Arab American University
Faculty of Graduate Studies
Department of Administrative and Financial Sciences
Master Program in Quality Management

Impact Of Soft And Hard Total Quality Management Practices On Green Logistics Practices: Mediation Effects Of Green Human Resources Practices In Developing Countries. Case Study: Palestine

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Thesis Approval

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Declaration

I declare that, except where explicit reference is made to the contribution of others, this thesis is substantially my own work and has not been submitted for any other degree at the Arab American University or any other institution.

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Dedication

This thesis is dedicated to everyone who believes in the strength of knowledge and tenacity. To my parents, who have always had faith in me and unwaveringly encouraged me to pursue my goals. To my brother and sisters, who have always been there for me. My teachers and mentors have motivated me to strive for excellence in both my academic and professional efforts.

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"I would also like to extend my sincere appreciation to my family, whose encouragement and patience have been instrumental throughout this journey. My heartfelt thanks to my professors and mentors for their invaluable guidance, constructive feedback, and continuous support, which have greatly contributed to the completion of this thesis."

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Impact of soft and hard total quality management practices on green logistics practices: mediation effects of green human resources practices in developing countries.
Case study: Palestine

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Abstract

Green logistics refers to the implementation of environmentally friendly procedures that optimize operations while reducing their negative impact on the environment. It entails encouraging the use of renewable resources, cutting carbon emissions, and utilizing energy-efficient transportation. Businesses can help conserve the environment, increase resource efficiency, adhere to environmental rules, improve their reputation, and satisfy the growing demand for environmentally friendly logistic solutions by putting green logistics strategies into effect.

Therefore, this study aims to examine the impact of hard and soft total quality management on green logistics with a mediation role of green human resources in developing countries. It has adopted a mixed-method methodology that is characterized

As a sequential exploratory design It includes collecting qualitative data and analyzing it in the first phase, then gathering the quantitative data to be studied in the second phase. Ten semi-structured interviews and 350 surveys were collected from manufacturing. Qualitative data was analyzed using thematic analysis, whereas quantitative data were analyzed by SPSS software.

The study found that both hard and soft total quality management practices positively impact green logistics in developing countries' manufacturing sectors. Green human resources practices also play a significant role in implementing sustainable practices in this sector. The result emphasises the crucial role of STQM in creating cross-functional teams, motivating employees to reduce waste and carbon emissions, and offering ongoing training on environmentally friendly procedures. To effectively enhance the GL process, HTQM focuses on data-driven techniques and technical solutions. With an emphasis on integrating environmental considerations into HR practices, including hiring, training, performance management, and employee engagement, GHRM mediates the interaction between HTQM, STQM, and GL. GHRM strengthens the connection between operational excellence and cultural values and human resources.

This study is considered among the first empirical studies exploring the impact of hard and soft practices on green logistics with the mediating role of green human resources in Palestine. This study also aims to encourage decision-makers in the manufacturing sector to implement hard and soft practices to improve their processes, operation and sustainability in all sectors, Highlighting the crucial role of green human resources in this improvement and hiring practices with environmental objectives.

Keywords: Hard total quality management, Soft total quality management, Green human resources management and Green logistic.

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List of Definitions of Abbreviations

Abbreviations	Title
AVE	Average Value Extracted
BVR	Based Value Resources
GHRM	Green Human Resources Management
GL	Green Logistic
HTQM	Hard Total Quality Management
HR	Human Resources Management
STQM	Soft Total Quality Management
TQM	Total Quality Management

Chapter One:Introduction

1.1 Background

In recent decades, the world has experienced unprecedented economic expansion due to the availability of modern technologies and opportunities for international trade (Aronsson and Brodin, 2006). However, this growth has also given rise to significant environmental challenges that have captured society's interest (Naser, 2011), such as an increase in the quantities of carbon dioxide, methane, and nitrous oxides in the global atmosphere (Mizyed, 2018). Both developed and developing nations nowadays worry about the significance of environmental challenges and sustainable development (Masri and Jaaron, 2017).

The rise in greenhouse gas concentrations is a direct cause of climate change (Mizyed,2018), leading to increased natural disasters and environmental degradation (Naser, 2011). This is particularly concerning for developing nations, where health, water, and food security are vulnerable (Thorpe and Fennell, 2012). Climate change manifests in severe weather, storm intensity, water scarcity, and disease spread (Dasaklis and Pappis, 2013). The logistics industry represents one of the main sectors that significantly contributes to producing carbon emissions, nitrogen, and greenhouse gas emissions. Since it uses fossil fuels for the majority of its energy requirements or about 96% of them (Khan, 2019), and is considered the main source of pollution and resource consumption (Vienažindienė, Tamulienė and Zaleckienė, 2021).

The logistics industry plays a vital role in fostering sustainable development within a country. As it facilitates both social and economic progress (Vidova, et al, 2012), its services have evolved to the level of an important business function (Lazar, Klimecka-Tatar and Obrecht, 2021), and incorporation of sustainability factors into commercial logistics is becoming increasingly essential (Lazar, Klimecka-Tatar and Obrecht, 2021).

This industry plays a critical role in raising awareness of the need to implement efficient environmentally-friendly methods (Masri and Jaaron, 2017), since pollutants are implicitly produced as by-products at every stage of the integrated logistics process (Aronsson and Huge Brodin, 2006).

Traditionally, sustainability has been referred to as the preservation or enhancement of the Earth's life-supporting systems to provide opportunities for present and future generations to prosper economically and socially while maintaining cultural variety (Moldan, Janoušková and Hák, 2012). Environmental sustainability, on the other hand, involves utilizing ecosystem services, such as waste absorption capacity and renewable and non-renewable resource availability, to enhance human welfare and coexist with biophysical constraints (Moldan, Janoušková and Hák, 2012).

Nowadays, businesses plan their operations to satisfy environmental regulations and offer eco-friendly products (Zaid, Sleimi and Alaqra, 2021), also linking green supply and demand, overcoming challenges, and ensuring efficient movement of products and services (Zheng and Zhang, 2010). As a result, stakeholders, government, suppliers, and employees are all greatly impacted by competitiveness when it comes to embracing environmental and development consciousness (Zheng and Zhang, 2010). This will increase demand on manufacturing companies to address environmental challenges, to secure a competitive edge and stakeholder satisfaction, they must adopt green practices aimed at reducing pollution and carbon emissions (Zaid, Sleimi and Alaqra, 2021).

The term "green logistics"(GL) refers to any activity involving the environmentally responsible management of product and information flows both forward and backward between the point of origin and the point of consumption with the aim of meeting or exceeding customer demand (Kumar, 2015). On the other hand, green supply chain management integrates environmental concerns into inter-organizational activities, prioritizing enhancements in material acquisition, production, and distribution. This approach aims to boost the profitability, competitiveness, and resilience of suppliers, manufacturing systems, distribution centers, and retailers (Franchetti, Elahi and Ghose, 2017). Research indicates that the more vigorously green human resource management

(GHRM) policies are implemented, the more quickly various businesses embrace environment management systems (EMS) and policies. (Bohdanowicz, Zientara and Novotna, 2011). This underscores the critical role of GHRM in ensuring that organizations uphold their moral, ethical, and social responsibilities (Alcara et al, 2019) which often requires additional work to manage its environmental impact successfully (Alcara et al, 2019). To address this need, a new concept in sustainability systems, termed "GHRM," has emerged. GHRM focuses on incorporating ideas from green management into HR plans (Ullah, 2017). GHRM is becoming a more important field in management (Mehta and Chugan, 2015). Its adaption emphasizes improvements in organizational culture, enhanced teamwork, greater operational performance, and reduced overall costs (Jackson et al, 2011).

Scholars have long underscored the vital role of total quality management (TQM) practices in assessing the sustainability of green logistics (Jermsittiparsert, Namdej and Somjai, 2019). Mejías and Pardo (2016), affirm that TQM has been instrumental in driving the development of sustainability practices (Mejías and Pardo, 2016) TQM helps organisations in increasing their earnings, market share, and general competitiveness (Singh and Shrivastava, 2012). TQM as a continuous improvement tool plays a vital role in organizations to drop rejections and downtime which leads to cost savings and improved performance (Singh and Singh,2014).

Furthermore, adopting TQM practices is necessary to generate environmentally sound products (Mishra and Napier, 2015). Moreover, Green et al. (2019) contend that TQM programs not only enhance environmental performance but also contribute to pollution prevention efforts. The implementation of TQM practices plays a crucial and significant role in enhancing organizational competitiveness by reducing waste and energy consumption, consequently, reducing environmental risk and improving market performance (Agyabeng-Mensah, 2021).

Interestingly, TQM philosophy is often associated with both the behavioral and system sides of TQM (Sun et al, 2004). The behavioral side of TQM is termed “soft” (STQM) which concentrates on the behavioral component of quality management practices that

deal with the people, social side, and the culture of the organization (Sciarelli, Gheith and Tani, 2020). STQM Includes Leadership Practices (LP), Customer Focus Practices (CF), Employee Involvement Practices (EIP), Knowledge and Education Practices (K & E, P) (Zwain and Othman (2014).

The system side is called "hard" (HTQM) and concentrates on technical issues by utilising scientific methodologies and statistical tools (Sciarelli, Gheith and Tani, 2020), HTQM Include Process Management Practices (PM), Supplier Management Practices (SMP), Continuous Improvement Practices (CI), Information and Analysis Practices(I&A), Quality Management Tools and Techniques Practices (QMT & TP) (Zwain and Othman (2014).

STQM & HTQM practices constitute the TQM paradigm (Zwain, Lim, and Othman, 2014). STQM facilitates the HTQM for implementation of TQM practices, given that STQM &HTQM practices influence logistics performance across all nodes, and their efficacy is closely tied to the cost, quality, and delivery of goods (Modgil and Sharma, 2017). Moreover, effective integration among manufacturers, suppliers, distributors, retailers, and customers is essential for achieving the desired performance, ultimately leading to excellent business results (Modgil and Sharma, 2017).

TQM practices enhance organizational performance improvement by having a substantial impact on the logistics procedure at every node (Modgil and Sharma, 2017). Implementing these practices has a beneficial role in putting changes into the operational and managerial frameworks of both public and private organizations (Zaid and Sleimi, 2023). Involving both HTQM & STQM approaches integrates stakeholders, manufacturers, suppliers, distributors, retailers, and customers, for successful business results (Modgil and Sharma, 2017).

Choudhary et al (2020). Find that Implementation of hard and soft TQM practices will reduce the harm that logistic activities produce to the environment, in addition to that TQM dimensions like leadership, customer demand focus, and HR focus play crucial

roles in determining a company's success in sustainability and logistic sector (Jermsittiparsert, Namdej and Somjai, 2019). TQM practices are essential for Implementing the multi-dimensional framework and call for a closer examination of the roles and interdependencies among practices, especially in developing nations where TQM adoption is still in its infancy (Saleh et al, 2018).

Palestine, as one of the developing countries, faces many challenges as a result of climate change, including material damage, biodiversity, water scarcity, agricultural losses, and public health issues. Energy use is the main cause of air pollution (Qureitem, Al-Khatib and Anayah, 2020). So, Environmental groups and stakeholders are putting more and more pressure on manufacturing companies to address ecological challenges (i.e., lowering carbon emissions, cutting back on fossil fuels, and offering green products) which are produced mainly from logistics practices. (Zaid, Sleimi and Alaqra, 2021).

Several scholars talked about how little empirical research has been done in developing nations' industrial sectors (Hossain et al, 2022). Studies in developing countries like Palestine are challenging due to the scarcity of research, development facilities, and skilled labor (Hanieh, et al, 2015) In addition to that, Palestinian manufacturing organizations have a unique situation because of the Occupied Palestinian Territories (OPT), where dual environmental laws, Palestinian National Authority Law and Israeli Authorities Law, dominate internal policies, impacting the Palestinian manufacturing sector (Masri and Jaaron, 2017). Also, there is a lack of experience in technical and logistic practices due to the restrictions and strict rules of the Israeli occupation (Alsoussi et al, 2024).

However, in addition to the previously noted research gap. Firstly, this work is the first study of its kind that examines the impact of hard and soft TQM practices on green logistics practices with the mediation role of green human resources practices in the context of developing nations and the first of its sort in Palestine.

In summary, the environment is currently facing challenges due to climate change and pollution, particularly in developing nations like Palestine. The high production of carbon emissions resulting from industrial activities, including logistics practices, exacerbates these issues. Conversely, TQM with its combination of HTQM and STQM, has demonstrated its effectiveness in enhancing processes across various domains and mitigating the adverse effects of harmful environmental practices. Consecutively, human resources practices play a crucial role in the adoption of green practices at organizations.

The purpose of this study is to investigate how both HTQM & STQM practices influence GL practices in developing countries like Palestine. To aid industrial firms in attaining sustainable development and enhancing environmental conservation. It is however unclear how exploring the interplay between these factors was addressed in previous studies, with the mediation role of GHRM, particularly within the context of developing countries. This demonstrates how urgently this investigation is required.

1.2 Research problem statement

The logistics industry's growth is particularly emphasized in developing nations (Liu et al, 2018). However, poor logistical infrastructure is the primary cause of carbon emissions (Khan et al, 2020). The heavy reliance on fossil fuels makes it a primary contributor to dangerous air pollution and anthropogenic climate change (Khalili, et al, 2019). Moreover, it stands out as the most energy-intensive sector, contributing to 14% of global greenhouse gases (Khalili, et al, 2019). Despite Palestine contributing less than 0.01% of global greenhouse gas emissions (Our World in Data, 2024), it is severely affected by accelerating climate change. Additionally, developing countries are likely to emit more than half the annual global total of greenhouse gas (GHG) emissions as early as 2030 (Bhattacharya, Kharas, and McArthur, 2022).

Without additional environmental protection measures, carbon dioxide emissions are projected to escalate to 60% by 2050 (Liu et al,2018). In addition to environmental concerns, Palestine faces significant social and environmental challenges, including health disorders, carbon emissions, and climate change. (Khan, 2019). The Absence of

regional policies and rules for energy consumption and high-emission carbon products in developing countries exacerbates these issues (Liu et al,2018). Furthermore, companies are increasingly expected to adopt green behavior as an ethical requirement in their business processes and to balance economic, social, and environmental performance (Zaid, Jaaron and Bon, 2018).

This emphasizes how crucial it is for the logistics sector to adopt sustainable practices to lessen the negative effects it has on society and the environment (Rodrigue, Slack and Comtois, 2017). For Palestine as mentioned above, GL adoption is challenging due to dual environmental legislations: Palestinian National Authority Law and Israeli Authorities Law. This situation makes it difficult for Palestinian manufacturers to implement green practices. Despite participating in regional agreements, the manufacturing sector's preparedness for green practices remains uncertain.

Mitigating pollution requires the effective implementation of GL strategies. This involves adopting TQM practices as tools for continuous improvement. TQM practices can significantly enhance the assessment of sustainability within GL, impacting logistics procedures, cost savings, performance enhancement, and the production of environmentally friendly goods at each stage. Both HTQM & STQM practices are essential in minimizing the environmental impact of logistics activities. These practices encompass elements such as leadership and a focus on customer demands, supplier management practices, continuous improvement, quality management, and techniques practices. Moreover, to ensure that organizations fulfil their moral, ethical, and social responsibilities, an efficient GHRM department is imperative. Implementing GHRM practices can foster improvements in organizational culture, enhance operational performance, and decrease overall costs.

Alongside an examination of the impact of both HTQM & STQM practices, while explaining the mediating role of GHRM. This relationship has not been previously explored, thus leaving a gap in knowledge that this research aims to address.

1.3 Research Questions and Objectives.

1.3.1 Research Questions

1. What is the impact of HTQM & STQM practices on GL practices in Palestinian industries?
2. What is the mediation effect of GHRM practices on the relationship between HTQM & STQM and GL practices in Palestinian industries?

1. 3.2 Research Objectives

This research aims to study the following:

1. • Investigate the Impact of TQM & STQM practices on GL practices performance and analyze the relations between them within industries of Palestine.
2. • Explore the mediation impact of GHRM practices in the relation between STQM & HTQM practices and GL practices.

1.4 Conceptual model and research hypotheses

1.4.1 Conceptual model

According to the background mentioned above about the discussed constraints, we developed the theoretical framework, as illustrated below in Figure 1.1

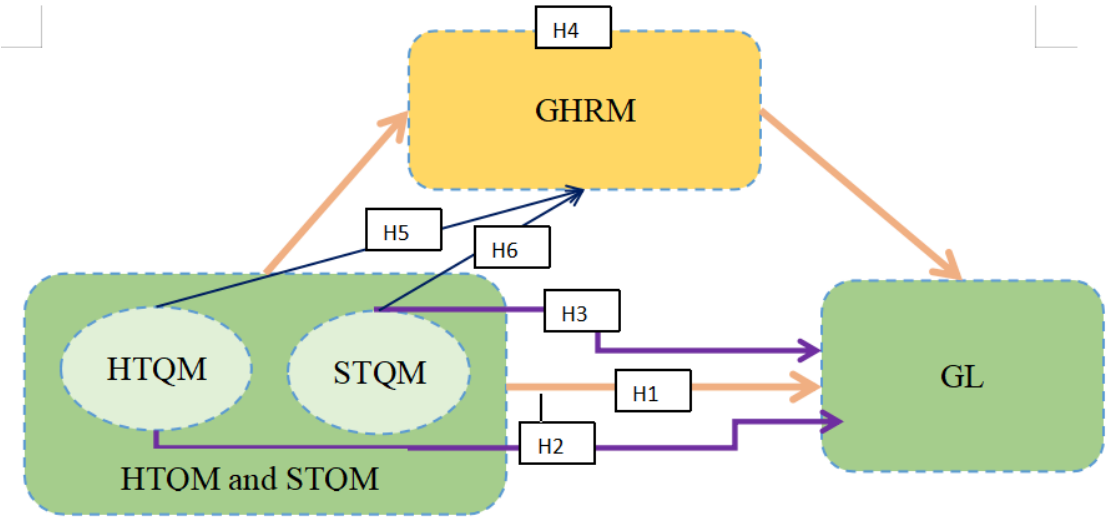

Figure 1.1: The development stage of the study.

