exist in logistics activities and strategies which are the result of different industries, markets and logistics expertise. This was noted in the analysed articles where it was clearly stated that the competitive pressures, globalisation and the nature of business have some influence on the skills needed. It was also noticed in interviews that some elements appeared on the top five and were not commonly found on the top elements in neither the academic articles nor the career guides due the differences in culture and the level of logistics expertise.

As for the elements that were not mentioned at all in the career guides and the interviews, it cannot be concluded that they are irrelevant or unimportant to logistics

managers, and their absence could be attributed to the small sample size or the limited scope of information covered within these two sources.

There was doubt prior to conducting the content analysis that finding clear competency statements for logistics managers would be possible. However, exploring the skills and knowledge elements that exist in the three examined sources and highlighting the links that exist between them would support the design of the CF as will be demonstrated in the next chapter.

7.7 CHAPTER SUMMARY

This chapter presented a content analysis of selected academic articles, career guides and semi-structured interviews to investigate the skills and knowledge elements required to create logistics competencies. The content analysis revealed the existence of forty five elements that relate to logistics competency where the majority of elements fell under the business/management knowledge category. The top five elements in each category – skills, business/management knowledge, and logistics knowledge – were examined. Some elements in the top five were found common in the three different sources which in turn indicate their importance to logistics competency. The forty five elements appeared in all the academic articles while some of the elements did not appear in career guides and interviews due to the large number of academic articles examined and the wealth of information that was provided. The links between the elements were also more witnessed in academic articles due to the provision of comprehensive statements that allowed the examination of the links that exist between the different elements. Highlighting the links between the different skills and knowledge elements allowed the researcher to understand their relevance for logistics performance which will support the creation of the CF in the next chapter.

CHAPTER EIGHT: THE GENERIC FRAMEWORK FOR LOGISTICS EXECUTIVES - SUGGESTED METHODS FOR USE

8.1 INTRODUCTION

This chapter starts with presenting the outcomes of the data collected and analysed in the course of this study and their contribution in creating the competency framework template for logistics executives in RMG manufacturing companies. This chapter presents the generic framework for logistics executives that is the result of the data collected and analysed in this research and it also presents a competency framework that was completed by one of the RMG manufacturing companies in Egypt. Moreover, the guidelines necessary for RMG manufacturing companies to create their own framework is presented and the chapter concludes by presenting the methods by which the framework can be used to determine the training needs of logistics executives.

8.2 THE OUTCOMES OF THIS STUDY AND THEIR CONTRIBUTION IN CREATING THE COMPETENCY FRAMEWORK TEMPLATE

The principal information required to create the CF template is:

- The functions and tasks performed by logistics executives in RMG manufacturing companies; and
- The skills and knowledge elements required to perform these functions effectively.

The outcomes of this research with regard to these two requirements are:

- ✓ The functions and tasks performed by the logistics executive in RMG companies are collected and ranked in order of importance to effective job performance (Questionnaire);
- ✓ The forty five skills and knowledge elements necessary to create competencies for logistics executives and their definitions were collected from academic

articles that present the views of practitioners and academics (Content Analysis); and

- ✓ The possible combinations of skills, business/management knowledge and logistics knowledge needed to create competencies (Content Analysis).

The benefits of these outcomes in the creation of the framework are:

- Providing the functions and tasks which represent the responsibilities of logistics executives in RMG manufacturing companies give clear and detailed information on the scope of responsibilities of the logistics executive. This in return would assist in the avoidance of any overlap with any other function within the company.
- Providing a rank for the functions and tasks reflects the sample's opinion on the level of importance of these functions and tasks to effective job performance. This consequently will provide a guide for companies on which tasks and functions contribute more to effective job performance and thus to be given more attention.
- Providing this rank would also guide in setting priorities as to which functions and tasks to be addressed first when assessing training needs.
- Providing the detailed information on the tasks within each function can assist companies in carrying in-depth investigations as to which exact tasks need improvement and training.
- The forty five elements extracted from the academic articles are to be used as a source of reference from which to select the skills and knowledge elements to perform the functions and tasks effectively.
- The definitions provided for each of the forty five elements will guarantee common understanding for those involved in the process of designing the framework.
- Providing the possible combinations between skills and knowledge elements would support the selection of needed elements to create competencies.

Table 8.1 shows the generic framework for logistics executives in RMG manufacturing companies based on the ranked functions in this study.

Table 8.1 – The Generic Framework for Logistics Executives in RMG Manufacturing Companies in Egypt

RANK	FUNCTION	SKILLS	BUSINESS/MANAGEMENT KNOWLEDGE	LOGISTICS KNOWELDGE
1	Develop logistics plans to meet the requirements of customers' orders.			
2	Respond to incidents during logistics operations.			
3	Improve the quality of logistics performance.			
4	Manage logistics service providers.			
5	Ensure compliance of logistics operations with government's legislations and company's regulations.			
6	Maintain safety and security in logistics operations.			
7	Integrate technology tools in logistics operations.			
8	Design contingency plans for logistics operations.			
9	Identify the logistics requirements for the company's supply chain.			
10	Monitor the environmental impact of logistics operations.			

The left side of Table 8.1 presents the rank and the functions of logistics executives that contribute to effective job performance where on the top row of the table the three titles – skills, business/management knowledge and logistics knowledge – are provided to present the elements required to perform the functions stated on the left. The blank spaces are to be completed using Table 7.1 in chapter seven that presented the skills and knowledge elements acknowledged in the literature to create competencies for logistics executives. Table 8.2 provides an example of a complete framework for logistics executives in RMG manufacturing companies based on the data collected and analysed in chapter seven.

Table 8.2 – An Example of a Complete Framework for Logistics Executives in RMG Manufacturing Companies

RANK	FUNCTION	SKILLS	BUSINESS/MANAGEMENT KNOWLEDGE	LOGISTICS KNOWLEDGE
1	**Develop logistics plans to meet the requirements of customers' orders.**	*Communication; Time management*	*Finance/cost; Strategic management*	*Forecasting; Order processing; Customer service*
2	**Respond to incidents during logistics operations.**	*Analytical skills; Computer skills; Problem solving*	*System thinking; Cross functional operation*	*Materials handling; Supply chain security*
3	**Improve the quality of logistics performance.**	*Communication; Leadership; Innovation*	*Finance/cost; Quality management*	*Customer service; Technology tools*
4	**Manage logistics service providers.**	*Communication; Decision making; Teamwork*	*Finance/cost; Human resource management; Strategic management*	*Customer service; Outsourcing*
5	**Ensure compliance of logistics operations with government's legislations and company's regulations.**	*Communication*	*General management; Logistics/supply chain knowledge*	*Customer service*
6	**Maintain safety and security in logistics operations.**	*Leadership; Decision making; Teamwork*	*Finance/cost; General management; Quality management*	*Supply chain security; Technology tools*
7	**Integrate technology tools in logistics operations.**	*Computer skills; Continuous learning; Innovation*	*Finance/cost; Project management*	*Technology tools*
8	**Design contingency plans for logistics operations.**	*Analytical skills; Teamwork*	*International business; Strategic management*	*Customer service; Order processing*
9	**Identify the logistics requirements for the company's supply chain.**	*Teamwork; Innovation; Decision making*	*Cross functional operations; General management; System thinking*	*Forecasting; Materials handling; Order processing*
10	**Monitor the environmental impact of logistics operations.**	*Analytical skills; Continuous learning*	*Quality management; Marketing; Strategic management*	*Green logistics*

The selection of the skills and knowledge elements required to effectively perform the functions of the logistics executive in Table 8.2 was based on the patterns of skills and knowledge examined in chapter seven. However, it could not be claimed that this framework can be generalised to the population of logistics executives in RMG manufacturing companies in Egypt as the framework was not validated. In addition, the ranking of functions in the framework as well as the skills and knowledge elements required for the performance of these functions would differ from one company to another according to their strategies and priorities. Section 8.4 will later present the guideline that RMG companies should follow to complete and customise the competency framework for their logistics executives.

8.3 EVALUATING THE FRAMEWORK

In order to evaluate the information that was collected and analysed to create the CF template, a semi-structured interview was conducted with Mrs. Sarah Raouf, Senior Merchandiser and Development Manager at *Wagdy Moamen and Partners for Textile Industries and Ready-Made Garments Company*. Mrs. Raouf is the direct manager of the logistics executive in this company. The purpose of this interview was to evaluate the inputs provided by the study to create the CF template i.e. the functions and tasks of logistics executives; and the skills and knowledge elements. Mrs. Raouf was asked to:

- give feedback on whether the functions and tasks provide an actual representation of the scope of responsibility of the logistics executive in RMG companies;
- give her opinion on the rank of the functions provided;
- give feedback on whether the skills and knowledge elements represent all the possible elements from which users can select those of relevance to create competencies and;
- complete the framework by selecting the skills and knowledge elements required to perform the stated functions effectively.

In addition, the respondent was asked to give her opinion on whether this competency framework can be a useful tool in determining training needs. Finally, Mrs. Raouf was requested to comment on the language used in the framework as well as the overall structure of the framework.

8.3.1 Feedback on the Competency Framework

Mrs. Raouf was first asked to give her opinion on whether the functions and tasks provided for the framework describe the responsibilities of logistics executives in RMG manufacturing companies and whether there are any other tasks or functions that should have been included. She stated that the description of functions and tasks are very detailed and that she has not seen any document before that describe the tasks of logistics executives in such detail. She added that this description covers the scope of responsibilities of logistics executives and no other functions or tasks should be added.

As for the rank that was the result of the questionnaire on the sample of logistics executives in RMG manufacturing companies in Egypt, Mrs. Raouf stated that the rank reflects the importance level of the functions towards effective job performance and she would not change the rank of these functions. She mentioned that maybe as a start to the use of this framework; this rank could be a useful guide for companies which need directions on the way to determine priorities and to understand which functions are more important than others. But she emphasised that at a more advanced level, this rank should depend on the companies' strategies and priorities in operations. For instance if the company is operating in a highly competitive market and is working towards securing more business relations with major RMG retailers, then the functions of '*improve the quality of logistics performance – rank 3*' and '*integrate technology tools in logistics operations – rank 7*' would probably be in higher ranks to support the company's goals.

Mrs. Raouf was also asked whether the skills and knowledge elements provided present the range of all the possible elements which might be needed to perform the stated functions effectively. She agreed that these elements present all the possible choices but she commented on the skill of the 'second language'. She stated that the 'second language' i.e. English is a crucial skill that any logistics manager must have especially when working in the RMG manufacturing sector. She further stated that although this skill is very important, it would not be found among the selected skills that are necessary to perform the different functions (in the completed framework) because

second language proficiency is an inherent skill for performing all the functions of the logistics executive.

