

An Application of Interpretive Structural Modeling In Sustainable Supply Chain Management

Kevin Abraham, P N E Naveen, Chaitanya Mayee M

Abstract: The advent of globalization in the market has led to huge competition among the companies in various fields to achieve best supply chain practices. Increasing focus on environmental concerns has driven critical changes in industries' strategy by incorporating sustainability in their supply chain. A supply chain which does not threaten the opportunities for future generations by considering environmental and social impact in addition to the economic impact leads to the concept of Sustainable Supply Chain Management (SSCM). Firms adopt sustainability by implementing specific practices - named as SSCM practices, in supply chain. However they struggle to identify the influential practices. This Paper intends to analyze the SSCM practices in plywood Industries in Visakhapatnam using Interpretive Structural Modeling (ISM). ISM method is used to develop a structural model to identify the influential practices. The SSCM practices are identified through literature review and from domain experts and managers of industries. Then practices are grouped under the dimensions of sustainability namely economic, environmental and social. And ISM model is built through which the most dominant practice among them in each dimension is identified.

Keywords: sustainability, supply chain, interpretive structural modeling, plywood industries.

I. INTRODUCTION

Over the last few years the industries in India have undergone drastic change due to their rapid growth that has surpassed all previous records. These industries have huge contribution towards the economy of the country. Today many global industries are looking to leverage India's cost-competitive manufacturing practices. However, the industries in India are facing tremendous challenges like rising fuel prices, R&D competence, and emissions of carbon dioxide in the environment which has led to climate change as well as negative impact on human health. Hence a strong need is felt in the industry to adopt sustainability in their supply chain.

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A. Plywood Industries in India

Plywood is invented by Egyptians in BC 3500. But today's plywood is invented by Emmanuel Nobel. First plywood industry setup in India was on 1918 by M/s Assam saw Mill & timber Co.Ltd. The market for plywood and allied products in India is estimated to be about 13000 crores, and 5th position in Asia in production. Even though, the plywood industry is in search of a sustainable way of production. The industry has issues in many areas. Deforestation is the prime concern. The plywood industries spoil the greenery and promote deforestation. It should be minimized or controlled. This industry creates health related issues to workers and society. Also the industry itself lacks engineered or managerial skilled persons. so sustainability reflects environmental, economic and social concerns.

B. Sustainable Supply Chain Management

During the last two decades, environmental issues are becoming the main concerns of many global supply chain practitioners. In order to address these emerging environmental issues, various industrial experts are keen to explore a total solution to reduce the waste generated from current practices in a supply chain. The process and drive accompanying globalization has prompted manufacturers to enhance their environmental performance. "Sustainability is commonly defined as utilizing resources to meet the needs of the present without compromising future generation's ability to meet their own needs" (WCED, 1987). SSCM ensures sustainability in Traditional Supply Chain Management (TSCM). Earlier the concept of sustainability was mainly restricted to environmental issues but now the organizations have started to understand the importance of following Triple bottom approach i.e. giving equal importance to all the three dimensions of sustainability- social, environmental and economic. The aim of SSCM is to create a supply chain that helps in achieving competitive advantages without compromising the dimensions of sustainability. Such a supply chain should improve the economy without disturbing opportunities for future generation.

Many companies have benefited by trying to adopt sustainability in their supply chain through SSCM practices. However, there are still many challenges associated with SSCM practices in terms of understanding and implementation. Increasing environmental costs of the supply networks and increasing consumer pressure towards Eco-friendly products is leading many organizations to apply

supply chain sustainability as a new measure of good logistics management. The advent of global companies in the Indian market has led to huge competition among the industries to achieve best supply chain practices. Effective implementation of SSCM practices result in sustainable economic benefits and advantage for the firm in competitions. Also as per the global trend in today's business economy, the competition is becoming less "industry vs industry" and more "supply chain vs supply chain". Thus, a number of companies are now focusing on strengthening their entire supply chain. In the quest to implement sustainability, the stakeholders adopt practical attitude towards decrease of environmental impact due to the manufacturing processes of their firms. The pressure to reduce costs in every possible manner has driven manufacturers to work towards resource productivity and minimization of waste. Sustainability is introduced into the supply chain in the form of a set of practices. These practices are called SSCM practices. However firms struggle to identify the prominent practices or their effect over each other. Hence a need is felt to understand the mutual influence amongst the practices in order to determine the dominant practices. The present study aims to analyze the SSCM practices being followed in the Indian industries with the help of ISM. The ISM method helps in developing a structural model to determine the interrelationship among practices based upon expert opinion. The objective of this study is to identify the dominant SSCM practice from the recommended list of practices and to analyze the mutual relationship of the 21 practices for achieving competitive advantages in SSCM based firms in India using NM method based on expert opinion.

