Sustainability and Economic Growth of In-House Units: A Case of Jalandhar's Sports Industry

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ABSTRACT

Jalandhar's sophisticated history with the production of sports goods has earned it a distinct position in the world where traditional practices meet to industrial advancements. Globalization, sustainability, and the growing role of government policies have recently transformed this sector. The aim of this research is to understand the processes through which micro and small scale units of sports goods manufacturers from Jalandhar are adapting to the drastic shifts from global market integration, increased ecological consciousness, and policy frameworks.

As a consequence of globalization, the author seeks to understand the effects it has had on sports goods manufacturing units in houses. With the loosening of trade restrictions, the interrelation of markets and commerce increases, presenting Jalandhar based producers with both new prospects and new challenges. This research explores the degree to which in-house manufacturing units have gained access to international markets, their subsequent changes in export expectations, and how they have dealt with evolving buyer-seller dynamics. Furthermore, it examines the competition that is emerging from outside the country and the need to embrace technological advancements to sustain relevance, operational efficiency, and competitive costs. The results showed that some businesses suffer from the pace of international expectation, while others have been able to use globalization for growth.

The second core objective was to analyze the economic consequences of sustainability approaches on these manufacturing units. This research seeks to understand the extent to which industries are adopting environmentally responsible practices such as energy-efficient operations, green purchasing, waste reduction, and the use of biodegradable packaging. It investigates whether these sustainable initiatives result in cost reduction, profit enhancement, and market differentiation. Furthermore, it examines the understanding and perceptions of these

manufacturers on sustainable development goals as well as their readiness to commit to long-term ecological investments despite fierce market competition. While a number of enterprises acknowledge the importance of integrating sustainability into their business models, the majority point to insufficient funds and poor understanding as the primary reasons stifling widespread adoption.

The central goal focuses on the consideration and evaluation of government policies which aid local manufacturers of sports goods. Fiscal policies, grants, and even policy regulations are pivotal to the growth of small and micro enterprises. This research explores the perceptions, information, and policy impacts of local manufacturers in Jalandhar. Additionally, it analyses the overall effectiveness of these schemes in fostering sustainability and competitiveness. This investigation indicates a structural disparity between the policy

objectives and the policy implementation gaps as perceived by many manufacturers who are unaware or unconsciously hindered by the red tape concerning support.

As a whole, this report addresses the issues of globalization, sustainability, and public policy concerning the sports goods manufacturing industry in Jalandhar. It documents local entrepreneurial responses, delineates the supporting gaps which policymakers need to address, and emphasizes the need for concentrated efforts on education, infrastructural development, and new innovations to achieve sustained growth. Stakeholders in the industry, public officials, and academics who wish to participate in devising a manufacturing environment that is more integrated and responsive to the future can utilize the findings of this study.

CHAPTER 1: INTRODUCTION

India's sporting goods manufacturing industry holds a unique niche as a labor-intensive and export-oriented industry with deep historical roots and a growing globalized presence. Of its key manufacturing hubs, Jalandhar, the city in the state of Punjab, is a pillar of India's sporting economy. With a history spanning a century, Jalandhar has evolved into a specialized industrial cluster renowned for producing cricket bats, footballs, hockey sticks, safety gear, gym equipment, and sports wear in-house. The majority of these in-house units are micro, small, and medium-sized enterprises (MSMEs), reconciling traditional craftsmanship with incremental pockets of modernization to satisfy local as well as global markets (Kaur & Soni, 2019; Sharma et al., 2021).

The significance of Jalandhar in the sports sector became more prominent in the years following the Partition of India in 1947, when the mass migration of skilled artisans from Sialkot, now in Pakistan, to several Indian urban centers, including Meerut and Jalandhar, took place. Over the next few decades, Jalandhar emerged as a self-sustaining production hub, characterized by large numbers of family-owned small-scale units and dependence on local labor as well as semi-mechanized production processes (IBEF, 2024). Such local industrial culture facilitated the development of important areas such as Basti Nau, Basti Sheikh, Basti Guzan, and Nakodar Road, which emerged as areas of concentrated sports goods production.

These local organizations have built a strong supply chain with suppliers, processors, assemblers, and distributors. The local nature of production enables cost control and flexible manufacturing, which has been a major strength of Jalandhar's sports cluster traditionally. Although advanced automation is still in small-scale usage, these organizations have been able to retain their competitive edge with low cost of production and an educated labor force (Gupta & Verma, 2020).

1.1 The Strategic Importance of Jalandhar in India's Sports Sector

Jalandhar has established itself as one of the most influential centers for sports goods manufacturing in India, playing a pivotal role in the country’s emergence as a global supplier of sports equipment. Together with Meerut, Jalandhar accounts for nearly 80% of the total sports goods production in India (SGEPC, 2023). These two cities form the

backbone of India's sports manufacturing clusters, but Jalandhar holds a distinctive advantage in terms of its legacy, export orientation, and networked ecosystem of micro, small, and medium enterprises (MSMEs). Industry estimates indicate the presence of more than 3,000 sports manufacturing units across these regions, with Jalandhar alone being home to over 115 export-oriented firms. These units have not

only contributed to the economic fabric of Punjab but have also propelled India's reputation in the global sporting goods marketplace (Banga et al., 2011).

Jalandhar's sports goods are exported to over 130 countries, including major sporting nations such as the United Kingdom, United States, Germany, France, and Australia. These exports comprise a broad range of products including cricket bats, footballs, hockey sticks, yoga mats, boxing gloves, and fitness gear. The city's manufacturers have secured key certifications and built relationships with globally renowned brands and sporting events, including FIFA and international cricket associations. This has not only enhanced the credibility of the city's manufacturing standards but has also placed Jalandhar firmly on the global map of sports production hubs (IBEF, 2024).

What sets Jalandhar apart is not just its volume of production but the institutional ecosystem that supports its growth. Organizations such as the **Sports Goods Export Promotion Council (SGEPC)** have been instrumental in connecting local manufacturers to international buyers, enabling participation in trade fairs, and assisting with export documentation and compliance. Simultaneously, the **Sports Goods Manufacturers and Exporters Association (SGMEA)** serves as a platform to address both domestic and international challenges faced by manufacturers, offering support in matters related to policy advocacy, legal issues, and trade representation. The **Process-cum-Product Development Centre (PPDC)**, based in Jalandhar, plays a central role in innovation and skill enhancement by facilitating the development of prototypes, testing facilities, and quality assurance systems tailored to the needs of MSMEs.

A significant boost to Jalandhar's cluster competitiveness came from the **UNIDO-supported Cluster Development Programme (CDP)**, implemented between 2002 and 2008. This initiative introduced systematic infrastructure development, modernized production facilities, and promoted the adoption of corporate social responsibility (CSR) practices across the cluster. It also helped improve inter-firm collaboration, reduced duplication of efforts, and encouraged shared services among small-scale manufacturers (SGMEA, n.d.). Notably, the program encouraged cleaner production methods, labor rights compliance, and environmental awareness, which were vital for positioning Jalandhar's products in international markets where sustainability norms are becoming increasingly stringent.

Moreover, the strategic location of Jalandhar, well-connected by road and rail to major trade corridors like Amritsar, Delhi, and Mumbai, facilitates efficient logistics and movement of goods, thereby reducing lead times for export orders. In recent years, the proliferation of e-commerce platforms has further helped Jalandhar's manufacturers tap into direct-to-consumer global markets, bypassing traditional intermediaries. However, the presence of robust institutional support remains a critical factor that enables these smaller units

to compete with larger multinational corporations. Through financial subsidies, skill development programs, and policy guidance, these institutions continue to act as growth enablers.

Thus, the strategic importance of Jalandhar lies not merely in its high output but in its integrated ecosystem of skilled labor, export-ready infrastructure, and industry-specific institutions. These components collectively enable small-scale, in-house units to thrive, scale, and evolve toward global standards. The city exemplifies a rare model where traditional knowledge, modern aspirations, and public-private partnerships converge to create a resilient industrial identity that significantly contributes to both regional economic stability and India's global trade dynamics.

1.2 Diversity of Manufactured Sporting Equipment

India has over 300 types of sports equipment, most of which are produced in Jalandhar clusters. Products range from cricket equipment, footballs, volleyballs, nets, boxing gloves, and yoga mats to other fitness products. Most of them are produced for international brands on Original Equipment Manufacturing (OEM) orders (Punjab Investment Promotion Bureau, 2021). Some local brands also operate that are expanding their presence in local retail outlets and e-commerce platforms.

With the growing need for environment-friendly as well as high-performance equipment, the sector is more in need of adopting modern materials, eco-friendly sourcing techniques, and lean manufacturing techniques (Patel & Mehta, 2022). Experiments with biodegradable packaging materials, PVC-free manufacturing processes, as well as energy-saving models have been undertaken by most.

1.3 Economic Significance and Employment Generation

The sports manufacturing industry is a major contributor to India's Gross Domestic Product (GDP) and foreign trade. The industry generated export earnings of over US$ 523 million during the fiscal year 2023-24 (IBEF, 2024). The industry provides jobs to around 500,000 people, the majority of whom belong to marginalized groups based on manual labor like stitching, carving, painting, and assembly (Tyagi, 2012). In Jalandhar, jobs in the industry are often located in residential-cum-industrial estates, thus supporting entire families for generations.