As for the usefulness of the framework towards helping RMG companies in determining the training needs for logistics executive, Mrs. Raouf stated that it can be useful only if clear guidance is provided. And finally, for the comments on the general structure of the framework in terms of clarity and the language used, she commented that the overall structure looks good but some words in the language are not clear. She stated that for example in function number 8 'design contingency plans for logistics operations' the word *contingency* is not clear and she suggested the use of another simpler word. In addition, she emphasised that providing this competency framework in the Arabic language can be clearer and simpler for RMG companies to use rather than the English language.

Therefore it can be concluded that the feedback on the inputs gathered for the creation of the framework is considered satisfactory taking into consideration the suggestions provided by Mrs. Raouf concerning the provision of the proper guidelines for the use of the framework and the changes to be done for the unclear words.

8.3.2 The Completed Framework: Wagdy Moamen and Partners for Textile Industries and Ready-Made Garments Company

Mrs. Raouf was asked to complete the competency framework by selecting the required skills and knowledge elements to perform the stated functions effectively. She was requested to choose between a minimum of one element to a maximum of three elements from each of the three categories - skills, business/management knowledge and logistics knowledge. The purpose of completing the framework is:

- to provide an example of an actual complete framework; and
- to examine the most occurring elements that are needed to create competencies.

Table 8.3 shows the completed competency framework.

Table 8.3 – A Complete Competency Framework [*Wagdy Moamen and Partners Company for Textile Industries and Ready-Made Garments Company*]

RANK	FUNCTION	SKILLS	BUSINESS/MANAGEMENT KNOWLEDGE	LOGISTICS KNOWLEDGE
1	**Develop logistics plans to meet the requirements of customers' orders.**	*Communication; Problem solving; Time management*	*Logistics/supply chain knowledge; Strategic management; System thinking*	*Forecasting; Transportation; Warehousing*
2	**Respond to incidents during logistics operations.**	*Analytical skills; Computer skills; Problem solving*	*Knowledge management*	*Materials handling; Supply chain security*
3	**Improve the quality of logistics performance.**	*Communication; Continuous learning; Leadership*	*Finance/cost; Human resource management; System thinking*	*Technology tools*
4	**Manage logistics service providers.**	*Communication; Decision making; Teamwork*	*Human resource management; Knowledge management; System thinking*	*Outsourcing; Technology tools*
5	**Ensure compliance of logistics operations with government's legislations and company's regulations.**	*Communication*	*General management; Logistics/supply chain knowledge*	*Supply chain security*
6	**Maintain safety and security in logistics operations.**	*Analytical skills; Decision making; Teamwork*	*Finance/cost; General management; Quality management*	*Supply chain security; Technology tools*
7	**Integrate technology tools in logistics operations.**	*Computer skills; Continuous learning; Innovation*	*Finance/cost; Human resource management*	*Technology tools*
8	**Design contingency plans for logistics operations.**	*Analytical skills; Communication*	*International business; Strategic management*	*Customer service; Order processing*
9	**Identify the logistics requirements for the company's supply chain.**	*Computer skills; Continuous learning; Decision making*	*Cross functional operations; General management; System thinking*	*Forecasting; Materials handling; Order processing*
10	**Monitor the environmental impact of logistics operations.**	*Analytical skills; Continuous learning*	*Quality management; Marketing; Strategic management*	*Green logistics*

In Table 8.3, it can be easily noted that some common elements are required for the effective performance of different functions and for the creation of competencies. By examining these common elements, it was found that the most highly cited elements in both the *skills* and the *business/management knowledge* categories were also among the top five elements in the three analysed sources in the content analysis (chapter seven). In the skills category, the elements are: communication, analytical skills and continuous learning skills, whereas in the business/management knowledge category, the elements are: system thinking, strategic management, finance/cost, human resource management and general management. This in return signifies the importance of these elements towards the creation of competencies for logistics executives.

In the logistics knowledge category, only two elements are most common: technology tools and supply chain security. The former was among the top five in the analysed sources while the latter had a very weak presence. Thus seeing that supply chain security is one of the most common elements found in the logistics knowledge category in the complete framework signifies its importance towards achieving competencies.

Furthermore, comparing the patterns between the elements in the three categories for each function, it can be noted that they are similar to those patterns found in the examined sources which again justifies the findings from the content analysis.

8.4 GUIDELINES TO COMPLETE THE COMPETENCY FRAMEWORK

This section aims at presenting the process of compiling the framework and at providing RMG manufacturing companies with the necessary guidelines to create the competency framework. The inputs for the process represent the findings from the data collected and analysed in the previous chapters, whereas the guidelines are based on the literature review that was conducted earlier in this research and the semi-structured interview conducted with Mrs. Raouf.

To compile the framework, the *practical method* in designing competency frameworks by Whiddett and Hollyforde (2003) and Armstrong (2006) will be used. Figure 8.1 shows the process of compiling the competency framework.

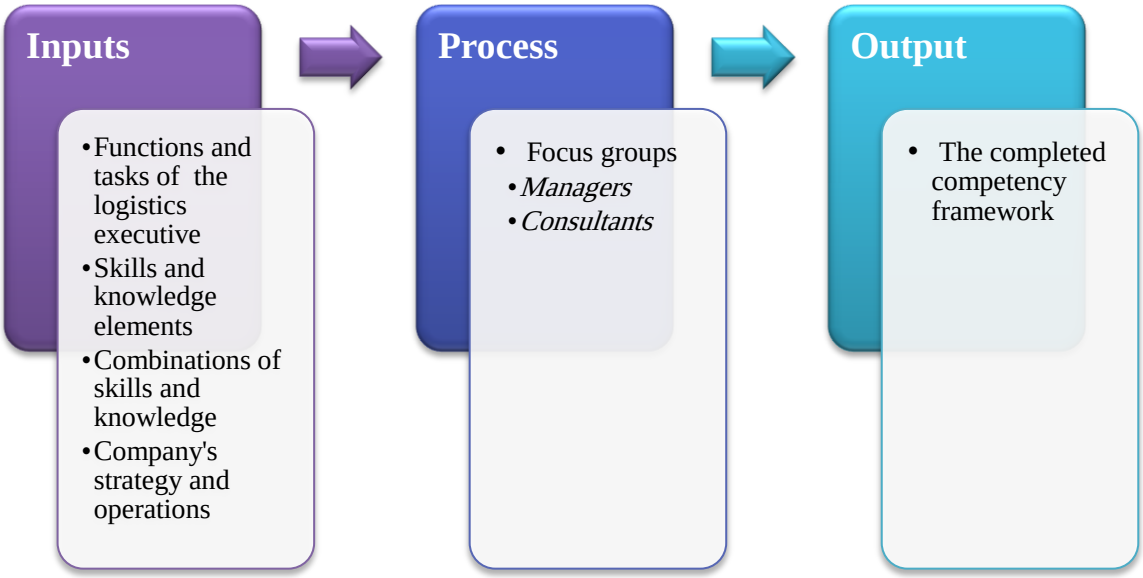


Figure 8.1 – The Process of Compiling the Competency Framework

Source: Author based on Whiddett and Hollyforde (2003)

In addition to the inputs provided by this research that consist of the functions and tasks of logistics executives, and the skills and knowledge elements and their combinations; information on the individual RMG company's strategies and operations would be required in order to customise the framework to the company's needs.

Processing the information required to create a competency framework could be performed by different methods as previously discussed in chapter four. The process shown in Figure 8.1 suggests the use of focus groups or workshops which would involve managers from the different departments in the RMG company in addition to consultants who represent the 'expert' knowledge or experience. This method is quick and efficient as stated by Spencer and Spencer (1993) and would help in the communication of the company's strategic intentions (Mansfield, 2000). The principal aim of this focus group or workshop would be to reach an agreement on the functions that are important towards effective job performance and the competencies required to perform these functions effectively. After this is achieved, the competency framework is to be compiled and revised before putting it into use.

It is now important to highlight some important guidelines to be taken into consideration to ensure that the competency framework meets the objectives for which it is designed.

To ensure that the appropriate elements (skills/knowledge) are selected to define the competencies required to perform the listed functions, it is important to:

- Involve different people i.e. human resources department, senior management and logistics managers in the selection of elements to avoid bias and to ensure that the elements selected would create the competencies required to meet the company's objectives; and
- Consider the tasks involved in the performance of each function to support the choice of the required elements.

It is advised that the selection of elements (skills/knowledge) should be limited to only those which are crucial to the effective performance of the stated functions to avoid confusing and lengthy details that can discourage users from using the framework.

It is also important to note that it is not necessary that all the forty five elements (skills/knowledge) should be included in the competency framework. This table is to be considered as a reference from which to choose the required elements to perform the provided functions in the framework.

As stated previously, the ranking of the functions provided in the framework represents the opinion of the sample of logistics executives who participated in the questionnaire. Therefore RMG companies can either create their frameworks using the ranking provided by the sample or by establishing their own ranking which can be based on the company's objectives and goals in the targeted markets. For example, if a RMG manufacturing company is dealing with RMG retailers who hold their suppliers accountable for their carbon footprint and excess packaging – as previously stated by Neff (2007) in chapter seven - then the function of 'monitor the environmental impact of logistics operations' would probably be in a higher rank in their competency framework.

It should also be made clear that the ranking of functions should be tested frequently. In other words, RMG manufacturing companies would need to perform their own assessment on the level of importance that each function has towards achieving effective performance. Such assessment is needed to avoid the pitfall that was stated by Dalton (1997) who warned that companies become attached to competency frameworks even when conditions change, consequently affecting the effectiveness of the framework.

8.5 USING THE COMPETENCY FRAMEWORK FOR TRAINING PURPOSES

As previously discussed in chapter four, competency frameworks can highly contribute in the different stages of the process of preparing training plans for employees. The literature shows that the use of competency frameworks for the purpose of training can be divided into two main categories: competencies proficiency assessment; and structuring training plans. Thus the following sections will highlight the use of the competency framework created in this study within these two categories.

8.5.1 Competencies Proficiency Assessment

In this category, the competency framework is considered a benchmark against which the employee's level of proficiency for each competency is assessed. As suggested by Rose (2008) it is preferable to use a combination of techniques to assess the employees' competencies. Therefore, the competency framework will be used in structuring 'skills audit' and 'performance reviews' to assess the logistics executive's competencies.

It was revealed in chapter six that in the majority of Egyptian RMG companies, the HR department has the responsibility of determining the training needs for logistics executives. But the following section will suggest that such a responsibility should be the duty of the direct manager to whom the logistics executive reports. This is because the direct manager monitors performance more closely and might be more capable of detecting deficiencies more effectively than the HR department.

However, it is worth noting that these suggestions do not consider particular HR policies or regulations within RMG companies and thus they might be subject to change.

The competency framework can be used in constructing a skills audit by which the proficiency of the senior logistics manager in the stated skills and knowledge elements are assessed. The proficiency levels scale to be used in the skills audit is taken from the U.S. Office of Personnel Management (OPM) Human Resources Management (HRM) expert survey results for the HRM Competency Model as shown in Table 8.4 (OPM, 2010).