1.4.2 Research hypotheses

H1: HTQM & STQM practices positively Impact positively on GL practices.

H2: HTQM practices positively Impact GL practices.

H3: STQM practices positively Impact GL practices.

H4: GHRM practices have a mediation effect between the relation of HTQM & STQM practices and GL practices.

H5: HTQM practices Impact positively on GHRM practices.

H6: STQM practices Impact positively on GHRM practices.

1.5 Research Importance

The implementation of the current study holds significant importance for several reasons outlined below. Firstly, the current study investigates the correlation between HTQM & STQM practices and GL practices with a focus on the mediating role of GHRM practices, this fills a notable gap in the background.

Secondly, closing this gap could contribute to a deeper comprehension of how STQM & HTQM practices affect organizational performance through GL practices and GHRM acting as mediators, which would benefit developing countries' manufacturing industries and the nation's economies. Moreover, the study also emphasizes the paramount importance of the manufacturing sector in driving economic development at the national level. and how most industries can detect and apply its findings globally facilitating the dissemination of valuable information and enhancing the effectiveness of the study's findings. Furthermore, by identifying GHRM practices as a mediator in the relationship between HTQM & STQM practices and GL practices, the study sheds light on critical affecting organizational performance across social, environmental, and economic dimensions, this study aims to further the field's understanding of the more effective and efficient implementation of HTQM & STQM and GL practices.

1.6 Thesis structure

This research is structured into five sections as follows Section one presents a general background, the research problem, and the conceptual framework. Section two covers the literature, which presents previous studies to outline the concept of HTQM &

STQM practices, GHRM practices, and GL practices. Section three covers theoretical development and research methodology, including data collection methods and respondents' profiles Section four presents data analysis and results. The discussion of managerial implications and scope for future research with limitations and conclusions are outlined in the final section, section five.

Chapter Two: Literature Review

2.1 Overview

This chapter offers a thorough analysis of the body of research on the topic, emphasizing important theories, ideas, and empirical discoveries. In order to lay the theoretical groundwork for the study, pinpoint any gaps, and support the necessity for additional research, it looks at earlier studies. This chapter seeks to place the research within the larger academic debate by examining pertinent papers, highlighting its importance and contribution to the field.

2.2 Characteristics of Green Logistics

Logistics is defined as the set of activities whose goal is to maximize revenues while minimizing expenses (Seroka-Stolka, 2014), It encompasses, transportation, inventory control, warehousing, packaging, and information management for goods and services that are transferred via air, sea, land, or rail. (Al Zadajali and Ullah, 2024). Logistics practices involve controlling and coordinating physical traffic both within and beyond organizational boundaries (Ezzat and Kassem,2019) Additionally, logistics is a crucial component of supply chain management, it guarantees that a company's resources—raw materials, products, and services—are efficiently managed to increase production efficiency and guarantee customer satisfaction, which strengthens competitive advantage and boosts performance (Baah et al, 2019).

In recent years, businesses have increasingly integrated environmental and ethical responsibilities into their core values (Al-Awamleh et al , 2022) as these factors are now considered integral components of pricing strategies (Zheng and Zhang, 2010). This paradigm shift has led companies to actively seek and adopt green innovations, such innovations enable them to implement environmentally conscious differentiation strategies, thereby attaining competitive advantages (Mady et al., 2023). GL concept represents one of the green innovations that has emerged to encompass a variety of eco-friendly practices that reduce the overall environmental effect of logistics firms while promoting sustainability and environmental protection (Karaman, Kilic and Uyar, 2020).

GL practices represent a comprehensive approach to sustainable and environmentally responsible practices (Bajdor, 2012), that offer a competitive enhanced business performance (Khan et al 2020). Bajdor (2012) elucidates that GL practices have an important impact on several key areas including cost reduction through improved packaging and waste minimization, the establishment of integrated supply chains, and Just-In-Time (JIT) systems for efficient distribution. These practices also enhance system efficiency through network optimization and ensure effective and punctual transportation, thereby reducing the need for private warehouses and expanding business opportunities through diversified supply chains. On the other hand, Karia & Asaari (2016) demonstrate that GL practices lead to cost reduction associated with sustainable environment practices, such as materials procurement, energy consumption, waste discharge, waste treatment, and environmental penalties, augmenting energy efficiency and mitigating CO_2 emissions. Moreover, waste reduction contributes to mitigating negative environmental impacts, such as reducing sulfur dioxide and nitrogen oxide concentrations, greenhouse gas emissions, and fossil fuel consumption.

Govindan et al (2014), emphasize that GL practices yield multifaceted benefits encompassing enhanced economic, environmental, and societal outcomes, including heightened productivity, cost reduction, prudent resource management, alignment with market standards, compliance with environmental regulations, cultivation of a harmonious workplace, and the fortification of the business's reputation.GL practices are implemented across diverse domains, encompassing packaging, warehousing, shipping, and environmental management. These strategic practices contribute significantly to the reduction of greenhouse gas emissions, exerting a substantial positive influence on environmental sustainability (Karia, 2020). Consequently, the benefits of profitability are translated into green logistics (financial gains) for businesses, which in turn bring value to individuals, society, and the environment (Karia & Asaari, 2016). Therefore, Logistics Service Providers (LSPs) experience significant enhancements in operational, financial, economic, organizational, and social performance through the implementation of green logistic practices (Karia, 2020).

2.2.1 Green Logistic Practices

GL practices include sustainable practices in both forward and reverse logistics operations (Baah et al,2020), which aim to improve performance across three areas—social, environmental, and economic (Agyabeng-Mensah and Tang,2021), by mitigating their impact on the environment and society. This will yield a significant improvement in performance indicators for green-oriented LSPs (Karia, 2020), achieved through waste reduction and the conservation of energy and resources (Agyapong-Mensah & Tang, 2021).

The manufacturing sector has received the majority of GL practices' attention, but transportation and logistics businesses have received less (Vienažindienė,Tamulienė and Zaleckienė, 2021).The implementation of GL practices translates into economic profit for businesses while generating value for society, the environment, and individuals (Karia & Asaari, 2016). The economic aspect of a company involves cost-effective routes, fair pricing, quality assurance, and competitiveness.

This enhances the business environment and lowers taxes. The environmental aspect involves renewable energy sources, reducing emissions, and using clean vehicles. The social aspect involves social responsibility, employee competence, occupational safety, ergonomic working conditions, and reducing road accidents. Financial results are crucial for an enterprise's success, but social and ecological responsibility are also critical for a sustainable society (Vienažindienė, Tamulienė and Zaleckienė, 2021: Khan, 2019: Khan et al,2019: Yu, Golpira and Khan, 2018).

Authors have categorized sustainable logistics techniques into primary groups, including reverse logistics, sustainable packaging, sustainable warehousing, sustainable transportation, and sustainable purchasing, green management system, logistics system design, supplier collaboration, environmental management systems/standards (Kumar, 2015, Karia & Asaari, 2016; Karaman, Kilic & Uyar, 2020; Agyapong-Mensah & Tang, 2021; Al-Minhas, Ndubisi & Barrane, 2020). On the other hand, Prataviera, Creazza, and Perotti (2023) cluster GL practices into two main groups intra-organizational (internal) practices or inter-organizational (external) practices. Internal practices include Distribution Network (re-) Design, Distribution Planning and Transportation Execution,

Green Warehousing, Reverse Logistics, Packaging Design and Management, and Internal Management, whereas Green Purchasing, Collaboration with Customers, and Other Collaborations have been defined as inter-organizational (i.e., “external”) GLPs.

Additionally, Al Balushi and Ullah (2023).Grouped GL practices into two main categories, comprehensive building practices, such as energy-efficient lighting, and customers' exposure to sustainability like, eco-friendly packaging, cleaning products, and recycling. After reviewing the literature, the most common GL practices categorisation was summarized in Table 2.1 below.

Table 2.1: Green logistic practices

Categories	**Description**	**GLPs**	**References**
Sustainable packaging	Using environmentally friendly materials for packaging, constantly keeping in mind that goods must be efficient and safe for the environment as well as human health	weight reduction, packaging design for improved recovery, integrating green vendors, and using recyclable and reused materials.	(Boz, Korhonen and Koelsch Sand, 2020), (Karia, 2020), (Wandosell et al, 2021).
Reverse logistics	The process of organizing, carrying out, and managing the effective, economical movement of raw materials, inventory for use in production, completed goods, and associated data from the point of consumption to the point of origin with the aim of recovering value or appropriate disposal.	Effective management of materials and waste, recycling, remanufacturing, repairs, re-design, recovery, and re-use.	(Sharma et al, 2021), (Dabees et al, 2023), (Saruchera and Asante‐Darko, 2021).
Sustainable transportation	Meeting mobility needs while preserving and enhancing human and ecosystem health, economic progress, and social justice now and for the future," emphasizes the use of energy-efficient and low-emission vehicles.	Use of alternative (green) fuels, New transportation cooperation protocols for either goods delivery or people transportation, such as car sharing (Uber), automatic driven vehicles, Set Emission standards and emission taxes.	(Gruchmann, 2019), (Karia,2020), (Laguir *et al*. 2021) (Litmanand Burwell, 200).0).

Green management system	A green logistics strategy involves strategic planning, control, and assessment to enhance environmental, economic, and social sustainability.	Full participation, education, top management support, and robust monitoring for environmental performance metrics to ensure its effectiveness in achieving sustainable outcomes across all dimensions.	(Karia and Asaari, 2016), (Karia, 2020), (Pantalon et al, 2022).
Logistics system design	Logistics system design is centred around optimizing product transit durations, with a focus on both centralized and decentralized distribution structures. Its primary goals include ensuring timely deliveries, mitigating environmental impact, and enhancing operational efficiency).	Pre-planning techniques, eco-friendly practices, and effective communication channels construct systematic structure for renting contracts, payment schemes, and claim management	(Karia,2020), (Mahmoudi and Parviziomran, 2020). (Hasselqvist, Hesselgren and Bogdan, 2016).
Warehousing and Green Building	Compilation of strategies specifically designed for storage facilities aiming to reduce costs and minimize environmental impact by decreasing energy consumption, expenses, and greenhouse gas emissions in warehouse operations.	Automatic warehousing systems, Inventory minimization programs and Just-in-time systems, maximizing warehouse space, ensuring inventory accessibility, adequate workforce, efficient order fulfilment, and effective communication with suppliers and shipping firms are crucial for efficient operations.	(Al Balushi and Ullah, 2023), (Al-Minhas, Ndubisi and Barrane,2020), (Bartolini et al, 2019).
supplier collaboration	Successful management strategies involve setting environmental goals, improving performance, expediting product development, enhancing quality, reducing manufacturing costs, and optimizing supply network efficiency, requiring collaboration from suppliers.	supplier relationship management and key supplier programmes, long-term planning and contracts, cultivating strong partnerships and aligning environmental goals	(Yen, 2018), (Kristal et al, 2013), (Ferrell et al, 2020). (Kähkönen, 2017).
Environmental management systems/standard	a collection of procedures and methods that allow a business to lessen its effects on the environment and	Environmental management system, such as ISO 14001 or environmental Management and Audit	(Feldman, 2012), (Grotta et al, 2020).

	boost operational effectiveness.	Scheme (EMAS ISO 14001) certification.	

2.3 Total Quality Management (TQM)

Deming, one of the most famous quality gurus, describes the term “Quality” as meeting the demands and expectations of the client both now and in the future (Bagrova and Kruchinin, 2021). He elaborates that "total" denotes the potential for improvement in all aspects of the business, including organizational, human, and physical components (Sabrina, 2022). Quality, in this context, extends to all employees and divisions within the company. Consequently, TQM is defined as a management philosophy that focuses on customer demands and expectations to continuously improve processes, products, and services in order to increase customer satisfaction and organizational success (Saffar and Obeidat, 2020). TQM’s persistent pursuit of greatness by fostering in individuals the necessary abilities and mindsets to enable defect prevention and always provide complete customer/user satisfaction (Kiran, 2017). TQM enhances the organization's reputation, public image, and competitiveness. It meets customer requirements, enhances brand image, and reduces costs by preventing wasted time and low quality, creating a new firm culture (Hassan and Jaaron, 2021).

TQM as a management system emphasizes continuous improvement and enhances organizational performance through the efficient use of resources. Producing poor-quality products or services leads to the wastage of natural resources and hinders the achievement of environmental sustainability (Abbas, 2020). According to Wassan et al. (2022), TQM practices directly impact sustainability. To achieve corporate success, organizations must integrate TQM practices with sustainability practices. For instance, Papetti et al. (2019) found that minimizing waste was achieved by the application of lean manufacturing and continuous improvement, which focus on reducing waste of all types, including time, energy, and materials. Additionally, by streamlining procedures and boosting productivity, TQM reduces the need for energy and resources.

Furthermore, Jimoh et al. (2029) emphasize that TQM techniques improved quality by lowering faults and that raising the caliber of goods and services also lowers the requirement for scrap and rework, which saves energy and material. Additionally, extended product lifespans are a result of high-quality products' increased dependability and durability, which lowers the need for replacements and their negative environmental effects (Tarí, Claver-Cortés and García-Fernández, 2023). Also, Anil and Satish (2019) explain that TQM helps businesses meet customer needs for sustainability, bringing in eco-aware clients and strengthening brand distinction. According to Ababneh (2021), TQM encourages Innovative sustainability concepts and staff involvement, which fosters an inclusive culture, programs for teaching sustainable behaviors, and increasing awareness. Furthermore, Zaid and Sleimi (2023). Described that the supply chain is encouraged to collaborate and source sustainably by using TQM principles, which guarantee that suppliers that are dedicated to sustainable practices are chosen.

2.4 Total Quality Management Practices

TQM practices are various strategies used by businesses to guarantee the highest possible degree of customer satisfaction with their goods or services through the involvement of all staff (Farish and Satish, 2017). According to many authors, TQM practices in general are divided into two primary groups: soft practices and hard practices which all types of practices could be embraced under them (Ali and Johl, 2022: Fotopoulos and Psomas, 2009: Rahman and Bullock, 2005).

2.4.1 Soft and hard TQM (STQM & HTQM)

STQM practices are those practices that are related to the human resources aspect (behavioral, social aspect) including leadership, human resources, customer focus, top management commitment, employee involvement, workforce commitment, shared vision, personnel training, employee empowerment, corporate quality culture, and teamwork (Ali and Johl, 2022).

On the other hand, HTQM practices (technical)are concerned with strategy, systems, management tools, and processes that are necessary to support the implementation of soft factors. Most of the time, they deal with benchmarking, flexibility, quality systems, quality assurance, use just-in-time, zero defect, continuous improvement and innovation, strategic quality management, information and performance measurement, process management, process improvement, strategic planning, process control, product or service design (Ratny, Arshad and Gaoliang, 2018). The application of TQM practices must be interconnected and integrated to generate benefits that demonstrate the global nature of the TQM projects (Nweke, 2020). When combined, STQM and HTQM provide a comprehensive framework for quality management that promotes operational excellence, long-term organizational success, and continual development (Shuaib and He, 2023).

Some HTQM practices have a direct effect on organization performance like just-in-time, processes management, technology utilization, and continuous improvement. Whereas, STQM practices have an indirect impact on performance through HTQM elements by integrating them into a management system that includes resources, tools, and management techniques (Calvo-Mora et al, 2013: Alkhaldi and Abdallah, 2022). HTQM influences decision-making by gathering, analyzing, and disseminating information to all members of the organization. Thus, members of an organization can consistently work towards the aims, goals, and strategies of the organization by using structured and standardized methods (Sisnuhadi, 2014).

Table 2.2 and table 2.3 summarize the most popular HTQM & STQM practices authors mentioned in different fields.

Table 2.2: HTQM practices

Categorization	Description	Sub-Practices	Examples	References
Process Management Practices	The belief that process control is essential for error reduction and that enhancing production procedures will ultimately improve overall quality performance.	1.Tools and techniques 2.Process improvement 3. Benchmarking	1.Affinity diagram, cause and effect diagram, scatter diagram, force-field analysis, and quality function deployment. 2. Identify Ownership, limits, and steps of the process, apply statistical process control, employee	(Alkhaldi and Abdallah, 2022: Das, Paul and Swierczek 2008; Zhang, Cho and Linderman, 2019: Ali and Johl, 2022: Anil and Satish,2016).

			self-assessment, automated examination.	
Continuous Improvement Practices	The continuous effort to enhance all business aspects, making performance a challenging goal for competitors, and the belief that improvement is an endless journey		Kaizen, Six Sigma	(Alkhaldi and Abdallah, 2022: Sichinsambwe et al, 2019: Robbins and Fredendall, 2010)
Information and Analysis Practices	The company is actively utilizing and sharing information about quality activities and performance, including equipment breakdown rates, schedule compliance, and fault rates, with all employees	1.Encompassing data-driven decision-making 2.Use of information systems	1.Quality database and analyze them. 2. Quality improvement measurement systems	(Ali and Johl, 2022: Haitham et al, 2021).
Quality Management Tools and Techniques Practices	The use of quality diagrams and analysis techniques like relations, affinity, cause and effect, scatter, force-field analysis, and quality function deployment are utilized		Control charts, statistical process control	(Alshourah, 2021: Pham,2020: Anil and Satish, 2016).

