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## ***Editorial***

*India has travelled a long way in education. Higher education in our country has made much advance than ever imagined by the west. In the emerging global world order, India is trying to position itself as a knowledge driven economy. Higher education assumes tremendous importance in this context. Large scale changes are being talked about and may indeed be implemented. The changes are many and momentous, and a successful transition in arena is full of possibilities*

*It is no secret that a genuine knowledge has a prerequisite of solid foundation provided by educational institutions characterized by relevance and excellence in training and research. JCS is intended to nurture research and thereby expand realms of knowledge.*

*Looking forward to the future we can assure that the journal will continue to deliver the best of recent developments in different disciplines and publish good quality findings of high significance and relevance. On this happy occasion I wish to express my sincere appreciation to research & Journal committee for their enthusiastic support and co-operation to this academic venture. I also extend sincere appreciation of the college management and the principal, to the valued readers and authors for their continued interest in JCS, and to every member of the editorial board to this scientific endeavour. We further gratefully acknowledge the enthusiasm and support of the college PTA who provided the financial support for the publication of the journal.*

*We also welcome valuable suggestions and criticisms of the readers for improvement and augmentation in this regard.*

*With warm regards*

**Dr. Jeeju PP**  
Chief Editor



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## NEED FOR NEW INITIATIVES AND PROJECTS FOR THE RELIEF AND SUSTAINABLE REBUILDING EFFORTS IN KERALA

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### *Abstract*

*The Government of Kerala has launched a new initiative to overcome the impact of Kerala flood-2018, namely 'Rebuild Kerala Initiative'. This great initiative stands for crowd funding of projects envisaged for rebuilding Kerala in the light of deluge that occurred during August 2018. Projects once included in this portal will be funded by various donors including that of numerous institutions as well as individuals. Accordingly, Irrigation department is also having exhaustive discussions with premier institutions like World Bank, Asian Development Bank and other private firms on a day-to-day basis. Apart from rehabilitation and reconstruction measures proposed by the department, all the institutions under discussion have extended serious commitment in helping the department to adopt modern techniques practiced across the globe in managing water resources. This includes various capacity building measures. The main focus areas of this rebuild initiative are Hydrology, Hydraulics, Using Renewable energy in water sector, Environmental and social aspects in water, Coastal Protection Measures Management and Operation of Reservoirs including flood forecasting systems. In Kerala, the flood occurred in 2018 have destroyed or damaged 83000 km of roads, including 16,000 km of major roads. As a result of the flood the economic activity has largely ground to a halt in many areas of the state. In this context this paper is an attempt to assess the various economic aspects of the severe flood occurred in the State in 2018.*

**Keywords:** Kerala Flood, Economic Impact, Rescue Measures, Rebuild Kerala, etc.

### **Introduction**

Extreme rainfall and almost full reservoirs resulted in a significant release of water in a short-span of time were the main reasons behind the severe flood that occurred in Kerala during August 2018. Seasonal rainfall above normal, high reservoir storage and unprecedented extreme rainfall in the catchment areas of major

dams in the State worsened the flooding in the state. This large-scale flooding have affected millions of people and caused 400 or more deaths. Kerala received more rainfall during the period 2018 May 1 to August 21 and it was 53 per cent more than the average. Most of the major reservoirs in the State had more than 90 per cent of its capacity on the first week of August 2018. The heavy rain occurred in the

catchments area of major reservoirs was unprecedented. Therefore, the reservoirs had to release the considerable amount of water in a short span of time. For instance, Idukki, Kakki, and Periyar reservoirs, which were already almost full, witnessed extreme rainfall.

### **Significance of the Study**

As per the Census Report 2011, around half of the population in Kerala live in rural areas and depend on rural livelihoods. The flooding and landslides have led to significant shelter destruction. Nearly twenty thousand houses have been damaged. Due to flooding, the plantation industry in Kerala is at risk of losing major amounts of foreign exchange receipts. Most probably it affects the livelihoods of many farmers in the State. Coffee plantations are heavily impacted. The flood has also affected tea, rubber, cardamom, and black pepper plantations. Re construction of the Kerala is not an easy venture. It requires huge fund mobilisations and investments. Rebuilding of the State is not the responsibility of the Government alone, but it is of the society as well.

### **Objectives of the Study**

The important objectives of the study are;

1. To assess the background of Kerala Flood-2018
2. To study about the major economic impact of the flooding occurred during august 2018.
3. To examine the initiatives required for re building Kerala.

### **Methodology of the Study.**

This study is descriptive in nature and secondary data is used for it. Really there is much scope for various kinds of research works concerned to this topic, which will be useful for the farmers as well as the policy makers.

### **An overview of Kerala Economy**

Kerala generally known as “God’s Own Country” is really God’s own country only. The people of Kerala are always proud of expressing this in their writings, discussions, and poems wherever possible about the beauty of Kerala State. The God also wholeheartedly in a very generous manner blessed Kerala state like anything else which in no way can be comparable with not only with any states in India but also with any other parts at global level. The blessings of God mainly based on or originated from Western Ghats. Almost forty percent of the Western Ghats lie in Kerala only. All the forty four rivers originate from the Western Ghats or the areas which are associated with Western Ghats. The Western Ghats, with an Average Annual rainfall of 3107 mm, presents one of the best examples of the monsoon system at the global level. Average annual rainfall of India is 300–650 millimetres only which also not reliable and some years only failures. The average rain fall in Tamil Nadu is 945 mm. The coastal area of Kerala has fifty three brackish lagoons which are lying parallel to the Arabian sea coast which includes five large lakes linked by canals, both manmade and natural, fed by 38 rivers, and extending virtually half the length of Kerala state. We heard a lot about Edan Garden

described in the Bible but nobody seen it. If anybody wanted to see such places in the Universe one has to visit Kerala state first to experience the reality and witness. Really Edan Garden is so beautiful like Kerala you have to visit then reveal it to the world. One can enjoy the beautiful mountains, mountain peaks, mountain slopes and valleys, rivers, backwaters, tropical forests, trees, birds, animals and flora and fauna etc. The Lord Parasuram has reclaimed the land by throwing his axe between Western Ghats and the Arabian Sea in such a way that its green beauty should not be compromised at any situation.

Kerala was selected by the National Geographic Traveller as one of the 50 destinations of a lifetime visit and one of the thirteen paradises in the world. Kerala with serene beaches, tranquil stretches of backwaters, equable climate, lush hill stations and exotic wildlife are the major attracted tourists from world over throughout the year. And an added advantage of this land is that most of the destinations in Kerala are very close to one another. The entire state of Kerala is full of tourist destinations. At every corner of this state, one can experience something new. That is why the people proud of calling the state as 'God's Own Country'. Such a beautiful state has a lot of firsts in her credit or leader in most of the social activities. Social Transformation is the process of change from inward looking to outward looking or travel from ignorance to enlightened world or the formation of value system in the fullest sense. Social transformation started taking place in Kerala from nineteenth century

onwards. Social reformers and political visionaries in Kerala like Sri Narayana Guru, Chattampi Swamikal, Ayyankali, Dr. Palpu, Kumaran Asan, R.. Sankar, Nitya Chaitanya Yati, Nataraja Guru, V.T Bhattathiripad, and Mannath Padmanabhan etc., and Christian Missionaries preached the importance of education, institutionalisation, rights and freedoms etc. All these social activities helped the Kerala society in getting the opportunity of learning in schools and colleges much in advance and became hundred per cent literary state in primary education compared to other states.

The 'Western Education System' or 'Modern School System' was initiated and implemented by the Christian Missionaries which brought revolution in education development among the Kerala society by ensuring education accessible to all without any caste and religion identity or discrimination. Nair, Ezhava and Scheduled Caste and Scheduled Tribe were guided and supported by ashrams and the above listed saints and social reformers.

Kerala's social developments with respect to hundred percent primary school enrolment rate, low Maternal Mortality Rate (around 46 only), low Infant Mortality Rate (less than 9), But at all India level it is 34 in 2016. life expectancy: Kerala has the highest overall life expectancy at birth, at 74.9 years–72 for men and 77.8 for women, high female literacy rate of 92.07 per cent etc are praised and appreciated not only by the government of India but also by UN, World Bank, IMF and World Economic

Forum. Most of the world renowned economists like Amartya Sen have quoted Kerala in their research studies the Way of Kerala Development taking place. The political parties which occupied the government after independence also gave much importance to health and education and motivated the people to be first in achieving social variables. In most of the western world social development took place along with industrial revolution or after industrialisation. Social development took place in Kerala without industrialisation of the state. That made the economists surprise and made their eyebrows raises. That may be the reason the academic world called it a model.

World Bank and Niti Aayog in their weighted composite index consists of health outcomes (70 per cent weightage), governance and information (12 per cent weightage), and key inputs and processes (18 per cent weightage) listed Kerala first for the achievements with these variables.

Classical art forms, colourful festivals, exotic cuisine are some of the cultural marvels that await travellers. Ayurveda, the ancient Indian system of medicine and Panchakarma, the rejuvenation therapy in Ayurveda have also helped Kerala to gain a pan-global reputation as a worth-visit destination. Season never ends in Kerala due to year-long moderate climate and numerous festivals. If there is a place in the riveting diversity of India where there is tangible beauty and a phenomenal as stated above it is here in Kerala. Kerala has beautiful landscape, fascinating customs, and an educated public and high-intensity cultural life. The state always

attracts tourists and travellers from not only India but also all over the world. Back waters, historical structures, culture, wildlife, and natural beauty, the state has all these and more. The major tourist destinations in the state include Thiruvananthapuram, Kochi, Kovalam, Thrissur, Kozhikode, Munnar, Palakkad, Alappuzha, Kollam and Kannur.

According to Kerala Economic Review 2016, cropping pattern in Kerala is dominated by cash crops. Food crops comprising of rice, tapioca and pulses accounted for just 10.21 per cent of the total cultivated area in 2015-16 while cash crops, cashew, rubber, pepper, coconut, cardamom, tea and coffee, constituted 62.8 per cent of the total cultivated area. Plantation crops like rubber, coffee, tea and cardamom accounted for 26.8 per cent of the total cultivated area. Coconut has the largest area under crop cover (30 per cent) followed by rubber (20.9 per cent) and paddy (7.4 per cent). Of the cultivated area, 4.45 per cent is under banana and other plantains. Little more than 2 per cent is under tapioca and just 0.2 per cent is under ginger and turmeric together. In 2015-16, pulses, pepper, ginger, areca nut, cardamom and rubber recorded slight increases in area under cultivation compared to the previous year while all other crops recorded a decline.

The share of net irrigated area to total cropped area was 15.75 per cent in 2015-16. Thus, only 15.75 percent of the total cropped area was under irrigation cover whereas in states like Punjab, Uttar Pradesh and Tamil Nadu it was more than 50 per cent. The share of gross irrigated area to gross cropped area was 18.4 per

cent. Coconut occupied the largest share of the irrigated area (34.25 percent) followed by paddy (31.12 per cent). The share of other crops was banana (9 per cent), areca nut (7 per cent) and vegetables (8 per cent).

Kerala State with Rs 7.76 lakh crores Gross Domestic Product, tourism and agriculture, mostly rice, pepper, cardamom, cashew, tea, coffee, coconut, contribute about 10 per cent each (tourism -10 and slightly more for agriculture) enjoying the 8<sup>th</sup> position among Indian states. Such a beautiful state met a natural calamity in the month of August, 2018 in the form of floods and landslides. All the above stated social components of the state GDP are in a state of total chaos and destruction.

#### **Development Experience of Kerala**

Kerala is one of the most advanced state in the country with respect to most of the social indexes like high literacy rates, low rates of population growth, low infant mortality rate and low maternal mortality rate which are comparable to most of the Western European countries, successful tourism sector and high agricultural goods exports as well as a strong flow of remittances, nearly forty per cent of the State GDP, from migrants working in Gulf countries.

Kerala witnessed the worst flood in the month of August, 2018 ever after 1924. Kerala is a state that routinely witnesses heavy rainfall but this year it was nearly 30 per cent higher than the average rainfall, leading to the floods. But Experts have different views on the reasons for this flood and claimed that unplanned development, cutting of trees and illegal forest

land acquisition at the Western Ghats are other major reasons for the flood.

Kerala state received a very good rainfall right from the beginning of the monsoon. Infact it started one week earlier this year and it is about 257 per cent more than the normal rain fall in Kerala. Almost all the 54 dams in the state were filled by the end of July, 2018.

The Central Water Commission (CWC), New Delhi, has stated that the flood in Kerala was due to severe storm occurrences during August 8 to 9 and 15 to 17. "The storm of August 15 to 17 resulted in heavy flooding in Periyar, Pampa, Chalakudy and Bharatapuzha sub-basins of Kerala. The rainfall during August 15 to 17 was almost comparable to the historical July 16 to 18, 1924 rainfall of Kerala. One day rainfall in majority of the areas was more than 200 mm and severe rainfall continued for 3 to 4 days. For the first time in the state's history, 35 of its 54 dams have been opened simultaneously.

Local fisherman community of the State were the first to join the rescue efforts. They were using their boats to take victims to safety. India's army, navy and air force used helicopters and boats in a massive operation to rescue of thousands of people stranded in remote areas.

Weathermen have stated that it was the worst flooding in Kerala in nearly a century. All 14 districts of the state were placed on red alert. One-sixth of the total population of Kerala had been directly affected by the floods and related incidents. The Central Government has declared the floods a Level 3 Calamity, or "calamity of a severe nature".

### Impact of floods 2018 in Kerala

More than seventy percent of the of the regions were affected by this monsoon were classified as Ecologically-Sensitive Areas (ESAs). Most of the recommendations and directions by the committee was either neglected or rejected. Madhav Gadgil has blamed the Kerala state government for its irresponsible environmental policy for the landslides and floods. Kerala's backwaters, a pretty network of lakes, rivers and canals stretching almost half the length of the state, draw millions of tourists every year. Tourism Industry witnessed more than 80 percent cancellations of tourist bookings over the past few months. "The GDP growth of the state would decline by at least one percent. Things will normalise by next year. Tourism could see a revival in the next six months. But everything would be contingent on how swiftly the rebuilding begins.

Kerala floods 2018 have impacting not only tourism industry but also cash crops, trade activities including the international trade from Kochi and other ports are adversely affected the lives of millions of people.

Kerala is a highly consumption-oriented state. Tourism and cash crops are the lifelines of Kerala. When these two are completely crippled with a prolonged impact, the losses would be enormous leaving lakhs of people in the hardship. Let us list out the major damages caused by the floods.

1. Amount of Damage: The Associated Chambers of Commerce & Industry of India (ASSOCHAM) has estimated the devastating floods in Kerala could

potentially have caused damage worth Rs 15,000-20,000 crores. Deadly floods in Kerala have caused an estimated \$2.7billion to \$ 3.7 billion worth of damages. But there is every possibility that the cost to rebuild Kerala will exceed \$3.7 billion. Unofficial records pointed out that the loss may be around \$ 5.0 billion.

2. Over 3 lakhs of farmers were affected and their livelihood crops including commercial crops are totally destroyed due to landslides and flood.
3. Number of Houses destroyed: Initial estimates stated that 7000 to 27000 homes have been completely destroyed and around 50,000 partially damaged.
4. Number of people became homeless: About two lakhs and twenty thousand houses.
5. Number of bridges damaged: about 221bridges are fully damaged and to be rebuild.
6. Number of roads damaged: About 83,000km of local roads, including 16,000km of major arteries of roads, rivers, or railway lines were completely damaged or destroyed. Government officially estimated around 12000km roads were to be reconstructed and plan to spend around 1000 crores only for this sector.
7. Number of tracts of farmlands submerged: The floods submerged 45,000 -54000 hectares of farmland, including those growing tea, rubber and other commodities.

8. Number of people lost their lives: The flood has killed about 493 people so far.
9. Number of people displaced: the flood has displaced around 10 Lakh people.
10. Health officials are concern about the scope for diseases to break out given the poor sanitary conditions, and widespread contamination of drinking water.
11. The Indian Institute of Spices Research (IISR) has found that 30 per cent fall in spices production due to the Kerala flood, 2018.
12. The Kochi airport is estimated to have incurred losses between Rs 200 crores to Rs 250 crores. Kochi airport which became the world's first airport to completely run on solar power also witnessed damages to the solar panels. Due to floods 20 per cent of the panels have been damaged.
13. In the case of electricity a total of 50 sub-stations, 16,158 transformers, 25.6 lakh connections hit; Idukki: Losses worth Rs 4.83 crores in power infrastructure. Across the state, the KSEB puts the losses to its infrastructure at Rs 350 crores, apart from revenue losses of Rs 470 crores, having had to suspend operations at five general centres and 28 sub-stations after the flood.
14. The damage is particularly striking for Kerala as it has an extensive road network, down to villages, thanks to a People's Planning Campaign of 1996, transferring the control of over 35 per cent of the development budget to local authorities, with people of the area implementing the projects based on their needs. As of 2016-17, 69.79 per cent of the roads in the state were maintained by Panchayats, while the stake of the PWD was just 14.54 per cent, and that of its national highway wing only 0.82 per cent.
15. The Central Tuber Crops Research Institute has estimated that the Kerala floods have destroyed more than 2.5 lakh tonnes of tuber crops worth Rs. 288 crores cultivated in 7679 hectares, which is about 8.65 per cent of the total area under cultivation. The institute has found that the floods have affected the soil fertility. The institute has recommended that Site-specific nutrient management is imperative along application of lime, compost, green manure and bio fertilisers, bio pesticides to avoid soil-borne diseases.
16. Tourism accounts for 12 per cent of the state's economic activity and 20 per cent of its employment, will also have taken a particularly strong hit. The damaged infrastructure and difficulty of access have led to more than three quarters of reservations cancelled for September; October, the peak tourism season, is likely to see a 20 to 25 per cent drop. We know that the Cochin International Airport has been shut until August 26 after the runway was submerged. Train services in several parts of the state have also been suspended because of landslides and flash floods. "Tourism is completely out of gear immediately after the floods. Tourism accounts for about 10 per cent of Kerala's

gross domestic product, with the state welcoming about one million foreign tourists last year and 14.7 million local visitors.

The natural disaster could mean a loss of tourism income for an entire season while the state rebuilds itself. The **Kerala Government** needs to urgently address poor management of tourism along with unplanned and excessive development. The encroachment of water bodies and wetlands has tremendous repercussion and the Kerala Floods is a direct alarm to other Indian states as well. “But this is also a wake-up call for India to plan better in the long run to help adapt for extreme climate change events.” Kerala Tourism has rolled out a 12-point action plan to overcome the crisis facing the tourism sector. The plan aims at increasing tourist arrivals to watch the Neelakurinji that has bloomed every 12 years in Munnar and in the peak season commencing October through aggressive marketing campaign within the country and in traditional and new source markets of Kerala abroad.

A tourism survey has stated that that 90 percent of the destinations and facilities are ready for holiday visits. Tourists have started coming. But many fear to come down unaware that the monsoon fury is over. The plan is to convey the message that the State is safe for travel and stay, Kerala will participate in all domestic and international travel trade fairs and marts to convey the message that ‘God’s Own Country’ has bounced back after the floods. A new campaign will be launched to promote destination and products. Digital campaign on major destinations will be launched from

September 15 to win the confidence of the holidayers. “Organising it will give a strong message to holidayers that the water bodies in the State are safe. The Kerala Travel Mart (KTM) will be organised as scheduled from September 27 to 30 as it gives an opportunity to project the destination among 10,000 buyers and sellers. The State will also attend the prestigious World Travel Market in London from November 5. The Kochi-Muzris Biennale from December to March 2019 will be used to promote the destination and increase the footfall. Farm tours will be organised for travel writers, media persons and travel agents. Interactions will be organised in all major cities.

Ecologist Madhav Gadgil, Chairman of the Western Ghats Ecology Expert Panel (WGEEP), has claimed that the floods Kerala were a man-made disaster as illegal constructions on river beds and unauthorised stone quarrying contributed to the calamity. There are two components to it. One is the intense rainfall—of a higher level than normal. The material loss due to the Kerala floods has been estimated at Rs. 26000 crores, , but beyond this there has been an immense loss of natural, human, and social capital for which no estimates are available. There is no doubt that the short-sighted attempts in building man-made capital such as buildings in hilly forests, encroachments on wetlands and rivers, and stone quarries, while ignoring the attendant degradation of natural, human and social capital have played a significant role in exacerbating the problem.

### Schemes for Reconstruction of Kerala

After a once in a century heavy rain and floods, Kerala is now getting ready on its road to recovery and will build “New Kerala” or “Nava Keralam”. Now the state has to embark on a massive reconstruction work to retain the status of “God’s Own Country”. People have to start their journey once again from economic devastation, the environmental damage. Definitely the Kerala people will come out and rise up as the Phoenix. But building several areas from scratch is not an easy task and not as simple as it sounds. The funds or lack of it will be the major problem for the state. Here’s a look at the cost of rebuilding Kerala; the fears of an epidemic and containing them; getting help from different corners and utilising them etc.

The state should take inspiration from the ‘new deal’ plan formulated by President Roosevelt to revive the economic depression that the American economy was going through during the 1930s. Now thousands of employment opportunities will be generated as more than twenty seven thousand crores of money going to be spent. Kerala Government has stated that this is the worst calamity in the history of Kerala. This calamity has affected the entire stretch of Kerala and 12 out of 14 districts severely. The devastation and destruction are extremely severe and beyond a description. The loss of life, livelihood, homes, roads, bridges, agriculture, power lines and public infrastructure will have far-reaching impact on socioeconomic fronts. The money will be spent to repair and build roads and bridges, houses and business

establishments, creating new jobs for painters, carpenters, electricians, plumbers, wood cutters, and engineers, which will trigger a consumption boom. It seems an immediate demand for ceiling fans, washing machines, refrigerators, and TVs, which will also activate the economy. The flood created an opportunity for the state to transform itself to a more resilient economy with stronger finances and better disaster management capabilities in India.

The ultimate aim of reconstruction should not be just repairing the damage and compensating for the loss, but rebuilding a better Kerala. Estimates required for reconstruction varies from `27000 to `50000 crores. The Government of Kerala has sought the Centre’s approval for raising the state’s borrowing limit to 4.5 percent of SGDP and borrowing from the market.

According to Gireesh Babu ‘Start-ups’ such as Strava Technologies, which used spatial data analytics platform Cybermonkey to offer geospatial intelligence to rescue teams; QKopy, a social networking app that has helped authorities fight fake news during emergency; and Riafy, an app studio that has developed cookbook recipes and others — used their knowledge and technology to convert physical addresses into GPS coordinates, supporting rescue teams in mapping those requiring support. Strava provided drone-mapping and GIS technology to help the rescue forces and also helped manage various distress calls and messages to offer useful data for efficient and faster rescue operations. Riafy Technologies developed a platform in which addresses were

converted into GPS coordinates — as physical landmarks were not making any sense given most of them were submerged — and colour-coded the locations based on rescue, food, water and medicine requirements. Besides, it also eliminated duplicate requests, thus helping authorities effectively utilise useful data. The company said in a blog post that within three days of the platform being launched, it has processed 100,000 requests for help and after eliminating duplicate requests, accurately pinned GPS locations of more than 35,000 people, saving thousands of lives. QKopy, a start-up from Kozhikode, has also been working with local authorities to manage traffic as various roads were either inundated with flood waters, or damaged. With the app installed by the public along with a particular number advertised by local traffic police officials, the administration was able to communicate to people directly on road conditions without any fake messages distracting users. Earlier, when the Cyclone Ockhi had hit the southern coasts of Kerala, another start-up, C Mobile, had helped in search operations.

The United Nations Report on Kerala Flood has stated that Kerala will need about Rs 31,000 crores for recovery and reconstruction following the century's worst floods. This is the first time the UN has prepared such a report in India. The report assessed the damage and loss incurred due to the devastating floods in the state in August 2018. It said the state would need about Rs 31,000 crores for recovery and reconstruction. The highest amount would be needed for reconstruction of roads and

transportation (Rs 10,046 crores), followed by housing (Rs 5,443 crores), agriculture, fisheries and livestock (Rs 4,498 crores), employment and livelihood (Rs 3,896 crores), other infrastructure (Rs 2,446 crores), irrigation (Rs 1,483 crores) and water and sanitation (Rs 1,331 crores). The report highlighted the international examples and models for building back a better Kerala in 16 sectors. It suggested that Kerala could become the first green state in the country by building on the four pillars of integrated water resources management; eco-sensitive and risk informed approaches to land use and planning; inclusive and people centred approaches; and by adopting knowledge, innovation and technology. Kerala Government sought the support of UN for providing support to the state for flood response and developing the PDNA. The support needed in the areas of technical support in developing sectoral recovery plans, bringing international models and new technologies to Kerala and in strengthening the recovery committees with experts. The PDNA is the global methodology developed by the UN, the World Bank and the European Union to assess damage and loss in the wake of disaster and to recommend the recovery needs and strategies. In all, 76 experts from 10 UN agencies and EU across 13 sectors collaborated to develop the report in 20 days. The UN agencies included UNDP, UNICEF, UNESCO, UN Women, UNFPA, UNEP, WHO, WFP, ILO and FAO and adopted reports of three sectors from World Bank and ADB. Besides, two experts on integrated water resources management from the Netherlands also provided support. The report was prepared after visiting 120 villages in 10 districts and interacting with

experts, affected people, elected representatives, officials and representatives of civil society organisations.