Additionally, the micro, small, and medium enterprise (MSME) structure offers flexible working hours and home-based work options, mostly for women and the elderly. The socioeconomic integration of the sector makes it not only a source of employment but also a component of social identity for the Jalandhar

communities (Choudhary & Singh, 2020). With proper policy support, the micro-enterprises can be used as models of sustainable and inclusive development.

1.3 Economic Significance and Employment Generation

The sports goods manufacturing industry in Jalandhar is not an isolated contributor to India’s exports. Rather, it serves as a substantial engine of local economic activity, employment generation, and industrial growth. This industry, which forms the part of the micro, small, and medium enterprise (MSME) sector, is a hallmark of grassroots entrepreneurial activity in the channels of urban and semi-urban employment. Sports goods export data indicates that India’s sports goods export reached above US$ 523 millin in the fiscal year 2022-23 with Jalandhar being a key player (IBEF, 2024). These figures capture the broad contribution of this economic sector to national foreign trade and, most importantly, mark its emerging status as a linchpin of self-sustaining manufacturing industry within the “Make in India” initiative.

This cluster has had a profound impact on employment. The sports manufacturing industry surrounding Jalandhar is projected to directly and indirectly employ over five hundred thousand people, most of who belong to the weaker sections of society or marginalized groups (Tyagi, 2012). These workers are mainly engaged in basic operations like cutting, molding, stitching, engraving, painting, and assembling. These processes are frequently performed in small shops or domestic work rooms situated in a Zola, Basti Sheikh, Nakodar Road and Basti Nau, where people from the same family work together.

The type of employment created within this cluster demonstrates a remarkable social-industrial balance in which a family-based residence serves as a workplace, ensuring that the craft is passed down through generations. In turn, this creates a system of informal production units that provide work opportunities while enhancing social relationships and the transfer of skills within families and communities. This economic region, as pointed out by Choudhary and Singh

(2020), in combination with the social construction has established a sociological backbone which survives the impact of globalization, changing policies, and volatile markets.

Alongside its customary functions, the structure of the MSME sector in Jalandhar provides flexible and diverse work opportunities for the women and senior citizens. The women are able to engage in income-generating work due to the fact that many stitching and finalization processes are done at home. This has led to an increase in women's economic participation and enhanced households' income levels in resource-poor households. In addition, the informal configuration allows older workers to be active in the workforce without the constraints of formal employment, thus increasing the productive life span of the population.

Alongside this constituent, its socio-economic importance focusing more to inclusive development also strengthens.The focus on small and medium enterprises does not need large scale and greater investment as big corporations do. However, these types of enterprises do require a great deal of attention because there are gaps within the frame of social protection, health safety standards, and equity in wages. To add, many employees do not have insurance or pension. Also, payment differs greatly depending on skill and type of contract. Without filling these gaps, the industry will be unable to provide fulfilling and dignified work for everyone.

The third-party services which accompany the industry are also noteworthy in regard to their economic significance. These include packaging companies, transportation service providers, tool manufacturers, leather and wood processors. All these businesses form a part of the extended ecosystem that benefits from the manufacturing activity. The primary constituents not only provide business opportunities to these secondary sectors, but also afford further employment in the form of tax payments to the local and regional authorities.

There is significant scope for further development on employment and economy aspects of the sector with appropriate policy measures like cluster-based funding schemes, labor welfare, and skill development initiatives. Through and integrated sports manufacturing workshops in Jalandhar is an outstanding example – an illustration that micro-industrial self-reliant development embedded in social fabric can serve as a springboard for global exportation.

1.4 Obstacles of Structures and Hurdles of Sustainability

While remembering the past and considering the economical associations and diversity of products offered in Jaladhar's sports manufacturing sector, it is however evident that its long term sustainability is of concern due to its structural hurdles. The city's position as a manufacturing behemoth in India's MSME landscape is accompanied by a multitude of internal and external difficulties that retard modernization, global competitiveness, and adaptability to ever growing sustainability standards. Some of the most critical barriers include technological gaps, poor digital infrastructure, restricted formal credit access, and very low international environmentally relevant norm mediation compliance (Rana & Kapoor, 2021).

A significant number of in-house manufacturing units still rely on obsolete tools and operate with a significant manually controlled components chronologically. Numerous craftsmen use hand-cutting tools, simple sewing machines, and curing ovens operated with manual temperature controls—tools with very limited scalability, uniformity, and resource effectiveness. These antiquated processes not only decrease output, but they also

increase the amount of waste and energy consumed. In addition, weak digital skills coupled with the almost complete absence of ERP systems or basic ERP inventory systems stifles small firm's capabilities in optimizing processes, controlling inventory, managing supply chains, or agile responding to market changes. As these global handicaps grow, the gap increases between Jalandhar micro, small, and medium enterprises (MSMEs) and the rest of the world (Mukherjee, 2023).

The problem of environmental compliance is yet another overriding challenge. With clientele around the world now paying greater attention to sustainable resource procurement and eco-sensitive manufacturing, the Jalandhar cluster has significant difficulties in obtaining certifications like ISO 14001, REACH, and FSC. Kapoor and Sharma (2022) reported that more than 60% of the units in the city have no formal sustainability certification, the absence of which inhibits access to upscale export markets that require green compliance. The widespread unchecked disposal of chemical-laden adhesives, synthetic dyes, and leather waste is problematic. In addition, these units disorganized coal combustive heating units and poorly insulated lighting emit carbon gases to the atmosphere. All the while, these entities pay little attention to the systematic problem.

Like the production processes, physical logistics, and infrastructure at the Jalandhar cluster are equally divided on these issues. Internally, the lack of road construction, uniform warehousing, and an orderly supplier network results in extra handling charge. This severely compromises the trust Jalandhar has in its export cost–effectiveness. In this semi-structured environment, many local firms only exist in an informal capacity or are underrepresented in partial registration. As Mukherjee (2023) points out, such invisibility to government schemes means little access to subsidized technological refreshment and green spending. Hence, these units are trapped in a vicious cycle of informality and underinvestment without the means to expand or comply with operational mandates.

Another critical constraint is the lack of skilled technical manpower. The region does have an underutilized labor pool, but workers are predominantly unskilled or possess traditional craft skills that do not interface with contemporary machinery or digital tools. There is a notable lack of systematic training, tailored to specific industry clusters. Programs like Skill India and PMKVY are providing some level of basic vocations training, but their impact has not been felt in the sports goods cluster of Jalandhar. Ongoing basic curricula on green manufacturing, energy-efficient tooling, product innovation, and lean production stagnate the transition of these units from basic hostile enterprise to a sustainable enduring enterprise (Sharma et al., 2022).

This gap exists not only in the workforce, but also at the level of business management. The majority of MSME owners do not understand global industry standards, have no access to digital markets, and have limited exposure to funding systems. Thus, their choices are limited and mostly driven by immediate needs. Even well-meaning entrepreneurs require extensive restructuring in order to integrate sustainability into their

business models without directed capacity-building initiatives coupled with technical collaborations with academic or private bodies.

Resolving these structural gaps demands attention to policy implementation, infrastructural investment, skills development, and financial access all at once. The expansion of backward and forward linkages within the cluster, the development of shared service centers, the economization of the certification processes, and the creation of dedicated green manufacturing zones can all contribute to improving the region's enabling environment. Additionally, joint efforts by government bodies, local universities, and global collaborators can help in rooting dynamism and ecological sustainability into the heart of Jalandhar's identity as a sports manufacturing hub.

1.5 Contribution to Sustainability and Global Competitiveness.

Some sports goods manufacturers from Jalandhar have started adopting sustainability-oriented reforms recently, which is surprising given the systemic and infrastructural challenges the region faces. Not only do international buyers impose some compliance requirements, but there is also increasing domestic demand for resource optimization and long-term operational profitability. A number of smaller units have begun implementing solar energy, rainwater harvesting, and waste segregation in an effort to lessen their environmental impact. The adoption of energy-efficient motors in place of traditional diesel-run machinery and the switch from PVC materials to eco-friendly polymers are clear indicators of

progressive change within the cluster (Das & Roy, 2023). Albeit limited in their reach, these initiatives are accompanied by fundamentally shifting intent across the sector.

The underlying cluster paradigm of Jalandhar's manufacturing economy provides a strong leveraging opportunity for sustainability. Given that manufacturers in the region frequently utilize the same suppliers, logistics, and training facilities, there is a clear possibility for collaborative investment in such areas as green technology, waste recycling centers, and even joint sustainability certifications like ISO 14001 and FSC. This collective advantage greatly benefits smaller units that individually would not be able to afford eco-certifications but can obtain them through consortium-based models. The prospects for cooperative contracting, shared procurement, uniform branding, and simplified reporting could dramatically improve the ability of the cluster to comply with global environmental compliance standards.

Global collaboration has been pivotal in this shift. Partnerships with NGOs, Corporate Social Responsibility (CSR) initiatives from international clients, and policy-advising centers have aided numerous enterprises

obtain fair-labor credentials, transition to energy-efficient technologies, and adopt proper waste disposal practices. Such compliance not only improves the social responsibility imaging of these units but also expands premium market access, particularly in Europe and North America where these regions have come to regard sustainable procurement as a prerequisite for long-term supply contracts (Bhatt & Kapoor, 2021). These sustainable achievements are increasingly important in capturing foreign customers, and with Jalandhar meeting these requirements, it prepares itself as a future-ready manufacturing hub.

