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Export Dependence, Policy Challenges, and Digital Adaptation: A Study of Jalandhar's Sports Goods SMEs

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Abstract

Small and medium sports goods firms in Jalandhar drive important economic results for India. The industry now faces multiple challenges that put its financial stability at risk, including market dependence on foreign countries, COVID-19 recovery, international rules and the need to change the business model. Our research studies rank the most critical obstacles faced by small and medium sports goods enterprises in Jalandhar through market research collection. A team studied financial performances at 100 SMEs and tested key relationships using statistical models and calculation methods. High export reliance combined with increases in shipping and material expenses puts serious risks to SME survival. International companies must follow strict workplace and environmental rules, which create financial stress for companies without understanding these policies and proper technical training. Companies using digital tools for business and manufacturing become more sustainable and better connected with their customers. More effective support programs combined with education offer the best way to help small enterprises meet all requirements while adopting digital transformation. Researchers should examine how businesses will keep adapting into the future while examining the benefits government support offers to sustainable growth.

Keywords: Sports Goods Industry, SMEs, Economic Viability, Compliance Challenges, Digital Transformation, Global Market Dependence.

1. Introduction

The Indian sports manufacturing industry is approximately a centenarian and has evolved and sustained because of its strategic human resource. Today, it played an important role in the economy of the country since more than 500,000 people are employed in this branch. The industry is comprised of toys and video game articles, other articles, festive and carnival articles, gymnastic and athletic wears and articles, fishing articles, outdoor and garden products and toys. The major manufacturing centres of the Industry in India are in and around the following cities or Prominent Sports Manufacturing Hubs are Jalandhar, Meerut, Delhi, Mumbai, and Calcutta, out of which Jalandhar and Meerut are the leading cities. These cities contribute about

75-80% to the overall production in the country's food processing industry. Others include Delhi, Mumbai, and Kolkata. Or course, much has changed since the partition of India in 1947 when many skilful mechanics from Sialkot, Pakistan moved to these cities (IBEF, 2024). In Punjab, Sports Goods Manufacturing operations are located in Basti Nau and Basti Danish Mandan. As the business expanded, it now encompasses Nakodar Road, Basti Sheikh Road, Industrial Area, and Sports Complex. The Kapurthala and G.T. roads lead to Amritsar. This industry employs skilled individuals the key parts of the manufacturing and are settled in Bhargav Camp, Gandhi Camp, Basti, Guzan, Basti Sheikh, and Basti Danish Mandan, next to the manufacturing unit. Entrepreneurs are establishing sophisticated units with mechanical production processes Open space with additional space to attain better results (Kaur & Soni, 2019).

1.1 Prominent Jalandhar and Meerut Sports Manufacturing Hubs

The two cluster cities for manufacturing of sports products are Jalandhar and Meerut alone have more than 3000 manufacturing units and 130 exporters comprise of about 82% of total production. Accordingly, at present a majority of the sports and fitness products are produced by small and medium enterprises (SMEs) (IBEF, 2024). Exports have grown in importance within the commercial sector. Many firms have recognized the benefits of undertaking commercial activities outside of their own country. Only a few years ago, industries were mostly national in scope. Currently, a few global firms control them. The current study sought to analyse the export orientation of the sports goods industry in Jalandhar (Punjab), as well as the factors influencing it. To achieve the goals, 30 units exporting sports items were picked from a list of 263 submitted by the Sports items Export Promotion Council (SGEPC) (Banga et al., 2011). This small and medium enterprise (SMEs) with a production experience of more than 120 years has created a niche for itself among the leading sports goods manufacturers in the world. It grew into the prime exporter of sports goods to the international markets including the requirements of some of the leading brands. It is a large exporting cluster with about 115 exporting enterprises who make a direct contribution to sports goods exporting from India. Export figures of the state were recorded to 320 crores in 2000-2001 which was enhanced to 585 crores in 2008-09 and further escalated to 1500 crores in 2016-17. There are another 400 odd enterprises that also serve merchant exports and the domestic Indian market. A sizable number of industry networks and support institutions are found in the cluster. The main ones being are Sports Goods Export Promotion Council (SGEPC) it is Dealing with exports only, Sports Good Manufacturers and Exporters Association (SGMEA) it is Dealing with Manufacturer's problems of domestic and export nature, Sports goods Foundation of India (SGFI) it is Dealing with Child Labor problem only, Institute of Technology (NIT), Punjab Technical University having Degree collages(Polytechnics), Central Leather Research Institute (CLRI), Central Institute of Hand Tools (CIHT) and Process cum Product Development Centre for Sports Goods (PPDC) (Jalandhar and Meerut). UNIDO has worked with the Jalandhar Sports Goods Cluster from 2002 to 2005 under its Cluster Development Programme (CDP), in addition, from May 2005 to December 2008 under in its new global research project of Cluster Development Programme and Corporate Social Responsibility (CSR) (SGMEA, n.d.).

1.2 Types of Sports Products Developed

India manufactures more than 300 sports related goods, such as toys, video game consoles, gymnastic and sportswear goods, fishing articles, and outdoor gamines equipment's (IBEF, 2024). Punjab its self-produce 75% of total sports goods manufactured in India (Punjab Bureau of Investment Promotion, 2021).

1.3 Economic Viability of the Sports Goods Industry

India's sports goods business is a significant part of the Indian economy. This labour-intensive sector employs around 5 lakh people in the country. India's sports items have gained global prominence and have occupied a significant share of the worldwide market. India's indigenous businesses have been exporting over 60 percent of its output and exports were recorded at US $ 232.80 million in the year 2017-18, compared to US $ 224.83 million the year 2019 (Kaur & Soni, 2019). It provides the astonishing fact that the Indian sports'

goods industry is being valued by labour intensity and increasing demand for sports' related products home and abroad. The industry has been experiencing the growth rate of 14.7% exports that evidently define the large market potential for India in the given sector. By the current timeliness, the industry has recorded relatively moderate growth and is estimated that the market will reach US$ 6.6 billion by 2027. This sector also has a very large impact on the nation's Gross Domestic Product, and there are about half-a-million people employed in industry (IBEF, 2024). Economic development relies on small businesses to develop innovative ways to combine price and worth that create both growth and sustainability. Collaboration allows SMEs to acquire scale advantages that maintain their sustainability. European businesses consist mainly of small entities because 93% of enterprises maintain ten employees or fewer and generate two-thirds of employment. The workforce of US Small Medium Enterprises totals approximately 50% while they earn twice as many patents when compared to major corporations per worker. As China's economy expands so do SMEs which produce sixty-five percent of country patents then continue to create eighty percent of their new goods because they keep embracing foreign capital. The fast economic expansion of China and India transforms SMEs into vital sources of growth and innovation throughout the region (Tyagi, 2012).

