National Innovation Council

INNOVATION CLUSTER IN THE FURNITURE INDUSTRY AT ERNAKULAM, KERALA

A Case Study

Based on the Innovation Cluster Initiative of the National Innovation Council

By

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Nita Sachan, Saswati Chakravarty and Venkat Munagala (Indian School of Business, ISB) wrote this case solely to provide a description of work carried out under the National Innovation Council's Innovation Cluster Initiative. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

EXECUTIVE SUMMARY

The furniture industry in India is highly fragmented with 85% of the manufacturing units belonging to the unorganised sector. Majority of micro units produce traditional designs while contemporary styles form only a small percentage of the total output. Kerala is one of the larger furniture manufacturing states in the country. The state government adopted cluster development as a part of its industrial policy in 2003 and has, since, approved 5 furniture clusters. Among them is the Ernakulum furniture cluster, which has close to 600 small and micro enterprises working mostly as individual entities. The major challenge faced by the cluster is the supply of seasoned wood. It also faces other challenges, especially furniture design limitations, restricted market access and shortage of skilled labour. The Ministry of Micro Small and Medium Enterprises (MSME), Government of India, provided financial support to establish a common facility centre (CFC) for the Ernakulam cluster and subsequently referred it to the National Innovation Council (NInC) for critical interventions. NInC helped establish the Cluster Innovation Centre to effectively transfer technologies from public research institutions and garner support from firms and individuals to address some of the challenges. This study seeks to capture the challenges, interventions, impact and the way forward.

BACKGROUND OF THE CLUSTER

The domestic furniture market in 2007-2008 was estimated to be around Rs 48,227 crore and is expected to grow at a compound annual growth rate (CAGR) of 17%[1]. Although this demand is essentially satisfied by the Rs 50,000-crore domestic industry, India remains a net importer of furniture in value terms. In 2007-08 Rs 1,790 crore worth of furniture was imported while furniture exports amounted to Rs 1,485 crore[2]. Majority of the imports is of blended furniture and is imported from China, Malaysia, Italy and Germany. India is the 8th largest furniture market in the world and imports are predicted to grow at a very fast pace due to increased domestic demand for foreign products[3].

1 National Skill Development Corporation Report on Human Resource and Skill Requirements in the Furniture and Furnishings Sector: 2022, (2012).
2 National Skill Development Corporation Report on Human Resource and Skill Requirements in the Furniture and Furnishings Sector: 2022, (2012)
3 India Furniture Outlook published by CSIL Milano, March 2011

The Ernakulam region has close to 600 furniture units with a combined annual turnover of Rs 750-800 crore and exports worth Rs 64 crore per year[4]. In Ernakulam district, the cluster is concentrated within a radius of 25 km including the Kunnathunadu and Kothamangalam sub-divisions. The units can avail various facilities at the common facilities centre by paying a user fee.

As summarised by Mr K.P. Raveendran:

> *"Kerala has 10,000 manufacturers and merchants. Of these, at least 4000 are manufacturers with the majority being micro-enterprises. The rest are traders and distributors, some of whom also manufacture, but all do not own showrooms. We are trying to develop the Ernakulam cluster as a model for the state. "*

Historically, the Ernakulam region has been rich in timber plantations, making sourcing of raw materials easy. The first plantation was established in Palapally in 1872. Since 1970, plantations mixed teak wood with soft wood, like rubber[5]. The Perumbavoor area has predominantly plywood pressing units. As the price of teak, mahogany and other wood varieties increased, manufacturers across the country shifted to using cheaper varieties such as rubberwood as a raw material. Kerala has gained in importance since it produces almost 80% of the country's rubberwood.

The Kerala Furniture Consortium (Kefcon) was established in 2009 to act as the nodal agency for the cluster. Kefcon also manages the CFC. It has 33 members, who have contributed 30% of the total capital of Rs 5 crore. These include manufacturers of plastic, particle board and steel furniture. This consortium has been setup as a for-profit Special Purpose Vehicle mandated to help local micro-enterprises to produce improved quality furniture and increase production. The consortium has also procured land for a 'Common Raw Material Bank' to facilitate storage of raw material procured in bulk. The presence of an association representing the local industry in the form of Kefcon gave NInC activities a head start as the capacity building process could be expedited.

