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THE ROLE OF SOME REVERSE LOGISTICS ACTIVITIES IN ENHANCING SUSTAINABLE COMPETITIVE ADVANTAGE: AN EXPLORATORY STUDY OF THE OPINIONS OF A SAMPLE OF EMPLOYEES AT THE BADOUSH CEMENT FACTORY IN NINEVEH PROVINCE

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Abstract
This research aims to measure and identify the role of certain reverse logistics activities in enhancing the sustainable competitive advantage of the studied factory. This, in turn, reflects in improved employee performance, increased productivity, and boosted morale among individuals working in the environment, leading to the enhancement of the sustainable competitive advantage of the studied plant. This, in turn, strengthens the sustainable competitive advantage of the factory under study. The research problem is represented by the fact that the workplace suffers from low productivity due to the use of traditional tools and methods, which have a negative effect on the factory and its employees. To address this problem, the study adopts the approach of reverse logistics activities to overcome the weaknesses in the material resources used in the work environment, thereby enhancing sustainable competitive advantage. A questionnaire was used as the primary tool for data collection in the researched field, and the sample comprised employees at the (Badosh Cement Factory) in Nineveh Governorate, specifically in the city of Mosul. Data were analyzed, leading to a set of conclusions based on the results. The research also presents a series of recommendations that benefit the studied factories.

Keywords: Reverse logistics activities, sustainable competitive advantage.

Introduction

The current state of business companies, particularly those in the industrial sector on a global scale, is marked by significant challenges stemming from unforeseen phenomena and technological advancements. These include the rapid and diverse acceleration of customer needs and desires, as well as the shortened product life cycles, which have negatively impacted the natural environment by generating additional forms of waste associated with these developments. Amid the growing focus on environmental issues, efficient resource use, and sustainability, it has become imperative for the management of companies and industrial

plants to pursue unconventional approaches to address the previously mentioned phenomena. This not only strengthens sustainable competitive advantage but also enables them to achieve profitability, growth, and continuity. The success of an industrial company is closely linked to how well its management understands the challenges and obstacles it faces in achieving these goals. Research efforts aimed at addressing these issues have underscored the importance of adopting a reverse logistics approach, as evidenced by its practices to support efficient resource usage. This approach also provides a means to reduce the types of waste companies contribute to the natural environment by reusing, remanufacturing, maintaining, recycling, or safely disposing of defective, consumed, or outdated products, thereby enhancing sustainable competitive advantage.

Given that the state of the Iraqi industrial sector faces challenges similar to those encountered by global industrial companies, this study aims to provide a modest research contribution to address all forms of damaged, outdated, or defective goods in the selected industrial plant in Nineveh Governorate. Effective management techniques were adopted to address these shortcomings, reflecting the discussions and dialogues at both the academic and governmental levels, which indicate that the challenges facing Iraqi industry are not due to a lack of resources but rather their management. To achieve this, the current research is organized into four chapters: the first covers the research methodology; the second addresses the theoretical framework; the third presents the fieldwork; and the fourth provides conclusions and recommendations.

Section One: Research Methodology

This section outlines the research problem, its significance, objectives, the construction of its conceptual framework, and the formulation of hypotheses. It also covers the methods used for data collection and statistical analysis tools, as follows:

First: Research Problem

Through a review of the literature on reverse logistics activities, the researcher observed a notable focus on sustainability by promoting efficient resource usage through unconventional approaches, such as reverse logistics activities. This approach is intended to address the challenges faced by contemporary companies and industrial plants, including shortened product life cycles and rapidly changing customer needs and desires. These factors present issues related to disposing of outdated, defective, or consumed products, prompting company management to recognize the importance of improving their reverse logistics practices. Given that the conditions of Iraqi businesses, especially industrial companies, are similar to the previously described scenario, a preliminary exploratory study was conducted by the researcher between June 15, 2024, and August 9, 2024, on a selected industrial plant in Nineveh Province, namely, the Badoush Cement Plant (as the researcher resides in this province). The researcher assumes that activating reverse logistics activities by the management of this plant would serve as an effective mechanism to address the diverse challenges it faces in the competitive business environment, thereby enhancing sustainable competitive advantage. The research problem addressed by the researcher can be summarized through the following questions:

1. What is the level of availability of reverse logistics activities in the plant under study?
2. What is the nature of the relationship and impact between reverse logistics activities and sustainable competitive advantage in the plant under study?
3. Which reverse logistics activities have the greatest impact on the sustainable competitive advantage of the plant under study?

Second: Research Importance

The importance of this research can be viewed from two perspectives:

1. Scientific Importance:

This importance emerges from the growing interest in research and legislation around logistics issues, emphasizing the efficient use of resources or products in all their forms. This approach not only reduces the harm that such use can inflict on people and the natural environment but also strengthens sustainable competitive advantage by employing reverse logistics practices.

2. Practical (Applied) Importance:

- It assists in directing the attention of the plant's management to the necessity of activating reverse logistics activities, which contribute to resource conservation and efficient handling of raw materials, outdated products, defective items, or consumed goods throughout their life cycle.
- It emphasizes the role that reverse logistics practices can play in supporting the plant's management efforts to enhance sustainable competitive advantage through its various perspectives.