The COVID-19 pandemic greatly accelerated the adoption of digital channels and revealed many new opportunities for micro-manufacturers. Due to the disruption of traditional trade shows and logistics, numerous businesses from Jalandhar started utilizing online trade fairs, virtual training, and e-commerce portals to showcase their products and interact with customers. This initial step towards digitization not only helped businesses sustain some level of activity during the standstill, but also exposed them to the prospects of direct sales, order fulfillment, and automated inventory management (Verma & Thakur, 2022). In-house units relying heavily on intermediaries or bulk contracts were offered greater competitive and flexible growth opportunities.

Despite such progress, gaps in marketing systems, IT infrastructure, as well as the digital divide pose serious obstacles. This singular shift has not benefitted all companies equally. Further investment in advanced digital systems, cybersecurity, and employee training is crucial for sustaining momentum. E-commerce can further enhance Jalandhar's competitiveness in the global sports goods market by integrating eco-friendly initiatives such as supply chain transparency, carbon footprint monitoring, and instant customer feedback systems.

The sports equipment industry in Jalandhar epitomizes the kind of industrial ecosystems, which, although preformed, have potential to be global, sustaining both local heritage and global impact. This chapter illustrated how a cluster of micro and small enterprises matured into a sophisticated manufacturing system, which, on one hand, powers the Indian economy with exports and, on the other, sustains thousands of jobs. The rich geographical setting, path-dependent history, and the related institutional milieu enabled specialization in greater assortment of sports goods in the region for both local and overseas markets.

Even with such opportunities, the industry suffers from a myriad of structural deficits like old machinery, lack of formality, informal structures, poor financing, and international quality and sustainability standards. Not having strong digital presence and absence of motivation along with skilled labor being quite low limit pushed many of such companies to grow aggressively. Nonetheless, other factors which include the use of clean technologies, digitization, even globally, have begun altering the industrial face of Jalandhar.

With directed assistance from government policy, educational collaborations, and industrial networks, Jalandhar's sports cluster has the capacity to transform into a world-class exemplar of sustainable, MSME-driven manufacturing. The following chapters of this study will analyze the interactions between the sustainability activities and the economic impacts within these in-house units, the growth trajectories under different policy frameworks, and the impact of digital adoption on market access and competition in the context of agile international trade shifts.

CHAPTER 2: LITERATURE REVIEW

The viability and growth prospects of in-house manufacturing units in Jalandhar's sporting sector have attracted greater attention due to international environmental issues and competitive trade patterns. Literature indicates that these micro and small enterprises are characterized by a high degree of labor intensiveness, operate with thin profit margins, and are often constrained by results of outdated practices as well as regulatory uncertainties. As per Kaur and Soni (2019), the sports goods sector in Punjab has been severely impacted by problems of an insufficiency of skilled labor, increasing raw material prices, and an endemic shortage of knowledge regarding government schemes aimed at promoting modernization. These results, derived through constraint analysis and Garrett Ranking methods, reflect wider trends reported in micro, small, and medium-sized enterprises (MSMEs) in India. Furthermore, Srivastava and Bhargava (n.d.) contend that many MSMEs suffer from problems arising from inadequate financial support, poor adoption of technical know-how, and the lack of systematic entrepreneurship development programs. In the sports goods clusters, Jhamb (2016) highlights the demand for government-supported infrastructure, facilities for access to modern tools, and the development of local human capital as key factors towards enhanced sustainability outcomes.

The long-term sustainability and profitability of business firms are inextricably linked to India's sports manufacturing clusters' global positioning. Empirical evidence by Gola et al. (2014) indicates that mega sporting events such as the IPL have caused short-term production surges; however, long-term development necessitates the implementation of sustainable global trade practices. Kaur and Soni (2019) indicate a trend where numerous enterprises in Jalandhar are shifting towards trading activities instead of manufacturing expansion, which shows a trend of survival-level adjustments instead of strategic expansion. Likewise, the report of Saengchai et al. (2019) in Thai small and medium-sized enterprises highlighted that the lack of frequent government-backed incentives discourages the capability of small industries to invest in energy-saving technology and process automation, which eventually leads to stagnation. This is particularly true for the in-house units in Jalandhar, which are still heavily dependent on manual labor and rudimentary machinery. Moreover, the dynamics of global competition as well as fluctuating export policies exert pressure on pricing mechanisms, thereby discouraging investments in sustainable materials or technological upgradation, a concern addressed similarly by Mukherjee et al. (2010).

The historical development of Jalandhar's industrial profile—specifically with regard to post-partition migration and the emergence of artisanal agglomerations—gives further context to its modern-day issues. Chattha (2016) compares Jalandhar to Sialkot as similar artisanal towns, speculating that development policies pay scant regard to differences in regional growth drivers such as supply chains, traditional skill, and cultural norms. Likewise, Tyagi (2012) identifies growing pressures from international regulatory bodies such as FIFA

and ILO, calling for compliance with corporate social responsibility (CSR) and labor norms. Jalandhar's small and medium enterprises (SMEs), particularly those producing cricket bats and leather products, face growing threats of being cut off from international supply chains because of issues around child labor and environmental non-compliance. Mukherjee et al. (2010) contend that, whereas policy reforms have been aimed at building the sports retailing industry, they fall short of attending to the structural vulnerabilities that affect manufacturers directly—such as the high cost of inputs, the threat of cheaper imports, and volatility in demand.

Corporate social responsibility (CSR), labor management, and stakeholder inclusivity are now core elements within the discourse of sustainable development in manufacturing clusters. Tyagi (2021) hypothesizes that SME managers in

Meerut, and thus in Jalandhar, are more interested in customer satisfaction than in employee welfare and environmental safety, leading to ongoing conflict and high turnover. Das and Kalita (2009), drawing from firm-level surveys, indicate that infrastructure shortages and the lack of continuous upskilling remain principal growth restraints in labor-intensive sectors like sports manufacturing. These are compounded further by the low degree of financial literacy among unit owners, who fail to appropriately leverage government schemes. Moreover, most companies are unaware of their environmental responsibility and how incorporating CSR can open premium international markets (Vij et al., 2010). These observations create an urgent imperative for stakeholder mapping and inclusive approaches capable of balancing short-term survival with long-term sustainability goals.

Digitization, innovation, and finance remain variables influencing Jalandhar sports SMEs' ability to digitalize and innovate. Lakkhongkha et al. (2023) propose cost leadership and technology adoption-driven models of SME evolution with a key focus on policy-driven systematic intervention fostering innovation. Lednev and Solntsev (2021) too identify the role of entrepreneurship and innovation in acquiring a greater degree of significance globallyactively invest in new product development, digital platforms, and differentiated branding to remain competitive. In the context of Jalandhar, however, the lack of access to formal financial institutions has often been cited as a significant obstacle. Gola et al. (2015) found that sports SMEs in similar clusters heavily rely on informal credit systems and local committees due to high collateral demands and a perception of risk by formal banks. This reliance inhibits their ability to scale or invest in sustainability-enhancing technologies. Furthermore, Rao (2020) emphasizes that generic financial practices, which may work for broader industries, fail to address the material volatility and seasonality-specific revenue patterns of sports goods manufacturing units. This underscores the need for tailored financial instruments and cluster-specific credit assessment models.

From a policy and institutional standpoint, the impact of post-2006 MSME policies in Jalandhar has been uneven. Alanka (2020) critiques the over-reliance on quantitative metrics such as business registration numbers without examining actual business health or survival rates. For sports goods producers, raw material price fluctuations and unanticipated regulatory shifts—like GST—have severely impacted operational margins. Similarly, Khara and Dogra (2009) identified the top three export constraints as financial limitations, outdated technology, and skilled labor shortages—challenges that have only deepened in the wake of global crises such as the COVID-19 pandemic. The lack of real-time industry data, sector-specific handholding, and agile trade policy adjustments are compounding barriers that prevent Jalandhar’s SMEs from responding effectively to global market shifts.

Comparative literature from other clusters like Sialkot (Pakistan) and Kashmir offers valuable contextual insights. Thomsen and Nadvi (2009) show how differing approaches to CSR and government intervention affect cluster integration into global value chains. While Sialkot has successfully adopted decentralized quality compliance systems to meet FIFA and other international standards, Jalandhar still lacks a unified regulatory approach that bridges traditional processes with global mandates. Similarly, Butt and Wani (2018) study Kashmir's cricket bat industry, pointing out constraints such as access to specific willow varieties and artisanal capacity, which mirror Jalandhar’s raw material dependency and process bottlenecks. Yet, Kashmir’s issues are more resource-based, whereas Jalandhar’s are systemic—requiring institutional upgrades and ecosystem-wide transformation.

Lastly, the question of aligning local values and traditions with global standards remains central to Jalandhar’s sustainability transition. Knorringa and Nadvi (2014) introduce the concept of "local social contracts," arguing that SMEs operate within unique informal institutions that must be understood before introducing global frameworks. Applying this to Jalandhar, it becomes evident that the push toward ethical sourcing, labor transparency, and green manufacturing must be tailored to local practices and constraints. Akram and Khan (2021) show how Sialkot's success in global sports goods markets is based not only on skilled labor and technology but also on education, policy coherence, and export support. Jalandhar, though rich in tradition and human capital, continues to grapple with fragmented implementation, overlapping governance, and sporadic innovation.