Key Challenges

a) Restricted supply of raw materials

Prior to the establishment of the CFC, local manufacturers typically used unseasoned wood. This affected the lifespan and quality of the finished product. Early on, Kefcon invested in machinery with a capacity to season 4,000 cubic feet (cft) of wood. It also developed the capability to make finger joint boards, membrane pressing (laminations), manufacturing components and polishing and painting. There was a pressing need to increase the availability of seasoned wood. However, the facility has remained underutilised due to lack of knowledge to optimally use it. Another inhibiting factor was the lack of awareness among local units.

b) Limitations of design

Majority of the micro enterprises are family run businesses. One of the major challenges for such units is to keep abreast with recent import trends such as- Ready to Assemble (RTA) and Completely Knocked Down (CKD) furniture kits. The Ernakulam manufacturers mostly manufactured traditional furniture designs and lacked exposure to modern and international furniture designs. The manufacturers undertake work orders from local retailers or directly from the consumers for household items such as furniture items, door and window frames. The same manufacturer would typically manufacture custom furniture units and also do interior woodwork. Their work was highly unstructured and lacked newer design incorporation.

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4 Diagnostic Study of the Furniture Cluster at Ernakulam, prepared by IL&FS for NInC, March -2012

5 Diagnostic Study of the Furniture Cluster at Ernakulam, prepared by IL&FS for NInC, March -2012

With the help of the MSME ministry, Kefcon roped in the National Institute of Design (NID). The ministry has also funded a study tour for the Kefcon members to Japan to understand the importance of intellectual property rights (IPR), especially design patents. NID has also conducted design clinics for the cluster members.

As Mr Raveendran says:

> *"Despite many classes there is deficient understanding. A national furniture design institute has been proposed for Ernakulam. Both the state government and NID have already indicated their approval."*

Typology of furniture products manufactured

Type of products	Type of assembly	Percentage of firms
CKD	Completely Knocked Down	0
SKD	Semi-Knocked Down	13.3
RTA	Ready to Assemble	13.3
Fully Featured		73.3

c) Deficiency of skilled labour

Less than 10% of the furniture units in Ernakulam employ 10 people or more at each unit. Majority of micro units employ less than 5 employees and hence a single person ends up being assigned to multiple tasks and often lacks specialized skills. The Ernakulam cluster employs 25,000 people.[6] In 2006, 3,00,000 people were employed by the furniture industry at the national level of which 21,000 worked in Kerala[7]. The manufacturing units have resorted to hiring workforce from other parts of the country due to scarcity of skilled workforce trained in modern day practices. Carpentry is no longer a lucrative profession and, hence, very few youngsters have it taken up as their livelihood.