### **Ecologically Sensitive Areas**

Western Ghats is the United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Site and is one of the eight "hottest hotspots" of biological diversity in the universe. The chain's forests, which are older than the Himalaya Mountains influence the Indian monsoon weather pattern. The decision will ensure the mountain range, spread across seven states, gets international support for its conservation. The Western Ghats extend from Dang in Maharashtra-Gujarat to a place near Kanyakumari in Tamil Nadu, along the western coast; it is spread over 7,953 sq km. Although most of the Western Ghats appear more like rolling hills than craggy snow-covered peaks, parts of it do reach over 2,000 metres and it contains the highest mountain in India, the Anaimudi, at 2,695 metres.

The total area in this boundary came to 1,29,037 square km, running about 1,490 km north to south, with a maximum width of 210 km in Tamil Nadu and minimum of 48 km in Maharashtra. It proposed that this entire area be designated as ecologically sensitive area (ESA). Within this area, smaller regions were to be identified as Ecologically Sensitive Zones (ESZ) I, II or III based on their existing condition and nature of threat. It proposed to divide the area into about 2,200 grids, each approximately 9 km × 9 km, of which 75 per cent would fall under ESZ I or II or under already existing protected areas such as wildlife sanctuaries or natural

parks. To protect the Western Ghats two Committees were set up and their recommendations are already discussed widely. Whether their recommendations were accepted and implemented by the concerned governments are attracting more attention now.

After Kerala flood the reports of Madhav Gadgil Committee and the Kasturirangan Committee became limelight once again. Let us list the recommendations of the Gadgil Committee known as The Western Ghats Ecology Expert Panel (WGEEP) as follows:

1. The entire hill range of Western Ghats as an Ecologically Sensitive Area (ESA).
2. The Report has classified the 142 taluks in the Western Ghats boundary into Ecologically Sensitive Zones (ESZ) 1, 2 and 3.
3. ESZ-1 being of high priority, almost all developmental activities (mining, thermal power plants etc) were restricted in it.
4. The Committee Reported that ,”no new dams based on large-scale storage be permitted in Ecologically Sensitive Zone 1. Since both the Athirappilly of Kerala and Gundia of Karnataka hydel project sites fall in Ecologically Sensitive Zone 1, these projects should not be accorded environmental clearance,
5. The Report specified that the present system of governance of the environment should be changed from a bottom to top approach (right from Gram Sabha) rather than a top to bottom approach and

- reminded for decentralization and more powers to local authorities.
6. The Report recommended constitution of a Western Ghats Ecology Authority (WGEA), as a statutory authority under the Ministry of Environment and Forests, with the powers under Section 3 of the Environment (Protection) Act, 1986.
  7. For all settlements and built areas/ to be developed areas, certain types of areas would be no-go areas, including watercourses, water bodies, special habitats, geological formations, biodiversity-rich areas, and sacred groves. Special Economic Zones should not be permitted. New hill stations should not be allowed and public lands should not be converted to private lands.
  8. A building code should be evolved which includes inter-alia eco-friendly building material and construction methods, minimizing the use of steel, cement, and sand, providing water harvesting methods, non-conventional energy and waste treatment. The application or detailing of the framework would be done by local authorities to suit local conditions.
  9. Certain practices recognized as the best construction/development ones such as topsoil conservation, trees conservation, etc. should be followed as per the guidelines of Green Building certifications of Eco Housing and GRIHA. Any other appropriate codes are also to be encouraged. Certain activities such as filling of marshes/ wetlands, the introduction of alien invasive species are not permitted. The area that may be saved is to be restricted; paving of ground areas may be done in such a manner that there is no change in the run-off/permeability of the plot overall before and after paving (if some area is paved, the recharge from other areas will have to be enhanced).
  10. Local authorities should be made responsible for developing regional systems for handling hazardous, toxic, biomedical wastes as well as recyclable materials.
  11. Promote organic agricultural practices; discourage cultivation of annual crops on slopes exceeding 30 per cent , where perennial crops should be promoted; introduce incentive payments for sequestration of carbon in soils, introduce incentive payments for maintenance of select traditional cultivars, encourage participatory breeding programmes to improve the productivity of traditional cultivars; encourage precision in agricultural practices.
  12. Forest Rights Act to be implemented in its true spirit by reaching out to people to facilitate their claims, Community Forest Resource provisions under FRA to replace all current Joint Forest Management programmes.
  13. No new licenses to be given for mining. Where mining exists, it should be phased out in 5 years, by 2016. Detailed plans for environmental and social rehabilitation of

mines to be closed. Illegal mining to be stopped immediately.

14. Educate the energy consumer about the environmental and social impacts of energy production and the need for reducing luxury demand. Encourage demand-side management; enhanced energy efficiency across sectors. Launch smart campaigns as key components of demand-side management, focusing on smart grids, smart buildings, smart power, smart logistics and smart motors. Promote decentralized electricity and use of solar power.

Madhav Gadgil has come out in favour of the report. If the recommendations of his Report had been implemented by the concerned state governments, the scale of disaster in Kerala would not have been as huge as it is.

The ESA in the state is spread over an area of 9,993.7 sq km comprising 9,107 sq km of forest area and 886.7 sq km of non-forest area. According to the Kasturirangan Report, a total of 13,108 sq km, including stretches in 123 villages in Kerala, was proposed to be demarcated as ecologically fragile land under the ESA. The high-range areas of the state had witnessed protests after the Centre passed two orders in November 2013 for implementing the report, which imposed several restrictions, including on taking up construction and quarrying.

The Kerala government has submitted to the Centre its revised recommendations on demarcation of 'Ecologically Sensitive Areas' (ESAs) in the Western Ghats in the state. An exclusive legislation to resolve various issues in

Munnar, such as construction activities, was under the government's active consideration.

In the Gadgil Report, the committee had predicted a flood situation at that point in time, urging the government to take steps to protect the Western Ghats. But all the governments raised a lot of concerns about the report and claimed it is "too environment-friendly".

### Major Criticisms of Madhav Gadgil Report

1. The major criticism faced by Gadgil Committee Report was that it was more environment-friendly and not in tune with the ground realities.
2. Recommendations were cited as impractical to implement.
3. Gadgil report has asked for a complete eco-sensitive cover for the Western Ghats which hamper different states on energy and development fronts.
4. There was a criticism against the constitution of a new body called WGEA. States insist that protection can be given under existing laws.
5. Gadgil report doesn't give a solution for revenue losses due to the implementation of its recommendations.
6. Gadgil report is against dams in the Western Ghats, which is a crucial blow on the ailing power sector. Considering the growing energy needs of India, critics argue that this recommendation cannot be taken.

The Gadgil Committee report made adverse remarks against the sand mining and

quarrying lobbies in Goa. Many mafias created fear among farmers in Kerala that the Gadgil report is against them, and that they will lose livelihood if its recommendations are implemented.

The weather report has clearly stated that the unexpected heavy rainfall is the major cause for the flood. The Madhav Gadgil and Kasturirangan Reports received enough attention at the time of flood. Now it is up to the government to take appropriate steps based on these reports.

#### Environment and Reconstruction

The **Kerala Floods** -2018 has highlighted what India needs the most. In an era of rapid Urbanisation and asymmetrical development, there is always a concern about the ill effects of it. What economic degradation, **biodiversity loss**, and growing inequality can do to an existing ecosystem?. A number of canals being reclaimed, deforestation for tourism and excessive construction projects even in the hills - played its indirect role in the Kerala Floods. Just for the sake of tourism and revenue generated from the sector, Kerala has witnessed an asymmetrical facelift which has made the state vulnerable against natural calamities. For an instance, the **Cochin International Airport** which received '**Champion of Earth Prize - 2018**' by the United Nations was actually made by reclaiming the fertile paddy land to make space for the runway. No wonder, the airport which is just 400 meters away from the **Periyar River** had to be closed due to water logging. The example of Cochin Airport is important because

it highlights how a river can recapture its floodplains.

When government started taking rebuilding of Kerala in a war footing one side the environmentalists on the other hand have raised one important questions: Could the damage have been reduced if more attention had been paid to sustainable development? The floods were triggered by the most intense rains in nearly a century that lashed a picturesque state whose coastal plains and low-lying mountains beckon tens of thousands of tourists each year. Environmental experts like Madav Gadgil argued that “a construction boom that saw houses, buildings and tourist resorts mushroom in areas that traditionally soaked up rainwater worsened the impact of the monsoon. There is a huge wave of construction, firstly on wetlands, which would have otherwise earlier stored water, no longer do so and encroachments on rivers. the massive construction prompted indiscriminate sand mining and quarrying in the mountains. Large numbers of landslides have occurred because of these stone quarries. Rubble from them has blocked streams and rivers.

G.M. Pillai, World Institute of Sustainable Energy in Pune made it clear that the recent flooding was more devastating because of the disappearance of traditional paddy fields. About 80 percent of the paddy fields in Kerala have been levelled or converted in to other activities, either for construction or rubber plantations during the period 1970 to 2016. It is a huge environmental neglect,” “Paddy fields are kind of wetlands in Kerala’s topography capturing water from the surrounding hills. Traditional

drains have been blocked there, too. In 2014, as floods swept Kashmir, encroachments were blamed for diminishing the holding capacity of lakes and other water Kerala will have to seek sustainable development as it rebuilds damaged homes and thousands of kilometres of eroded roadways. But others worry that the mammoth task of reconstruction will only put more pressure on resources. The immediate requirement is constructing infrastructure which has been lost. “But along with that you should also do what I call construction of environmental infrastructure, you have to restore a lot of those paddy fields, for example, which have been lost.

1. In order to open more fundraising channels for reconstruction and rehabilitation of its flood-hit areas, Kerala is set to approach the central government to increase its market borrowings limit from 3 per cent of Gross State Domestic Product (GSDP) to 4.5 per cent. The state is already in talks with the World Bank to raise Rs 100-150 billion at an attractive interest rate of around 2.5-3 per cent. If the Centre agrees to relax the Fiscal Responsibility and Budget Management (FRBM) rules for Kerala, its ability to raise money from the markets may increase by around Rs 115 billion.
2. Government has to hereafter encourage the people who live in the landslide prone areas to go for single floor houses constructed with light weight material like woods, and bamboo items. It will reduce the possible impact of landslide on the human life.
3. Government has to set up permanent monsoon relief camps where ever possible by identifying the flood prone areas and the landslide prone areas. It will help the people move to safer places much in advance.
4. Kerala has 43 major dams in addition to some small reservoirs. The basic purpose of constructing a dam is irrigation and electricity generation. The area under paddy cultivation in Kerala is keep on reducing from 1970 onwards.
 

According to the State Planning Board (Economic Review, 2016), paddy cultivation in Kerala reduced from 32 per cent in the 1980s – the highest share of gross cropped area in the state – to only 6.63 per cent of Kerala’s total cropped area in 2016-17. And from 8.82 lakh hectares in 1974-75, the area planted with paddy came down to 1.96 lakh hectares in 2015-16, Paddy lands are converted for commercial crops and non-form activities. So the need for water for commercial crops is much limited compared to paddy cultivation. Now the basic purpose of filling dams is to electricity generation followed by irrigation and drinking water purposes. Government has to look into how much water to be stored in a dam.
5. Government should take steps to reduce too much dependent on hydro electric power. Government should concentrate on non-conventional energy sources like solar, wind energy, ocean energy in addition to thermal power etc., The total power generated in Kerala by different sectors are as follows : Hydro Electric

Projects (2107.91 MW), Small Hydro Electric Projects (52.85 MW), Thermal Projects (234.6 MW), Non-conventional energy (65.25 MW) and Power project under construction) Government has to encourage people and private and public institutions adopt to a maximum extent for solar energy for their day to day needs in due course. Solar power is totally free energy. If people started using solar energy the need for hydro-electric power would be automatically reduced. For example you take the case of Nedumbassery airport. It has adopted this system and with its solar power plant it produces more energy than it needs and banks the rest with the state power grid for rainy days and night-time requirements. Finally the need for keeping more water in the dams would be reduced followed by the threat of flood will also be reduced. Government can keep the water level at a desirable limit may be around seventy five per cent of the capacity. Then, the dams as well as the people will be safe.

6. The government of Kerala should not accept or try to implement the Madhav Gadgil formula/Kasthuri Rangan Committee recommendations at this juncture. It will be another fatal attack on the affected people who settled in the Ecologically Sensitive Areas long back. Rehabilitation of the people in Ecologically Sensitive Areas should be carried out in the respective areas only

unless it is not viable for livelihood due to landslides.

7. Government has to constitute an expert committee to visit countries like Indonesia and Japan to have first hand methods adopted by these countries to reduce the impact of natural calamities like flood, earthquake, tsunami and backwaters etc., and implement those technologies if possible or suitable to Kerala during the emergency period. Government responsibilities are to be **mitigation** and preparedness, emergency **response**, as well as post-disaster **rehabilitation** and reconstruction. Government should prepare better building requirements which can save lives and limit damages.
8. Top priority should be given to restore the basic infrastructural facilities like ports, railway stations, airports, national highway, state highway and other road corridors that connected tourist destinations and pilgrim centres.
9. The state of Kerala has 44 rivers with a total of 54 dams. The Comptroller and Auditor General of India Report 2017 have warned that not a single one of these dams had an emergency action plan in place for disaster management. Pre- and post-monsoon safety inspections had not been carried out for any of these dams either. Silts from the dams should be removed on a periodical basis. Disaster management for each dams should be drawn immediately to safeguard the people.

10. Government of Kerala made an all out efforts on waste management in flood affected areas that is a major challenge and a threat to public health, as bacterial and viral infections like rat fever is spreading in many flood affected areas. All local self government bodies were directed to collect biodegradable waste on priority basis and dispose it immediately with the support of clean Kerala Mission. The local bodies have opened collection centres for solid waste management. The total amount of waste generated after the floods is around 35717 metric tonnes, out of this 14,297 metric tonnes is biodegradable while 18,541 tonnes is solid waste. Accumulation of such wastes for too long will trigger serious environmental and potential health problems. A major threat to health comes from electronic waste as it contains toxins like zinc, mercury, magnesium and lithium. Some of these also contain radioactive substances, which are very harmful to human health and the ecosystem. In addition to household wastes, carcasses of animals and birds killed in the floods were also found lying unburied in several places, mostly in the water-logged Alappuzha and landslide-hit Idukki and Wayanad districts. A major problem volunteers have faced is lack of adequate vacant space to store and segregate the waste collected from the affected areas. While it is impossible to find such spots in cities and towns, they are facing resistance from local residents in rural areas. At this juncture government has to identify and air

mark certain areas in each Panchayat for dumping the waste generated in such an extraordinary situations. It is a must to avoid spread of any communicable disease.

11. People hereafter should be taught how to protect themselves from heavy rain, flooding and landslides that are specific to their areas and how they may impact on their lives. Every home should have an emergency plan regarding water, non-perishable food items, battery based torch light and radio, flash light, first aid kit to sustain their families for three or four days. At the time of emergency people should follow the directions of the local authorities. One should turn off power lines, close the gas cylinders, should keep the valuables on the first floor and remain in the first floor of the house and act as directed by the local authorities/government until rescued.

### Conclusion

The devastation in Kerala highlighted Kerala vulnerability to flooding due to changes in rainfall patterns linked to climate change. China constructed three gorges check dam in the year 2006 on the Yangtze river with the main purpose of saving millions of people from the frequent flood that plagues the Yangtze river basin in China. Similar suggestions are put forwarded now by Central Water Commission seriously. Central Water Commission Report on Kerala's Floods has recommended that (a) Kerala state to go for constructing more storage dams across the Periyar, Pamba and Achienkovil

rivers for flood moderation and other multipurpose uses, (b) Inspect the Poringalkuthu dam in Chalakudy basin and review flood, spillway capacity, (c) Review the “rule curve” - that is the storage or empty space to be maintained in a reservoir during different times of the year, of the reservoirs in Kerala to create a dynamic flood cushion for moderating floods, (d) increase efficiency of flood discharge from Vembanad lake. Along with these recommendations at this juncture let us recollect what Madhav Gadgil has stated in his report? “Kerala should involve local communities and rebuild itself in a sustainable manner, recreating not only the lost man-made capital, but also its “natural, human and social capital”,. “Kerala should come to serve as a laboratory for fashioning development programmes compatible with conservation while deepening democracy and social justice. The single-minded focus on development defined in a narrow fashion is not an appropriate way to go forward with unbridled encroachment, quarrying and unscientific dam operations, among other factors, contributed to the recent floods. According to Anshu Gupta, Funder of Goonj, which focuses on humanitarian and community development works, “it is vital to ensure that the ecological demands of the State are met while rebuilding Kerala after the floods. And, this should be done without allowing external forces to impose their designs on the State, “It is the rebuilding phase after the floods. Therefore, make sure that there’s no interference of any external forces to enforce their designs on the State and that it meets its own ecological demands during the course of its reconstruction’. States like Uttarakhand, Jammu

&Kashmir and Bihar have also seen floods in the recent times. Unfortunately, the reconstruction carried out in these States blatantly defied the ecological demands. Many multi-storey buildings cropped up in no time. Hence, make sure that a State like Kerala, renowned for its architectural style and tradition, did not fall into this trap,” Since a lot of construction was going to happen across the State, it was important to ensure that there would be no tinkering with the environment. Government responsibilities are to be **mitigation** and preparedness, emergency **response**, as well as post-disaster **rehabilitation** and reconstruction. Government should prepare better building requirements which can save lives and limit damages.

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## MODERN FEMALE WRITING AND VARIOUS PROBLEMS OF WOMEN IN HINDI LITERATURE

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### *Abstract*

*The depiction of women in Hindi novels has been in line with every era according to the Indian tradition in Premchands pre-era novels, the idios, 'sati-sadhvi' womens are mostly found. While reviewing novels related to earlier exaggeration of female exchanges. This was due to novelists being influenced by the consciousness of the Renaissance. But the male novelists of that time talked about the 'Salvation' of women in the frame work of the traditional womens code. Modern women novelists like Krishna Sobati, Shashi Prabha Sastri, Mridula Garg, Prabha Khetan, Mamta Kalia, Mannu BHandari, Deepti Khandelwal, Usha Priyamvada, Malti Joshi, Nirupama Sevati are awakening to the rights of women and women's consciousness and struggle in present life.*

**Keywords:** Modern Hindi Literature, Female writers, Female characters.

### **Introduction**

In Premchand's time, the life of a woman is synonymous with slavery. Dowry was custom. Girls were deprived of education. There was no door left for the women to go out of that circle. At this time the number of novelists writing about the problems of women were less. For the first time widow marriage took place in 'Bhagyavathi' (1877), by Sraddaram Foolauri. Kunwar Hanumanth Singh Raghuvanshi illustrates the consequences of child marriage in the novel 'Chandrakala' (1893). His novel 'Gruhastha Charitha' (1909) depicts the defects of female illiteracy. According to traditional values in the novels of this era, the women has been depicted. Writing about patriarchy, ideal wife and ideal mother from modesty, virtue, etique etc were the main tendencies of these novels. Prof. Gopal Rai writes – "it is an interesting fact that the Hindi Novel was started

with women talks and in the earlier fiction novels, womens problems after the farmers got the main place." <sup>1</sup>

The woman was given only place of homemaker or prostitute. The main topics of female-centric novels of this time were prostitution, dowry and problems of widows. Premchand expressed sympathy on the women but crossing these rebellions, no character comes to us through his novels. The prominent female writers of this era are Rukhmini Devi, Vimala Devi, Prashtic Bhatnagar, Ushadevi Mitra etc. These writers portray a women about traditional values. "These novel writers have succeeded in making authentic portrayals of feminine and their pitiable status in Hindu Society, but their approach is limited, they are dare to go against the traditional women's code, although they openly support women's education. The

feminine approach of these writers is not different from the male writers.<sup>2</sup>

In the Hindi novels of the Premchand era (After Premchand) there was a change in the depiction of female characters. New explanations were made in men and women relations. "The norms of women illustration in the Hindi novels of Premchand era have definitely changed. In the concept of female characters, men and women writers appear to be more conscious and progressive. The typical nature of this age has been Psychological. The concept of all the characters of the novels was done in accordance with their mental conditions. The concept of women characters is also seen through this era in the form of an independent and self-proclaimed."<sup>3</sup>

Modern means new, innovative etc. While explaining the meaning of modern, Dr. Anita Rawat says- "It does not mean to say modern things that anything is completely new, because the creation of a new thing is a tradition based on earlier acquaintances."<sup>4</sup> Modernity can be defined by adding it to the present. In the olden days, the time that has passed is modern for people of that era. Modernity in literature is indicative of the word improvement. Among the women novelists who are awakening to the rights of women and women's consciousness and struggle in life, Krishna Sobati, Shashi Prabha Sastri, Mridula Garg, Prabha Khetan, Mamta Kalia, Mannu Bhandari, Deepti Khandelwal, Usha Priyamvada, Malti Joshi, Nirupama Sevati etc. These women novelists in their novels attempted to address the physical, mental etc overall problems of women in their novels.

1. Compassionary life problems:- The wife has a second place in the family. She can not do anything according to her wishes. Due to the changing circumstances of modern times, there is also a radical change in the women. She started stepping out of the house. She does not depend heavily on the man. As a result, conflict arises in married life. 'Aapke Bunty' is a novel designed primarily to problems of married life. The main cause of stress in Shakun and Ajay's marital relations is the egotistic nature of both of them. As soon as marriage starts, Ajay & Shakun feel that their mutual choice was wrong. Shakun wants to show that only a man can not live accordingly to his wishes, the woman can do the same form. Even, so Shakun's companions could not enjoy life. Here the ego of Husband and wife is a major reason for the problems of life. 'Kohare' novel can see side by side problems of the couple. When Sunil finds out that his wife writes poetry, then his statement is "If you write poems then only for me....not to show the print."<sup>5</sup> Sunil gets angry after Smita giving a program of classical music in radio. Ego is more in Sunil. He wants to keep her in captivity rather than freedom. In the parties, he changed the partners himself, but if there is any offer for Smita, then he makes some excuses. According to Smita - "I did not have any material or physical lacks with Sunil."<sup>6</sup>

The novel 'Tuttha hua Endradhanush', novel's character Shobhana is thinking about Manish her lover all the time while being a mother and wife of a child. Shobhana is a modern ideal wife. She likes

to live with the boy as soon as he goes out. But Prabhat Parmar tries to solve the problems of life with ease and appears to be trying to pursue a virgin life. In the 'Sheshayatra' novel's heroin Anu marries a foreign doctor. Anu starts living with Pranav. after four years of marriage. Pranav leaves Anu for the sake of another woman. Anu says, "I was immersed in my wifehood, but perhaps Pranav's one woman does not work. Probably I never understood Pranava, I never thought that lentils - beyond the vegetable. There is more to be desired."<sup>7</sup>

2. Economic problems; The problem of financial in front of a woman causes mentally pathentic situation. The proceeds of 'Patachad ki aavasem' heroin works in order to cope up with her daily life. The sufficient money in the life of Sumitra of the novel 'Patachad ki Aavazem' is the cause of sadness. Sumitra, who works, pays salaries for her family. In spite of being a working woman, economic deprivation becomes a threat for her life. Priya's 'Chinnamasta' novel is also the story of victim of economic problem. Even in the face of Narmada of 'Katgulab', financial problems are presented in terrible form.
3. Problem of exploitation of women: In the male-dominated society, the Indian woman is absorbed in every period. There are various forms of exploitation - exploitation of labor, economic relationships etc. In the form of mother, wife and daughter, where women should have a respectful attitude, they have been exploited in many ways. In

the novel 'Dar se Bichhudi', Rathi, the heroine have been physically, mentally and ideologically exploited. The guards were punished for the crimes committed by the mother. Relatives sees every behavior of her in terms of doubt. The 'sooraj mukhi andhere ke' novel's heroine becomes a victim of physical and mental abuse. Ratti is raped in childhood. The effect of this phenomenon has such an effect on the mind that it starts hating men. When the friends address her bad girl, then she starts crying. Physical exploitation of ratti has also become a cause of mental equilibrium. Elsa's novel 'Uske ghar' is a female victim of physical abuse. There is no one else to sell her for a few pennies is her brother. Elma could not do anything this knowing all . Feminine abuse has been depicted in the novel 'Katgulab'. After the death of her father, Smita lives with her sister and brother-in-law. Shee is physically abused by brother-in-law. On the contrary, labor has been exploited with Narmada. Namita, Smita, Asima in Katgulab are the victims of some kind of exploitation. That is why they all hates men. In the novel 'Parchaiyom ke peeche', Sumitra is exploited by her husband. Despite being a working woman, she is dependent. Husband considers her to be a shawl of foot. She could not be free from husband's exploitation. Sushma of 'Panchachan Khambe lal deewarem' novel's heroine is a victim of exploitation at the hands of her parents. Sushma staying away from the family to work for the future of her brother's and sister, teaches in

the college. Sushma is the economic source of the house. In another manner her family exploiting her by collectiong her money.