CHAPTER 3: RESEARCH GAP AND OBJECTIVES

3.1 Research Gap

India’s sports goods industry witnessed an evolutionary shift in the past two decades because of better global connectivity, technological advancement, and policy changes. From a policy perspective, macro level analyses cover India's sports exports and associated policies, but the intricate systems of in-house manufacturing units in Jalandhar are eilent." Cricket bats, footballs, and protective gear have dominated Jalandhar’s sports equipment production and export subsector, but the region's position in the global trade constellation is absent from the literature. Andreff & Andreff (2009) and Banga et al. (2011) study export orientation within Punjab, but do not disentangle Jalandhar’s unique set of issues as a culturally condensed industrial district.

Additionally, scholarly work has been insufficient regarding the sustainability aspects of these micro and small in-house units, especially in relation to resource input, the environment, and waste management. While national analyses such as Kumar, Suhaib & Asjad (2021) explore the sustainability focus within India’s manufacturing industries, the distinct eco-environmental concerns of Jalandhar’s sports goods manufacturers are still largely ignored by scholars. Issues like sustainable production, including energy and water consumption, as well as integrating biodegradable materials into packaging, are essential for maintaining a market edge, especially in regions like the European Union, where these standards are fast becoming obligatory.

Moreover, the impact of international competitiveness and emerging technologies on the adaptability of in-house units has also received limited attention. Understanding how these small informal units are adapting to increasing global standards for product traceability, automated digital sales, and advanced electronics is lacking. New avenues resulting from the e-commerce boom, digital marketing, and remote supply chain management create opportunities, but also pose challenges, especially for under-resourced manufacturers who do not have the experience or skills to navigate the digital landscape.

Along with structural and technological disparities, there seems to be a gap in government policy evaluations concerning Jalandhar’s micro-manufacturers. Policies such as “Make in India,” facilitations of credit to MSME’s, and scope of exports at the state level are presumably intended to aid clusters like Jalandhar. Still, how these policies are accessed, regarded, or enacted in this particular area is sparse in literature. Some scholars like Alankar (2022) have discussed MSME support in the broader context of Punjab, but there is scant information on Jalandar's small scale sports goods manufacturers and the reasons for lagging policy absorption.

Thus, this analysis highlights an under-researched issue of policy and comprehensive understanding of how in-house units in Jalandhar manage a balance between sustainability, profitability, and the complexities of globalization. The absence of disaggregated data, policy feedback, and sustainability indicators makes it difficult to design adequate proactive strategies for this sector.

3.2 Research Objectives

To address the stated gaps in research, this study will analyze the in-house sports goods manufacturing industry in Jalandhar through the prism of sustainability, economic opportunity, and international competitiveness. The following objectives shall direct the research:

1) **To analyze the impact of globalization on in-house sports goods manufacturing units in Jalandhar.**

This encompasses studying new possibilities in international trade, analyzing how exports are in demand, the cost competitiveness, as well as how small scale industries are coping with changes in buyer relationships, competition, and digital transformation.

2) **To understand the impact of sustainability practices on the economy of micro and small manufacturing units in Jalandhar.**

This is directed towards understanding how these manufacturers are incorporating sustainable practices such as green procurement, energy-efficient processes, waste minimization, and escalation of ecological concerns vis-à-vis their profitability, market accessibility, and business relocation in the backdrop of fierce competition.

3) To evaluate the relevance and utilization of government policies for local sports goods manufacturers in Jalandhar.

The research is aimed at determining the degree to which government programs such as MSME credit lines, sustainability subsidies, and export promotion schemes are known, utilized, and their effectiveness tailored to the circumstances of the formal and semi-formal units within the cluster.

CHAPTER 4: RESEARCH METHODOLOGY

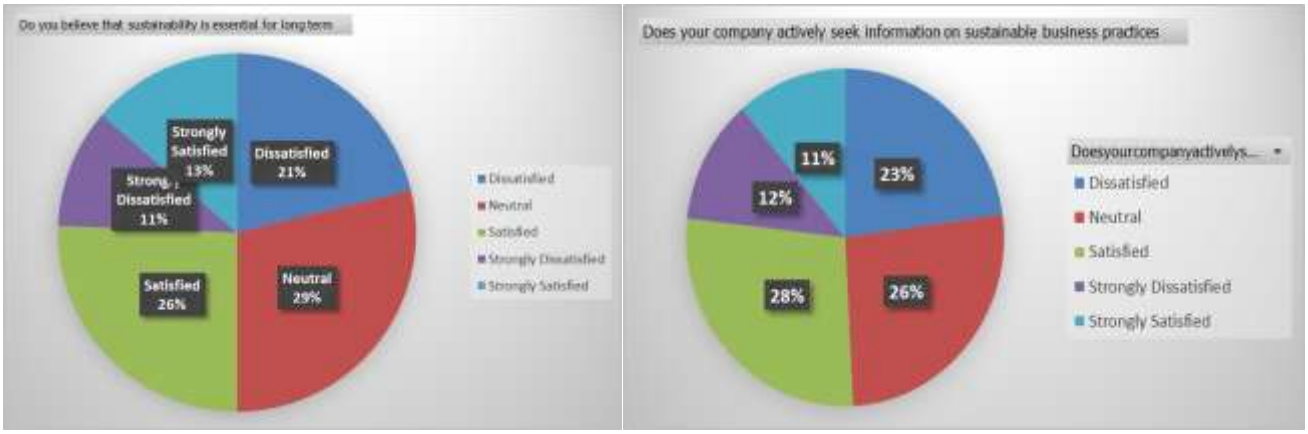
This chapter explains the operational challenges as well as the sustainability framework issues pertaining to in-house sports goods manufacturing units located in Jalandhar. To achieve the objectives of this research study, a quantitative approach was employed along with statistical methods such as SPSS and Excel Pivot Tables for the analysis of data sourced from relevant stakeholders within the industry. In this methodology chapter, we further outline the research framework, the research design, the procedures involved in collecting the data, sample selection criteria, the analytic tools, and the rationale for the decisions taken.

4.1 Research Design

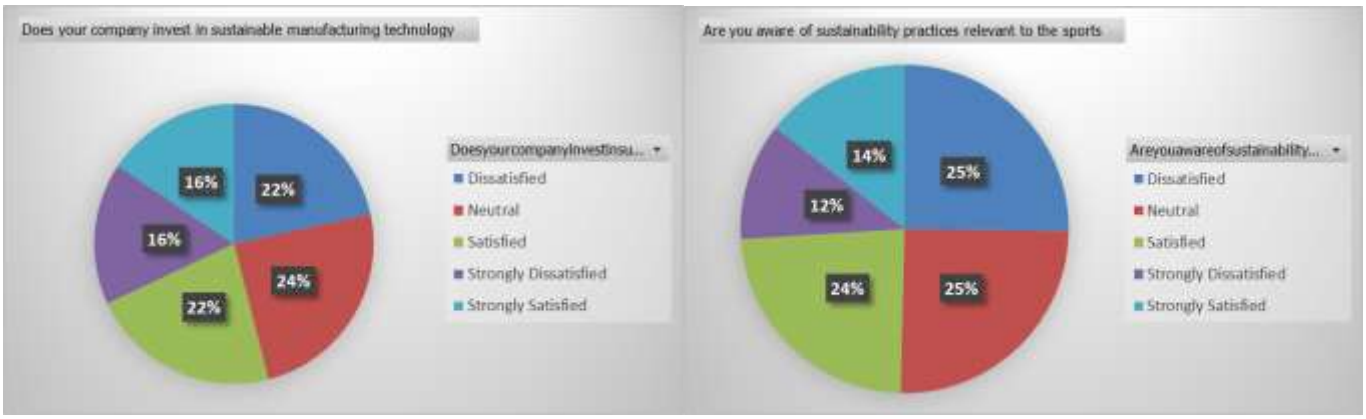
This study uses a descriptive-analytical design to analyze the sustainability practice adoption levels, the financial health, and the policy engagement theater of Jalandhar's in-house sports goods manufacturing sector. There is one time point collection to evaluate the post COVID-19 pandemic landscape and its interplay with growth, digital, and environmental responsiveness. We can examine how strong or weak relationships exist between sustainability policy frameworks and awareness with respect to export performance, policy available, and financial access.