1.4 Common Challenges Faced by Sports Manufacturing Hubs

The overall scenario of the industry revealed that scarcity of skilled labour was the common problem reported by all types of industrial units. The automation in the sport industry has increased the demand for skilled workforce, which is the most emerging challenge faced by the sports industry. Therefore, the study has suggested that there should be a special training programme to produce trained labour force for industry to cope up with this problem. Extent of competition with alternate products, price fluctuation due to change in demand, taste of consumers (consumer's preferences among various choices of similar sports goods) and unaware of government policies emerged as other major issues of the sports industry in the Punjab state which needs immediate solution for the industry to compete in the global market. The main findings of the study brought to the fore a significant fact that the manufacturing of sports goods is no longer a profitable enterprise, and manufacturers have been either turning their business from manufacturing to trading or have started trading along with manufacturing of sports goods. In general, majority of the sports industries were dealing with more than one sport goods, particularly all traders in the sample were dealing with multiple products. The study also concludes that market share of the sports industries observed to be varied with size of industry. The concentration of sports industries having market share more than 20 per cent was the highest on large farms. The large size industrial units were observed to be more competitive as compared to small and medium size. Moreover, the study highlighted the present scenario of different sizes of sports goods industries in terms of type and scale of business, extent of imports and exports, extent of demand and competition which could be helpful for stakeholders and policy planners on account of sustaining and uplifting the sports industry in the Punjab state (Kaur & Soni, 2019).

1.5 Contribution to the Indian Economy

The industry also plays a great role in the economy of India by providing employment opportunities and through export business. The growth of the global PV industry has been phenomenal, and the industry's contribution to the GDP is significant, the current export is estimated to be US$ 523.24 million during the financial year 2023-24. Sports and Fitness is also the equal part of the industry that helps in improving the health standards of the population as a whole (IBEF, 2024). The sports goods production in Jalandhar serves as a vital economic contributor to the state while earning worldwide recognition for its premium manufacturing patterns. The industry generates substantial employment opportunities since it established itself as a leading exporter and importer worldwide. Jalandhar manufactures premium sports equipment which are exported to 130 international nations and establish 60% of all Indian sports exports. Every year Jalandhar sends popular sports equipment to five major export markets which include footballs, cricket

equipment, hockey gear, the United Kingdom, the United States, Germany, France, and Australia. The sector in Jalandhar has incorporated advanced technological approaches while modifying products while meeting worldwide demands, which has made it into a world-class facility for sports equipment manufacturing. Several problems appear when examining this sector both inside and outside the country (Kaur & Soni, 2019). The cluster model presents substantial advantages across capacity development and skill and technology updating and public-private partnership promotion within projects that support small and medium-sized enterprise (SME) expansion. The practice of clustering functions as a solution that allows SMEs to tackle their growth difficulties when they aim to extend their business reach globally. The realization of these cluster benefits fully depends on the successful cooperation between cluster firms. Industrial clusters grow significantly more rapidly when member businesses share robust networking connections when compared to those clusters with weaker inter-firm relationships. Social networking activities within clusters enable organizations to create synchronized operations which produce more value along the entire value chain beyond what separate businesses could achieve independently. Such clusters demonstrate a workforce behaviour which collectively functions as a single extensive interrelated enterprise. The link between cluster businesses is achieved through the arrange of projects by state agencies along with independent non-profits. The effectiveness of cluster business requires these organization efforts since most cluster-based firms lack competitive abilities. The development of collaborative networks by businesses enables simple data sharing with access to and exchange capabilities which promotes both problem resolution strength and enhanced competitiveness levels. Organizations that stand near each other tend to interact frequently and share information easily. For successful regional business collaboration, the shared meaning between groups and their cultural understanding are essential elements. Clusters function as perfect environments for information flow enhancement through their definition by common goals and mutual trust driven by physical proximity (Jhamb, 2019).

2. Literature Review

2.1 Challenges and Constraints in the Sports Goods Industry

The study titled “Emerging Problems and Challenges for Sports Goods Industry In Punjab: A Constraint Analysis” The researchers used constraint analysis to identify skilled labour shortages along with price volatility and policy unawareness as the primary economic viability challenges before applying Garrett Ranking to determine their order of importance (Kaur & Soni, 2019). “Emerging Challenges of Entrepreneurial Growth in Indian Micro, Small & Medium Enterprises (MSMEs)” By utilizing a descriptive and analytical approach debits that MSMEs were facing various emerging challenges that include financial constraints, lack of technical training, insufficient and entrepreneurship development program to support these MSMEs in overcoming these challenges (Srivastava & Bhargava, n.d.). The literature review made on “Regional Competitiveness of Sports Goods Clusters: A Proposed Conceptual Model” The performance and viability of sports goods SMEs receives substantial enhancement through government support along with access to skilled labour as well as well-developed production infrastructure (Jhamb, 2016).

2.2 Profitability, Growth Trends, and Global Influences

Another study on “Status of Sports Goods Industry in Punjab - An Overview” by structed survey on Industry owner or responsible person and descriptive statistics on the bases of frequency and percentages revealed that the declining profitability has forced Jalandhar’s SMEs to diversify into trading, a trend that underscores their economic precarity (Kaur & Soni, 2019). According to the research made on " Small and medium Sports enterprises – An Engines of Economic Growth with Special Reference to Indian Economy” through secondary research through various secondary data sources demonstrates the sector booming driven by the events like IPL and international championships, the manufacturing competitiveness of SMEs is challenged by the need for investment in technology and systems to absorb global trends (Gola et al., 2014). In the study of “How the adoption of sustainable technology affects the organizational performance of SMEs in Thai

Sports industry" Conducted through Structured questionnaire and analysed structural equation modeling (SEM) using the Partial Least Squares (PLS), Debits that the Government support through special training and incentives will enhance the SMEs specifically, for the industries facing global competitive pressures (Saengchai et al., 2019).

2.3 Historical and Policy Perspective on Industry Growth

Descriptive study on "Artisanal Towns: A Comparative Analysis of Industrial Growth in Sialkot and Jalandhar" According to Naomi Oates any industrial development policies need designers to consider the complex interweaving historical and regional factors determining modern industrial circumstances (Chattha, 2016). "Corporate social responsibility and SMEs: exploratory study on dynamics of corporate and stakeholders perspective in Sports Goods Industry Meerut" focus on Meerut overlooks Jalandhar's SMEs balance CSR cost with competitiveness in a globalized market and embedding compliance with labour and environmental standards into core operation undermines compositeness in global markets like non-adherence to FIFA/ILO norms risks exclusion from international supply chain, a challenge equally relevant to the Jalandhar's SMEs which is dominate cricket bat exports(Tyagi, 2012). The descriptive study made on "Sports Retailing in India: Opportunities, Constraints and Way Forward" The policy needs change would create advantages for Jalandhar's SMEs manufacturing cricket and football products. The retail formats fail to notice the on-the-ground problems faced by SMEs because their costs rise, and they face competition from imported low-priced goods (Mukherjee et al., 2010).

