Original Research Article

ADDRESSING UNEMPLOYMENT THROUGH THE COIR INDUSTRY: AN ANALYSIS OF NATIONAL EFFORTS AND CHALLENGES

ABSTRACT

The coir industry in Kerala, the birthplace of Indian coir, is facing significant challenges due to mechanization, leading to widespread labour displacement and migration. This issue is not adequately addressed by government policies, as unemployment affects all segments of the industry and negatively impacts disadvantaged social groups. The decline in the coir industry is causing a shift in the manufacturing sector, with small-scale and household sectors being abandoned and large export firms moving to other states. This article provides insights into the difficulties in finding employment and the rising rate of unemployment in the context of the coir industry, a field often disregarded in national economic policies. Using a mixed-methods approach that incorporates surveys, structured interviews, and secondary data analysis, the study looks at the relationship between unemployment and the modernization of coir enterprises, concentrating on how these changes effect job prospects and the socioeconomic position of workers. According to the findings, despite consistent government support, other initiatives are insufficient, resulting in a significant loss of employment, labour displacement and frequent labour migration.

KEY WORDS: Coir Industry, Modernisation, Mechanization, Labour Displacement, Unemployment, Labour Migration

INTRODUCTION

The coir industry, a traditional sector in India, plays a significant role in rural employment and the national economy. Coir industryhas a rich history that dates back several centuries. The earliest mention of coir is found in Sangam literature, which dates back to the early centuries of the Common Era. Since then, it has long been a significant source of income for a large number of state residents, especially in the rural areas (Jeromi, 2003). The industry revolves around the extraction and processing of coconut husk fibres to produce a range of products such as coir fibre, coir yarn, and coir-based products.In the traditional society of Kerala, coir production was primarily a cottage industry. Women, in particular, were engaged in spinning coir yarn using simple hand tools. The arrival of European traders,

particularly the Portuguese, Dutch, and British, significantly impacted the coir industry. They recognized the commercial potential of coir products, especially for shipbuilding and maritime purposes due to their water-resistant properties.

The British played a crucial role in industrializing the coir sector in the 19th century. The first coir factory in India was established in Alleppey (Alappuzha) by Mr. James Darragh in 1859. This marked the beginning of organized coir production and export. After India's independence, the coir industry continued to grow and remained as a prime export-basedindustry. The government of Kerala and the central government took several initiatives to promote coir production, improve the quality of products, and expand the market. In recent decades, the coir industry in Kerala has seen significant technological advancements. Modern machinery and production techniques have improved efficiency and product quality (Thomas Isaac & Michael Tharakan,1995). Innovations in coir processing have led to a diversification of products, including coir mats, carpets, geo-textiles, and eco-friendly coir composites.

In the twentieth century, it was the greatest cottage industry, employing more than a million people. However, the industry has been suffering issues, which have led to rising unemployment in the region. The major issues are modernization and mechanization, displacement of labour, wage reduction, relocation of the production base, scarcity of raw materials (coconut husk, coir fibre, coir yarn), and challenges from neighbouring states that have completely mechanized their coir sector.One of the other key factors contributing to this situation is the increasing competition from synthetic and alternative materials in the global market. This has led to a decrease in demand for traditional coir products, affecting the overall production and employment levels in the industry. Despite these hurdles, the coir business produces 280,000 metric tonnes of coir and coir fibre products each year, and the export value is continuously climbing. However, coir workers in Kerala's coir enterprises confront a number of obstacles, including wage disparities, delayed payments, a lack of credit facilities, rising raw material prices, expensive machinery costs, and health and welfare issues. Women, who make up the majority of basic workers, are frequently paid pitiful salaries for their efforts, and many companies lack creche facilities, resulting in unclean working conditions for expecting moms. Limited ownership and resources also impede women's capacity to start firms. To address these difficulties, the government and industry should fund welfare initiatives, enforce existing laws, and give vocational training opportunities. Keeping all of these facts in consideration, the purpose of this article is to look at the current situation of the coir sector and its workers in Kerala, with an emphasis on

modernisation and unemployment, as well as national and state measures to address the industry's issues. The text body is structured as follows: a review of the literature, methodology part, an analysis, and a discussion.