4.1.1 Data Collection Method

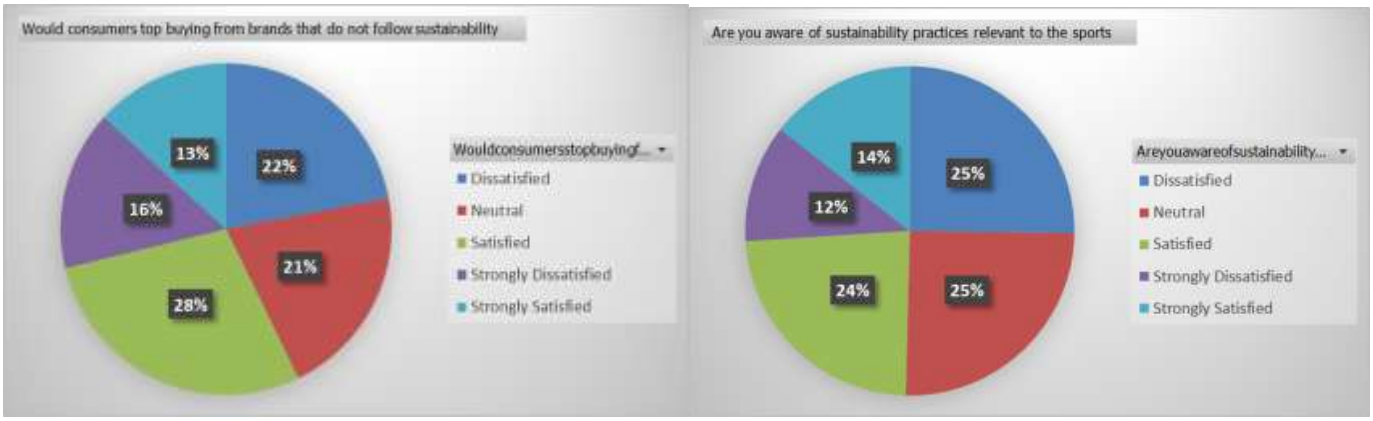
The study relies on primary data sources

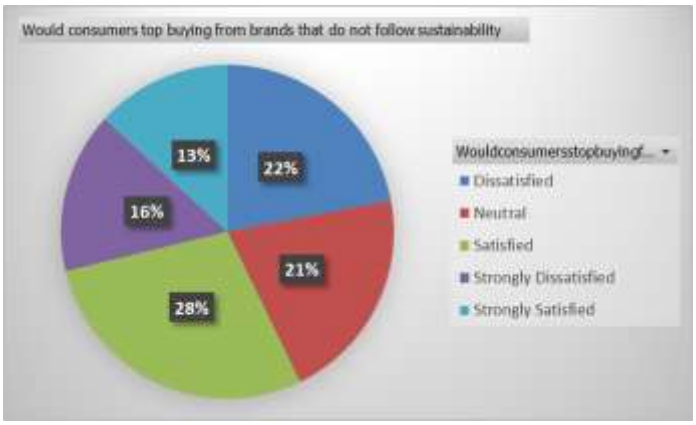


Primary Data: Collected through a structured questionnaire**,** designed to assess the perspectives of business, owners, managers, and key stakeholders regarding sustainability practices and their economic impact.



4.2 Data Collection





A focus on primary and secondary research approaches served to structure the data collection process.

4.2.1 Primary Data

Primary data was gathered through a tailored questionnaire aimed toward understanding the production processes, the environmental practices, financial drivers, level of digital adoption, and the effects of government policy. It also incorporated closed-ended questions, ranking scales, and Likert-type responses along with a mix of scales to ensure standardization for statistical purposes. The survey targeted owners,

managers, and other key decision-makers from SMEs situated within Jalandhar's sports manufacturing enterprise zones, particularly Football Chowk, Basti Nau, Nakodar Road, and Basti Sheikh.

4.3 Sampling Techniques

A respondent was selected based on described operational requirements with direct involvement within the strategic and operational activities for policy in-house competing sustainable responses on the policies from a manufacturing planning perspective as the two views were the most relevant for the objectives of the work.

4.3.1 Target Population

The target population included the manufacturers of cricket gear and footballs, athletic apparel, and fitness equipment, along with their respective business unit heads, shop-level managers, and other relevant strategic-level employees. All respondents belonged to operational business units based in Jalandhar.

4.3.2 Sample Size

From the various micro and small scale manufacturing units, 100 responses were obtained. The respondents participated from major production clusters including traditional as well as semi-mechanized units from the region.

4.4 Data Analysis Techniques

The information collected from the survey was analyzed with the help of SPSS and Microsoft Excel Pivot Tables. The survey's broader objectives were achieved with each variable and its interrelation through varying statistical methods.

4.4.1 Descriptive Statistics

The following basic demographic and business profile information is presented.

- Role in the company
- Year you spend in this company
- Size of the Company

were represented in graphs and tables. Moreover, pivot tables were created to depict frequency distribution along with percentage distribution of different cut-off levels.

4.4.2 Regression Analysis

To evaluate the aforementioned factors' impact on business performance, regression models were developed using business performance indicators as primary metrics. Independent indicators included green materials utilization, advanced waste management sytems, and export dependency, while dependent indicators were business growth and profitability.

4.4.3 Chi-Square Test

To assess digital transformation's impact on competitiveness, we evaluated how the adoption of digital tools (for example, e-commerce platforms and ERP systems), was perceived to inform business viability by testing underlying digital transformation hypotheses with the chi-square method.

4.5 Research Tools and Software

- SPSS: Was utilized for the quantitative computation of regression, descriptive stats, and chi-square tests.
- Google Forms: Was utilized to distribute the survey electronically and collect structured responses.

- Microsoft Excel: Was utilized to streamline the preliminary cleaning processes, categorization, and visualization of the data through pivot tables.
- Microsoft Word: Was utilized for documentation and interpretation of findings as well as the compilation of the reports.

4.6 Ethical Considerations

This study followed the ethical principles of privacy, confidentiality, voluntary participation, and informed consent. Each respondent was thoroughly briefed on the objective of the study, how their data would contribute, and what the potential benefits are. Anonymity was preserved by the removal of personal identifiers, while confidential responses were kept securely for academic assessment in vaults devoid of access control systems.

4.7 Fieldwork Notes

The data collection process was carried out both in-person and virtually, giving the research team the opportunity to meet personally with the respondents from the key manufacturing areas within Jalandhar. Some informal interviews were also carried out with selected unit owners to cross-check the questionnaire responses alongside capturing hatchback nuances that standard techniques might overlook.

CHAPTER 5: RESULTS AND DISCUSSION

5.1. Descriptive Statistics

Descriptive statistics provide an overview of the dataset, summarizing responses regarding company demographics, sustainability practices, economic benefits, and industry perceptions**.**

5.2.1 Demographic Characteristics of Respondents

Table 4.1 summarizes the key demographic details of the respondents, including their roles in the company, years of operation, and company size.

Table 5.1: Demographic Characteristics of Respondents

What is your role in the company?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employee	70	28.0	28.0	28.0
	Manager	119	47.6	47.6	75.6
	Owner	61	24.4	24.4	100.0
	Total	250	100.0	100.0	

How many years has your company been operating?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10-15 years	84	33.6	33.6	33.6
	5-10 years	74	29.6	29.6	63.2
	Less than 5 years	46	18.4	18.4	81.6
	More than 15 years	46	18.4	18.4	100.0

Total	250	100.0	100.0	

What is the size of your company?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Large (More than 250 employees)	66	26.4	26.4	26.4
	Medium (50-250 employees)	118	47.2	47.2	73.6
	Small (Less than 50 employees)	66	26.4	26.4	100.0
	Total	250	100.0	100.0	

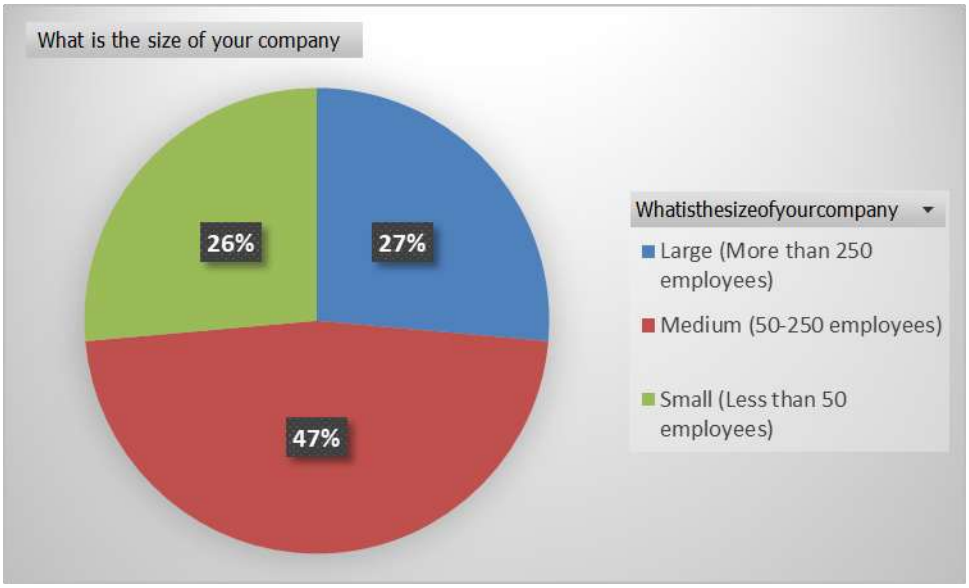


Figure 5.1: Company Size Distribution

The distribution of roles within the company shows that the majority of respondents are managers (47.6%), followed by employees (28%) and owners (24.4%). This indicates that most of the survey participants hold decision-making or supervisory positions within their organizations, which is beneficial for understanding strategic perspectives on sustainability. The significant representation of managers suggests that the responses reflect insights from individuals involved in policy implementation and business operations.