2.4 CSR, Labor Dynamics, and Stakeholders Engagement

The study on "Stakeholder Mapping and Corporate Social Responsibility" A study using structured interviews with Meerut's sports goods SME owners and managers shows that management focuses on customers while neglecting labour conditions and community needs. This finding indicates a parallel pattern at Jalandhar's SME cluster which might intensify economic difficulties due to frequent labour disputes also affecting FIFA labour compliance standards (Tyagi, 2021). Examined the "Do Labor Intensive Industries Generate Employment? Evidence from firm level survey in India" highlights skill shortage and infrastructural shortage as key barriers to the employment in the labour intensive as critical concern for Jalandhar's SMEs, identified through structured interviews with managers/ owners of manufacturing and export-oriented unity and analyses by mixed method approach combination of qualitative insights as well as quantitative ranking challenges (Das & Kalita, 2009).

2.5 Innovation, Digital Transformation, and Entrepreneurship

Study made on "Guidelines for the growth of SMEs in the Thai Sports Industry" explains the growth strategies for SMEs in Thailand sports industry, emphasizing competitive advantages through cost leadership, differentiation, and innovation and their structural equational model (SEM) highlights the management practices and digital adaptation. this study conducted through qualitative interviews to identify the growth factors and followed by group discussion to validate the findings and analysed through structural equational model (SEM) (Lakkhongkha et al., 2023). A Qualitative study made on "Entrepreneurship in sports industry: Direction, innovations and support" outlines the various sectors in the sports entrepreneurship, presents examples of the successful ventures and discussed the current support measures for the small and medium enterprises (SMEs) in sports industry, emphasizing the need for innovative solution and state involvement to future enhance these activities (Lednev & Solntsey, 2021). Study on "Small & Medium Enterprises: Assessing alternative sources of Financing" through questionnaires to SMEs owners/mangers and analysed by Descriptive statics says Meerut's sports goods SMEs reliance on the traditional finance and local committees due to limited access to the formal credit and innovation and scaling is lacking with collateral and high-risk perception by the bank (Gola et al, 2015).

2.6 Marketing Opportunities and CSR Interventions

Descriptive study made on "Sports market in India: an overview" through secondary research reveals that the market growth (CAGR of 806% for 2021-2026) and league-based sports underscores opportunities for Jalandhar's SMEs to expand production (Kumar & Bhalla, 2022). Qualitative research on "Role of SGFI in Empowerment of Children – A Case of Identification and Rehabilitation of Child Labor" through formal report, which is monitored by the manufacturers, debits that Corporate Social Responsibility (CSR) awareness among SMEs, joint effects to fight child labour coupled with enhancing economic opportunities, and strategic issues of SMEs in balancing short term financial constraints with long run sustainability practices in the industry (Vij et al, 2010). Descriptive study made on "Productivity improvement of sports goods industrial cluster in Meerut India" concludes that the Common Facilitation Centre (CFC) can significantly it enhance the efficiency, productivity and profitability of the sports manufacturing industry in Meerut by solving the issues like fragmented clusters, absence of technical knowledge and limited access to funding (Agarwal et al, 2011).

2.7 Policy Impact, Export Barriers, and Financial Practices

"Impact of Policy Regime Post 2006 on MSMEs of Jalandhar District" Their research about policy influences on small business growth in Jalandhar depends too heavily on company registrations and does not consider the unique survival issues faced by sports goods producers from raw material price hikes. The found differences indicate we need to study exactly how industry conditions influence how policies work in different sectors (Alanka, 2020). "Examination of export constraints affecting the export performance of the Indian sports goods industry" depts the export performance of sports goods small and medium enterprises in Punjab suffers from three main challenges: financial problems, technology missing links, and workforce limitations. The study should incorporate current raw material costs driven by COVID since it affects how businesses survive today (Khara & Dogra, 2009). "A Study On Financial Practices and Performance of SMES' With Special Reference to Guntur District, Ap" The findings show that companies should focus on financial methods while also controlling how much they borrow. Their broad methodologies do not address unique financial challenges that sports goods companies in Jalandhar experience including material cost changes through industry-specific guidance (Rao, 2020).

2.8 Comparative Insights from Other Clusters

Looking at businesses in Sialkot and Jalandhar shows how different CSR standards and business management methods affect how small and medium-sized enterprises work with international supply networks. Despite providing insight into Jalandhar's technology issues and leadership problems this study does not measure the costs of regulations or discuss future challenges created by Chinese competition. research needs to discover how business costs for sustainability and technological obstacles combine to hurt sports goods SMEs in Jalandhar (Thomsen, P., & Nadvi, 2009). "Identification and Assessment of Constraints to Growth and Development of Cricket Bat Industry of Kashmir, India" The study finds that Kashmir's cricket bat industry struggles with its need for specific materials and slows improvement of production techniques. Their study matches Jalandhar's sports goods SME problems, but they missed major influences such as export competition and GST compliance that determine Jalandhar's business survival (Butt & Wani, 2018).

2.9 Global Standards and Export Competitiveness

Rising Power clusters work inside institutional frameworks ('social contracts') to determine their approach toward global standards. Since their inclusive study shows how businesses handle local values versus ethical compliance standards, they neglect to examine the distinct industry challenges that affect Jalandhar's sports product business cluster which faces increased pressure from conflicting operational costs and Chinese competition. A localized study must assess how global standards connect with the SME ecosystem of Jalandhar because the current gap exists in this analysis (Knorringa & Nadvi, 2014). The export performance

success of Sialkot's sports goods industry depends on skilled labour together with owner education and policy-backed support. Their PESTLE analysis provides valuable insights into Jalandhar SMEs but fails to recognize Jalandhar trade barriers such as GST requirements and Chinese synthetic material competition which are not relevant in Sialkot. An analysis of economic viability needs to assess global and regional factors together as they meet within specific geographic locations (Akram & Khan, 2021).

3. Research Gap

The Jalandhar based sports goods manufacturing industry is going through several crucial issues like skill labour shortages, price fluctuation and policy unawareness but lacks granularity in addressing contextual factors such as Jalandhar's reliance on global export markets, post-pandemic disruptions (e.g., supply chain instability, reduced demand), and the financial burden of compliance with evolving international labour/environmental standards the analysis does not account for digital transformation (e.g., e-commerce adoption, Industry 4.0 technologies) as a potential mitigator of viability challenges. This research utilizes a combination of methods and places constraints within the socio-economic framework of Jalandhar to address existing knowledge gaps while creating practical strategies for regulatory bodies and increasing academic comprehension about SME sustainability in new industrial clusters.

RQ1: To study the impact of global market dependency and post pandemic disruption on the sustainability of Jalandhar's sports goods SMEs.

RQ2: To study financial and operational impact of policy awareness and compliance with international labour and environmental standards on local SMEs.

RQ3: To study the significance of digital transformation including e-commerce and Industry 4.0, in enhancing the SMEs viability and competitiveness.

