

Strategic Business Plan Development for Bamboo Structural Applications in Northeast India

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**DEPARTMENT OF MANAGEMENT STUDIES
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Strategic Business Plan Development for Bamboo Structural Applications in Northeast India

by

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DEPARTMENT OF MANAGEMENT STUDIES

Submitted

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Certificate

This is to certify that the thesis entitled “Strategic Business Plan Development for Bamboo Structural Applications in Northeast India” being submitted by Mr. Syed Zulfequar Haider Hussaini to the Indian Institute of Technology Delhi for the award of the degree of Doctor of Philosophy (Ph.D.), is a record of bonafide original research work carried out by him. He has worked under my guidance and supervision, and has fulfilled the requirements for the submission of the thesis, which has attained the standard required for a Ph.D. degree of the Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.



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(Syed Zulfequar Haider Hussaini)

Abstract

The fact that the Indian bamboo sector has immense potential is not a contentious issue. The question which has remained unanswered was how can this potential be achieved? The present study is a novel attempt to find out an answer to the above question and explore certain steps that can certainly pave the way to move things faster to arrive at a point of decision. It aims to present a considered view of the needs of the sector and a better understanding of its need for support. With an objective to develop a strategic business development plan and decision support system for the Bamboo industry in northeast India, the researcher critically analysed the existing industrial structure, revisit the strategy planning and ensure strategy execution excellence for optimum utilization of resources for sustainable development. To evolve a research and policy framework for policy makers, a holistic analysis of the overall bamboo industry, bamboo supply chain and existing government policies has been performed to design a strategic business development plan.

The study starts with the analysis of the global trade of bamboo based products of major countries to understand the comparative analysis of India and other bamboo-rich nations. It's extremely shocking to note that, in spite of being the second largest reservoir of bamboo resources India is a net importing nation.

The factors of the bamboo industry have been identified from the review of available literature. The conceptualization of the Bamboo hierarchical model has been done by the analysis of factors using Modified Total Interpretive Structural Modelling (TISM). The

group of 37 experts were questioned to give their view on the relationships among the factors. The modified total interpretive structural model has been prepared which clearly shows that the availability of bamboo raw material plays a pivotal role in the construction of Raw Bamboo Structures while Technology and Skill follow as the second most important factor. In the case of engineered wood, Marketing has been identified as the key factor behind the downfall of the industry. The model shows that Government policies and Marketing play a key role in the road to success. The majority of experts are of the view that neither the government nor the industry has invested enough efforts to attract potential customers who can pay the price of its products and services. The expenditure on marketing and customer awareness is negligible in all the developmental schemes of NER.

To follow up the results of the hierarchical model, the raw material availability, supply chain and policy effectiveness were further studied in the subsequent chapters. In the study on raw material, the researcher has made an attempt to map the state-wise habitat, diversity and distribution of important bamboo species and explored the raw material issues and its availability in NER markets. It was found in the study that all the eight northeastern states have bamboo species that can be utilized for construction purpose, hence all eight states are suitable for facility location of engineered bamboo wood manufacturing units. Hence, the study dismissed the argument of Minister of Science & Technology and Earth Sciences Shri S. Jaipal Reddy in reply to a written question in the Lok Sabha that the Department of Science and Technology that non-availability of raw material is a serious issue for survival of bamboo based manufacturing units in northeast. Subsequently, the study undergoes the supply chain analysis of (i) Raw Bamboo Constructions and (ii) Engineered bamboo constructions. Detailed case studies of the Bamboo Mat Cluster of Barpeta (Assam) and the major bamboo-based companies like

A.B. Composites, Mutha Industries and ESES Bio Wealth were undertaken. The Supply chain analysis undergoes in-depth analysis the Production-to-Distribution System. The industry analysis has been done using SWOT, Porter's 5 Forces Model, SCOR model and Cost Flow analysis to give a clear illustrated depiction of real-life problems and their solution. To study the impact and effectiveness of public policies, the outcomes of the two Bamboo missions were critically examined using TISM. SAP-LAP analysis has been applied to unearth the current problems and develop a holistic understanding.`

The researcher studied the business model of bamboo-rich nations like Indonesia, China, Vietnam, Thailand, Malaysia, and Japan to explore the business opportunities and target industries for the bamboo sector. An attempt was made to design a conceptual model of the integrated bamboo cluster by integrating the business models of different related sectors with the production system model and industrial tourism. Finally, a decision support system (DSS) has been developed to support the decision-making process at the managerial level.