This Paper is intended to develop an ISM model to improve sustainability of plywood industries. Data is obtained from literature reviews as general supply chain practices. With the help of domain experts, key practices that are necessary for sustainability in plywood industries are identified. The relevance of plywood industries in this era is also evaluated by using surveys among the customers.

From this study, the contextual relationships among supply chain practices in plywood industries are developed. With the help of ISM methodology, which helps in determining the dominant practices in each dimension of sustainability, priority for implementation of these practices is identified. It provides a clear picture to the industrial experts at managerial level about which SSCM practice has to be concentrated upon in each dimension so as to improve the performance of the plywood firm as a whole.

II. LITERATURE REVIEW

It was inferred that property packaging includes a positive impact on environmental, economic and social outcomes. (Vachon and Klassen 2008) did a survey of North yankee makers to look at the role of collaboration among provide chain partners on surroundings connected problems. (Svensson 2007) introduced the terms of initial, second and n-order provide chains. A first-order provide chain denotes that a considerable a part of it's supported the employment of non-renewable and non-recycled resources, whereas the subsequent n-order ones (e.g. second order) are supported a bigger share of renewable and/or recycled resources.

Carter and Rogers (2008) explains concerning the triple bottom line approach of property provide chain management. Triple bottom line approach indicates that every one 3 factors, i.e., environmental, social and economic factors ought to incline equal importance. Zhu and Sarkis (2006) commented on environmental impact assessment as a tool used for making certain optimum use of natural resources for property development. Zailani studies concerning policies control, actions taken, and relationships shaped in response to considerations related to the natural surroundings that ends up in the conception of environmental buying. Zhu and Sarkis (2007) provide insights to waste hindrance and management. These are varied techniques to cut back and manage the solid wastes made within the business.

We need to acknowledge the extraordinary lean, inexperienced and sturdy practices on it high management have to be compelled to focus therefore on reinforce the performance of motorized offer chains. The instructive structural modeling approach is used as a valuable methodology to acknowledge inter-relationships among lean, inexperienced and sturdy practices and supply chain performance and to categorize them in line with their driving or dependence power. In line with study, the practices with the foremost driving power are versatile transportation (resilient practice), environmentally friendly packaging (green practice) and just-in-time (lean practice). Consumer satisfaction measures the performance in line with durable dependence and weak driving power; that is, it's powerfully inclined by the alternative studied variables but does not disturb them. Pattern informative Structural Modeling (ISM) to make the inter-relations between the risks of offer chain functions of retail corporations is extraordinarily encouraging.

III. INTERPRETIVE STRUCTURAL MODELLING

ISM could be a method to help planner to grasp and clearly determine those who couldn't be known. It helps to develop model that area unit imprecise and doesn't offer clear visual image. Components and their relationships area unit known in philosophical system. Try wise comparison of components develops a structural self-interaction matrix (SSIM). Once SSIM matrix is developed, it's decoded into reachability matrix by victimization binary digits. The matrix obtained is understood as Initial reachability matrix. Before we tend to proceed additional, it's sensible to ascertain the transitivity property among any 3 nodes. This may additional translate the initial reachability matrix into final reachability matrix. Once we've obtained final reachability matrix, its additional subjected to level partitioning.

When we develop a SSIM of components, it specifies pair-wise relations of components of a system. to check the antecedents, a relation of attain was chosen. This implies that one antecedent ends up in another antecedent; the latter can result in another antecedent; the 2 antecedents can facilitate to attain one another or the antecedents are unconnected. to investigate the obstacles once developing SSIM, the subsequent four symbols area unit being employed to denote the trail of relationships between blocks (i and i): V antecedent i will help achieve antecedent j, A antecedent j will be achieved by antecedent

I, X antecedent i and j will help achieve each other and O antecedent i and j are unconnected to each other.

