

PRODUCTIVITY & EFFICIENCY ANALYSIS OF APPAREL SECTOR IN INDIA

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PRODUCTIVITY & EFFICIENCY ANALYSIS OF APPAREL SECTOR IN INDIA

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*With the blessings of
Vighnaharta Mangalmurti Shri Ganesh*

*Dedicated to my sons
Samarth & Reyansh
the stars that light up my life!*

CERTIFICATE

This is to certify that the thesis titled “**Productivity and Efficiency Analysis of Apparel Sector in India**”, being submitted by **Mrs. Dhvani Gambhir** to the Indian Institute of Technology Delhi for the award of the degree of **Doctor of Philosophy** is a record of bonafide research work carried out by her. She has worked under my guidance and supervision, and has fulfilled all the requirements for the submission of the thesis, which has attained the standard required for a Ph.D. degree of this institute. The results presented in this thesis have not been submitted in part or full to any other university or institution for any degree or diploma.

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“Every outstanding achievement owes its accomplishment to the untold individuals who supported behind the scenes.”¹

- Daisaku Ikeda

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¹ Ikeda, D. (2017). Valentina Tereshkova, first woman in space: Expressing your appreciation. *Value Creation*. Vol.12, Issue 5, p.58. May 2017. New Delhi: Eternal Ganges Press Pvt. Ltd.

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Dhwani Gambhir

ABSTRACT

Apparel sector is a leading sector in the global economy and seen as the avenue of industrialisation by developing economies. The growth of apparel manufacturing sector is seen as a means to improve employment and women participation in the economy. The apparel industry in India is one of the leading sectors in the economy, contributing significantly to the GDP and exports in India. Despite remarkable and improved performance, there are a number of challenges curtailing growth of this industry.

Productivity and efficiency are major concerns for sustained growth and competitiveness in the manufacturing sector overall. In addition, they lead to socio-economic benefits such as increased employment and income. A number of leading apparel manufacturing countries including India are developing economies that need to improve productivity and efficiency in apparel manufacturing to position themselves for greater participation in domestic and international markets. A review of literature revealed that there are a limited number of studies focusing on productivity and efficiency in apparel manufacturing sector in Asia and studies relating to recent years are scarce. The earlier studies have shown contradictions in efficiency performance and sources of productivity gain as well as in the drivers of efficiency and productivity.

Based on the perspective and gaps in existing literature, certain questions arise - What are the sources of productivity gain? Is there a specific area pulling down productivity performance? What is the technical efficiency performance? Which input needs to be managed more efficiently? What are the firm-level factors that influence pure efficiency? What policy support and managerial action is needed to enhance performance?

To provide appropriate answers, using secondary data, a comprehensive productivity and efficiency study has been conducted for the apparel industry in India at different levels of analysis and an efficiency analysis performed for competing economies in Asia. The tools of data envelopment analysis and Malmquist productivity index have been applied under input-orientation for the measurement of efficiency and to estimate change in and identify sources of total factor productivity at the state and firm level. Disaggregate analysis and Tobit regression are used to identify firm-level factors influencing pure efficiency in apparel manufacturing. The techniques of trend analysis and growth accounting are applied to study the growth and performance of Indian apparel manufacturing sector in aggregate.

The study has been supplemented with a primary survey conducted to judge managerial perspective related to challenges and policy support in Indian firms.

The study finds that all leading apparel manufacturing countries in Asia have a poor efficiency scenario. Pure technical efficiency needs urgent attention in all countries. The pure technical efficiency of apparel manufacturing firms depends on different drivers in each country and varies based on age, export intensity, capital intensity and labour-staff ratio. Small firms are technically more efficient than large firms.

While on the whole apparel manufacturing industry in India has shown growth, there has not been significant improvement in performance ratios as such. The apparel manufacturing industry in India is dominated by contribution from the southern states. There is slight progress in terms of productivity change with a need to upgrade technology, improve utilisation of resources and existing facilities as well as expand plant capacities. Exporting and unlisted corporate firms have better productivity performance as compared to non-exporting and listed corporate firms. The survey findings reveal that most apparel manufacturing firms believe that exporting promotes efficiency and adopt output orientation to production. The machine usage is for lower value added activities and labour related issues are perceived to be the major challenge and cause of low efficiency.