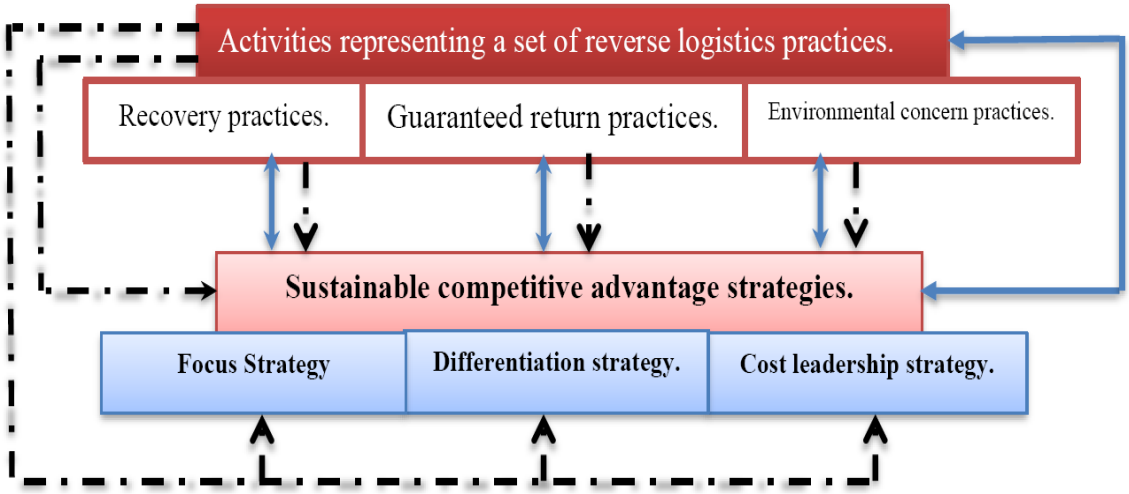
Third: Research Objectives

The main objective of the current research is to diagnose, analyze, and understand the relationship and impact between reverse logistics activities and sustainable competitive advantage, as well as to identify the implications of these relationships and effects at the level of the plant under study. The specific objectives include:

1. Presenting the theoretical frameworks related to the variables of the current research.
2. Developing and testing a hypothetical model to reflect the relationship and impact between the research variables.
3. Examining the level of variation in sustainable competitive advantage based on its different perspectives for the plant under study, in light of each reverse logistics practice included in the research.

Fourth: Research Hypothetical Model

The methodological approach to the research problem requires designing a hypothetical model, illustrated in Figure (1), which demonstrates the logical relationship between the research variables.



Source: The model was prepared by the researcher

Correlation ⟷

Impact ⇠

Fifth: Research Hypotheses

Based on the hypothetical research model, the following hypotheses are proposed:

- **Main Hypothesis 1**: There is no statistically significant correlation between reverse logistics activities (overall) and sustainable competitive advantage, based on its different perspectives (overall), in the plant under study.
  - *Sub-hypothesis for Main Hypothesis 1*: There is no statistically significant correlation between individual reverse logistics activities and sustainable competitive advantage, based on its different perspectives (overall), in the plant under study.
- **Main Hypothesis 2**: There is no statistically significant impact of reverse logistics activities (overall) on sustainable competitive advantage, based on its different perspectives (overall), in the plant under study.
  - *Sub-hypotheses for Main Hypothesis 2*:

1. There is no statistically significant impact of individual reverse logistics activities on sustainable competitive advantage, based on its different perspectives (overall), in the plant under study.
2. There is no statistically significant impact of reverse logistics activities (overall) on sustainable competitive advantage, based on each individual perspective in the plant under study.

Sixth: Research Methodology

The researcher adopted descriptive and analytical methodologies to complete this study.

Seventh: Research Limits

1. **Temporal**: The research period extends from June 15, 2024, to August 9, 2024, covering both the theoretical and field aspects of the study.
2. **Geographical**: The industrial plant chosen for the fieldwork is located in Nineveh Province.

3. **Human**: A purposive sample consisting of managers and supervisors, selected for their extensive experience and knowledge of the plant's activities and operations, was utilized.

Section Two: Reverse Logistics: Conceptual Roots and Fundamentals

This section aims to present the conceptual development of reverse logistics through the following areas:

First: Conceptual Roots of Reverse logistics

Literature on reverse logistics, such as that by Olariu (2013), Paty (2017), and Kulikova (2016), suggests that the origins of this concept can be traced back to practices initiated by companies like the American furniture store Montgomery Ward. This store adopted a customer-focused return policy to attract more customers, offering a full refund if they were not 100% satisfied with their purchase. Additionally, during World War II, many companies faced material shortages, which highlighted the need to rebuild or reuse parts, such as vehicle components, or to adopt modification strategies. This need spurred companies to further explore and expand the concept of reverse logistics. In this context, the children's clothing retailer "Hannadowns" offers an example. The company implemented reverse logistics practices by inviting customers to return all worn-out children's clothing to receive a 20% discount on any new clothing item purchased from the company (Ogunleye, 2013, p.7).

This trend continued to expand daily, acquiring various names over time. In the 1970s, studies by Bajwa (2014) and Muttimos & Younas (2017) began to refer to reverse logistics practices as "reverse channels" or "reverse flows," which pertain to recycling. By the 1980s, the concept had come to signify reverse flows within the logistics. In the early 1990s, it was formally recognized as "reverse logistics," encompassing recycling, waste disposal, hazardous materials management, replacement, reuse, and disposal on a larger scale. Previously, reverse logistics had been considered a subset of the traditional logistics. Interest in reverse logistics continued to grow, both practically and conceptually, especially during the 1990s. This growth was evident when Libben-ember & Rogers published *"Going Backward: Reverse Logistics Trends and Practices"* in 1988, underscoring a rising interest in the topic by pointing out that various past activities evidenced the existence of reverse logistics (Ogunleye, 2013, p.7).