3.1 Research Methodology

The analysed sector of SMEs in Jalandhar's sports goods industry was examined using survey-based methods within a combined descriptive analytical research design. Researchers applied a single-time analysis approach to investigate Jalandhar SMEs' present situation after the pandemic occurred. A total of 100 responses collected from SME owners, managers and key decision makers who are directly involved in strategic planning, operations, and compliance decisions of the SMEs in Jalandhar's football chowk & Basti Nau and the collected data was analysed using SPSS and Pivot tables in which various statistical techniques utilized. Primary data was collected by using Purposive sampling technique in which structure questionnaire to get the key aspects of the SMEs operations, financial performance, policy compliance, and digital transformation. The questionnaire contains closed-ended and ranking questions, ensuring consistency in responses. The market analysis and policy implications received support through secondary data obtained from government reports and industry publications and research papers.

The tables served to aggregate demographic information and basic business traits of those responding to the survey. The analysis used pivot tables to examine the total number of items present in the data. Education qualification of interviewees, Type of sports goods produced, Annual turnover (approx.), Years of operation and Export business statues and export revenue percentage. Objective 01 (Impact of global market dependence and post-pandemic disruptions). The independent variable in this analysis comprises supply chain diversification trends and it measures material costs together with shipping expenses while pandemic-related factors represent additional independent variables. Objective -2 (Operational Impact of Compliance Challenges). The study examines how much business operations suffer from delays, cost adjustments and cancelled orders due to compliance problems. Awareness of overseas labour and environmental standards plus certification expenses determine business success along with required expertise and recordkeeping problems. Objective 3 (Digital Transformation and SME Viability). The essential elements for your analysis

should be companies using digital business tools as well as e-commerce platforms and their predictions regarding market competition. SPSS (for data cleaning, regression, chi-square, correlation analysis) Pivot Tables in Excel group and simplify information about business traits. Used Google Forms to Collect Data Plus Conducted Surveys Outside the Internet Documentation. Microsoft Excel used for Preliminary Data Filtering and Pivot Table Analysis, in addition to that Microsoft Word used for Documentation, Interpretation & Report Writing.

4. Findings & Discussions

4.1 Education Qualification:

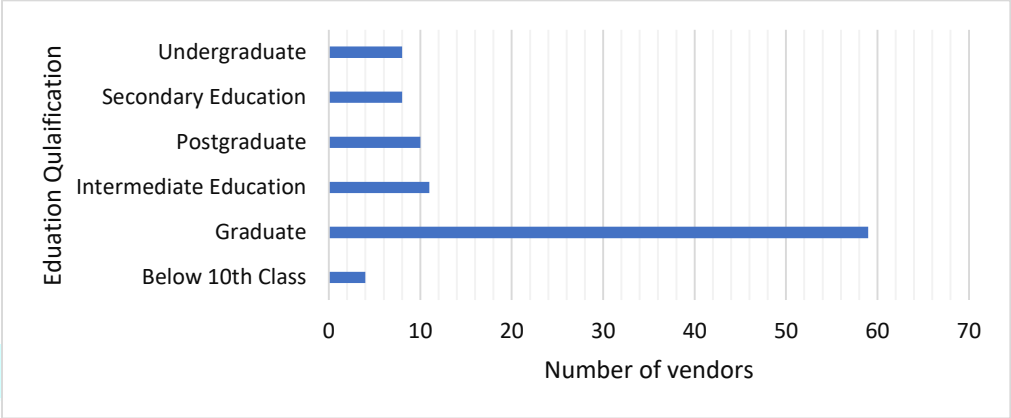

Fig no: 01 - Pivot table of Count of Education qualification of SMEs Respondents

Research participants were business owners and managers who possessed different learning qualifications. A total of 59% of respondents had received their education at the bachelor's level. Next came those who had completed intermediate education (11%) and postgraduate studies (10%). An additional 8% of respondents had finished secondary education and undergraduate studies, and 4% had education below the 10th grade.

4.2. Type of Sports Goods Produced

Sports Goods Produced	Number of SMEs produce
Cricket gear	75
Football	63
Fitness equipment	53
Rugby	30
Hockey	50
Badminton racket with cork	59

Table 02: Type of Sports Goods Produced by SMEs

More than three-quarters of these business entities specialized in making cricket equipment followed by 63% manufacturing footballs. The production of badminton racket with cork (59%), fitness gear (53%), and hockey sticks (50%) made up the next top categories.

4.3 Annual Turnover

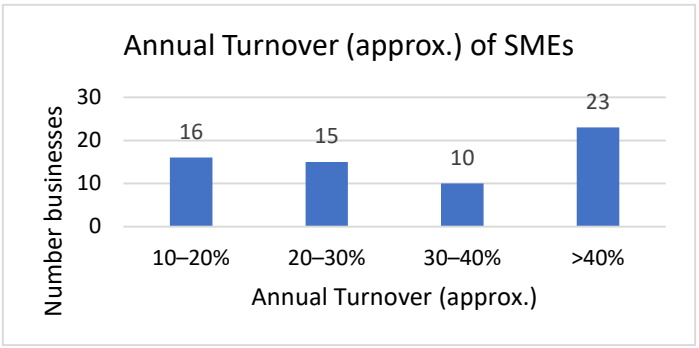

Fig no: 03 - Annual Turnover (approx.) of SMEs

SME organizations were partitioned into five revenue categories for survey purposes. There are 16 businesses fall under ₹5 lakh–₹10 lakh category, ₹10 lakh–₹15 lakh are generated by the 14 businesses, ₹15 lakh–₹20 lakh has been generated by 23 businesses, More than ₹20 lakh of revenue has been generated by 47 businesses, less than ₹5 lakh: 0 businesses, near about 50% of the businesses are generating revenue more than 20 lakhs per year.

4.4 Years of Operations

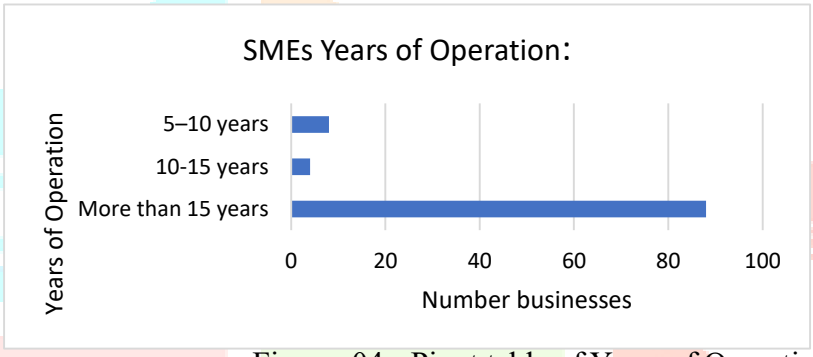

Fig no: 04 - Pivot table of Years of Operation

More than 15 years: 88 businesses, 10–15 years: 4 businesses and, 5–10 years: 8 businesses. It says that the maximum of the SMEs is running since more than 15 years we can consider it as a family-owned business as well.