Table 2.3: STQM practices

Categorization	Description	Sub-Practices	Examples
Leadership Practices	Means investing in human capital. These methods effectively lead people, information, resources, and activities. It is Includes top management commitment and strategic planning	Setting objectives, swaying people's emotions, forming productive teams, having conversations, embracing setbacks, inspiring, bringing people together, and rewarding their efforts.	(Al-A'wasa, 2018: Kilag and Sasan, 2023).

Customer Focus Practices	Means person's level of satisfaction after comparing a product's performance to their expectations, it has an impact on market share and client retention and is a crucial success factor in a competitive business	Measure customer satisfaction, customer feedback, customer relationships, customer involvement in new product design/introduction. Collection of information on customer needs and dissemination of information collected on customer needs within the organization and responsiveness to that information	(Ooi and Yee, 2011: Sousa, 2003).
Supplier Management Practices	The focus is on establishing long-term relationships with suppliers, involving them in product development, quality improvement projects, and selecting them based on their quality.	Supplier quality management, supplier relationship, strong supplier-customer dependency, policy for select purchases, top priorities for quality over price, quality control of suppliers, product development support from suppliers.	(Maistry et al, 2017: Claver, Tari and Molina 2003: O'Connor, Lowry and Treiblmaier, 2020:)
Employee Involvement Practices	Organizations must prioritize employee competence and dedication to gain a competitive advantage and drive innovation, ensuring increased productivity and quality	Employee empowerment, participation in goal setting, decentralised decision-making, performance measurement system, financial and non-financial rewards, training and having a common improvement method	(Van Assen, 2021: Bakotić and Rogošić, 2017)
Knowledge and Education Practices	Knowledge is a strategic asset that can provide a sustainable competitive advantage for organizations through training, development programs, and knowledge sharing.	Employee Training Programs, Knowledge Sharing Platforms, Educational Reimbursement Programs and Cross-Functional Training Initiatives	(Zwain and Othman, 2014: McNair, Bensimon and Malcom-Piqueux, 2020).

2.5 Impact of HTQM on GL Practices

HTQM includes technical methods like process management, continuous improvement, and quality management tools and techniques, all aimed at achieving customer satisfaction and improving performance (Abbas, 2020). Similarly, green logistics practices aim to achieve customer satisfaction by reducing cost, waste, and

environmental damage (Karaman, Kilic and Uyar, 2020). Green logistics methods are greatly impacted by HTQM because it promotes a sustainable culture, ensures compliance, drives innovation, and increases efficiency.

This promotes the overarching objective of lessening the environmental impact of the logistics industry and results in more ecologically friendly logistical operations (Green et al, 2019). Based on the work of Tian (2023), it was found that HTQM practices emphasize on statistical control, lean, and Six Sigma process optimization that aims to reduce waste and increase efficiency in logistics operations while advancing sustainable practices.

Agyabeng-Mensah, et al (2021). Investigated and found that HTQM promotes standardized procedures in green logistics, ensuring consistent environmental performance. It also helps organizations monitor and maintain compliance with environmental regulations, ensuring legal requirements and industry sustainability standards. According to Agyabeng-Mensah, Ahenkorah and Korsah (2019) leveraging cutting-edge technologies like AI, and big data analytics for increased productivity and environmentally friendly logistics, HTQM encourages technology integration. This emphasis on ongoing development promotes the use of greener technologies, such as renewable energy and electric cars.

Shaikh, Huaming, and Ameer (2024), HTQM measures environmental performance and supports data-driven decision-making by utilising KPIs like carbon footprint, energy usage, and waste levels. This improves sustainability in logistics operations and identifies opportunities for improvement. HTQM practices prioritize customer satisfaction, performance, cost-effectiveness, and prompt product delivery while maintaining high efficiency through continuous improvement (Abbas and Sagsan, 2019). This aligns with the goal of GL and timely service provision. Process management ensures flawless product design through automation and self-evaluation. Information and analysis include performance evaluation, operational tracking, and decision-making based on operational and market data (Albloushi, 2023).

Implementing HTQM practices has a clear impact on achieving sustainability and stability in the process (Azam et al, 2023) and improving operational procedures to ensure that activities do not pollute the environment, including air, soil, and water (Khalil and Muneenam, 2021). Furthermore, improving product design to use non-toxic, biodegradable compounds or little to no non-renewable energy resources increases energy efficiency by reducing waste or disposal. (Abbas and Sagsan, 2019). HTQM practices play a crucial part in strengthening an organization's capacity to meet green performance goals (Abbas, 2020).

2.6 Impact of STQM on GL Practices

Soft practices are long-term, intangible elements of TQM that deal with managerial and behavioral issues, emphasizing human and cultural aspects such as leadership, customer focus, knowledge and education practices, supplier management practices, and employee involvement (Karakasnaki and Gerou, 2024). These practices play crucial roles in improving GL performance and enhancing firms' overall effectiveness (Jermsittiparsert, Namdej and Somjai, 2019). Thus, STQM practices significantly impact organization performance by improving market share, sales growth, profitability, employee morale, and customer satisfaction (Lim et al, 2022). Also, STQM components support overall effectiveness by optimizing human resources and creating final products and services that meet customer expectations and achieve sustainability (Lim et al, 2022).

Using STQM components makes substantial progress toward environmental and social sustainability (Khalili, 2019). For instance, Karia (2020) explores that effective leadership integrates sustainability goals into an organization's vision and strategy, reducing fuel consumption and emissions, and promoting green logistics practices and resource allocation for sustainable technologies and processes. Additionally, Graham, Cadden, and Treacy (2023), found that staff involvement and training in sustainability practices raise awareness and engagement, which can result in eco-friendly behaviors and creative ideas for enhancing environmental performance. Moreover, Chu, Wang, and Lai (2019) discovered that customer-focus practices, prioritizing sustainability, and

being open about their environmental effect can help businesses increase customer satisfaction. They can also exceed customer expectations by using green logistics techniques and carbon-neutral shipping choices.

2.7 Logistics at Palestine

Palestine faces significant logistical challenges due to the geopolitical climate, infrastructure limitations, and economic circumstances of the area. International trade primarily occurs through land border crossings with Israel, Jordan, and Egypt, whereas land is the main mode of import for Palestinian goods. The high transportation costs incurred by Israeli regulations make it more difficult for the Palestinian economy to compete in global markets (Hassouna and Kim, 2013). According to Alimahomed-Wilson and Potiker (2018), due to Israel's colonial dominance over Palestine's logistical infrastructure, racialized labor practices, monitoring, and exploitation of Palestinian truck drivers impede international trade and economic growth. Solidarity efforts are weakened by the occupied supply chain, and the Israeli trucking industry continues to be undervalued and disorganized.

Furthermore, Alimahomed and Potiker (2017) found that through closures, security checkpoints, and militarized border crossings, Israel's military damage of Gaza's harbor and airport, along with immobilization programs, affects the movement of Palestinian commodities, resulting in the "logistics of occupation" and the destabilization of the Palestinian economy. Fannoun and Hassouneh (2019) explain that Israeli ports are the main ports used for Palestinian imports and exports, which makes logistics operations more difficult and expensive. Trade is rising but still limited with neighboring countries. In the West Bank, local distribution is simpler, but there are limitations in Gaza. The competitiveness of Palestinian commodities in both local and international markets is diminished by high transportation expenses.

2.8 Green Human Resources Management (GHRM)

GHRM is an environmentally responsible method that encourages workers and supports environmental preservation through various operational actions. It assists businesses in managing personnel, performance, supervision, training, and reward systems, while also earning carbon credits and lowering their carbon emissions (Saeed et al, 2022). GHRM fosters the sustainable utilization of an organization's assets with a strong emphasis on environmental sustainability, addressing both executive and individual concerns (Abbas et al., 2021). The implementation of GHRM methods has a significant impact on a company's environmental advancement (Aldaas, 2022). Playing a crucial role in achieving environmental balance, economic stability, sustainability, health, wellness, social equity, and the overall well-being of businesses and their workforce (Acquah, Agyabeng-Mensah and Afum, 2020). GHR initiatives improve process competency, reduce environmental impact, and replenish resources for higher productivity and reduced expenses, thus improving an organization's financial and environmental performance (Bon, Zaid and Jaaron, 2018).

GHRM techniques clearly impact sustainability by lowering an organization's carbon footprint, save resources, and raise environmental consciousness. They also result in

lower expenses, more productivity, creativity, and a competitive edge (Zihan and Makhbul,2024). Additionally, Setyaningrum and Muafi (2023) show that business social responsibility, employee engagement, and worker well-being are all improved by green HR strategies. Malik, Yukun, and Khan (2020) conclude that implementation of these methods can guarantee long-term survival, promote a cultural transition, and adhere to legal requirements.

The equilibrium between environmental preservation and industrial growth not only enhances sustainable practices but also contributes to increased profits. Strengthening green human resource policies catalyst, the adoption of environmental management systems (Ahmad, 2015). To establish an effective environmental management system, organizations can align strategic development goals with specific environmental

objectives and tactics (Haden, Oyler and Humphreys, 2009).Implementation of sustainability principles comes through theoretical contributions. Theoretical contribution means, how your research adds to, improves, or broadens pre-existing theories or frameworks in your discipline. It is the distinct intellectual contribution that your study makes to enhance comprehension of ideas, connections, or occurrences (Ridder, 2017). It involves two main types which play a significant role in implementing sustainability concepts. One of them is the resources-based value (RBV) and stakeholder theory.Both theories play contrasting roles in promoting sustainability by emphasizing relationships with external stakeholders and internal capabilities. The RBV highlights that a firm's distinct resources and capabilities determine its capacity to establish and maintain a competitive advantage.

The RBV emphasizes the significance of creating and utilizing resources that are valuable, rare, unique, and non-substitutable (VRIN) to address social and environmental issues when it comes to sustainability (Shibin at el, 2020).While, stakeholder theory, considers customers, workers, suppliers, governments, and the public, whose interests must be balanced and taken into consideration. It emphasizes the significance of inclusive and accountable decision-making in the context of sustainability (Goodman, Korsunova and Halme, 2017).

2.8.1 Green Human Resources Management Practices

GHRM practices are essential for encouraging staff members to support the company's green initiatives (Elshaer et al, 2023). In addition to that, GHRM aims to create policies, procedures, and initiatives that motivate staff members to adopt environmentally friendly practices for the benefit of consumers, communities, the environment, and businesses (Saeed, 2019).Implementing various human resource strategies to integrate environmental ideals throughout the company and carry out environmental management programs meant to enhance environmental performance is a crucial part of "greening the organization" (Tang, 2028).

Table 2.4 illustrates GHRM practices that strategically target environmental performance, as mentioned by various authors (Tang et al, 2018: Shahriari et al, 2019: Shah, 2019).

Table 2.4: GHRM practices

GHR Practices	Description	Examples	Authors
Green job design	Fostering teamwork in multitasking groups for environmental management tasks, incorporating organizational requirements into job descriptions and specifications, and gathering data for eco-friendly choices.	1-environmental responsibility: energy efficiency, waste reduction, and sustainable resource usage. 2-Sustainable Work Practices: cutting down on paper use, energy utilization, and carbon footprints. 3-Training and Development: Employees at the organization are receiving extensive training on sustainable technology and practices so they can carry out their responsibilities with responsibility.	(Alavi and Aghakhani, 2023: Al Mamun, 2019: Mwita, 2019).
Green recruitment and selection	Hiring and integrating staff members who support an organization's environment guarantees that the new hires will help the organization achieve its environmental goals.	1-Green Job Advertisements: Highlighting Environmental Commitment, Attracting Environmentally Conscious Candidates. 2- Eco-Friendly Recruitment Processes: Digital Applications, Virtual Interviews 3- Onboarding with a Green Focus: Including environmental duties and requirements in all job roles, asking questions about the environment during interviews to determine whether they are in line with the company's objective.	(Paillé, 2019: Mwita and Kinemo, 2018).

Green training and Development	The process of educating and enhancing employees' skills to promote environmentally sustainable practices within an organization, fostering a culture of sustainability.	1- of eco-friendly practices: Teaching particular behaviours and abilities that cut down on waste, save energy, and maximize resource use. 2-Green technologies include teaching staff members how to use and maintain environmentally friendly systems and technologies 3- skills are upgraded, and workplace difficulties are prepared for through training	(Obaid, 2015: Jabbar and Abid, 2015).
Green performance management	strategy that incorporates environmental factors into conventional performance management systems, aims to match an organization's environmental goals with its overall performance objectives.	1-Setting measurable environmental goals, such as reducing carbon emissions, minimizing waste, or improving energy efficiency, is integral to an organization's overall performance metrics. 2- Employee engagement, promoting environmental goals within a company through training, rewards, and performance reviews that take environmental factors.	(Mutingi, Mapfaira and Monageng, 2014).

Green pay and reward	Employee adoption of environmentally friendly activities is encouraged via green pay and reward systems, which make sure that non-financial and monetary awards are in line with the organization's sustainability objectives.	1- Employees that reach or surpass environmental performance targets —such as lowering energy use, cutting waste, or taking part in sustainability projects—are eligible for sustainability-linked bonuses. 2- Employees that show extraordinary commitment to environmental causes are recognized through recognition programs, which typically involve public acknowledgement, certificates, or other non-cash incentives.	(Das and Dash, 2024: Eniola, joseph and adekemi, 2023).
Green involvement	Green involvement is the active participation of workers, stakeholders, and communities in environmental sustainability projects, encouraging teamwork and group efforts to meet environmentally friendly objectives.	1- Promoting sustainability goals inside an enterprise requires active employee engagement at all levels. This includes green teams, sustainability planning, and encouraging eco-friendly practices in day-to-day operations. 2- Involving clients, vendors, investors, and other stakeholders in green initiatives, getting their feedback, working together on sustainability projects, and openly disclosing environmental performance are all components of stakeholder engagement.	(Matthes, Wonneberger and Schmuck, 2014: Wang, 2017).

2.9 Mediating role of GHRM between STQM, HTQM, and GL.

GHRM initiatives like green training and employee involvement enhance the effects of STQM, by coordinating staff actions and attitudes with environmental objectives (Wang, 2023). On the other hand, GHRM makes sure that workers have the knowledge and will to embrace eco-friendly practices, which makes it easier to apply HTQM practices (Hamdan and Alheet, 2021).Saeed et al (2022) in their research highlight that GHRM such as Green training programs gives staff members the know-how and abilities to successfully apply hard and soft TQM principles, improving GL's environmental performance. Also, employee participation in sustainability activities is encouraged via green engagement programs, which strengthen the procedural components of hard TQM and the cultural features of soft TQM. Furthermore, Soltanmohammadi et al (2021) conclude that through the integration of environmental standards into performance management, GHRM guarantees an ongoing emphasis on sustainability, hence strengthening TQM endeavors.

DEDE(2019) discovered that collaboration between HTQM, STQM, and GHRM impact positively GL process to be more effective by reducing waste and energy consumption. Additionally, Fongtanakit and Suteerachai (2019) in their result indicate that by enhancing environmental performance and sustainability credentials through the integration of GHRM and STQM, HTQM can set a firm apart and increase customer satisfaction and loyalty.Al-Minhas, Ndubisi and Barrane (2020) find that by coordinating human resources with environmental objectives GHRM improves HTQM & STQM practices and gives businesses a competitive edge in environmentally concerned markets. This results in effective, sustainable logistics operations.

Green logistics practices encompass transportation, inventory control, warehousing, packaging, and information management, all aimed at enhancing energy efficiency and environmental sustainability. In quality management, key approaches like STQM and HTQM emphasize human resources, strategy, systems, and processes. In Palestine, logistics operations face significant challenges due to the geopolitical climate, infrastructure limitations, and economic conditions. Meanwhile, Green Human Resource Management (GHRM) plays a crucial role in fostering employee engagement

in environmental preservation, ultimately improving process efficiency, reducing environmental impact, and boosting productivity.

The purpose of this study is to demonstrate the vital role that Hard Total Quality Management (HTQM) and Soft Total Quality Management (STQM) play in advancing sustainability, especially in the logistics industry. The study investigates how intermediaries like Green Human Resource Management (GHRM) might facilitate the successful implementation of these management techniques. No prior research has combined these particular variables in the context of logistics sustainability, therefore by combining them, the study tackles a novel and understudied issue.

Chapter Three: Methodology

3.1 Overview

This chapter outlines the methodological strategy for the study, detailing the comprehensive plan for data collection. It employs an exploratory research approach to investigate specific hypotheses and address the research questions. The chapter covers the procedures for collecting the necessary data, along with the methods and strategies for data analysis. Additionally, it presents a diagram of the research methodology and discusses the study's population. The chapter also addresses the ethical considerations involved in designing this research project, along with issues of validity and reliability.

3.2 Research Types

Selecting the research types that best fits the study's objectives is essential when doing research. Based on its goal, methodology, and data type, research can be broadly divided into numerous types. Knowing these differences aids in choosing the best method for gathering, evaluating, and interpreting data (Wang et al, 2021).Research is categorized into three groups according to their goals: explanatory, descriptive, and exploratory (Casula, Rangarajan, Shields, 2021).

Exploratory research seeks to answer questions about a phenomenon by using general principles to explain data and observations. It does not involve altering variables or identifying specific impacts (Singh, 2021).Descriptive research is a methodological approach that provides a detailed account for comprehending and classifying a subject by analysing and describing its properties (Siedlecki, 2020).

Explanatory study is to explain the causes of a phenomenon. This involves analysing the relationships between various factors to identify trends and patterns (Baskerville and Pries-Heje,2010).Based on the literature review of previous studies presented in Chapter Two of this thesis, this research adopts an exploratory approach, as it is the first of its

kind in Palestine and there have been no prior studies conducted in this area within a Palestinian context (Ponelis, 2015).