In the early 21st century, the concept of reverse logistics developed intensively, expanding and adapting within its operational framework to the knowledge processes involved. Initially, most researchers and practitioners overlooked reverse logistics operations and the emergence of its flows. However, economic growth eventually pushed companies to recognize the changes brought about by these shifts (Patyk, 2017, p.28).

Second: Definition of Reverse Logistics

Nylund (2012, p.15) defines reverse logistics as "the process by which manufacturers regularly accept valuable products or parts returned from the point of consumption for recycling, remanufacturing, or disposal." According to the Reverse Logistics Executive Council (2007), reverse logistics involve "the planning, implementation, and control of cost-

effective, efficient flows of raw materials, work-in-progress inventory, finished products, and related information from the point of consumption back to the point of origin to reclaim value or properly dispose of them."

(Wainaina, 2014: 10) notes that reverse logistics "involve the return of products by customers to manufacturers for the purpose of recovering unused products or components, potentially generating value from them." Additionally, Anne et al. (2015, p.679) describe reverse logistics as "all activities related to the repair of returned products, including remanufacturing, repairing, reselling, recycling, or waste disposal."

Hosseini (2015, p.485) characterizes reverse logistics as "the process through which companies become more environmentally efficient by recycling used materials, reusing them, and minimizing waste." Abdullah & Yaalkub (2015, p.154) define it as "the movement of products or materials occurring in the opposite direction of the logistics to create or recover value or ensure proper disposal." This includes handling returned damaged goods, inventory management, restocking, excess inventory, and received packaging materials from the end user, as well as recycling programs and the disposal of damaged equipment to recover assets. Kulikova (2016, p.6) emphasizes that reverse logistics represent "the process through which manufacturers retrieve products, materials, and parts from consumption sites for reuse, recovery of remaining value, or disposal." Heda et al. (2017, p.1186) explain that reverse logistics encompass "a set of activities conducted after the sale of a product, such as servicing, refurbishment, and recycling, aimed at recovering value, returning products, or ensuring proper disposal." From the various perspectives on the concept of reverse logistics, it is evident that all focus on the process of returning used products that have completed their functional life back to their source of manufacture. Recently, reverse logistics have also been defined as asset management across different industries and specialties. In other words, they do not solely focus on the return process but also encompass other areas such as fulfilling orders, customer service, and parts management (Kwateng et al., 2014, p.18).

Third: Importance of Reverse Logistics

The previous discussion highlights that the true significance of reverse logistics lies in their ability to provide a competitive advantage for companies by offering better services to customers through inventory availability and rapid delivery. However, reverse logistics are not solely about the return of goods from customers; they also provide an opportunity to return inventory to suppliers through the reverse logistics (Salvador, 2017, p.51). Furthermore, reverse logistics can contribute to reducing environmental impacts by decreasing the amount of waste generated and improving resource efficiency (Arrieta, 2015, p.17). They also help save costs by utilizing environmentally friendly products that require less processing compared to manufacturing new products (Wainaina, 2014, p.13).

Chapter Three: Strategies for Sustainable Competitive Advantage

To achieve a sustainable competitive advantage, organizations must focus on providing safe working conditions that suit their employees, such as proper ventilation and adequate lighting, which distinguish them from their competitors while considering sustainability. They should also align with the long-term needs and desires of customers and identify

competitive strategies such as cost leadership, differentiation, and focus to offer distinctive products. Furthermore, organizations can reshape their core competitiveness or acquire unique technologies or intellectual property, all of which are essential requirements for making the organization successful in a highly competitive market. This chapter includes the following:

A. Concept of Sustainable Competitive Advantage Strategy

The term competitive strategy refers to the business-level strategy that shows the organization or its units how to compete in their industries and markets (Sandberg & Abrahamsson, 2011, p.24). Both Liu (2010, p.10) and Wang (2014, p.3) agree that sustainable competitive advantage strategy encompasses the set of strategies, activities, means, and programs that the organization employs to focus on reducing sources of waste while maintaining product quality, aligning simultaneously with customer needs and desires over the long term.

Porter (1985, p.27) argues that possessing resources to achieve sustainable competitive advantage involves focusing on a strategy of reducing operational costs while offering environmentally friendly products that competitors cannot imitate. Competitive strategy is defined as one that achieves sustainability, emphasizes providing a safe and environmentally friendly working environment, and improves the competitive position within the market segment served by the organization or its business units (Wheelen & Hunger, 1995, p.183).

Tanwar (2013, p.11) emphasizes that organizations with a high market share have been successful because they continued their cost leadership strategy. Similarly, organizations with a low market share have also succeeded because they segment the market to focus on a small geographic area, making them profitable in specialized markets. Conversely, organizations in the middle have been less profitable because they could not employ a general strategy.

(Daft, 2013, p. 17) defines sustainable competitive advantage strategy as: an organized action plan to interact with and maintain the competitive environment to achieve the organization's goals. This requires organizations to choose competitive strategies in light of rapid environmental changes, increased competition among organizations, and the difficulty of entering markets in the context of economic openness. Through these competitive strategies, organizations can achieve a sustainable competitive advantage, especially since it is not expected that competition will decrease in the new millennium, according to the competitive strategies that characterize global organizations. (Porter, 1980, p. 34) views the sustainable competitive advantage strategy as maximizing the organization's capabilities to maintain a clean and harm-free environment while achieving a stronger competitive position, whether through offensive or defensive strategies. This involves taking actions to establish a defensive position in the industry to successfully deal with the five competitive forces, which lead to superior returns on investment for the organization.