REVIEW OF LITERATURE

Kerala has an extensive tradition of producing coir products, which are a significant export. Many people have traditionally found work in this industry, especially women living in rural areas. Nonetheless, a number of causes have led to the drop in employment in this industry over the years. This section, the review of the literature on unemployment in Kerala's coir sector, discuses the existing studies and reports on the root causes, effects, and potential remedies for this problem.

Research on the coir industry reveals several factors contributing to unemployment and employment challenges within the sector. According to Narayana, D. (1994), Bordoloi, S. (2020) and Raseena, K.K. (2024), the coir industry faces unemployment and employment challenges due to technological advancements and shifts in manufacturing processes.Traditional workers, often from lower socio-economic backgrounds, are affected by this shift. Economic downturns impact demand for coir products, leading to reduced production and employment opportunities. The industry often employs low-paying and difficult workers, exacerbated by the uneven shift from piecemeal to daily compensation. Social stratification also affects access to and stability in jobs, particularly for lower-caste workers. These factors contribute to the sector's challenges and unemployment.

The fierce competition Kerala's coir industry faces from low-cost, synthetic alternatives and foreign goods has resulted in decreased employment and slow growth. In their studies, Thomas Isaac et al., (1992), Mathew, K. S. (2001), Chandaran (2005), Mohanasundaram (2015), Aswathy and Ajithjumar, Saranya (2018), Bordoloi, S. (2020), and Raseena, K.K. (2024) note that the rise of synthetic alternatives has caused a decline in the global market for coir products. The industry's growth and profitability have significantly decreased as a result of this rivalry, posing financial difficulties for many workers and small-scale producers who depend on the manufacture of coir.

The supply of high-quality coconut husks, which are necessary for the manufacturing of coir, has decreased. Employment and production levels are impacted by this scarcity. This notion is supported by the research of T. M. Thomas Isaac (1983), Kannan, K. P. (1998), Heller, P. (1999), S. Rajendran (2002), Ghosh, J. (2002), and Thomas et al. (2013).Due to a

number of factors, including decreased coconut farming, competition from other businesses for the use of coconut husks, and inefficiencies in the collecting and processing of coconut husks, the supply of coconut husks has been decreasing.

Through their research, Thomas Isaac (1982), Thomas Isaac et al. (1992), Mathew, K. S. (2001), Chandaran (2005), Mohanasundaram (2015), Aswathy and Ajithjumar, Saranya (2018), Bordoloi, S. (2020), and Raseena, K.K. (2024) make the case that the collapse of the traditional coir industry, modernization and the ensuing labour displacement, and technological advancements all contributed to unemployment in the coir industry. The majority of workers in the coir business are women, who are disproportionately impacted by unemployment. This has consequences for women's empowerment and gender equality in the area. Numerous reasons are contributing to the increasing rate of unemployment, which is being addressed by the state, federal, and affiliated government entities through various policies and initiatives. The state government's yearly budget allocations, the Coir Board and Coir Fed programs, and the five-year plans were all effective in this regard. The challenges of labour migration, displacement, and rising unemployment in the coir industry are discussed in the article.

As therefore, the study employs a mixed-methods strategy that includes surveys, structured interviews, and secondary data analysis in order to address the research problem and study objectives outlined below.

OBJECTIVES OF THE STUDY

A comprehensive look into the intricate connection between unemployment and the coir sector, as well as possible avenues for improving job prospects, are directed by these following objectives.

- Analyse how coir industry’s modernization and mechanization influence employment and worker productivity.
- Examine the patterns and trends in unemployment that are now occurring in the coir industry.
- Analyse the impact of mounting unemployment on the coir industry.
- Evaluate national and state level efforts aimed at mitigating unemployment within the coir industry.

METHODOLOGY

To investigate the relationship between rising unemployment and national efforts in the context of the contemporary coir industry, a descriptive and exploratory study with a mixed-methods approach incorporating qualitative and quantitative data is employed. Primary data consists of surveys, questionnaires, structured interview, focus groups discussion, and literature studies. Secondary data sources include government and industry reports, employment rates, output levels, and economic contributions. Sampling is stratified random sampling, with sample sizes set by population size. Data analysis consists of descriptive and inferential statistics, as well as thematic and content analysis. Informed consent, confidentiality, and transparency are ensured for ethical considerations. Each part of the investigation has its own specific timeframe.The study was taking a total of 12 months to complete, including a month-long piolet investigation. The next section goes into more detail about the study's general observations and findings.