The study has made a number of recommendations for policy makers and management of apparel manufacturing firms in Asia and India in particular. The major recommendations include: (i) Identification of the unique causes pulling down productivity and efficiency in countries and firms and taking corrective action appropriately rather than a common approach; (ii) Provision of specific policy support ‘raincoats’ to different firms and segments in addition to general ‘umbrella’ policies; (iii) Increased focus on enhancing internal management and resource utilisation; (iv) Designing and executing training and skill development programmes appropriately based on the needs of the firm; and (v) Labour or Human capital to be made the core of action area and investment for sustained improvement in efficiency and productivity performance.

The study has highlighted the significance of synergising policy efforts and the bottom-up approach in enhancing efficiency and productivity identifying labour input as the most important part of the production chain after analysing performance at multiple levels. In addition, the study adds to the limited literature on the efficiency and productivity performance and drivers in the apparel manufacturing sector in the context of Asia and India.

Immediate corrective action based on the recommendations of this study by countries and managerial personnel to enhance efficiency and productivity performance in the apparel sector can lead to capitalisation of major gains in the global markets in the light of changing dynamics and emerging opportunities.

सार

परिधान क्षेत्र वैश्विक अर्थव्यवस्था में एक अग्रणी क्षेत्र है और अर्थव्यवस्थाओं को विकसित करके औद्योगिकीकरण के एवेन्यू के रूप में देखा जाता है। परिधान विनिर्माण क्षेत्र की वृद्धि अर्थव्यवस्था में रोजगार और महिलाओं की भागीदारी में सुधार के साधन के रूप में देखी जाती है। भारत में परिधान उद्योग अर्थव्यवस्था में अग्रणी क्षेत्रों में से एक है, जो जीडीपी और भारत में निर्यात में महत्वपूर्ण योगदान देता है। उल्लेखनीय और बेहतर प्रदर्शन के बावजूद, इस उद्योग के विकास को कम करने में कई चुनौतियां हैं।

उत्पादकता और दक्षता कुल मिलाकर विनिर्माण क्षेत्र में सतत विकास और प्रतिस्पर्धात्मकता के लिए प्रमुख चिंताएं हैं। इसके अलावा, वे सामाजिक-आर्थिक लाभ जैसे रोजगार और आय में वृद्धि का नेतृत्व करते हैं। भारत समेत कई प्रमुख परिधान विनिर्माण देश विकासशील अर्थव्यवस्थाएं हैं जिन्हें घरेलू और अंतरराष्ट्रीय बाजारों में अधिक भागीदारी के लिए खुद को परिस्थिति बनाने के लिए परिधान विनिर्माण में उत्पादकता और दक्षता में सुधार करने की आवश्यकता है। साहित्य की एक समीक्षा से पता चला कि एशिया में परिधान विनिर्माण क्षेत्र में उत्पादकता और दक्षता पर केंद्रित अध्ययनों की सीमित संख्या है और हाल के वर्षों से संबंधित अध्ययन दुर्लभ हैं। पहले के अध्ययनों ने दक्षता प्रदर्शन और उत्पादकता लाभ के स्रोतों के साथ-साथ दक्षता और उत्पादकता के ड्राइवर्स में विरोधाभास दिखाए हैं।

मौजूदा साहित्य में परिप्रेक्ष्य और अंतराल के आधार पर, कुछ प्रश्न उठते हैं - उत्पादकता लाभ के स्रोत क्या हैं? उत्पादकता प्रदर्शन को खींचने वाला कोई विशिष्ट क्षेत्र है? तकनीकी दक्षता प्रदर्शन क्या है? कौन सा इनपुट अधिक कुशलता से प्रबंधित किया जाना चाहिए? शुद्ध दक्षता को प्रभावित करने वाले फर्म-स्तरीय कारक क्या हैं? प्रदर्शन को बढ़ाने के लिए नीति समर्थन और प्रबंधकीय कार्रवाई की आवश्यकता है?