3.3 Research Approach

Research methodologies can be classified as either qualitative or quantitative, depending on the type of information being sought. A study that integrates both approaches, harnessing the benefits of each, is referred to as a mixed-methods study (Taherdoost, 2022).Qualitative research is a method used to understand the meanings that individuals or groups attach to social or human issues. It involves inductive analysis, data collection, interpretation, and results in a flexible written report. This approach emphasizes individual perspectives and aims to address the complexity of a situation (Cheng et al, 2017).Using this type provides deep insights into participants' attitudes, actions, and experiences that can be gained via research. It also offers flexibility, permits the investigation of difficult problems, and contextualizes occurrences that occur in the actual world. On the other hand, it is labor-intensive, non-statistically analyzed, difficult to generalize because of small sample numbers, and open to the researcher's interpretation, which obscures the results (Mohajan, 2018).

Quantitative research examines objective theories through the measurement, examination, and statistical analysis of numerical data. Similar to qualitative research, it involves deductive testing, minimizing bias, controlling for alternative explanations, and generalizing findings (Mohajan, 2020).

Quantitative research has advantages including objectivity, reproducibility, generalisability, and obvious patterns. However, because statistical approaches are difficult to use and interpret, they have drawbacks such as limited context, rigidity, shallow comprehension, and sophisticated analysis. Furthermore, it ignores more profound elements that qualitative research can reveal (Shatrı, 2020). Mixed methods combining quantitative and qualitative that allows researchers to cross-verify complementary data, validate findings, and provide explanations for unexpected results

(Mikalef at el, 2019), this type of research combines qualitative and quantitative methodologies to provide thorough, cross-validated data, flexibility, and improved insights. It takes a lot of time, resources, and skill to complete, though, as it involves both approaches. It also necessitates expertise in both qualitative and quantitative methodologies and may produce contradictory results (Almeida, 2018).

The constraints of both quantitative and qualitative procedures can be solved by adopting mixed methods, which gives the researcher access to rich data that would be impossible to gather with just one approach (Almeida, 2018).Ten mixed methods approach fall into four main categories: sequential design, concurrent design, multiphase design, and multilevel design (Almeida, 2018).

This research follows an exploratory sequential type in mixed method approach because it is the first time such research was conducted in Palestine and little information is known about the issue. Exploratory mixed-method research aids in formulating and testing hypotheses, finding key variables, improving research tools, and understanding complex phenomena. It collects comprehensive qualitative data for understudied fields, develops hypotheses, and extrapolates findings to larger populations. Qualitative techniques like interviews help to identify unknown variables (Gogo and Musonda, 2022).We began with the gathering and analysis of qualitative data; this initial phase allows researchers to gain in-depth insights and understand the context or phenomena under study. A qualitative approach was implemented through semi-structured interviews based on personal responses. This study explores a new area—the impact of hard and soft TQM on green logistics in Palestine. Based on these qualitative findings, a new tool or taxonomy is developed, which is then utilized in the subsequent phase of collecting and analyzing quantitative data. The final phase involves interpreting the combined results to provide a comprehensive understanding.

A quantitative strategy was employed by using a survey, it was developed based on a literature review and updated with data gathered from interviews, ensuring they are relevant and comprehensive. By combining these methods, policy researchers can obtain a nuanced understanding and explanation of complex issues, as noted by Taheri,

Jami Pour, and Asarian (2019). This methodology allows for a richer, more comprehensive analysis by leveraging the strengths of both qualitative and quantitative data.See figure 3.1.

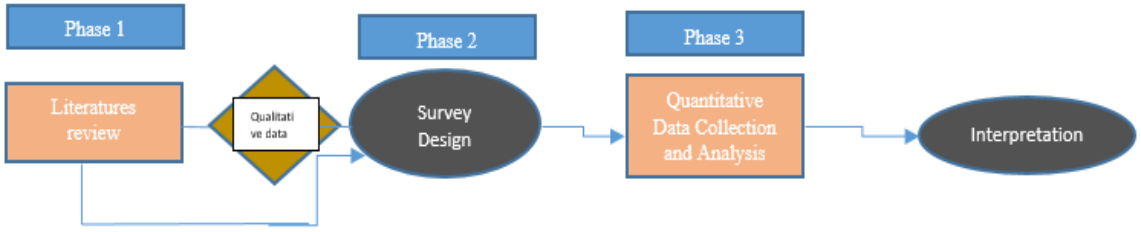

Figure 3.1: Exploratory sequential design (Creswell and Clark, 2011)

3.4 Research Methodology Diagram

This thesis' methodology part describes the methodical strategy used to look into how soft and hard TQM impact green logistics in Palestine. In order to guarantee the reliability and validity of the study findings, a well-organized methodology that paves the way from data collection to data analysis is essential.This research uses an exploratory sequential design, which is a type of mixed-method technique where the quantitative phase comes after the qualitative data have been gathered and analyzed. This approach is especially well-suited for investigating intricate and newly discovered phenomena since it permits a thorough comprehension and the ensuing creation of instruments for more comprehensive quantitative evaluation.

An illustration of the research process is provided by a Methodology Flow Chart Diagram. Figure 3.2 offers a comprehensive overview of all the sequential actions performed, starting with the first qualitative data collection and ending with the combined results' interpretation. Because the flow chart acts as a visual guide, the process is clear and simple to understand.

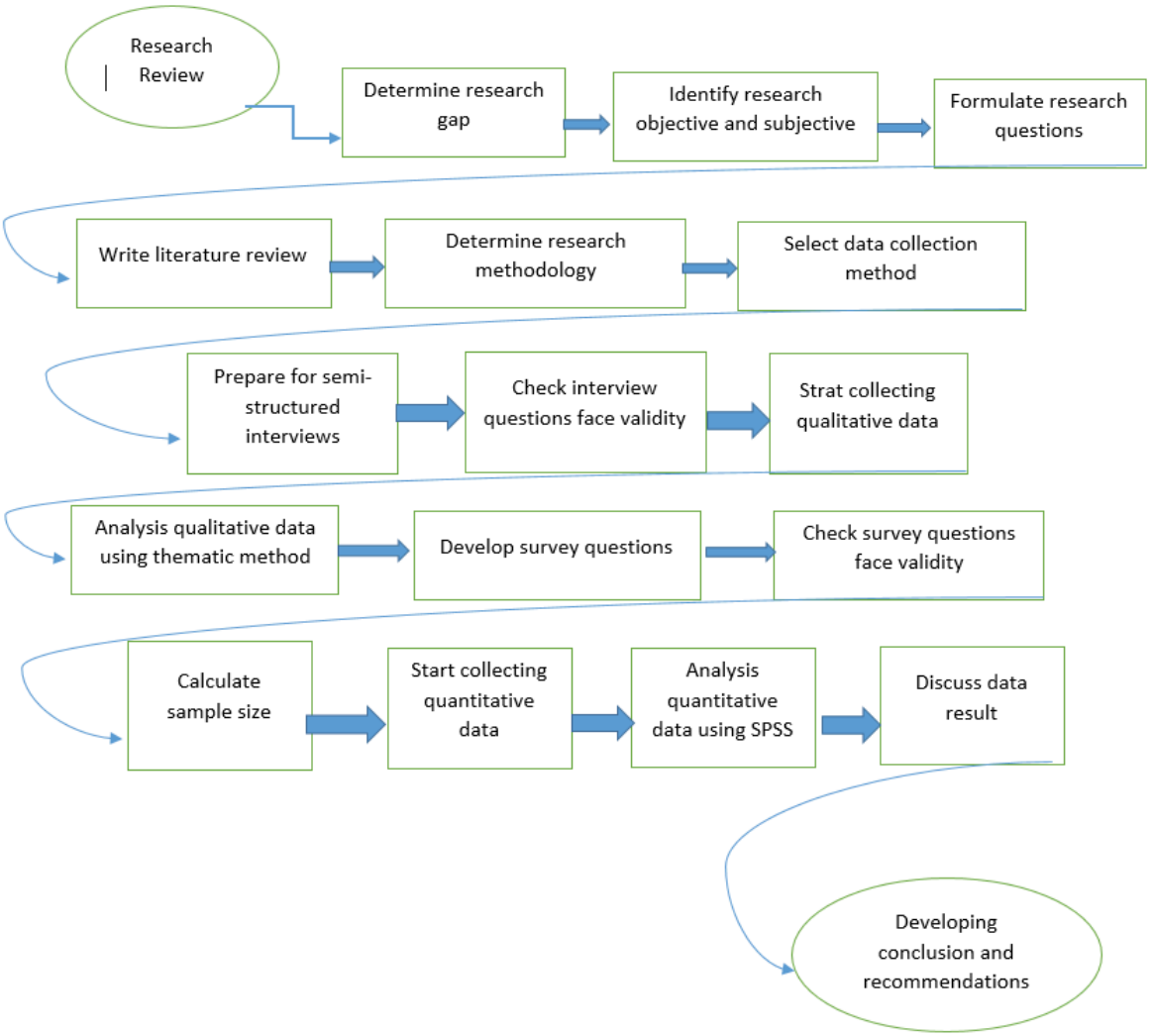

Figure 3.2 Methodology flow chart diagram

3.5 Data Collection Tools

Data is a vital component of research. Even though research study methodologies can differ, all studies begin with high-quality data that are subsequently analyzed and interpreted to produce knowledge. Primary data are typically the foundation of research providing first-hand evidence directly from the source (Nayak and Narayan, 2019). Data gathering and analysis can be done using a wide range of approaches. The majority of approaches are built around the same set of fundamental instruments, However, most methodologies rely on a core set of fundamental tools, which include: Interviews, Focus group discussions, Observation, Photography and video, Surveys, and questionnaires (Mack, 2005). In our study, ten semi-structured interviews were done to collect

qualitative data, and then a survey was created to collect quantitative data (Braun and Clarke, 2013).

Qualitative data were collected by interviews with ten specialist managers. Meeting schedules were arranged via email, some of them conducted face to face and others conducted online using platforms such as Teams or Zoom. All interviews were recorded for accuracy. The interviews lasted roughly fifteen minutes, starting with an introduction to the research objectives and key terminology, and then gathering general information about the interviewees. The interview questions then sought to explore the potential impact of S & H TQM practices on GL practices and the mediating role of GHRM practices in this relationship. For example:

Is there an impact of GHRM practices on the application of total quality management practices in your organization? Please explain how.

What HTQM and STQM practices are currently being implemented in your company?

Conversely, a survey with two sections—one addressing demographic inquiries and the other concentrating on the study's goals—was utilized to gather quantitative data. A selected sample of 400 individuals received the survey form via email, to receive 352 replies based on statistical estimates which are explained in section 3.7 later. Several reminders were sent out to promote involvement. Each poll took about 10 minutes to complete, and the entire data collection procedure took about two months.

3.5.1 Interview

An interactive technique for gathering data that allows for customized information exchange is the interview (Lobe, Morgan and Hoffman, 2020). It can be done online, over the phone, or in person. Face-to-face interviews were used in this exploratory study to enable participants to personally explain the purpose of the study and provide further clarifying remarks. The technology transfer-focused study questions did not necessitate

the engagement of experts in question design (Jain, 2021). An interview allows for the free exchange of ideas and the development of an emotional bond between the interviewee and the interviewer, by building rapport and tearing down social and physical boundaries. It enables the interviewer to evaluate the veracity of responses by delivering intellectual, emotional, and subconscious cues (Pandey and Pandey, 2021).

According to Naz, Gulab and Aslam (2022), interviews can be categorized into three main types based on the level of structure involved:

1. Structured interview: Referred to as a survey conducted by a researcher, is a fixed-design interview that contains closed-ended, pre-coded, or fixed-choice questions with the goal of eliciting responses from participants that fall within a specific range (Bihu, 2020).

2. Semi-structured interviews: Use an interview guide with open-ended questions to address research objectives. The guide provides structure and focus, allowing the natural flow of conversation for each unique interview. This approach contrasts with closed-ended questions found on survey instruments for quantitative analysis. (Adeoye‐Olatunde and Olenik, 2021).

3. An unstructured interview is the most flexible type of which has no predetermined questions and only a general topic or area of interest. There is more freedom for the participant to talk about topics at their own pace and in their language during the more casual exchange. This method is frequently applied in exploratory research to obtain comprehensive data and comprehend complicated occurrences (Alamri, 2019).

In this research, semi-structured interviews were selected to collect qualitative data since they provides researchers the ability to examine a variety of viewpoints and experiences. Especially in exploratory research, they are helpful because they let

participants give specifics while staying focused on the targeted subject (Ruslin et al, 2022). In addition to that this research study is the first of its kind in Palestine.

Ten semi-structured interviews were conducted with senior managers in the Palestinian industry, including individuals in roles such as general manager, quality manager, process manager, logistic manager, and human resources manager. Each participant had a minimum of five years in their respective managerial position. Some interviews were conducted online, while others took place face-to-face. All interviews were recorded and documented, with each lasting approximately 45 minutes.

The semi structured interview process began with an explanation of the key terms mentioned in the research to ensure that the interviewees had a clear understanding and could provide informed responses to the subsequent questions.

The questions were divided into two parts, The first one was demographic Questions which aimed to gather background information about the interviewees, including their experience, job title, and the name and field of the manufacturing company they represented. The other one was research-related questions consisting of eleven questions designed to investigate the relationship between the research constraints based on the interviewees' experiences in the field. See Appendix 1 for the interview questions used. A total of ten interviews were conducted with senior managers, specifically targeting quality managers at various Palestinian manufacturing companies in different fields.

3.5.2 Survey

Paper questionnaires are a straightforward and tangible means of communication between the public and researchers, and they have long been the preferred method for gathering survey data in research (Ebert et al, 2018). Surveys have created hitherto unheard-of obstacles for survey research due to a combination of factors, including diminishing response rates, growing data collection costs, and dwindling funding for big national probability (Jain, 2021).

Since our research follows a mixed method, the other data collection was surveyed to collect quantitative data. The survey was established basically on the literature review mentioned above. Literature offers an understanding of the important ideas, factors, and connections that have been investigated in comparable settings. Important themes or areas of focus are found by evaluating prior research, such as particular aspects affecting HTQM, STQM, GL, and GHRM. The survey questions are then designed using these ideas.

An online survey link was created to collect needed data from different participants sent through emails. The survey, which takes approximately fifteen minutes to complete, consists of five sections. It begins with demographic questions to gather information on participants' experience, job position, gender, age, and academic qualifications senior managers with a minimum of three years of experience are eligible to complete the survey for our study. This criterion ensures that participants have sufficient experience to provide informed and reliable responses. If participants do not meet the required criteria, their responses will be excluded to ensure the reliability of the data. The remaining four sections are based on standardized questionnaires that have been validated in previous studies, ensuring the consistency and trustworthiness of the questions across different research contexts. The section on SQM practices includes 24 questions, adapted from Sachin and Sanjay (2017) and Saleh et al. (2018), to assess the extent to which STQM is implemented in the Palestinian industry. Similarly, the HTQM section consists of 17 questions sourced from Sachin and Sanjay (2017), Saleh et al. (2018), and Abbas, J. (2020). Additionally, 14 questions adapted from Alvarenga et al. (2023) assess the implementation of GL practices in the Palestinian industry. Finally, the GHRM practices section includes 11 questions adapted from Zaid, Jaaron, and Bon (2018). See Appendix 2.

3.6 Data Collection Tools Validity and Reliability

Validity means how effectively the gathered data covers the actual field of study. It guarantees that the instrument yields significant and practical outcomes for the construct under investigation. (Taherdoost, 2016). The basic mean of validity is "Measure what is

intended to be measured" (Field, 2005). Validity has four main types, namely, face validity, content validity, construct validity, and criterion validity (Mohajan, 2017).

Face validity is a subjective assessment of a measure's applicability to a particular concept that is based on the opinions of non-experts, such as test takers and representatives of the legal system. To ensure the instrument's relevance, reasonableness, unambiguity, and clarity, it evaluates the questionnaire's readability, consistency, style, formatting, and language clarity. Content validity which means the extent to which an assessment instrument's components are pertinent to and reflective of the intended concept for a given assessment purpose (Yusoff, 2019). Face and content validity were performed for the survey and interview questions that are shown in the next part. The results of other validity types will be detailed in the result chapter.

3.6.1 Interview validity

The interview questions were initially constructed based on the literature review discussed in the previous section. These questions were then reviewed by academic experts (Veinhardt, Gulbovaitė, and Ahmed (2017). They provided valuable feedback and suggestions for improvement. See Appendix 3 which shows the arbitrators used and their position and level of experience. All their recommendations were carefully considered and incorporated into the final version of the interview questions before commencing the interviews and data collection process.

For example, it was suggested to provide examples for each type of practice before asking related questions. Additionally, some participants noted that certain questions seemed too similar. To address this, definitions of key terms along with examples were added at the beginning of the interview, and some questions were rephrased to ensure greater clarity, accuracy, and directness.

3.6.2 Survey validity

In research, validity is important since it establishes how well a survey captures the intended data. For a number of reasons, face validity, and content validity were guaranteed in this study (Mason et al, 2020). By guaranteeing that survey questions accurately reflect the desired constructs or variables, content validity promotes appropriate measurement. Face validity makes surveys seem to measure what they say they do, which raises their credibility and dependability. Validity plays a crucial role in Mitigating biases and inaccuracies in data gathering, especially in qualitative interviews. Moreover, high validity fosters generalizability by enabling findings to be applied to larger groups or situations, especially in research on policy or practice (DeVellis and Thorpe, 2021).