4.5 Count of SMEs into the export business

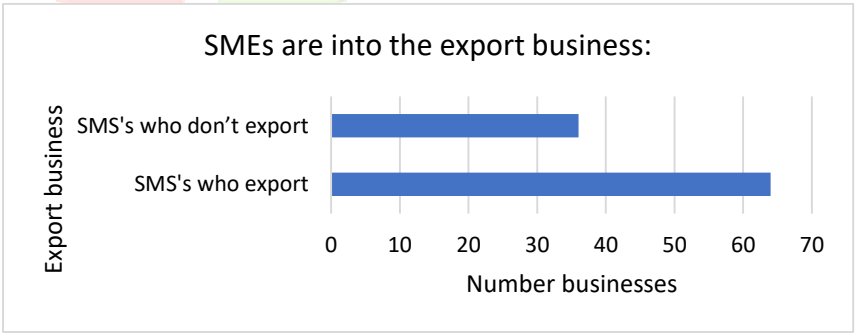

Fig no: 05 - Pivot table of Count of SMEs into the export business

64 SMEs were engaged in exports, while 36 did not export their products. It says that a major proportion of the SMEs currently in Jalandhar are in the export business.

4.6 Percentage of total revenue from export markets

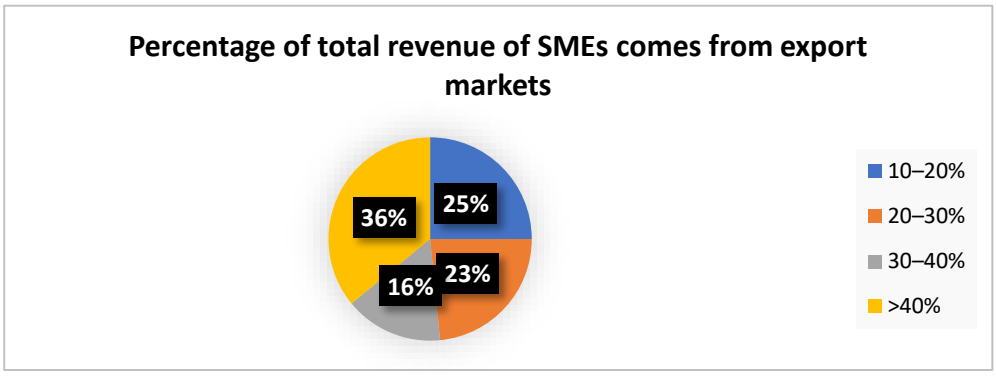

Fig no: 06 - Percentage of total revenue of SMEs comes from export markets

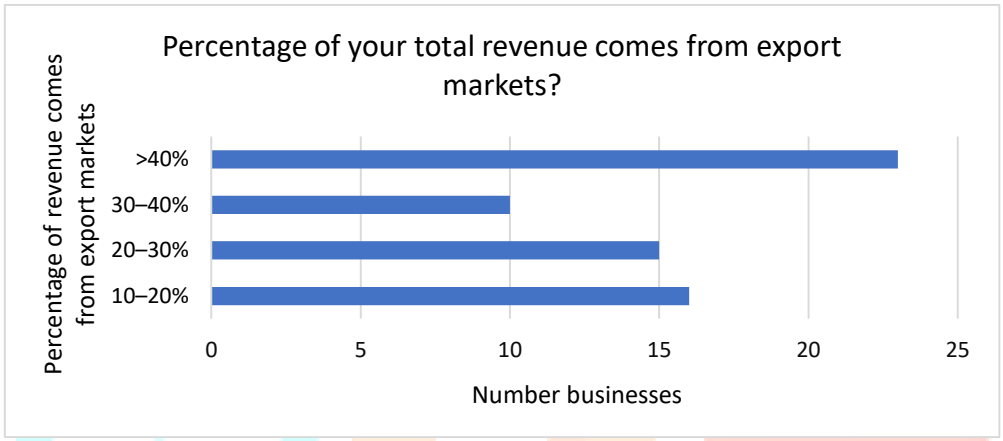

Fig no: 07 - Pivot table of Percentage of total revenue of SMEs comes from export markets

Nearly about a quarter of SMEs generate the revenue more than 40% through exports only

4.7 Impact of global market dependence and Post-Pandemic Disruption

4.7.1 Hypothesis Formulations

Null Hypothesis (H0): There is no statistically significant impact of global market dependence and post-pandemic disruptions on the sustainability of SMEs in Jalandhar's sports goods industry. The challenges arising from international trade reliance and COVID-19-related disruptions do not considerably influence SME operations or financial performance.

Alternative Hypothesis (H1): Global market dependence and post-pandemic disruptions have a statistically significant impact on the sustainability of SMEs in Jalandhar. These external factors adversely affect the financial stability, operational continuity, and long-term viability of the enterprises.

4.7.2 Regression Analysis

A multiple regression analysis examined how SME sustainability as measured by annual turnover/export percentage and their dependency on export markets relates to shipping cost modifications, material costs, supply chain factors, imports of raw materials, and aftermath demand variations.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.589[a]	.347	.305	.937	.347	8.248	6	93	.000	2.547

a. Predictors: (Constant), Has your business diversified its supply chain sources post-pandemic? If 1, how? , Rank the top 3 challenges your business faced due to the COVID-19 pandemic (1 = most severe) [Top-02], Rank the top 3 challenges your business faced due to the COVID-19 pandemic (1 = most severe) [Top-03], Rank the top 3 challenges your business faced due to the COVID-19 pandemic (1 = most severe) [Top-01], How has the cost of raw materials (e.g., rubber, leather, synthetic fabrics) changed since Post Pandemic or Post-Covid? , How severely have shipping/logistics costs impacted your profitability since Post Pandemic or Post Covid?

b. Dependent Variable: Annual Turnover (approx.)

Table no: 06 – Model summary for Impact of global market dependence and Post-Pandemic Disruption.

This table interpretates that the R value (0.589) represents the correlation between the observed and predicted values of SME sustainability (annual turnover). This value indicates a moderate positive relationship, suggesting that as global market dependence and post-pandemic factors evolve, SME sustainability is also significantly affected. However, since the R value is not close to 1, other variables outside the model also influence SME financial performance. The moderate R-value (0.589) says a strong but not absolute relationship between SME sustainability and the factors studied. The R Square value (0.347) means that 34.7% of the variation in SME sustainability can be explained by the independent variables (export dependency, shipping cost modifications, material cost fluctuations, supply chain factors, and post-pandemic demand variations). The 34.7% value of R Square indicates the need to introduce other variables for obtaining a complete comprehension of SME sustainability. The Adjusted R Square measurement exhibits a value of 0.305 that is marginally less than the original R Square value. The findings suggest that independent variables function as solid predictors, but certain factors have minimal effects, so the model needs adjustment through additional influencing variables. The F-statistic (8.248) with a significance value ($p = 0.000$) confirms that the model is statistically significant and the p-value below 0.05 means that at least one of the independent variables has a significant effect on SME sustainability, rejecting the null hypothesis. The results demonstrate global market dependence and pandemic disruptions directly affect small and medium-sized enterprise financial stability because their statistical data achieves significance levels ($p < 0.05$).