Table 8.4 – Proficiency Levels Scale

Levels	Proficiency	Interpretation
Level 1	**Awareness**	Proficiency level 1 (Awareness) and proficiency level 2 (Basic) means that the employee has an awareness or basic understanding of the knowledge and skills associated with the competency, but would not actually possess the knowledge and skills to perform the competency in difficult or complex situations.
Level 2	**Basic**	
Level 3	**Intermediate**	Proficiency level 3 (Intermediate) means that the employee has more than an awareness or basic understanding of the knowledge and skills associated with the competency, and actually possess some of the knowledge and skills to perform the competency in difficult or complex situations.
Level 4	**Advanced**	Proficiency level 4 (Advanced) means that the employee has an advanced understanding of the knowledge and skills associated with the competency, and actually posses much of the knowledge and skills to perform the competency in difficult or complex situations.
Level 5	**Expert**	Proficiency level 5 (Expert) means that the employee has more than an advanced level in the knowledge and skills associated with the competency, and actually possess all of the knowledge and skills to perform the competency in difficult or complex situations.

Source: OPM (2010)

The ideal proficiency levels that the logistics executive should have in the skills and knowledge elements provided in the competency framework would be either the 'advanced' or the 'expert' levels which will be determined according to each company's

needs and strategies. Table 8.5 presents an illustration of the skills audit based on the competency framework provided in Table 8.3

Table 8.5 – An Example of a Skills Audit

In performing the following functions, please rate the senior logistics manager's proficiency level in each corresponding skill and knowledge element using the following scale: 1 = awareness, 2 = basic, 3 = intermediate, 4 = advanced, 5 = expert			
Function	**Element**	**Rate**	**Comment**
Develop logistics plans to meet the requirements of customers' orders.	Communication	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Forecasting	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Logistics/supply chain management knowledge	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Problem solving	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	System thinking	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Time management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Transportation	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Warehousing	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Respond to incidents during logistics operations.	Analytical skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Computer skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Knowledge management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Materials handling	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Problem solving	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Supply chain security	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Improve the quality of logistics performance.	Communication	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Continuous learning	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Finance/cost	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Human resource management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Leadership	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	System thinking	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Technology tools	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	

Table 8.5 – An Example of a Skills Audit (Continued)

Function	Element	Rate	Comment
Manage logistics service providers.	Communication	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Decision making	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Human resource management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Knowledge management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Outsourcing	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	System thinking	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Technology tools	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Ensure compliance of logistics operations with government's legislations and company's regulations.	Communication	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	General management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Logistics/supply chain management knowledge	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Supply chain security	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Maintain safety and security in logistics operations.	Analytical skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Decision making	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Finance/cost	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	General management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Quality management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Supply chain security	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Teamwork	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Technology tools	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Integrate technology tools in logistics operations.	Computer skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Continuous learning	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Finance/cost	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Human resource management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Innovation	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Technology tools	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	

Table 8.5 – An Example of a Skills Audit (Continued)

Function	Element	Rate	Comment
Design contingency plans for logistics operations.	Analytical skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Communication	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Customer service	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	International business	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Order processing	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Strategic management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Identify the logistics requirements for the company's supply chain.	Computer skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Continuous learning	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Cross functional operations	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Decision making	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Forecasting	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	General management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Materials handling	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Order processing	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	System thinking	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
Monitor the environmental impact of logistics operations.	Analytical skills	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Continuous learning	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Green logistics	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Marketing	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Quality management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	
	Strategic management	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5	

The skills audit is to be completed by the logistics executive's direct manager who in most companies is the exports manager. It is suggested that the skills audit to be performed at least once a year but more frequent assessments would be advised to guarantee constant improvement. As shown in Table 8.5, the skills audit uses the ordered functions from the competency framework and their related skills and knowledge elements. Within each function, the skills and knowledge elements are ordered alphabetically to make clear that these elements are not ranked in order of importance. The column headed 'comment' is for remarks made by the assessor which can be useful in structuring the training plans.

It is suggested that after completion, the exports manager should discuss his assessment with the logistics executive through a performance review. This process might be useful in ensuring mutual understanding between both parties on the needs for training and for improving performance in certain skills and knowledge elements.

Skills and knowledge elements with a proficiency level of 3 or below will be given priority in training. However, it is worth noting that the priority in training will be given according to the order of functions. For example, if in the first function [develop logistics plans to meet the requirements of customers' orders] it was found that some elements are rated 3 or below, they will be given priority in training than those identified in the following function [respond to incidents in logistics operations] and so on. The completed skills audit should then be forwarded to the HR department whose role is presented in the following section.

8.5.2 Structuring Training Plans

Using the data provided by the skills audit and the competency framework package (completed competency framework; the tasks involved in each function; the skills and knowledge elements definition; the company's strategies and objectives) the HR department should be capable of structuring a training plan for the logistics executive. All the information provided would assist the HR department in determining the learning objectives and in selecting the appropriate training programs. It is suggested that training events and activities could be a mix of on-site, off-site and distance learning courses in order to accommodate the manager's time and needs.

The effectiveness of the training provided should also be investigated by the HR department by seeking feedback from the trainee and his direct manager to determine whether improvement was achieved or not.

8.6 CHAPTER SUMMARY

This chapter presented the final structure of the competency framework template that the study aimed to design for logistics executives in Egyptian RMG companies. The inputs used to create the competency framework were evaluated by conducting a semi-structured interview with the senior merchandiser and development manager in a RMG company in Egypt. This interview primarily aimed at seeking feedback on the functions and tasks of logistics executives and the skills and knowledge elements required to create competencies which were all the result of the data collected and analysed in this study. The interview also aimed at getting feedback on the structure and language of the competency framework. The feedback provided on all the previously mentioned aspects was satisfactory as to the aims and objectives of this study. Moreover, the interviewee completed the competency framework to provide an actual example of a complete framework. Guidelines were provided for RMG companies to create and customise the competency framework according to their needs and strategies. The chapter concluded with the use of the framework in creating a skills audit to be used as a tool to determine training needs in addition to the role of the HR department in structuring training plans and monitoring the effectiveness of the training provided.

CHAPTER NINE: CONCLUSIONS AND SUGGESTIONS FOR FURTHER WORK

9.1 INTRODUCTION

This chapter firstly starts by presenting the conclusions which are derived from this research, followed by the research contribution. The chapter then concludes by presenting the research limitations and providing suggestions for how this research may be developed in the future, considering both the use of existing data and the addressing of questions which have arisen during the course of this study.

9.2 CONCLUSIONS

By recognising the lack of training and skills deficiencies in RMG manufacturing companies in Egypt and the vital role that the logistics function can play to support the competitiveness of Egypt's RMG exports, this research aimed at creating a tool that would address the three elements mentioned previously: skills, training and logistics.

The earlier studies that addressed these three elements in Egypt's RMG manufacturing industry were just limited to indicate the existence of problems/deficiencies whereby their scope did not cover the provision of the methods or guidelines necessary to overcome these problems. Therefore this research was designed to provide a practical tool that can assist RMG manufacturing companies in Egypt to determine the competencies required for logistics executives whose roles and competencies are vital towards the competitiveness of Egypt's RMG exports. Nevertheless, the same tool can be used to define the skills deficiencies which can assist RMG manufacturing companies in providing the adequate training that would target the skills gaps, consequently improving performance and productivity.

The following sections will discuss the important conclusions which were identified in the course of conducting this research.

9.2.1 The Lack of Skills and Training in RMG Manufacturing Companies in Egypt

The RMG industry in Egypt plays an important role in Egypt's economy in terms of exports earning and investment; and many factors such as cotton, the geographical proximity to major importing markets and supply of labour supported its strategic contributions to the economy. In the global market however, the share of Egypt's RMG exports is only 0.38% which is twice below the regional competitors. A number of factors were found to affect Egypt's RMG exports that included tariffs and taxes, the low quality of textiles inputs produced in publicly owned textiles companies, trade logistics, high labour costs and the lack of strong relationship with global retailers. These challenges which are fairly common in developing countries in the region led to the examination of the factors that supported the regional competitors in exporting more than double Egypt's share to the global market. It was found that these countries focused on developing and improving the factors which were under their direct control such as improving efficiency and management capabilities. Therefore in an examination of the aspects that Egypt's RMG manufacturing companies can develop to improve Egypt's RMG exports was labour and management skills. A number of studies have shown that the lack of skills and training have been negatively affecting productivity which was directly linked to the low competitiveness of Egypt's RMG exports. It was made evident in some studies that skilled labour and management can increase productivity, reduce unit costs, increase exports and ultimately increase market share.

9.2.2 Logistics Supports Competitiveness

Logistics management in the RMG supply chain is vital to achieve competitive advantage. The RMG market which is characterised by rapid changes, tremendous products variety and very high competition requires a sound logistics system that can manage and deliver products to retailers to fulfil the customers' needs. This consequently draws attention to the vital role that competent logistics managers can play in this highly competitive and challenging environment. Therefore it was concluded that competent logistics managers in RMG manufacturing companies in Egypt can support the competitiveness of Egypt's RMG exports.

9.2.3 The High Demand for Competent Logistics Managers

The role of the human factor in logistics and supply chain performance was very apparent in the literature that emphasised their contribution to productivity improvements, greater efficiencies, increased market share, and business excellence. The literature also revealed the presence of trends that increase the need for skilled logistics managers. The business trends included globalisation, outsourcing, information technologies, total quality management, agility and quick response, and environmental sustainability. The development trends included learning organisations, skills requirements and learning technology.

9.2.4 Skills Related Studies

Investigating the skills required for logistics managers was a topic of interest for many researchers. Nearly all of these investigations were conducted in developed countries and none in Africa or the Middle East regions. There was an apparent lack of consistency among the findings of the various studies whether in the number of skills identified or the categories used to define the skills elements. The majority of studies classified skills into three categories: business, management and logistics, where the management category was identified to be of prime importance to logistics managers.

9.2.5 The Importance of Training Logistics Managers

Training of logistics managers was highly emphasised as it results in high value-adding managers who can leverage the organisations' logistics potential which is a major component of business strategy. Badly managed logistics training results in ignorance and lost opportunity costs, negatively impacting the business.

9.2.6 The Competency Approach – A Possible Solution

The competency approach proposed by Ferrara and Morvillo (2002) is a method that uses job profiles to define the skills and knowledge needed for the logistics profession. They recommended the use of this approach for complex and evolving jobs like logistics as it uses an input based approach that describes the underlying elements that lead to competent performance instead of an output based approach that describes performance standards. The competency framework which is the output of the competency approach can also be used as a benchmark to determine skills deficiencies

and can support the provision of the appropriate training. Thus the competency approach was concluded to be the method by which to develop a competency framework for logistics executives in RMG manufacturing companies in Egypt that would define the competencies required for effective job performance and assess the deficiencies that require training. It was concluded that this competency framework would be created from scratch since the search for a competency framework that targeted the logistics profession has yielded no positive results.