The study concludes by designing a strategic business development plan for the engineered bamboo industry which an aim to achieve 1% share of the Rs. 45,000 crore Indian Plywood Market by 2025. It applies 4'A Model of strategy execution excellence which includes the strategic directions and actions needed to ensure optimum utilization and sustainable management of bamboo resources. All the activities should follow the principle of a sustainable climate-resilient green economy to avail optimum utilization of resources while ensuring environmental sustainability and forest protection. The industry should not serve only big players; it should prosper in such a way that it plays a significant role in poverty alleviation and employment generation.

सार

इसमें कोई शक नहीं कि भारत में बांस के क्षेत्र में अपार संभावनाएं हैं। प्रश्न यह है कि इन संभावनाओं को उपलब्धि में कैसे प्राप्त किया जा सकता है? वर्तमान अध्ययन उपरोक्त प्रश्न का उत्तर खोजने और इस लक्ष्य को प्राप्त करने हेतु रणनीति तैयार करने का एक प्रयास है। जो निश्चित रूप से इस क्षेत्र में तेजी से आगे बढ़ाने का मार्ग प्रशस्त कर सकता है। इसका उद्देश्य क्षेत्र की जरूरतों के बारे में एक सुविचारित दृष्टिकोण प्रस्तुत करना और इसकी आवश्यकताओं को बेहतर ढंग से समझना है। पूर्वोत्तर भारत में बांस उद्योग के लिए एक रणनीतिक व्यापार विकास योजना और निर्णय समर्थन प्रणाली विकसित करने के उद्देश्य से, शोधकर्ता ने मौजूदा औद्योगिक संरचना का गहन अध्ययन एवं विश्लेषण किया, रणनीति योजना पर फिर से विचार किया और सतत विकास के लिए संसाधनों के इष्टतम उपयोग के लिए रणनीति निष्पादन उत्कृष्टता सुनिश्चित की। नीति निर्माताओं के लिए एक अनुसंधान और नीतिगत ढांचा विकसित करने के लिए, समग्र बांस उद्योग, बांस आपूर्ति शृंखला और मौजूदा सरकारी नीतियों का समग्र विश्लेषण एक रणनीतिक व्यवसाय विकास योजना तैयार करने के लिए किया गया है।

अध्ययन भारत और अन्य बांस-समृद्ध देशों के तुलनात्मक विश्लेषण को समझने के लिए प्रमुख देशों के बांस आधारित उत्पादों के वैश्विक व्यापार के विश्लेषण के साथ शुरू होता है। यह बेहद चौंकाने वाली बात है कि बांस संसाधनों का दूसरा सबसे बड़ा भंडार लाने के बावजूद भारत एक शुद्ध आयातक देश है।

उपलब्ध साहित्य की समीक्षा से बांस उद्योग के कारकों की पहचान की गई है। संशोधित कुल व्याख्यात्मक संरचनात्मक मॉडलिंग (टीआईएसएम) का उपयोग कर कारकों के विश्लेषण द्वारा बांस पदानुक्रमित मॉडल की अवधारणा की गई है। कारकों के बीच संबंधों पर अपने विचार देने के लिए 37 विशेषज्ञों के समूह से पूछताछ की गई। संशोधित कुल व्याख्यात्मक संरचनात्मक मॉडल तैयार किया गया है जो स्पष्ट रूप से दर्शाता है कि बांस कच्चे माल की उपलब्धता कच्चे बांस संरचनाओं के निर्माण में एक महत्वपूर्ण भूमिका निभाती है जबकि प्रौद्योगिकी और कौशल दूसरा सबसे महत्वपूर्ण कारक है। इंजीनियर लकड़ी के मामले में, उद्योग के पतन के पीछे विपणन को प्रमुख कारक के रूप में पहचाना गया है। मॉडल दर्शाता है कि सरकारी नीतियां और विपणन सफलता की राह में महत्वपूर्ण भूमिका निभाते हैं। अधिकांश विशेषज्ञों का विचार है कि न तो सरकार और न ही उद्योग ने संभावित ग्राहकों को आकर्षित करने के लिए पर्याप्त प्रयास किए हैं जो इसके उत्पादों और सेवाओं की कीमत चुका सकते हैं। एनईआर की सभी विकासात्मक योजनाओं में विपणन