4. Problems of Loneliness : If a social person has to remain separate from the society then he lives a lonely life. Due to the changing circumstances of the modern era, there is a worrying fact before woman - loneliness. The Radhika of the novel 'Rukogi nahi Radhika' feels herself alone. No one came to the airport to pick Radhika, who came home from America after years. Radhika feels herself alone in the world. Despite being a father, brother, sister-in-law, etc. She has become alone in the family. Staying abroad, she gets bored with loneliness. Only then she thinks that she will go to India and be happy with family and friends. But even after coming to India, she experiences loneliness. In the novel 'Aapka Bunty', Shakun has been alone for six to seven years. There is a way to get rid of her loneliness is job. She decides to marry Dr. Joshi. Smita experiences loneliness after Smita-Sunil is divorced in 'Kohare' novel. To overcome loneliness, Smita decides to get married with Prashant. Anecdotes of the novel 'Balshayatra' heroine also get bored with loneliness. She feels lonely despite having a husband, a lot of property, a large bungalow, a car, and pleasures. She wants husband to erase her loneliness but husband does not want her. Pranav divorces her. But Anu survives loneliness by marrying Deepapankur. Patient Pranav finally came to the Anu- "When I say that I

am alone, then it means that the person is alone, without child and wife." <sup>8</sup> Even after receiving everything, Anu feels lonely. 'Pachpan khambe lal deewarem' novel's Sushma binds the pleasures of her own personal life by binding into the problems of the family. For the family, Sushma leaves boyfriend Neel. After Neil's departure, Sushma is suffering from loneliness.

5. The Problem of working Women: Due to the promotion of education, the woman started trying to move forward with the man in every sphere. The woman is working with the men in every sphere, then there are issues arises. Sushma of 'Panchachan khambe lal deewarem' is a smart women of modern age. She works on the post of warden and teacher. The responsibilities of entire family are in front of Sushma. Before she was working at the private college, there was a conspiracy with the secretary there. Sushma leaves the job. In the family, she has to play the role of father. She loves Neil then she have to endure the struggle too. He is asked for sushma's resignation. For Sushma, she is ready to leave the job, but family responsibilities are obstructed. Neel inspires her to quit, Sushma says: - "I am the only instrument, there is no place for my feeling, it is not possible for me to leave the family untouched by marriage, I have adopted myself for such a life." <sup>9</sup> Sushma also has a personal life she had to bear humiliation. The practice of 'Patachad ki aavazem' novel's Anubhais also a working woman. Anubhava's family is

forced to live in the building where prostitutes live. By making the medium of the body, she could get a higher rank in the job. She is favored to get promotions like this. The Shakun of the novel 'Aapka Bunty' novels' heroine Shakun is also a modern working woman. Educated Shakun opposes the dark tradition. She does not have financial problems like Sushma and Seva. She considers the job as a means of entertainment. After divorcing Ajay, Shakun lives alone with her son. This is the problem in front of a modern servant woman that people see them with suspicion because of their being alone. There are also different problems of female marriages. Physical exploitation at work place etc. are to be handled with them. There are many parents who force the daughter to carry family responsibilities. There is such a condition of middle-class working women that to work hard and earn money for family, So they have to face the bad eyesight of the men in the office. In many novels presented, many employed women appear to be making money machines.

### **Conclusion:**

The most struggling organism in the race of materialistic age is woman in her home, her condition was pathetic, now she started to exit, then she is engrossed in her personality or in search of an identity. In today's society, there are different roles such as housewife, working woman etc. The ease in portraying the tortures of the house, the family and the woman is emerging so that the following truths are mentioned in the context. These female novelists have shown

smallest incidents in their female characters, the achievement of love, search for perfection, their dedication of work and suffering etc. It is in nature in women writing that it is being thought of women as being representative of women. The modern woman is awakening to the atrocities and atrocities on her. This consciousness in women, or the contribution of modern female novelists in the process of awakening is important. In the modern female novel writing, the tone of rebellion and dissatisfaction is clear. "Some of the writers, who are portraying women as hypocrisy and victim, have become so involved with their female characters that the rigors of traditional moral values in their hands seem to advocate personal morality."<sup>10</sup> In women's novel writing, the various social, family, mental problems of women have been freely portrayed. These writers have expressed their inability to marriage arrangements by their female characters. They don't believe in the custom of marriage. Creating relationships related to marriage bondage, finding tremendous fear of marriage life and finding of their identity etc have been depicted. We can also see women characters who wander in search of liberation by choosing dedicated women, devoted in female novel writing, having a feeling of ego, choosing a free life. Being the woman's creator, the grip of every subtle aspects of the woman's mind has been possible in novels. The expected changes in the process of family, social, and psychological thinking have come today. The reformation of these changes empowers female novel writing. This mode is going on by presenting new and new things to related to mental and physical issues related to women.

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## NEED FOR THE PRODUCTION OF AYURVEDIC MEDICINES IN PUBLIC SECTOR FOR ELIMINATING ADULTERATION

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### *Abstract*

*Ayurveda means the science of long life. This long-established system of Indian medicine has least five thousand years of tradition. Various herbal plants and its raw materials are used for the pharmaceutical industry. It constitutes a substantial proportion of the global drug market. It is a fact that various types of adulteration practices are followed in the manufacturing of Ayurvedic medicines. At the same time the substitution of different species are also practiced in the manufacturing of Ayurvedic medicines. These kinds of economic adulterations pursued in Ayurvedic medicine manufacturing industry may be intentional or unintentional. However, the adulteration and Substitution of the herbal drugs has emerged as serious issue in Ayurveda medicines manufacturing industry. Various kinds of adulteration practices pursued in the Ayurveda medicine's manufacturing sector have lead to the credibility of Ayurvedic medicines also. In this background this study is an attempt to examine the concepts of adulteration and substitute drugs in Ayurvedic medicinal manufacturing and to examine the reasons for increasing trend of adulteration practices followed in the manufacturing of various Ayurvedic medicines. An attempt is also done to assess the role of a public sector company, that is to say 'Oushadhi' in the preparation and supply of Ayurvedic medicines and to assess the initiatives taken by the public sector company to address the issues related to adulteration.*

**Keywords:** Ayurveda, Dhoshas, Medicinal plants, Adulteration, Drug substitution, Classical medicines, Patent medicines, Herbal medicinal products Etc.

### **Introduction**

Ayurveda is a highly systematized Indian system of medicine. This traditional system of treatment rests on the pillars of the proven theories and documented clinical observations. In literary terms, Ayurveda means the science of life. It is considered the oldest written literature on medicinal practices in the world. The term 'Ayurveda' is the coinage of two words, namely 'Ayur' and 'Veda'. The word 'Ayur' means life and 'veda' means knowledge. It means Ayurveda is the science of life. The systematize knowledge of ayurveda has resulted from the amalgamation and practical application of various schools of thought. These different

thoughts are known as 'darshanas'. These darshanas form the logical and philosophical schools of thought of ancient India.

Ayurveda is a medical system that deals with body, mind and spirit. According to Ayurveda, most diseases are connected with the physiologic and pathologic changes in the body that are caused by imbalance in three different doshas. These are vata, pitta, and kapha. The fundamental aim of Ayurvedic therapy is to restore the balance between these three major body systems. Any imbalance can lead to various kinds of diseases. According to Ayurveda the definition of health is the balanced state of body, mind, and consciousness.

## Methodology of the Study

This study has been carried out by considering secondary data. Adulteration and substitution of various kinds of drugs practiced in the manufacturing of Ayurvedic medicines were obtained from the reports of various studies and other available literature on Ayurveda. Authentic texts on Ayurveda and Internet were also used for obtaining a comprehensive understanding of the subject. Regarding the functioning of Oushadhi, which is a public sector company, engaged in the preparation and supply of various kinds of Ayurvedic medicines, data has been collected from the official website of the company. Opinions of twelve Ayurvedic medical practitioners were also collected for this study. This study is generally descriptive in nature.

## Objectives of the Study

The important objectives of the study were:

1. To examine the concepts of adulteration and substitute drugs in Ayurvedic medicinal manufacturing.
2. To examine the reasons for increasing trend of adulteration practices followed in the manufacturing of various Ayurvedic medicines.
3. To assess the role of public sector company in the preparation and supply of Ayurvedic medicines.
4. To assess the composition of the brands prepared and supplied by Oushadhi, a public sector undertaking

## Significance of the Study

World Health Organisation (WHO) has stated that plant materials are used throughout developed and developing countries as home remedies. Various herbal plants and its raw

materials are used for the pharmaceutical industry. It constitutes a substantial proportion of the global drug market. Based on these facts, the WHO has suggested that it is essential to establish internationally recognized guidelines for assessing their quality. The World Health Assembly, in resolutions WHA 31.33 (1978), WHA 40.33 (1987) and WHA 42.43 (1989), has emphasized the need to ensure the quality of medicinal plant products by using modern control techniques and applying suitable standards.

WHO has published Quality control methods for medicinal plant materials in 1998, in order to support WHO Member States in establishing quality standards and specifications for herbal materials, within the overall context of quality assurance and control of herbal medicines. This publication came to be regarded as one of the key technical documents in ensuring and controlling the quality of herbal medicines. This manual describes a series of tests for assessing the quality of medicinal plant materials. The tests are designed primarily for use in national drug quality control laboratories in developing countries.

Herbal materials are categorized according to sensory, macroscopic and microscopic characteristics. An examination to determine these characteristics is the first step towards establishing the identity and the degree of purity of such materials, and should be carried out before any further tests are undertaken. Macroscopic identity of herbal materials is based on shape, size, color, surface characteristics, texture, fracture characteristics and appearance of the cut surface. Microscopic inspection of herbal materials is indispensable for the identification of broken or powdered materials;

the specimen may have to be treated with chemical reagents. An examination by microscopy alone cannot always provide complete identification, though when used in association with other analytical methods it can frequently supply invaluable supporting evidence.

Appropriate infrastructure facilities including the organizational structure, procedures, processes and resources, and systematic actions are necessary to assess and ensure the quality of herbal medicines available in the market. For this purpose a laboratory or organization and its proper management is needed to establish, implement and maintain a quality management system pertaining to herbal medicines.

In the modern world, the market is lead by profitability, adulteration in Ayurvedic medicines has been increasing and it has emerged as a burning issue. Therefore, the scope of the good practice guidance in pharmaceutical quality control laboratories handling herbal medicines is the need of the hour.

### **Review of Literature**

Mitra and Kannan (2007) have discussed about some of the unintentional adulterations, reasons behind them and methods for easy identification of the spurious plant and authentication of the authentic plant. The medicinal plants constitute an effective source of traditional and modern medicine. Germany and France, together represent around forty per cent of the \$14 billion global retail market. In India, about eighty per cent of the rural population depend on medicinal plants and indigenous systems of medicine. In fact today, approximately seventy per cent of the synthetic medicines are derived from plants. Popularity

among the common people has increased the usage of medicinal plants and herbal drugs. Herbal adulteration is one of the common malpractices in herbal raw material trade. Both intentional and unintentional adulterations exist in herbal raw material trade due to various reasons. However, many of these kinds of adulterations are unknown even to the scientific community.

Prachi Garodia. et al. (2007) has observed about the glimpse of the Ayurvedic approach to cancer diagnosis and treatment. It made an attempt to review the role of Ayurvedic approaches and treatment employed in cancer treatment. Cancers of the colon, lung, breast, and prostate are most prevalent in the Western world. The mortality and morbidity in India owing to all of these cancers is very low. For example, the incidence of prostate cancer is 50-fold less in India compared with the United States. The cause of the lower incidence, mortality, and morbidity could be lifestyle and diet related; the question of whether it is due to Ayurvedic principles leading to a better diet and lifestyle is difficult to pinpoint. Ayurvedic treatments are still followed by 75 to 80 per cent of the rural population of India. As much as 70 per cent of the Indian population is vegetarian, and this may also contribute to be the lower incidence of cancer. Ayurvedic treatment of cancer is a holistic approach and it is widely preferred in the modern world. The new wave of “system biology” and “genome revolution” is expected to provide a holistic approach to the treatment of cancer. In spite of it, this approach tends to ignore the relationship between mind, body, and spirit. It is our hope that Ayurveda can help fill this gap.

Poornima, B (2010), has analysed about the substitution of different species practiced in the manufacturing of Ayurvedic medicines. She has

also assessed various types of adulteration. The different types of adulteration are, adulteration with inferior commercial varieties( Eg: Maricha (Piper nigrum) adulterated by papaya seeds), Adulteration by artificially manufactured substitutes (Eg: Artificial invert Sugar for Honey), Adulteration by Exhausted drugs (Eg: Clove, Fennel), Adulteration by addition of Heavy Metals (Eg: Pieces of Limestone in Asafetida) and Adulteration by Synthetic Principles (Eg: Adding Citral to Oil of Lime).

Neelam et al. (2014) have stated that medicinal plants constitute an effective source of traditional and modern medicine. In India, about eighty per cent of the rural population depends on medicinal herbs and indigenous system of medicine for primary health care. Adulterants and substitutes are the common malpractices in herbal raw material trade. Adulteration is considered as an intentional addition of foreign substances to increase the weight of the product or to decrease its cost. According to them adulteration take place due to various reasons such as lack of knowledge about authentic plants, confusion in their local names, lack of sufficient quantity of herbal plants, Similarity of plants in structure, its aroma, casual collection of the herbs etc. Recently, the number of species in endangered plant list is increasing very fast. In this scenario selection of substitute drugs may be the right option.

Poonam (2016) has observed that the traditional medical systems remain important resources of healthcare worldwide. The traditional medical system is reported to be safe and produce minimum side effects compared to other synthetic medicines. Adulteration is the burning problem in modern era. Incorrect knowledge, incorrect identification, deforestation

and personal benefits have resulted in adulteration. In India normally the adulteration in crude drugs is done either for financial gain or due to carelessness and lack in proper hygienic condition of processing, storing, transportation and marketing.

### **Adulteration in Herbal Medicines Observations by W H O**

According to WHO Herbal medicines are defined as herbal products in the medicines category in a national drug regulatory framework, and may include “herbs”, “herbal materials”, “herbal preparations” and “finished herbal products”/“herbal medicinal products”. In some countries, certain herbs and herbal materials may also be used as foods or as ingredients of foods. For this reason, the following terms have been adapted accordingly to address both regulatory categories of herbal medicines and food.

Contaminants in herbal medicines are classified into physicochemical contaminants and biological contaminants. A variety of agrochemical agents and some organic solvents may be important residues in herbal medicines. Contamination should be avoided and controlled through quality assurance measures such as good agricultural and collection practices (GACP) for medicinal plants, and good manufacturing practices (GMP) for herbal medicines. Chemical and microbiological contaminants can result from the use of human excreta, animal manures and sewage as fertilizers. As noted in the WHO guidelines on GACP for medicinal plants (3), human excreta must not be used as a fertilizer, and animal manures should be thoroughly composted. Toxic elements and other chemical contaminants, including solvents originating from products

intended for use in households and industrial chemicals, can be concentrated in composted sewage. Therefore, care should also be exercised with sewage management in agricultural areas. Foreign matter should be controlled.

Numerous hazardous contaminants and residues are found in the herbs and herbal materials. Their presence in the products, such as herbal preparations and finished herbal medicines are dangerous to the health. The level of some contaminants and residues appears at different stages of preparation due to various reasons such as the result of post-harvest processing, in preparations such as extracts, and in finished herbal products during the manufacturing process.

#### **Presence of Chemical Contaminants**

Contamination of herbal materials with toxic substances such as arsenic can be attributed to many causes. These include environmental pollution (i.e. contaminated emissions from factories and leaded petrol and contaminated water including runoff water which finds its way into rivers, lakes and the sea, and some pesticides), soil composition and fertilizers. This contamination of the herbal material leads to contamination of the products during various stages of the manufacturing process. Pesticides containing arsenic and mercury were widely used until a few years ago and they are still being used in some countries. As toxic substances are likely to be present in many foods, due to their abundance in nature, it is important to note that concomitant ingestion of herbal products would add to the total concentration of toxic metals consumed by people, even if best practice guidelines are followed.

#### **Presence of Pesticide Residues**

Medicinal plant materials may contain pesticide residues, which accumulate as a result of agricultural practices, such as spraying, treatment of soils during cultivation and administration of fumigants during storage. It is therefore recommended that every country producing medicinal plant materials should have at least one control laboratory capable of performing the determination of pesticides using a suitable method.

#### **Presence of Foreign Matter**

Foreign matter found in a sample of herbs and herbal materials should not exceed limits set in national, regional or international pharmacopoeias. Foreign matter includes insects and other animal contamination including animal excreta, as well as other species of plants. In general, any substance other than the acceptable sample of good quality medicinal plant material is regarded as foreign matter. A pure sample is seldom found and there is always some foreign matter present. However no poisonous, dangerous or otherwise harmful foreign matter should be allowed. Thus following the GACP should help to ensure that contamination is kept to a minimum. Removal of larger pieces of foreign matter from whole and cut plants is often done by hand-sorting after macroscopic examination. Finished products should also be examined for foreign materials.

World Health Organisation (WHO) has indicated the guidance of good practices for national pharmaceutical control laboratories, including quality assurance measures, should be followed. All methods chosen should be properly validated in accordance with these good practices. These methods include the

determination of arsenic and toxic metals, the determination of aflatoxins, the determination of microorganisms and the determination of pesticide residues. In connection with this the WHO has given the list of culture media and strains and the list of reagents and solutions.

### **Adulteration in Ayurveda Medicines**

The adulteration and Substitution of the herbal drugs has emerged as serious issue in Ayurveda medicines manufacturing industry. Various kinds of adulteration practices pursued in the manufacturing sector of Ayurveda medicines have lead to the credibility of Ayurvedic medicines also. The extinction of many of the herbal species and deforestation are the main reasons behind this adulteration. Sometimes the identification of many of the rare plants has also results in the substitution of raw drugs and it ultimately lead to a kind of adulteration.

Adulteration in the preparation of Ayurvedic medicines can also be seen as a part of maximising the profit of the medicine manufacturing companies. It is a practice of using inferior raw materials or using other similar substances. The qualities of such substances are low and it fails to perform as a real medicine. Adulteration can be simply defined as an act of mixing or substituting the original drug material with other bogus, inferior, defective, ruined, useless other parts of same or different plant or harmful substances. These so called drugs fail to maintain the official standards. As a result of adulteration the traditional trust in herbal drugs has declined to a greater degree. It is evident that the dealers of medicinal plants use various scientific methods in creating adulteration. In common practices it is very difficult to trace these kinds of adulterations.

In Ayurvedic medicine manufacturing industry, the drugs are generally adulterated or substituted with substandard, inferior or artificial drugs. The most common type of adulteration practiced is the use of sub standard raw materials that are easily available at a low cost. Most often the artificially manufactured substances look a lot like the original drug. The notable types of adulteration practices followed by the Ayurvedic medicine manufactures are:

1. Using apparently similar types of inferior drugs
2. Use of various kinds of powders including chemicals
3. Use various kinds of substandard commercial varieties of raw materials
4. Manufactures also uses different kinds of artificially produced substances
5. Using the other extraneous stuffs of same plant
6. Use of exhausted and drained drugs
7. Using synthetic chemicals to augment the usual character
8. Various kinds of other harmful adulterants are also used for the preparation of medicines.

### **Major factors Responsible for Adulteration**

Various studies indicate that adulterations in the manufacturing of ayurvedic medicines are not deliberate but it unintentional. Most of the medicinal plant collectors and the suppliers are illiterate and not aware about their false supply. Major reasons behind this are the incidence of confusion in name, non availability of the real plants and the lack of knowledge about the authentic plants. Various factors responsible for

the adulteration in the manufacturing of Ayurvedic medicines are stated below.

**1. Misunderstanding in names:** Due to the similarity in the names in traditional systems of medicine, these two herbs are often interchanged or adulterated or substituted.

**2. Absence of adequate knowledge about the authentic source of drugs:** Although the genuine plants are available in plenty throughout the different parts of our locality suppliers are ignorant about it. If it is available in forest premises it makes some restrictions in collection of such plants. As a result of these reasons, the manufactures use some spurious plants and flowers for that purpose.

**3. Lack of authentic plant:** Due to the non availability of certain authentic medicinal plants, most often the manufactures of Ayurvedic medicines uses forged and artificial substances.

**4. Similarity in morphology:** In the absence of authentic herbal plants similar other kinds of herbs are used for the preparation of medicines.

**5. Similarity in colour:** Similarity in colour is another factor leading to the use of bogus items as raw materials for drug manufacturing.

**6. Careless and casual collection of medicinal plants:** Adulterations in herbal medicines occurs due to the carelessness of herbal collectors and suppliers. In the absence of much concentration the collectors and suppliers misunderstand certain plants as it is genuine.

#### **Drug Substitution in the Manufacturing of Ayurvedic Medicines**

Sometimes the manufactures of Ayurvedic medicines use other similar or dissimilar drugs as substitutes. Various kinds of substitution of

herbs can provide similar therapeutic effect as that of original drug. Such conditions are

1. Non-availability of the adequate quantity of suitable drugs.
2. Uncertainty regarding the identification the authentic drug.
3. High cost of the suitable drug.
4. The availability of the herbal drugs due to the geographical specialities.
5. The adverse reaction of certain the drugs:

The substitutions of herbal drugs in the manufacturing of Ayurvedic medicines take place in various forms. These are:

1. Using another totally different drug
2. Substitution of the species belonging to same family of the medicine plant
3. Using some other different species
4. Using different parts of the same plant. For example, though the root of the medicinal plant is mentioned as the most effective part, the aerial parts are also equally effective in certain cases.
5. Using other herbs which perform the same action.

#### **Adulteration and Substitution are Different Doings**

Adulteration is a purposeful attempt for adding a low grade or spoiled drug or entirely different drug similar to that of original drugs. The main purpose of adulteration is maximisation of profit. It is also deliberately done for adding some foreign matter or things to increase the weight of the product and to decrease the cost. In simple words it is the debasement of the product. It is added partially

or fully which is inferior or substandard in curative and clinical properties. Adulterant drugs are identical to the genuine but may be substandard in quality and cheaper in terms of expenses. On the other side substitution of drugs are entirely different from adulteration. Substitute drugs have similar properties. Substitution is generally done when the original

and genuine drugs are not available or available in little quantity. Detailed description regarding substitute drugs can be drawn authentic books on Ayurveda, written by eminent 'acharyas'. Substitution can be done by using totally different herbal drugs belonging to same family or different genus.