9.2.7 The Functions of Logistics Executives in RMG Manufacturing Companies in Egypt

Ten themes/functions were identified from the job profiles and job advertisements of logistics executives in RMG manufacturing companies which are mainly centred on: customer service, logistics service providers, incidents, quality, government legislations and company's regulations, safety and security, technology tools, contingency plans, supply chain and the environment. The lack of information on the tasks involved in each of these functions led to the use of other sources to complete the missing information required for the framework. These sources were: The National Occupational Standards for Logistics Operations Management (U.K.'s Skills for Logistics) and The Career Cluster Resources for Transportation, Distribution and Logistics published by the U.S. department of labour. Although these two sources presented general information as to the role of logistics managers, they were adapted and modified to match the themes/functions of the logistics executive in RMG manufacturing companies.

The functions and tasks that were adapted and customised from the previously mentioned sources were validated by the use of a questionnaire that targeted a sample of logistics executives in which they were asked to provide their opinions on the degree each task contributed to effective job performance. The responses showed that nearly all the tasks were considered either 'important' or 'very important' to effective job performance which consequently supported the validity of the functions and tasks provided. The Sign test also revealed that all the tasks were statistically significant to be included in the competency framework. The ranking of the tasks and functions in order of importance to effective job performance revealed that the most important function was the development of logistics plans to meet the requirements of customers' orders.

This in return reflected the vital role that logistics executives can play towards satisfying the customers' needs and its impact on the competitiveness of the business.

It was revealed from the questionnaire that the majority of respondents have indicated that they needed training to be effective in their job performance. This consequently supported the purpose for developing the competency framework as it will serve as a tool in supporting these managers and those who are involved in identifying their training needs. Respondents also identified a varied range of topics that they thought would be useful for them to study to be effective in their jobs. The topics identified belonged to the business, management and logistics disciplines, which proved that logistics is a multi-disciplinary job that requires a mix of knowledge and skills.

9.2.8 The Skills and Knowledge Necessary for Logistics Competencies

The content analysis showed the existence of forty five elements that relate to the competencies of logistics managers in academic articles. These elements were classified into three categories: skills, business/management knowledge, and logistics knowledge. The majority of the elements found belonged to the business/management category. It was noted that some of the highly stated elements were found common in the academic articles, career guides and the semi-structured interviews which in turn indicate their importance to logistics competency. The forty five elements appeared in all the academic articles while some of the elements did not appear in career guides and interviews due to the large number of academic articles examined and the wealth of information that was provided. The links between the elements were also more prevalent in academic articles due to the provision of comprehensive statements that allowed the examination of the links that exist between the different elements.

9.2.9 Evaluating the Competency Framework

The semi-structured interview that was conducted with the senior merchandiser and development manager at a RMG manufacturing company in Egypt had provided very useful information to evaluate the inputs of the framework. It was indicated that the functions and tasks provided in the framework cover the scope of responsibilities of logistics executives in RMG manufacturing companies. It was also made clear that the rank provided to the functions reflected their importance to effective job performance

and that it would assist companies that need directions on setting priorities and understanding the functions that are more important than others. But it was noted that at an advanced level, this rank could change to match the company's strategies and priorities in operations. As to the feedback on the general structure and the language used in the framework, it was stated that the structure is clear, but some words would need to be substituted with others to be clearer for users.

Providing an actual complete example of the competency framework showed that common skills and knowledge elements were likely needed in the performance of different functions. It was concluded that the highly cited elements in this complete framework were also those which belonged to the top skills and knowledge elements found in the content analysis. This consequently validated the outcome of the content analysis and emphasised the importance of these skills and knowledge elements.

9.2.10 Creating a Generic Framework, not a Standard Competency Framework

It was not possible to create one standard competency framework for logistics executives in RMG manufacturing companies in Egypt because for a competency framework to be relevant, they must be customised to each company's needs and strategies. Thus the outputs of this research were limited to providing the necessary materials and guidelines for RMG manufacturing companies to facilitate the process of creating and customising their own frameworks.

9.2.11 Techniques for Identifying Training Needs by the Use of the Competency Framework

Skills audits and performance reviews were the two recommended techniques for the use of the competency framework in identifying the training needs of logistics executives in RMG manufacturing companies. These techniques were suggested to be performed by the logistics executive's direct manager who monitors performance more closely and thus might be more capable of detecting deficiencies more effectively than the HR department. Based on the information provided by the completed skills audit and performance reviews, the HR department's role would be to structure the training plan for the logistics executive.

9.3 RESEARCH CONTRIBUTION

This thesis seeks to make an original contribution to knowledge by creating a generic competency framework that RMG manufacturing companies in Egypt can use to identify the competencies and detect the skills deficiencies of logistics executives.

This is a contribution in the sense that it followed the recommendation of Ferrara and Morvillo (2002) in using the competency approach to define the competencies of those involved in the logistics profession which was not performed before in any research that investigated the competencies of logistics executives in Egypt nevertheless in the RMG manufacturing sector.

This research is also a contribution in the sense that it proposes the competency approach as a possible solution to the low skills and lack of training problems identified in previous research that investigated the factors negatively impacting the competitiveness of Egypt's RMG manufacturing industry. It brings the attention of the research community in Egypt to the competency approach and how it can be of benefit to companies in many HR functions such as recruitment, performance review and training needs analysis. It also emphasises how the integration of the competency approach can leverage the companies' workforce's potentials in a way that would positively impact the companies' performance.

Another contribution of this thesis is that it would not only benefit the RMG manufacturing companies in Egypt, but it would also provide other RMG exporting countries with a tool that can support them in leveraging their logistics managers' potentials. It is worth noting that the majority of RMG exporting countries in the WTO's annual trade statistics are developing countries which are more likely to share similar managerial and development problems i.e. low skills and lack of training. Therefore, the generic competency framework developed in this research could also be of use to other RMG exporting nations. However, changes would have to be performed to customise the competency framework according to the strategic priorities of the RMG exporting companies in other countries. This would be through repeating the questionnaire to investigate the degree to which each function and task contributes to effective job performance.

The methodology followed to create the competency framework in this study is another contribution to knowledge. The methodology followed in this research added scientific rigour to the practical methodology of developing competency frameworks described by Whiddett and Hollyforde (2003) and Armstrong (2006) through introducing the sampling process, questionnaire, reliability and validity, and statistical analysis. This methodology can also be used to create competency frameworks for entry and middle level logistics managers in RMG manufacturing companies. This would support the RMG manufacturing companies in having a clear vision of the competencies required for each job level. Consequently this will assist RMG companies in better allocating their resources in terms of employees' training and development. Moreover, it will provide employees with a sense of direction in terms of the competencies they currently need to perform their jobs effectively and those they are expected to have and acquire in the future. It is also worth noting that the methodology developed in this research to create the competency framework can be applied to create a competency framework for any other profession as the steps provided can be easily customised to study the targeted profession.

This research is also a contribution in that it emphasises the role of logistics executives towards supporting Egypt's RMG exports, an angle which was not previously investigated, as earlier research focused on other aspects that supported the competitiveness of Egypt's RMG exports such as trade regulations. This could be as well considered as an area worth investigation by other RMG exporting countries. Moreover, addressing the role of logistics executives could draw the attention of other industrial sectors in Egypt to consider the role of competent logistics executives towards supporting companies' performance.

This research also contributes to knowledge the profile of the logistics executive's responsibilities in RMG companies in Egypt which does not only serve the purpose of this research, but can also be of relevance whether to researchers or practitioners with an interest in performance, strategy or even training of these managers.

In addition, the output of the content analysis is also a contribution to the extent that it presented the collective views of researchers and professionals over a ten years period

on the elements that are of relevance to logistics managers. The contribution here is that it transfers the knowledge and expertise of international scholars to the Egyptian community, especially to the population that this research is targeting.

9.4 RESEARCH LIMITATIONS

While this study has provided valuable insights, there are some limitations to the competency framework developed:

- The competency framework did not consider the personality characteristics of logistics managers and their possible impact on competencies. But since the main purpose of developing this framework was to be used as a tool to assess skills and knowledge deficiencies that required training, the research did not address personality traits because it was indicated in the literature that they are very hard to change or develop. Thus the research just focused on the skills and knowledge elements that can be developed and improved through training.

- Assessing the training needs of logistics executives in RMG manufacturing companies and providing the right training are not the only factors that would support performance improvement. A number of other factors would influence their development such as the company's culture, top management's support and the willingness of the logistics manager himself to learn, get trained and developed.

- Involving more people in the validation stage of the competency framework such as HR managers, consultants or even the logistics executives could have probably given the opportunity to examine the different views and feedbacks, and how it would change or influence. But due to the difficulty that was encountered in contacting companies to be involved in this validation stage, the validation interview was limited to just one company in which the feedback that was provided was very valuable to this research.

- One major difficulty with this research is that no studies have been previously performed regarding the creation of a competency framework for logistics

executives. Although this will add to the originality and value of this study, the research will not have the added benefit of learning from others' mistakes.

9.5 SUGGESTIONS FOR FUTURE RESEARCH

In conducting this research a number of areas were identified for further research and future study. These areas include:

- An in-depth study can be performed to incorporate the views of the HR manager, consultants and the logistics executive to define the competencies needed for effective job performance taking into consideration the company's strategies and priorities in the market.

- The same competency framework could be used in a comparative study between the RMG manufacturing companies and other industries in order to test the differences in the level of importance of the logistics managers' functions to effective job performance and examine its impact on the competencies required.

- The generic competency framework could be completed by a number of RMG manufacturing companies which are different in terms of capital, products, exports volume and then investigate the impact of these factors on the competencies they indicate as required for logistics executives.

- The generic competency framework could be completed by a RMG manufacturing company in which a skills audit is then performed using the framework to assess the skills deficiencies of the logistics executive.

- An investigation on the different methods that RMG manufacturing companies use in identifying skills deficiencies. A comparison can then be performed between these methods and the skills audit that is based on the competency framework in terms of relevance and accuracy in identifying training needs.

In summary, this research makes a positive contribution in the direction of competencies and training of logistics executives in developing countries generally and in the RMG manufacturing companies in Egypt specifically. However, this research sought to overcome the limitations it encountered with the most methodological sound techniques and it should be followed by other efforts in the same direction. This research and similar studies will encourage other researchers to engage in more studies regarding the training and development of logistics managers in the hope that such efforts will improve the relationship between companies, its managers and its customers with regard to greater mutual and common advantages and benefits.