The SSIM will be changed into a binary matrix after we check its transitivity, resulting in final reachability matrix (RM) by replacing X, A, V and O by 1 and 0. The substitution of 1s and 0s are according to the following rules: If the (i, j) entry shows V, the (i, j) entry in the Reachability Matrix becomes 1 and (j, i) entry becomes 0. If the (i, j) entry shows A, the (i, j) entry in the Reachability Matrix becomes 0 and (j, i) entry becomes 1. If the (i, j) entry shows X, the (i, j) entry in the Reachability Matrix becomes 1 and the (j, i) entry also becomes 1. If the (i, j) entry shows O, the (i, j) entry in the Reachability Matrix becomes 0 and the (j, i) entry also becomes 0.

The next step allocates levels to each of the antecedents we identified. The reachability set and antecedent set for each of our antecedents is to be found out once the reachability matrix is obtained. After we recognize the variables in these sets, the intersection set is established for all the variables. The variables which the intersection set and the reachability set are same it is given highest level of the ISM hierarchy. After identifying variables of the highest level, they are divided from other variables and duplication is continued to find the variables in the next level.

ISM model relations with various antecedents have been characterized into various levels and the relationships are shown by arrow markings. Arrow with single end shows one way relationship (V & A entries). Arrows with both ends indicates both way relationships (X Entry). This is called directed graph, which is then changed to ISM based model.

The digraph for ISM will be identified. With the levels of the elements identified, arrows are used to show the relationship between the elements. The variables with level 1 will be in the top level of the hierarchy. These digraphs provide data about the hierarchy of variables of supply chain skill gap. The digraph completely depicts how various parameters of organization influences the supply chain skill gap. It shows that top management commitment being the root cause is the most important variable for supply chain skill gap.

IV. DATA COLLECTION

The problem is to develop ISM model for sustainable supply chain in plywood industries. After identifying the problem, detailed literature review is done. Around 40 SSCM practices are identified. To understand about the usage and relevance of plywood products, a survey is conducted.

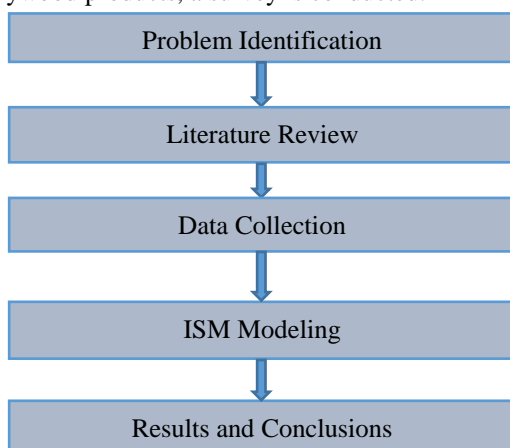


Figure 1: Methodology

Based on opinions from academic and industrial experts, relevant practices are found out. And these are classified into social, economic and environmental practices. Interpretive structural model is built by using these data. The results are evaluated and conclusions are made.



Figure 2: peeling of Wood



Figure 3: jointing and grading of Wood

V. DATA ANALYSIS

Relevant practices are found and classified into environmental, economic and social factors as give below:

A. Social Practices

1. Triple bottom-line approach
2. Internal supply chain integration
3. Reverse logistics
4. Collaborating with suppliers
5. Top management commitment
6. Risk management
7. Cooperating with the customers to execute SSCM practice

B. Economic Practices

1. Triple bottom-line approach
2. Inventory management
3. Design of products to reduce waste and costs
4. Effective use of by-products
5. Innovation

C. Environmental Practices

1. Triple bottom-line approach
2. Product recovery techniques
3. Waste prevention and management
4. Life cycle assessment
5. Supplier certification

and standards

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6. Environmental awareness

7. Redesigning process

D. SSIM Matrices

The contextual relationship connecting any two practices (i and j) is analyzed with the help of four symbols which indicate the track of relationship between the practices (i and j). The symbols used are as shown below:

- V: Practice i will help achieve practice j;
- A: Practice j will help achieve practice i;
- X: Practice i and j will help achieve each other; and
- O: Practices i and j are unrelated

The Structural Self-interaction Matrix (SSIM) matrix is established for each dimension of sustainability based on the relationship among the practices considered in that dimension.