Result

The analysis of the collected data reveals the working circumstances of coir workers as well as the current status of the coir industry. The sector saw a sharp downturn after 1990, when mechanization gained traction as a result of large firms' needs for higher production and efficiency. Household and small-scale operations began to close one by one. The modernization has both positive and negative impacts on employment. While the introduction of machinery can lead to labour displacement, it can also create new roles like machine operators and maintenance technicians. Skill development can be challenging for unskilled workers, but there is an increased demand for skilled workers, leading to more training programs. The government and trade unions have reached an understanding to encourage mechanization while limiting labour displacement, although the detrimental effects on employment levels have not been entirely offset by these measures. Participants in the study were aware that mechanization of the industry can enhance working conditions, increase productivity, and ensure consistent quality.However, the bigger anxiety of exporters and large-scale unit operators who shared their openness through the survey centred on the fact that it can also lead to higher production volume and cost efficiency.When approval for modernization is given, policy makers anticipate that retraining programs, gradual mechanization, and legislative interventions will help balance the effects. Other industries' experiences have shown that by addressing these challenges, the benefits of mechanization may be maintained while labours’ concerns are balanced and lessened, promoting both steady employment and technological advancement.

This section of the article is subdivided into four: a) Modernisation and its Impacts on the Coir Industry, b) Labour Displacement as a Result of Coir Industry Modernization, c) Reported Health Issues among Coir Workers, and d) Pattern and Direction of Labour Displacement.

Modernisation and its Impacts on Coir Industry: The study finds that the coir industry experienced significant growth and decline from 1947 to 2020, with 39 major factories and over 200 export units and 540 registered coir production units with power looms and electrically driven machines in operation now. The 1980s saw a significant expansion in the number of coir industrial units, including household, small-scale, and cooperative units, as well as workers, particularly those involved in coir yarn spinning and looming. This growth was facilitated by favourable programs and policies implemented by both the national and state governments. However, the number of small scale and household units declined sharply after 1990, with the abandon rate increasing due to mechanization and economic problems faced by the units. The labour force in the coir industry increased up to 1990 but then showed a decreasing tendency, revealing the labourdisplacement and migration process from the industry.

Large-scale mechanization for the coir industry has been gaining traction since 1990, and it has nearly completely changed the composition and operation of the Kerala coir industry. The central regulatory agency's (Coir Board) report shows that 75.1% of coir yarn manufacturing units are modernized.Only19.4% of coir looms are conventional. Coir Mats industries make up 36.5% of power loom operations. Traditional methods are used by only small-scale and domestic units remaining. However, some units choose not to modernize due to funding and electricity tariffs.The output of coir yarn has increased as a result of de-fibering machines and automated yarn spinning machines, while the mechanization of weaving-spinning looms to increase productivity and speed significantly reduced the demand for human labour while contributing significantly to cost-effective production.

According to the study, 77.3% of today's coir employees are well-equipped to manage modern coir industrial technology, while 4.6% are still unfamiliar with the industry's changing practices. However, 18% of employees are intentionally unprepared to handle new technologies.The study's findings also show that 60% of coir industry labors in the traditional Loom/Weaving segment believe they are well-equipped in coir production technological skills in traditional mode and do not require any training to improve their skills for mechanized pattern, whereas 39% of current loom workers willingly underwent skill training

because they accepted the mechanised pattern of production. Though they have no other option than to continue in the coir sector for the rest of their lives, 40% of coir workers over 50 stated they would like to obtain training in automated machinery and new technologies.