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APPENDIX 1 – A COMPETENCY MODEL FOR A HUMAN RESOURCE DEVELOPER IN THE AUTOMOTIVE INDUSTRY

	Key task areas	**1. Implement existing company wide HR systems in the business unit**				**2. Analyse future qualification needs and derive possible interventions**			**3. Implement unit-specific HRD interventions**			
	Tasks	*Present relevance of HR system in BU*	*Communicate with managers about special needs of BU*	*Communicate with trainers about special needs of BU*	*Organise and implement OD workshops in unit*	*Run future workshops*	*Analyse results of interviews and workshops*	*Derive possible interventions to meet future needs*	*Analyse HR problems together with BU*	*Research possible interventions*	*Evaluate interventions and make a decision*	*Organise deployment of the program*
competencies	a. Recognising problems of human interaction				x	x			x			x
	b. Structuring and solving problems				x	x	x		x		x	
	c. Knowledge about human learning	x		x	x	x		x		x	x	
	d. Knowledge about human personality			x				x	x			
	e. Knowledge about the functioning of social systems	x			x	x			x		x	x
	f. Knowledge of facilitation techniques				x	x						
	g. Management of self, priorities, time				x	x			x			x
	h. Goal setting				x	x						x
	i. Communicating in one-on-one conversation		x	x	x	x			x	x		x
	j. Presentation techniques	x			x	x						x

Source: Sicilia (2006)

APPENDIX 2 – ENGLISH QUESTIONNAIRE

Section 1 – General Questions

1	**Name**	
2	**Job Title**	
3	**How many years have you worked in logistics?**	□ less than 5 years □ 6 – 9 □10 - 14 □15 – 19 □20 – 24 □ More than 25 years
4	**Please tick on the highest qualification you hold:**	□ General Secondary Certificate □ Bachelor Degree □ Professional Diploma □ Master of Science □ Master of Business Administration (MBA) □ Doctor of Philosophy (PhD) □ Other – *please state*
5	**Please tick on the industrial zone area where your company is located**	□ Alexandria □ Greater Cairo Area □ Middle Delta Governorates □ Suez Canal Area
6	**Please tick the answer that best describes your company**	□ public company □ private company □ Joint venture □ Other – *please state*

Section 2 – Logistics Manager Tasks

1. Read each task statement carefully;
2. Decide the degree of importance of each task to effective job performance using the scale below. Please tick the appropriate boxes.

Function: Develop logistics plans to meet the requirements of customers' orders

Task	not at all important	of little importance	of average importance	important	very important
Monitor communication with customers to obtain information on their requirements for logistics operations.	☐	☐	☐	☐	☐
Supervise the process of providing customers with clear and relevant advice and information on the logistics operations.	☐	☐	☐	☐	☐
Supervise the effective response to the customers' requirements.	☐	☐	☐	☐	☐
Confirm the logistics operations that are required to meet the needs of customers.	☐	☐	☐	☐	☐
Agree with customers on the timings and deadlines for the provision of the logistics operations.	☐	☐	☐	☐	☐
Verify the logistics resources and sequence of tasks required to provide the logistics operations.	☐	☐	☐	☐	☐
Review all factors and risks that could affect the schedule.	☐	☐	☐	☐	☐
Monitor the provision of logistics operations against the schedule.	☐	☐	☐	☐	☐

Task	not at all important	of little importance	of average importance	important	very important
Identify any problems with the schedule, and take the appropriate action to deal with them.	☐	☐	☐	☐	☐
Ensure customers are regularly informed of progress in responding to their requirements.	☐	☐	☐	☐	☐
Respond promptly to any queries or comments raised by customers, and ensure they are dealt with by the appropriate person.	☐	☐	☐	☐	☐

Function: Design contingency plans for logistics operations

Task	not at all important	of little importance	of average importance	important	very important
Review the disruptive events that have previously occurred and the factors that have led to them.	☐	☐	☐	☐	☐
Identify the potential disruptive events that may hinder logistics operations.	☐	☐	☐	☐	☐
Assess the impact of disruptive events on logistics operations.	☐	☐	☐	☐	☐
Develop specific contingency procedures for each potential disruptive event.	☐	☐	☐	☐	☐
Ensure that all relevant people are informed of the contingency procedures.	☐	☐	☐	☐	☐

<u>Function:</u> Ensure compliance of logistics operations with government legislation and company's regulations

Task	not at all important	of little importance	of average importance	important	very important
Obtain information on the legislation and regulations that apply to the logistics operations.	☐	☐	☐	☐	☐
Monitor changes in legislation and regulations that could have an effect on logistics operations.	☐	☐	☐	☐	☐
Explain to employees the content of legislation and regulations.	☐	☐	☐	☐	☐
Monitor the work activities of employees to ensure that regulations are followed.	☐	☐	☐	☐	☐
Inform all relevant people (suppliers/subcontractors) of any changes to company's regulations that could affect them.	☐	☐	☐	☐	☐
Identify any problems with compliance, and take the appropriate action to deal with them.	☐	☐	☐	☐	☐

Function: Identify the logistics requirements for the company's supply chain

Task	not at all important	of little importance	of average importance	important	very important
Work closely with the other departments in the company to align the logistics function with the company's objectives.	□	□	□	□	□
Identify the organisations involved in the company's supply chain.	□	□	□	□	□
Identify the characteristics of the supplies/products flowing through the supply chain.	□	□	□	□	□
Monitor the activities of the main organisations operating in the supply chain.	□	□	□	□	□
Identify the available transport modes and routes used, and the way supplies/products need to be stored.	□	□	□	□	□
Identify all relevant factors that could affect the use of the logistics resources.	□	□	□	□	□
Develop plans to perform the logistics activities to achieve the optimum balance of usage and performance.	□	□	□	□	□
Monitor changes in the company's supply chain that could have an effect on logistics operations.	□	□	□	□	□
Identify potential opportunities for the company arising from changes in the supply chain.	□	□	□	□	□
Identify ways of improving the logistics resources used in logistics operations.	□	□	□	□	□

<u>Function:</u> Improve the quality of logistics performance

Task	not at all important	of little importance	of average importance	important	very important
Identify the performance measures to be used to assess logistics performance.	☐	☐	☐	☐	☐
Establish performance targets for monitoring logistics performance.	☐	☐	☐	☐	☐
Obtain valid and reliable information on the performance of logistics operations.	☐	☐	☐	☐	☐
Identify the logistics performance gaps.	☐	☐	☐	☐	☐
Identify and evaluate the causes of logistics performance gaps.	☐	☐	☐	☐	☐
Determine the potential areas for improvement.	☐	☐	☐	☐	☐
Assess potential improvement methods for the logistics operations.	☐	☐	☐	☐	☐
Select and apply the most suitable improvement methods for improving the quality of logistics operations.	☐	☐	☐	☐	☐
Monitor the application of the improvement methods over a period of time.	☐	☐	☐	☐	☐
Identify any problems with applying improvement methods, and take the appropriate action to deal with them.	☐	☐	☐	☐	☐

<u>Function</u>: Integrate Technology Tools (equipment/software) in Logistics Operations

Task	not at all important	of little importance	of average importance	important	very important
Identify the logistics functions' requirements for technology tools.	☐	☐	☐	☐	☐
Identify the ways in which the technology tools would improve logistics operations.	☐	☐	☐	☐	☐
Set the selection criteria to evaluate potential technology tools.	☐	☐	☐	☐	☐
Select the suitable technology tools.	☐	☐	☐	☐	☐
Monitor the implementation plan of the technology tools.	☐	☐	☐	☐	☐
Ensure that the technology tools are applied efficiently and effectively during logistics operations.	☐	☐	☐	☐	☐
Identify any training needs related to the use of the technology tools.	☐	☐	☐	☐	☐
Check that the employees using the technology tools understand its use and are proficient in its operation.	☐	☐	☐	☐	☐
Monitor the follow up of maintenance schedules of the technology tools.	☐	☐	☐	☐	☐
Approve contingency plans to respond to failures in the technology tools.	☐	☐	☐	☐	☐

<u>Function:</u> Maintain safety and security in logistics operations

Task	not at all important	of little importance	of average importance	important	very important
Observe the implementation of organisational procedures for safety and security within the logistics department.	□	□	□	□	□
Monitor changes in safety and security regulations and guidelines, and implement their requirements.	□	□	□	□	□
Ensure that manufacturers' and other relevant instructions relating to the safe use of equipment in the logistics department are followed.	□	□	□	□	□
Identify promptly any safety hazards and security issues.	□	□	□	□	□
Take immediate action to prevent injury, theft, or damage, and give priority to the protection of people over organisational performance.	□	□	□	□	□
Respond to incidents affecting safety and security by using the appropriate safety equipment and carrying out the safety procedures specified by the company.	□	□	□	□	□

<u>Function:</u> Manage logistics service providers

Task	not at all important	of little importance	of average importance	important	very important
Identify the logistics activities to be contracted.	☐	☐	☐	☐	☐
Set the selection criteria of service providers.	☐	☐	☐	☐	☐
Identify the possible service providers to perform the logistics activities.	☐	☐	☐	☐	☐
Identify bid specifications for service providers.	☐	☐	☐	☐	☐
Evaluate bids of service providers.	☐	☐	☐	☐	☐
Select service providers.	☐	☐	☐	☐	☐
Document the evaluation process and selection decision of service providers.	☐	☐	☐	☐	☐
Identify performance compliance requirements in contracts with service providers.	☐	☐	☐	☐	☐
Observe the collection of the service provider's performance data.	☐	☐	☐	☐	☐
Monitor the conduct of the service provider's compliance review.	☐	☐	☐	☐	☐
Review the service provider's performance report.	☐	☐	☐	☐	☐
Inform the service provider of his performance.	☐	☐	☐	☐	☐

<u>Function:</u> Monitor the environmental impact of logistics operations

Task	not at all important	of little importance	of average importance	important	very important
Implement and promote the organisation's environmental policy.	☐	☐	☐	☐	☐
Monitor the use of energy and materials to deliver logistics operations.	☐	☐	☐	☐	☐
Identify the effects of logistics operations on the environment.	☐	☐	☐	☐	☐
Identify ways to reduce any bad effects on the environment.	☐	☐	☐	☐	☐
Identify ways to use energy more effectively and efficiently.	☐	☐	☐	☐	☐
Recycle surplus materials wherever possible.	☐	☐	☐	☐	☐
Dispose of surplus materials according to the government's legislation and the company's regulations.	☐	☐	☐	☐	☐
Respond to any environmental impact with the appropriate action according to organisational procedures.	☐	☐	☐	☐	☐
Inform the supply chain members (suppliers, subcontractors, etc) of their environmental responsibilities when dealing with the company.	☐	☐	☐	☐	☐
Recommend ways to improve the environmental impact of logistics operations.	☐	☐	☐	☐	☐

<u>Function:</u> Respond to incidents during logistics operations

Task	not at all important	of little importance	of average importance	important	very important
Obtain relevant information on the incident from the appropriate people as soon as they occur.	□	□	□	□	□
Identify the factors causing the incident using the appropriate investigation methods.	□	□	□	□	□
Implement responses to the incident using the appropriate methods and resources.	□	□	□	□	□
Monitor the delivery of the responses, and ensure that they are implemented.	□	□	□	□	□
Ensure the requirements of customers are met when incidents occur.	□	□	□	□	□
Inform the relevant people of the responses to the incident.	□	□	□	□	□