d) Market access

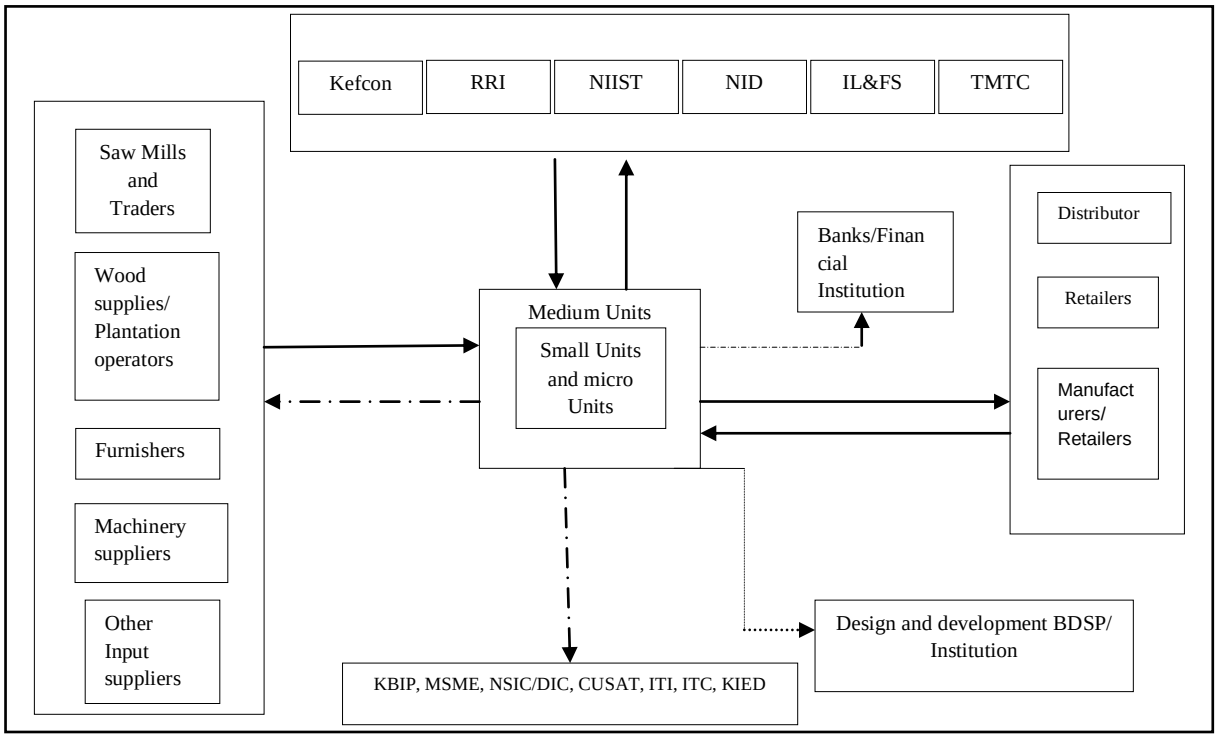
Another major area of concern has been limited market access. Most units in the cluster rely on local sales and work orders. They lack appropriate channels to sell to other parts of Kerala and the country. Most retailers own showrooms and also manufacture furniture, however these are small scale players. Kefcon has established a central marketing entity and also plans to set up 200 branded showrooms over the next 5 years.

CLUSTER ECOSYSTEM

The cluster is dominated by micro enterprises operating mostly in isolation and, thus, do not benefit from economies of scale. Most small and micro enterprises prefer not to pool resources due to higher tax implications for larger entities. There is a general lack of interest in adopting new practices. Kefcon's CFC is the first attempt to create a common pool of resources for all units to tap into. Kefcon's initiatives have largely been driven by the energies and ideas of individuals who have, over

6 Diagnostic Study Report, Furniture Cluster Ernakulam, IL&FS, March -2012
7 National Skill Development Corporation Report on Human Resource and Skill Requirements in the Furniture and Furnishings Sector:2022 (2012)

time, emerged as the leaders. The challenges and strategy were identified by this leadership in conjunction with member units. NInC's intervention was sought to take up some of the actionable issues. NInC organised a workshop for the stakeholders with the Tata Management Training Centre. The programme sought to help Kefcon create organisational structures, develop leadership modules, promote innovative thinking and change the mindset for taking up challenges.



[8]*Abbreviations*

Mr K. Narayanan, head of the CFC and the CIC co-ordinator says:

> *"The Tata training has benefitted the cluster members. It has sown the seeds of innovative thinking and has helped change attitude."*

In order to address the key issues identified, NInC mapped out an innovation ecosystem to plug existing gaps. It enabled matches between Kefcon and public institutions and private individuals to ensure that the CFC facilities were put to better use. It facilitated training of CFC staff by the Kochi-based Rubber Board to effectively utilize specialized machinery. It has also roped in the services of the Thiruvananthapuram-based Rubber Research Institute (RRI) to transfer technology to reduce the time taken for seasoning the wood. NInC has also involved a furniture designer to design newer prototypes exclusively for Kefcon. Kefcon utilized NInC seed support to create a Cluster Innovation Centre (CIC).