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.409	6	7.235	8.248	.000[b]
	Residual	81.581	93	.877		
	Total	124.990	99			

a. Dependent Variable: Annual Turnover (approx.)

b. Predictors: (Constant), Has your business diversified its supply chain sources post-pandemic? If 1, how? , Rank the top 3 challenges your business faced due to the COVID-19

Table no: 07 – ANOVA Test for Impact of global market dependence and Post-Pandemic Disruption

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.587	.738		3.504	.001	1.121	4.054		
	How severely have shipping/logistics costs impacted your profitability since Post Pandemic or Post Covid?	.586	.115	.555	5.112	.000	.358	.814	.596	1.679
	Rank the top 3 challenges your business faced due to the COVID-19 pandemic (1 = most severe) [Top-01]	.211	.097	.215	2.183	.032	.019	.403	.724	1.381
	Rank the top 3 challenges your business faced due to the COVID-19 pandemic (1 = most severe) [Top-02]	-.275	.114	-.254	-2.420	.017	-.501	-.049	.638	1.567
	Rank the top 3 challenges your business faced due to the COVID-19 pandemic (1 = most severe) [Top-03]	.047	.086	.052	.547	.585	-.124	.218	.774	1.292
	How has the cost of raw materials (e.g., rubber, leather, synthetic fabrics) changed since Post Pandemic or Post-Covid?	-.072	.179	-.043	-.403	.688	-.429	.284	.619	1.615
	Has your business diversified its supply chain sources post-pandemic? If 1, how?	.080	.214	.039	.376	.708	-.344	.505	.654	1.529

a. Dependent Variable: Annual Turnover (approx.)

Table no: 08 – Regression coefficient for Impact of global market dependence and Post-Pandemic Disruption

This table interprets the fact that Total shipping and logistics expenses have a major influence on the turnover level. The analysis shows that shipping costs heavily affected SME profitability since the standardized Beta reached 0.555 at a significant level ($p = 0.000$). COVID-19 Challenges Had Mixed Effects. Top 01 Challenge demonstrated a positive influence on SME business survival rates ($\beta = 0.215$, $p = 0.032$) because companies who ranked this challenge at the highest level managed to survive partially. Businesses placing Top 02 Challenge as their primary concern experienced severe financial depletion based on the statistical results ($\beta = -0.254$, $p = 0.017$). Raw Material Cost and Supply Chain Diversification Are Not Statistically Significant. These issues did not directly influence SME financial performance over the studied period ($p > 0.05$) indicating that adjustments were made to protect profitability.

4.8 Policy Awareness and Compliance Challenges

4.8.1 Hypothesis Formulation:

Null Hypothesis (H0): Awareness of international labour and environmental standards, along with the associated compliance costs, does not have a significant influence on the financial and operational performance of SMEs. These factors are assumed to have a minimal or no measurable impact on the day-to-day operations or profitability of the firms.

Alternative Hypothesis (H1): SME financial and operational performance shows a direct relationship with their understanding of international labour and environmental standards together with their compliance costs. The problems associated with compliance requirements lead to both operational difficulties and monetary challenges.

4.8.2 Linear Regression (Financial Impact)

Dependent Variable: Annual turnover

Independent Variable: Awareness of compliance standards, compliance cost as a percentage of revenue, challenges in compliance, awareness of government schemes, and partnership with industry associations.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.482[a]	.232	.183	1.016	.232	4.685	6	93	.000

a. Predictors: (Constant), Are you aware of Indian government schemes (e.g., MSME subsidies, export incentives) to support compliance? , Rank the top 3 challenges in meeting

Table no: 09 – Model summary of Policy Awareness and Compliance Challenges

This table interprets the fact The R-value (0.482) indicates the strength of the relationship between SME financial performance (annual turnover) and factors such as awareness of compliance standards, compliance cost percentage, compliance challenges, awareness of government schemes, and industry partnerships. A value of 0.482 suggests a moderate positive correlation between these independent variables and SME financial performance. The 23.2% R^2 score indicates that annual turnover financial performance of SMEs depends on compliance awareness together with costs and challenges, government schemes and industry partnerships by 23.2%. The external factors which were omitted from the model demonstrate a greater impact on SME financial performance than compliance-related elements. Statistical significance at 95% confidence level is proven by the Sig. F Change value (0.000). The established variables in the model demonstrate a considerable contribution toward understanding SME financial performance variation. Statistical analysis presents a p-value of 0.000 thus dismissing H0 and validating H1 indicating SME financial outcomes are substantially influenced by compliance awareness and costs.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.011	6	4.835	4.685	.000[b]
	Residual	95.979	93	1.032		
	Total	124.990	99			

a. Dependent Variable: 1Annual Turnover (approx.)

b. Predictors: (Constant), Are you aware of Indian government schemes (e.g., MSME subsidies, export

Table no: 10 – ANOVA test of Policy Awareness and Compliance Challenges

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	6.072	.788		7.705	.000	4.507	7.637		
4Are you familiar with international labor/environmental standards (e.g., FIFA's labor guidelines, REACH regulations)?	-.613	.192	-.379	-3.187	.002	-.995	-.231	.584	1.711
How much does compliance with these standards cost your business annually?	.017	.078	.026	.222	.825	-.138	.173	.614	1.629
Rank the top 3 challenges in meeting international compliance requirements: [Top - 01]	-.118	.149	-.077	-.789	.432	-.415	.179	.872	1.147
Rank the top 3 challenges in meeting international compliance requirements: [Top - 02]	.064	.101	.064	.637	.526	-.136	.264	.822	1.217
Rank the top 3 challenges in meeting international compliance requirements: [Top - 03]	-.207	.097	-.217	-2.141	.035	-.400	-.015	.800	1.250
Are you aware of Indian government schemes (e.g., MSME subsidies, export incentives) to support compliance?	-.190	.179	-.124	-1.063	.290	-.545	.165	.602	1.660

a. Dependent Variable: 1Annual Turnover (approx.)

Table no: 11 – Coefficients of Policy Awareness and Compliance Challenges

Awareness of International Standards Negatively Affects Turnover, B = -0.613, p = 0.002 (<0.05, significant). The awareness of international standards by SMEs leads their organizations to experience lower turnover. Compliance Costs (as % of revenue) Are Not Statistically Significant, B = 0.017, p = 0.825 (not significant). The costs of compliance do not create significant enough impact on the turnover of companies. The third challenge from the top compliance list [Top 03] significantly influences turnover ratios according to the data with B = -0.207, p = 0.035 (<0.05, significant). The analysis reveals that significant compliance challenges directly lead to decreased financial performance in SMEs and cause increase in representative turnover. Awareness of Indian Government Schemes Does Not Significantly Impact Turnover, B = -0.190, p = 0.290 (not significant). Annual financial performance levels remain unchanged for SMEs who have knowledge of Indian government compliance assistance programs.