Displacement of Labour due to Modernisation of Coir Industry: Modernization in the coir industry has substantially improved the sector's efficiency and export profile, but it has had drastic effects on the workforce, including high rates of unemployment, devaluation of skilled multitaskers, migration, rising debt, wage cuts, irrational terminations of employees, widespread poverty and other socio-economic miseries (Mathew, 1995). Due to their early adoption of a mechanized production pattern, low labour costs, increased accessibility of coconut husk, and lack of interference from labour unions, Kerala's neighbouring states quickly surpassed Kerala in pre-loom work, particularly in the areas of raw material management, coir fibre extraction from coconut husk, and coir yarn spinning.The advent of large machinery in this area, i.e., raw material production, removed the necessity for traditional coir workers, particularly female coir workers from Kerala's coir sector. Between 1970 and 1990, the coconut de-husking and husk retting industry was restructured through mechanization to manage ecological and health concerns (water pollution, air pollution and health issues near the husk retting areas), displacing a large number of labourers, particularly unskilled, unorganized, moderately literate, and over-50-year-old casual workers.

Table 1: Displacement of Coir Units (Source: Primary Data)

Coir Workers	**1990's**	**In 2000**	**Up to 2010**	**Now**
Unregistered	>98650	>58250	<43755	<19600
Organized	>66000	>41500	<39000	<11580
Total	**>164650**	**>99750**	**<82755**	**<31180**
Coir Units				
Unregistered	>2500	>800	<40	2
Organized	>5648	>3458	<683	258
Total	**>8148**	**>4258**	**<723**	**<260**

The high time of coir industry was pre-1990's and thereafter the traditional coir sector, especially the unregistered household and small-scale units started disappearing. The financial loss, labour- raw material cost up and high working capital, and high costs of mechanisation and maintenance cost of mechanisation were the reported reasons. Among small-scale coir units, 51% of units discontinued operations between 2000 and 2010, with only few small-scale units remaining but continued in the old-fashioned way. However, the lock-out of 3120 small-scale coir units contributed 39% of loss in employment prospect.The

displaced coir workers are typically older than 50, as they are unable to adapt to mechanised production and lack the technical expertise needed in the contemporary coir industry. Men over the age of 50 and women over the age of 45 (together 33% of total labours) were the most affected segments of coir workers as a result of modernisation-induced unemployment in the coir industry.

In general, the average age of displaced male coir workers is 59, while females averaged 63. Men make up 56% of the displaced coir workers, while women make up 44% (Pratheesh, 2012). Labour migration has been a significant issue in the coir sector, with women making up 70% of the workforce and mostly employed in spinning and housekeeping industries. Many displaced workers are being re-employed in other sectors, such as tourism, transportation, delivery agents, security guards, office attendants, and the National Rural Employment Guarantee Program (Pratheesh & Nair, 2022). Furthermore, skilled labourers' migration from outside the state to run the mechanized coir manufacturing business poses a significant threat to local employment and the state's economy.

Reported Health Issues among the Coir Workers: The coir industry, a complex process involving hard work and dusty environments, often leads to health issues for workers. Respiratory issues (sinusitis, bronchitis, asthma) are largely reported. Ophthalmic issues, orthopaedic issues and common health issues like headaches and back pain were common among the traditional coir workers. In government hospitals, especially in Cherthala and Ambalappuzha Taluks in Alappuzha district, Coir workers special care wards are running. Cases recorded were chronic cough, protracted cough, phlegm, wheeze, dyspnea, bronchitis, sinusitis, shortness of breath, and bronchial asthma.Among female workers, 47% and 19% reports head ache and neck & back pain respectively (Pratheesh & Nair, 2021). The traditional husk retting pattern, chemicals used to prepare coir fibre, and additional chemicals used for mat and matting decorations all contribute to these health risks.

Pattern and Direction of Labour Displacement: The Kerala coir industry employs 3,66,200 people (50% in the unorganised sector, 40% in the cooperative sector, and 10% in government companies), regardless of educational background. However, due to modernization of coir producing operations in the 1990s, a younger generation (age <30) left the business entirely. Another group of coir workers (over the age of 60) were forced to leave because they could not manage the mechanised activities. The mechanization and resultant labour displacement significantly impaired the socially and economically disadvantaged section (OBC), who make up 73% of the total coir workers. The age of the workers,