The researcher agrees with the perspective of (Ong & Bin Ismail, 2008, p. 65), which defines the sustainable competitive advantage strategy as a distinctive management approach that views the organization holistically, aiming to maximize sustainable competitive advantage that allows for market superiority, occupying a strong competitive position, and leveraging

available opportunities in the surrounding environment. This strategy also enhances the organization's capabilities to achieve a stronger competitive position against current and potential competitors while reducing damage rates and minimizing the environmental impact, ultimately producing products at reasonable costs.

B. Competitive Forces for Achieving Sustainable Competitive Advantage:

(Srivastava et al, 2013, p. 48), (Rothaermel, 2008, p. 214), (Kay, 2014, p. 17), (Nickols, 2016, p. 3), and (Sultan, 2007, p. 130) all agree that Porter's model of the five competitive forces in industry analysis includes the following:

1. Threat of New Entrants:

The entry of new competitors into the industry increases capacity and the desire to gain a significant market share. New entrants often possess alternative resources, and the emergence of one or more new competitors poses a significant threat to existing organizations. Consequently, this increases competitive intensity and decreases sales and market share, which also affects price structures and, in turn, impacts profits. This threat depends on the barriers to entry for new competitors in the industry on the one hand, and the expected reactions of current competitors to the new entrants on the other. If the barriers are high, new entrants anticipate that existing competitors will retaliate quickly. Conversely, if the barriers are low, new competitors may be able to enter the industry successfully, increase their market share, and achieve profitability for their companies.

1. Bargaining Power of Suppliers:

The bargaining power of suppliers depends on several market characteristics and the position they hold in the industry, as well as the importance of their sales in comparison to the overall operations of the organization. Analyzing the competitive market position is crucial for suppliers, who can increase their bargaining power in the following cases:

A. Limited Number of Suppliers: When there are few organizations operating in the logistics sector, along with a high concentration of products.

B. Lack of Alternative Raw Materials.

C. Limited Industry Attractiveness.

D. High Switching Costs: When organizations incur high costs if they consider switching to alternative sources.

E. Essential Inputs: When the materials involved in production are essential and constitute a significant portion of the product's total output.

F. Threat of Vertical Integration: When suppliers are perceived as a threat to any attempt at vertical integration within the industry.

2. Bargaining Power of Buyers:

The bargaining power of buyers is also a significant factor in analyzing the competitive market position, as it has a substantial impact on the negotiating position of existing organizations and the potential for new entrants to enter the market. Buyers are in a strong position under the following conditions:

A. When there is a significant concentration of buyers, particularly when purchases are made in very large quantities, as this gives them major leverage in the market.
B. When the purchased products are standardized and not differentiated.
C. When the purchased products are a key component of the product and represent an important part of its overall costs.
D. When industrial products are not critical to the quality of the product or service.
E. When industrial products do not safeguard the buyers' finances.
F. When there is a credible threat from buyers regarding backward integration (i.e., taking control of their logistics needs).

1. Threat of Substitute Products:

Another threat comes from substitute products, as the strategic success of an organization partially or fully depends on the availability of alternatives to the products it offers. The real threat posed by substitute products arises when they can provide similar or superior quality at lower costs and prices compared to those offered by existing organizations. Factors contributing to this threat include numerous competitors, slow growth, high fixed costs, low differentiation, low switching costs, significant capacity increases, a variety of competitors, high stakes, and high barriers to exit.

2. Intensity of Competition Among Existing Rivals:

The intensity of competition among existing rivals is a fundamental element in Porter's model for assessing industry attractiveness. The intensity of competition is a common and natural occurrence among competitors in the market, employing strategies and tactics such as competitive pricing and offering high-quality products or services. This allows organizations to achieve better industrial attractiveness, enabling competing firms to generate high profits. According to Porter, the intensity of competition is influenced by several key factors, including:

1. Number of Competitors: The fewer the number of competitors, the greater the intensity of competition among them.
2. Industry Growth Rate: If the industry is growing rapidly, it provides most organizations with opportunities to achieve their goals. Conversely, if industry growth is slow, competition will intensify and may threaten organizations' ability to reach their objectives.
3. Fixed Costs.
4. Product or Service Differentiation: Organizations whose products are distinguished by uniqueness and environmental friendliness will have a higher competitive advantage in the industry, thereby achieving higher profits compared to those without product differentiation.
5. Capacity Utilization: Many organizations prefer to operate at maximum capacity, utilizing advanced and unique technologies to offer specific, environmentally friendly products, thereby achieving economies of scale.
6. High Barriers to Exit.

C. Strategies for Sustainable Competitive Advantage

According to Porter (1980, 35-36), addressing the five competitive forces will lead to a successful strategic approach for achieving a sustainable competitive advantage, allowing organizations to outperform their competitors by offering products at lower prices compared to others. The general strategies are as follows:

1. Cost Leadership Strategy.
2. Differentiation Strategy.
3. Focus Strategy.

Based on the above, the strategies for sustainable competitive advantage are as follows:

1. Cost Leadership Strategy:

Both Ong & Ismail (2008, 63), Bingxin Li & Juan Li (2008, 11), Hutchinson et al. (2007, 78), and Allen et al. (2004, 12) agree that the cost leadership strategy can achieve sustainable competitive advantage by offering products at the lowest possible cost while being environmentally friendly. This involves providing low-cost advantages or differentiation. The low costs result from the organization's efficiency in producing goods or services that match lower market prices. This low cost can translate into higher revenues.

