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A STUDY ON RELATIONSHIP BETWEEN TECHNOLOGICAL TYPE AND MAINTENANCE OF QUALITY OF TEX PRODUCTS WHILE EXPORTING

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ABSTRACT
The textile export industry plays a crucial role in the global economy. This study includes the factors influencing the quality of textile products in the export market, focusing on technological advancements, workforce expertise, supply chain management, and regulatory compliance. Through a mixed-methods approach, including primary data collection from textile entrepreneurs in Surat and secondary literature analysis, this research identifies critical variables affecting product quality. The findings aim to provide insights for businesses to enhance their quality standards and competitiveness in international trade.
KEYWORDS: *Textile Industry, Export Quality, Supply Chain Management, Technological Advancements, Workforce Training, Quality Control, International Trade, Regulatory Compliance, Production Efficiency.*

INTRODUCTION

Quality assurance in textile exports is a concern for entrepreneurs striving to meet international market standards. The increasing demand for premium textile products requires firms to adapt to evolving technological, labor, and regulatory frameworks. This study determines the challenges faced by entrepreneurs in maintaining quality standards during production and export. By analyzing these elements, this research aims to highlight best practices and strategic interventions that can improve quality management in textile exports.

LITERATURE REVIEW

Carmen Lagesa, Cristiana Raquel Lagesb, Luis Filipe Lages (2005) have studied the RELQUAL scale: a measure of relationship quality in export market ventures. The study aimed to reveal that a better quality of the relationship results in a greater (1) amount of information sharing, (2) communication quality, (3) long-term orientation, as well as (4) satisfaction with the relationship. To also reveal that relationship quality is positively and significantly associated with export performance. The type of research design used in the was exploratory. This study is conducted through primary data. The data were collected in 2002. Out of the 1564 exporters, 111 replies were received, representing a raw response rate of 7%. CFA is performed to assess the measurement properties of the existing scales, using full information maximum likelihood (FIML) estimation procedures in LISREL, CFA provides a better estimate of reliability than coefficient alpha. The area of study was conducted in United Kingdom from Warwick University. Research has found that the RELQUAL scale provides a comprehensive and reliable measure of relationship quality between exporters and importers, highlighting its critical role in enhancing export performance.

Luis Filipe Lages, Graça Silva, and Chris Styles, (2009) have studied Relationship Capabilities, Quality, and Innovation as Determinants of Export Performance. The study aimed to reveal that though product quality is a critical aspect in international markets, both product innovation and relationship performance play a greater role in enhancing economic performance. The authors conclude with implications for international marketing theory and practice. The type of research design used in the was exploratory. This study is conducted through primary data. The data for the main study are from a random sample of 1332 exporting manufacturing firms listed in a Portuguese governmental agency database. Evaluated construct reliability using a measure of internal consistency— namely, composite reliability (ρ). The area of study was conducted in Portugal. The research has found that the study offers insights into these issues and provides significant implications for international marketing theory and practice.

Zo Rakotomalala, François A. Ravalison, (2015) A New Quality Control Tool to Assess Quality Management Performance in Textile and Garment Factories: The study aimed to review their quality assurance programs and to conduct cause and effect assessments on a regular basis to correct the process. To look at quality assurance

practices from the textile and garment industries where quality process is usually and rigorously conducted. The type of research design used in the was exploratory. The data have collected data during 46 and 32 weeks respectively for textile and garment factories. Data mining was conducted to identify a measure or a mapping. Result reveals and proposes a trapezoid, which permits to map quality assurance performance. The research is conducted in African continent in Antananarivo-Madagascar. A new control chart named by "Quality Trapezoid" is a new finding. It permits to map quality control and to assess quality assurance performance. It has some advantages related to control chart easy in mapping and easy in assessing quality assurance performance of a textile or garment enterprise.

Thomas Atkin a & Nicolas Gurney, (2013) Protecting Quality of Wine Exports to China: Barriers and Bridges: To present a strong case for the adoption of storage and transportation standards for wine, such as the Wine Storage Management System implemented by Hong Kong Quality Assurance Agency (HKQAA). To protect the quality and maintaining value in the auction market there. This was an exploratory study that sought to understand the path to successful exportation of wine as well as current methods used to prevent degradation of wine during storage and transportation. This study is conducted through primary data. Interviews were conducted with industry professionals representing links in the supply chain from wine production all the way to the consumer in China. This included 4 winery owner's managers, 3 freight forwarders, 3 warehouse managers, and 2 members of the HKQAA. The interviews were semi structured, with several research themes raised rather than a series of specific questions. Field notes were recorded after each interview. Exporting wine to China offers a great opportunity to wineries that are patient and willing to invest time and effort in that endeavor. A strong recommendation has been developed for the adoption of a certification system like the WSMS promulgated by the HKQAA. Wine is an example of an ''experience good,'' a product whose quality is unobservable until it is consumed

Dominik Zimon, Grzegorz Zimon, (2018) Impact of Implementation of Standardized Quality Management Systems on the Functioning of Organizations in the Textile Industry: To determine the impact of an implementation of the quality management system according to ISO 9001 on the improvement of processes related to the management of liabilities to suppliers. To surveyed enterprises were divided into those which implemented quality management systems according to ISO 9001 standard (10 organizations) and those that do not use such solutions (28 organizations). The analysis of financial ratios and statistical methods were used as the basic research tools. it can be stated that an effective and effective quality management system can effectively support the analyzed processes and be a starting point for consolidating positive relationships with suppliers.