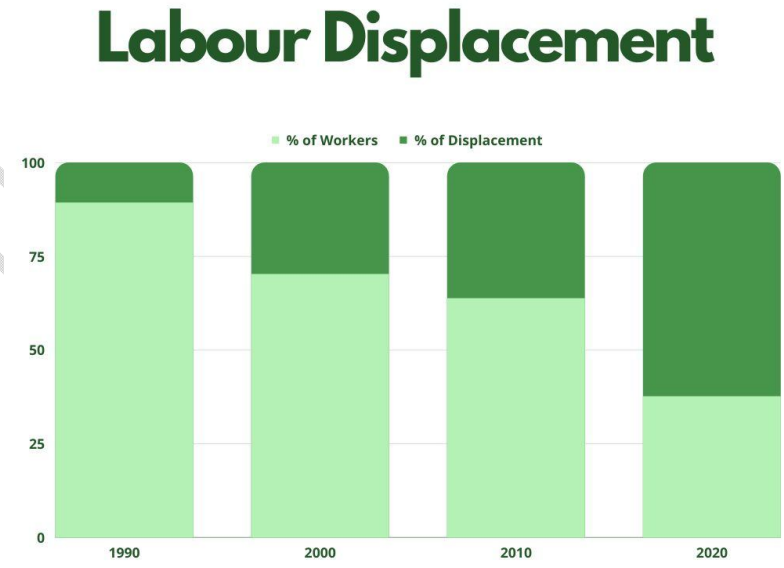
combined with the delay and slow mechanization process, resulted in the widespread expulsion of traditional coir workers from the industry, and they would never be reabsorbed into the contemporary coir industry.

Table 2: Displacement of Coir Workers (Primary Data)

Period	Number	% Workers	% Displacement (After 1990)
1991	264650	89% (Compared to1980)	11% displaced
2001	219750	70%	21% displaced
2011	92755	64%	49% displaced
2021	31180	38%	81% displaced

Steady displacement of labour is visible since 1990 (Commencement of NEP) and the total workforce reduced from 264650 to 31180 between 1990 and 2021 caused the displacement of nearly 81% of coir workers from all segments. Among the displaced workforce, women make up a significant portion (42.8%) and the majority work in the traditional coir industry (64.2%). Due to labour displacement, poor financial performance, lack of training and development, poor skills, and health issues, the mechanization of the coir industry has caused greater socioeconomic misery for women coir workers. Since 1990, more than 20% of coir workers have been replaced in each decade. The workers from all segments of the coir producing industry, namely household, small scale, cooperative, and manufacture cum exporter units, are unemployed.

Figure 1: Magnitude of Labour Displacement (Primary Data)



This massive unemployment situation has had a wide-ranging socioeconomic impact on the coir business (up to small scale operators) and sociocultural life of coir workers. The household and small-scale segment of production has almost completely abandoned since itwas in conventional handloom method, with only a few units using 2-3 semi-mechanized or power looms still in operation. The closing of household units resulted in 95.6% labour displacement, while small scale units resulted in 98.6% (the operators also quit from the business). In the study area, total of 133470 workers have been displaced from the coir industry as of 2021. It is a truth that the coir company operations have a high rate of unemployment and insecure employment nowadays. The aforementioned rationale is the reason why the younger, educated adults unchosen coir industries. The few significant coir units in operation are export-oriented, and they only favour hiring temporary labour. The current reality is that "electricity is more essential than manpower."

DISCUSSION

This section of the article focuses on broad observations and specific information that has been gathered via study results analysis. The Kerala, India, coir industry is currently experiencing a significant but uncommon employment situation that is leading to modernization and a strategic shift in its production. Machines are replacing human labour, coir production units are closing, production costs are rising (labour charges, machine maintenance, massive increases in the price of raw materials, late payments for products, and other reasons), and workers are gradually being reemployed in various other job sections. Workers suffered from economic difficulty as a result of the mechanization, whereas larger companies and exporters enjoyed better earnings (Shaljan, 2002).Kerala's economy has benefited from the modernization of the coir industry, which has increased exports of coir and coir products by 15.5% and 26.7%, respectively. India's coir industry (in respect of workforce) has been shrinking since 1991 as a result of new economic measures and resulted in labour migration, with many workers finding employment in other industries or service sectors (Aparna Mitra, & Pooja Singh, 2006). The automatic reabsorption theory of mechanization, which was believed to be relevant to the coir industry, was shown to be bogus because the process of mechanization was not gradual but rather progressed slowly, which resulted in the gradual displacement of labour but prevented their reabsorption into mechanized production segments.