Bhattacharjee et al. (2015, 532) pointed out that costs along the value chain and access to products at the lowest possible cost make their products environmentally friendly with acceptable quality marks and limited standard features in the market to gain a competitive edge and maximize broad customer participation.

Ireland et al. (2011) clarify that the cost leadership strategy is an integrated set of actions taken to produce goods or services with acceptable features for customers and to offer products at the lowest possible cost while also being environmentally friendly. The researcher agrees with the perspective of Philip et al. (2011, 2) that the cost leadership strategy is the organization's effort to reduce costs in order to sell its products and services at a lower price than competitors offering the same product or service with similar quality, without depleting or polluting natural resources, and while preserving the surrounding environment. A successful cost leadership strategy is characterized by the following advantages (Tanwar, 2013, 12):

1. Practical engineering skills.
2. Products designed to be easy to manufacture.
3. Continuous access to inexpensive capital.
4. Close supervision and product design aligned with the optimal use of natural resources.
5. The ability to recycle returned products without causing environmental pollution.
6. Incentives based on quantitative goals.
7. A constant focus on keeping costs at the lowest possible level.

To implement a cost leadership strategy, several requirements must be met (Certo et al., 1995):

a. Availability of significant capital investments with ongoing expansion.
b. Provision of necessary engineering skills to complete operations.
c. Intensive supervision of employees.

d. Designing products in accordance with the optimal use of natural resources to facilitate the production process.

e. A low-cost and environmentally friendly distribution system.

Baraskova (2010, 22) views the requirements for applying this strategy as follows:

1. Strict control over costs.
2. Establishing an organizational structure and responsibilities.
3. Offering environmentally friendly products at an appropriate cost and branding them as market leaders.
4. Providing good customer service, personal attention, and emphasizing the importance of environmentally friendly products.
5. An incentive system that reduces operational costs while providing non-polluting products and ensuring a safe work environment free from health and environmental hazards, based on precise and quantitatively defined goals.

The adoption of a comprehensive cost leadership strategy can lead to several risks, including (Baraskova, 2010, 23):

1. Investment in modern equipment, resulting in the old assets becoming obsolete.
2. The ability to offer distinctive and hard-to-imitate products that are environmentally friendly and meet customer needs.
3. A diminished capacity to perceive changes in products and markets due to the focus on minimizing costs.

According to Bhattacharjee et al. (2015, 533), the cost leadership strategy leads to financial strategy, which plays an important role in providing environmentally friendly products at an appropriate cost. Implementing a cost leadership strategy allows organizations to effectively reduce costs to sell their products and services at lower prices than competitors. Bingxin Li and Juan Li (2008, 17) state that the necessary conditions for applying a cost leadership strategy include:

1. There is price elasticity of demand, whereby any price reduction leads to an increase in consumer purchases of the product.
2. Standardization of offered goods.
3. Lack of multiple ways to differentiate the product.
4. The presence of methods that reduce sources of waste wherever they exist while maintaining uniform product quality for all buyers.
5. The limited or non-existent switching costs for buyers. Examples of global organizations that adopt the cost leadership strategy include BIC, known for manufacturing ballpoint pens; General Electric, a leader in major home appliances; and Ford, specializing in heavy-duty trucks.

Awade and Sadan (2015, 51) highlighted the characteristics of the cost leadership strategy as follows:

a. Reduction in the number of products offered.

b. Limiting post-purchase services provided to buyers.

c. Lower levels of performance and product quality.

d. Lower salaries and benefits for employees compared to competitors.

e. Reduction in the number of outlets used for distributing the organization’s product.

f. Decreased spending on research and development compared to competitors.
g. Use of lower specifications for purchased materials.
h. Greater emphasis on achieving higher productivity levels compared to competitors.

Many approaches have been proposed by researchers and scholars regarding how organizations can achieve cost leadership strategies, including Allen and Helms (2006, 442) and Bordean et al. (2010, 174) in the field of production and operations management, which include the following:

1. Using mass production techniques.
2. Achieving economies of scale.
3. Adopting new technologies.
4. Ensuring effective mass distribution and product design.
5. Reducing input costs.
6. Maximizing resource utilization.
7. Outsourcing.
8. Improving access to raw materials.

Second: Differentiation Strategy

Porter (1980, 37) indicates that the differentiation strategy is one of the most important sustainable competitive advantage strategies, focusing on offering products that are unique and superior to those of competitors. This ensures that the organization captures a larger market share for its products or services and creates something that is perceived as unique within the industry. In a similar vein, Wit et al. (1998, 352) explain that it is the organization's ability to provide distinctive products that are difficult for competitors to imitate, environmentally friendly, and aligned with customer needs.

According to Barney and Arikan (2001), an organization can achieve a sustainable competitive advantage by offering products that align with customer needs and desires. This makes it difficult for competitors to imitate these products, as their attempts may ultimately fail to replicate or simulate these unique features (Andrevski & Ferrier, 2008, 3).

He (2012, 46) and Frambach et al. (2003, 10) argue that differentiation is a source of sustainable competitive advantage, meaning that it involves providing a unique brand, innovative technology, customer service, or distinctive products to gain market share. Differentiation strategies can be implemented through design, information systems, and logistics management.