माध्यमिक डेटा का उपयोग करके उचित उत्तर प्रदान करने के लिए, भारत में परिधान उद्योग के विभिन्न स्तरों पर विश्लेषण और एशिया में प्रतिस्पर्धी अर्थव्यवस्थाओं के लिए दक्षता विश्लेषण के लिए एक व्यापक उत्पादकता और दक्षता अध्ययन आयोजित किया गया है। डेटा लिफाफा विश्लेषण और मालमक्विस्ट उत्पादकता सूचकांक के उपकरण दक्षता के माप के लिए इनपुट-अभिविन्यास के तहत लागू किए गए हैं और राज्य और फर्म स्तर पर कुल कारक उत्पादकता के स्रोतों में परिवर्तन का अनुमान लगाने और पहचानने के अनुमान लगाए गए हैं। असंगत विश्लेषण और टोबिट रिग्रेशन का उपयोग परिधान विनिर्माण में शुद्ध दक्षता को प्रभावित करने वाले फर्म-स्तरीय कारकों की पहचान के लिए किया जाता है। समग्र रूप से भारतीय परिधान विनिर्माण क्षेत्र के विकास और प्रदर्शन का अध्ययन करने के लिए प्रवृत्ति विश्लेषण और विकास लेखांकन की तकनीक लागू की जाती है। अध्ययन को भारतीय

फर्मों में चुनौतियों और नीतिगत समर्थन से संबंधित प्रबंधकीय परिप्रेक्ष्य का न्याय करने के लिए आयोजित एक प्राथमिक सर्वेक्षण के साथ पूरक किया गया है।

अध्ययन में पाया गया है कि एशिया के सभी प्रमुख परिधान विनिर्माण देशों में खराब दक्षता परिदृश्य है। शुद्ध तकनीकी दक्षता को सभी देशों में तत्काल ध्यान देने की आवश्यकता है। परिधान विनिर्माण फर्मों की शुद्ध तकनीकी दक्षता प्रत्येक देश के विभिन्न ड्राइवों पर निर्भर करती है और उम्र, निर्यात तीव्रता, पूंजी तीव्रता और श्रम-कर्मचारी अनुपात के आधार पर भिन्न होती है। छोटी कंपनियां बड़ी कंपनियों की तुलना में तकनीकी रूप से अधिक कुशल हैं।

जबकि भारत में पूरे परिधान विनिर्माण उद्योग ने विकास दिखाया है, वहीं प्रदर्शन अनुपात में उल्लेखनीय सुधार नहीं हुआ है। भारत में परिधान विनिर्माण उद्योग दक्षिणी राज्यों से योगदान का प्रभुत्व है। प्रौद्योगिकी को अपग्रेड करने, संसाधनों के उपयोग में सुधार और मौजूदा सुविधाओं के साथ-साथ पौधों की क्षमता बढ़ाने के साथ उत्पादकता में बदलाव के मामले में मामूली प्रगति हुई है। गैर-निर्यात और सूचीबद्ध कॉर्पोरेट फर्मों की तुलना में निर्यात और असूचीबद्ध कॉर्पोरेट फर्मों के पास बेहतर उत्पादकता प्रदर्शन है। सर्वेक्षण निष्कर्ष बताते हैं कि अधिकांश परिधान विनिर्माण फर्मों का मानना है कि निर्यात दक्षता को बढ़ावा देता है और उत्पादन के लिए उत्पादन अभिविन्यास को अपनाता है। मशीन का उपयोग कम मूल्यवर्धित गतिविधियों के लिए है और श्रम संबंधी मुद्दों को बड़ी चुनौती और कम दक्षता का कारण माना जाता है।

इस अध्ययन ने नीति निर्माताओं और विशेष रूप से एशिया और भारत में परिधान विनिर्माण फर्मों के प्रबंधन के लिए कई सिफारिशों की हैं। प्रमुख सिफारिशों में शामिल हैं: (i) देशों और फर्मों में उत्पादकता और दक्षता को कम करने और सामान्य दृष्टिकोण की बजाय उचित कार्रवाई करने के अद्वितीय कारणों की पहचान; (ii) सामान्य 'छाता' नीतियों के अतिरिक्त विभिन्न फर्मों और खंडों के लिए विशिष्ट नीति समर्थन 'रेनकोट' का प्रावधान; (iii) आंतरिक प्रबंधन और संसाधन उपयोग को बढ़ाने पर ध्यान केंद्रित किया गया; (iv) फर्म की जरूरतों के आधार पर उचित रूप से प्रशिक्षण और कौशल विकास कार्यक्रमों को डिजाइन और निष्पादित करना; और (v) श्रम या मानव पूंजी को दक्षता और उत्पादकता प्रदर्शन में निरंतर सुधार के लिए कार्रवाई क्षेत्र और निवेश का मूल बनाया जाना चाहिए।