[8] *Kefcon- Kerala Furniture Consortium, RRI- Rubber Research Institute, NIIST- National Institute of Interdisciplinary Science and Technology , NID- National Institute of Design, IL&FS- Infrastructure Leasing and Financial Services Ltd , TMTC- Tata Management Training Center, KBIP Kerala Bureau of Industrial Promotion; MSME- Ministry for Micro Small and Medium Enterprises; NSIC – National Small Industries Corporation; CUSAT – Cochin University of Science and Technology; ITI – Industrial Training Institute; ITC – Industrial Training centre; KIED – Kerala Institute of Entrepreneurship Development; BDSP- Business Development Service Providers*

SPECIFIC INNOVATIONS UNDERTAKEN

a) Restricted supply of raw materials

Most of the raw wood that is seasoned at the CFC is received from member units, while 20% of the wood is directly procured by the CFC. The facility undertakes seasoning of hard woods like teak and mahogany and soft woods like rubberwood, among a host of other varieties including coconut and neem. It offers chemical treatment as well as heat kilns to reduce moisture. One of the first interventions conducted by the CIC was to make the wood seasoning process more efficient which allowed larger volumes to be handled.

In order to increase the supply of seasoned wood, it was imperative to reduce the time taken to season wood. Following the training by the Rubber Board and the appropriate wood seasoning technology from RRI Thiruvananthapuram, the average time taken for seasoning wood has been reduced by 3 days. From earlier wood seasoning timeframe of 14 days, it has now been significantly reduced to 12 days, thereby creating potential to supply more raw materials in the same time span. Further optimisation of the process is capital intensive and has to be done in phases. Kefcon has signed a Memorandum of Understanding with RRI for a gradual transfer of technology. The below chart indicates wood seasoning for a 2000cft before and after the intervention-

	PRE INTERVENTION				**POST INTERVENTION**				
Item	**Human Resource**	**Cost / Day**	**No. of Days**	**Total Cost Per Cycle**	**Human Resource**	**Cost / Day**	**No. of Days***	**Total Cost Per Cycle**	**Savings in %**
Labour Operator	1	400	14	5,600	1	400	12	4,800	
Helper (Stacking)	16	200	3	9,600	16	200	2	6,400	
Helper (Boiler)	1	200	14	2,800	1	200	12	2,400	
Total Labour Cost				18,000				13,600	
Electricity		400	14	5,600		400	12	4,800	**14**
Firewood		5,000	14	70,000		5,000	12	60,000	**14**
TOTAL				**93,600**				**78,400**	**16**

[9] *Data from Rubber board, Kottayam, Kerala*

b) Design Limitations

NInC's intervention with regard to design was aimed at demonstrating the value of partnering designers on a regular basis to create a continuous chain of new designs. Apart from NID furniture designers, NInC has helped Kefcon identify a local furniture designer who was engaged on a formal basis for a limited tenure. This initiative has created 6 new design prototypes, including chairs, beds, and tables etc. utilizing CFC facilities. These prototypes were exhibited at local furniture fairs so that retailers and showroom owners can adopt them for mass production.

Kefcon reports a more encouraging picture. According to Mr Narayanan, the CIC co-ordinator:

> *"During our presentation at MEME summit organized by CII at Kochi, we have received some confirmed orders from our regular customer, which will sufficiently meet*

[9] *Rubber Board, Kottayam, Kerala estimates that the overall estimated benefits: Processing time can potentially reduce by 18%; Power consumption could reduce by 14%; Firewood consumption can reduce by 14%; Based on these estimates the total cost reduced can by 16%. Assuming that the CFC facility is optimally utilized, and that the estimated reduction in processing time is reinvested, the productivity is estimated to increase by 22%*

the expenses incurred for producing samples. The amount of confirmed order would be about Rs 5 lakhs. We are still getting enquiries and we hope that the trend will improve further."

c) Deficiency of skilled labour

Apart from seasoning, the CFC offers machine cutting and finishing facilities. To a large extent, this reduces the dependence on labour-intensive processes. The benefits of this are likely to accrue over time as the CFC manufacturing volume increases. For the moment though, capacity utilisation remains an area of concern.