Table 1: SSIM Matrix of Economic Practices

i \ j	EC7	EC6	EC5	EC4	EC3	EC2
EC1	V	V	V	A	A	V
EC2	A	X	O	A	V	
EC3	X	A	O	X		
EC4	X	X	O			
EC5	A	O				
EC6	V					

Table 2: SSIM Matrix of Environmental Practices

i \ j	ENV7	ENV6	ENV5	ENV4	ENV3	ENV2
ENV1	V	X	V	X	V	V
ENV2	V	V	V	X	V	
ENV3	X	V	A	V		
ENV4	V	A	A			
ENV5	V	A				
ENV6	A					

Table 3: SSIM Matrix of Social Practices

i \ j	S7	S6	S5	S4	S3	S2
S1	V	A	A	A	V	V
S2	V	A	X	A	A	
S3	V	A	A	V		
S4	X	O	A			
S5	V	V				
S6	A					

E. Reachability Matrices

In this step, a reachability matrix is developed from every SSIM. The Structural Self Interaction Matrix format are going to be then remodeled into associate degree initial reachability matrix format by dynamic information from every Structural

Self Interaction Matrix cell into binary digits (i.e., 1 and 0).

This alteration is completed with the foundations as follows:

- If iteration of cell (i, j) in SSIM is V, then (i, j) becomes 1 and (j, i) becomes 0 in the initial RM.
- If iteration of cell (i, j) in SSIM is A, then (i, j) becomes 0 and (j, i) becomes 1 in the initial RM.
- If iteration of cell (i, j) in SSIM is X, then both (i, j) and (j, i) become 1 in the initial RM.
- If iteration of cell (i, j) in SSIM is O, then both (i, j) and (j, i) become 0 in the initial RM.

The initial reachability matrix is developed from each SSIM following these rules. Transitivity is incorporated to obtain the final reachability matrix for the SSCM practices.

Table 4: Initial Reachability matrix for Economic Practices

i \ j	EC7	EC6	EC5	EC4	EC3	EC2	EC1
EC1	1	1	1	0	0	1	1
EC2	0	1	0	0	1	1	0
EC3	1	0	0	1	1	0	1
EC4	1	1	0	1	1	1	1
EC5	0	0	1	1	0	0	0
EC6	1	1	1	1	1	1	0
EC7	1	0	1	1	1	1	0

F. Level Partitions

The final reachability provides antecedent and each inspection sets the reachability, for which the required is obtained. The reachability set for a selected variable contains the variable matrix itself and alternative variables, that it's going to facilitate attain. The antecedent set contains the variable itself and alternative variables which can facilitate in achieving them.

Table 5: Final Reachability matrix for Economic Practices

i \ j	ENV7	ENV6	ENV5	ENV4	ENV3	ENV2	ENV1
ENV1	1	1	1	1	1	1	1
ENV2	1	1	1	1	1	1	0
ENV3	1	1	0	1	1	0	0
ENV4	1	0	1	1	0	1	1
ENV5	1	0	1	1	1	0	0
ENV6	0	1	1	1	0	0	1
ENV7	1	1	0	0	1	0	0

Table 6: Initial Reachability matrix for Social Practices

i	EC7	EC6	EC5	EC4	EC3	EC2	EC1	DP

j									
EC1	1	1	1	1	1	1	1	1	7
EC2	1	1	0	1	1	1	1	0	5
EC3	1	1	1	1	1	1	1	1	7
EC4	1	1	1	1	1	1	1	1	7
EC5	0	0	1	1	1	1	1	1	5
EC6	1	1	1	1	1	1	1	1	7
EC7	1	1	1	1	1	1	1	1	7
DEPENDENCE	6	6	6	7	7	7	7	6	

Table 7: Final Reachability matrix for Social Practices

i \ j	S7	S6	S5	S4	S3	S2	S1
S1	1	0	0	0	1	1	1
S2	1	0	1	0	0	1	0
S3	1	0	0	1	1	1	0
Table 7: Final Reachability matrix for Social Practices							
S4	1	0	0	1	0	1	1
S5	1	1	1	1	1	1	1
S6	0	1	0	0	1	1	1
S7	1	1	0	1	0	0	0