Thompson et al. (2012, 2) point out that a differentiation strategy provides customers with more value by consistently delivering distinctive products while also protecting the environment by offering high-quality product attributes. Soliman (2008, 824) adds that it reflects the organization's ability to deliver unique and distinctive value that aligns with customer needs and desires, such as product quality, special features, or after-sales services. The differentiation strategy targets the broader market and includes innovation in products and services perceived as unique, or providing customer services that are difficult to imitate. It also aims to deliver superior products compared to competitors in the industry, allowing the company to charge a higher price for its products. Differentiation is a valuable strategy

for achieving higher than average returns because it fosters brand loyalty and reduces customers' sensitivity to price increases.

Awade (2014, 703) states that a differentiation strategy makes an organization's products or services unique and environmentally friendly compared to its competitors, focusing on improvements in quality, simpler operation methods, and enhanced aesthetics. The products must be distinctive, unique, and environmentally sustainable, making them difficult for competitors to imitate.

Justinian (2015, 12) argues that distinctive skills allow the organization to offer unique products without harming the environment. When both aspects are integrated into a single sustainable competitive advantage, the competitive edge appears more durable. Sustainable competitive advantage can be achieved through a unique operational position, economies of scope, alignment between cost and demand, brand loyalty, customer relationships, location-based differentiation, or product environment. Similarly, Baroto (2012, 121) notes that differentiation strategies are implemented in large industries where their products or services are perceived as unique by customers. The researcher points out that a differentiation strategy involves having a unique brand, adopting innovative technology, offering non-imitable customer services, or providing superior products compared to competitors, which ensures gaining a larger market share. To implement a differentiation strategy, the following conditions must be met (Tanwar, 2013, 13; Vista, 2010, 41):

1. Consumers must appreciate the differences in the product or service, achieving a degree of distinction.
2. The product should have multiple uses and align with consumer needs.
3. There should not be a large number of competitors.

According to Thomas and Strickland (2003, 163), the key competitive advantages of a differentiation strategy include the following:

1. A unique product protects the organization from competitors to the extent that it fosters consumer loyalty. This loyalty reflects a high level of commitment and allegiance, representing a valuable and sustainable competitive advantage.
2. The uniqueness of the product generates a desire and willingness among consumers to pay a higher price for the distinctive product compared to similar products in the market.
3. A differentiated product creates barriers for new competitors or for those considering entering the industry.
4. The organization gains strength in developing unique skills and competencies that enable it to compete effectively against other rivals.
5. The organization provides a distinctive and unique product that satisfies consumer needs and desires as perceived by the consumers, rather than merely as viewed by the organization itself.
6. The product should have multiple uses and align with consumer needs, making it more appealing in the market.

Third - Focus Strategy

Frambach (2003, 11) indicates that an organization can identify a specific sector in the market to compete in, which helps it maintain a clean and sustainable environment and provide

service to a narrow strategic target more effectively and efficiently than competitors who are competing on a broader scale. Based on this, Awade (2014, 704) points out that this strategy focuses on combining cost leadership and differentiation, aiming to serve a specific target or part of the industry. Unlike cost leadership and differentiation strategies, both aim to achieve goals at the industry level. The organization's efforts direct towards what Gibson (2012, 20) sees as a narrow or defined competitive area to gain competitive advantages in that targeted segment, where the focus can be either on low cost or on differentiation, with a strategy directed at a specific sector of the market or a particular group of buyers.

Sohail & Al-Ghamdi (2012, 1465) define focus as a strategy directed at a specific sector of the market or a particular group of buyers, to offer products at lower prices compared to competitors. Pisano (2015, 5) and Pelham (2000, 54) confirm that the focus strategy tends to utilize an approach centered on customer satisfaction criteria. Additionally, Justinian (2015, 12) notes that the focus strategy combines differentiation and cost leadership strategies by selecting a sector targeted towards a specific part of the market or a particular group of buyers, relying on a precise understanding of consumer needs and characteristics, leading to efforts to satisfy those needs. Japanese organizations have succeeded in providing high quality at low prices.

Gibson (2003, 202) and Rosli (2012, 94) indicate that the focus strategy aims to identify a specific sector in the market to compete in, while maintaining a clean and sustainable environment. The researcher believes that the focus strategy is directed at a specific segment of the target market or a particular group of buyers, without others. Here, the organization seeks to leverage a sustainable competitive advantage in the target market by offering lower prices than competitors, focusing on cost reduction, targeting specific customers, or providing high-quality, environmentally friendly products. In this context, Awade & Sadan (2015) mention that the main benefits an organization gains from implementing a focus strategy include the following:

1. Organizations concentrate on building a sustainable competitive advantage by providing distinguished skills and qualifications that can protect them from competition, allowing them to offer a product or service that competitors cannot provide.
2. Avoid entering market segments where some competitors hold a strong position.
4. The focus strategy empowers the organization over consumers because they cannot obtain the same offerings elsewhere.
5. The organization focuses on managing risks and preventing environmental pollution from its production processes, fostering consumer loyalty. The organization can set prices higher as consumer loyalty increases.

In the same context, Baroto (2012, 123) points out that the main problems associated with implementing a focus strategy are as follows:

1. The expertise of major differentiators in managing a large number of market sectors efficiently may not allow for the success of the focus strategy.
2. The organization’s concentration on a specific segment of the target market and a narrow range of its products may fail to achieve a competitive advantage due to rapid technological changes or shifts in consumer tastes.

3. Continuous research by differentiators to compete with organizations following a focus strategy by offering products that can meet the demands of consumers in high-focus businesses.