Section 3: Training

1	**Do you attend training events?**	□ Yes □ No
2	**Who is responsible for determining your training needs?**	□ you □ your direct manager □ Human resources department □ Others – please state □ Not applicable
4	**Do you need training to be effective in your job?**	□ Yes □ No
4.a	**If your answer is *No* to the previous question, please tick the reason:**	
5	**If you could go back to college for a year, what five topics do you think would be most useful for you to study to be effective in your job?**	□ □ □ □ □

Please use the space below to write any comments you have on the questionnaire

APPENDIX 3 - ARABIC QUESTIONNAIRE

الجزء الأول: أسئلة عامة

1	**الإسم**	
2	**المسمى الوظيفى**	
3	**اذكر عدد سنوات الخبرة لديك في مجال الخدمات اللوجستية؟**	أقل من 5 سنوات 6– 9 14-10 19- 15 24 – 20 أكثر من 25
4	**يرجى إختيار أعلى مؤهل دراسى حصلت عليه**	شهادة الثانوية العامة درجة البكالوريوس دبلومات متخصصة درجة الماجستير ماجستير إدارة الأعمال درجة الدكتوراة أخرى
5	**يرجى إختيار المنطقة التى تقع فيها الشركة التى تعمل بها**	الإسكندرية القاهرة محافظات وسط الدلتا منطقة قناة السويس
6	**يرجى إختيار الجواب الذى يمثل أفضل وصف للشركة التى تعمل بها**	شركة حكومية شركة خاصة شركة مشتركة أخرى (أذكر)

الجزء الثانى: مهام مدير العمليات اللوجستية

مهام مدير العمليات اللوجستية

حدد مدى أهمية المهام الآتية على فعالية الأداء الوظيفى بإستخدام الإختيارات التالية: ليست مهمة على الإطلاق، مهمة بشكل ضعيف، متوسطة الأهمية، مهمة، مهمة جدا.

وضع الخطط اللوجستية لتلبية طلبيات العملاء

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
متابعة الاتصالات التى يقوم بها الموظفين مع العملاء للحصول على معلومات عن الاحتياجات المطلوبة لإتمام العمليات اللوجيستية.	☐	☐	☐	☐	☐
الإشراف على عملية توفير المعلومات والإستشارات للعملاء بشأن العمليات اللوجيستية.	☐	☐	☐	☐	☐
الاشراف على الاستجابة الفعالة لاحتياجات العملاء.	☐	☐	☐	☐	☐
تأكيد العمليات اللوجستية اللازمة لتلبية احتياجات العملاء.	☐	☐	☐	☐	☐
الاتفاق مع العملاء على التوقيت والمواعيد النهائية لتقديم الخدمات اللوجستية.	☐	☐	☐	☐	☐
جرد ومتابعة الموارد اللوجستية وسلسلة المهام الوظيفية المطلوبة لتوفير العمليات اللوجستية .	☐	☐	☐	☐	☐
مراجعة جميع العوامل والمخاطر التي يمكن أن تؤثر على الجدول الزمني.	☐	☐	☐	☐	☐
متابعة توفير العمليات اللوجستية طبقا للجدول الزمني المحدد.	☐	☐	☐	☐	☐
التعرف على أي مشاكل في الجدول الزمني ، واتخاذ الإجراءات المناسبة للتعامل معها.	☐	☐	☐	☐	☐
التأكد من أن العملاء على علم بالتقدم المحقق في الاستجابة لطلبياتهم.	☐	☐	☐	☐	☐
الاستجابة الفورية لأية استفسارات أو تعليقات قدمت من العملاء.	☐	☐	☐	☐	☐

تصميم خطط طوارئ لعمليات النقل والإمداد

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
استعراض الأحداث المعرقلة لعمليات النقل والإمداد التي وقعت في السابق ، والعوامل التي أدت إليها.	☐	☐	☐	☐	☐
التعرف على إمكانية وقوع الأحداث المحتملة التي قد تعرقل العمليات اللوجستية.	☐	☐	☐	☐	☐
تقييم تأثير اضطراب الأحداث على عمليات النقل والإمداد.	☐	☐	☐	☐	☐
وضع إجراءات محددة للطوارئ المحتملة لكل حالة اضطراب.	☐	☐	☐	☐	☐
التأكد من أن جميع الموظفين على علم بإجراءات الطوارئ.	☐	☐	☐	☐	☐

ضمان إلتزام العمليات اللوجستية مع التشريعات الحكومية واللوائح التنظيمية للشركة

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
الحصول على معلومات خاصة بالتشريعات واللوائح التنظيمية التي تنطبق على العمليات اللوجيستية.	☐	☐	☐	☐	☐
متابعة التغيرات في التشريعات واللوائح التي يمكن أن يكون لها تأثير على العمليات اللوجيستية.	☐	☐	☐	☐	☐
شرح مضمون التشريعات واللوائح للموظفين.	☐	☐	☐	☐	☐
متابعة أنشطة العمل للموظفين لضمان إتباع التشريعات واللوائح.	☐	☐	☐	☐	☐
إبلاغ جميع الموردين و المقاولين عن أي تغييرات في لوائح المنظمة التي يمكن أن تؤثر علي سير العمل بينهم وبين الشركة.	☐	☐	☐	☐	☐
التعرف على أي مشاكل في الإلتزام بالتشريعات واللوائح ،واتخاذ الإجراءات المناسبة للتعامل معها.	☐	☐	☐	☐	☐

تحديد الاحتياجات اللوجستية لسلسة إمداد الشركة

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
العمل بشكل وثيق مع الإدارات الأخرى في المنظمة لتحديد كيفية تماشى العمليات اللوجستية مع أهداف الشركة.	□	□	□	□	□
التعرف على المنظمات الأخرى الموجودة في سلسلة إمداد الشركة.	□	□	□	□	□
التعرف على خصائص المواد الموردة والمنتجات المتدفقة في سلسلة إمداد الشركة.	□	□	□	□	□
متابعة أنشطة المنظمات الرئيسية المشتركة في سلسلة إمداد الشركة.	□	□	□	□	□
التعرف على وسائط النقل والطرق المتاحة والمستخدمة ، وطرق تخزين المواد الموردة والمنتجات.	□	□	□	□	□
تحديد جميع العوامل التي يمكن أن تؤثر على استخدام الموارد اللوجستية.	□	□	□	□	□
وضع خطط لأداء الأنشطة اللوجستية لتحقيق التوازن الأمثل بين الإستخدام والأداء.	□	□	□	□	□
متابعة التغيرات التي تحدث في سلسلة إمداد المنظمة التي قد يكون لها تأثير على عمليات النقل والإمداد.	□	□	□	□	□
تحديد الفرص المحتملة للمنظمة من خلال التغييرات الناشئة في سلسلة الإمداد.	□	□	□	□	□
تحديد سبل تحسين الموارد المستخدمة في العمليات اللوجيستية.	□	□	□	□	□

تحسين جودة أداء العمليات اللوجستية

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
تحديد المقاييس المستخدمة لتقييم أداء الخدمات اللوجستية.	☐	☐	☐	☐	☐
تحديد أهداف لمتابعة مستوى أداء الخدمات اللوجستية.	☐	☐	☐	☐	☐
الحصول على معلومات صحيحة وموثوقة عن أداء العمليات اللوجستية.	☐	☐	☐	☐	☐
تحديد الثغرات في أداء الخدمات اللوجستية.	☐	☐	☐	☐	☐
تحديد وتقييم أسباب حدوث الثغرات فى أداء العمليات اللوجستية.	☐	☐	☐	☐	☐
تحديد إمكانية تحسين الجوانب المؤثرة على العمليات اللوجستية.	☐	☐	☐	☐	☐
تقييم الأساليب الممكنة لتحسين عمليات النقل والإمداد.	☐	☐	☐	☐	☐
اختيار وتطبيق الأساليب الأكثر ملائمة لتحسين جودة أداء عمليات النقل والإمداد.	☐	☐	☐	☐	☐
متابعة تطبيق أساليب تحسين الجودة على فترة من الزمن.	☐	☐	☐	☐	☐
التعرف على أي مشاكل في تطبيق أساليب تحسين الجودة ،واتخاذ الإجراءات المناسبة للتعامل معها.	☐	☐	☐	☐	☐

إستخدام الوسائل التكنولوجية من معدات وبرمجيات في العمليات اللوجيستية

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
تحديد إحتياج العمليات اللوجستية من أدوات تكنولوجية.	☐	☐	☐	☐	☐
تحديد الطرق التي توفرها وسائل التكنولوجيا لتحسين العمليات اللوجستية.	☐	☐	☐	☐	☐
تحديد معايير لتقييم وسائل وأدوات التكنولوجيا المحتمل تطبيقها فى العمليات اللوجستية.	☐	☐	☐	☐	☐
اختيار وسائل التكنولوجيا الملائمة لتطبيقها فى العمليات اللوجستية.	☐	☐	☐	☐	☐
متابعة خطة تطبيق الأدوات التكنولوجية.	☐	☐	☐	☐	☐
التأكد من أن أدوات تكنولوجيا تطبق بكفاءة وفعالية في العمليات اللوجيستية.	☐	☐	☐	☐	☐
تحديد الاحتياجات التدريبية المتعلقة باستخدام وسائل التكنولوجيا للموظفين.	☐	☐	☐	☐	☐
التأكد من إتقان الموظفين لإستخدام الوسائل التكنولوجية المطبقة.	☐	☐	☐	☐	☐
رصد ومتابعة جداول الصيانة للأدوات التكنولوجية.	☐	☐	☐	☐	☐
الموافقة على خطط بديلة للتطبيق فى حالة حدوث أعطال فنية فى وسائل التكنولوجيا المستخدمة.	☐	☐	☐	☐	☐

الحفاظ على السلامة والأمن في العمليات اللوجيستية

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
مراقبة تنفيذ الإجراءات التنظيمية للسلامة والأمن داخل إدارة العمليات اللوجيستية.	☐	☐	☐	☐	☐
متابعة التغيرات المتعلقة بنظام ولوائح السلامة والأمن ، وتنفيذ متطلباتها.	☐	☐	☐	☐	☐
التأكد من إتباع التعليمات الخاصة بالإستخدام الآمن للمعدات فى إدارة العمليات اللوجيستية.	☐	☐	☐	☐	☐
تحديد وجود أي مخاطر متعلقة بالسلامة أو الأمن داخل إدارة العمليات اللوجيستية.	☐	☐	☐	☐	☐
اتخاذ إجراءات فورية لمنع الإصابات ، أوالسرقة ، أو الضرر ، وإعطاء الأولوية لحماية الموظفين.	☐	☐	☐	☐	☐
الرد على المخاطر التي تؤثر على السلامة والأمن عن طريق استخدام معدات السلامة المناسبة وتنفيذ إجراءات السلامة التي تحددها الشركة.	☐	☐	☐	☐	☐