Table 8: Initial Reachability matrix for Environmental Practices

i \ j	ENV 7	ENV 6	ENV 5	ENV 4	ENV 3	ENV 2	ENV 1
ENV 1	1	1	1	1	1	1	1
ENV 2	1	1	1	1	1	1	0
ENV 3	1	1	0	1	1	0	0
ENV 4	1	0	1	1	0	1	1
ENV 5	1	0	1	1	1	0	0
ENV 6	0	1	1	1	0	0	1
ENV 7	1	1	0	0	1	0	0

Table 9: Final Reachability matrix for Environmental Practices

i \ j	S7	S6	S5	S4	S3	S2	S1
S1	1	0	0	0	1	1	1
S2	1	0	1	0	0	1	0
S3	1	0	0	1	1	1	0
S4	1	0	0	1	0	1	1
S5	1	1	1	1	1	1	1
S6	0	1	0	0	1	1	1
S7	1	1	0	1	0	0	0

Table 10: Level partition of Environmental practices

	REACHABILITY	ANTECEDENT	INTERSECTION	LEVEL
ENV 1	1,2,3,4,5,6,7	1,3,4,6	1,3,4,6	4
ENV 2	2,3,4,5,7	1,2,3,4,5,6,7	2,3,4,5,7	3
ENV 3	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1
ENV 4	1,2,3,4,5,7	1,2,3,4,5,6,7	1,2,3,4,5,7	2
ENV 5	2,3,4,5,6,7	1,2,3,4,5,6,7	2,3,4,5,6,7	2
ENV 6	1,2,3,4,5,6,7	1,3,5,6,7	1,3,5,6,7	3
ENV 7	2,3,4,6,7	1,2,3,4,5,6,7	2,3,4,6,7	3

Table 11: Level partition of social practices

	REACHABILITY	ANTECEDENT	INTERSECTION	LEVEL
S1	1,2,3,4,5,6,7	1,3,4,5,6,7	1,3,4,5,6,7	1
S2	2,3,4,5,6,7	1,2,3,4,5,6,7	2,3,4,5,7	1
S3	1,2,3,4,5,7	1,2,3,4,5,6,7	1,2,3,4,5,7	1
S4	1,2,3,4,5,6,7	1,2,3,4,5,7	1,2,3,4,5,7	1
S5	1,2,3,4,5,6,7	1,2,3,4,5,6	1,2,3,4,5,6	1
S6	1,2,3,5,6,7	1,2,4,5,6,7	1,2,5,6,7	2
S7	1,2,3,4,6,7	1,2,3,4,5,6,7	2,3,4,6,7	1

Table 12: Level partition of economic practices

	REACHABILITY	ANTECEDENT	INTERSECTION	LEVEL
EC1	1,2,3,4,5,6,7	1,3,4,5,6,7	1,3,4,5,6,7	2
EC2	2,3,4,6,7	1,2,3,4,5,6,7	2,3,4,6,7	3
EC3	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1
EC4	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1,2,3,4,5,6,7	1
EC5	1,2,3,4,5	1,3,4,5,6,7	1,3,4,5	4
EC6	1,2,3,4,5,6,7	1,2,3,4,6,7	1,2,3,4,6,7	2
EC7	1,2,3,4,5,6,7	1,2,3,4,6,7	1,2,3,4,6,7	2