Survey questions were crafted from both interviews and the literature. literature provided a validated scale that was used in the survey. and interviews helped to confirm that no additional items to the validated scales are needed for the case of Palestinian green logistics and that interviews confirmed that similar practices are used in Palestine. Quality experts then reviewed the questions, offering constructive feedback and recommendations for improvement. Their input was meticulously incorporated into the final set of questions, ensuring a well-prepared foundation before beginning data collection. They recommended making the questions shorter, but I clarified that in order to maintain academic integrity and clarity, the questions had to stay detailed because the objects required to be fully cited. See Appendix 4.

3.6.3 Survey Reliability

Survey Reliability measures the ability of a survey instrument to remain stable and constant throughout time, guaranteeing consistent results under the same circumstances, known as reliability (Taherdoost, 2016). It is essential for accurate measurement and enabling the attribution of response variations to real variables. Test-retest, internal consistency, split-half, and inter-rater reliability are some of the techniques used to

evaluate survey dependability (Tourangeau, 2021).Cronbach's alpha is used to quantify internal consistency (Chen et al, 2021) using SPSS software. Table 3.1 summarizes the survey's reliability test results.

Table 3.1: survey's reliability test results.

Construct	Cronbach's alpha value	Composite Cronbach alpha value (CR)
Soft Total Quality Management		
General management support	0.815	0.82
Focus on customer	0.671	0.68
Relations with suppliers	0.754	0.76
Training and employment	0.91	0.91
Employment empowerment	0.860	0.87
Hard Total Quality Management		
Research and Development	0.873	0.87
Product Quality	0.897	0.88
Process Management	0.868	0.87
Data Analysis	0.773	0.76
Green Logistic Practices		
Green Transformation	0.907	.91
Green Packaging	0.916	0.9
Green Building	0.932	0.92
Green Human Resources Practices		

Green Employment	0.820	0.8
Green Training	0.931	0.91
Green Management	0.953	0.96

Tavakol and Dennick (2011) state that Cronbach's alpha normally falls between 0 and 1, with values nearer 1.0 signifying higher levels of internal consistency across the variables on the scale. The values 0.7 or 0.75 are often used as cutoff values for Cronbach's alpha and thus for the reliability of the test (Bujang, Omar and Baharum, 2018). Therefore, higher Cronbach's alpha values indicate that the scale is more reliable. All survey constructs have reliability indices that fall within this range, indicating a high degree of dependability, as the table above illustrates. Unless one of STQM practices is focused on customers since 0.68 is less than 0.7 this means the internal consistency of the construct is weak and its needs improvement or using another measuring scale.

Composite Reliability (CR) gauges overall reliability in a confirmatory factor analysis paradigm, whereas Cronbach's Alpha gauges internal consistency and reliability. For more accurate reliability measurements, use CR, but for simpler exploratory testing, Cronbach's Alpha. Good CR is indicated by CR $\geq$ 0.70. Reliability is excellent when CR > 0.80 (Lai, 2021). As the above table shows, all items have good reliability.

3.7 Research Population and Sampling Techniques

The targeted sector in this study is Palestine manufacturing companies; this sector includes Industrial facilities, the manufacture of formed metal products, the manufacture of furniture, and the manufacture of food products. We found that 3700 facilities registered as manufacturing companies in 2022 according to the Palestinian Central Bureau of Statistics (2022). The purpose of the study was to determine whether these companies could respond to the research questions and whether the quantitative data would be legitimate and reliable. To be included in this research population, each company has to fulfill certain requirements, which are as follows:

1. A business has a license and registration from the official Palestinian authorities.
2. An organization that has a well-defined organizational structure. For example, one that has a quality officer and a declared quality policy, or one that has a quality department, quality function, or quality control/management activities. In addition, a business that has an HR department and publicizes its HR policy, or employs HR representatives to handle HR-related tasks.

According to Mweshi and Sakyi (2020) minimum sample size must be established for surveys in accordance with the following formula for producing a statistically representative sample size for the population thus in order to be able to generalize the results from the population.

- **Sample Size** = $[z2 * p(1-p)] / e2 \; / \; 1 + [z^2 * p(1-p)] / e^2 * N]$

  where

  - N = population size (3700)
  - z = z-score (1.96)
  - e = margin of error (5%)
  - p = standard of deviation (0.05)

n=352 sample

3.8 Analysis Techniques

As we mentioned above, this research follows a mixed method approach. So we choose appropriate analysis techniques for both qualitative and quantitative data. The following explains how both types of data were analyzed.

3.8.1 Interviews analysis

Ten semi-structured interviews were made with senior quality managers in different fields of the manufacturing factory. Ten managerial staff members from Palestinian industrial enterprises participated in semi-structured interviews with the researcher. The research subject and objectives were explained orally to each interviewee in advance. They were told the interview would run no more than 30 minutes, be semi-structured, and be audio recorded. A thematic approach is used to analyze qualitative data collected from interviews. The thematic technique was used to analyze qualitative data. Thematic

analysis is a technique for finding, examining, and interpreting meaning patterns—or "themes"—in qualitative data. It stands apart from other qualitative analytical techniques because it provides a technique, a tool, or a technique that is not constrained by theoretical obligations, as opposed to a methodology (a theoretically grounded, albeit constrained, research paradigm) (Clarke and Braun, 2017). It is frequently used to analyze qualitative data, like transcripts of interviews, in order to find significant insights about the study topics. The versatility of thematic analysis, which offers a structured yet flexible method for comprehending complex events, enables researchers to concentrate on both explicit and implicit interpretations of the data (Braun and Clarke, 2023). According to Neuendorf (2018). The following steps were followed to analyze qualitative data in thematic technique.

1- Become more acquainted with the data by going over the notes made during the 10 interviews and playing the recordings of the interview's multiple times in order to fully comprehend the responses provided by the respondents.

2- Creating preliminary codes and gathering information pertinent to each one by classifying, combining, and identifying concerns.

3- Combining all of the related or comparable codes into a single theme.

4- Make sure that only the primary topics that directly assist the study are listed by going over and editing the themes.

5- Naming and defining the themes to aid in the comprehension of the report produced by the analysis of the interviews.

6- -The researcher followed these steps to ensure high-quality outcomes from a comprehensive qualitative analysis in this study.

Four main themes including HTQM, STQM, GL, and GHRM were identified after the thematic analysis, as detailed in the result section.

3.8.2 Analysis of Survey Data

In order to derive significant insights, this section focuses on the examination of quantitative data gathered via the survey. Business, science, and the social sciences are just a few of the disciplines that use a range of methodologies and methods in data analysis, each with its own unique techniques.

Data entry, analysis, and visualization were done using a Windows-based program called the Statistical Package for the Social Sciences (SPSS). SPSS is well known for its capacity to manage huge datasets and carry out a variety of analytical tasks. SPSS, which is widely used in social science and business research, allows the creation of sophisticated statistical tests, tables, and graphs (Jatnika, 2015). Some tests were applied to quantitative data using the SPSS program, starting with normality tests to know how data is distributed. According to the normality test result, the rest of the tests will be specified. However, correlation tests, hypothesis tests using ANOVA, and regression are preferable to be applied.

3.9 Ethical concern

The researcher made sure that confidentiality and secure storage. Data was saved on Google Drive, which provides safe cloud storage for convenient management and access. A password protects the storage, guaranteeing that only individuals with permission can access the files approval from all respondents was obtained before they participated in the introduction of both the survey and interviews.to ensure the confidentiality of respondents**.** All advancement of scientific study goals was taken into account when developing the questionnaires and interviews. Throughout the process, they kept anonymous, followed up with responses, and submitted reference letters to the chosen companies.

Chapter Four: Result

4.1 Overview

The results of the analysis of both qualitative and quantitative data are presented in this chapter. The findings from the thematic analysis of the qualitative information gathered from semi-structured interviews are the main topic of the first section. The analysis of quantitative data using the SPSS approach to assess the study hypotheses is highlighted in the second section.

4.2 Interview analysis

The following Table 4.1 summarizes the thematic analysis conducted on the survey data used for quantity.

Table 4. 1: Thematic analysis

Codes	Issues discussed	Central themes
Quality standard	* Follow system and standards of quality control. * Maintenance of machinery and equipment periodically *Analyse data *Machines and equipment that run on electricity and solar panels. *Use quality tools *Advantage of following quality standards.	HTQM Practices
Automation program		
Data analysis		
Regular maintenance		
Electricity equipment, solar panel		
Control chart,Checklist, KPI's		
Financial revenue		
Reduce the percentage of waste of raw materials.		

Relationship with suppliers Green culture Top management commitment Quality of suppliers Employee training Employee affiliation Green training Customer satisfaction Relations with customer Increase worker productivity Reduce equipment and machinery damage	* Supplier selection based on quality standards. *Top management commitment to all processes and decisions. *Promote corporate affiliation and responsibility by the employee. *Employee training in process improvement and production control. *Implementation awareness programs focused on environmental issues. * Customer satisfaction follow-up system. *Incorporation of customer feedback when setting annual objectives.".	STQM Practices
Materials recycling Supplier collaborations Quality standard and system logistic transportation Electrical equipment Green warehousing Solar panel	*Recycle products and use them as raw materials. *Use of retrograde and damage for other industries. *Integrate suppliers with clear logistics strategies. *Follow the quality systems of ISO and others. *Provide comfortable workspaces and facilities for employees. *Use electric transport	GL Practices
Green practices training Employment standard Eco-friendly incentives Employee performance	*Employment according to environmental aspects. *Supporting and directing the management to environmentally friendly practices. *Monitoring and following up the level of performance of employees.	GHRM Practices

Four major themes were constructed from semi-structured interviews as followers:

Theme 1: Hard total quality management (HTQM).

The theme of HTQM focuses on identifying key HTQM practices commonly used by interviewees in their industries. These managers described the quality systems and tools they employ, such as checklists and control charts, to monitor processes and ensure the desired product quality. They also implement key performance indicators to measure process performance and minimize defects. Continuous improvement of processes and machinery is achieved through regular maintenance and the adoption of green technologies, such as electric vehicles, machines, and solar panels. Additionally, they analyze data to reduce defects and variations.

They also explain the relationship between HTQM and GL practices, pointing out that HTQM provides the framework, information, and discipline needed to implement green logistics successfully, whereas TQM makes sure that logistics procedures adhere to strict quality standards while simultaneously promoting environmental goals like, for instance, decreased carbon emissions and waste reduction. While green logistics seeks to lessen its impact on the environment, HTQM concentrates on minimising process variability and enhancing quality. Additionally, In the same way that GL aims to reduce energy consumption, minimize emissions, and streamline the supply chain for greater sustainability, HTQM drives continuous improvement through the systematic evaluation of performance metrics and provides the tools and methodologies (like Six Sigma or Lean) to achieve these improvements in an organized manner.

They also emphasize that implementing these practices brings multiple benefits to companies, across various areas, particularly financial, as these practices lower operating costs, reduce damaged and returned products, and minimize raw material usage. On the other hand, continuous updates and improvements in processes and products enhance market share and strengthen brand value.

Theme 2: Soft total quality management (STQM).

This theme STQM practices, emphasizing the critical role of collaboration among suppliers, employees, and customers in achieving high-quality standards. Selecting suppliers based on their adherence to quality standards is essential to maintain the desired quality level and involving them in setting annual strategic goals positively impacts industry productivity and quality. Interviewees also stressed the importance of customer collaboration in defining annual goals, as customer satisfaction is the primary.

objective. Additionally, they underlined the value of employee training for process improvement and production control, alongside the implementation of awareness programs focused on environmental issues, which ultimately contribute to increased industry revenue and growth.

The interviewee goes on to say that GL employs eco-friendly procedures because of STQM practices. They demonstrate how customer satisfaction is emphasised by both GL and STQM. By meeting customer expectations and capitalizing on the growing demand for environmentally sustainable products and services, businesses can enhance their market position. Additionally, STQM encourages staff members at all levels to participate in decision-making, problem-solving, and idea-sharing related to environmentally friendly practices, such as lowering packaging waste or increasing transportation fuel efficiency.

Theme 3: Green logistics (GL).

The GL theme highlights key practices implemented in Palestinian industries, as described by specialists. First, the importance of adopting green practices, such as using eco-friendly transportation and electric machinery, was emphasized. Second, recycling returned products to reduce costs by repurposing them as raw materials either within the same industry or for others was noted as a cost-effective strategy. Third, adherence to

quality standards like ISO helps ensure the desired quality while minimizing environmentally harmful practices, thereby enhancing both environmental stewardship and the industry's societal role in preserving the environment. Finally, providing comfortable, environmentally compliant workspaces and facilities for employees positively impacts their productivity and strengthens their sense of affiliation with the organization.

Both STQM and HTQM have an impact on GL implementation from different angles. For instance, STQM has an impact on forming a sustainability task force composed of cross-functional teams from different departments, encouraging staff to offer suggestions on how to cut waste and carbon emissions in their day-to-day work, offering continuous training on green practices like energy conservation, recycling, and resource efficiency, and fortifying customer relationships to comprehend sustainability expectations and modify services to comply with green standards. Conversely, HTQM enables the business to measure its environmental effect and enhance its logistics procedures using hard facts. As a result, there are noticeable gains in resource efficiency and a decrease in environmental effect. Using data analytics to identifying inefficiencies in warehouse energy use, adopting automated lighting and temperature control systems to reduce energy waste, implementing real-time tracking software to optimize delivery truck routes, cutting fuel and emissions, introducing ISO 14001 certification (Environmental Management Systems) to ensure compliance with environmental regulations, and setting quantifiable goals for reducing carbon footprints are a few examples.

Theme 4: Green human resources management (GHRM).

In this theme, interviewees highlight the crucial role of the human resources department in driving industry development. GHRM practices, particularly in recruitment based on environmental considerations, positively impact employee comfort and productivity. Additionally, the HR department plays a clear role in supporting and guiding management toward adopting environmentally friendly practices and establishing systems that monitor and assess employee performance effectively.

STQM enhances leadership and environmental culture, encourages employee engagement in sustainability, and promotes environmental consciousness, all of which have a good effect on General Human Resources (GHR) and Green Logistics. Green HR policies provide preference to hiring executives who share a commitment to sustainability by promoting energy-efficient technologies and electric automobiles. Additionally, Soft TQM improves teamwork and communication, which promotes cross-functional cooperation for sustainability projects. Workers from many departments collaborate to develop and enhance the business's green logistics procedures, and systems of rewards or recognition are in place for creative solutions.

Through the promotion of technical efficiency through green skills training and recruitment, Hard TQM has an impact on Green Logistics and Green Human Resources (GHR). Green technology, such as carbon footprint calculators and software for route optimisation, must be used by staff members with proficiency, according to GHR. In order to include sustainability in performance management, they must also incorporate sustainability criteria into employee assessments. In order to assist this, GHR has established standardised procedures like green job descriptions and green behavior norms. Recruiting and training with an emphasis on green technical skills, performance management systems with sustainability KPIs, and standardising green practices throughout operations are some of the key contributions made by GHR.

The integration of STQM and HTQM offers a thorough framework for optimising GHR's impact on GL. GL is now an essential component of operational effectiveness and employee engagement because of this combination, which also promotes green talent development, sustainable innovation, and the integration of green metrics and culture.

4.3 Survey analysis

Survey Analysis started by identifying the demographic data for the targeted sample, and then SPSS software was used to analyze correlation, relation, and all statistical tests needed.

4.3.1 Descriptive Statistics for Demographic Information

Sample size calculation led to the selection of 350 valid individuals in total. Their demographic characteristics are as follows. 37.1% of the sample was female and 62.9% of the sample was male, see Figure 4.1.

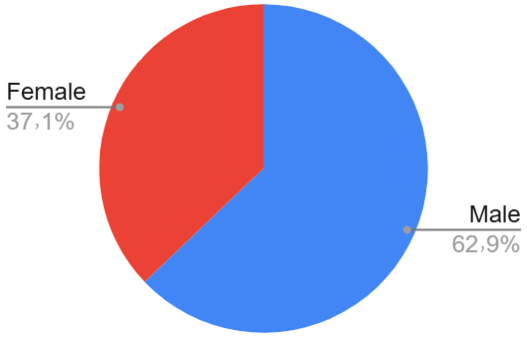

Figure 4.1: Gender percentage.

Most respondents were in the mid-career stage of their careers, with most falling between the ages of 31 and 40 see figure 4.2.

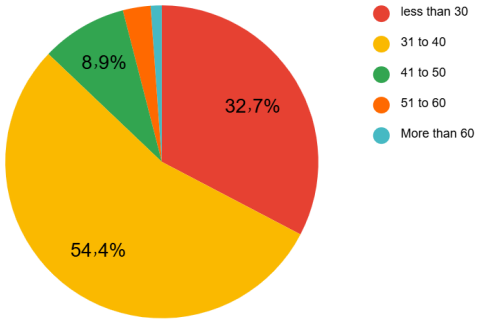

Figure 4.2: Age percentage.

The group was well-educated, with most members having a bachelor's degree (see Figure 4.3).

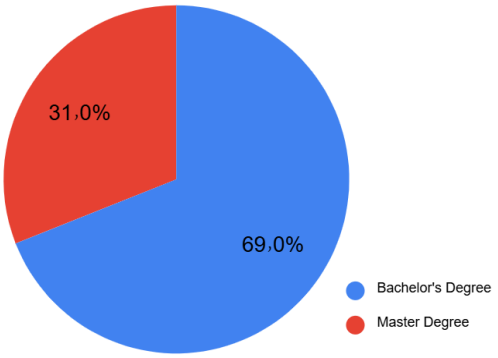

Figure 4.3: Academic Qualification.

About 80% of those surveyed were in roles like quality manager, logistics manager, or general manager. Process managers and human resources managers made up a smaller percentage (see Figure 4.4).