Awade & Sadan (2015, 51) explain how to achieve sustainable competitive advantage under a focus strategy through the following:

1. Selecting and identifying any sector within the industry to compete in.
2. Determining how to build a sustainable competitive advantage in the targeted market sectors. To decide which market sectors to focus on, it is essential to assess the attractiveness of the sector based on factors such as the sector size, profitability, the intensity of the five competitive forces in the sector, the strategic importance of the sector to major competitors, and finally, the alignment between the company's capabilities and the needs of the market sector.

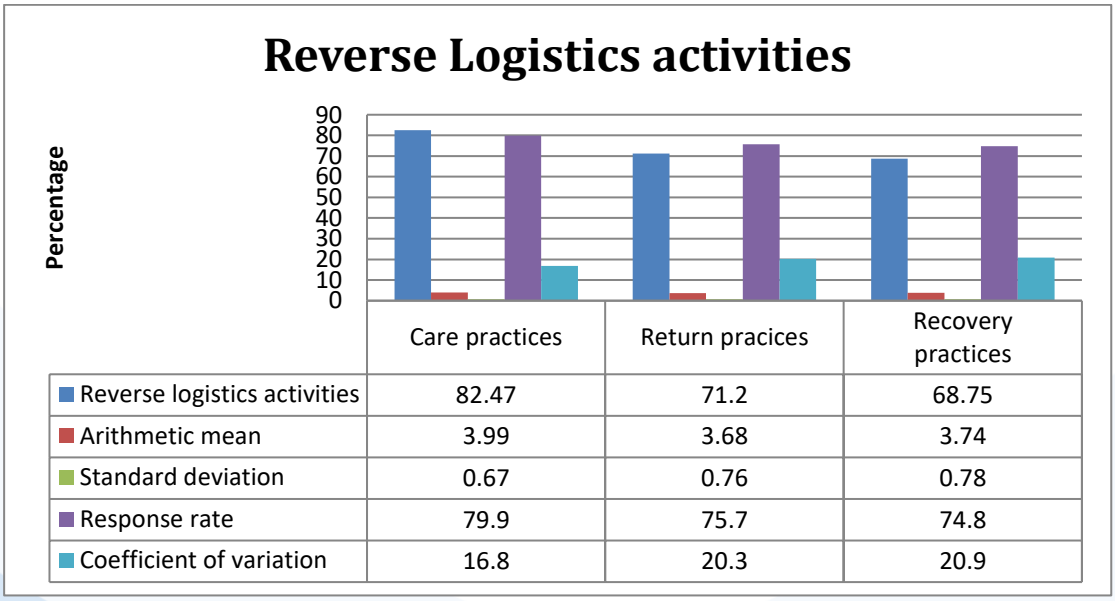
Based on the above, the researcher believes that the strategies mentioned to achieve sustainable competitive advantage through cost leadership, differentiation, or focus strategies can be utilized to establish sustainable competitive advantages in a specific target market segment or for a particular group of buyers. This allows the organization to distance itself from major industry competitors, as they can serve that small market segment efficiently. Moreover, the cost leadership strategy enables the organization to avoid price competition prevalent in the industry. However, on the flip side, the organization may face the risk of this small market gradually shifting towards broader market characteristics, as distinctive tastes and specific market traits may change and diminish over time.

Chapter Three: Practical Aspect

Description and Diagnosis of Research Variables in the Badosh Cement Laboratory:

First: Reverse Logistics Activities:

The chart illustrates the percentages obtained for the dimensions of reverse logistics activities.



	Care practices	Return pracices	Recovery practices
Reverse logistics activities	82.47	71.2	68.75
Arithmetic mean	3.99	3.68	3.74
Standard deviation	0.67	0.76	0.78
Response rate	79.9	75.7	74.8
Coefficient of variation	16.8	20.3	20.9

Table (1) reveals the agreement percentage among the surveyed individuals in the researched field regarding reverse logistics activities. The agreement on the practice of care ranked first with a general index of (82.7%), with an arithmetic mean of (3.99), and a standard deviation of (0.67), a general response rate of (79.9) and a coefficient of variation of (16.8). In contrast, the third activity, recovery practices, received the lowest agreement percentage at (68.75) with a general index, an arithmetic mean of (3.74), a standard deviation of (0.78), and a response rate of (74.8) with a coefficient of variation of (20.9). The agreement percentages and other statistical indicators for the remaining dimensions ranged between these two percentages.

	Cost Leadership Strategy	Discrimination Strategy	Focus Strategy
Competitive advantage	61.89	75.72	66.53
Arithmetic mean	3.55	3.83	3.71
Standard deviation	0.96	0.67	0.78
Response rate	71	65.4	74.2
Coefficient of variation	27.2	17.5	21.5

Competitive Advantage:

Table (1) presents the response rates from the surveyed individuals in the studied field regarding competitive advantage strategies. According to the index in Table (1), the statistics related to competitive advantage strategies reveal that the differentiation strategy received the highest agreement percentage, amounting to (75.72), with an arithmetic mean of (3.83), a standard deviation of (0.67), and a response rate of (0.67) with a coefficient of variation of (17.5) as a general indicator. This indicates that individuals working in the researched field (the cement factory in Badoush) are most influenced by this strategy. If reverse logistics activities are adopted, this will reduce the exposure of individuals working to this strategy, as reverse logistics activities work to eliminate or eradicate the sources of the causes of this strategy, thus providing a work environment free from dangerous sources.