Regarding company age, the majority of firms have been operating for 10-15 years (33.6%), followed by those in the 5-10 year range (29.6%). A smaller proportion consists of companies that have been in business for less than 5 years (18.4%) or more than 15 years (18.4%). This distribution suggests a mix of both relatively new and well-established businesses in Jalandhar's sports manufacturing sector. The higher percentage of firms in the 5-15 year range indicates a relatively stable industry with a good number of companies having gained sufficient operational experience.

In terms of company size**,** a substantial proportion of the firms fall into the medium-sized category (50-250 employees) at 47.2%**,** while large firms (more than 250 employees) and small firms (less than 50 employees) each make up 26.4% of the sample**.** This suggests that Jalandhar's sports manufacturing sector is dominated by medium-sized enterprises**,** which play a crucial role in balancing both local and international market demands. The presence of large companies indicates that some firms have scaled significantly, while the small company representation highlights that startups and smaller manufacturers are also contributing to the sector.

Overall, these findings provide valuable insights into the structure of Jalandhar's sports industry, ensuring that perspectives from different company sizes and levels of experience are incorporated into the analysis of sustainability practices.

5.2.2 Adoption of Sustainability Practices

Table 4.2 presents details on whether companies have implemented sustainability practices and their awareness regarding sustainability in the sports manufacturing industry.

Table 5.2: Adoption and Awareness of Sustainability Practices

Has your company conducted any sustainability-related training or workshops?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	60	24.0	24.0	24.0
	Neutral	62	24.8	24.8	48.8
	Satisfied	64	25.6	25.6	74.4
	Strongly Dissatisfied	35	14.0	14.0	88.4
	Strongly Satisfied	29	11.6	11.6	100.0
	Total	250	100.0	100.0	

Are you aware of sustainability practices relevant to the sports manufacturing industry?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	63	25.2	25.2	25.2
	Neutral	63	25.2	25.2	50.4
	Satisfied	59	23.6	23.6	74.0
	Strongly Dissatisfied	29	11.6	11.6	85.6
	Strongly Satisfied	36	14.4	14.4	100.0
	Total	250	100.0	100.0	

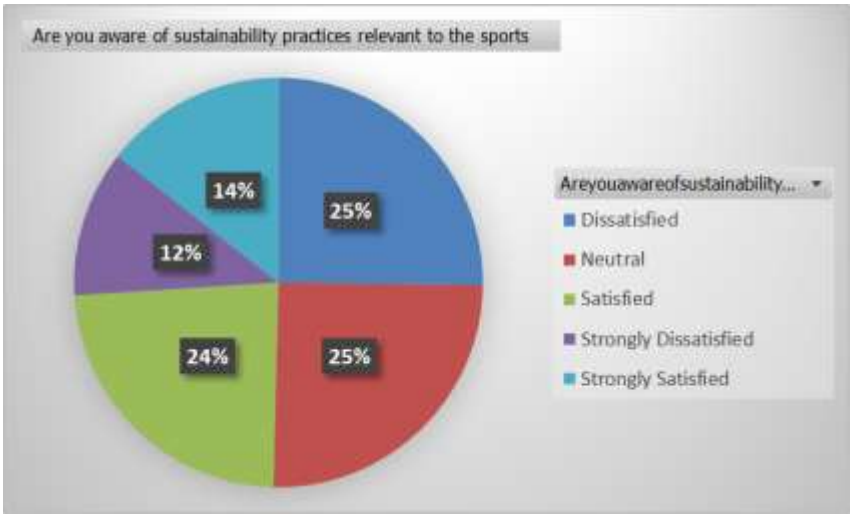


Figure 5.2: Awareness of Sustainability in the Sports Industry

The findings on sustainability-related training or workshops indicate a mixed level of engagement within Jalandhar's sports manufacturing sector. A significant portion of respondents expressed neutrality (24.8%) regarding their company's efforts in conducting sustainability-related training, while 25.6% were satisfied and 11.6% were strongly satisfied**.** On the other hand, 24% of respondents were dissatisfied, and 14% were strongly dissatisfied**,** suggesting that a considerable number of employees and managers feel their companies are not doing enough in terms of sustainability training. This indicates a need for increased investment in workforce education on sustainable manufacturing practices. Organizations that actively train their employees in sustainability can benefit from improved efficiency, compliance with regulations, and enhanced corporate reputation.

Regarding awareness of sustainability practices relevant to the sports manufacturing industry**,** the responses again show a diverse range of opinions. 25.2% of respondents were neutral**,** implying that many individuals may have some knowledge of sustainability but lack in-depth understanding. While 23.6% were satisfied and 14.4% were strongly satisfied**,** 25.2% were dissatisfied and 11.6% were strongly dissatisfied**.** These findings highlight that while awareness exists, there is still a significant gap in understanding and implementation of sustainability practices. Companies may need to improve communication and educational efforts to ensure that employees and decision-makers fully grasp the benefits and necessity of sustainable manufacturing.

Overall, the results indicate that while some companies are making efforts toward sustainability training and awareness, there is room for improvement. Implementing structured training programs, industry seminars, and awareness campaigns can enhance knowledge and adoption of sustainable practices, ultimately contributing to long-term environmental and economic benefits.

5.3 Chi-Square Test for Association

Chi-square tests were conducted to examine the relationship between key categorical variables.

5.3.1 Relationship Between Company Size and Sustainability Implementation

A chi-square test was performed to determine whether company size influences the adoption of sustainability practices.

Hypothesis:

- H0: There is no significant association between company size and sustainability adoption.
- H1: There is a significant association between company size and sustainability adoption.

Table 5.3: Chi-Square Test – Company Size vs. Sustainability Implementation

What is the size of your company? * Has your company implemented sustainability practices? Crosstabulation

Count

		Has your company implemented sustainability practices?		
		No	Yes	Total
What is the size of your company?	Large (More than 250 employees)	27	39	66
	Medium (50-250 employees)	67	51	118
	Small (Less than 50 employees)	36	30	66
Total		130	120	250

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.504[a]	2	.105
Likelihood Ratio	4.516	2	.105
N of Valid Cases	250		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 31.68.

The crosstabulation analysis between company size and implementation of sustainability practices reveals interesting insights into sustainability adoption trends across different company sizes. Among large companies (more than 250 employees), 59.1% (39 out of 66) have implemented sustainability practices**,** whereas 40.9% (27 out of 66) have not**.** This suggests that larger firms are more likely to embrace sustainability initiatives, possibly due to greater financial resources, regulatory compliance pressures, and corporate social responsibility commitments.

For medium-sized companies (50-250 employees), the adoption rate is lower, with only 43.2% (51 out of 118) implementing sustainability practices**,** while 56.8% (67 out of 118) have not**.** This indicates that medium-sized firms may face certain challenges, such as cost constraints, lack of technical expertise, or insufficient awareness about sustainable business strategies.

Small businesses **(**less than 50 employees**)** show a similar trend, with only 45.5% (30 out of 66) adopting sustainability practices**,** whereas 54.5% (36 out of 66) have not**.** The lower adoption rate in small firms may

be due to limited resources, lack of formal sustainability policies, and the perception that sustainability initiatives are costly or complex.

Chi-Square Test Analysis

The Pearson Chi-Square value is 4.504 with 2 degrees of freedom and a p-value of 0.105**.** Since the p-value is greater than 0.05**,** we fail to reject the null hypothesis, meaning there is no statistically significant association between company size and sustainability implementation at the 5% significance level. In other words, while larger companies appear to adopt sustainability practices at a higher rate, the relationship between company size and sustainability adoption is not strong enough to be considered statistically significant.

Although the statistical test does not show a strong relationship, the descriptive data suggests that larger firms are more proactive in adopting sustainability initiatives compared to small and medium enterprises (SMEs). This could be due to better financial and organizational capabilities.

To improve sustainability adoption among SMEs, government incentives, financial support, and industry awareness programs could play a crucial role. Smaller firms should also be encouraged to implement cost-effective sustainability measures, such as energy-efficient technologies, waste management strategies, and sustainable sourcing**,** which can enhance long-term profitability and business resilience.

5.4 Regression Analysis

Regression analysis was conducted to examine the impact of sustainability adoption on business efficiency, cost savings, and financial benefits.

5.4.1 Impact of Sustainability Adoption on Cost Efficiency

A regression model was developed with cost efficiency as the dependent variable **and** sustainability adoption and investment in sustainable technology as independent variables**.**

Hypothesis:

- H0: Sustainability adoption does not significantly impact cost efficiency.
- H1: Sustainability adoption significantly impacts cost efficiency.

Table 5.5: Regression Analysis – Impact of Sustainability on Cost Efficiency

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.453	.291		8.424	.000
	Are you aware of sustainability practices relevant to the sports manufacturing industry?	-.002	.060	-.003	-.041	.967
	Has your company received any government incentives for adopting sustainability initiatives?	.017	.061	.018	.282	.778
	Are you aware of government policies promoting sustainability in the sports manufacturing industry?	.048	.059	.052	.821	.412

a. Dependent Variable: Has sustainability adoption improved cost efficiency in your company?

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.51	2.78	2.62	.070	250
Residual	-1.778	2.484	.000	1.260	250
Std. Predicted Value	-1.670	2.191	.000	1.000	250
Std. Residual	-1.403	1.959	.000	.994	250

a. Dependent Variable: Has sustainability adoption improved cost efficiency in your company?