The investigation revealed that the coir sector witnessed considerable expansion and decline between 1947 and 2020. This observation can be explained by the fact that local

entrepreneurs took over the coir factory operations after the European proprietors moved from India after our independence. The industry grew gradually under the influence of these new owners' capitalist goals, while left-wing trade unions working to protect workers' interests also hindered progress. Between 1970 and 1990, hundreds of household coir units and new small-scale coir units were dispersed throughout Alappuzha, particularly in Ambalappuzha, Alappuzha, Komalapuram, Omanappuzha, Kanjikkuzhy, Mannanchery, Mararikkulam, Muhamma, Thannermukkam, Cherthala, and Kadakkarappally. In fact, half of the population, particularly those from the Ezhava community, solely relied on the coir industry for their survival. Participants were reported the high density of small-scale and household coir units in Mararikulam and Muhamma during that time. For example, there were four coir mat looms and 25 coir workers in every ten houses.

The 1980s saw a significant expansion in the number of coir industrial units, including household, small-scale, and cooperative units.In Alappuzha during 1980 and 1990, there were 1810 small-scale units, 3180 household units, 940 cooperative units, and 640 large-scale and export-cum manufacturing coir units. But the number of small scale and household units declined sharply after 1990, with the abandon rate increasing due to mechanization and economic problems. There are currently 214 small-scale, 109 household, 280 cooperative, and 30 large-scale, export-capable coir manufacturing plants in operation in Alappuzha.Large-scale mechanization for the coir industry has nearly completely changed the composition and operation of the Kerala coir industry.

The data analysis clearly identifies the trends within the coir industry, including the functional units or segments, various labour divisions, and specializations. However, prior to 1990, none of these were methodically or scientifically oriented; rather, they were primarily concerned with labour preferences and the type of work that was purported to be done in the coir industry. The industry is separated into functional segments, such as large-scale, small-scale, and domestic units. Typically, household coir units are involved in coir fibre extraction, coir yarn spinning, and one or two coir looms for traditional coir mat production. There is no division of labour in household units, and each family member is expected to execute some or all of the responsibilities associated with coir or coir product manufacturing (Pradeep Kumar, 2003). Child labour persisted in this segment until 1990. The mechanisation of spinning coir yarn was not embraced by all participants in the coir industry, but the fast-growing demand for spun coir yarns because of modernisation and export increase has compelled coir yarn producers to find new ways to enhance current spinning techniques. Thus, electric Ratt (yarn

spinning machine) appeared to boost coir yarn productivity. The Coir Board introduced fully automatic yarn spinning machines and comprehensive training program for coir workers, especially for women to manage unemployment and labour displacement.

Just 19.4% of coir looms are conventional, compared to 75.1% of modernized coir yarn manufacturing facilities. De-fibering devices and automated yarn spinning machines have enhanced the yield of coir yarn. 4.6% of today's coir workers are still uninformed about the evolving practices in the sector, but 77.3% of them are qualified to handle contemporary coir industrial technology. However, just 18% of workers purposefully lack the skills necessary to use modern technologies.