**Table 1:** Common Substitutions Followed in Ayurvedic Drug Manufacturing

| SI. No | Common Name        | Botanical Name         | Substitute Drug                  | Botanical Name                                |
|--------|--------------------|------------------------|----------------------------------|---|
| 1      | Chitrak            | Plumbago zeylanica     | Danti                            | Baliospermum montanum                         |
| 2      | Murva              | Marsdenia tenacissima  | Jinghini                         | Lannea coromandelica                          |
| 3      | Bakula             | Mimusops elengi        | Kamala                           | Nelumbo nucifera                              |
| 4      | Tagar              | Valeriana wallichii    | Kustha                           | Saussrea lappa                                |
| 5      | Jatipatra (Aril)   | Myristica fragrans     | 1.Lavanga<br>2.Jatiphala(fruits) | 1.Syzigium aromaticum<br>2.Myristica fragrans |
| 6      | Puskar mool        | Inula racemosa         | 1.Kustha<br>2. Eranda(root)      | 1.Saussrea lappa<br>2. Ricinus communis       |
| 7      | Chavya             | Piper chaba            | Pippali(root)                    | Piper longum                                  |
| 8      | Draksha            | Vitis vinifera         | Kashmari phala                   | Gmelina arborea                               |
| 9      | Bharangi           | Clerodendrum serratum  | Kantakari                        | Solanum xanthocarpum                          |
| 10     | Dhanavayasa        | Fagonia cretica        | Duralabha                        | Alhagi pseudalhagi                            |
| 11     | Ahimsa             | Capparis sepiaria      | Manakanda                        | Alocasia indica                               |
| 12     | Bakula (bark)      | Mimusops elengi        | Babul (bark)                     | Acacia arabica                                |
| 13     | Tulasi             | Ocimum sanctum         | Nirgundi                         | Vitex negundo                                 |
| 14     | Riddhi and Vriddhi | Hobenaria spp.         | Varahikanda                      | Dioscorea bulbifera                           |
| 15     | Ikshu              | Saccharum officinarum  | Nala                             | Arundo donax                                  |
| 16     | Kakoli             | Lilium polyphyllum     | Asvagandha                       | Withania somnifera                            |
| 17     | Kshirakakoli       | Fritillaria roylei     | Asvagandha                       | Withania somnifera                            |
| 18     | Bhallataka         | Semecarpus anacardium  | Nadi Bhallataka                  | Semecarpus travancorica                       |
| 19     | Ativisha           | Aconitum heterophyllum | Mustaka                          | Cyperus rotundus                              |
| 20     | Dadim              | Punica granatum        | Vrikshamla                       | Garcinia indica                               |
| 21     | Karpua             | Cinnamomum amphora     | Granthi parna                    | Leonotis nepetafolia                          |
| 22     | Nagapuspa          | Mesua ferrea           | Padma kesar                      | Nelumbo nucifera                              |
| 23     | Kusha              | Desmostachya bipinnata | Kasha                            | Saccharum spontaneum                          |
| 24     | Kutherika          | Ocimum basilicum       | Gramya tulasi                    | Ocimum sanctum                                |
| 25     | Amlavetas          | Garcinia pedunculata   | Chukra                           | Garcinia indica                               |

(Source: www.plantsjournal.com)

It is true to say that the future development of Ayurvedic medicine manufacturing sector largely depends upon the reliability of the methodology used for its preparation. It includes the correct identification of useful plants the quality assurance of the raw materials used for the

manufacturing of the drugs. Ayurvedic drug manufactures should follow high quality standards by using modern techniques of preparation and the use modern instruments in order to maintain the quality of drugs. With regard to this, the World Health Organization

(WHO) has published certain rules and guidelines for maintaining the quality standards for medicinal plant materials. Any batch of raw material, which has more than five per cent of any other plant part of the same plant, for example, the stem in leaf drugs, even if they are derived from the authentic plant it is recommended for the rejection of the drug. According to the WHO, the adulteration in Ayurvedic drugs, whether intentional or unintentional should be rejected by considering various kinds of standards. At the same time the suppliers and traders of herbal medicinal plants should be educated about the genuineness of such plants and its sources.

Adulteration may be deliberate or accidental. It is a fact that these kinds of adulterations are unknown even to the scientific community. The existence of adulteration raises questions about the identity and quality of some popular herbal medicines sold in the market. After understanding the various ways of adulteration, much care is needed to minimize the illegal act of adulteration. Strict control over the various kinds of adulteration pursued in the manufacturing of Ayurvedic drugs is required for improving the safety of the consumers. It is the duty of the concerned department of the government. For this purpose dynamic and intensive actions are needed to educate the public. Government can insist authoritative measures to safeguard the interests of the consumers and can provide adequate fund to implement them.

### **Production of Ayurvedic Medicines in the Public Sector**

Oushadhi or Pharmaceutical Corporation (Indian Medicines) Kerala Ltd is an Ayurvedic medicine manufacturing company owned and

operated by Government of Kerala. This Pharmaceutical Company was founded by His Highness Kerala Varma VI, the Maharaja of Cochin in the year 1941. Its earlier name was Sree Kerala Varma Government Ayurvedic Pharmacy. The Maharaja, Kerala Varma was a well known Ayurvedic physician. He had comprehensive and in depth knowledge in Sanskrit and was specialized in 'Vishavaidyam' (Poison treatment). In 1975, the company was registered and renamed as "The Pharmaceutical Corporation (Indian Medicines) Kerala Ltd". Oushadhi has two manufacturing units, one is working at Thrissur and the other is in Kannur District. The company has established thirty bedded Pancha Karma Hospital and Research Institute at Thrissur. There is also another institution that is functioning as a specialty centre for Ayurveda and Yoga at Thiruvananthapuram, the capital city of Kerala. Oushadhi is also supplying Ayurvedic medicines to 1,035 Government hospitals, dispensaries in Kerala and also to other states of the country at concessional prices. The company also owns two medicinal plant nurseries at Kuttanellur and Pariyaram. Oushadhi has hundreds of Agencies across Kerala.

### **Experiences of Oushadhi**

In India, Oushadhi is the largest producer of Ayurveda medicines in public sector. It is one among the few Public Sector companies that are making profit for a long period of time. Since 1999, this Ayurvedic manufacturing company is paying dividend to Government of Kerala. The company supplies various Ayurvedic medicines to Government of Kerala for the distribution to common man through ISM Dept. Oushadhi is a

GMP and ISO 9001-2008 certified company which produces around 450 Ayurvedic formulations - both classical and proprietary. It is the sole supplier of medicines to Government Ayurveda Hospitals and proprietary. At the same time, Oushadhi stands as the supplier of Ayurvedic Medicines to Government Hospitals and dispensaries of other states like Madhya Pradesh, Karnataka, Himachal Pradesh, Uttar Pradesh, Chhattisgarh, Pondicherry, Rajasthan, Haryana, Orissa, New Delhi, Lakshadweep etc. Oushadhi caters to the need of public through a vast network of 610 agencies spread all over the nation. The company is governed by dedicated board of directors.

Oushadhi obtains support from various tracks including Government of Kerala, Ayush Department of Government of India, Department of Indian Systems of Medicine (ISM Department), Kerala, National Medicinal Plant Board, State Forest Department, Reputed organizations like KFRI, TBGRI, Agricultural Universities, Ayurveda Research Centers, SC/ST Federation and also from the wholesale dealer of raw materials and the General Public. The vision of Oushadhi is to build a leading world class Ayurveda Industry in the country by the year 2020.

#### **Ayurvedic Medicines Produced and Supplied by Oushadhi**

The details of Ayurvedic Medicines produced and supplied by Oushadhi are furnished below. Table-2 presents the composition of the various kinds of medicines and brands prepared and supplied by Oushadhi

**Table-2** The Composition of the Brands Prepared and Supplied by Oushadhi

| Sl. No                             | Nature of Medicine             | Number of Brands | Percentage of Products |
|------------------------------------|--------------------------------|------------------|------------------------|
| 1                                  | Asavams & Arishtams            | 37               | 10.05                  |
| 2                                  | Kashaya & Sookshma Choomam     | 49               | 13.32                  |
| 3                                  | Gulika & Tablets               | 43               | 11.68                  |
| 4                                  | Lehyams & Ghruthams            | 61               | 16.58                  |
| 5                                  | Liquid Kashayams               | 42               | 11.41                  |
| 6                                  | Bhasma Sindooram               | 10               | 2.72                   |
| 7                                  | Medicated Oils (Thylam)        | 107              | 29.08                  |
| 8                                  | Patent & Proprietary Medicines | 19               | 5.16                   |
| Total Number of Medicinal Products |                                | 368              | 100.00                 |

(Source-Office of the Oushadhi)

#### **Details of Ayurvedic products Manufactured and Supplied by Oushadhi**

**Liquid Kashayams-** Oushadhi prepares and supplies 42 brands of liquid Kashayams. Among these the important brands are are Amruthotharam Kashayam, Ashtavargam Kashayam, Balaguluchyadi Kashayam, Balajeekadi Kashayam, Bhadravadadi Kashayam, Bruhthyadi Kashayam, Chiruvilwadi Kashayam, Dasmoolakaduthrayam Kashayam, Dhanwandaram Kashayam, Dananayanadi Kashayam, Drakshadi Kashayam, Dusparsadi Kashayam, Elakadi Kashayam, Gandarvahasthadi Kashayam, Guluguluthikthakam Kashayam, Guluchyadi Kashayam, Indukantham Kashayam, Kathakakhadiradi Kashayam, Maharasnadi Kashayam, Mahathikthakam Kashayam, Manjishtadi Kashayam, Nayopayam Kashayam, Padoladiganam Kashayam, Panchathikthakam Kashayam, Pathyadi Kashayam, Prasaranadi Kashayam, Punarnavadi Kashayam,

Rasneirandadi Kashayam, Sahacharadi Kashayam, Saptasaram Kashayam, Varanadi Kashayam, Vasaguluchyadi Kashayam, Vidaradi Kashayam and Vyoshadi Kashayam.

**Asavams and Arishtams-** Oushadhi prepares and supplies 37 brands of Asavams and Arishtams. Among these the notable brands are Abhayarishtam, Ahiphenasavam, Amritarishtam, Aragwadharishtam, Aravindasavam, Asokarishtam, Aswagandarishtam, Ayaskrithi, Balarishtam, Chandanasavam, Chavikasavam, Danthyarishtam, Dasamoolarishtam, Dhanwanthararishtam, Draksharishtam, Durlabarishtam, Jeerakarishtam, Kanakasavam, Karpoorasavam, Khadirarishtam, Kumaryasavam, Kutjarishtam, Lodhrasavam, Lohasavam, Madhookasavam, Moolakasavam, Mrudweekarishtam, Mustharishtam, Partharishtam, Piplyasavam, Punarnavasavam, Sarswatharishtam, Saribadyasavam, Useerasavam, Vasarishtam, Veppukadi and Vidaryadasavam.

**Lehyams & Ghrithams-** Oushadhi prepares and supplies 61 brands of lehyams and ghruthams. The major types of lehyams and ghruthams produced and supplied by Oushadhi are Agastya Rasayanam, Ajamamsa Rasayanam, Aswaganthadi Lehyam, Chavanaprasam, Dadimaghrutha, Dasamoolarasayanam, Dhathryadi Lehyam, Drakshadi Lehyam, Duruvaghrutham, Eladi Rasayanam, Gulguluthikthakamghrutham, Haridrakhanam, Indukanthamghrutham, Jathyadighrutham,

Jeevanthyadighrutham, Kalyanakaghrutham, Koosmanda Rasayanam, Mahakalyanamghrutham, Mahathikthakaghrutham, Manibhadra Lehyam, Neelidaladighrutham, Padavaryadighrutham, Panchageerakagudam, Patolaghrutham, Pulinkuzhambu, Rasnadasamoolaghrutham, Sarswathaghrutham, Sathavarigulam, Thaleesavadakam Granules, Tharamandooram, Thikthakaghrutham, Vajraka ghrutham, Valiyamadhusnuhi Rasayanam, Vidaryadighrutham, Villwadi Lehyam, and Vyoshadi Vatakam .

**Medicated Oils (Thylam)** Oushadhi prepares a wide variety of medicated oils generally called Tylams. The total number of medicated oils (Thylams) prepared by Oushadhi is 107. The popular brands of medicated oils prepared and supplied by Oushadi are Dhanwntharam Thylam, Ksheerabala Thylam, Kottamchukkadi Thylam, Pinda Thylam, Karpooradi Thylam, Murivenna etc.

**Bhasma Sindooram-** Oushadhi prepares ten different kinds of Bhasma Sindoorams. These are Abhra Bhasmam, Annabedi Sindooram, Aviltholadi Bhasmam, Gandhaka Rasayanam, Kantha Sindooram, Loha Sindooram, Mandoora Bhasmam, Panaviraladi Bhasmam, Pravala Bhasmam and Sringa Bhasmam.

### **Patent Ayurvedic Medicines Prepared and Supplied by Oushadhi**

Oushadhi prepares nineteen kinds of ayurvedic proprietary medicines. These ayurvedic

medicines have wide acceptability among the doctors and patients. The details of ayurvedic

proprietary medicines prepared and supplied by Oushadhi are furnished in the table-3.

**Table-3** Patent Ayurvedic Medicines Prepared and Supplied by Oushadhi

| Sl.No | Product                        | Number of Ingredients | Category | Indication  | Nature of Presentation |
|-------|--------------------------------|-----------------------|----------|---|------------------------|
| 1     | Ashtachornam Syrup             | 9                     | APM      | Loss of Appetite, Indigestion                       | 100 ml                 |
| 2     | Burncure Oinment               | 4                     | APM      | All types of burns, Inflammation, Discoloration     | 25 gm                  |
| 3     | Diabetdrinks                   | 4                     | APM      | Diabetes Mellitus                                   | 50 gm                  |
| 4     | Oushadhi Murivenna Oinment     | 2                     | APM      | Wounds, Sprain                                      | 10 gm                  |
| 5     | Oushadhi Rheumajith Oinment    | 8                     | APM      | Rheumatic Pain, Inflammation                        | 10 gm                  |
| 6     | Oushadhi Bliss Balm            | 8                     | APM      | Headache , Cold                                     | 10 gm                  |
| 7     | Oushadhi Chavanaprasam         | 52                    | APM      | Restore Immunity Power                              | 200 & 500 gm           |
| 8     | Oushadhi Cough Syrup           | 16                    | APM      | Allergic dry cough, Throat irritation               | 100 ml                 |
| 9     | Oushadhi Dahasamini            | 6                     | APM      | Thirst, Dryness of mouth                            | 50 gm                  |
| 10    | Oushadhi Hairtone              | 19                    | APM      | Dandruff, Loss of hair                              | 100 & 200 ml           |
| 11    | Oushadhi Thenginpookkulamruthu | 29                    | APM      | Low back ache, Post natal disorders                 | 400 gm                 |
| 12    | Oushadhi Tooth Powder          | 16                    | APM      | Pyorrhea, Tooth ache, dental caries                 | 25 gm                  |
| 13    | Pramehoushadhi Chooranam       | 14                    | APM      | Diabetes Mellitus                                   | 100 & 250 gm           |
| 14    | Pramehoushadhi Tablet          | 14                    | APM      | Diabetes Mellitus                                   | 10x10 Blisters         |
| 15    | Psorset Oil                    | 3                     | APM      | Psoriasis, Dermatitis, Skin diseases                | 100 ml                 |
| 16    | Psorset Oinment                | 4                     | APM      | Psoriasis, Dermatitis, Skin diseases                | 50 gm                  |
| 17    | Shadharanam Tablet             | 6                     | APM      | Rheumatic Fever                                     |                        |
| 18    | Sudarsanam Tablet              | 54                    | APM      | Fever   |                        |
| 19    | Vigor Plus                     | NA                    | APM      | General fatigue, Improves physical strength & vigor | 60 Capsules/Pack       |

(Source-Office of the Oushadhi)

### Strength of the Company

Established brand image is most important power force of the company. It gets continuous support of the Government. The various kinds of Ayurvedic medicines prepared and produced by Oushadhi have huge demand in the Ayurvedic medicinal market. The other strength of the company is its dedicated work force. The company gives emphasis to certain core values such as mutual trust and respect, customer satisfaction, strict quality control, maintaining professional ethics and company always try to the

march with time. Oushadhi maintains two medicinal plant nurseries. One is in Thrissur District and the other in Kannur District. They annually distribute around three Lakhs seedlings of twenty leading species. In Thrissur, medicinal plants are cultivated in 15 acres of land and in Kannur it is 50 acres.

### Conclusion

It is a fact that the future development of Ayurvedic medicine manufacturing sector largely depends upon the reliability of the methodology used for its preparation. It includes the correct

identification of useful plants the quality assurance of the raw materials used for the manufacturing of the drugs. Ayurvedic drug manufactures should follow high quality standards by using modern techniques of preparation and the use modern instruments in order to maintain the quality of drugs. In India, Oushadhi is the largest producer of Ayurveda medicines in public sector Oushadhi prepares various kinds of Ayurvedic proprietary medicines. These medicines have wide acceptability among the doctors and patients and have huge demand in the Ayurvedic medicinal market. The other strength of the company is its dedicated work force. The company gives emphasis to certain core values such as mutual trust and respect, customer satisfaction, strict quality control, maintaining professional ethics and company is always trying to the march with time.

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## A STUDY ON CUSTOMS DUTIES AFTER THE GOODS AND SERVICE TAX (GST) IMPLEMENTATION AT COCHIN CUSTOMS

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### *Abstract*

*Customs is an authority or agency in a country responsible for collecting tariffs and for controlling the flow of goods including animals, transports, personal and hazardous items into and out of a country. Each country has its own laws and regulations for the import and export of goods into and out of a country, which its customs authority enforces. In most countries, customs are attained through government agreements and international laws. A customs duty is a tariff or tax on the importation or exportation of goods. The customs work in Cochin port has been existence for over one and half century. The Customs Department was under the administrative control of the Department of Revenue, Ministry of Finance, Government of India. Customs duty means a tax levied on imports and some time on exports by the customs authorities of a country to raise state revenue and protect domestic industries predatory competitors from abroad. Customs duties is based on the value of goods. Goods and Service Tax is an indirect tax which was introduced in 1<sup>st</sup> of July, 2017 and was applicable throughout India, which replaces multiple taxes levied by the central and state Government.*

**Keywords:** GST,IGST,BCD,SAD,B/L, E Cess,

### **1. Introduction**

India is the fastest growing and seventh largest economy in the world. The basic tool to evaluate any country is its Balance of Payment. After the Implementation of Goods and Service Tax (GST), it has totally changed the business section. Customs Duty in India is a type of indirect tax, which is levied on commodities imported into India as well as on commodities exported from India. Import of goods means that bringing of some commodities or items into India from a place outside India. Export of goods means that taking the same from India into a place outside India. After Goods and Service Tax (GST), customs duty is now calculated from Basic Customs Duty (BCD) Integrated Goods and Service Tax and Compensation Cess. Under section 12 of Customs

Act 1962, deals with charging and collecting customs duties. It is now added to Integrated Goods and Service Tax (IGST), which comes under Integrated Goods and Service Tax Act 2017. In India there are three types of Goods and Service Tax. 1. Central Goods and Service Tax (CGST) 2. State Goods and Service Tax (SGST) Integrated Goods and Service Tax (IGST) Union Territory Goods and Service Tax (UGST). The rates of GST levying slabs are Nil, 0.25%, 3%, 5%, 12%, 18% and 28%.

### **2. Objectives of the Study.**

- i. To understand various procedural formalities in connection with Customs Duties in Cochin Customs

- ii. To study how the Goods and Service Tax (GST) implementation effected Exporters and Importers
- iii. To make a detailed study of the IGST rate classification on Importing and exporting goods
- iv. To know about various kinds of Customs Import duties.

### 10. Methodology of the Study

The researcher adopted the following methodology for the collection and analysis of data. Primary data collected with the help of contacting the High Officials of International Container Transhipment Terminal (ICTT), Cochin Port, Cochin Customs. The researcher also met proper officers of Customs Clearing and Forwarding Agents, and Steamer Agents. Personal interview is the other method of primary data collection. Secondary data got through the verification of documents like Customs Act, Customs Rules procedures and GST Tariff Act etc. The researcher also visited Cochin Port Trust Office and Customs House Office for the detailed information. Secondary data contains information regarding GST Tariff and Customs Duties of different importing goods

### 3. Customs Law & Procedure

Customs as a source of revenue has been known for many centuries. It known to have its origin in the ancient practice of customary payments made by international traders to kings or local chieftains of places they visited to sell their wares and in return enjoyed their protection. In India the system is known to have been in existence from ancient times as seen from Kautilya's Arthashastra, which has specific provisions for collection of duties and even penal

action for violation of related laws in force. Customs is one of the major source of revenue for the Central Government, the other being Central Excise, Income Tax and the comparatively new Service Tax. In India the Sea Customs Act was enacted in 1878, but the Central Excise Act was passed in 1944, though certain specific items like cotton yarn had been brought under excise levy earlier under specific Rules – Service Tax was introduced by the Finance Act 1994. Direct taxes are like Income Tax and Corporate Tax, Customs duties are collected from importers and exporters Central Excise duties collected from manufactures and service tax is collected from service providers. The authority for collection of Customs duties is under entry no. 83 of list 1 of the Seventh Schedule of the Constitution of India. The Customs Act 1962 (Which replaced the erstwhile Sea Customs Act of 1878) that came to effect from 1<sup>st</sup> February 1963 authorizes such collection at the rates specified under another legislation known as Customs Tariff Act 1975. Though essentially the Customs is revenue department, it has also to engage itself in prevention of smuggling and enforcement of various other laws of the Country such a Foreign Trade (Development and Regulation) Act 1992, Foreign Exchange Management Act (FEMA) 1991, Indian Explosives Act, etc., The Customs Act is comprehensive act covering all aspects relating to import and export. There are specific provisions for declaring ports and airports where only imports/exports can be effected for imposing restriction/prohibition for regulating and formulating the legal formalities for ship/aircrafts to come to leaving the country from/to abroad, warehousing of non-duty paid goods, baggage clearance, penal provision for violation of the

legal requirements etc. The procedure for clearance of goods on import/export through specified documents known as bill of entry for import and shipping bill for export are also laid down in the Act.

It also attends to the work of collecting trade statistics, which is important in framing the economic policies of the Country. The laws relating to the collection of revenue and other function of the customs are regulated and implemented by the Central Board of Excise & Customs, under the Ministry of Finance, Government of India. through the Commissionerates of Customs set up at different ports. The Commissioner of Customs is the Officer in charge of the Commissionerates, who has wide powers under the Customs Act in matters relating to import/export. He is assisted by other officers like Additional Commissioner, Joint Commissioner, Deputy Commissioner and Assistant Commissioner. The Customs has two main wings, One for collection of revenue called the Appraising department and the other for prevention of smuggling and control over the movement of goods and conveyance in the Customs area called the Preventive department. There is customs establishment at the port is known as Customs House. The Customs house can go by the manufactures literature or analytical report. Goods are normally tested by the Customs House Laboratory or in any of the national laboratories in the country.

#### **4. Import Procedure – Bill of Entry**

Goods imported into the country attract customs duty and also required to confirm to relevant to legal requirements. The detailed customs clearance formalities have to be followed

by the Importers. First of all, Importers have to obtain an Import Export Code (IEC) number from Director General of Foreign Trade (DGFT) to filing Bill of Entry. Under Section 46 of Customs Act 1962, the Importer of Customs brokers have to file Bill of Entry at Customs Station on line software system electronically. Signed invoice, Packing list, Bill of Lading, Import License, Insurance document Importers/Customs Brokers declaration and other relevant documents are required for clearing the imported goods. The proper Officer (Examiner) can make examination/inspection and assess the value of goods according to the Tariff Value. Then he can decide the customs duty as per the customs tariff. After the Goods and Service Tax implication, the following customs duties are levied as per the rule. Basic Customs Duty (BCD), Education Cess, Higher Education Cess, Integrated Goods and Service Tax (IGST), Anti –Dumping Duty and Safeguard Duty.

#### **5. Export Procedure – Shipping Bill**

Export Customs formalities are simplified now. After received documents for exporter. The Customs Broker files Shipping Bill Customs station under section 50 of Customs Act, 1962. The Shipping bill will move to appraisal queue and the examiner will make examination of export goods. After the examination report, the goods can stuff into containers and lade on vessel. After the Customs formalities is over, The Steamer Agents issues Bill of Lading.

#### **6. Present procedure of clearance of goods at Port & Customs in Cochin**

The Shipping lines/Steamer Agents/ Carriers/ Console Operators file the import General Manifest (IGM) in accordance with Section 30 of the

Customs Act, 1962. After filing the IGM and on arrival of the goods, Custom House Agent or Importer files Bill of Entry (cargo declaration) in terms of section 46 of customs Act, 1962. The first stage for processing a Bill of Entry is noting/registration of Bill of Entry (B/E). The Bill of Entry is then forwarded to the concerned Appraising group in the Customs House dealing with the commodity sought to be cleared. The assessing officer in the appraising group assesses the duty liability, taking due note of any exemption or benefits claimed by the importer. Necessary checks regarding any restriction or prohibition on the goods imported are followed. In case of doubt, the Officer may give an examination order in advance of finalization of assessment. Otherwise, the B/E is finally assessed and the importer deposits the duty calculated with the nominated Banks. After assessment the B/E is passed on to the Shed Appraiser/Superintendent for examination of goods along with the B/E. The Shed Inspector/examiners examine the goods and enter their report on the B/E with signature of the importer/Clearing Agent in token of examination in his presence. After completing examination of the goods the shed Appraiser would give order for "Out of Charge".

However in rare cases, if some discrepancy is found between the declaration and the result of examination of cargo, the Assistant Commissioner/Deputy Commissioner (AC/DC) revises the assessment on the basis of examination report. After issuance of Out of Charge order on the B/E, the importer presents the same to the Custodian who in turn issues the Gate Pass after verification of correctness of Bill of Lading and number of packages. The importer/CHA presents importer's copy of the B/E and the Custodian Gate Pass to the Customs Officer at the gate while taking the goods out of the Customs area. As regards exports, Shipping Bill are required to be filed along with other documents such as invoice, Application

for Removal (ARE), Packing list etc. The Assessing Officer in the export department checks the value of the goods, classification, rate of duty and others with regards to different provisions and the Foreign Trade Policy (FTP) and related documents. After the shipping bill is passed by the export department, the exporter presents the goods to the Shed Appraiser (Export) for examination. The examination is carried out under supervision of Shed Appraiser/ Superintendent (Export) and after examination, Officer gives "Let Export" order after which exporter may load the goods into vessel under supervision of Customs Officer. The procedural formalities of Cochin Customs is very strict when compare with other neighbouring ports of Kerala, Mangalore Port, Chennai Port, Tuticorin Port deals formalities of customs in very liberal methods. Cargo clearance expenses, loading and unloading charges, other miscellaneous expenses are very high in Cochin Port. This forced the exporters to avoid shipment through ICTT, Cochin.