إدارة مقدمى الخدمات اللوجستية

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
تحديد نوع الأنشطة اللوجستية التي سيتم التعاقد عليها.	☐	☐	☐	☐	☐
تحديد معايير اختيار مقدمي الخدمات اللوجيستية.	☐	☐	☐	☐	☐
تحديد شركات مقدمي الخدمات اللوجستية المتواجدة فى السوق.	☐	☐	☐	☐	☐
محاولة لتحديد المواصفات ومقدمي الخدمات اللوجستية.	☐	☐	☐	☐	☐
تقييم العروض من مقدمي الخدمات اللوجستية.	☐	☐	☐	☐	☐
اختيار مقدمي الخدمات اللوجستية.	☐	☐	☐	☐	☐
توثيق عملية التقييم والإختيارالنهائى لشركات مقدمي الخدمات اللوجستية.	☐	☐	☐	☐	☐
تحديد متطلبات الأداء في العقود المبرمة مع مقدمي الخدمات اللوجستية.	☐	☐	☐	☐	☐
الإشراف على جمع المعلومات المتعلقة بمستوى أداء مقدمى الخدمات.	☐	☐	☐	☐	☐
متابعة عمل تقرير إلتزام مقدمى الخدمات بالخدمات ومستوى الأداء المطلوب.	☐	☐	☐	☐	☐
مراجعة تقرير أداء مقدمى الخدمات.	☐	☐	☐	☐	☐
إبلاغ مقدمى الخدمات بمستوى أدائهم فى تقديم الخدمات اللوجستية للمنظمة.	☐	☐	☐	☐	☐

رصد الآثار البيئية للعمليات اللوجيستية

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
تنفيذ وتعزيز السياسات البيئية التابع للشركة.	☐	☐	☐	☐	☐
مراقبة استخدام الطاقة والمواد لتوفير العمليات اللوجستية.	☐	☐	☐	☐	☐
تحديد الآثار المترتبة على العمليات اللوجيستية على البيئة.	☐	☐	☐	☐	☐
تحديد سبل الحد من أي آثار سيئة على البيئة.	☐	☐	☐	☐	☐
تحديد طرق لاستخدام الطاقة بشكل أكثر فعالية وكفاءة .	☐	☐	☐	☐	☐
إعادة تدوير المواد الفائضة كلما كان ذلك ممكنا.	☐	☐	☐	☐	☐
التخلص من فائض المواد وفقا لقانون الحكومة والشركة وأنظمتها.	☐	☐	☐	☐	☐
التعامل مع أي أثر بيئي ناتج عن تنفيذ العمليات اللوجستية باتخاذ الإجراءات المناسبة وفقا للوائح المنظمة.	☐	☐	☐	☐	☐
إبلاغ أعضاء سلسلة الإمداد (الموردين والمقاولين من الباطن ، وما إلى ذلك) عن مسؤولياتهم البيئية عند التعامل مع المنظمة.	☐	☐	☐	☐	☐
إقتراح سبل تحسين الأثر البيئي لعمليات النقل والإمداد الخاصة بالمنظمة.	☐	☐	☐	☐	☐

التعامل مع الحوادث التي وقعت خلال العمليات اللوجيستية

المهام الوظيفية	ليست مهمة على الإطلاق	مهمة بشكل ضعيف	متوسطة الأهمية	مهمة	مهمة جدا
الحصول على معلومات عن الحادث من الاشخاص المناسبين.	□	□	□	□	□
تحديد العوامل التي تتسبب في وقوع الحادث باستخدام أساليب التحقيق.	□	□	□	□	□
جمع البيانات المتعلقة بالحادث من خلال استخدام الأساليب والموارد الملائمة.	□	□	□	□	□
التأكد من تنفيذ القرار من قبل الأشخاص المعنيين بالشكل المناسب.	□	□	□	□	□
التأكد من تنفيذ متطلبات العملاء عند وقوع حدث.	□	□	□	□	□
إبلاغ الأشخاص المعنيين ذوى الصلة بالقرار التى تم إتخاذه لمواجهة الحدث.	□	□	□	□	□

الجزء الثالث : التدريب

1	**هل تحضر دورات تدريبية؟**	نعم □ لا □
2	**من هو المسؤول عن تحديد احتياجات التدريب الخاصة بك؟**	□ أنت □ مديرك المباشر □ إدارة الموارد البشرية □ آخرون – اذكر □ لا ينطبق
4	**هل تحتاج إلى التدريب لكى تعمل بكفاءة؟**	نعم □ لا □
4.أ	**إذا كان الجواب لا على السؤال السابق ، يرجى كتابة السبب :**	
5	**إذا أتيحت لك الفرصة لتعود إلى الدراسة الجامعية لمدة عام واحد، ما هى الخمسة مقررات التى قد تفيدك لتعمل بكفاءة فى وظيفتك؟**	

برجاء اضافة اى تعليقات او ملاحظات خصاصة بهذة الاستبيان

APPENDIX 4 – ENGLISH COVER LETTER

Dear sir/madam,

My name is Sara Elzarka; I am an assistant lecturer in the College of International Transport and Logistics, at the Arab Academy for Science, Technology and Maritime Transport in Alexandria (Egypt). I am a PhD student in the School of Applied Sciences at the University of Huddersfield in the United Kingdom. I am inviting your respectful company to participate in research in the form of a questionnaire.

My PhD project is entitled "Designing a competency framework for logistics executives: the case of the ready-made garments manufacturers in Egypt". Your company's participation is important to this study as the information you provide will support the creation of a framework that would be a useful tool for companies in determining the training and development needs of logistics executives. This framework would be of great importance, as in this global economic crisis, improving the quality of employees is highly necessary because the better the quality of the workforce, the better becomes the ability of businesses to succeed and survive.

<u>The respondent to this questionnaire should be responsible for any or all of the following:</u>

- Managing logistics activities (transportation, warehousing, inventory management, etc).
- Managing logistics contractors (shipping companies, freight forwarders).
- Monitoring the fulfilment of customers' orders.
- Managing the exports activities.

{*If you* ***are not*** *responsible of any of the tasks above, please forward this email to the person responsible in your company*}

The questionnaire should take about 25 minutes to complete and it is available in English and Arabic. Your involvement in the study is voluntary and you may choose not to participate or to stop at any time.

As a sign of gratitude for your participation, you will automatically be entered into a prize draw upon completing the questionnaire. You will be notified by email or fax of your prize in 4 weeks.

This questionnaire is anonymous. The results of the study will be published, but your name will not be linked to responses in publications that are released from the project. All information you provide will remain strictly confidential. If you would like to obtain a summary of the results of this research, I am happy to send you copies of future publications.

Please click on the following link to participate in the questionnaire: **http://www.surveymonkey.com/s.aspx?sm=v_2fFIpgLcWw642_2b9q_2fqgnKg_3d_3d**

If you have any questions about this research project, please feel free to contact me:
Email **s.elzarka@hud.ac.uk** or sara_elzarka@aastmt.edu

Thank you for your consideration.

Sara Elzarka

APPENDIX 5 – ARABIC COVER LETTER

السادة المشاركين فى الإستبيان،،

تحية طيبة وبعد،

تتوجه الباحثة سارة الزرقا - مدرس مساعد بكلية النقل الدولى واللوجستيات بالأكاديمية العربية للعلوم والتكنولوجيا والنقل البحرى و الباحثة بجامعة Huddersfield بالمملكة المتحدة - بدعوة شركتكم الموقرة للمشاركة فى الإستبيان المتعلق برسالة الدكتوراة الخاصة بها والتى تهدف إلى تصميم هيكل كفاءات لتدريب وتطوير مديرى العمليات اللوجستية فى شركات صناعة الملابس الجاهزة المصرية.

ولأغراض إستكمال الدراسة الميدانية لهذا البحث، تقوم الباحثة بإعداد هذا الإستبيان بهدف التعرف على أهم المهام الوظيفية التى ينفذها مدير إدارة العمليات اللوجستية بشركات صناعة الملابس الجاهزة فى مصر لتصميم هيكل للكفاءات الذى من شأنه أن يكون أداة مفيدة للشركات في تحديد إحتياجات التطوير والتدريب للمديرين المسئولين عن الأنشطة اللوجستية.

وحيث أن مشاركتكم فى تعبئة الإستبيان يعد إثراء لهذا البحث، تود الباحثة من سعادتكم مشكورة بتمرير هذا الإستبيان إلى الشخص المسئول عن أى أو كل مما يلى:

- إدارة الأنشطة اللوجستية (النقل والتخزين وإدارة المخزون ، الخ).
- إدارة شركات مقدمى الخدمات اللوجستية (شركات النقل البحري ، ووكلاء الشحن) المسئولين عن تنفيذ العمليات اللوجستية الخاصة بالشركة.
- الإشراف على إتمام طلبيات العملاء.
- إدارة الصادرات.

نأمل أن تسهم شركتكم الموقرة فى الإجابة على أسئلة الإستبيان طبقاً للإرشادات الموضحة ،كما أن الإستبيان إلكترونى وباللغة العربية، هذا ولن يستغرق الأمر سوى 25 دقيقة. برجاء زيارة الموقع الإلكترونى التالي للمشاركة في الإستبيان:

http://www.surveymonkey.com/s.aspx?sm=v_2fFIpgLcWw642_2b9q_2fqgnKg_3d_3d

عند الانتهاء من إستكمال الإستبيان سوف يتم إدخال إسم المستجيب على الإستبيان فى سحب على الجوائز وسوف يتم إبلاغ الفائزين عن طريق البريد الإلكتروني أو الفاكس في غضون 4 أسابيع وستعامل المعلومات الواردة فى الإستبيان بسرية تامة ولن تستخدم إلا لأغراض البحث.

نشكركم على حسن تعاونكم معنا، على أن نوعد سيادتكم بإرسال نسخة من نتائج الإستبيان فور الانتهاء منه.

يمكن لسيادتكم الإتصال لمزيد من المعلومات أو الإستفسارات على:

البريد الإلكتروني **s.elzarka@hud.ac.uk** **أو** sara_elzarka@aastmt.org

الباحثة/ سارة الزرقا

APPENDIX 6 - SKILLS, BUSINESS/MANAGEMENT KNOWLEDGE AND LOGISTICS KNOWLEDGE DEFINITIONS

SKILLS	
ELEMENT	**DEFINITION**
Adaptability	Effectively manage changing environments in the organisation, global, economic, and political matters; maintaining effectiveness when dealing with multiple and conflicting priorities across different cultural settings, or during emergency and crisis situations.
Analytical skills	Possessing the reasoning ability to perform job successfully and critically reviews, analyses, and interprets information.
Communication	Having the ability to speak clearly where information is organised in a logical manner; to effectively use non-verbal expressions; to listen attentively and to appreciate feelings and concerns of verbal messages.
Computer skills	Use workplace computer applications which include word processing, spreadsheets, internet applications, and e-mailing.
Continuous learning	Having the ability and the will to constantly seek knowledge and education in the related work field and apply it to the corresponding work setting.
Decision making	Recognising the need to make a decision; identifying, analysing and evaluating the options; and implementing decision.
Innovation	Using information, knowledge and beliefs to generate original, innovative ideas that create opportunities for the business.
Interpersonal skills	Considering and responding appropriately to the needs, feelings, and capabilities of different people in different situations; is tactful, compassionate and sensitive, and treats others with respect.
Leadership	Actively guiding and supporting (motivating) people to achieve goals; having the ability to delegate and distribute authorities/responsibilities.
Negotiation	Understanding the techniques and principles of negotiation, as well as formulating and implementing contracts.
Networking	Having the ability to develop long term relationships with others for mutual benefit.
Problem solving	Recognising the existence of a problem; determining the possible causes; identifying solutions; evaluating solutions; implementing solutions and evaluating consequences.