Ordinal Regression (Operational Impact)

Dependent Variable: Compliance Impact on Business (Ordinal)

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	216.825			
Final	.000	216.825	17	.000

Table no: 12 – Model fitting of Policy Awareness and Compliance Challenges

The intercept-only model fits the data with a -2 Log Likelihood value of 216.825. The excellent data match of the Final Model appears through its measurement of -2 Log Likelihood at 0.000. A Chi-Square statistic value of 216.825 with 17 degrees of freedom produces a p value less than 0.001 which demonstrates the final model outperforms the intercept-only model. The statistically significant model verifies that compliance variables significantly affect operations within SMEs.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	52.439	55	.573
Deviance	50.546	55	.645

Table no: 13 – ınd Compliance Challenges

A high proportion of predicted results from the model match actual observations because Pearson Chi-Square results in 52.439 while p = 0.573 and Deviance Chi-Square shows 50.546 with p = 0.645. The model exhibits a good fit against actual data because the p-values exceed 0.05. The model demonstrates accurate calibration because it successfully demonstrates how operational impact relates to compliance factors.

Pseudo R-Square

Cox and Snell	.886
Nagelkerke	.993
McFadden	.973

Table no: 14 – Pseudo R-Square of Policy Awareness and Compliance Challenges

The Nagelkerke $R^2 = 0.993$ suggests that the model explains 99.3% of the variance in SME operational impact. The McFadden $R^2 = 0.973$ is also very high, indicating a strong model fit. So, these compliance-related variables significantly explain the operational challenges faced by SMEs.

Case Processing Summary

		N	Marginal Percentage
13How have evolving international labor/environmental policies (e.g., FIFA guidelines, REACH regulations) impacted your business relationship with Jalandhar's sports goods SMEs?	Frequent order delays	10	10.0%
	Price increases due to SMEs passing compliance costs	53	53.0%
	Order cancellations from buyers due to SMEs' non-compliance	7	7.0%
	No significant impact	30	30.0%
4Are you familiar with international labor/environmental standards (e.g., FIFA's labor guidelines, REACH regulations)?	Fully aware	51	51.0%
	Partially aware	37	37.0%
	Unaware	12	12.0%
Rank the top 3 challenges in meeting international compliance requirements: [Top - 01]	High certification costs	6	6.0%
	Lack of technical expertise	45	45.0%
	Complex documentation	41	41.0%
	Unclear guidelines	8	8.0%
Rank the top 3 challenges in meeting international compliance requirements: [Top - 02]	High certification costs	12	12.0%
	Lack of technical expertise	14	14.0%
	Complex documentation	42	42.0%
	Unclear guidelines	22	22.0%
	Time-consuming approval processes	10	10.0%
Rank the top 3 challenges in meeting international compliance requirements: [Top - 03]	High certification costs	7	7.0%
	Lack of technical expertise	12	12.0%
	Complex documentation	11	11.0%
	Unclear guidelines	45	45.0%
	Time-consuming approval processes	25	25.0%
Are you aware of Indian government schemes (e.g., MSME subsidies, export incentives) to support compliance?	Yes, and we use them	77	77.0%
	Yes, but don't use them	8	8.0%
	No	15	15.0%
Do you collaborate with industry associations (e.g., Sports Goods Export Promotion Council) to navigate compliance?	Yes	77	77.0%
	No	19	19.0%
	Not aware of such groups	4	4.0%
Valid		100	100.0%
Missing		0	
Total		100	

Table no: 15 – Case processing summary of Policy Awareness and Compliance Challenges

The total financial impact stems from compliance standards as 53% of business leaders observe higher prices in the market. In Operational Risk, 7% face order cancellations. The current state of awareness about compliance requirements reveals that nearly half of the surveyed individuals lack full understanding of standards. Authority Compliance poses three major challenges with 45% lack of expert knowledge (45%), complex documentation (42%) and unclear guidelines (45%). When it comes to Govt Support Awareness, in which 20% were unaware of support schemes. A total of 23% of organizations fail to work with associations.

4.9 Digital Transformation and SME Viability

Dependent Variable: Annual Turnover

4.9.1 Independent Variables:

Use of e-commerce platforms, Barriers to Industry 4.0 adoption, Investment in digital infrastructure, Level of customer engagement through digital channels and Perceived importance of digital marketing

Hypothesis Formulation

Null Hypothesis (H0): Using Industry 4.0 technologies alongside digital tools fails to directly affect the survival rate of SMEs.

Alternative Hypothesis (H1): Digital tools together with Industry 4.0 technologies strongly affect the survival of SMEs.

4.9.2 Ordinal Regression (Digital Adoption vs. SME Viability)

Dependent Variable: Annual Turnover

Case Processing Summary

		N	Marginal Percentage
1Annual Turnover (approx.)	5 lakh–10 lakhs	16	16.2%
	10 lakhs–15 lakhs	14	14.1%
	15 lakhs–20 lakhs	23	23.2%
	More than 20 lakhs	46	46.5%
Do you believe adopting e-commerce could reduce reliance on traditional export intermediaries?	Yes	72	72.7%
	No	23	23.2%
	Unsure	4	4.0%
Have you invested in upgrading digital infrastructure in the past 3 years?	Yes	64	64.6%
	No	23	23.2%
	Partially	12	12.1%
What percentage of your customer engagement is done through digital channels (e.g., WhatsApp, email)?	<10%	13	13.1%
	10–20%	19	19.2%
	20–30%	33	33.3%
	30–40%	18	18.2%
	>40%	16	16.2%
How important is digital marketing (e.g., Instagram, SEO) for reaching customers?	Not important	19	19.2%
	Slightly important	32	32.3%
	Moderately important	25	25.3%
	Very important	20	20.2%
	Critical	3	3.0%
Valid		99	100.0%
Missing		1	
Total		100	

Table no: 16 – Case processing summary of Ordinal Regression (Digital Adoption vs. SME Viability)

The implementation of e-commerce shows importance for SMEs as it helps them decrease their dependence on intermediaries according to 72.7% of surveyed businesses. The research output demonstrates support for hypothesis H1 (digital tools enhance viability). 64.6% of companies investing in Digital Infrastructure indicates Industry 4.0 adoption has reached a minimum limit. The category includes SMEs which generated more than 20 lakhs in turnover. A weak focus on digital marketing by SMEs as indicated by 19.2% who consider it unimportant might explain why these enterprises serve fewer than 40% of their customers digitally (16.2%). The regression result of digital marketing being statistically insignificant implies partial evidence for the validity of H0. The annual turnover rates of SMEs exceed 20 lakhs in 46.5% of cases. H1 receives validation when the SMEs adopting advanced digital practices (e-commerce users and digital infrastructure investors) match the ones with annual turnover exceeding 20 lakhs.