## 7. Significance of the Study

The existing Basic Customs Duty (BCD) will continue to do its round in the import bill, the existing Counter Vailing Duty (CVD) and Special Additional Duty (SAD) subsumed by Integrated Goods and Service Tax (IGST). GST Law can attract especially importers because of abolishing multiple tax by IGST. Input tax credit of IGST and GST compensation cess will be available to the importer/exporter and then will be transferred to the recipients in the supply chain.

## 8. Rate of duties at the time of import

In the GST regime, IGST and GST Compensation cess will be levied on import by virtue of sub-section (7) & (9) of Section 3 of the Customs Tariff Act, 1975. IGST rates have been notified through notification 01/2017-Integrated Tax (Rate) dated 28-06-2017. There are seven rates

prescribed for IGST- these are Nil, 0.25% 3% 5% 12% 18% and 28%. The actual rate applicable to an item would depend on its classification and would be specified in schedules notified under section 5 of IGST Act, 2017. The rates applicable to goods of Chapter 98 are as under:-

| No   | Items   | IGST Rate % |
|------|---|-------------|
| 9801 | Project Imports                               | 18%         |
| 9802 | Laboratory Chemicals                          | 18%         |
| 9803 | Passenger Baggage                             | Nil Rate    |
| 9804 | Specified Drugs and Medicine for personal use | 5%          |
| 9804 | Other Drugs and Medicines for personal use    | 12%         |
| 9804 | All other dutiable goods for personal use     | 28%         |

Source: Customs House

Calculation of customs duty payable is before the GST Implication If assessable value of a goods = Rs 10,000/-

| Seq. | Duty Description                          | Duty% | Amount   | Total Customs Duty |
|------|---|-------|----------|--------------------|
| (A)  | Assessable Value Rs                       |       | 10000    |                    |
| (B)  | Basic Customs Duty                        | 10%   | 1000     | 1000               |
| (C)  | Sub-Total for Calculating CVD (A + B)     |       | 11000    |                    |
| (D)  | CVD 'C' excise duty rate                  | 12.5% | 1375     | 1375               |
| (E)  | Sub-total for edu cess on customs B + D   |       | 2375     |                    |
| (F)  | Edu Cess of Customs-2% of 'E'             | 2%    | 45.50    | 47.50              |
| (G)  | SAH Education Cess of Customs- 1%of 'E'   | 1%    | 23.75    | 23.75              |
| (H)  | Sub-total for Spl CVD "C + D + F + G      |       | 12446.25 |                    |
| (I)  | Special CVD under section 3 (5) – 4% of H | 4%    | 497.85   | 497.85             |
| (J)  | Total Customs Duty                        |       |          | 2944.10            |
| (K)  | <b>Total duty rounded to</b>              |       |          | <b>2944</b>        |

Source: Customs House

Calculation of customs duty payable is after the GST Implication If assessable value of a goods = Rs 10,000/- (IGST 15%)

| Seq. | Duty Description             | Duty% | Amount | Total Customs Duty |
|------|------------------------------|-------|--------|--------------------|
| (A)  | Assessable Value Rs          |       | 10000  |                    |
| (B)  | Basic Customs Duty           | 10%   | 1000   | 1000               |
| (C)  | Education cess               | 2%    | 20     | 20                 |
| (D)  | Higher education cess        | 1%    | 10     | 10                 |
| (F)  | IGST (a + (b) + (c) + (d))   |       |        | 551.5              |
| (K)  | <b>Total duty rounded to</b> |       |        | <b>1581.5</b>      |

Source: Customs House

Calculation of customs duty payable is after the GST Implication If assessable value of a goods = Rs 10,000/- (IGST 12%)

| Seq. | Duty Description             | Duty% | Amount | Total Customs Duty |
|------|------------------------------|-------|--------|--------------------|
| (A)  | Assessable Value Rs          |       | 10000  |                    |
| (B)  | Basic Customs Duty           | 10%   | 1000   | 1000               |
| (C)  | Education cess               | 2%    | 20     | 20                 |
| (D)  | Higher education cess        | 1%    | 10     | 10                 |
| (F)  | IGST (a + (b) + (c) + (d))   |       |        | 1323.6             |
| (K)  | <b>Total duty rounded to</b> |       |        | <b>2353.6</b>      |

Source: Customs House

Calculation of customs duty payable is after the GST Implication If assessable value of a goods = Rs 10,000/- (IGST 18%)

| Seq. | Duty Description             | Duty% | Amount | Total Customs Duty |
|------|------------------------------|-------|--------|--------------------|
| (A)  | Assessable Value Rs          |       | 10000  |                    |
| (B)  | Basic Customs Duty           | 10%   | 1000   | 1000               |
| (C)  | Education cess               | 2%    | 20     | 20                 |
| (D)  | Higher education cess        | 1%    | 10     | 10                 |
| (F)  | IGST (a + (b) + (c) + (d))   |       |        | 1985.4             |
| (K)  | <b>Total duty rounded to</b> |       |        | <b>3015.4</b>      |

Source: Customs House

Calculation of customs duty payable is after the GST Implication If assessable value of a goods = Rs 10,000/- (IGST 28%)

| Seq. | Duty Description             | Duty% | Amount | Total Customs Duty |
|------|------------------------------|-------|--------|--------------------|
| (A)  | Assessable Value Rs          |       | 10000  |                    |
| (B)  | Basic Customs Duty           | 10%   | 1000   | 1000               |
| (C)  | Education cess               | 2%    | 20     | 20                 |
| (D)  | Higher education cess        | 1%    | 10     | 10                 |
| (F)  | IGST (a + (b) + (c) + (d))   |       |        | 3088.4             |
| (K)  | <b>Total duty rounded to</b> |       |        | <b>4118.4</b>      |

Source: Customs House

Different Percentage of GST Calculation for Import Goods

| Sl. No. | Description of Goods          | Central CGST | State/UT SGST/UTGST | Inter-State IGST | Compensation Cess |
|---------|-------------------------------|--------------|---------------------|------------------|-------------------|
| 1.      | Live animals- Sheep and Goats | Nil          | Nil                 | Nil              | Nil               |
| 2.      | Fish and other fish meat      | 2.5%         | 2.5%                | 5%               | Nil               |
| 3       | Leather Items                 | 6%           | 6%                  | 12%              | Nil               |
| 4       | Machine Tools                 | 9%           | 9%                  | 18%              | Nil               |
| 5       | Electric Accumulation         | 14%          | 14%                 | 28%              | Nil               |

The above charts clearly states that importing goods are levying different percentage of GST as per the GST Tariff, 2017. This charts also indicates that authority of customs are not levying most of the importing goods.

### 8. Different types of Customs duties.

- a. **Basic Customs Duty (BCD):-** Basic Customs Duty is the duty imposed on the value of goods at a specific rate.
- b. **Counter Vailing Duty (CVD):** This duty imposed by the Central Government when a country is paying the subsidy to the exporters who are exporting goods to India. This amount is equivalent to the subsidy paid by them.
- c. **Special Additional Duty (SAD) :** Special Additional Duty is imposed on goods equal track with goods produced or manufacture in India
- d. **Safeguard Duty:** In order to make sure that no harm is caused to the domestic industries of India. Safeguard Duty is imposed to safeguard the interest of our local domestic industries.
- e. **Anti-Dumping Duty:** often, large manufacture from abroad may export goods at very low price compared prices in the domestic market. Such dumping may be with interest to cripple domestic industry.
- f. **Education Cess and Higher Education Cess:-** At the prescribed rate is levied as a percentage of aggregate duties of customs.

After the GST implementation, Counter Vailing Duty (CVD) and Special Additional Duty (SAD) has subsumed by Integrated Goods and Service Tax (IGST).

### 9. Concluding Remarks

Customs is an authority or agency in a Country responsible for collecting tariff and for controlling the flows of goods including animals, transports personal and hazardous item into and out of a country. Basic Customs Duty (BCD), Counter vailing Duty (CVD), Special Additional Duty (SAD), Anti-Dumping Duty, Safe Guard Duty, Educational Cess were imposing on Import goods as per the Customs Rules. After the GST implementation, CVD and SAD avoided then Integrated Goods and Service Tax (IGST) is imposing. Other duties and Education Cess levying without any change. GST implementation on Customs duty is very profitable for importers as well as exporters, because of IGST and GST Compensation Cess will be available to the Importer when they transferred the goods to other person.

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## GROWTH PERFORMANCE OF MAJOR SPICES EXPORT IN INDIA

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### *Abstract*

*India is traditionally known as the spice bowl of the world. Indian spices has got a good name in the world market. The present study seeks to analyze the growth performance on quantity of major spices export in India and growth performance on value of major spices export in India. The study is based on secondary data, which obtained from Annual Reports of spices board, Indian Spices Board Statistics, published by Spices Board of India, Ministry of Commerce and Industry, Government of India. The analysis is based on 13 years starting from 2005-06 to 2017-18. Major spices such as Pepper Cardamom (small), chilli, Ginger, Turmeric have been taken for analysis. The analysis was done by the use of SPSS and Excel. The study used the statistical tools like mean, Standard deviation, coefficient of variation, compound annual growth rate for analyzing the data.*

**Keywords:** Spices, Export, World Market

### **Introduction**

India is the land of spices. It has been an integral part of the Indian diet. No Indian meal is considered complete without the tangy and delectable flavor of Indian spices, locally known as “masala”. Indian spices are famous in the world wide for their gastronomic value, are also known to possess high medicinal values (Thumar.,et.al 2012). India produces a wide range of spices due to varying agro-climatic conditions from arid to temperate. Almost all spices grow splendidly in India. In almost all the states and union territories of India, at least one spice is grown in abundance. Under the Act of Parliament, a total of 52 spices are brought under

the purview of Spices Board. However, 109 spices are notified in the ISO list. Spice products are essentially products derived from the whole spices. They are in the form of powders, extracts (oil, oleoresin, colors), preserved for like freeze dried, dehydrated frozen, in brine, in sugar syrup, etc. Spices are defined as strongly flavored or aromatic substance of vegetable origin, obtained from tropical plants, commonly used as a condiment. In ancient times, spices were as precious as gold and significant as medicines, preservatives and perfumes. India is the land of spices plays a significant role in the global spices market. None of the country in the world produces as many kinds of spices as India, with quality spices coming from the state of

Kerala. The most popular spice products are extracts which are widely used in food, pharmaceutical and toiletry industries. India enjoys a near monopoly in the field of spice extract [Spices Kerala]. India is not only the largest producer but also the largest consumer and exporter of spices in the world. Indian spices flavor foods in over 134 countries. Spice exports touched 10,28,060 tonnes valued 17,92,955 lakhs in 2017-18 (Spices board statistics 2017-18). The shift in preferences of domestic consumers for food items, increasing urbanization and rising incomes, altered demographic and social factors and the changes in productivity of spices have brought about changes in the pattern of their consumption and demand. India has certain natural comparative advantages with respect to production and utilization of spices; these include diverse agro-climatic production environments, availability of innumerable varieties and cultivars of each spice suitable for different climatic conditions, cheap labour, large domestic market and a strong tradition of using spices and their products in food, medicine and cosmetics. As India is known for the land of spices and has the great potential to meet the global demand. Looking to all these aspect there is a need to study the growth and instability in area, production and export of spices from India. The high growth and low instability index indicates sustainability in production which is the prerequisite and reflects positive indication for the export potential of the country. Keeping this in view the present study was planned. India is known as the "Land of Spices" and produces a large variety and quantity of spices. About sixty-three spices are grown in the country, which includes pepper

(King of Spices), cardamom (Queen of Spices), chillies, ginger, turmeric, coriander, cumin, fenugreek and many Others (Ashoka, 2013). The export of the basic agricultural commodities by developing countries can be relied upon to earn valuable foreign exchange due to the ever demand of spices. Indian spices exports have gained value realization despite very small growth in volumes (Sarangi and Singh, 2014). However, Marketing problems are more frequently faced by growers and exporters mainly due to failure in establishing market linkages rather than lack of market opportunities (Rohatash *et al.*, 2011). According to the Bureau of Indian Standards (BIS), out of the 109 spices listed by the ISO about 63 spices are being grown in our country of which commercial cultivation is limited to a dozen of spices which are of importance in the domestic and international markets. Black pepper, cardamom, chillies, turmeric and ginger are grouped under major spices and the rest are considered as minor spices based on their importance and contribution in foreign trade. Besides earning substantial foreign exchange to the country it provides direct and indirect employment to millions of farmers, traders and Agricultural labourers. The international spice scenario depicted a quantum leap over the past decade to more than 4.5 million tonnes valued at 1500 million US dollars every year. India's share of the world spices trade is estimated at 45-50 per cent by volume and 25 per cent by value. The present annual production of spices in the country is 3 million tonnes from over 2.5 million hectares, the lion's share (90 per cent) of the spices produced in India is absorbed in the

domestic market and only 10 per cent is exported to over 150 countries (peter, 2002).

### Significance for the Study

There have been several regulations in different countries to export of agriculture commodities. These regulations have caused the reduction of spices exports. This results welfare losses in spices exporting countries, as a result of decrease in spices production. Welfare losses include a decrease foreign revenue, unemployment, unfavorable terms of trade and loss of revenue to the Government. In addition, this situation increases poverty levels, and a reduction in social welfare services, which may calls unrest among they people, it is therefore very necessary to know the trends in the export performance of spices, that can help in understanding the kind of impact it will have and its social political consequences, this study therefore attempted to find out the growth performance on quantity and value of major spices export in India during 2005-06 to 2017-18.

### Objective of the Study

- To study the growth performance of quantity of major spices export in India during 2005-06 to 2017-18.
- To find out the growth performance of value of major spices export in India.

### Research Methodology

The study is based on secondary data, which obtained from Annual Reports of spices board, Indian Spices Board Statistics, published by Spices Board of India, Ministry of Commerce and Industry, Government of India. The analysis is based on 13 years starting from 2005-06 to

2017-18 Major spices such as Pepper Cardamom (small), chilli, Ginger, Turmeric have been taken for analysis. The analysis was done by the use of SPSS and Excel. The study used the statistical tools like mean, Standard deviation, coefficient of variation, compound annual growth rate for analyzing the data.

### Major Spices Exports in India

The table 1.1 shows the trend values and the annual average growth rate in the export of pepper from India during 2005-06 to 2017-18

**Table 1.1:** Export of pepper from India during 2005-06 to 2017-18

| Year    | Pepper (Quantity in tonnes) | AAGR (%) | Trend value | Pepper (value in Rs. lakhs) | AAGR (%) | Trend value |
|---------|-----------------------------|----------|-------------|-----------------------------|----------|-------------|
| 2005-06 | 17363                       |          | 22424       | 28750                       |          | 20576       |
| 2006-07 | 15095                       | -13.1    | 22258       | 30620                       | 6.5      | 29432       |
| 2007-08 | 35000                       | 131.9    | 22093       | 51950                       | 69.7     | 38289       |
| 2008-09 | 25250                       | -27.9    | 21928       | 41373                       | -20.4    | 47146       |
| 2009-10 | 19750                       | -21.8    | 21762       | 31392                       | -24.1    | 56002       |
| 2010-11 | 18850                       | -4.6     | 21597       | 38318                       | 22.1     | 64859       |
| 2011-12 | 26700                       | 41.6     | 21432       | 87813                       | 129.2    | 73716       |
| 2012-13 | 15363                       | -42.5    | 21266       | 63810                       | -27.3    | 82572       |
| 2013-14 | 21250                       | 38.3     | 21101       | 94002                       | 47.3     | 91429       |
| 2014-15 | 21450                       | 0.9      | 20935       | 120842                      | 28.6     | 100286      |
| 2015-16 | 28100                       | 31.0     | 20770       | 173042                      | 43.2     | 109142      |
| 2016-17 | 17600                       | -37.4    | 20605       | 114313                      | -33.9    | 117999      |
| 2017-18 | 16840                       | -4.3     | 20439       | 82078                       | -28.2    | 126856      |

Source: Spices Board of India

It is observed from Table. 1.1 that the quantity of pepper export in India was highest in 2007-08 and lowest in 2006-07. The quantity of pepper export has gone up from 15,095 tonnes in 2006- 2007 to 16,840 tonnes in 2017-18. But its growth rate in quantity gradually decelerated from -13.1 per cent to -4.3 per cent. The trend value decreased from 22,424 tonnes in 2000-2001 to 20,439 tonnes in 2017-18.

The value of pepper export in India was highest in 2014-15 and lowest in 2005-06. The value of pepper export has increased from

30,620 lakhs in 2006- 2007 to 82,078 lakhs in 2017-18. But its growth rate in value gradually decelerated from 6.5 per cent to -28.2 per cent during the corresponding period. The trend value increased from 20,576 lakhs in 2000-2001 to 1, 26,856 lakhs in 2017-18.

**Table 1.2:** Export of cardamom from India during 20005-06 to 2017-18

| year    | Cardamom (Quantity in tonnes) | AAGR (%) | Trend value | Cardamom(s) (Value in Rs. lakhs) | AAGR (%) | Trend value |
|---------|-------------------------------|----------|-------------|----------------------------------|----------|-------------|
| 2005-06 | 1909                          |          | 625         | 2150                             |          | -3891       |
| 2006-07 | 1500                          | -21.4    | 999         | 2331                             | 8.4      | 704         |
| 2007-08 | 500                           | -66.7    | 1372        | 2475                             | 6.2      | 5298        |
| 2008-09 | 750                           | 50.0     | 1746        | 4727                             | 91.0     | 9892        |
| 2009-10 | 1975                          | 163.3    | 2119        | 16570                            | 250.6    | 14486       |
| 2010-11 | 1175                          | -40.5    | 2492        | 13216                            | -20.2    | 19081       |
| 2011-12 | 4650                          | 295.7    | 2866        | 36322                            | 174.8    | 23675       |
| 2012-13 | 2372                          | -49.0    | 3239        | 21215                            | -41.6    | 28269       |
| 2013-14 | 3600                          | 51.8     | 3613        | 28381                            | 33.8     | 32863       |
| 2014-15 | 3795                          | 5.4      | 3986        | 32347                            | 14.0     | 37458       |
| 2015-16 | 5500                          | 44.9     | 4359        | 44983                            | 39.1     | 42052       |
| 2016-17 | 3850                          | -30.0    | 4733        | 42150                            | -6.3     | 46646       |
| 2017-18 | 5680                          | 47.5     | 5106        | 60908                            | 44.5     | 51241       |

Source: Spices Board Statistics

From the above Table.1.2 that the quantities of cardamom export in India were the highest in 2017-18 and the lowest in 2007-08. The quantity of cardamom export has improved from 1,500 tonnes in 2006- 2007 to 5,680 tonnes in 2017-18. But its growth rate in quantity of cardamom export gradually increased from -21.4 per cent to 47.5 per cent. The trend value increased from 625 tonnes in 2000-2001 to 5,106 tonnes in 2017-18.

The value of cardamom export in India was the highest in 2017-18 and the lowest in 2005-06. The value of cardamom export has gone up from 2,331 lakhs in 2006- 2007 to 60,908 lakhs in 2017-18. But its growth rate in value of cardamom export gradually declined from 6.5 per cent to -28.2 per cent. The trend

value increased from -3,891 lakhs in 2000-2001 to 51,241 lakhs in 2017-18.

**Table 1.3:** Export of chilli from India during 20005-06 to 2017-18

| year    | Chilli (Quantity in tonnes) | AAGR (%) | Trend value | Chilli (Value in Rs. lakhs) | AAGR (%) | Trend value |
|---------|-----------------------------|----------|-------------|-----------------------------|----------|-------------|
| 2005-06 | 113174                      |          | 92682       | 148500                      |          | 41799       |
| 2006-07 | 40300                       | -64.4    | 120666      | 80775                       | -45.6    | 75073       |
| 2007-08 | 209000                      | 418.6    | 148650      | 109750                      | 35.9     | 108346      |
| 2008-09 | 188000                      | -10.0    | 176634      | 108095                      | -1.5     | 141619      |
| 2009-10 | 204000                      | 8.5      | 204618      | 129173                      | 19.5     | 174892      |
| 2010-11 | 240000                      | 17.6     | 232602      | 153554                      | 18.9     | 208166      |
| 2011-12 | 241000                      | 0.4      | 260586      | 214408                      | 39.6     | 241439      |
| 2012-13 | 301000                      | 24.9     | 288571      | 238061                      | 11.0     | 274712      |
| 2013-14 | 312500                      | 3.8      | 316555      | 272227                      | 14.4     | 307985      |
| 2014-15 | 347000                      | 11.0     | 344539      | 351710                      | 29.2     | 341259      |
| 2015-16 | 347500                      | 0.1      | 372523      | 399744                      | 13.7     | 374532      |
| 2016-17 | 400250                      | 15.2     | 400507      | 507075                      | 26.8     | 407805      |
| 2017-18 | 443900                      | 10.9     | 428491      | 425633                      | -16.1    | 441078      |

Source: Spices Board Statistics

It could be seen from the table.1.3 that the quantities of chilli export in India were the highest in 2017-18 and the lowest in 2006-07. The quantity of chilli export has gone up from 40300 tonnes in 2006- 2007 to 443900 tonnes in 2017-18. But its growth rate in quantity of chilli export gradually increased from -64.4 per cent to 10.9 per cent. The trend value decreased from 92,682 tonnes in 2005-2006 to 4,28,491 tonnes in 2017-18.

The value of chilli export in India was the highest in 2016-17 and the lowest in 2006-07. The value of chilli export has increased from 80,775 lakhs in 2006- 2007 to 4, 25,633 lakhs in 2017-18. But its growth rate in value of chilli export gradually decelerated from -45.6 per cent to -16.1 per cent. The trend value increased from 41,799 lakhs in 2000-2001 to 4, 41,078 lakhs in 2017-18.

**Table 1.4:** Export of ginger from India during 20005-06 to 2017-18

| year    | Ginger (Quantity in tonnes) | AAGR (%) | Trend value | Ginger (value in Rs. lakhs) | AAGR (%) | Trend value |
|---------|-----------------------------|----------|-------------|-----------------------------|----------|-------------|
| 2005-06 | 9411                        |          | 4132        | 7500                        |          | 1779        |
| 2006-07 | 4295                        | -54.3    | 6347        | 3975                        | -47.0    | 4141        |
| 2007-08 | 6700                        | 56.0     | 8561        | 2800                        | -29.6    | 6503        |
| 2008-09 | 5000                        | -25.3    | 10776       | 3482                        | 24.4     | 8865        |
| 2009-10 | 5500                        | 10.0     | 12991       | 4675                        | 34.2     | 11227       |
| 2010-11 | 15750                       | 186.3    | 15206       | 12131                       | 159.5    | 13589       |
| 2011-12 | 21550                       | 36.8     | 17421       | 20420                       | 68.3     | 15951       |
| 2012-13 | 22207                       | 3.0      | 19635       | 18725                       | -8.3     | 18313       |
| 2013-14 | 23300                       | 4.9      | 21850       | 25614                       | 36.8     | 20675       |
| 2014-15 | 40400                       | 73.3     | 24065       | 33133                       | 29.4     | 23037       |
| 2015-16 | 24800                       | -38.6    | 26280       | 27595                       | -16.7    | 25399       |
| 2016-17 | 24950                       | 0.6      | 28495       | 25705                       | -6.9     | 27761       |
| 2017-18 | 22605                       | -9.40    | 30709       | 21606                       | -15.9    | 30123       |

Source: Spices Board Statistics

It could be seen from the table. 1.4 that the quantities of ginger export in India were the highest in 2014-15 and the lowest in 2006-07. The quantity of ginger export has improved from 4,295 tonnes in 2006- 2007 to 22,605 tonnes in 2016-17. But its growth rate in quantity of ginger export gradually decelerated from -54.3 per cent to -9.40 per cent. The trend value increased from 4,132 tonnes in 2000-2001to 30,709 tonnes in 2017-18.

The value of ginger export in India was the highest in 2014-15 and the lowest in 2007-08. The value of ginger export has gone up from 3,975 lakhs in 2006- 2007 to 21,606 lakhs in 2017-18. But its growth rate in value of ginger export gradually increased from -47.0 per cent to -15.9 per cent. The trend value increased from 1,779 lakhs in 2000-2001 to 30,123 lakhs in 2017-18.