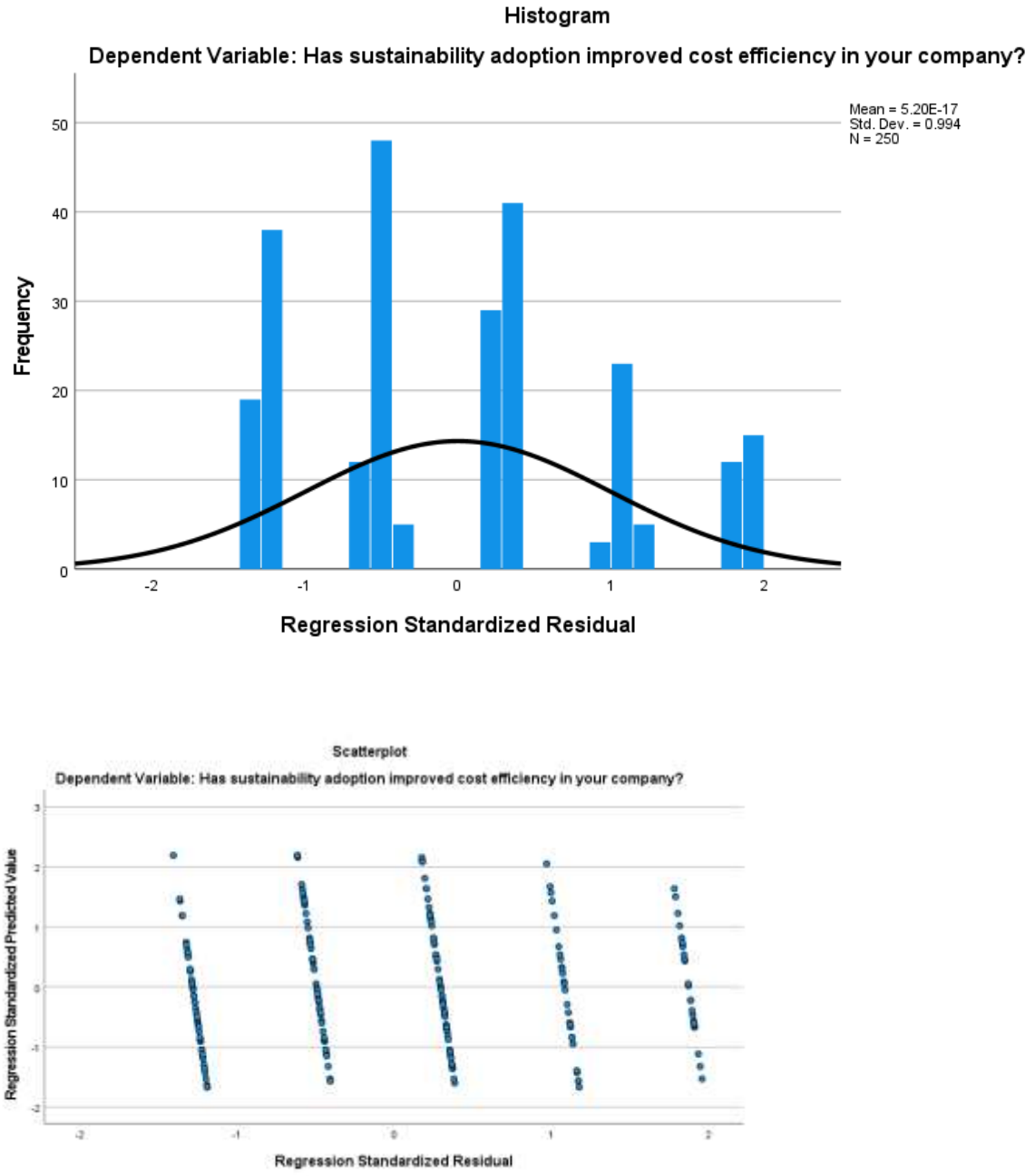


Figure 5.3: Regression Analysis

The coefficients table provides insight into the individual predictors. The constant term (intercept) has a significant positive value of 2.453 (p = 0.000)**,** indicating that even in the absence of the independent variables, the average response regarding cost efficiency improvement remains positive. However, all three predictors—awareness of sustainability practices, receipt of government incentives, and awareness of government policies—show insignificant p-values (0.967, 0.778, and 0.412, respectively)**.** This suggests that none of these factors significantly contribute to the perception that sustainability adoption improves cost efficiency. The beta coefficients are also small, further supporting the lack of a strong relationship between these variables and the dependent variable.

The residual statistics provide further insights into model accuracy. The mean of predicted values is 2.62**,** with a small standard deviation of 0.070**,** indicating little variation in the predicted responses. However, the residuals (differences between actual and predicted values) range widely from -1.778 to 2.484**,** with a standard deviation of 1.260, suggesting that the model does not fit the data well. The standardized residual values also confirm this, as they range from -1.403 to 1.959**,** indicating that the residuals are within acceptable limits but show moderate variability.

Overall, the regression analysis indicates that awareness of sustainability practices, knowledge of government policies, and receipt of government incentives do not significantly impact perceptions of cost efficiency improvements due to sustainability adoption**.** The model's insignificance suggests that other unexplored factors might influence cost efficiency, such as specific sustainability strategies, industry-specific challenges, or operational efficiencies. Future research could incorporate additional variables or refine the model to better capture the relationship between sustainability adoption and cost efficiency.

5.5 Findings and Discussion

The sport manufacturing industry in Jalandhar reveals interesting findings , incuding Demographic analysis which indicates that a significant number of respondents were managers (47.6%) while employees made up 28% and business owners were 24.4%. This demographic breakdown is essential because it shows that a significant proportion of the respondents are at the decision-making level, which lends credence to the answers given in relation to strategies for sustainability and implementation.

When looking at the company size and age, the bulk of the firms belong to the 10-15 years of operation category, which indicates the industry is stable. Most of the firms are medium sized (47.2%) with large and small corporations equally split down the middle at 26.4% each. This balanced distribution is important because it enhances understanding of how businesses of different sizes adopt and view sustainable practices.

With regards to sustainability, the respondents showed moderate engagement. Approximately 37.2% of respondents reported being satisfied or very satisfied with their company's training on sustainability issues, while almost 38% reported being dissatisfied or very dissatisfied. This captures that there is fragmented lack of dedication within the sector towards teaching employees sustainability issues. In the same way, only about a third of the participants reported being dissatisfied or indifferent which shows that gaps are present in the awareness of sustainability. This shows gaps in communication, formal recognition, and skill development concerning the sustainable manufacturing framework.

The analysis of the chi-square on the relationship between company size and the adoption of sustainability practices found no significant statistical relationship ($p = 0.105$). Although there was a greater tendency among larger firms to implement sustainability measures, it was not strong enough to make universal claims across all types of businesses. This argues that the adoption of sustainability within an organization may not simply be a function of the organizational size as other considerations such as the organizational culture, leadership attention, customer demand, or regulatory policies might drive the change.

The regression analysis explored the effects of cost efficiency on the adoption of policies supporting sustainability, but the results indicated that marketers' awareness of sustainable practices, knowledge of government policies, and receipt of government incentives did not significantly influence cost efficiency improvement. The p-value thresholds for each of the independent variables were greater than 0.05, which indicates no statistically significant effect. Additionally, the residual analysis calculated suggested a high degree of prediction error variance, implying that the model omits many important variables relating to the efficiency and cost outcomes.

These results imply that sustainability is an area of concern; however, it appears that its understanding and implementation is piecemeal at best. Training and awareness campaigns, particularly targeting small and medium enterprises, need to be broadened because they often lack the resources or the motivation to implement sustainable practices. Further, the issue of financial performance, particularly cost savings from sustainable practices, may be more dependent on the detailed specific operational policy rather than general awareness or government patronage.

To conclude, the sports equipment manufacturing industry in Jalandhar exhibits increasing recognition of sustainable policies, but action efforts are uneven throughout the sector. Improved Supported developed policies such as government funding, tailored training for the sector, and cross-industry partnerships could promote enhanced practices in sustainable development. Qualitative approaches or further quantitative diversifying focused within the distinct region of sustainability integration should be conducted in follow-up research to better answer the gaps identified within this study.

Chapter 6: Conclusion and Future Scope

6.1 Conclusion

In this research, we examined the sports goods industry in Jalandhar with regard to the adoption and impact of sustainable development policies. By synthesizing data from numerous response patterns at different organizational hierarchy levels, such as business owners and employees, the study achieved an understanding of the systemic gaps along the dimensions of sustainability awareness, training, and implementation.

The demographic distribution data indicates that the most predominant group was managers which raises the likelihood that the data capture the insights of strategic decision makers. The analysis also shows that most organizations were of medium size and had been in business for more than a decade which indicates the presence of an industrial base.

Focus on sustainability is apparent, although implementation throughout the entire sector appears fragmented in some areas. Around one third of participants indicated some level of dissatisfaction with the sustainability awareness and training programs provided. As discussed earlier, at the organizational level, this reflects a major failure in communication and organizational commitment toward sustainable work practices.

As per the results of the chi square test, there was no statistically significant relationship between the company size and the extent of sustainable practices adopted. This suggests that other no organizational scale factors, such as commitment from leadership or demand from customers, might be driving sustainability decisions for the organization.