और ग्राहक जागरूकता पर व्यय नगण्य है।

पदानुक्रमित मॉडल के परिणामों का अनुसरण करने के लिए, कच्चे माल की उपलब्धता, आपूर्ति श्रृंखला और नीति प्रभावशीलता का आगे के अध्यायों में अध्ययन किया गया। कच्चे माल पर अध्ययन में, शोधकर्ता ने महत्वपूर्ण बांस प्रजातियों के राज्य-वार आवास, विविधता और वितरण का नक्शा बनाने का प्रयास किया है और कच्चे माल के मुद्दों और एनईआर बाजारों में इसकी उपलब्धता का पता लगाया है। अध्ययन में पाया गया कि सभी आठ पूर्वोत्तर राज्यों में बांस की प्रजातियां हैं जो निर्माण के उद्देश्य से व्यावसायिक रूप से महत्वपूर्ण हो सकती हैं, इसलिए सभी आठ राज्य इंजीनियर बांस की लकड़ी निर्माण इकाइयों की सुविधा के लिए उपयुक्त हैं। इसलिए, अध्ययन ने इस तथ्य को खारिज कर दिया कि इंजीनियर बांस उत्पादों का उत्पादन करने वाली कंपनियों के लिए कच्चे माल की उपलब्धता का कोई गंभीर मुद्दा है।

इसके बाद, अध्ययन (i) कच्चे बांस निर्माण और (ii) इंजीनियर बांस निर्माण की आपूर्ति श्रृंखला विश्लेषण से गुजरता है। बारपेटा (असम) के बैंबू मैट क्लस्टर और प्रमुख बांस आधारित कंपनियों जैसे ए.बी. कंपोजिट, मुथा इंडस्ट्रीज और ईएसईएस बायो वेल्थ शुरू किए गए। आपूर्ति श्रृंखला विश्लेषण उत्पादन-से-वितरण प्रणाली का गहन विश्लेषण करता है। वास्तविक जीवन की समस्याओं और उनके समाधान का स्पष्ट सचित्र चित्रण देने के लिए एसडब्ल्यूओटी, पोर्टर के 5 फोर्स मॉडल, एससीओआर मॉडल और लागत प्रवाह विश्लेषण का उपयोग करके उद्योग विश्लेषण किया गया है। सार्वजनिक नीतियों के प्रभाव और प्रभावशीलता का अध्ययन करने के लिए, टीआईएसएम का उपयोग करके दो बांस मिशनों के परिणामों की गंभीर रूप से जांच की गई। एसएपी-एलएपी विश्लेषण को मौजूदा समस्याओं का पता लगाने और समग्र समझ विकसित करने के लिए लागू किया गया है।

शोधकर्ता ने बांस क्षेत्र के लिए व्यावसायिक अवसरों और लक्षित उद्योगों का पता लगाने के लिए इंडोनेशिया, चीन, वियतनाम, थाईलैंड, मलेशिया और जापान जैसे बांस समृद्ध देशों के व्यापार मॉडल का अध्ययन किया। उत्पादन प्रणाली मॉडल और औद्योगिक पर्यटन के साथ विभिन्न संबंधित क्षेत्रों के व्यापार मॉडल को एकीकृत करके एकीकृत बांस क्लस्टर का एक वैचारिक मॉडल तैयार करने का प्रयास किया गया था। अंत में, प्रबंधकीय स्तर पर निर्णय लेने की प्रक्रिया का समर्थन करने के लिए एक निर्णय समर्थन प्रणाली (DSS) विकसित की गई है। अंत में बांस उद्योग के लिए एक व्यापक रणनीतिक व्यापार विकास योजना प्रस्तुत की गई है जिसका उद्देश्य 2025 तक भारत के 450 बिलियन प्लाइवुड बाजार में 1% हिस्सेदारी हासिल करना है।

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Nomenclature

DoNER	Ministry of Development of North East Region, Government of India
DSS	Decision Support System
DST	Department of Science and Technology, Government of India
FSI	Forest Survey of India
HSN	Harmonized System of Nomenclature
INBAR	International Network of Bamboo and Rattan
ISFR	India State of Forest Report
MoEF&CC	Ministry of Environment and Forest & Climate Change
NBM	National Bamboo Mission
NECTAR	North East Center for Technology Application and Reach
NER	North East Region
NMBA	National Mission on Bamboo Applications
RERA	Real Estate Regulatory Authority
SAP-LAP	Situation, Actor, Process, Learning, Action, Performance
TDA	Technology Development Assistance
TISM	Total Interpretive Structural Modeling