Tulin Ural, (2009) The effects of relationship quality on export performance: To empirically examine the effects of relationship quality between exporter and importer on export performance in Turkish firms, and further, how small and medium-sized exporting firms are segmented based on quality of their relationship with importers. The paper includes Structural Equation Modeling and Cluster Analysis. The area of study was conducted in Turkey. The data used in this study drawn from small and medium-sized exporting firms which has been registered in the Union of Mediterranean Exporters in Mersin-Turkey. The study population consists of 426 exporting firms. A sample of 300 small and medium-sized firms was randomly generated from a database of the Union of Mediterranean Exporters. Personal interview was used for communication. The study found that probably indicate that the exporters in developing country have lower communication ability than counterparts in the developed country. Or maybe, owner of small business due to distance do not know completely the language codes and cultural dynamics of importer. "Distance may interrupt the communication flow between the exchange parties, which is vital in keeping them adequately informed".

M. Shafiq (2012), Implementation of Quality Management Systems and Business Excellence Frameworks in Pakistani Textile Companies: The study objective is to adopt higher level of quality management systems and business excellence models can help the organizations to improve their competitiveness and performance. In this study data was collected from two hundred and ten textile companies which were the member of All Pakistan Textile Mills Association (APTMA) and located in the province of Punjab. In this study data was collected from two hundred and ten textile companies which were the member of All Pakistan Textile Mills Association (APTMA) and located in the province of Punjab. The area of study was conducted in Pakistan. The study found that only ISO 9000 Quality Management System was widely adopted by the sample companies whereas the other models like EFQM Excellence Model, MBNQA, ISO 14001, SA 8000 and Six Sigma are not given much importance. The sample companies need to move beyond the adoption of ISO 9000 in order to achieve higher levels of performance and competitiveness in the international market.

Md. Moniruzzaman Sarker (2011), Improving Quality Management System of Textile Laboratory Empirical Study on Bangladeshi Textile Industry: The first is to hold on this image, quality assurance of garments products is one of the pivotal factors to sustain in this competitive business arena. The purpose of the study is to improve the quality management system of textile laboratory to be accepted at international level, increase awareness on international quality standards and potential for exports. This project is solely based on primary data and expert opinion which is collected through the survey which is exploratory in nature. Data is collected by administering a questionnaire through personal interview. Convenience sampling technique is adopted to select the sample elements. 100 clients are considered as the sample size for this survey. Respondents answer Likert scales, open ended questions to express their opinion. The questionnaire is presented in the Appendix - A. Descriptive statistics is used to measure the quantitative aspects. Study shows that each company annually tests on an average 880 units of products in their internal lab and 727 units in the external laboratories. The area of study was conducted in Bangladesh. Throughout this study, different aspects of Textile Laboratory market are discovered. To sustain in this competitive market, laboratories should step forward very carefully. Recommendations are made from the different views of the business so that they can run this business smoothly. Each and every guideline needs to be followed carefully to be held in this competitive environment.

Juan Carlos Hallak, Jagadeesh Sivadasan, (2009), Firms' Exporting Behavior Under Quality Constraints: The study aimed ability to produce quality using fewer fixed inputs. Compared to single attribute models of firm heterogeneity emphasizing either productivity or the ability to produce quality, our model provides a more nuanced characterization of firms' exporting behavior. The type of research design used in the was descriptive. The area of the study is USA. For various tests we perform, we need to concord our India and U.S. productlevel data with the 4-digit SITC classification. For the U.S., we construct a manual concordance between 5-digit SIC Rev.1987 codes and 4-digit SITC Rev.2 categories. In this paper, present a model of international trade with two dimensions of firm heterogeneity: productivity and caliber. Quality choice is endogenous and a minimum threshold needs to be attained in order to export. The model predicts conditional exporter premia for quality, price, average wage and capital intensity, which they have tested using establishment-level data from India, the U.S., Chile and Colombia.