इस अध्ययन ने समेकन नीति प्रयासों दक्षता और उत्पादकताबढ़ाने में निचले स्तर के दृष्टिकोण के महत्व पर प्रकाश डाला है। कई स्तरों पर प्रदर्शन का विश्लेषण करने के बाद उत्पादन श्रृंखला के सबसे महत्वपूर्ण हिस्से के रूप में श्रम इनपुट की पहचान करने वाली। इसके अलावा, अध्ययन एशिया और भारत के संदर्भ में परिधान विनिर्माण क्षेत्र में दक्षता और उत्पादकता प्रदर्शन और ड्राइवों पर सीमित साहित्य में जोड़ता है।

परिधान क्षेत्र में दक्षता और उत्पादकता प्रदर्शन को बढ़ाने के लिए देशों और प्रबंधकीय कर्मियों द्वारा इस अध्ययन की सिफारिशों के आधार पर तत्काल सुधारात्मक कार्रवाई, गतिशीलता और उभरते अवसरों के प्रकाश में वैश्विक बाजारों में प्रमुख लाभ का पूंजीकरण कर सकती है।

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ABBREVIATIONS

Abbreviation	Full Form
AEPC	Apparel Export Promotion Council
AGM	Annual General Meeting
ANOVA	Analysis of Variance
ASI	Annual Survey of Industries
ATC	Agreement on Textile and Clothing
B2B	Business to Business
BCC	Banker, Charnes, and Cooper
CCR	Charnes, Cooper, and Rhodes
CMIE	Centre for Monitoring Indian Economy
CPI-IW	Consumer Price Index for Industrial Workers
CRS	Constant Returns to Scale
CRSTE	Constant Returns to Scale Technical Efficiency
DEA	Data Envelopment Analysis
DIPP	Department of Industrial Policy & Promotion
DMU	Decision Making Unit
EFFCH	Efficiency Change
EU	European Union
FC	Fixed Capital
FDCI	Fashion Design Council of India
FDI	Foreign Direct Investment

FIPB	Foreign Investment Promotion Board
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GOI	Government of India
GVA	Gross Value Added
ICT	Information & Communication Technology
IIFT	Indian Institute of Foreign Trade
IT	Information Technology
KLEM	Capital, Labour, Energy and Materials
MFA	Multi-Fibre Arrangement
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MNC	Multi-National Corporation
MOSPI	Ministry of Statistics and Planning Implementation
MPI	Malmquist Productivity Index
MSME	Micro, Small and Medium Enterprises
NIC	National Industrial Classification
NID	National Institute of Design
NIFT	National Institute of Fashion Technology
NMCC	National Manufacturing Competitiveness Council
NMP	National Manufacturing Policy
NVA	Net Value Added
OECD	Organization for Economic Co-operation & Development
OLS	Ordinary Least Squares

PECH	Pure Efficiency Change
PFP	Partial Factor Productivity
PPP	Public-Private Partnership
R&D	Research and Development
SANKALP	Skill Acquisition and Knowledge Awareness for Livelihood Promotion
SECH	Scale Efficiency Change
SFA	Stochastic Frontier Analysis
SME	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences
TECHCH	Technology Change
TFP	Total Factor Productivity
TFPCH	Total Factor Productivity Change
TFPG	Total Factor Productivity Growth
TO	Total Output
UAE	United Arab Emirates
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations International Development Organization
USA/US	United States of America
VRS	Variable Returns to Scale
VRSTE	Pure/ Variable Returns to Scale Technical Efficiency
WPI	Wholesale Price Index
WTO	World Trade Organization