Usage of the CFC facilities has lowered the cost of manufacturing for the micro units. Significant cost savings are expected for larger manufacturing volumes. Also usage of machine tools for cutting etc produces better finished furniture which fetches higher market price. The benefits are expected to increase with increased manufacturing volumes. The below table below demonstrates the net profit from manufacturing a unit 0.7 cft sized chair at a CFC facility versus a micro unit.

ITEM	COST TO MICRO UNITS IN RS	COST AT CFC IN RS	GAIN IN RS
Raw material	910	805	
Seasoning (optional)	155	115.5	
Labour	351	145	
Electricity	Manual cutting	40*	
Polishing Materials**	198.75	265***	
Packing	32.34	26.60	
Total Cost of Production with seasoning	1,647.49	1,397.10	250.39
Selling Price	2,000.00	2,280.00	280

*Power tools used
**Manual
*** Using spray gun

d) Innovation in newer material

National Institute of Interdisciplinary Science and Technology, Thiruvananthapuram, has a new innovative new process to produce wood like material using coir as the raw material. This 'Poly-coir' is fire proof and strong. It can be easily moulded and cut according to design specifications. It is also an eco-friendly initiative since it utilizes coir waste and can be easily sourced locally. This initiative is still at lab scale and needs to be scaled up by bigger manufacturing units. NInC is helping the cluster find suitable manufacturers for this new revolutionary Poly-coir' material.

IMPACT AND WAY FORWARD

Although the CFC was set up almost 3 years ago, a lot more ground needs to be covered to popularise its value proposition among local micro units. This would not only be a good starting point to improve the utilisation of the existing facility, but would also help improve the operational economics of Kefcon. After all, the local industry has a sizeable turnover of Rs 750-800 crores and a orders from even a small percentage of units could convert into significant business for the CFC.

The CFC currently employs approximately 70 people. Higher business volumes would generate additional local employment. For that, Kefcon needs to define a clear roadmap that would enable the cluster to grow in a sustainable way. The foundation for innovative thinking appears to have been established at the Ernakulam cluster. Kefcon members appear to have imbibed the value of collaborative and comprehensive development efforts. Kefcon is now spearheading the creation of a Kerala Furniture Hub at an investment of Rs. 100 crore of which 30% will be private money. This proposal has received in-principle clearance from the Kerala government and is supported by NInC.

KEY INNOVATION INTERVENTIONS AND IMPACT

ACTIVITY	PRE-INTERVENTION	EXPECTED IMPACT	BENEFIT TO	WAY FORWARD
Formation of Cluster Innovation Centre	• No knowledge sharing practices • No identification of common issues	• Helped seed the innovation mindset • Common resource pool for all units in the cluster • Technology transfer to improve processes	Cluster	• Draw future road map for sustainable growth • Forge new partnerships • Propagate value proposition to micro units • Tap into local business • Generate local employment
Raw materials	• Unseasoned wood used • Unsatisfactory quality of finished furniture	• Increased availability of seasoned wood • Reduced seasoning time from 14 to 12 days	Cluster Manufacturing units	• Improve capacity utilisation • Capital needed for process optimisation • Gradual technology transfer needed
Design	• Traditional designs that were not market friendly • No knowledge of CKD/RTA kits	• Incorporation of newer designs as part of regular operations • Partnerships with designers • Prototypes developed	Cluster Manufacturing units Retailers	• Develop ability to manufacture CKD kits • Involve designers on a regular basis • Customise designs based on market feedback
Labour	• Deficiency of skilled labour • No specialisation • Unstructured practices	• Machine cutting replaces labour intensive processes • Lower cost of production • Better quality finishing • Higher asking price	Micro manufacturing units	• Larger volumes to reap economies of scale • Encourage more micro units to use facility • Improve capacity utilisation