**Table 1.5:** Export of turmeric from India during 20005-06 to 2017-18

| year    | Turmeric (Quantity in tonnes) | AAGR (%) | Trend value | Turmeric (value in Rs.lakhs) | AAGR (%) | Trend value |
|---------|-------------------------------|----------|-------------|------------------------------|----------|-------------|
| 2005-06 | 46405                         |          | 29513       | 51500                        |          | 17635       |
| 2006-07 | 15286                         | -67.1    | 36226       | 16480                        | -68.0    | 25040       |
| 2007-08 | 49250                         | 222.2    | 42938       | 15700                        | -4.7     | 32446       |
| 2008-09 | 52500                         | 6.6      | 49651       | 24857.8                      | 58.3     | 39852       |
| 2009-10 | 50750                         | -3.3     | 56363       | 38123                        | 53.4     | 47258       |
| 2010-11 | 49250                         | -3.0     | 63076       | 70285.2                      | 84.4     | 54663       |
| 2011-12 | 79500                         | 61.4     | 69789       | 73434.4                      | 4.5      | 62069       |
| 2012-13 | 88513                         | 11.3     | 76501       | 55487.7                      | -24.4    | 69475       |
| 2013-14 | 77500                         | -12.4    | 83214       | 66675.9                      | 20.2     | 76881       |
| 2014-15 | 86000                         | 11.0     | 89927       | 74435                        | 11.6     | 84286       |
| 2015-16 | 88500                         | 2.9      | 96639       | 92165                        | 23.8     | 91692       |
| 2016-17 | 116500                        | 31.6     | 103352      | 124189                       | 34.7     | 99098       |
| 2017-18 | 107300                        | -7.9     | 110065      | 103567                       | -16.6    | 106504      |

Source: Spices Board Statistics

It is observed from Table.1.5 that the quantities of turmeric export in India were the highest in 2016-17 and the lowest in 2006-07. The quantity of turmeric export has gone up from 15,286 tonnes in 2006- 2007 to 1, 07,300 tonnes in 2017-18. But its growth rate in quantity of turmeric export gradually decelerated from - 67.1 per cent to -7.9 per cent. The trend value improved from 29,513 tonnes in 2000-2001to 1, 10,065 tonnes in 2017-18.

The value of turmeric export in India was the highest in 2014-15 and the lowest in 2005-06. The value of turmeric export has gone up from 16,480 lakhs in 2006- 2007 to 1, 03,567 lakhs in 2017-18. But its growth rate in value of turmeric export gradually declined from -68.0 per cent to -16.6 per cent. The trend value increased from 17,635 lakhs in 2000-2001 to 1, 06,504 lakhs in 2017-18.

**Table 1.6:** Minimum, maximum, mean, standard deviation co-efficient of variation and compound growth rate of spices exports

| Spices Exports (Quantity in tonnes) |         |         |           |                    |                           |       |
|-------------------------------------|---------|---------|-----------|--------------------|---------------------------|-------|
| Variables                           | Minimum | Maximum | Mean      | Standard deviation | Co-efficient of variation | CGR   |
| Pepper                              | 15095   | 35000   | 21431.61  | 5843.29            | 3.66                      | -0.23 |
| Cardamom                            | 500     | 5680    | 2865.84   | 1759.82            | 1.62                      | 8.75  |
| Chilli                              | 40300   | 443900  | 260586.46 | 113525.05          | 2.29                      | 11.1  |
| Ginger                              | 4295    | 40400   | 17420.61  | 10766.98           | 1.61                      | 6.97  |
| Turmeric                            | 15286   | 116500  | 69788.76  | 28473.26           | 2.45                      | 6.66  |
| Spices Exports (value in Rs.lakhs)  |         |         |           |                    |                           |       |
| Variables                           | Minimum | Maximum | Mean      | Standard deviation | Co-efficient of variation | CGR   |
| Pepper                              | 28750   | 173041  | 73715.74  | 43737.94           | 1.68                      | 8.4   |
| Cardamom                            | 2150    | 60908   | 23675.00  | 19000.50           | 1.24                      | 29.3  |
| Chilli                              | 80775   | 507075  | 241438.83 | 139433.59          | 1.73                      | 8.4   |
| Ginger                              | 2800    | 33133   | 15950.98  | 10661.37           | 1.49                      | 8.4   |
| Turmeric                            | 15700   | 124189  | 62069.21  | 33165.13           | 1.87                      | 5.5   |

Source: calculated by researcher

The mean and standard deviation of the quantities of major spices export was 21431.61 2865.84 260586.46 17420.61, 69788.76 and 5843.29 1759.82 113525.05 10766.98 28473.26. The mean and standard deviation of the value of major spices export was found as 73715.74, 23675.00, 241438.83, 15950.98, 62069.21 and 43737.94, 19000.50, 139433.59, 10661.37, 33165.13. The co-efficient of variation for the five variables such as quantities of major spices export was found as 3.66, 1.62, 2.29, 1.61, and 2.45. The co-efficient of variation for the five variables such as value of major spices export was found as 1.68, 1.24, 1.73, 1.49, 1.87 and 5.5. Regarding the Compound growth rate of quantities of major spices export was concerned, Chilli has highest compound growth rate of 11.1 per cent per annum and pepper has lowest compound growth rate of -0.23 per cent per annum. The value of major spices export was concerned, Cardamom was found highest compound growth rate of 29.3 per cent per

annum and turmeric was found lowest compound growth rate of 5.5 per cent.

## Conclusion

The present study focused on growth performance of quantity and value of major spices export. The major spices export of India shows positive trend both in terms of quantity and value. The demand for Indian spices and its products are ever increasing both in the internal and external markets. Although there is tremendous importance of spices, it is rather unfortunate that the sector has not achieved the required level development because of many problems in the marketing, supply chain, exports, pre and post-harvesting activities. Also exporters overseas are struggling. This requires costly quality management systems and training of farmers. A targeted effort is needed to include poorer households in value chains: organizational development, technical upgrading, management skills and access to financing are all required. It seems that various factors appear to play a larger role determining the performance of major spices export. Still it has the potential to perform better under such circumstances the government should design supportive policies and development of strategies for spices exports.

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## SOURCES OF CHANGES IN MONEY STOCK IN INDIA: CERTAIN NOTICEABLE TRENDS

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### *Abstract*

*In the theory of money multiplier, the High Powered Money, H, plays a dominant role in the determination of money stock in a country. The value of money multiplier being a behavioural determinant, changes H appear to be more important for any Central Bank to make changes in money supply. RBI publishes data on the sources of money stock in India. In this paper, an attempt is made to analyse certain noticeable trends in the growth rate of different sources of money stock in India particularly in recent years.*

**Keywords:** *High Powered Money, Money Stock, RBI, Annual Growth Rate, Foreign Exchange Assets, Currency Liability, Economic Reforms, Reserve Bank of India Credit*

### **Introduction**

In a monetized economic system, Central Banks' actions deserve utmost serious attention as these actions have far reaching implications on both the real and the financial sectors of the economy. In fact, the theoretical underpinnings of the monetary actions of the Central Banks and its repercussions on the economy could be traced back to the inferences made by the Classical economists and later by the Monetarists under the stewardship of Milton Friedman. These models and the findings thereof consider money supply as the most significant variable in a monetized economy.

### **Theoretical Background**

Equilibrium in most of the monetary models is established between the demand for and the supply of money and the demand for money being reckoned as constant, supply of money is deemed to be playing an indispensable

role in the determination of the significant monetary variables like the price level and the nominal interest rates. Monetary economics offers theories of money supply which explain the factors causing changes in money supply in an economy.

In the theory of money supply, changes in money supply are a function of two variables viz. the money multiplier and the Higher Powered Money ( $M = m \cdot H$ ), where 'm' is the money multiplier. Money multiplier is behavioural factor which in turn depends on other variables reflecting the banking habit of the people and the working pattern of the commercial banks over which hardly any control can usually be made. Hence, in most of the monetary models, value of money multiplier is taken as a constant. This leaves us with the High Powered Money over which visible controls can be exercised by the Central Bank in an effort to

regulate the volume of money supply prevailing in an economy.

The sources of money supply are those sources which influence the value of 'H', the High Powered Money. In monetary realm, we often consider four measurements of money supply and four major sources of changes in money supply. The former include M-1, M -2, M-3 and M-4. In this paper we focus on the major sources of changes in money supply in India viz. Net Bank Credit to Government (NBCG), Bank Credit to Commercial Sector (BCCS), Net Foreign Exchange Assets of the Banking Sector (NFEABS) and Net Non-Monetary Liabilities of the Banking Sector (NNMLBS). Let us briefly explain each of these sources.

### **1. Net Bank Credit to Government (NBCG)**

Net Bank Credit to Government (NBCG) is the sum of three important variables viz. Net RBI Credit to Central Government (NBCCG), Net RBI Credit to State Governments (NBCSGs) and Other Banks Investments in Government Securities (OBIGS). It includes those financial helps that the RBI gives to the government for its short terms expenditure management. RBI invests money in the securities issued by both the Central Government and State Governments. When RBI does so, it adds to the quantity of high powered money available in the economy which further fuels money supply via the money multiplier process. Other Banks credit to Government encompasses the money invested by

commercial and cooperative banks in the securities including treasury bills of governments

$$NBCG = NBCCG + NBCSGs + OBIGS$$

### **2. Bank Credit to Commercial Sector (BCCS)**

Commercial sector is indirectly financed by the RBI through designated financial institutions specifically to set up for addressing the credit and refinance requirements of the nerve sectors of Indian economy viz. the Agriculture and the industrial sectors. Agriculture Refinance Development Corporation (ARDC), Deposit Insurance and Credit Guarantee Corporation (DICGC) are some of those institutions to which the RBI directs its credit flows. Besides, RBI invests in the debentures issued by the Land Mortgage Banks, Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI) and State Financial Corporations. We label the above as 'RBI Credit to the Commercial Sector (RCCS). BCCS also covers investments or loans made by Commercial and Cooperative Banks in commercial sector organizations and companies. These are labelled as "Other Banks Credit to the Commercial Sector (OBCCS)

$$BCCS = RCCS + OBCCS$$

### **3. Net Foreign Exchange Assets of the Banking Sector (NFEABS)**

In India both the RBI and other Banks authorised to deal in foreign exchange market hold foreign exchanges. Hence, NFEABS has two components: Net Foreign Exchange Assets

of the RBI (NFEARBI) and Net Foreign Exchange Assets of Other Banks (NFEAOS). Obviously, RBI holds the majority of the foreign exchange assets whereas other banks hold relatively a few foreign exchange assets that too only to operate in foreign exchange markets.

$$\text{NFEABS} = \text{NFEARBI} + \text{NFEAOS}$$

#### 4. Net Non-Monetary Liabilities of the Banking Sector (NNMLBS)

NNMLBS consists of two elements: Net Non-Monetary Liabilities of RBI (NNMLRBI) and Net Non-Monetary Liabilities of and that of the other Banks (NNMLOB). Broadly, it covers reserves kept by banks and other kinds of branch adjustments of other banks.

$$\text{NNMLBS} = \text{NNMLRBI} + \text{NNMLOB}$$

#### 5. Government's Currency Liabilities to the Public (GCLP)

For smooth transactions in an exchange economy people require even small currencies and coins. It is the responsibility of the government to ensure that non-availability of small coins and currency do not bring any unnecessary disruptions in the exchange process. To ensure, this government is liable to supply enough one rupee notes and coins, small coins to the public.

#### Period of Analysis

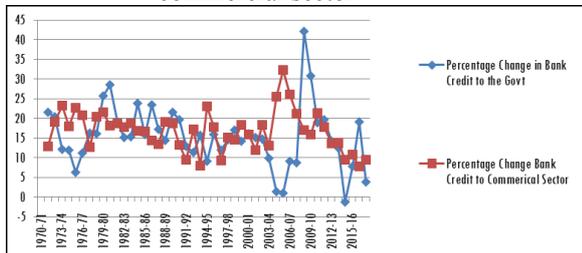
In the present paper, we intend to throw light on the trends in the sources of money stock in India during the period 1970-71 to 2017-18. The data pertaining to this reference period is

obtained from the RBI data site and necessary statistical treatments have been made to make the data amenable to the present study. For the purpose of illustration of trends and to peep into the specific reasons for the changes in crucial sources of money stock in India, decadal trends have also been looked into. This paper purposefully omits complex statistical treatments to make it readable to as many scholars as possible.

#### Analysis and Explanations

Among the sources of money stock in India, bank credit to the government and the commercial sector play a dominant role for two reasons. First and foremost, these factors directly reflect the internal changes of the economy and largely being determined by the policy decisions of the government and business sentiments. These factors, unlike the net foreign exchange assets, are controllable by the actions of government to a greater extent. Looking at the trends in percentage change in these two sources it could obviously be understood that they are highly positively correlated, the correlation value being .99 which means that during the period under the present study, by and large, they moved in the same direction (Figure No.1). However, in mid 1970s and in early 2000s, the percentage credit to the commercial sector outweighed the government sector credit, and in late 2000s, specifically in 2009-10, perhaps in the aftermath of the global financial meltdown, the credit to the government sector surpassed the credit to the commercial sector as the source of change in the money stock of India.

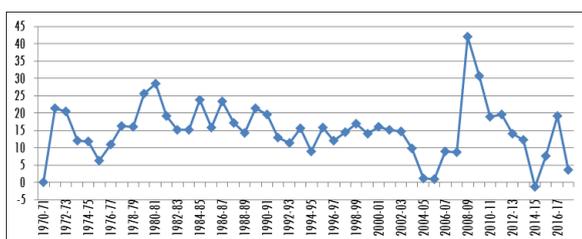
**Figure 1** Comparing the percentage change in bank credit to government sector and commercial sector



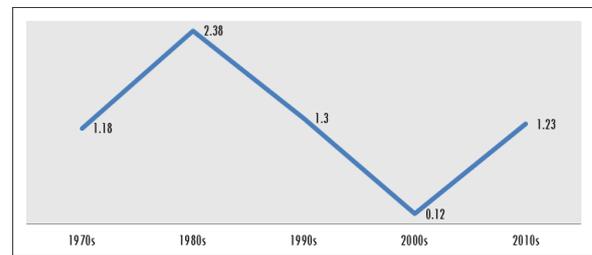
Source: Compiled from RBI Data on Money Stock

It is worthwhile to note that barring late 2000s, the percentage change in net bank credit to the government showed an almost constant trends. In fact it is in 2008-09 that the net bank credit to government shot up thanks to the efforts of the government to withstand the spill over effects of global financial meltdown (Figure No.2). For a precise picture of the trends in percentage change in net bank credit to government, a decadal analysis has been done for 1970s, 1980s, 1990s, 2000s and 2010s. The results of this analysis are much interesting as it sheds light on an overall trend during the period under consideration. For instance, in 1980s, the average growth rate of net bank credit to government hovered around 2.38 which was marked change from the 1.18 per cent average annual growth rate in 1970s. Further it is quite interesting to note than in 2010s, it again started rising after having touched a low growth rate in 200s (Figure No3).

**Figure 2** Percentage Changes in Net Bank Credit to Government



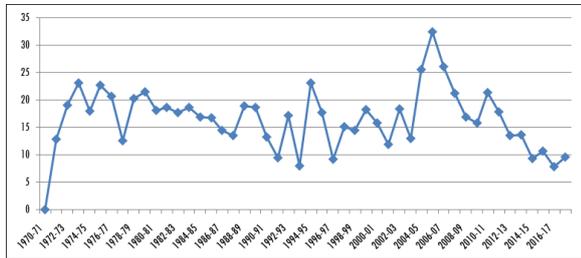
**Figure 3** Decadal Changes in Net Bank Credit to Government



Source: Compiled from RBI Data on Money Stock

Commercial sector comprising agriculture, industrial and service sectors assume importance as its many subsectors have been prioritized in the lending policy of the banking sector in India. Often, the net credit flow to this sector is determined by the industrial and agriculture policies of the governments in power. Majority of the credit that owes to this sector takes the form of either indirect lending or refinancing mode by the RBI and other leading lending institutions. In India, as a source of stock of money, however, this factor has been much volatile in comparison with the net bank credit to the government sector. This has been more evident from the oscillations in its growth rate observed since the initiation of neo-liberal economic policies in India (Figure No.4). It is curious to note that in 2008-09, as in the case of net bank credit to the government sector, the growth in bank credit commercial sector took a U-turn by registering the highest growth rate during the period under consideration of the present study. This is prima facie on account of the pre-emptive efforts that the government of India undertook to address the backlash effect of the global financial meltdown, and it needs to be reiterated here that these policies actually prevented India from falling into the trap of the debt crisis surfaced in other countries.

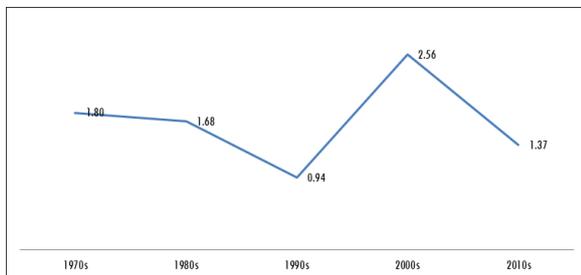
**Figure 4:** Percentage Changes in Net Bank Credit to Commercial Sector



Source: Compiled from RBI Data on Money Stock

The boosts that the private enterprises have been given in India since the implementation economic reforms in 1991 also got reflected in the decadal growth rate in net bank accredit to the commercial sector. During the 1990s, as evident from the Figure No.5, the net bank credit to commercial sector shot up to 2.56 from 0.94 at beginning of the period. But, the post 2000 period witnessed a fall in the growth rate of this component which is obvious from the fact that during this period the rate of growth in Net Bank credit to the commercial sector plummeted to a level as low as 1.37 per cent. Thus runs quite contrary to the trend in the net bank credit to the government sector because during this period there has been a remarkable hike in the net bank credit to the government.

**Figure 5:** Decadal Changes in Net Bank Credit to Commercial Sector



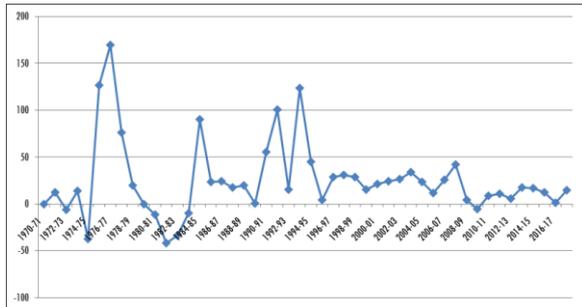
Source: Compiled from RBI Data on Money Stock

Unlike the aforesaid two sources of changes in the money stock in India, net foreign

exchange assets of the banking sector that is both of the RBI and other banks are deemed to have been playing a significant role in the determination of money supply in India. This factor assumes importance for two reasons: one is that it is the factor over which we do not have control as these are determined predominantly by the income of the foreign countries and the competitiveness of Indian exports in the international markets. Secondly, this has been the most volatile source of change in the money stock of India. Moreover, policies of India governing the foreign exchange market and exchange rate could influence the reserve of the foreign exchange assets assuming that other determinants remaining undisturbed. It is quite surprising to note that in 1970s and in the beginning of 1980s, the change in net foreign exchange assets was much volatile compared to other years (Figure No.6). This untoward oscillations in net foreign exchange assets as a source of money stock is attributed to the existence of fixed exchange rate system and the policy actions followed by the government under the Foreign Exchange Regulation Act (FERA). The strict regulatory mechanism put in place to safeguard the domestic interest of the country in fact led to frequent and violent changes in these factors. But in the post reform period, we observe that there has never been a smooth growth in the net foreign exchange assets of the banking sector as source of money stock in the country. Decadal changes in the growth rate of

this source also tell us the same story of high volatility owing the factors mentioned above.

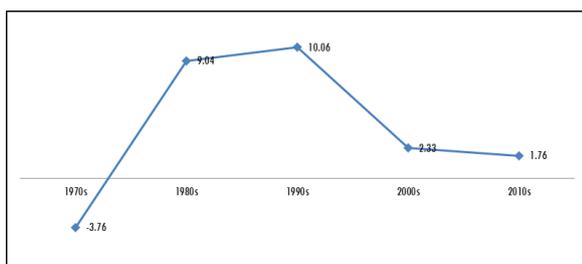
**Figure 6** Percentage Change in Net Foreign Exchange Assets of the Banking Sector



Source: Compiled from RBI Data on Money Stock

It is quite interesting to note in 1970s the rate of growth of net foreign exchange of the banking sector was almost negative to the tune 3.76 per cent per annum whereas in the 1980s, the decadal growth rate averaged 9.04 percent and further rose to 10.06 percent in 1990s. It obviously points to the fact that in 1980s and 1990s, changes in money stock in India as greatly attributed to the changes in the net foreign exchange assets of the banking sector. But, in 2000s and 2010s, the decadal growth rate fell down to the level as low as 2.33 percent and 1.76 percent respectively (Figure No 7). This clearly shows that in the time of second generation reforms in India, the changes in Money stock have hardly been influenced by net foreign exchange assets.

**Figure 7:** Decadal Changes in Net Foreign Exchange Assets of the Banking Sector

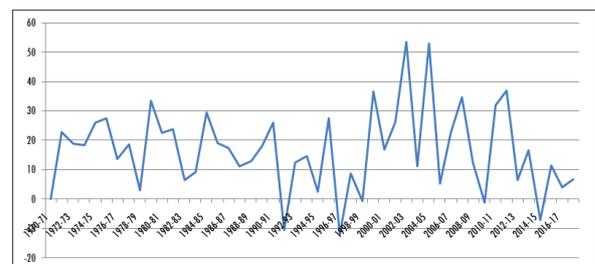


Source: Compiled from RBI Data on Money Stock

Now, we turn to the Net-Non-Monetary Liabilities of the Banking sector and the growth in this over decades as a source of change in High Powered Money or the Reserve Bank Money (RBM) in India. It is again interesting to note that this component comes with a negative sign in the determinants of sources of changes in money supply in India. This is a quite sizeable item in the accounts of the RBI. The growth in this item has been enormous although volatile. Non-monetary liabilities of RBI consist of different items such as the paid-up capital of RBI, RBI Pension Fund, Provident Fund and other expenses. Contributions to different national funds from the part of RBI also come under this head. a glance at the figure no.8 reveals that this item has been much volatile compared to all other sources of changes in money stock in India. In early 1990s, it was shown to be negative and in the period following that its volatility has grown much compared to the pre-reform period (Figure No.8).

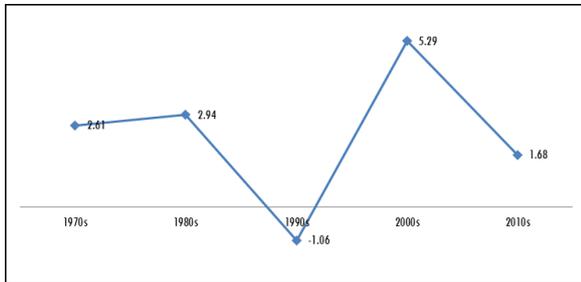
From the trend in decadal growth of this component it is evident that in 2000s its average annual growth rate ever skyrocketed to 5.29 percent after having touched the negative rate of -1.06 per cent in 1990s (Figure No9). In 2010s, however, it growth rate declined to 1.68 percent.

**Figure 8:** Percentage Change in Net Non-Monetary Liabilities of the Banking Sector



Source: Compiled from RBI Data on Money Stock

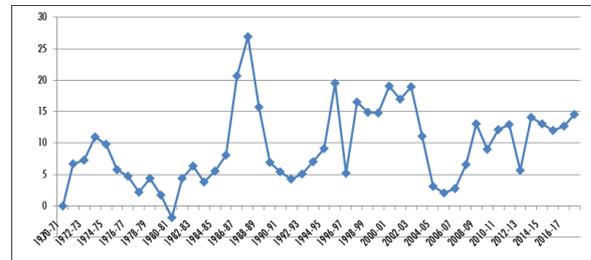
**Figure 9:** Decadal Changes in Net Non-Monetary Liabilities of the Banking Sector



Source: Compiled from RBI Data on Money Stock

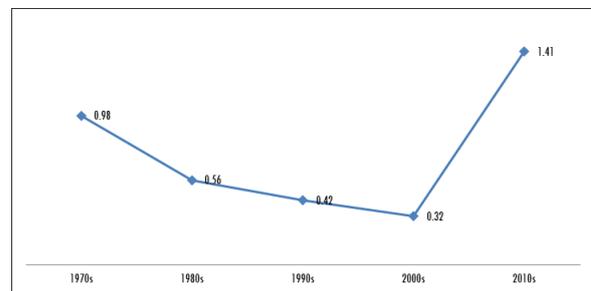
Now, we turn to the last source of change in the money stock of India, the Government's currency liabilities to the public. This source of money stock in India plays only a marginal role in the determination of money stock, but the volatility that it has shown in its growth rate is worthier to be noted. For instance, in 1980-81, the percentage change in government's currency liability to the public witnessed the slowest growth rate, but in 1987-88 it skyrocketed before touching the lowest level in 1992-93 (Figure No.10). Further it is curious to note that the decadal growth rate in this source had shown a secular decline till 2000s, and thereafter, it started rising (Figure No.11). It does mean that the movement currency liability to the public has been showing an upward trend in recent times despite the movement towards the digital payments.