SKILLS (Continued)	
ELEMENT	**DEFINITION**
Second language	Having the ability to speak and understand one or more foreign languages that contributes to facilitating communication in the related work setting.
Teamwork	Acknowledging team membership and role; establishing productive relationships; identifying with the team and its goals; resolving conflicts.
Time management	Understanding that time is a valuable asset to be well utilised for the firm's benefits in terms of defining priorities, and determining specific timeframes for tasks.
BUSINESS AND MANAGEMENT KNOWLEDGE	
ELEMENT	**DEFINITION**
Benchmarking	To understand the systematic process of comparing the activities and work processes of an organisation or department with those of outstanding organisations or departments in order to identify ways to improve performance.
Change management	Having the ability to judge when change is needed, adapting to changes outside of the firm and determining the internal changes required.
Conflict management	Having the knowledge of the proper procedures for handling conflicts, including the proper uses of power and influence to resolve the situation.
Cross functional operation	Having the ability to work with a group of people with different functional expertise to achieve common goals.
Finance/cost	Determining and analysing the costs elements involved in logistics activities to manage the overall value to the company.
General business	Having the knowledge on the basics of operating a business that includes the creation of the business structure; designing, producing, and marketing products and services.
General management	To understand the functions of management: planning, organizing, leading and controlling.
Human resource management	Knowledge of principles and procedures for personnel recruitment, selection, training, compensation and benefits.
International business	Recognising the dynamics of the international market as well as the political, legal, economic and cultural forces affecting it.
Knowledge management	To understand the strategies and processes designed to identify, capture, structure, value, leverage and share an organisation's intellectual assets to enhance its performance and competitiveness.

BUSINESS AND MANAGEMENT KNOWLEDGE (Continued)	
ELEMENT	**DEFINITION**
Logistics/supply chain knowledge	Having the basic knowledge of the concept of logistics, its role and activities within the organisation as well as understanding the supply chain processes.
Marketing	Understand the principles of marketing which include marketing strategies, marketing mix and the role of logistics in supporting marketing goals.
Production	To understand the production processes of a business and the management of the resources and activities required.
Project management	Having the ability to divide a certain target into a number of defined tasks, and assigning the resources needed to accomplish these tasks.
Quality management	Recognising the principles of total quality management and its applications within the different processes of the organisation.
Strategic management	Understand the principles of strategic management which includes the setting of the mission, vision and objectives of the organization as well as strategy formulation, implementation and evaluation.
System thinking	Having the ability to view systems from a broad perspective that includes seeing overall structures and patterns in systems rather than seeing only specific events in the system.
LOGISTICS KNOWLEDGE	
ELEMENT	**DEFINITION**
Customer service	Knowledge of principles and processes for providing customer services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.
Forecasting	Determine the most appropriate forecasting method; identify factors/variables for developing forecasting models; develop and evaluate forecasts; and document forecasts in written reports.
Green logistics	Having the knowledge about the impact of logistics activities on the environment and the measures and techniques necessary to render the performance of these activities friendly to the environment.
Inventory control	Having the knowledge of all the activities and procedures used to control and maintain the right amount of each item in stock or to provide the required level of service at minimum cost.
Materials handling	Knowledge of selecting materials handling equipment and evaluating cost effective alternatives.
Order processing	Having the knowledge related to filling and delivering customers' orders. Designing a network to permit the firm to meet the customers' requests while minimising the total delivered cost.

LOGISTICS KNOWLEDGE (Continued)	
ELEMENT	**DEFINITION**
Outsourcing	Determine logistics and planning services to be bid and contracted; develop proposal and review/selection criteria; identify possible service providers; develop bid specifications for providers; request bids from providers; evaluate bids and select providers.
Purchasing	Scheduling supplies' order; evaluating potential suppliers; managing contracts; and implementing supplier rating system.
Reverse logistics	Having the knowledge of the logistics processes required to remove new or used products from their initial point in a supply chain, such as returns from consumers, over stocked inventory, or outdated merchandise and redistributing them using disposition management rules.
Supply chain security	Evaluate the potential risks associated with national or global political and government policy changes and determine the security measures necessary to protect the different processes across the entire supply chain.
Technology tools	Evaluating, selecting and applying the appropriate tools or technological solutions that support the logistics operations.
Transportation	Determine origin and destination points for routing; determine load levels and transportation requirements for goods; determine availability of qualified operators and required transportation equipment; develop routes to meet service and time requirements at lowest cost; develop plans and schedules (times, operators, equipment) that meet service/time requirements at lowest costs.
Warehousing	Having the knowledge to direct the efficient and cost-effective operation of distribution centres or warehousing facilities. Having the knowledge to manage inbound activities related to the receipt and storage of goods, and inventory management as well as outbound activities related to order-filling, stock replenishment and shipping.

Source: OVAE (2002), Competency Development Planning Guide (2003), CSCMP (2007), U.S Department of Labour (2009)

APPENDIX 7 - LIST OF ANALYSED ARTICLES

International Journal of Logistics Management		
Authors	**Date**	**Title**
Prabir K. Bagchi and Helge Virum	1996	European logistics alliances: a management model
Christopher R. Moberg et al.	2004	Do the management components of supply chain management affect logistics performance?
John Mangan and Martin Christopher	2005	Management development and the supply chain manager of the future
Peter G. Burcher et al.	2005	A cross country comparison of careers in logistics management in Australia and Britain
Fredrik Nilsson	2006	Logistics management in practice – towards theories of complex logistics
Erik Sandberg	2007	Logistics collaboration in supply chains: practice vs. theory
Yen-Chun Jim Wu and Ya Huei Chou	2007	A new look at logistics business performance: intellectual capital perspective
Mary J. Meixell and Mario Norbis	2008	A review of the transportation mode choice and carrier selection literature
Michael J. Gravier and M. Theodore Farris	2008	An analysis of logistics pedagogical literature: past and future trends in curriculum, content, and pedagogy
Remko van Hoek et al.	2008	Great divides: internal alignment between logistics and peer functions
Journal of Business Logistics		
Authors	**Date**	**Title**
Robert A. Novack et al.	1993	Teaching quality in logistics
Kant Rao et al.	1994	Training future logistics managers: logistics strategies within the corporate planning framework
Rae Andre	1995	Leading diverse management teams in logistics

Journal of Business Logistics (Continued)		
Authors	**Date**	**Title**
Lloyd M. Rinehart and Gary L. Ragatz	1996	Management of facility and human resources in materials and logistics management
Carlo D. Smith et al.	1998	Removing the barriers between education and practice: tools and techniques for logistics management
David J. Closs and Theodore P. Stank	1999	A cross-functional curriculum for supply chain education at Michigan State University
Alexander E. Ellinger et al.	2002	Logistics managers' learning environments and firm performance
R. Glenn Richey et al.	2006	A supply chain manager selection methodology: empirical test and suggested application
Douglas M. Lambert et al.	2008	The role of logistics managers in the cross-functional implementation of supply chain management
John T. Mentzer et al.	2008	Supply chain management and its relationship to logistics, marketing, production and operations management
European Business Review		
Authors	**Date**	**Title**
Ronald H. Ballou	2007	The evolution and future of logistics and supply chain management
International Journal of Logistics management Research and Applications		
Authors	**Date**	**Title**
John Mangan et al.	2001	Education, training and the role of logistics managers in Ireland

International Journal of Operations and Production Management		
Authors	**Date**	**Title**
Larry Giunipero et al.	2006	Supply management's evolution: key skill sets for the supply manager of the future
Journal of Enterprise Information Management		
Authors	**Date**	**Title**
Paul D. Larson	2008	Accreditation program design: a survey of supply chain professionals
Journal of Management Development		
Authors	**Date**	**Title**
Charles R. Gowen III and William J. Tallon	2003	Enhancing supply chain practices through human resource management
Logistics Information Management		
Authors	**Date**	**Title**
Tony Hagon	1994	Putting the logistics manager in the driving seat
Supply Chain Management an International Journal		
Authors	**Date**	**Title**
Remko I. Van Hoek et al.	2002	Managers in supply chain management, the critical dimension
Robert E. Spekman et al.	2003	Supply chain competency: learning as a key component
Yen-Chun Jim Wu	2006	Skill requirements for logistics license in Taiwan

International Journal of Physical Distribution and Logistics Management		
Authors	**Date**	**Title**
Don Sutton	1990	The role of the logistics manager/director
Jonathan W. Kohn et al.	1990	Organisational environment and logistics strategy: an empirical study
Bernard J. La Londe and James M. Masters	1994	Emerging logistics strategies: blueprints for the next century
Haw-Jan Wu and Steven C. Dunn	1994	Environmentally responsible logistics systems
Paul R. Murphy et al.	1994	Role and relevance of logistics to corporate environmentalism-An empirical assessment
Peter Gilmour et al.	1994	Future directions for logistics in Australia
George T. Haley and R. Krishnan	1995	It's time for CALM: computer aided logistics management
Huan Neng Chiu	1995	The integrated logistics management system: a framework and case study
C. John Langley et al.	1995	Microcomputers as a logistics information strategy
Kenneth B. Kahn and John T. Mentzer	1996	Logistics and interdepartmental integration
Kofie Q. Dadzie	1998	Transfer of logistics knowledge to Third World countries
Chee-Chuong Sum and Chew-Been Teo	1999	Strategic posture of logistics service providers in Singapore
Joseph L. Cavinato	1999	A general methodology for determining a fit between supply chain logistics and five stages of strategic management
Paul D. Larson and Jack D. Kulchitsky	1999	Logistics improvement programs: The dynamics between people and performance
Remko I. Van Hoek	2000	Logistics education – achieving market and research driven skill development
Richard F. Poist et al.	2000	Preparation of logistics managers for the contemporary environment of the European Union
Tage Skjoett-Larsen	2000	European logistics beyond 2000
M. Razzaque and B. Sirat	2001	Skill requirements: perception of the senior Asian logisticians

International Journal of Physical Distribution and Logistics Management (Continued)		
Authors	**Date**	**Title**
John L. Gattorna	1992	Creating an effective logistics systems solution: The role of people
Paul W. Hyland et al.	2003	Continuous improvement and learning in the supply chain
Shaukat A. Brah and Hua Ying Lim	2006	The effects of technology and TQM on the performance of logistics companies