VI. RESULTS AND DISCUSSIONS



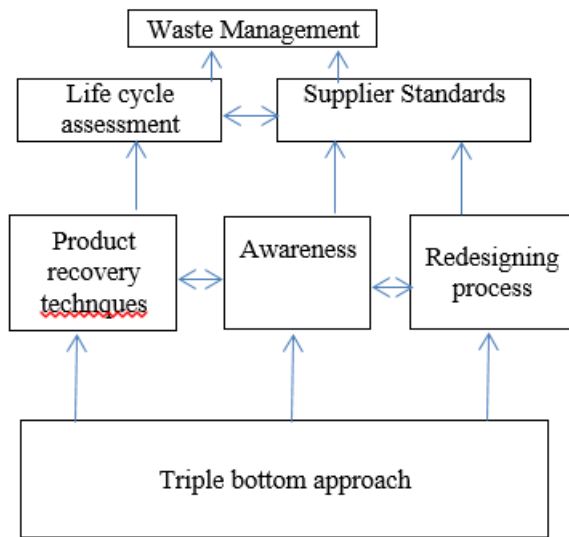


Figure 4: ISM digraph for environmental factors

I. ISM digraph for environmental factors

A. Waste management prevention

Waste prevention focuses on reducing the amount of waste that you generate at source. It involves looking at manufacturing, processing, packaging, storage, recycling and disposal processes to identify opportunities to manage waste and minimise its impact on the environment. In plywood industry scenario, the wood waste itself can cause pollution in the form of dust and cause separate space to handle. So, this waste can be mainly used as fuel in the drying machine or it can be sold to another industry thus storage space can be minimised.

B. Life-cycle assessment

Life cycle assessment assesses environmental impacts eco-friendly that is related to all the stages of a laminate product's life from material extraction through materials process, manufacture, distribution, use, repair and maintenance, and disposal or usage. This method is applied by designers to assist critique their merchandise. Within the life cycle of laminate, it causes deforestation and through producing it manufacture heap of mud particle causes respiratory problems. Since its perishable disposal method might not cause any damage for the character.

C. Supplier standards

The wood supplier should follow some moral towards quality and afforestation concerns. The manufacture should choose them based on their quality of morale, thus the industry should be eco-friendly and quality assured one.

D. Product recovery technique

A proposed method for assessing wood recovery involves application of a machining station approach with volume and mass measurements. For the volume method, three dimensions were measured on each specimen: the length, width, and thickness. For the mass method, the specimens were weighed before and after each processing station using a balance. Thus, waste reduction and plywood product recovery are assured.

E. Awareness

Awareness is the readiness of the plywood industry to practice green activities and to ensure sustainability in supply chain management. Each player in supply chain must show responsibility and integration to fulfill the sustainability.

F. Redesign

The processes must be viable for redesign if necessary. Business processes that can be redesigned encompass the complete range of critical processes, from manufacturing and production, to sales and customer service. Also known as business process re-engineering. Thus, productivity and sustainability can be maintained. So, industry should be willing to redraw its processes to gain value.

G. Triple bottom line approach

Triple bottom line (or otherwise noted as TBL or 3BL) is a framework with three parts: social, environmental (or ecological) and economical. This will ensure the sustainability in the production process. TBL approach shows the company's reputation and responsibility towards society. In plywood industry, the company must take care of the social and ecological aspects of the product. Otherwise it will cause harms like deforestation, pollution etc.

II. ISM digraph for economic factors



Fig 5: ISM digraph for economic factors

In the ISM digraph for economic factor, six factors lie in the prime position and risk management lies in the final position.

A. Internal SCM integration

Internal provide chain mentions the chain of activities inside a firm that settles with providing a product to the client. During a laminate trade this method involves multiple functions appreciate sales, production, and distribution. It's obvious that a company's performance would be improved by the combination of those functions. Thus specializing in internal SCM should be enforced.

B. Reverse logistics

Reverse supplying relates to any or all operations connecting the use of product and materials. It's a method that moves merchandise from their final destination for the aim of capturing worth, or correct disposal. Laminate may be taken back either for use or as a supply of fuel. Since its perishable it'll not cause hurt to nature.

C. Supplier collaboration

Both the client and provider area unit joined with their capabilities in provider collaboration for the needs of reduced value, innovation and method enhancements in merchandise or services. During a laminate

trade provider ought to establish the requirement of shoppers and future technologies to upset the market.

D. Management commitment

The importance of high management commitment to roaring provide chain improvement initiatives cannot be questioned. Here in plywood industry commitment can be built through persuasion and appeals to corporate values or strategy. However, when increased commitment does not appear to be forthcoming, the best strategies are to work on cross functional relationships and communication. Management should maintain a healthy relationship with all the supply chain links and with employees too.

E. Customer cooperation

Awareness among the customers regarding the negative impacts of products on the environment helps in execution of sustainable practices easily. So, customers should aware and review the product quality and impact. It will help in attaining sustainability.