**Figure 10:** Percentage Change in Governments Currency Liabilities to the Public



Source: Compiled from RBI Data on Money Stock

**Figure 11:** Decadal Changes in Governments Currency Liabilities to the Public



Source: Compiled from RBI Data on Money Stock

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## WHY DEMONETISATION WAS DOOMED TO BE A POLICY FAILURE?

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### **Introduction**

On 8<sup>th</sup> November 2016, the National Democratic Alliance decided to demonetize 500 and 1000 currency notes thereby making about 86% of the currency in circulation valueless. No doubt this policy was unequalled because no nation had ever much experimented with withdrawing currency notes of popular denomination to curb the black money (500 and 1000 in this case). The government itself has accepted that a large section of the population was affected by this step. Many of the ruling lawmakers justified this as ‘temporary pain’ for a ‘larger good’. The objective of demonetization was mentioned as mainly to curtail black money. Later on new objectives were added like digitalization of payments, transition to cashless economy and most weirdly reducing real estate prices. There was also an argument in support of demonetization that this led to activation of dormant Jan Dhan Yojana bank accounts leading to greater financial inclusion. In the recent past, there have been instances of demonetization like in Singapore in 2014, Sweden in 2013 and Canada in 2011. This policy disrupted the normal functioning of the economy as well as led to huge impact on the lives of the ordinary citizens. When compared to developed economies, India is a country which mostly

relies on cash for daily transactions and hence, demonetization caused a greater hardship for the people. The paper is an attempt in understanding what went wrong as far as demonetization was concerned.

### **Black Money and Its Actual Source**

The term ‘black money’ is a misnomer because it is actually a process or a flow concept than a stock concept. The same currency in its flow through various levels could become white as well as black. The idea of black money as a stock concept is fuelled by common public imagination sprouting from Bollywood movies where money earned from illegal activities are always stacked and kept in big lockers. The Report of the Committee headed by the Chairman of Central Board of Direct Taxes titled ‘Measures to Tackle Black Money in India and Abroad’ identifies three sources of black money—crime, corruption and business (pp.5). Criminal activities such as trafficking, sexual exploitation, smuggling, drug money, illegal arms trade etc generate black money. It is also generated through corrupt activities such as bribery, theft, siphoning off government funds, facilitating payments etc. Businesses also generate black money by underreporting revenues, inflating expenses, underreporting labour employed and so on. A large part of black money is invested in

illegal activities as well as legal assets both in India and abroad. The common forms of generation of black money in India are:

- 1) Suppression of revenues and inflating of expenditure.
- 2) Real estate is a favoured asset for investment using black money because valuations are different. Also, both black and white money can be used for investing in land.
- 3) Corruption is a major reason for generating black economy, especially in developing economies like India. The Corruption Perceptions Index 2016 brought out by the Transparency International puts India in 79<sup>th</sup> rank in a list of 176 countries and the same database in 2017 put India at 81 in a list of 180 countries. This puts an additional cost or what can be termed as 'transaction cost' on the poor and marginalized sections of population for accessing public services. Another major investment as well as generation of black money is the election process which requires significant reforms. There have been no attempts in expanding the ambit of Right to Information (RTI) to include political parties nor any ordinances or legislations in this direction.
- 4) Financial markets, especially in the secondary market are used for parking the black money. Insider trading as well as 'Dabba-trading' and all causes to shadow economy.
- 5) Gold and jewellery are also ideal for investments using black money. The

World Gold Council estimates that nearly 18,000 tonnes of gold stock are held in India which is nearly valued at 2/3<sup>rd</sup> of our current GDP. Though investments in gold are unproductive, the fact that it has high intrinsic value finds favour with illegal investments.

There was also a theoretical confusion between black money and black economy. If one goes through the text of the PM's speech declaring demonetization, never in his speech there is a mention of black economy but there are only references to black money. Unless we attack its generation points how we can stop the influx of black money.

### **Fake Currency**

A main reason given for justifying demonetization was reducing fake or counterfeit currency notes which are mostly of high denominations. The demand for currency notes depends on a whole host of factors such as inflation levels, income and even the opportunity costs for holding notes. The RBI had observed an increase in money circulation in 2010-11 which even found mention in its that year's Annual Report. RBI justified it with three reasons:

- 1) High inflation especially among food items.
- 2) Increase in real economic activity from 6.8% in 2008-09 to 12.5% in 2010-11.
- 3) The interest rate on bank deposits was very low when compared to inflation.

Demonetisation, no doubt would directly impact the fake currency but an implicit assumption for this would be that the new

currency note would have safety measures which are difficult to replicate. The RBI Annual Report of 2016-17 says that the detection of Fake Indian Currency Notes (FCIN) went up by nearly 24%. But, there were also news reports that within few days of demonetization, fake Rs: 2,000 notes which were just introduced, being recovered by law enforcement agencies.

### **Digital Payments and Cashless Economy**

Even though initially the entire objective of demonetization revolved around black money. Nearly few weeks after the implementation, a new objective was added and that was moving towards a 'cashless' economy. The logic behind this is simple that is, most of the payments would be digital payments like debit or credit cards, e-wallets, online payments etc which would leave a trail by which one can identify the spender. But, there are some logical inconsistencies to this as well:

1. The digital transactions are more costly than the cash transactions. There are various hidden charges like MDR, service charges and now Goods and Services Tax (GST) on this leading to higher cost. As Prof. Prabhat Pattnaik points out there is an undemocratic nature in the government forcefully asking its citizens and that too the poorer section to switch to cashless transactions.
2. The same Annual Report of RBI (2016-17) mentions that cashless transactions increased from 523.23 million worth Rs: 93.63 lakh crore in November 2016 to 682.45 million worth Rs: 150.24 lakh crore. But, it has returned to pre-demonetization

levels and in October 2017 it was only 5% of the total transactions.

3. Almost 93% of India's workforce is engaged in informal sector which uses cash as medium. Nearly, 97% of transactions involve exchange of cash. This leads to a situation where there is undue pressure on the masses to migrate to new technology. Popularizing of technology leads to cost reduction but the fact is that cashless transactions are not yet popular and hence, costly.

### **Conclusion**

There is no doubt that this policy was an unprecedented in modern India but the effectiveness and thoughts behind this is indeed doubtful. The arguments like demonetization would lead to a 2% increase in GDP are all based on half-truths and unscientific. The permanent damage it has caused to the economy would be there for long-run. There have been reports coming in that nearly 99.3 % of the demonetized currency has come back which means most of the money is back. In a developing economy like India which has a very large population of poor and illiterate, the very idea of filling up a bank account form or walking to a bank for accessing its services are daunting tasks for a common man. The confusion, chaos and uncertainty created by demonetization along with the economic, social and human costs don't justify this policy. The need for the hour is to arm the administrative machinery like CDBT for effective detection and investigation of black money and its source. One also needs to go to

the basics regarding the meaning of the term 'black money' which is actually a process of generating illegal money and not exactly an imagination of lockers stashed with unaccounted money popularized by the Bollywood movies.

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## AN ECONOMIC ANALYSIS OF THE SPICES ECONOMY OF INDIA IN THE POST GLOBALISATION PERIOD

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### *Abstract*

*India is known as the land of spices. The arrival of the Europeans to India, namely the British, French, Dutch and Portuguese led to a new era of European domination in spices trade in the country. Almost all varieties of spices are cultivated in India. Spices Board India has listed 52 items of spices which are cultivated in the country, which come under the purview of the Board. According to the FAO estimates India and China are the leading producers of total spices in the world. The major spices cultivated in India are pepper, cardamom, ginger, turmeric and chillies. India is also the largest consumer of spices. Around thirty kinds of spices are commercially cultivated in India. Among these commercial spices, black pepper, is known as the king of spice as it is the most important dollar-earning crop. Kerala and Karnataka are the two major production centres of black pepper. Historically India had a place as the largest producer and exporter of black pepper in the world. In the era of globalisation India has much potential to tap the advantages of global spices trade. Effective attempts are required to keep the traditional fame of Indian spices in the global market.*

**Keywords:** *Spices, Black Pepper, Global Market, Export Destination, Volume of Exports, Value of Exports etc.*

### **Introduction**

Spices are one of the grand gifts of nature to mankind. The term 'spice' was derived from the Latin word 'spices aromatacea'; this means the fruits of the earth. According to American Spice Trade Association 'spices are natural products of plant origin, used primarily for flavouring, seasoning or for adding flavour and pungency to foods and beverages'. The International Standards Organization (ISO) lists 109 spices that are usually used in the world. According to the information provided by Spices

Board India, India cultivates around 52 types of spices.

According to Food and Agricultural Organisation (FAO), spices are vegetable products such as leaves, flowers, seeds and roots that are rich in essential oils and aromatic principles. They are used mainly as condiments. For practical reasons, FAO is considering spices as primary crops. Spices can be broadly classified into five categories. They are:

- 1) Major spices- This category includes five spices such as pepper, cardamom, ginger, turmeric and chillies.

- 2) Seed spices- These include spices such as coriander, celery, fennel, fenugreek, poppy seed, dill seed aniseed, caraway etc.
- 3) Tree spices- Clove, nutmeg and mace, cinnamon, tejpat, tamarind, cassia, asafoetida, curry leaves etc. include in this category.
- 4) Herbal spices- Spices such as thyme, marjoram, oregano, savory, basil etc. come under this category.
- 5) Miscellaneous spices- Miscellaneous spices include spices such as garlic, saffron, vanilla, curry powder, spice oils, oleoresins, spice mixtures etc.

**Objectives of the Study-** Globalisation is a fact today. Trends in production, export and export unit price of spices can influence the well being of the cultivators. The extent of our export earnings is also significantly influenced by our spices exports and its unit prices. Spices sector directly and indirectly stood as a major source of income to a large majority in different states of the country. The important objectives of the study are:

- To analyse the position of India in global trade of spices.
- To examine the trends in area, production and productivity of major spices of India.
- To study the trends in export and export earnings of major spices of India.
- To evaluate the most significant trade destinations of Indian spices.

**Significance of the Study-** The present study has relevance in the globalised trade realm. In this highly integrated world economy, one country cannot pursue policies which are not in

harmony with the worldwide trends. The opportunities emerged through the new Foreign Trade Policy are to be tapped at the earliest by giving priority to farm products and traditional exports. The new Foreign Trade Policy has unravelled immense opportunities for the domestic sector to become more competitive to conquer the world markets. Under the new wave of globalisation, it is worthy to enquire about what is happening in the spices economy of India over the past two and a half decades.

### Methods and Materials

The study was conducted on the basis of secondary data. The main sources of secondary data were Spices Board, India, Cochin and the Data Base of Food and Agricultural Organisation (FAO). The other sources were Department of Economics and Statistics, Trivandrum, Directorate of Areca nut and Spices Development, Calicut and the International Pepper Community, Jakarta, Various issues of the Economic Review, Economic Survey, Spices Export Review and Annual Reports of Spices Board India.

### Review of Literature

Economic review (2002) has stated that international prices of agricultural commodities are characterized by high volatility which is a crucial factor for the trade policy and the strategy under WTO obligation. Quantitative Restrictions (QRs) cannot be used to check imports and price shocks in future. The world prices of almost all agricultural commodities have witnessed a steep decline after experiencing a boom in the end of 1990s. The need for a price stabilisation fund is significant in this context.

Rao, B.S, Babu, K.R and Rao, R.V (2003) have evaluated the impact of economic reforms on the Indian agriculture. The liberalisation of the economy during nineties gave increased hopes to the agricultural sector.

Sathish, C.Jha (2004) has viewed that 75 per cent of the total poor live in rural India, and 80 per cent of these poor depend largely on agriculture for their livelihood. Agriculture sector accounts for 15 per cent of the total export earnings.

Reeta Kumari Bhagat and S.K.Upadhaya (2007) have examined the potentials of India in the export of agro-products under the WTO regime.

Singh and Gupta (2007) were of the opinion that Indian agriculture has been facing large opportunities and serious challenges under WTO. On the one side, the country has fluctuating trend of agricultural production and exportable surplus and on the other, changes in the world market situations; all these have a definite impact on the exports. In the case of country's agricultural exports, a smooth trend of export growth of agricultural and allied products is not still visible.

### **Global Scenario of Spices**

According to the FAO estimates India and China are the leading producers of total spices in the world. During the year 2016, largest area in which spices were cultivated was in India. Nearly 26 per cent of the total area under spices cultivation in the world was in India. On the Production front around two-third of the world spice produce is cultivated by India and China. India has a leading place in the production of many commercially significant spices. In the

production of anise badian, fennel and coriander altogether, India's production share was 39.65 per cent. Of the world total production of chillies and peppers, dry the country's contribution was 40.19 per cent. In the case of other commercially significant spices India's production share was ginger (23.78 per cent), spices, nes (67.99 per cent), pepper (12.88 per cent) and garlic (4.72 per cent). Of the total production of nutmeg, mace and cardamoms in the world, India's share was around 25 per cent.

**Chillies and Peppers, dry-** During 2016 the world production of chillies and peppers, dry was 3054.86 thousand tonnes. India was the largest producer of chillies and peppers, dry with a quantity of 1227.8 thousand tonnes. India's share in the world production of chillies and peppers, dry was around 40 per cent. Second largest producer of chillies and peppers, dry was china (8.31 per cent) followed by Pakistan (6.28 per cent), Thailand (5.20 per cent) and Ethiopia (4.62 per cent).

**Chillies and peppers, green-** The comparative significance of chillies and peppers green is evident from that it is the largely produced item of spice in the world. In terms of quantity its share in the total spices production, in 2016 was around 52 per cent. During 2016 China produced 13189.3 thousand tonnes of chillies and peppers, green; which constituted 47.87 per cent of the world production. The second largest producer was Mexico with a share of 8.48 per cent. India's contribution to the world production of chillies and peppers, green in terms of share in per cent was less than one per cent.

**Ginger-** The world production of ginger during the year 2016 was 1620.49 thousand tonnes. It is

commercially cultivated in around thirty countries. India was the largest producer of ginger in the world with a quantity of 385.33 thousand tonnes. Its share in the world production was 23.78 per cent. Other leading producers of ginger were China (20.61 per cent), Nepal (13.01 per cent), Thailand (10.66 per cent) and Nigeria (10.01 per cent) respectively.

According to UNCTAD data, in terms of volume of trade, pepper contributes around 35 per cent of the total global trade of spice and it was followed by Chillies (22 per cent), Seed spices (17 per cent), Tree spices (14 per cent), Turmeric (5 per cent), Ginger (4 per cent), Cardamom (3 per cent) and Vanilla (1 per cent). Vietnam, Indonesia, India, Malaysia, Brazil, Sri Lanka and China are the main pepper producing countries in the world. In 2016, the global pepper production was estimated to be around 314000 tonnes. Global demand for pepper in terms of export is around 2.2 Lakh tonnes per year. The main suppliers to the global market are Vietnam, India, Indonesia and Brazil. Major destinations of pepper export are the US, Europe, Japan and Australia. Global output of small cardamom is estimated to be around 35000 tonnes per year. India and Guatemala are the main producers of cardamom in the world. Vietnam, Sri Lanka, Cambodia, Laos, El Salvador and Papua New Guinea also produce cardamom. Around 30 percent of the consumption of cardamom is made by European countries. World production of chillies is estimated to be around four million tonnes per year. Leading chilli producing countries are India, China, Pakistan, Morocco, Mexico and Turkey. In terms of quantity, chillies contribute nearly 22 percent of the global spice trade. Global output of cumin seed is estimated to

be less than 3 lakh tonnes per year with bulk of the output concentrated in Asian countries. Global demand as per export of Cumin is estimated to be around thirty thousand tonnes per year. Main exporters of Cumin are India, Syria, Turkey, Iran etc.

### Largest Spices Importing Countries in the World at a Glance

USA is the single largest importer of total spices in the world. According to the FAO's classification of spices in to twelve categories, USA is the largest buyer of seven groups of spices. The trade details of major spices importing countries during the year 2010 can be summarised as table-1

**Table-1** Largest Spices Importing Countries in the World

| Sl. no | Item                                | Import Share in terms of Volume | Import Share in terms of Value | Top Importer in Value terms |
|--------|-------------------------------------|---------------------------------|--------------------------------|-----------------------------|
| 1      | Anise, Badian, Fennel and Coriander | 8.25                            | 11.95                          | USA                         |
| 2      | Chillies and Peppers, dry           | 19.06                           | 21.11                          | USA                         |
| 3      | Chillies and Peppers, green         | 29.46                           | 22.64                          | USA                         |
| 4      | Cinnamon (Canella)                  | 19.96                           | 17.70                          | USA                         |
| 5      | Cloves                              | 17.97                           | 19.64                          | India                       |
| 6      | Garlic                              | 21.79                           | 10.60                          | Indonesia                   |
| 7      | Ginger                              | 14.47                           | 16.79                          | Japan                       |
| 8      | Nutmeg, Mace and Cardamoms          | 16.04                           | 24.58                          | Saudi Arabia                |
| 9      | Pepper (Piper spp.)                 | 22.35                           | 22.91                          | USA                         |
| 10     | Poppy seed                          | 14.72                           | 19.52                          | India                       |
| 11     | Spices, nes                         | 8.29                            | 9.58                           | USA                         |
| 12     | Vanilla                             | 25.89                           | 29.28                          | USA                         |

Source: Compiled from FAO Data Base

### India's Spices trade in History

The recorded history of the use of spices in India goes back to about five thousand years, which was related to Indus valley civilization. The most ancient recorded history of spices can be found in Rig-Veda and the other Vedas. The compilation period of Vedas is generally regarded as from 6500 BC to 4700 BC. Spices were mentioned more frequently in the writings

of the epic period. It had been extensively used during that period. Epic period extended from 4000 BC to 2000 BC. During the post epic period of Indian history, the famous Indian physicians Charaka and Susruta had written much about the medicinal qualities of various spices. In 300 BC Kautilya (Chanakya), the chief minister of the court of Chandragupta Maurya, the founder of the Mauryan dynasty wrote about the use of spices in his book 'Arthashastra'.

In fact the history of spices is the history of trade. During the medieval period many famous travelers such as Fa-Hien (399-414 AD) and Huen-Tang (629 AD), the two Chinese scholars and travelers, Albiruni (1017 AD), the Persian traveler, Marco polo (1288-1293 AD) and Nicolo de Conti (1430 AD), the Italian merchant and explorer visited India. They also wrote much about Indian spices. As a result of these arrivals, many maritime routes were developed to India and China with an ultimate desire to develop a spice route (Rosengarten, 1969). The Portuguese navigator Vasco da Gama is considered as the first discoverer and spreader of spices from India to other countries. He reached the port of Calicut on May 17, 1498 and was received by the ruler of Calicut, Zamorin. The landing of Vasco da Gama and the Portuguese trade with India was a turning point in the history of India. The Portuguese entered into an alliance with the Zamorin through which they got the right to procure all spices. The Portuguese traders collected spices from different places like Calicut, Cannanore, Cochin and Quilon. They compelled the people to

cultivate more spices and carried bundles of spices to Europe. The arrival of the Europeans to India, namely the British, French, Dutch and Portuguese led to a new era of European domination in spices trade in the country.

### **Spices Production in India and its Position in the Global Market**

India produces almost all the spices of the world. India occupies a prominent position in the world trade of spices and finds more than 125 markets all over the world. India produces and exports a number of spices such as pepper, cardamom (small), cardamom (large), chilli, ginger, turmeric, coriander, cumin, celery, fennel, fenugreek, garlic, nutmeg, mace and vanilla. Along with these spices the country also exports curry powder, mint products, spice oils and oleoresins. India is not only the home of spices but also have the supreme position in production, consumption and exports. According to the FAO estimates, India is the leading exporter of many spices in the global market such as anise, badian, fennel and coriander, chillies and peppers, dry and spices, nes. In the case of ginger, pepper, nutmeg, mace and cardamom the country is placed at the fourth. In the export of garlic India is the fifth largest exporter in the world. The country is the sixth largest exporter of vanilla. But in the case of cinnamon and poppy seed exports, country's share is less than one per cent of the world export both in terms of volume and value. The details regarding India's position in the world trade of spices are given in table-2

**Table-2** India's Position in the World Trade of Spices (Quantity in tonnes and value in US \$ 1000)

| Sl. no | Item                                | India's share in per cent (Quantity) | India's share in per cent (Value) | India's position (In Qty terms) |
|--------|-------------------------------------|--------------------------------------|-----------------------------------|---------------------------------|
| 1      | Anise, Badian, Fennel and Coriander | 34.56                                | 28.29                             | 1                               |
| 2      | Chillies and peppers, dry           | 50.60                                | 35.38                             | 1                               |
| 3      | Spices, nes                         | 45.64                                | 20.14                             | 1                               |
| 4      | Pepper (Piper spp.)                 | 7.53                                 | 6.00                              | 4                               |
| 5      | Nutmeg, Mace and Cardamoms          | 7.36                                 | 9.01                              | 4                               |
| 6      | Ginger                              | 4.40                                 | 3.80                              | 4                               |
| 7      | Garlic                              | 1.47                                 | 0.63                              | 5                               |
| 8      | Vanilla                             | 4.90                                 | 5.48                              | 6                               |
| 9      | Clove                               | 1.30                                 | 1.50                              | 11                              |
| 10     | Cinnamon (Canella)                  | 0.40                                 | 0.55                              | 12                              |
| 11     | Chillies and peppers, green         | 11.67                                | 0.32                              | 13                              |
| 12     | Poppy seed                          | 0.14                                 | 0.22                              | 20                              |

Source: Compiled from FAO Data Base

### Spices Cultivated in India

Almost all varieties of spices are cultivated in India. Spices Board India has listed 52 items of spices which are cultivated in the country, which come under the purview of the Board. The list of spices, botanical names and their the parts used are illustrated in table-3

**Table-3** List of Spices that are Cultivated in India

| Name                | Botanical Name            | Parts used   |
|---------------------|---------------------------|--------------|
| 1. Cardamom (Small) | Elettaria cardamomum      | Fruit seed   |
| Cardamom (Large)    | Maton Amomum subulatum    |              |
| 2. Pepper           | Piperaceae                | Fruit seed   |
| 3. Chilli           | Capsicum annum            | Fruit seed   |
| 4. Ginger           | Zingiber officinale       | Rhizome      |
| 5. Turmeric         | Curcuma longa             | Rhizome      |
| 6. Coriander        | Coriandrum sativum        | Leaf & Seed  |
| 7. Cumin            | Cuminumcuminum            | Fruit        |
| 8. Fennel           | Foeniculum vulgare        | Fruit        |
| 9. Fenugreek        | Trigonella foenum-graecum | Seed         |
| 10. Celery          | Apium graveolens          | Fruit        |
| 11. Aniseed         | Pimpinella anisum         | Fruit        |
| 12. Bishops weed    | Prachyspermum ammi        | Fruit        |
| 13. Caraway         | Carum carvi               | Fruit        |
| 14. Dill            | Anethum graveolens        | Fruit & Seed |
| 15. Cinnamon        | Cinnamomum verum          | Bark         |
| 16. Cassia          | Cinnamomum aromaticum     | Bark         |

|                      |                         |   |
|----------------------|-------------------------|---|
| 17. Garlic           | Allium sativum          | Bulb  |
| 18. Curry leaf       | Murraya koenigii        | Leaf  |
| 19. Kokam            | Garcinia indica         | Peel of fruit                                 |
| 20. Mint             | Mentha piperita         | Leaf  |
| 21. Mustard          | Brassica juncea         | Seed  |
| 22. Parsley          | Petroselinum crispum    | Seed  |
| 23. Pomegranate seed | Punica granatum         | Seed  |
| 24. Saffron          | Crocus sativus          | Stigma  |
| 25. Vanilla          | Vanilla planifolia      | Pod   |
| 26. Tejpat           | Cinnamomum tamala       | Bark & Leaf                                   |
| 27. Pepper long      | Piper longum            | Fruit   |
| 28. Star anise       | Illicium verum          | Fruit   |
| 29. Sweet flag       | Acorus calamus          | Rhizome                                       |
| 30. Greater Galanda  | Alpinia galanga         | Rhizome                                       |
| 31. Horse-radish     | Armoracia rusticana     | Rhizome                                       |
| 32. Caper            | Capparis spinosa        | Fruit/root                                    |
| 33. Clove            | Syzygium aromaticum     | Unopened flower bud                           |
| 34. Asafoetida       | Ferula asafoetida       | Oleogum resin from rhizome and thickened root |
| 35. Cambodge         | Garcinia cambogia       | Pericarp lobes                                |
| 36. Hyssop           | Hyssopus officinalis    | Leaf  |
| 37. Juniper berry    | Juniperus communis      | Berry   |
| 38. Bay leaf         | Laurus nobilis          | Leaf  |
| 39. Lovage           | Levisticum officinale   | Leaf  |
| 40. Marjoram         | Marjorana hortensis     | Leaf & Flower top                             |
| 41. Nutmeg           | Myristica fragrans      | Seed  |
| 42. Mace             | Myristica fragrans      | Aril of fruit                                 |
| 43. Basil            | Ocimum basilicum        | Leaf  |
| 44. Poppy seed       | Papaver somniferum      | Seed  |
| 45. All-Spice        | Pimenta dioica          | Fruit & Seed                                  |
| 46. Rosemary         | Rosemarinus officinalis | Leaf  |
| 47. Sage             | Salvia officinalis      | Leaf  |
| 48. Savory           | Satureja hortensis      | Stem, Leaf & Flowering top seed               |
| 49. Thyme            | Thymus vulgaris         | Fruit & Leaf                                  |
| 50. Oregano          | Origanum vulgare        | Leaf & Flowering top                          |
| 51. Tarragon         | Artemisia dracunculus   | Leaf  |
| 52. Tamarind         | Tamarindus indica       | Fruit   |