Figure 2: Labour Displacement in Coir Yarn Spinning Segment

Source: Primary Source

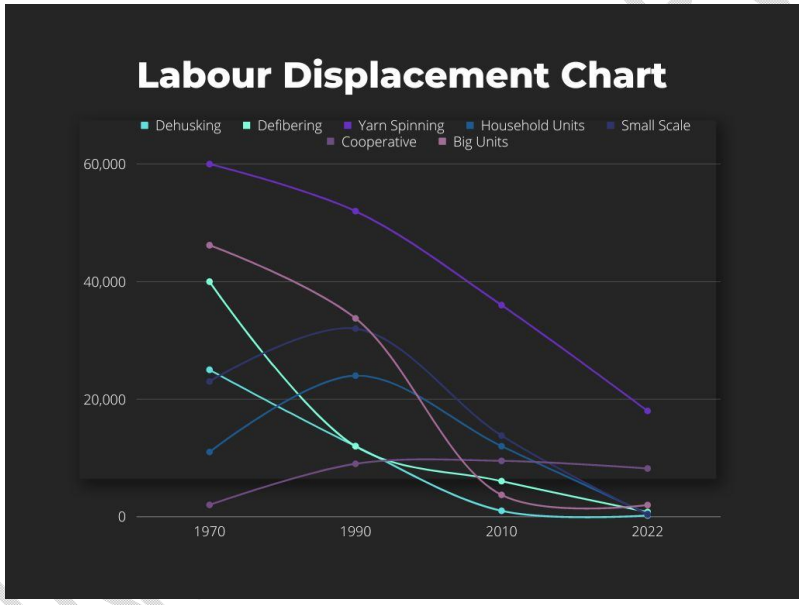
The workforce peaked between 1970 and 1980 and then declined due to mechanisation, with 70% of workers laid off. Today, only 30% of coir workers remain, a significant decline from the pre-mechanisation phase.As mechanization proceeded, the capital expenditure required for mechanized manufacturing became prohibitively expensive for these workers, and government support for handloom coir goods was reduced. This has resulted in rising debt, insecure employment, and a shrinking market for handloom coir goods, particularly in household traditional coir units. The current availability of coir workers in conventional housing units is barely 2.1%.

Kerala has approximately 10,000 small-scale coir commercial firms, the majority of which are owned by business-savvy individuals. Due to high costs and labour needs, these

plants primarily use conventional methods to manufacture mats and carpets for major exporters. Large exporters establish prices without considering production costs, which leads to debt and financial problems. Since 1990, mechanization has resulted in 98.4% of small-scale businesses in Alappuzha alone being shut down. This results in significant job losses for the economically vulnerable portions of society.

Kerala's coir industry, which comprises over 80% of manufacturing, experienced a decline in workforce after the 1990s due to labour union resistance and lockouts. The government's lack of support for mechanization and labour disputes led to job losses and migration to neighbouring states. The surviving units suffer for earnings due to higher production costs. Since 1990, 133470 workers have been displaced, with 81% of them unemployed.

Figure 3: Comparison Chart of Labour Displacement



Kerala's unemployment situation is a big worry, with chronic unemployment being the most serious social issue in the last three decades. The coir industry's displacement reflects the overall unemployment rate. The main contributors to this imbalance are mechanisation and labour displacement.The study located the causes for unemployment.Technological obsolescence, market competition, seasonal nature, skill deficit, and inadequate infrastructure were the listed causes. Traditional methods lead to lower productivity and inefficiency, making it difficult to compete with synthetic alternatives. The influx of cheaper, synthetic substitutes has also affected demand, leading to a decline in coir product market share. The industry also faces skill gaps due to younger generations' disinterest in traditional skills and

inadequate training facilities. Inadequate infrastructure further contributes to the industry's inefficiency and unemployment.

To lessen the severe effects of modernization on the workforce, state and central governments, as well as governmental organizations, have been implementing consistent policy-based interventions. These interventions are discussing in the following part.

GOVERNMENT MEASURES TO ADDRESS UNEMPLOYMENT

Government initiatives and policies were launched at both the state and national levels to improve the coir industry's predicament. The central government allocates an average of 100 crore to the coir industry every budget and considerable focus in five-year plans, with most of this funding going towards mechanization. However, some funds are also set aside for the protection of the old coir industry, which is still an active. The National Coir Training and Research Centre in Kalavoor(Alappuzha) was established to proceeds research in modernisation and impart trainingfor coir workers. The centre aims to develop new designs and patterns for coir products, establish self-employment options through the PMEGP, and establish employment chances in coir industrial units. Frequent training programs are put in place to improve labour skills, new machine operation, and machine maintenance. The National Coir Mission is to advance innovation, modernize the coir sector, and raise the competitiveness of coir goods on the global market. With the introduction of the Mahila Coir Yojana program, women employed in the coir industry are empowered by receiving free training and automatic spinning machines at a discounted rate. The Rejuvenation, Modernization, and Technology Upgradation of the Coir Industry is a credit-linked subsidy program approved by the central government to address labour displacement in the coir industry. The main goals of the scheme are to modernize the coir industry, improve productivity, quality, and product diversity, and boost the economy. The Coir Industry Technology Upgradation Scheme (CITUS) aims to boost industrial units with modern infrastructural facilities, encourage the development of cutting-edge coir processing facilities, expand the sector to new locations, and encourage better use of available raw materials.