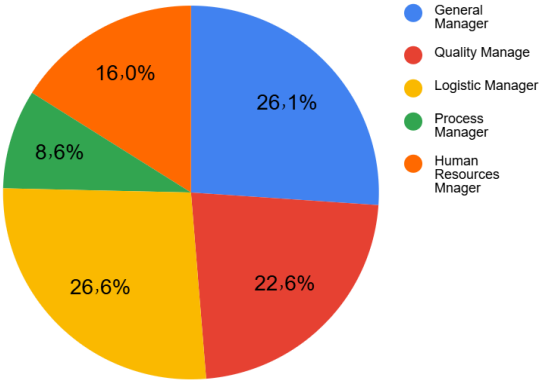

Figure 4.4: Job title distribution.

4.3.2 Result of Research Model Analysis

4.3.2.1 Normality Test

Data analysis started by checking data normality. Numerous statistical techniques, including regression analysis, ANOVA, and the t-test, presume that the data is normally distributed. The results could be erroneous or deceptive if the data does not support this hypothesis. For parametric tests to reliably compute p-values, the data must be normally

distributed. The p-values may be erroneous if the data is not normal, which could result in incorrect interpretation. Also, To Choose statistical tests if the data is not normally distributed, non-parametric tests (like the Mann-Whitney U test or the Kruskal-Wallis test) have to be used in place of parametric testing. These non-parametric tests may be better suitable for skewed or ordinal data because they do not presume normalcy. Conclusions on statistical significance (Hatem et al, 2022). See Table 4.2

Table 4.2.: Normality test results

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
STQMGMSmean	.153	349	.000	.936	349	.000
STQMFOCmean	.153	349	.000	.946	349	.000
STQMRWSmean	.158	349	.000	.923	349	.000
STQMTampmean	.126	349	.000	.946	349	.000
STQMEEmean	.165	349	.000	.951	349	.000
HTQMRampmean	.196	349	.000	.946	349	.000
HTQMPQmean	.202	349	.000	.903	349	.000
HTQMPMmean	.155	349	.000	.953	349	.000
HTQDAmean	.153	349	.000	.944	349	.000
GLGTmean	.179	349	.000	.915	349	.000
GLGpmean	.191	349	.000	.917	349	.000
GLGBmean	.157	349	.000	.927	349	.000
GHRMGEmean	.187	349	.000	.924	349	.000
GHRMGTmean	.104	349	.000	.961	349	.000
GHRMGEVmean	.246	349	.000	.910	349	.000

a. Lilliefors Significance Correction

(STQMGMS: STQM general manageral support, STQMFOC:STQM focus on customer, STQMRWS:STQM releation with supplier, STQMTAMP:STQM training and development, STQMEE:STQM employee envolvment, HTQMRAMP:HTQM Research and development, HTQMPQ:HTQM product quality, HTQMPM:HTQM process quality, HTQMDA:HTQM informationa nd data analysis, GLGT: GLGREEN TRANSPORTATION, GLGP:GL green packging, GLGB:GL green building, GHRMGE: GHRM green hiring, GHRMGT:GHRM green involvement, GHRMEV:GHRM Green performance management and compensation).

Since the p-value was less than 0.005 ($p < 0.005$), the normality test findings showed that all the data were non-normal. Thus, the alternative hypothesis (H1) is accepted while the null hypothesis (H0), which asserts that the data is normally distributed, is rejected.

4.3.2.2 Descriptive Statistics

Statistical tests assist in comprehending the data's distribution and core patterns. Some statistical tests were computed and measured like (mean, median, standard deviation, and correlation test). As shown in the table below the mean value is around 2 and the standard deviation is approximately 0.6. See Table 4.3.

Table 4.3: Descriptive statistics list

Item	Range
STQMGMS mean	Low
STQMFOC mean	Medium
STQMRWS mean	Medium
HTQMRAMP mean	Medium
HTQMPQ mean	Medium
HTQMPM mean	Medium
HTQMDA mean	Low
GLGT mean	Medium
GLGP mean	Medium
GLGB mean	Medium
GHRMGE mean	Medium
GHRMGT mean	Medium
GHRMGEV mean	Medium

4.3.2.3 Validity test

Criterion validity is known as the degree to which a measure is associated with an outcome. It gauges how accurately one measure forecasts the results of another. If a test can be used to forecast behavior or performance in a different scenario (past, present, or future), it has this kind of validity. It includes Correlation tests and regression analysis. (Román-González at el, 2017).

4.3.2.3.1 Correlation test

Alignment with research questions and hypothesis structure model was constructed to investigate the connections between the constructs in accordance with the study questions and hypothesis framework. The model was analyzed in terms of the strength and direction of the relationship using a correlation test. See Table 4.4.

Table 4.4 Correlation test result

Correlations

		STQMM	HTQMM	GLMM	GHRMMM
STQMM	Pearson Correlation	1	.835**	.506**	.726**
	Sig. (2-tailed)		.000	.000	.000
	N	349	349	349	349
HTQMM	Pearson Correlation	.835**	1	.604**	.685**
	Sig. (2-tailed)	.000		.000	.000
	N	349	349	349	349
GLMM	Pearson Correlation	.506**	.604**	1	.494**
	Sig. (2-tailed)	.000	.000		.000
	N	349	349	349	349
GHRMMM	Pearson Correlation	.726**	.685**	.494**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	349	349	349	349

**. Correlation is significant at the 0.01 level (2-tailed).

The above table shows that there is a strong correlation between STQM and HTQM, STQM, and GHRM. Since the Pearson coefficient is greater than 0.7. Moderate validity between STQM and GL, HTQM and GL, HTQM, and GHRM Since the Pearson coefficient is between 0.5 and 0.6, and weak correlation between GL and GHRM since the Pearson coefficient is less than 0.5. (Nawaz, Chen and Su, 2023). But, since the p-value equals 0.00, this means that there is a statistically significant relation between all constraints.So that mean if changing happing one of the the other will change in a predictable way.

4.3.2.3.2 Construct validity

The consistency of survey questionnaire measurement values with a criterion-related standard, as determined by objective and self-reported data. It is measured by calculating AVE. Average variance extracted (AVE) shows the significant variance explained by a particular concept in comparison to measurement error, for evaluating construct validity and improving the dependability of scientific research. If AVE $\geq$ 0.50 indicates good convergent validity referring to Table 4.5 AVE value greater than 0.5 means all items have good convergent validity. Unless one of STQM's practices focuses on customers since as we mentioned before CR was less than 0.7 and as shown in the table below AVE less than 0.5. This strongly indicates that the measurement instrument

is not reliable or valid, meaning that the construct is not well measured by its indicators. Improvement or replacement measuring scales have to be implemented.

Table 4.5: Average Variance Extracted (AVE) values

Construct	Average Variance Extracted (AVE)
Soft Total Quality Management (STQM)	
General management support	0.5
Focus on customer	0.45
Relations with suppliers	0.51
Training and employment	0.53
Employment empowerment	0.65
Hard Total Quality Management (HTQM)	
Research and Development	0.64
Product Quality	0.68
Process Management	0.63
Data Analysis	0.55
Green Logistic Practices (GL)	
Green Transformation	0.73
Green Packaging	0.74
Green Building	0.73
Green Human Resources Practices (GHRM)	
Green Employment	0.66
Green Training	0.73
Green Management	0.71

4.3.2.4 Hypothesis test

Evaluating research hypotheses needs implementing analysis of variance method (ANOVA) since it reduces error rates, offers a thorough test for group differences, and contributes to statistical reliability. An ANOVA is crucial for comparing many groups. ANOVA test was conducted and The result is shown in Figure 4.5 below.

The research questions have been sufficiently addressed by this study. Answering research queries.

H1 : HTQM & STQM practices Impact positively on GL practices.

ANOVA test shows that GL practices are positively impacted by both HTQM and STQM. Additionally, these connections' p-values were 0.00, indicating statistical significance. As shown in table 4.6

Table 4.6: H1 ANOVA test result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.773	2	21.386	99.204	.000[b]
	Residual	74.591	346	.216		
	Total	117.364	348			

a. Dependent Variable: GLQMMM

b. Predictors: (Constant), HTQMMM, STQMMM

The regression equation that follows represents the relationship *GL=0.854+0.006*STQM+0.556 HTQM.*

See table 4.7

The coefficient means 1-unit increase in HTQM practices, GL increases by 0.556 units and STQM remains unchanged. By highlighting its role in promoting sustainable logistics practices through technical and process-oriented techniques like resource management and efficiency optimisation, this shows that HTQM has a significant positive impact on GL. While HTQM remains constant, there is only a 0.006-unit gain in GL for every unit increase in STQM practices. This suggests that although STQM

has a beneficial effect on GL, it is far less significant than HTQM. This may indicate that quality management's human and cultural components are not the main factor in logistical sustainability, but rather a supporting one.

Table 4.7: H1 coefficient equation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.854	.099		8.586	.000			
	STQMMM	.006	.079	.005	.070	.944	.506	.004	.003
	HTQMMM	.556	.072	.599	7.693	.000	.604	.382	.330

a. Dependent Variable: GLQMMM

H2: HTQM practices impact positively on GL practices.

HTQM has a positive effect on GL practices when considered independently. The following regression equations serve as representations of these relationships. *GL=0.857+0.560*HTQM.*

The coefficient means that 0.56 unit increase in GL for every unit rise in HTQM. See table 4.8, 4.9.

Table 4.8: H2 ANOVA test result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.772	1	42.772	198.973	.000[b]
	Residual	74.592	347	.215		
	Total	117.364	348			

a. Dependent Variable: GLQMMM

b. Predictors: (Constant), HTQMMM

Table 4.9: H2 coefficient equation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.857	.091		9.403	.000			
	HTQMMM	.560	.040	.604	14.106	.000	.604	.604	.604

a. Dependent Variable: GLQMMM

According to the relationship and results. Adopting environmentally friendly logistical procedures—like maximising resource utilisation, cutting waste, and enhancing transportation efficiency—is supported by the use of structured HTQM practices.

H3: STQM practices Impact positively on GL practices

Also, STQM has a positive effect on GL practices when taken into account independently. The following regression equations serve as representations of these relationships.

*GL=0.971+0.515*STQM.*

The coefficient means 0.5 for every unit increase in GL every unit for every unit rise in STQM practices. See Tables 4.10 and 4.11.

Table 4.10: H3 ANOVA test result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.015	1	30.015	119.234	.000[b]
	Residual	87.350	347	.252		
	Total	117.364	348			

a. Dependent Variable: GLQMMM

b. Predictors: (Constant), STQMMM

Table4.11. :H3 coefficient equation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.971	.106		9.147	.000			
	STQMMM	.515	.047	.506	10.919	.000	.506	.506	.506

a. Dependent Variable: GLQMMM

According to the relationship and results. Adopting environmentally friendly logistical procedures—is supported by the use of structured STQM practices.

H4: GHRM practices have a mediation effect between the relation of HTQM and STQM practices and GL practices.

Table 4.12: H4 ANOVA test result

```
Model  : 4
    Y  : SHTQMM
    X  : GLQMMM
    M  : GHRMMM

Sample
Size:  349

**************************************************************************
OUTCOME VARIABLE:
 GHRMMM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .4939      .2439      .5326   111.9556     1.0000   347.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant    1.0369      .1463     7.0860      .0000      .7491     1.3248
GLQMMM       .7128      .0674    10.5809      .0000      .5803      .8452

**************************************************************************
```

GHRM has a positive mediation effect on the relationship between HTQM, STQM, and GL practices. The mediation effect is statistically significant since the p-value is 0.00. As follows,

TQM = *0.5722+0.2847GL+0.4055GHRM*.

The coefficient of 0.4055 indicates a positive relationship, meaning that for each 1-unit increase in GHRM practices, HTQM and STQM practices are expected to increase by 0.4055 units, assuming other factors are constant. This suggests that GHRM has a stronger positive impact on HTQM and STQM than GL, as reflected in the larger coefficient for GHRM (0.4055) compared to GL (0.2847). These findings highlight the significant role GHRM plays in enhancing HTQM and STQM practices, potentially

strengthening their impact on GL practices and supporting the development of effective and sustainable logistics systems. See Tables 4.12 and 4.13.

Table 4.13: :H4 coefficient equation

Model

	coeff	se	t	p	LLCI	ULCI
constant	.5722	.0776	7.3746	.0000	.4196	.7248
GLQMMM	.2847	.0384	7.4153	.0000	.2092	.3602
GHRMMM	.4055	.0266	15.2420	.0000	.3532	.4578

H5: HTQM practices impact positively on GHRM practices.

Table 4.14: H5 ANOVA test result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114.816	1	114.816	307.403	.000[b]
	Residual	129.606	347	.374		
	Total	244.423	348			

a. Dependent Variable: GHRMMM

b. Predictors: (Constant), HTQMMM

With a coefficient connection of

HTQM = 0.53+0.918 GHRM

and a p-value of 0.00, HTQM has a direct and significant effect on HRM. This implies compelling proof that HTQM procedures do affect HR. According to the coefficient of 0.918, which indicates a strong positive linear association. A unit rise in HTQM practices is correlated with a considerable increase in GHRM practices. This finding supports the previously stated important role of HTQM on GL and is an example of a process-driven strategy that could encourage the adoption of more organized and effective green HR practices, supporting organizational sustainability initiatives. See table 4.14,4.15.

Table: 4.15:H5 coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.503	.120		4.187	.000			
	HTQMMM	.918	.052	.685	17.533	.000	.685	.685	.685

a. Dependent Variable: GHRMMM

H6: STQM practices impact positively on GHRM practices

Table 4.16: H6 ANOVA test result

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1184.126	1	1184.126	404.549	.000[b]
	Residual	1015.679	347	2.927		
	Total	2199.805	348			

a. Dependent Variable: GHRMM

b. Predictors: (Constant), STQMM

STQM has a significant and direct impact on GHRM since p-value 0.00, with a coefficient relation equal to *STQM= 0.205 +1.066GHRM*.

The value of 1.066 indicates a substantial positive correlation between GHRM and STQM, indicating that GHRM practices significantly rise when STQM practices improve.

This suggests that the adoption of environmentally sustainable GHR policies can be greatly aided by STQM techniques, particularly those that encourage employee leadership and involvement. See table 4.16,4.17.

Table 4.17:H6 coefficient equation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.205	.122		1.680	.094			
	STQMMM	1.066	.054	.726	19.650	.000	.726	.726	.726

a. Dependent Variable: GHRMMM

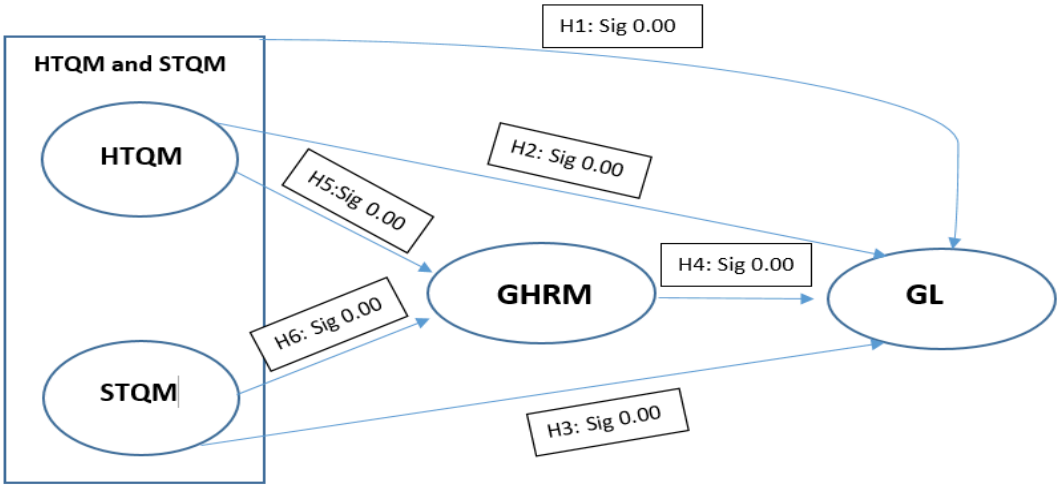

Figure 4.5: Model's path diagram

Table 4.18: Standardized path estimates of hypothesized research models.

Hypothesis	Brief description	p-value	Result
H1	HTQM &STQM GL	0.00	Supported
H2	HTQM GL	0.00	Supported
H3	STQM GL	0.00	Supported
H4	HTQM,STQM GRRM GL	0.00	Supported
H5	HTQM GL	0.00	Supported

H6	STQM GL	0.00	Supported

According to the result above all hypotheses are significant and supported, as shown in Figure 4.5. and Table 4.16. This explains the significant role of total quality management practices (STQM and HTQM) on sustainability practices, GL practices one of them. It also illustrates the crucial role of GHRM practices as a mediation role in implies sustainability practices and total quality management practices (STQM and HTQM.

Chapter Five: Discussion

5.1 Overview

This chapter presents research findings and results derived from the analysis of the qualitative and quantitative data collected for this study, as well as its discussion. It will explain the research findings and hypotheses.

5.2 Overall result discussion

In this part the findings for each research hypothesis will be discussed, with an emphasis on developing countries like Palestine. The findings will be analyzed in relation to existing literature, survey responses, and interview insights, providing a comprehensive understanding of the study outcomes and their alignment with previous research and real-world observations.

5.2.1 Discussion of the result of HTQM, STQM, and GL.

As a result of the ANOVA test, H1 was supported, this means that there is a positive impact for both HTQM and STQM practices on GL practices in the developing area with a significant statistical result.

This result aligns with the interviewed opinion as mentioned above in the thematic analysis section which emphasizes the crucial role of STQM and HTQM in implementing GL practices in developing nations like Palestine. interviewee number 2 said," Both STQM and HTQM have a significant role in implied GL practices, they complement each other". They highlight the impact of STQM practices on forming a sustainability task force composed of cross-functional teams from different departments, encouraging staff to offer suggestions on how to cut waste and carbon emissions in their day-to-day work, and offering continuous training on green practices like energy

conservation. whereas HTQM emphasis on technological tools, procedures, and data-driven methods to improve the GL process efficiently.literature also supports the positive relationship between HTQM, STQM, and GL. Most studies emphasize the beneficial effects of HTQM and STQM practices on GL.