On the other hand, the individuals working in the researched field are less exposed to the second group (the group of diseases targeting the organic systems due to working in the work environment, such as respiratory, skin, and musculoskeletal diseases). Therefore, human engineering utilizes all means to prevent workers from being exposed to this type of disease in the workplace.

Measuring Correlation and Effect Corelation in the Cement Factory in Badoush:

Correlation Relationships Between Research Variables: Table (2) displays the nature of the correlation relationships between the principles of green human engineering and occupational diseases:

Table (2) Correlation Relationships

	Sustainable Competitive Advantage Strategies
Environmental concern practices	**0.513****
Guaranteed return practices	**0.396****
Recovery practices	**0.694****
Reverse logistics activities	**0.677****

N = 59 P ≤ 0.05

It is evident from Table (2) that there is a statistically significant correlation between reverse logistics activities as an independent variable and sustainable competitive advantage strategies as a dependent variable, with a correlation coefficient of (0.677) at a significance level of (0.05) and a sample size of (59). At the level of reverse logistics activities, a positive significant correlation was found between each reverse logistics activity and competitive advantage strategies, with correlation coefficients of (0.515), (0.396), and (0.694), respectively. This indicates that increasing support and attention to reverse logistics activities contributes to reducing the intensity of competition in the workplace.

Effect Correlation Between Research Variables: Table (3) displays the effect Correlation between the research variables: reverse logistics activities as an independent variable and competitive advantage strategies as a dependent variable:

Table (3) Effect Correlation

	Reverse logistics activities		**R^2**	**F**	
	B0	**B1**		**Calculated**	**Tabular**
Competitive strategy	0.561	0.812 (6.940)	0.677	48.164	**7.314**

(6.940) T Calculated Value D.F (1,58) N = 59 P ≤ 0.05

Table (3) reveals a significant impact of reverse logistics activities on competitive advantage strategies, as evidenced by the F test value for the model, which is (48.164) and exceeds its tabular value of (7.314) at degrees of freedom (1,58). Additionally, following the beta coefficient for the T test, it has been confirmed that the principles of green human engineering significantly influence occupational diseases, with a value of (0.812). This indicates that the calculated T test value of (6.940) is greater than its tabulated value of (1.684) at a significance level of (0.05) with a sample size (N = 59). This suggests that adopting the principles of green human engineering leads to a reduction in injury levels in the surveyed field. As for the nature of the impact relationship between each principle of green human engineering and occupational diseases, the relationships are illustrated as shown in Table (4)

Table (4) Effect Correlation at the Micro Level

	Reverse logistics activities				R^2	F	
	B0	**B1**	**B2**	**B3**		**Calculated**	**Tabular**
Competitive strategy	**0.541**	**0.121 (1.011)**	**0.139 (1.711)**	**0.572 (4.421)**	**0.719**	**19.582**	**4.084**

(4.421) T Calculated Value D.F (3,55) N = 59 P ≤ 0.05

Table (4) shows the impact relationships between each reverse logistics activity and competitive advantage strategies in the Badoush Cement Factory. A statistically significant effect of reverse logistics activities, specifically, environmental concern practices, guaranteed return practices, and recovery practices, has been established on competitive advantage strategies, with impact values of (0.121), (0.139), and (0.572), respectively. This effect is confirmed by the T test, with calculated values for these activities of (1.011), (1.711), and (4.421). These values are greater than the tabulated value of (1.96) at a significance level of (0.05) with a sample size (N=59). The coefficient of determination indicates that the contribution percentage of reverse logistics activities to changes in competitive advantage strategies is (71%), while the remaining percentage is attributed to other variables not included in the study model.

Chapter Four: Conclusions and suggestions

Thirdly: Conclusions from the Badoush Cement Factory

1. The first dimension (environmental efficiency) ranked first, as it received a high agreement percentage, while the fourth dimension (learning from nature) ranked last, receiving a low agreement percentage.
2. The third group ranked first, also achieving a high agreement percentage, while the first group ranked last with a low agreement percentage.
3. There is a significant positive correlation between each dimension of green ergonomics and occupational diseases, justified by the correlation values for each dimension of green ergonomics with the groups of occupational diseases.
4. There is a significant effect relationship between each dimension of green ergonomics and occupational diseases, supported by the calculated F value being greater than the tabulated value. Following the beta coefficient of the T test confirmed this effect.

Suggestions

Based on the conclusions reached by the research, a set of recommendations has been proposed to the researched factories:

1. The management of the researched factories should prioritize reverse logistics activities and competitive advantage strategies in managing their operations by disseminating posters, brochures, and murals within the engineering departments. Additionally, a library should be established to include research and studies on reverse logistics activities and competitive advantage strategies.

2. The management of the researched factories should heavily rely on reverse logistics activities in managing their operations by prioritizing the goals of these activities and developing plans, programs, and policies responsible for their implementation, as well as allocating the necessary resources and facilities to facilitate and support the execution process.
3. Continuous efforts should be made to identify the strengths and weaknesses in the researched factories regarding reverse logistics activities through periodic surveys that assess the awareness of employees about the importance and implementation of these activities, emphasizing the need for commitment and adherence to their variables.
4. The management of the researched factories should focus on reverse logistics activities, specifically addressing the low percentage to garner support and commitment from upper management and benefit from experienced professionals in this field, in coordination with universities and institutes, and open training courses for managers and employees to enhance their awareness.
5. It is essential for the management of the researched factory to provide metrics suitable for the nature of its activities, allowing them to identify the levels of implementation of reverse logistics activities to manage their operations and enhance competitive advantage.

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