III. ISM DIGRAPH FOR SOCIAL FACTORS

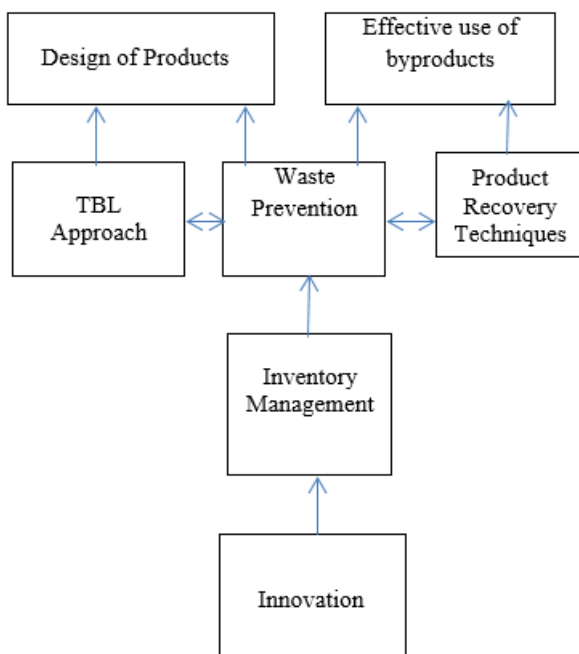


Figure 6: ISM digraph for social factors

In the ISM digraph for social factors, design of products and effective use of byproducts lie in the prime position and innovation lies in the final position.

A. Design of products to reduce waste and costs

Consider the eco-design and life-cycle impacts and so minimize the most important environmental impacts known once an organization desires to style a product victimization property principles. Environmental impact is to be thought of at each stage within the life cycle for a ply board business, from the terribly 1st stuff procuracy through the top of the product's life. An honest style decreases the wastage and delivers price potency.

B. Effective use of by-products

In plywood industry the by product is small pieces of wood. It can be mainly used as fuel in the drying machine or it can be sold to another industry thus storage space can be minimized. Some of the plywood factories supply the unwanted wood for small scale handy crafting purposes.

C. Innovation

As the international marketplace is evolving, offer chain managers ought to suppose a lot of creatively and pro-actively to balance product flow and prices of fabric throughout a product's life cycle. Innovation and provide chain might sound like 2 completely different activities, however they generate vital communication. The availability chain comes in to source once a product is meant, manufacture the merchandise and acquire it to the market. Thus innovation is significant once it involves maintaining property. Here within the case of ply board, innovation should be implement to find new ply board product and improves its quality.

VII. CONCLUSION

In India, plywood is the major composite wood (78%).The market for plywood and allied products in India is estimated to be about 13000 crores, and 5th position in Asia in production.

The main blessings of ply board square measure its low value, durability, aesthetics, and disposability. Ply board is principally used for functions like workplace interior and ceiling, piece of furniture, doors etc.

General supply-chain practices square measure known from literature review. The relevant supply-chain practices for property in ply board trade are determined by interview with industrial skilled and educational skilled. In ply board trade by adopting property offer chain they'll create huge variations. Additionally to surroundings and economic problems the corporate ought to focus their attention towards their social facet of property. This study is conducted to investigate the SSCM practices altogether 3 dimensions of property in ply board trade with the assistance of doctrine methodology, which might give a transparent image to the ply board industrial consultants at social control level regarding, that SSCM practices needs to be targeted upon in every dimensions thus on improve the performance of the firm as an entire.

To improve economic side of property Triple bottom line approach, inventory management, style of product to cut back the value and wastes, effective use of by-products, innovation, waste interference and management, product recovery techniques ought to be thought-about. Triple bottom line approach, setting awareness, waste interference management, product recovery techniques, life cycle assessment, provider certification and management, redesigning method etc., square measure found to be the foremost distinguished practices with regards to environmental side of property. Social impacts square measure typically additional invisible and tough to quantify than the environmental and economic impacts .But they ought to even be given because of thought to enhance property. Practices like TBL approach, internal supply chain integration, reverse logistics, collaboration with suppliers, Top management commitment, Risk management, Cooperating with the customers to execute SSCM practices etc., should improve social aspects of sustainability.

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