For instance " Impact of Quality Management Techniques and System Effectiveness on the Green Supply Chain Management Practices" by Jermsittiparsert, Namdej, and Sriyakul (2019). Showing that it has a beneficial impact for HTQM and STQM on environmentally friendly supply chain management. Likewise, Green (2019) in his study about "Impact of JIT, TQM and Green Supply Chain Practices on Environmental Performance," evaluates HTQM and STQM complementary effects on environmental performance empirically, indicating a helpful role.

Both STQM and HTQM can assist Palestinian organizations in better addressing sustainability issues by striking a balance between technical know-how and cultural sensitivity to encourage more environmentally friendly supply chains in spite of financial and physical limitations. STQM methods support the development of a sustainability-focused organizational culture in poor nations like Palestine, where environmental management regulatory frameworks are weak. This allows for the promotion of GL without a significant reliance on outside regulation. whereas HTQM methods can aid in the optimization of logistics operations for sustainability. Lowering inefficiencies, minimizing resource waste, and increasing cost-effectiveness, are all crucial in economies with limited access to cutting-edge green technologies.

5.2.2 HTQM and GL

As the results indicated hypothesis number 2 was supported, it emphasizes the significant impact of HTQM on GL practices. Green logistics is improved by Hard Total Quality Management (HTQM), which encourages methodical, process-driven enhancements that increase environmental sustainability. Data-driven decision-making, standardized processes, and ongoing process improvements are its main focuses. These

lead to waste reduction through lean management and process optimization, energy efficiency through standardized quality control measures, improved transportation fuel efficiency, and optimized warehouse energy consumption. Carbon emissions are reduced by pollution control through ongoing logistical process improvement.

Adherence to regulations HTQM frameworks support sustainable logistics operations by guaranteeing compliance with environmental certifications and standards. And optimization of the supply chain. A more sustainable supply chain results from HTQM's implementation of strict quality standards, which improve material handling and supplier selection.

5.2.3 STQM and GL

By encouraging a culture focused on sustainability, employee engagement, and ongoing learning, Soft Total Quality Management (STQM) has a good effect on Green Logistics. It places a strong emphasis on human elements like teamwork, leadership, and customer focus, which helps green logistics techniques be implemented successfully. Employee involvement in sustainability, strong leadership dedication, stakeholder cooperation, ongoing innovation and improvement, customer satisfaction, and green branding are some of the main effects. When STQM is used in conjunction with Hard Total Quality Management (HTQM), it guarantees that green logistics efforts are successfully carried out and accepted as a fundamental organizational value.

5.2.4 Mediation Relationship Discussion.

The hypothesis test shows that H4 was supported. GHRM has a mediation role in the relation of HTQM and STQM and GL.

GHRM practices play a crucial connection between TQM procedures and GL, which concentrate on incorporating environmental factors into HR procedures like hiring, training, performance management, and employee engagement.

By encouraging a sustainability-focused culture where staff members are inspired and encouraged to embrace green practices, SQM (such as employee involvement and leadership support) has an impact on GHRM. In a similar, HTQM (such as data-driven decision-making and process standardization) offers the metrics and structural tools necessary to successfully integrate GHRM tactics, including performance reviews that are in line with sustainability objectives and green training initiatives.

By ensuring that the workforce is both technically equipped to implement sustainable logistics solutions and ecologically sensitive, GHRM acts as a mediator, amplifying the influence of HTQM and STQM on GL. GHRM for instance, can draw in talent dedicated to sustainability, and ongoing training improves staff members' capacity to implement eco-friendly procedures like resource optimization and waste reduction in logistical operations. Thus, by aligning human resources with both operational excellence (H TQM) and cultural values (SQM), GHRM improves the link between HTQM, STQM, and GL.

GHRM plays a significant role as a mediator in sustainability as mentioned in many research. For example, a study by Awwad Al-Shammari at al. (2022), was published in Frontiers in Environmental Science “Green human Resource management and Sustainable Performance with the Mediating Role of Green Innovation: A Perspective of new technological” examines the impact on environmental performance of GHRM practices and green innovation.

Similarly, the study "Examining the Effect of GL and GHRM on Sustainable Development Organizations: The Mediating Role of Sustainable Production” by v et al (2023). Investigating the effects of GHRM and GL on sustainable development finds that they have a beneficial impact.

The mediation effect of GHRM emphasized also by interviewees, since they explained that A comprehensive framework for maximizing GHR's influence on GL is provided by the combination of STQM and HTQM. Because of this mix, GL is now a crucial part

of operational effectiveness and employee engagement. It also encourages sustainable innovation, green talent development, and the integration of green metrics and culture.

5.2.5 HTQM and GHRM Practices.

Results show that H3 was supported. HTQM practices are a crucial instrument in GHRM. It facilitates the creation of quantifiable GHRM policies, performance monitoring, process automation, and ongoing enhancement of sustainability-related procedures. HTQM also supports regulatory compliance and environmental standards, ensuring HR policies align with green laws and certifications HTQM assists HR departments in developing cost-effective green initiatives by minimizing resource waste and energy consumption through the application of lean and Six Sigma methodology. GHRM initiatives are successfully implemented and optimized for long-term success through this integration.

5.2.6 STQM and GHRM Practices.

STQM practices like employee involvement, empowerment, teamwork, and internal communication systems have a significant impact on human resource practices. This was emphasized by the H6 result since it was supported and significant. STQM components involve human factors, which are essential to creating efficient HR procedures, according to a study by Arab American University "Total Quality Management, Employee Outcomes, and Environmental Uncertainty: Unveiling the Dynamic Nexus for Sustainable Organizational Performance in Palestinian Service Sector" by Thabet, (2024). This implies that by encouraging a culture of environmental responsibility and continual development, the application of STQM can have a good effect on GHRM. Also as per interviewee number 5 " leadership training play crucial role in sustainability decisions for the employees"

5.3 Theoretical Contribution

There are numerous theoretical and practical ramifications to this work. It greatly enriches literature by answering earlier appeals to address GL concerns in the context of developing nations (Rodrigue, Slack and Comtois, 2017). And role of STQM and HTQM in sustainability practices (Sin, Jusoh and Sim, 2022).

From a theoretical perspective. This study fills a gap in literature since it illustrates the significance of both STQM and HTQM in GL practices. The results show that both practices play a significant role in implication GL practices in developing areas like Palestine. In addition to that this research describes the mediation role of GHRM between two contains as it strengthens the relations.

This research has adopted two global theories in the field of sustainability. One of them is RBV, the other stakeholder to discuss the role of four main constraints (STQM, HTQ, GL, GHRM) in the same field. Few studies have connected theories like RBV with the practices of HTQM and STQM. Thus, by investigating how STQM and HTQM promote sustainability, this study offers a fresh validation of RBV. While HTQM stresses ongoing process improvements targeting green practices, lowering pollutants, waste, and energy consumption, STQM concentrates on human-centered activities that increase organizational growth. Furthermore, by encouraging the creation of sustainable products, these enhancements enhance stakeholder satisfaction, which is consistent with stakeholder theory. So, this research represent extension for those theories which have high level of efficiency in sustainability.

Green human resources management (GHRM) along with STQM and HTQM, can be used to further examine the implications of the RBV and Stakeholder Theory. In addition to improving stakeholder satisfaction, GHRM includes sustainable HR practices that place an emphasis on resource efficiency and cultivate an organizational culture that is ecologically conscious. This study bridges the individual, organizational, and environmental dimensions by validating RBV and Stakeholder Theory and expanding its relevance to the inter-level perspective. With its focus on leadership, training, and employee engagement, STQM complements GHRM by fostering a workforce that is motivated by sustainability. By incorporating environmentally friendly

operational strategies, HTQM, which focuses on technical breakthroughs and structured process improvements, enhances GHRM.

Green logistics (GL) methods, which integrate eco-friendly tactics in the logistics industry that meet stakeholder expectations for lowering pollutant emissions, validate both Stakeholder Theory and the Resource-Based View (RBV). As stressed in RBV, GL practices address stakeholder concerns about environmental responsibility while simultaneously improving operational efficiency and competitive advantage through the use of eco-friendly packaging, sustainable transportation, and effective supply chain management.

By showing how sustainable logistics methods support long-term value creation on several levels, our study not only supports these notions but also expands upon them. According to the Stakeholder Theory, GL improves company social responsibility, regulatory compliance, and consumer happiness. According to RBV, it improves resource efficiency and encourages innovation in sustainable logistics, strengthening a company's internal skills. This study offers a thorough framework for comprehending how corporate success and sustainability are driven by combining strategic management theories with green logistics.

5.4 Conclusion

This research investigates the impact of Soft Total Quality Management (STQM) and Hard Total Quality Management (HTQM) practices on Green Logistics (GL), with a focus on the mediating role of Green Human Resource Management (GHRM) in Palestine. The results give important information on how these factors relate to one another and have important ramifications for businesses looking to improve logistical sustainability.

Green logistics is positively impacted by HTQM methods in a significant and direct way. With a large coefficient (0.556), HTQM stands out as the most important

component, highlighting the importance of organised, process-driven strategies including waste reduction, resource optimisation, and efficiency enhancements in attaining sustainable logistics for developing countries like Palestine where sustainability requires making the most of the resources at hand.

On the other hand, STQM has beneficial contributions but its techniques have a negligible direct impact on green logistics (coefficient 0.006). This suggests that whereas human-centric strategies like teamwork, leadership, and a culture focused on

quality encourage creativity and cooperation; they have a negligible direct impact on the sustainability of logistics. However, in Palestine, promoting innovation and collaboration—particularly in sectors confronting external challenges and operational uncertainties—remains contingent upon cultivating a quality-focused organisational culture, leadership, and cooperation.

GHRM practices significantly mediated between the relationship of both STQM and HTQM and GL. GHRM improves TQM practices' ability to support logistics sustainability by coordinating HR strategies with environmental goals. Integrating GHRM can increase the efficacy of TQM methods in the Palestinian environment, where human capital is a fundamental component of resilience, hence bridging the gap between technological efficiency and human-centric approaches. However, the regression model's constant value (0.854) indicates that elements other than TQM and GHRM, such organisational logistics infrastructure, current sustainability frameworks, or external regulatory pressures, also have a substantial role in GL.

The regression model's constant value (0.854) emphasises the significant influence of outside variables outside of TQM and GHRM, like infrastructure constraints, international assistance, and regulatory frameworks. Navigating these outside forces is essential for Palestinian organisations to advance logistics sustainability.

When combined, HTQM and STQM techniques create a framework that balances human-centered and cultural approaches with technical efficiency. But given Palestine's particular difficulties, giving HTQM's technological solutions top priority is essential to getting noticeable and significant outcomes while using STQM to maintain organisational resilience and creativity over the long run.

5.5 Recommendations

Based on the findings, the following recommendations are proposed to enhance the adoption and impact of HTQM and STQM practices on GL through GHRM:

* Organisations should concentrate on putting HTQM practices—such as process optimisation, lean management, and the use of data-driven tools—into practice, to maximise their contribution to logistics sustainability.

*Investing in GHRM by coordinating performance management, employee engagement, training, and hiring practices with environmental objectives. By doing this, GHRM's mediation impact will be strengthened and TQM methods will be completely utilized to propel GL.

*Create focused programs to increase the impact of STQM, like cross-functional teamwork, leadership development, and cultivating a sustainable culture. These programs have the potential to close the gap between logistics operations and human-centric approaches.

*Adopte a TQM framework that integrates STQM and HTQM techniques. This will provide a well-rounded strategy that takes into account sustainability's technical and human aspects.

* Examine and take advantage of outside elements that support the basic connection in GL, such as stakeholder alliances, market incentives, and regulatory requirements. Logistics sustainability can be further improved by fortifying these components.

* In light of Palestine's distinct economic, legal, and logistical issues, businesses should adopt TQM and GHRM practices to the local environment. Prioritise resource-efficient solutions, interact with local stakeholders, and modify procedures to fit the infrastructure and market conditions of the area.

5.6 Limitations and future research directions

1. Impact of Sociopolitical Factors on Execution

   The adoption of TQM, GHRM, and GL methods is significantly impacted by Palestine's social context. Lack of government support, infrastructure problems, and political uncertainty make it difficult to put these strategies into practice. Additionally, the geopolitical environment restricts access to international markets and technology, which could lead to outdated or inefficient practices.

   Future research ought to examine how to enhance sustainable practices in this specific context.

2. Difficulties with Data Availability

   The lack of thorough and trustworthy statistical data, particularly in developing nations like Palestine, presents constraints for the study. The robustness of the analysis is limited by inadequate records, limited centralized databases, and inconsistent data reporting, which may have an impact on the findings' generalizability. Comparative or longitudinal research are hampered by this lack of data.

In order to create standardized frameworks for sustainability and quality management, future research should investigate digital platforms for real-time data collecting in environments with limited resources, carry out case studies on effective tactics, and cooperate with regional institutions.

3. Varying Industry-Specific Variations

The absence of consideration for differences in green logistics methods across different industries hampered the study's generalizability and may have led to different conclusions.

For instance, the food industry prioritizes waste reduction, supply route optimization, and energy efficiency, whereas the steel industry deals with issues related to emissions management, industrial byproduct disposal, and sustainable raw material procurement

Future research might examine how green logistics methods differ in Palestine's major industries, including manufacturing, agriculture, and construction, by conducting sector-specific analysis.

4. Limited Maturity of GL and GHRM Frameworks in Developing Countries

Although GL and GHRM are new management disciplines in developing countries like Palestine, it is difficult to match them with operational realities and real-world practices due to their theoretical underdevelopment. That’s because GHRM practices are still evolving, so many businesses are focusing on core human resources practices while neglecting to incorporate sustainability into worker policies. The same for implementing GL practices and eco-friendly regulations they find difficult due to socio political limitations, smaller businesses.

Future research might Create frameworks for GL and GHRM that are specific to the circumstances of developing nations, especially in politically complicated areas like Palestine.

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Appendices

Appendices 1 Interview Questions

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

عزيزي المُشارك،

يجري الباحث دراسة بعنوان

لإتمام رسالة التخرج لمتطلبات درجة الماجستير في إدارة الجودة من الجامعة العربية الأمريكية ، رام الله.

يهتم الباحث بإجراء مقابلات مع المسؤولين العاملين في شركات التصنيع في فلسطين لفهم متعمق لممارسات إدارة الجودة الشاملة الصلبة واللينة وممارسات اللوجستية الخضراء أيضا ممارسات إدارة الموارد البشرية الخضراء والعلاقة بينها.

المقابلات سوف تكون مسجلة والباحث هو الشخص الوحيد الذي يمكنه الوصول الى هذه المعلومات وسيتم تحليل جميع المعلومات التي تم جمعها باستخدام المقابلات من أجل أغراض البحث العلمي وستبقى هذه المعلومات سرية للغاية ولن تظهر أي أسماء في الاطروحة النهائية .

نظرا لأنه يمكنك تقديم صورة صحيحة في هذا الصدد ، يرجى التكرم بالمشاركة في الإجابة على أسئلة المقابلة التي قد تستغرق 40 دقيقة فقط لا غير. إذا كنت توافق على الشروط المذكورة أعلاه، الرجاء مساعدتنا في فهم وجهة نظرك حول الأسئلة أدناه.

شكرا لك على وقتك وتعاونك.

اسم المُشارك **التوقيع**

_____

مع فائق الاحترام
تسنيم عصام السفاريني
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تعريف بالمفاهيم الأساسية بالبحث

ممارسات إدارة الجودة الصلبة: إدارة الجودة الشاملة الصلبة تشير إلى الجوانب الفنية والإجرائية لإدارة الجودة، والتي تشمل الأساليب والعمليات والأدوات والتقنيات المستخدمة لتحقيق وتحسين جودة المنتجات والخدمات. تتضمن هذه الجوانب إدارة العمليات، التحسين المستمر، وإجراءات مراقبة الجودة التي تهدف إلى تحسين الكفاءة وتقليل الفاقد وضمان تلبية متطلبات العملاء.

ممارسات إدارة الجودة اللينة : تشير إلى العناصر الإدارية والسلوكية لإدارة الجودة، التي تركز على الجوانب البشرية والثقافية داخل المنظمة. تتضمن هذه العناصر القيادة، التركيز على العميل، مشاركة الموظفين، التدريب والتعليم، وإدارة الموردين. تهدف هذه الممارسات إلى تحسين الأداء التنظيمي من خلال تعزيز ثقافة الجودة والابتكار والعمل الجماعي.

إدارة اللوجستيات الخضراء تشير إلى العمليات والممارسات التي تهدف إلى تقليل الأثر البيئي للأنشطة اللوجستية من خلال تطبيق مبادئ الاستدامة البيئية. تشمل هذه الممارسات استخدام وسائل نقل منخفضة الانبعاثات، تحسين كفاءة الجدولة ونقل البضائع، استخدام مواد تعبئة وتصميم صديقة للبيئة، وتقليل النفايات والتلوث. تهدف إدارة اللوجستيات الخضراء إلى تحسين الكفاءة البيئية والتكلفة التشغيلية في نفس الوقت، مما يساهم في تحقيق رضا العملاء والتنمية المستدامة.