The initiatives at national levelhave also underlined the importance of coir industry R&D efforts, financing research initiatives and collaborations with research institutes to drive innovation, increase coir production efficiency, and explore new applications for coir-based goods. The 12th Five Year Plan Project, also known as the Coir Plan (General) Scheme or Coir Vikas Yojana, was created with the following goals in mind: to enhance the utilization of

raw materials, create jobs, empower women, broaden local and foreign markets, and provide social programs. Furthermore, sufficient funding will be needed for the Coir Board's planned initiatives as well as those of the States that produce coir, such as Kerala, Tamil Nadu, etc. The Government of India would spend a total of Rs. 365 crores on the coir industry during the 12th Five Year Plan period. The coir sector and its ability to create jobs are given appropriate weight in the present national resource allocation system. The major goals of today's projects are to diversify production, attract young and skilled labour, increase self-employment opportunities through the coir industry, expand coir production operations to new locations, and expand the market for coir products both locally and internationally—particularly those with eco-friendly value added.

The Directorate of Coir Development, Government of Kerala, coordinates the activities and programs of the coir industry in Kerala. Other state organizations include Kerala State Co-operative Coir Marketing Federation (COIRFED), Kerala State Coir Corporation Limited (KSCC), and Foam Mattings (India) Limited (FOMIL). COIRFED manages procurement and marketing of primary coir cooperative societies. KSCC, founded in 1969, provides small-scale coir producers with manufacturing and marketing facilities. The Directorate of Coir Development has implemented five major schemes to modernize and develop infrastructure in coir co-operatives, strengthen marketing activities, stabilize coir fibre and yarn prices, and include geo textiles as a standard engineering material.

SUGGESTIONS

The study makes a number of important recommendations for Kerala's coir sector.

- Support must be ensured by subsidized rate raw materials, timely payments, regular employment, and subsidies for electricity to run the machinery in order to maintain household and small-scale coir units.
- In order to increase the availability of raw materials and provide opportunities for employment for women, it is necessary to become self-sufficient in the production of raw materials, improve coconut production, collect green husk in a systematic manner, and put in automated defibring and yarn spinning units at key locations.
- The kind of mechanization needed by coir units should be examined by an ad hoc committee, which should also create standards for future mechanization in the coir industry.

- Small-scale industrial units should be excused from the Minimum Guarantee Scheme by the Electricity Board, and a group of specialists should assess the remaining facilities and suggest ways to revitalize them.
- The Coir Board should work closely with local governments to invite displaced coir workers and provide appropriate training to improve their work skills and increase their chances of reemployment.
- A fresh rehabilitation scheme is needed for displaced coir workers and mechanisation victims.

CONCLUSION

The modernization of the Coir Industry, affecting 75.1% of manufacturing units, has led to increased output but also high unemployment rates, devaluation of skilled workers, migration, rising debt, wage cuts, and irrational terminations. The labour class, particularly coir workers, has suffered significantly as a result of the mechanization of the coir company operations. The mechanization of the coconut de-husking and husk retting industry in Kerala, India, has led to the displacement of many unskilled, unorganized, and over-50-year-old casual workers. These workers, who make up 70% of the workforce, are often older than 50 and lack the technical expertise needed in the modern coir industry. Health issues among these workers include respiratory, ophthalmic, orthopaedic, and common issues like headaches and back pain. As of 2021, 133470 workers have been displaced from the coir industry. The government, particularly the bureaucracy, was slow to act when it came to mechanizing the coir industry, which led to the displacement of between 60 and 70 percent of workers across the coir industry sectors. Despite the proposal of the "automatic reabsorption theory" of mechanization, these workers were not automatically reabsorbed back into the coir industry. While relief measures costing the state exchequer were promptly put into place, the reformers did not come up with a plan to make use of the funds allocated to conventional coir producing methods. Conditions in the coir sector industry have improved thanks in part to government initiatives, but policies and programs to lessen the socioeconomic effects on the labour class have not been successful enough, nor has the government interfered sufficiently.

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

Consent

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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