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	242.253			
Final	129.788	112.465	16	.000

Table no: 17 – Model fitting test of Ordinal Regression (Digital Adoption vs. SME Viability)

Analysis shows that the final model with digital transformation predictors provides an excellent fit to the data compared to the intercept-only model since its chi-square value reaches statistical significance ($p < 0.001$). The multiple indicators of digital adoption show a statistically significant relationship with small business sustainability (annual revenue) according to H1.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	1255.801	59	.000
Deviance	127.194	59	.000

Table no: 18 – Goodness of fit of Ordinal Regression (Digital Adoption vs. SME Viability)

The statistical tests evaluate how accurately the predictive model values correspond to existing observation points. The model fit evaluation indicates inadequate performance because of low p-values less than 0.001 but researchers commonly encounter this issue during ordinal regression analysis that uses small-to-moderate data samples with limited categories (N = 99).

Pseudo R-Square

Cox and Snell	.679
Nagelkerke	.737
McFadden	.449

Table no: 19 – Pseudo R-Square of Ordinal Regression (Digital Adoption vs. SME Viability)

The Pseudo R^2 statistic shows how much the annual turnover gets explained by digital adoption variables in the data. The analysis based on Nagelkerke (0.737) indicates that the model accounts for ~73.7% of variation which demonstrates a powerful effect. McFadden's result shows (0.449) that this model possesses a very strong statistical power. The variables related to digital transformation including the removal of Industry 4.0 barriers and the prioritization of digital marketing have a significant effect that sustains SME viability and strongly confirms H1.

4.11 Chi-Square Test (Digital Tools vs. Competitiveness)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	37.757[a]	8	.000
Likelihood Ratio	43.703	8	.000
Linear-by-Linear Association	.628	1	.428
N of Valid Cases	100		

Table no: 20 – Chi-Square Test of (Digital Tools vs. Competitiveness)

Pearson Chi-Square = 37.757, $p < .001$. This indicates a statistically significant association between E-commerce adoption (belief in its potential to reduce reliance on intermediaries), and the impact of environmental compliance on competitiveness. The p-value of .000 confirms that the association is highly significant. Degrees of Freedom (df = 8). Reflects the number of categories being compared across the two variables. Likelihood Ratio = 43.703, $p < .001$, Supports the findings of the Pearson test, reinforcing the statistical significance.

5. Conclusions and Future Scope

5.1 Conclusion

The research analysed Jalandhar's sports goods SMEs through a framework that assessed their economic viability regarding global dependence and regulatory requirements as well as digital transformations. The results show that SMEs have strong export dependencies which generate their susceptibility to worldwide market changes. Supply chain breakdowns together with increased costs coupled with workforce reduction

affected numerous companies during the COVID-19 pandemic while firms with various supply centres and export destinations proved better equipped for survival than organizations anchored to one market or route. SMEs possess average knowledge about international labour and environmental standards including ISO and SA8000 but face issues when implementing these standards because they struggle with expenses and technical requirements which prevent them from joining global markets while they need additional training from internal sources and expensive certification fees make it challenging for small businesses to keep implementing standards. The adoption of electronic commerce solutions and digital instruments reveals a mixed pattern across Malaysian SMEs since businesses involved with digital marketing strategies and online customer management demonstrate superior competitiveness according to statistical Chi-Square analysis and Spearman's correlation demonstrated a positive moderate relationship between digital management and perceived digital marketing benefits.

The financial stability of companies with high export dependence suffered more due to market changes occurring worldwide, Rising shipping expenses made substantial negative impacts on the profitability of SME businesses, The financial stability of a business receives negative consequences from rising prices in raw material costs, Business sustainability was not significantly influenced by the amount of imported raw materials needed by companies, The effects of post-pandemic demand variations differed among different SMEs because each business faced varying impacts, Higher compliance costs led to lower annual turnover which consequently diminished profitability levels, SMEs whose owners received information about government support programs demonstrated improved financial stability throughout the pandemic, SMEs who lacked technical staff faced increased difficulty in complying with operations, Complex documentation systems blocked several paths for organizations to ensure compliance with their requirements, The participation of SMEs with industry associations became a valuable method for reducing certain compliance problems, Firms that accepted e-commerce together with digital systems achieved more beneficial financial outcomes compared to other businesses, High investment expenditures on digital infrastructure played a crucial role in making SMEs more viable, Digital tools proved essential for the development of superior market competitiveness among businesses, Smaller enterprises which placed digital marketing as their top priority achieved better client involvement, and the digital engagement practices demonstrated a direct relationship with market growth which generated better business outreach. SMEs highly dependent on the exports suffer greater financial instability due to post-pandemic market disruptions as well as increased logistics costs, rising raw material costs significantly impacted profit margin, creating financial stress to SMEs, SMEs faced financial and practical challenges when they had to follow international labour and environmental rules because they lacked understanding and budget, Government support schemes played an important role in mitigating compliance related problems, but there is very limited awareness among the SMEs, Businesses that adopted e-commerce and digital technologies outperformed others in finance and beat out their market competition, Small enterprises that build digital capabilities and marketing techniques achieved better relationships with clients and grew their operations, This study highlighted the need for SMEs to adopt to the strategic measures to enhance sustainability, including risk mitigation against the global market dependence, improved compliance mechanisms, and digital transformation initiatives.

5.2 Scope of Research

Future studies can include a comparative analysis of SMEs in different regions to find the broader impact of global market dependence. A sector-wise analysis within the sports goods industry can provide deeper into specific challenges faced by manufacturers with respect to the different product categories. Further research can be done on the effectiveness of government policies in reducing compliance burdens as well as promoting SME growth. Research scope on analysing both Industry collaborations and policy frameworks need to understand how regulatory support can be enhanced to the SMEs**.** A focus study can be made on emerging digital tools, AI-driven marketing, and automation technologies that can improve SME competitiveness in further. A long-term study can be done by tracking the performance of SMEs over multiple years and can

provide insights into the sustainability of digital and policy-driven breaking in. The study on the impact of future economic disruptions, which includes geopolitical shifts and inflationary, can be analysed for future prediction preparedness.

5.3 Research Implications

The results of this study offer practical implications for multiple stakeholders in the ecosystem of sports goods SMEs. International labour and environmental compliance make up a primary roadblock for SMEs according to the study results. Public officials can resolve this issue through simplified regulation procedures combined with financial help programs and awareness initiatives. Programs supporting digital adoption together with certification incentives help small and medium enterprises to gain international market access which makes them more competitive. The Sports Goods Export Promotion Council along with other organizations should exploit this data to establish training programs and economic certification approaches and development opportunities for digital proficiency. Structuring these initiatives would let SMEs defeat their technical problems alongside their cost-related compliance barriers. SMEs should consider investing in e-commerce platforms and digital tools as well as online customer engagement strategies based on the positive link between digital marketing engagement and competitiveness. These technological initiatives will expand their market territory while making their operations more efficient. This study creates an academic basis for researchers who wish to examine SME sustainability within particular niche manufacturing industries. The research encourages new studies that combine studies of economics with technology and policy to create interconnected research. The strong connection between digital interaction with customers proves that SMEs need budget-friendly technology solutions that work on a scale. Software developers together with service providers should create sector-specific digital platforms for inventory control and market outreach and customer support through this research knowledge.

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