إدارة الموارد البشرية الخضراء تشير إلى مجموعة من الممارسات والإجراءات التي تهدف إلى تعزيز الاستدامة البيئية من خلال إدارة فعالة للموارد البشرية. تشمل هذه الممارسات توظيف وتدريب الموظفين على أساليب عمل صديقة للبيئة، تطوير برامج لتعزيز الوعي البيئي بين الموظفين، وتحفيزهم على تبني سلوكيات وممارسات مستدامة في العمل. كما تشمل إدارة الأداء والمكافآت لتشجيع الممارسات الخضراء. تهدف إدارة الموارد البشرية الخضراء إلى تحقيق التوازن بين الأداء البيئي والاقتصادي والاجتماعي للشركة، وتعزيز الرفاهية العامة للموظفين.

<u>الجزء الأول:</u> معلومات عامة

1. المؤسسة: _____

2 . المنصب الوظيفي _____

3. سنوات الخبرة: _____

4 . تاريخ المقابلة: _____

5. رقم المقابلة: _____

<u>الجزء الثاني:</u> ممارسات إدارة الجودة الشاملة الصلبة والمرنة، ممارسات اللوجستية الخضراء، ممارسات إدارة الموارد البشرية الخضراء.

1. ههل يمكنك وصف مدى أهمية الممارسات الخضراء لمؤسستكم؟ وبخصوص نظام اللوجستيات على وجه التحديد؟
؟_____
_____
_____

2. هل يمكنك توضيح ما إذا كانت ممارسات إدارة الجودة الشاملة يتم اتباعها في مؤسستك؟ لماذا هي مهمة لعملك من فضلك؟
_____
_____

3. ما هي ممارسات إدارة الجودة الشاملة الصلبة والمرنة التي يتم تطبيقها في شركتك حاليًا؟
_____
_____

4. هل تتأثر الممارسات اللوجستية الخضراء بمؤسستكم بممارسات إدارة الجودة الشاملة اللينة؟ رجاء توضيح؟
_____
_____

5. هل يتم تطبيق ممارسات إدارة الموارد البشرية الخضراء بمؤسستكم؟ هل يمكنك ذكر أهم هذه الممارسات ؟
_____
_____

6. هل يوجد أثر لهذه الممارسات على أداء المؤسسة والعاملين فيها ؟
_____
_____

7. هل هنالك أثر لممارسات إدارة الموارد البشرية الخضراء على تطبيق ممارسات إدارة الجودة الشاملة الصلبة في مؤسستك؟ رجاء تفسير كيف؟
_____
_____

8. هل تؤثر ممارسات إدارة الموارد البشرية الخضراء في مؤسستك على إجراءات ممارسة إدارة الجودة الشاملة اللينة؟ رجاء توضيح كيف؟

9. هل هنالك اثر لممارسات إدارة الموارد البشرية الخضراء في نجاح تنفيذ ممارسات اللوجستيات الخضراء من خلال ممارسات الجودة الشاملة الصلبة واللينة ؟رجاء توضيح ؟

_____

_____

10. هل يمكنك إعطاء أمثلة عن كيفية استفادة عملياتك اللوجستية من مساهمة ممارسات إدارة الجودة الشاملة الصلبة في الاستدامة؟

_____

_____

_____

11. هل يمكنك إعطاء أمثلة عن كيفية تحسين ممارسة إدارة الجودة المرنة لاستدامة لوجستياتك؟

_____

_____

_____

12. هل يمكنك إعطاء مثال على أي مشاريع ناجحة تم تحسين إجراءات اللوجستيات الخضراء بواسطة تقنيات ممارسات إدارة الجودة الشاملة الصلبة او المرنة؟

_____

_____

_____

_____

13. هل يمكنك شرح فهمك لممارسات إدارة الموارد البشرية الخضراء ؟و كيف تصف دورها في مؤسستك؟

_____

_____

_____

14. هل هنالك علاقة بين ممارسات إدارة الموارد البشرية الخضراء مع ممارسات إدارة الجودة الشاملة الصلبة في مؤسستك؟ PLEASE EXAPLIN HOW?

_____

_____

_____

15. كيف تكمل ممارسات إدارة الموارد البشرية الخضراء في مؤسستك إجراءات ممارسة إدارة الجودة الشاملة اللينة؟ PLEASE EXPLAIN HOW?

_____

_____

_____

16. هل هنالك اثر لممارسات إدارة الموارد البشرية الخضراء في نجاح تنفيذ ممارسات اللوجستيات الخضراء من خلال ممارسات الجودة الشاملة الصلبة واللينة؟ PLEAS

?EXPLAIN _____

17. ما هي العوامل أو مصادر المساعدة الأخرى التي يمكن أن تساعدك في دمج هذه الممارسات بشكل أفضل؟ _____

Appendices 2 : Survey questionnaire

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

QUESTIONNAIRE

Dear Participant,

The researcher is carrying out a study titled "impact of hard and soft total quality management practices on green logistic practices in developing countries: mediation role of green human resources" in partial fulfilment of the requirements of master's degree in quality management from the Arab American University, Ramallah.

The attached questionnaire aims to collect the primary data about green and quality practices at Palestinian manufacturing companies. The information you provide will help the researcher better understand the impact of hard and soft total quality management practices on green logistic practices in Palestinian manufacturing companies. Since you can give a correct picture in this respect, you are kindly requested to answer the questions frankly and honestly.

Your answers will be kept strictly confidential. The researcher is the only one who will have access to the information you provide.

If you agree to participate in this questionnaire, please answer the questions. Answering the questions takes no more than 15 minutes. If you have any questions about this project, feel free to contact the researcher.

Tasneem Al-Saffarini

email: t.alsafarini@student.aaup.edu, Telephone: 0597369536

Thank you for your time and cooperation.

Sincerely yours

Researcher: Tasneem Al-Saffarini

Key definition

Hard Quality Management Practices: Hard Total Quality Management refers to the technical and procedural aspects of quality management, which include the methods, processes, tools and techniques used to achieve and improve the quality of products and services. These aspects include process management, continuous improvement, and quality control procedures aimed at improving efficiency, reducing waste, and ensuring customer requirements are met.

Soft quality management practices: Refer to the administrative and behavioral elements of quality management, which focus on the human and cultural aspects within the organization. These elements include leadership, customer focus, employee engagement, training and education, and supplier management. These practices aim to improve organizational performance by promoting a culture of quality, innovation and teamwork.

Green logistics management refers to processes and practices that aim to reduce the environmental impact of logistics activities by applying environmental sustainability principles. These practices include using low-emission transportation methods, improving the efficiency of scheduling and transporting goods, using environmentally friendly packaging and design materials, and reducing waste and pollution. Green logistics management aims to improve environmental efficiency and operational cost at the same time, which contributes to customer satisfaction and sustainable development.

Green Human Resources Management refers to a set of practices and procedures aimed at promoting environmental sustainability through effective management of human resources. These practices include hiring and training employees in environmentally friendly work methods, developing programs to raise environmental awareness among employees, and encouraging them to adopt sustainable behaviors and practices at work. GHRM also involves performance management and rewards to incentivize green practices. The goal of GHRM is to balance environmental, economic, and social performance within the company while enhancing the overall well-being of employees.

Section One: Demographic Characteristics

Please choose the appropriate response:

1. **Gender:**

    1. Male
    2. Female

2. **Age:**

    1. 30 and below
    2. 31-40
    3. 41–50
    4. 51–60
    5. Over 60

3. **Education level:**

    1. Bachelor's degree
    2. Master's degree
    3. PhD
    4. Other degree

4. What is your position/role?

1. CEO/General manager
2. Operations director
3. Quality manager
4. Logistic manager
5. HR manager
6. Other management role

5. Years of experience?

1. Less than 5 years.
2. 5 to 10 years.
3. 11 to 15 years
4. Over 15 years

Section Two: Soft total quality management (STQM)

Adapted from Sachin and Sanjay (2017) and Saleh et al (2018)

Please indicate your level of agreement with each of the following statements about your company's practice of STQM:	Strongly disagree	disagree	Neutral	Agree	Strongly Agree
Scale 01: Top management support					
1. In your organization long-term plans are focused on quality and development.					
2. Top managers have identified clear quality goals					
3. At company meetings, top level managers often discuss the importance of quality.					
4. Top-level managers view quality as being more important than cost.					
5. Top level management depends heavily on quality performance to evaluate employees.					
Scale 02: Customers focus					
1. A summary of customer complaints is given to floor managers					
2. Customer's feedback is used to determine their requirements.					
3. Customers' requirements are used as the basis for measuring quality.					
4. Floor managers are not aware of the level of customer satisfaction satisfaction (Reversed item)					
5. We are frequently in close contact with our customers.					

Scale 03: Relations with suppliers					
1. Your organization establishes long-term relationships with suppliers.					
2. Your organization encourages the participation of suppliers in a new product development process.					
3. Your organization selects suppliers based on quality.					
4. Your organization actively engages suppliers in its quality improvement efforts.					
Scale 04: Training and development					
1. Employee training is provided in quality principles					
2. Resources are available for employee quality training					
3. There is almost always some kind of employee training going on in our company					
4. Top level managers allocate adequate resources towards efforts to improve quality.					
5. Top management are often involved in quality training					
Scale 05: Employee deployment in quality management practices					
1. In our company, employees have the required authority to resolve customer's quality related issues					
2. In our company employees are actively involved in defining quality policy and objectives of the business.					

3. Our company has made it easy for employees at all levels to show their concerns regarding improvement in processes, products and day to day operations					
4. Our company consider employee participation is very important to maintain the standards of quality					

Section Three: Hard total quality management practices (HTQM)

Adapted from Sachin and Sanjay (2017), Saleh et al (2018) and Abbas, J. (2020).

Please indicate your level of agreement with each of the following statements about your company's HTQM practices:	Strongly disagree	disagree	Neutral	Agree	Strongly Agree
Scale 01: Research and development (R&D)					
1. We have excellent communication processes between R&D and other departments.					
2. We have excellent communication processes between R&D and other departments.					
3. Our R&D strategy is mainly characterized by high-risk projects with a chance of high return.					
4. R&D plays a major part in our business strategy.					
Scale 02: Product quality					
1. The performance of our products is good.					
2. We believe in conformance to specifications of products.					
3. The reliability of our products is very high.					

4. Our products are durable					
Scale 03: Process management					
1. Most of the processes in our organization are largely automated and protected against human error.					
2. We have the latest technology and equipment to serve our customers more effectively and efficiently.					
3. Our system allows us to examine and track key processes that are critical to the organization.					
4. We regularly evaluate and improve our business processes to ensure quality.					
Scale 04: Information and data analysis.					
1. We have an effective information and reporting system for all products and services.					
2. The management regularly provides quality data (errors,complaints, defects etc.) to the workers.					
3. Workers, supervisors, and managers can easily retrieve information about different products and services.					
4. The top management uses quality data to make decisions and plans.					
5. There is no coordination between departments coordinate with each other to implement and monitor quality improvement programs (Reversed item)					

Section Four: Green logistics (GL)

Adapted from Alvarenga at el (2023).

Please indicate your level of agreement with each of the following statements about your company's level of green logistic practices (GL).	Strongly disagree	disagree	Neutral	Agree	Strongly Agree
Scale 01: Green transportation.					
1. Optimization in the use of energy-efficient vehicles contributes to the efficiency of logistics costs					
2. Optimization of the distribution process, through a better route and scheduling contributes to the efficiency of logistics costs.					
3. The use of green technologies less harmful to the environment, within transport contributes to the efficiency of logistics costs.					
4. Encouraging eco-driving to reduce fuel consumption contributes to the efficiency of logistics costs.					
5. Use of green fuels (for example: biodiesel) contributes to the efficiency of logistics costs.					
Scale 02: Green packaging					
1. Use of environmentally friendly materials in packaging contributes to the efficiency of logistics costs.					
2. Use of eco-design in packaging contributes to the efficiency of logistics costs.					
3. Use of cleaner technologies in packaging contributes to the efficiency of logistics costs.					
4. Use of recycled packaging materials purchased externally, from the company contributes to the efficiency of logistics					

costs					
Scale 03: Green building and warehousing					
1. Construction materials from ecological processes (such as recycled steel, concrete and asphalt) contribute to the efficiency of logistics costs					
2. Constructions with thermal insulation contributes to the efficiency of logistics costs					
3. Buildings with natural lighting contributes to the efficiency of logistics costs					
4. Energy-efficient lighting systems contribute to the efficiency of logistics costs					
5. Efficient material handling equipment, contributes to the efficiency of logistics costs					

Section five: Green human resources management Practices (GHRM)

Adapted by Zaid, Jaaron and Bon (2018).

Please indicate your level of agreement with each of the following statements about your company's level of practice of GHRM.	Strongly disagree	disagree	Neutral	Agree	Strongly Agree
Scale01: Green hiring(GH)					
1. Employees are hired based on the company's environmental criteria					
2. Employees become preferable through their environmental commitment					

Scale 02: Green training and involvement (GTI)					
1. Managers' environmental objective					
2. Assessment of managers comprise their environmental performance					
3. Assessment of employees comprise their environmental performance					
4. Reward of non-monetary incentives for achieving targeted environmental performance					
Scale 03: Green performance management and compensation (GPC)					
1. Payment of variable compensation according to environmental performance					
2. Arrange ecological training for employees					
3. Arrange ecological training for managers					
4. Environmental responsibility is part of the job description					
5. Employees participate in matters concerning environmental issues					
Please use the box below if you would like to share any additional information or comments					

Thank you for your participation!

Appendices3: Interview validity

Number	Name	Position
1	Dr Ayham Al-Jaroon	Associate professor

Appendices4: :Survey validity

Number	Position
1	Quality manager for Al-Mawared industry
2	Human resources manager for Al-Mawared industry
3	Quality manager for Izhiman's company

Appendices 5: List of Interviewee

Number	Position	Industry Name	Locations
1	Quality Manager	Almawared Industry	Tulkarem
2	HR Manager	Almawared Industry	Tulkarem
3	Quality Manager	National Carton Company	Nablus
4	Operation Manager	Satco Company	Nablus
5	General Manager	Third Dimension for printing	Ramallah
6	Quality Manager	Kanan trade company	Qalqilia
7	Quality Manager	Izhiman Company	Ramallah
8	Quality Manager	ktabah Company	Tulkarem
9	Quality Manager	Al-qasem company	Tulkarem
10	General Manager	Al-Barq Company	Tulkarem

أثر ممارسات إدارة الجودة الصلبة واللينة على الممارسات اللوجستيات الخضراء في الدول النامية بوجود عامل وسيط: ممارسات الموارد البشرية الخضراء، حالة الدراسة: فلسطين

تسنيم عصام فتحي السفاريني

د. أيهم الجعرون

د. أشرف الميمي

د. يحيى صالح

ملخص

تشير اللوجستيات الخضراء إلى تنفيذ الإجراءات الصديقة للبيئة التي تعمل على تحسين العمليات مع تقليل تأثيرها السلبي على البيئة. يتضمن ذلك تشجيع استخدام الموارد المتجددة، وتقليل انبعاثات الكربون، واستخدام وسائل النقل الموفرة للطاقة. مما يمكن الشركات المساهمة في الحفاظ على البيئة، وزيادة كفاءة الموارد، والامتثال للقوانين البيئية، وتحسين سمعتها، وتلبية الطلب المتزايد على الحلول اللوجستية الصديقة للبيئة من

خلال تنفيذ هذه الاستراتيجيات اللوجستية الخضراء. لذلك، تهدف هذه الدراسة إلى فحص تأثير ممارسات إدارة الجودة الشاملة الصلبة واللينة على اللوجستيات الخضراء مع دور وساطة الموارد البشرية الخضراء في البلدان النامية. لقد اعتمد البحث منهجية مختلطة تتميز بتصميم استكشافي تسلسلي. يشمل ذلك جمع البيانات النوعية وتحليلها في المرحلة الأولى، ثم جمع البيانات الكمية لدراستها في المرحلة الثانية. تم جمع عشرة مقابلات شبه منظمة و350 استبيانًا من قطاع الصناعات الفلسطينية. تم تحليل البيانات النوعية باستخدام التحليل الموضوعي، بينما تم تحليل البيانات الكمية باستخدام برنامج SPSS. النتيجة تؤكد التأثير الإيجابي لكل من ممارسات إدارة الجودة الشاملة الصلبة واللينة على اللوجستيات الخضراء. بالإضافة إلى ذلك، أكدت النتائج على دور الوساطة الإيجابي لممارسات الموارد البشرية الخضراء بين العوامل موضوع البحث. في النهاية، تؤكد هذه الدراسة على الدور الهام لممارسات إدارة الجودة الشاملة الصلبة والناعمة في تنفيذ الممارسات الخضراء في أحد قطاعات التصنيع مثل اللوجستيات في البلدان النامية. بالإضافة إلى ذلك، يصف الدور الوسيط الهام لممارسات الموارد البشرية الخضراء في تنفيذ الممارسات المستدامة في قطاع التصنيع بالتعاون مع إدارة الجودة الشاملة الصلبة واللينة. تُعتبر هذه الدراسة من بين الدراسات التجريبية الأولى التي تستكشف تأثير ممارسات إدارة الجودة الشاملة الصلبة واللينة على اللوجستيات الخضراء مع دور الوساطة للموارد البشرية الخضراء في فلسطين. تهدف هذه الدراسة أيضًا إلى تشجيع صانعي القرار في قطاع الصناعات على تنفيذ ممارسات إدارة الجودة الشاملة الصلبة والناعمة لتحسين عملياتهم وتشغيلهم واستدامتها في جميع القطاعات. أيضا هدفت الدراسة

إلى تسليط الضوء على الدور الحاسم للموارد البشرية الخضراء في هذا التحسين وممارسات التوظيف ذات الأهداف البيئية.

كلمات المفتاحية: ممارسات إدارة الجودة الصلبة، ممارسات إدارة الجودة اللينة، ممارسات اللوجستية الخضراء، ممارسات إدارة الموارد البشرية الخضراء.