Cesare Imbriani, Piergiuseppe Morone, Giuseppina Testa, (2008), Exporting quality: is it the right strategy for the Italian manufacturing sector: The study aimed to survive the growing competition coming from newly-industrializing countries. Italian manufacturing industry, which relies largely on SMEs, is struggling to regain competitiveness in global markets. In light of these stylized facts, we first investigate whether innovating activities and quality goods' production enhance Italian SMEs' probability to be exporter. The survey was carried out using a questionnaire administrated to a stratified random sample of about 2,600 Italian manufacturing firms. Descriptive statistics, Empirical methodology, Chow test and interaction variables approach has been used for the survey. The area of the study is Italy. The study has found relevant policy implications: on the one hand, quality strategy cannot be considered as a general strategy to revitalize manufacturing exports as a whole, and on the other hand, if quality strategy has to be followed, policy makers should aim to increase the average firm size and facilitate the quality-oriented innovation activities.

RESEARCH METHODOLOGY

This study implies a descriptive and exploratory research design to analyze the factors affecting textile product quality in exports. The research is based on primary data collected through structured questionnaires distributed to 50 textile entrepreneurs in Surat. Additionally, secondary data from journals, industry reports, and academic literature provide a comprehensive background. The study utilizes a convenience sampling method to gather insights from industry stakeholders. Statistical techniques such as Kruskal-Wallis test are applied using SPSS software to identify key determinants of quality and their impact on export performance.

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DATA ANALYSIS

Kruskal-Wallis Test

Ranks			
	What type of technology do you primarily use in your production process?	N	Mean Rank
Raw Material Quality	Manual	3	23.33
	Semi-Automated	35	23.80
	Fully Automated	10	29.05
	Advanced	1	31.50
	Total	49	
Workforce skills	Manual	3	32.83
	Semi-Automated	35	23.50
	Fully Automated	10	28.75
	Advanced	1	16.50
	Total	49	
Technology used in production	Manual	3	15.17
	Semi-Automated	35	24.50
	Fully Automated	10	29.05
	Advanced	1	31.50
	Total	49	
Quality Control Systems	Manual	3	27.83
	Semi-Automated	35	22.70
	Fully Automated	10	31.10
	Advanced	1	36.00
	Total	49	
Packaging	Manual	3	37.50
	Semi-Automated	35	23.50
	Fully Automated	10	25.25
	Advanced	1	37.50
	Total	49	
Pricing	Manual	3	28.67
	Semi-Automated	35	25.40
	Fully Automated	10	22.95
	Advanced	1	20.50
	Total	49	
Manufacturing Process	Manual	3	19.67
	Semi-Automated	35	23.40
	Fully Automated	10	33.55
	Advanced	1	11.50
	Total	49	
Environmental and Storage Conditions	Manual	3	26.17
	Semi-Automated	35	25.00
	Fully Automated	10	22.90

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	Advanced	1	42.50
	Total	49	
Market Trends and Customization	Manual	3	25.00
	Semi-Automated	35	25.00
	Fully Automated	10	25.00
	Advanced	1	25.00
	Total	49	
Lack of proper packaging materials	Manual	3	28.33
	Semi-Automated	35	22.50
	Fully Automated	10	31.60
	Advanced	1	36.50
	Total	49	
Transportation and logistics issues	Manual	3	20.67
	Semi-Automated	35	25.10
	Fully Automated	10	24.75
	Advanced	1	37.00
	Total	49	
International Compliance Requirements	Manual	3	19.67
	Semi-Automated	35	26.20
	Fully Automated	10	23.75
	Advanced	1	11.50
	Total	49	

H_0: There is no significant association between the following factors (e.g., raw material quality, workforce skills, technology, quality control, etc.) and the type of technology for maintaining production quality.
H_1: There is a significant association between at least one of the following factors and the type of technology for maintaining production quality.

Test of Statistics			
	Chi-Square	**df**	**Asymp. Sig.**
Raw Material Quality	2.219	3	.528
Workforce skills	3.426	3	.330
Technology used in production	4.229	3	.238
Quality Control Systems	4.633	3	.201
Packaging	4.600	3	.204
Pricing	1.178	3	.758
Manufacturing Process	7.178	3	.066
Environmental and Storage Conditions	2.834	3	.418
Market Trends and Customization	0.000	3	1.000
Lack of proper packaging materials	5.373	3	.146
Transportation and logistics issues	1.315	3	.726
International Compliance Requirements	2.201	3	.532

Interpretation
The Chi-Square test results indicate that none of the examined factors show a statistically significant association with production quality at the 5% significance level, as all p-values (Asymp. Sig.) are greater than 0.05. Other factors, such as quality control systems (p=0.201p = 0.201p=0.201) and lack of proper packaging materials (p=0.146p = 0.146p=0.146), also show relatively lower p-values, but they are not statistically significant. The

results suggest that while these factors may influence production quality, there is no strong statistical evidence to confirm their significant impact in this analysis.

CONCLUSION

Maintaining top-notch quality in textile exports isn't just about meeting standards, it's about staying competitive in a fast-paced global market. This study highlights the challenges like high costs, supply chain issues, and strict international regulations. However, by investing in better technology, skilled workers, and stronger supplier relationships, businesses can overcome these hurdles. Continuous improvement and adherence to international regulations are essential for sustained success in the global textile market.

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