Regression analysis indicates that awareness, knowledge of government policies, and government incentives cumulatively did not influence cost efficiency. This implies that mere awareness of sustainable practices or external assistance does not guarantee cost advantages. Actual benefits are likely contingent on the effectiveness and the degree of operational integration of the sustainability measures.

In summary, the research suggests that although the sports manufacturing cluster in Jalandhar is beginning to adopt sustainable practices, developing a comprehensive and impactful sustainability framework remains a significant challenge. A blended approach comprising of educational interventions, supportive legislation, and policy/action alignment is critical for advancing genuine sustainable manufacturing.

6.2 Future Scope

This study suggests several possibilities for future research:

1. Qualitative Research: Business executives, sustainability practitioners, and policymakers' insights can be explored through more targeted motivation and barrier-focused interviews.

2. Wider International Scope: Studying other sports manufacturing centers in India or abroad would allow for comparison and best practices identification.

3. Impact Assessments of Policies: Research can be directed toward assessing the impact of certain government policies or schemes designed to enhance sustainability in MSMEs (Micro, Small, and Medium Enterprises).

4. Integration of Technologies: The application of modern technologies, especially IoT, AI, and green manufacturing technologies, could clarify how some innovations assist in achieving sustainable development.

5. Sustainability Strategy: A study on the development of sustainability strategies over several years would be useful in identifying trends, areas of progress, and areas of stagnation.

6. Market Demand: Including consumer perceptions of sustainable practices would demonstrate market demand's impact on corporate decisions in the sports manufacturing industry.

These other studies will enable more effective strategies, policies, and training to be devised for comprehensive sustainable development in sports manufacturing.

Chapter 7: Implication

It is evident that stakeholders in the sports manufacturing sector, specifically in places like Jalandhar, as well as in some other similar industrial clusters in India, face considerable consequences from the findings of the current study. These consequences cover several areas: management, policy, society, and academic study.

7.1 Managerial Implications

In my opinion, this study identifies an emerging gap in the awareness and training concerning the sustainable development issues within several organizations. Entirely new paradigms include creating new avenues for educating employees on principles of sustainability. Forward looking strategic investments in sustainable technologies and training can create an organizational ethos of responsibility, innovation, and compliance with business and societal regulatory frameworks. Moreover, placing such technologies on the sustainable developmental performance appraisal instrument can transform peripheral concern into core organizational decision-making issues.

7.2 Policy Implications

It appears that knowledge of government incentives and policies is not leading to benefits, such as cost savings, in practice. This suggests a reevaluation of the actual implementation of government programs and their communication strategies. Financial incentives should be of easier access, more outreach should happen through industry associations, and steps for coping with sustainable compliance should be clearer and better defined. More specific tailored schemes for MSMEs (Micro, Small and Medium Enterprises) that constitute a large part of Jalandhar’s sports manufacturing industry or region can help foster meaningful adoption.

7.3 Societal Implications

Sustainability in manufacturing practices improves quality of life in local communities through less environmental impact, safer jobs, and resource efficiency. The low satisfaction levels reported by respondents in regard to the

awareness of sustainability issues shows that local authorities in collaboration with educational institutions and community groups need to act. An industry that invests in social responsibility bolsters its

reputation and earns consumer and citizen trust, which contributes to economic and social sustainability in the region in the long run.

7.4 Academic and Research Implications

There appears to be limited academic interest regarding sustainability within the context of sports manufacturing regional value chains. In focusing on overcoming the gaps in scholarly research, this study draws attention to lack of execution despite heightened awareness, and incentive structures that seem to perform far below expectations. Addressing the sustainability gaps is an important first step for scholars concerned with more in-depth causal engagements, inter-sectoral analyses, and the sociopsychological dimensions of sustainability.

7.5 Industrial and Economic Implications

Demonstrable sustainability credentials may enhance market access and overall competitiveness for Jalandhar's manufacturers as global supply chains increasingly seek out socially responsible and sustainable business partners. Aligning with such trends, businesses at the forefront of transitioning to greener practices stand to gain significantly from enhanced export potential, branding opportunities, and reduced operational costs over time. On the other hand, industries that lag in adapting risk out-of-sync evolution with global standards and consumer expectations.

This cross-disciplinary research highlights the importance of the integrated multi-actor approach for comprehensive sustainable development in the context of sports industry manufacturing. Strategically addressing the outlined implications has the potential for stronger environmental responsibility, improved economic performance, and greater industrial ecological resiliency.

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Annexure A

Objective 1: To analyze the impact of globalization on in-house sports goods manufacturing units in Jalandhar.

What is your role in the company?
☐ Owner
☐ Manager
☐ Employee
☐ Consultant
☐ Other (Specify)

How many years has your company been operating?
☐ Less than 5 years
☐ 5-10 years
☐ 10-15 years
☐ 15-20 years
☐ More than 20 years

What is the size of your company?
☐ Micro (Less than 10 employees)
☐ Small (10–50 employees)
☐ Medium (51–250 employees)
☐ Large (251–1000 employees)
☐ Very Large (More than 1000 employees)

Has globalization increased your access to international markets?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Has your company's export demand increased due to globalization?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Has globalization affected your cost competitiveness?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

How well is your company coping with changes in buyer relationships?
☐ Very Well
☐ Well
☐ Neutral
☐ Poorly
☐ Very Poorly

How would you rate the level of competition you face from global players?
☐ Very High
☐ High
☐ Moderate
☐ Low
☐ Very Low

Has digital transformation helped you improve your operational efficiency?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Objective 2: To understand the impact of sustainability practices on the economy of micro and small manufacturing units in Jalandhar.

Has your company implemented sustainability practices?
☐ Yes
☐ No
☐ Planning to
☐ Not sure
☐ Prefer not to say

If yes, which of the following sustainability practices have you adopted? (Select all that apply)
☐ Energy efficiency measures
☐ Waste reduction and recycling
☐ Sustainable sourcing of raw materials
☐ Water conservation practices
☐ Use of eco-friendly packaging

Are you aware of sustainability practices relevant to the sports manufacturing industry?
☐ Strongly Aware
☐ Aware
☐ Neutral
☐ Slightly Aware
☐ Not Aware

Does your company actively seek information on sustainable business practices?

☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Has your company conducted any sustainability-related training or workshops?
☐ Yes, regularly
☐ Occasionally
☐ Planning to
☐ Not yet
☐ No

Do you believe that sustainability is essential for long-term business success?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Does your company prioritize sustainability in its business strategy?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Are employees encouraged to participate in sustainability initiatives?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Has sustainability adoption improved cost efficiency in your company?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Have you noticed significant cost savings due to energy-efficient practices?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree

☐ Strongly Disagree

Has implementing sustainable practices enhanced your company's profitability?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Do sustainability initiatives contribute to reducing raw material costs?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Has your company experienced an increase in customer demand after adopting sustainability measures?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Do you think sustainability gives your company a competitive advantage?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Objective 3: To evaluate the relevance and utilisation of government policies for local sports goods manufacturers in Jalandhar.

Are you aware of government policies promoting sustainability in the sports manufacturing industry?
☐ Strongly Aware
☐ Aware
☐ Neutral
☐ Slightly Aware
☐ Not Aware

Has your company received any government incentives for adopting sustainability initiatives?
☐ Yes, multiple incentives
☐ Yes, limited incentives
☐ Applied, awaiting approval
☐ Not applied
☐ Not aware

Do you think government incentives encourage businesses to adopt sustainable practices?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Do you believe current government policies effectively support sustainability in sports manufacturing SMEs?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Has your company faced challenges in accessing government schemes related to sustainability?
☐ Yes, significant challenges
☐ Yes, some challenges
☐ Neutral
☐ Minor issues
☐ No challenges

Are you satisfied with the level of government support for SMEs in sustainability adoption?
☐ Strongly Satisfied
☐ Satisfied
☐ Neutral
☐ Dissatisfied
☐ Strongly Dissatisfied

Do you think stricter government regulations are necessary to improve sustainability in the sports industry?
☐ Strongly Agree
☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Would you support financial penalties for companies that do not comply with sustainability guidelines?
☐ Strongly Support
☐ Support
☐ Neutral
☐ Oppose
☐ Strongly Oppose

Do you think government-backed training programs on sustainability would benefit your company?

☐ Strongly Agree

☐ Agree
☐ Neutral
☐ Disagree
☐ Strongly Disagree

Would tax benefits for sustainable companies encourage you to adopt more eco-friendly practices?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Do you believe consumers prefer sports products manufactured using sustainable methods?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Has your company experienced increased sales after adopting sustainable manufacturing practices?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Do you think sustainability is an important factor in consumer purchasing decisions?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Are consumers willing to pay more for sustainable sports products?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Do customers inquire about sustainability before purchasing sports products?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Has your company adapted its product designs based on consumer demand for sustainability?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Do you think sustainability gives your company a competitive advantage in the market?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Are marketing campaigns focused on sustainability effective in influencing consumer behavior?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Do you believe sustainability certification (e.g., eco-labels) increases consumer trust in a product?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied

Would consumers stop buying from brands that do not follow sustainable manufacturing practices?

☐ Strongly Satisfied

☐ Satisfied

☐ Neutral

☐ Dissatisfied

☐ Strongly Dissatisfied