Source: Spices Board

**Table 4:** Area, Production and Productivity of Various Spices During 2016-2017 (Area in hectares, production in tonnes and yield in kg./hect.)

| Item         | Area   | Share in per cent | Production | Share in per cent | Yield  |
|--------------|--------|-------------------|------------|-------------------|--------|
| Pepper       | 134280 | 3.33              | 57000      | 0.66              | 235.58 |
| Cardamom (S) | 69357  | 1.72              | 17990      | 0.21              | 385.53 |
| Cardamom (L) | 26617  | 0.66              | 5570       | 0.06              | 477.86 |
| Chilli       | 864730 | 21.45             | 2394320    | 27.81             | 36.12  |
| Ginger       | 160480 | 3.98              | 1047190    | 12.16             | 15.32  |
| Turmeric     | 248050 | 6.15              | 1215520    | 14.12             | 20.41  |
| Coriander    | 672760 | 16.69             | 863530     | 10.03             | 77.91  |
| Cumin        | 780920 | 19.37             | 500360     | 5.81              | 156.07 |
| Celery       | 4010   | 0.10              | 5510       | 0.06              | 72.78  |
| Fennel       | 89540  | 2.22              | 148560     | 1.73              | 60.27  |

|                                       |                |               |                |               |              |
|---------------------------------------|----------------|---------------|----------------|---------------|--------------|
| Fenugreek                             | 220670         | 5.47          | 310070         | 3.60          | 71.17        |
| Ajwan                                 | 34340          | 0.85          | 27840          | 0.32          | 123.35       |
| Garlic                                | 302980         | 7.51          | 1722750        | 20.01         | 17.59        |
| Tamarind                              | 49660          | 1.23          | 202150         | 2.35          | 24.57        |
| Clove                                 | 2200           | 0.05          | 1230           | 0.01          | 178.86       |
| Nutmeg                                | 22760          | 0.56          | 14020          | 0.16          | 162.34       |
| Cinnamon                              | 240            | 0.01          | 150            | 0.00          | 160.00       |
| <b>Grand Total (Including Others)</b> | <b>4031700</b> | <b>100.00</b> | <b>8610810</b> | <b>100.00</b> | <b>46.82</b> |

Source: Spices Board

During 2016-2017, the total area under spices cultivation in the country was 40.31 lakh hectares. Total area under chilli was 8.6 lakh hectares which constituted 21.45 per cent of the total area. The area under cumin and coriander were 19.37 per cent and 16.69 per cent respectively. In the case of spices such as pepper, cardamom, ginger and turmeric the percentage share in total area were 15 per cent. Item wise share pepper, cardamom, ginger and turmeric were 3 per cent, 2 per cent, 4 per cent and 6 per cent respectively. The area under cultivation of cinnamon, ajwan, celery, tejpat, vanilla, clove and nutmeg were less than one per cent. Among various spices produced in the country, during the year 2016-2017, chilli contributed 27.8 per cent of the total quantity, followed by garlic (20 per cent), turmeric (14.12 per cent), ginger (12.16 per cent) and coriander (10.03 per cent).

### Spices Export Basket of India

India's spice export basket include various items such as whole spices, organic spices, spice mixes, spices blends, freeze dried spices, curry powders, spice mixtures, oleoresins, spice extracts, spice oils, de-hydrated spices, spice in brine and many other value added spices. The category of whole spices include items such as aniseed, ajwan seed, asafoetida, badian seed,

basil, bay leaf, black pepper, cassia, combodge, caraway, cardamom (S), cardamom (L), celery, chilli, cinnamon, coriander, cumin, curry leaf, dill seed, fennel, fenugreek, garlic, ginger, juniper, kokam, long pepper, mint, mustard, nutmeg, mace, poppy, pomegranate, rosemary, saffron, sage, star anise, sweet flag, tamarind, tejpat, thyme, turmeric and vanilla.

Organic spices include items such as organic pepper, organic ginger, organic herbal spices, organic thyme, organic marjoram, organic vanilla, organic turmeric, organic parsley, organic pepper, organic cardamom, organic rosemary, organic sage and organic mustard.

Spice mixes include items such as curry powder, curry paste, curry masala and other masala mixtures. Indian curry powders are widely recognised all over the world. Spice blends include items like tamarind concentrates and blended curry powders like curry masala, chicken masala, meat masala, sambar powder, rasam powder and instant pickle making powders. Green pepper is the main freeze dried exporting item. Curry powders and mixtures include a variety of items like powders of pepper, ginger, cumin, turmeric, poppy seed, cassia, cardamom, celery, dill seed, tamarind, tejpat, chilli, coriander, fennel, mustard and cinnamon.

The category of spice oleoresins includes the oleoresins of almost all varieties of spices. The country also exports different varieties of spices oils. India is a leading exporter of spice oils to West Europe, USA and Far East. Spices are also exported in de-hydrated forms, especially de-hydrated green pepper, garlic powder and garlic flakes. Pepper in brine is another variety item exported. The country also

exports various value added spice items like tamarind extract and vanilla extract.

### Export of Spices from India During 2016-2017

In the spices export history of India, the export of spices and spice products from India crossed 17 lakhs tonnes for the first time during the year 2016-2017. The export of spices recorded an all time high both in terms of value and volume in 2016-2017. In 2016-2017, the country exported 947790 tonnes of spices and earned foreign exchange valued at Rs.1766460 lakhs (2633.30 million US \$). Compared to the previous year 2015-2016, export of spices showed an increase of 7 per cent in volume and 5 per cent in Rupee value. Item wise details are given in table-5

**Table-5:** Export of Spices from India During 2016-2017 (Quantity in tonnes and value in Rs. lakhs)

| Sl. no       | Item                    | Export quantity | Share in per cent | Export value      | Share in per cent |
|--------------|-------------------------|-----------------|-------------------|-------------------|-------------------|
| 1            | Pepper                  | 17600           | 1.86              | 114312.50         | 6.47              |
| 2            | Cardamom(S)             | 3850            | 0.41              | 42150.00          | 2.39              |
| 3            | Cardamom(L)             | 780             | 0.08              | 8265.50           | 0.47              |
| 4            | Chilly                  | 400250          | 42.23             | 507075.00         | 28.71             |
| 5            | Ginger                  | 24950           | 2.63              | 25705.00          | 1.46              |
| 6            | Turmeric                | 116500          | 12.29             | 124189.00         | 7.03              |
| 7            | Coriander               | 30300           | 3.20              | 29207.50          | 1.65              |
| 8            | Cumin                   | 119000          | 12.56             | 196320.00         | 11.11             |
| 9            | Celery                  | 6250            | 0.66              | 6246.00           | 0.35              |
| 10           | Fennel                  | 35150           | 3.71              | 30878.50          | 1.75              |
| 11           | Fenugreek               | 34680           | 3.66              | 18276.50          | 1.03              |
| 12           | Other seeds (1)         | 18100           | 1.91              | 15455.00          | 0.87              |
| 13           | Garlic                  | 32200           | 3.40              | 30711.50          | 1.74              |
| 14           | Nutmeg & Mace           | 5070            | 0.53              | 23641.65          | 1.34              |
| 15           | Other spices (2)        | 40210           | 4.24              | 50595.00          | 2.86              |
| 16           | Curry Powders/ Paste    | 28500           | 3.01              | 59910.00          | 3.39              |
| 17           | Mint Products(3)        | 22300           | 2.35              | 252750.00         | 14.31             |
| 18           | Spice Oils & Oleoresins | 12100           | 1.28              | 230775.00         | 13.06             |
| <b>TOTAL</b> |                         | <b>947790</b>   | <b>100.00</b>     | <b>1766460.65</b> | <b>100.00</b>     |

Source: Spices Board

\*(1) Include mustard, aniseed, ajwan seed, dill seed, poppy seed etc. (2) Include tamarind, asafoetida, cassia, saffron etc. (3) Include mint oils, menthol and menthol crystal.

### Review of India's Export Performance of Spices

Recently the exports of Indian spices have been able to record strident gains in volume and value. During the last five years spices exports have registered substantial growth, registering a compound annual average growth rate of 7 per cent in rupee terms and 5 per cent dollar terms of value and India commands a formidable position in the World Spice Trade. During the year 2017-2018, a total of 10.28 Lakh tonnes of spices and spice products valued Rs.17929.55 crores, worth US\$ 2781.46 Million has been exported from the country as against 947790 tonnes valued Rs. 17664.61 crores (US\$ 2633.29 Million) in the year 2016-2017 registering an increase of 8 per cent in volume and 1 per cent in rupee terms and 6 per cent in dollar terms of value. During the year 2017-2018, the total export of spices has exceeded the target in terms of both volume and value, as compared to the target fixed for the period. Compared to the target of 10.23 Lakh tonnes valued Rs.17665 crores (US\$2636.58million) for the financial year 2017-2018 the achievement is 100 per cent in terms of volume and 101 per cent in rupee and 105 per cent dollar terms of value.

### Top Ten Export Destinations for Indian Spices During 2016-2017

Annually India exports spices to over 125 countries. During 2016-2017, the top ten buyers of Indian spices alone contributed around 82 per cent of the country's total exports. These countries were USA, Vietnam, China, Thailand, Malaysia, UAE, UK, Sri Lanka, Saudi Arabia and Bangladesh. In this period the country has exported a total of 947790 tonnes of spices,

valued Rs. 17.81 Lakh crores, of which 774117 tonnes of spices (81.68 per cent) valued Rs.1399271 lakhs (78.56 per cent) were to these ten countries. The details are furnished in table 6.

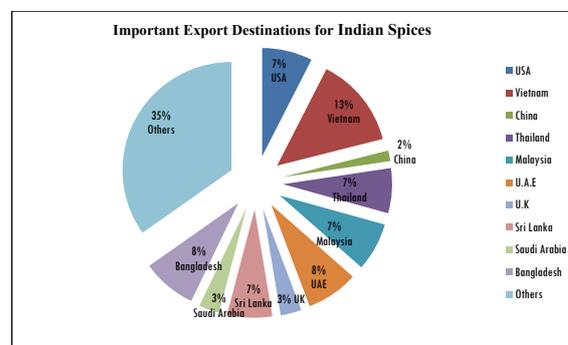
**Table-6:** Top Ten Export Destinations for Indian Spices During 2016-2017 (Quantity in tonnes and value in Rs. lakhs)

| Sl. no | Country      | Export Quantity | Share in per cent | Export Value      | Share in per cent |
|--------|--------------|-----------------|-------------------|-------------------|-------------------|
| 1      | USA          | 70795           | 7.47              | 288660            | 16.21             |
| 2      | Vietnam      | 128568          | 13.57             | 178856            | 10.04             |
| 3      | China        | 14921           | 1.57              | 116970            | 6.57              |
| 4      | Thailand     | 63698           | 6.72              | 106642            | 5.99              |
| 5      | Malaysia     | 68443           | 7.22              | 82864             | 4.65              |
| 6      | U.A.E        | 73199           | 7.72              | 81601             | 4.58              |
| 7      | U.K          | 29436           | 3.11              | 75745             | 4.25              |
| 8      | Sri Lanka    | 63227           | 6.67              | 64071             | 3.60              |
| 9      | Saudi Arabia | 28740           | 3.03              | 59996             | 3.37              |
| 10     | Bangladesh   | 76764           | 8.10              | 57615             | 3.23              |
| 11     | Others       | 156326          | 16.49             | 286251            | 16.07             |
|        | <b>Total</b> | <b>947790</b>   | <b>100.00</b>     | <b>1781223.59</b> | <b>100.00</b>     |

Source: Compiled from Spices Board Data

USA is the largest market for Indian spices and India exports almost all types of spices to USA. In 2016-2017 India exported 70795 tonnes of spices (7.47 per cent) to USA which valued Rs.288660 lakhs (16.21 per cent). As per the value matrix of the spices exports of India, the other important destinations were Vietnam (10.04 per cent), China (6.57 per cent), Thailand (5.99 per cent) and Malaysia (4.65 per cent). Chilli, pepper, cardamom, ginger and turmeric were the five important items of spices exported by the country. Curry powder/mixture, spice oils and oleoresins were the other commercially significant items.

**Figure-1:** Important Export Destinations for Indian Spices During 2016-2017



Source: Compiled from Spices Board Data

### Major Export Destinations of Various Indian Spices

India exports almost all types of spices to the global market. As a part of the study, an attempt has been made to identify the leading importers of Indian spices such as pepper, cardamom, ginger, turmeric, chilli, curry powders and spice oils and oleoresins, which are commercially significant to the country.

#### Leading Markets for Indian Pepper

In the case of pepper, during the year 2016-2017, USA, UK, Germany, Sweden and Canada were the five chief export markets for Indian pepper. In this period the country has exported 8128 tonnes of pepper to USA and earned foreign exchange valued at Rs 52679 lakhs. It was 44 per cent and 42 per cent of total pepper export of the country in terms of quantity and value respectively. The other significant export destinations were the UK (8.1 per cent), Germany (5.2 per cent), Sweden (4.5 per cent) and Canada (4.2 per cent). The country's pepper export to USA stood around 41 per cent per annum over the period 2000-2001 to 2016-2017.

The main exporting item of black pepper is 'Malabar Grade-1'.

### **Principal Markets for Cardamom (small)**

During 2016-2017, the country exported 3850 tonnes of cardamom and earned foreign exchange valued at Rs.42150 lakhs. Saudi Arabia was the prime importer. They imported 2500 tonnes of cardamom valued Rs.27469 lakhs, which was 56 per cent of the total export of cardamom in terms of both quantity and value. UAE was the second largest export destination (15 per cent) for Indian cardamom. Kuwait (4.7 per cent), USA (3.6 per cent) and Japan (2.6 per cent) were the other main export markets.

### **Main Markets for Ginger**

The export of ginger from India during 2016-2017 was 24950 tonnes valued at Rs.25704 lakhs. Ginger is mainly exported in fresh, dry and powder forms. Fresh ginger export accounts for more than 50 per cent in volume. During this period, in quantity terms Bangladesh was the main export market for Indian ginger. Their import was 40.6 per cent of the total ginger exports. But in value terms it was only 9.2 per cent. In value terms Saudi Arabia and UK were the significant markets. Their share in India's ginger export earnings were 12.7 per cent and 12.2 per cent respectively, followed by Spain (10.1 per cent), Bangladesh (9.2 per cent) and USA (8.5 per cent).

### **Major Markets for Turmeric**

Iran was listed as the largest buyer of turmeric from India and their purchase was 14862 tonnes valued at Rs.13575 lakhs. Their import was 13.2 per cent and 12.2 per cent in

terms of quantity and value respectively in the total exports of turmeric. The other important buyers in terms of quantity were USA (8.4 per cent), UAE (7.8 per cent), Malaysia (8.1 per cent) and Morocco (6.2 per cent). These five countries altogether constituted 44 per cent and 42 per cent of the country's total turmeric exports, in terms of quantity and value respectively.

### **Important Markets for Spice Oils and Oleoresins**

During 2016-2017 the export of spice oils and oleoresins from India was 12100 tonnes valued Rs.245532 lakhs. USA was the largest export market for Indian spice extracts accounting for 22.87 per cent (2768 tonnes) of country's total export of spice oils and oleoresins. Other principal export markets in terms of value were Germany (11.2 per cent), UK (6.8 per cent), Japan (6.1 per cent) and China (4.9 per cent). The main items of spice oils that are exported from the country were pepper oil (75 tonnes), nutmeg oil (45 tonnes), mustard seed oil (40 tonnes), clove oil (22 tonnes), celery seed oil (17 tonnes) and ginger oil (15 tonnes). In the case of oleoresins, paprika oleoresin was the largest item (2400 tonnes) exported from India followed by capsicum oleoresin (1350 tonnes), pepper oleoresin (1100 tonnes), garcinia extract (575 tonnes) and turmeric oleoresins (325 tonnes).

### **Main Markets for Indian Curry Powders and Mixtures**

During 2016-2017, the export of processed spices like curry powders, spice powders and mixtures constituted 53 per cent of the total export of spices from the country. In

this period, a total quantity of 28500 tonnes of curry powders and blends valued at Rs.59910 lakhs were exported. In terms of export value, Saudi Arabia (15.4 per cent) was the largest export destination for Indian curry powders and mixtures. The import by UK was 2912 tonnes. Other important export destinations in terms of value were USA (12.4 per cent), Saudi Arabia (12.1 per cent), USA (11.2 per cent) and Canada (5 per cent).

### Conclusion

Annually India exports spices to over 125 countries. The top ten buyers of Indian spices alone contributed around 82 per cent of the country's total exports. These countries were USA, Vietnam, China, Thailand, Malaysia, UAE, UK, Sri Lanka, Saudi Arabia and Bangladesh. India exports almost all types of spices to the global market. Pepper, cardamom, ginger, turmeric, chilli, curry powders and spice oils and oleoresins are the commercially significant spices cultivated in the country.

Recently the prices of various spices are fluctuating in a greater manner. During the post globalisation period the magnitude of price risk has increased. Yester years, the fluctuations that occurred in the price of pepper were severe. On the other side, the cost of pepper cultivation is escalating year after year. The fog of distress is surrounding the pepper farmers mainly due to these reasons. Both the supply and demand side factors are responsible for the price variations. It is argued that the fall in price is due to the import export policies adopted by the central government as a part of globalisation process or as a member country of WTO. In this context it is worthwhile to examine that to what extent the

globalisation process and WTO regime have influenced our spices production and trade especially in the case of commercially significant spices. The prominent question is that whether our spices sector and the farmers are capable and prepared to face the challenges raised in relation to globalisation process. It may be useful for the agro sector and farmers, if they are getting proper suggestions to reap the benefits of trade liberalisation and globalisation policies. The present study is an attempt to examine the nature of spices economy of India in the post globalisation period.

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## A STUDY ON THE CURRENT STATUS AND CHALLENGES FACED BY HANDLOOM SECTOR IN KERALA

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### *Abstract*

*Handloom textile industry is one of the prominent among traditional industries in Kerala. Handloom units are concentrated in rural areas. The glory of woven handloom clothes with golden jerry borders decorated by silk threads is world renowned. This sector contributes nearly 15 percent of the cloth production in the country and also contributes to the export earnings of the country. Handloom sector is a major source of non-farm rural employment generation in India. Handloom sector shows a declining trend in Kerala. Global recession dropped the handloom and textile exports of Kerala by 40% since 2008 following 4 years. The Directorate of Handlooms and Textiles, Kerala, formulates various policies for the promotion and development of handloom and textile sector in the state. The government has been implementing policies and programmes for development of handloom textile industries. The study attempts to understand the current status of handloom sector in Kerala, its production, employment trends and about various schemes implemented by Government for its marketing support. The study also analyses problems and challenges faced by handloom sector in Kerala with a glimpse on the effects of flood 2018 on Chendamangalam handloom unit in Kerala.*

**Keywords:** *Handloom sector, Kerala, cloth production, employment, export earnings, Government, marketing*

### **Introduction**

Handloom products in India earned a great reputation in ancient Arabian and European nations. Her tradition of cloth starts from *vedic* age to the present, spread over thirty to forty centuries. Towards the end of the 17th century, the British East India Company exported Indian fabrics to other countries. Before the introduction of mechanized spinning, in the early 19<sup>th</sup> century, all Indian cotton and silks were only hand woven. Handloom industry being labour intensive is a major source of non-farm rural employment generation in India. In India 87% of weavers are rural while 13% are urban. The production and export of handloom cloth and garments during year 2015-16 was 720 crore

sq.mtrs and Rs.2353 crore respectively. It is providing direct and indirect employment to more than 43 lakh weavers and allied workers. 75% of them are in the co-operative line. The textile industry contributes to 10 per cent of manufacturing production, 2 per cent of India's GDP and 13 per cent of the country's export earnings. Among this handloom sector contributes nearly 15 percent of the textile cloth production in the country and also contributes to the export earnings of the country. In fact, 95 per cent of the world's hand woven fabric is produced in India. In terms of proportion of handlooms, 65.2% of the total handlooms in the country were being operated in the North Eastern states, Assam was the leading state accounting for nearly 46.8% of the aggregate number of

handlooms in the country. Other major states with respect to number of handlooms in the country were West Bengal (12.9%), Manipur (8.0%), Tamil Nadu (6.5%) and Tripura (5.8%).

The share of Kerala in the national handloom industry remains relatively small. Kerala's textile industry comprises traditional handloom sector, power loom and the spinning sector. In Kerala, the Industry is dominated by the Co-operative sector with 94 percent of looms and the remaining 6 percent is owned by the entrepreneurial sector. The co-operative sector consists of factory type and cottage type societies. By the end of March, 2012, there were 591 handloom weavers' co-operative societies in which 166 belongs to factory type with a share of 28.09 percent and 425 belongs to cottage type societies, which amount to 71.91 percent of the total handloom weavers' co-operative societies in the state. In Kerala economy, the number of house hold units involving in handloom weaving is much more than the number of non-house hold units. Almost 2 lakhs of weavers are earning their livelihood from the handloom.

Unavailability of raw materials, competition from power looms, changing consumer preferences, outdated technologies, low wages of weavers, alternative employment opportunities of handloom weavers have threatened the survival of handloom sector. The development of handloom sector lies in flexibility, uniqueness, openness in innovation, adaptability to suppliers requirements. The Directorate of Handlooms and Textiles, Kerala, functioning under the Department of Industries and Commerce, aims at evolving policies for the promotion and development of handloom and textile sector in the state. In this

context, the current study focused on present status of handloom industry, their production, sales and marketing activities for its future growth in Kerala.

#### State-wise distribution of Handloom worker Households (as per Handloom census 2010)

| States            | Total handloom workers (in '000') | % Distribution | % share to Total Households in states |
|-------------------|-----------------------------------|----------------|---------------------------------------|
| Assam             | 1,241                             | 44.58          | 21.7                                  |
| West Bengal       | 407                               | 14.61          | 2.1                                   |
| Tamil Nadu        | 189                               | 6.79           | 1.2                                   |
| Manipur           | 179                               | 6.43           | 33.7                                  |
| Andhra Pradesh    | 177                               | 6.36           | 1.0                                   |
| Tripura           | 121                               | 4.33           | 17.6                                  |
| Uttar Pradesh     | 111                               | 3.97           | 0.4                                   |
| Nagaland          | 61                                | 2.19           | 9.7                                   |
| Orissa            | 41                                | 1.46           | 0.5                                   |
| Mizoram           | 19                                | 1.42           | 18.9                                  |
| Karnataka         | 39                                | 1.35           | 0.3                                   |
| Arunachal Pradesh | 38                                | 1.09           | 12.7                                  |
| Bihar             | 25                                | 0.92           | 0.2                                   |
| Rajasthan         | 23                                | 0.81           | 0.2                                   |
| Jammu & Kashmir   | 17                                | 0.62           | 0.8                                   |
| Jharkhand         | 14                                | 0.51           | 0.3                                   |
| <b>Kerala</b>     | <b>12</b>                         | <b>0.42</b>    | <b>0.1</b>                            |
| Meghalaya         | 11                                | 0.41           | 2.3                                   |
| Uttarkhand        | 11                                | 0.38           | 0.6                                   |

#### Objectives of the study

1. To study production and employment trends of handloom sector in Kerala
2. To analyse the problems and challenges faced by handloom sector in Kerala with special reference to Chendamangalam handloom unit.
3. To understand various policies and programmes followed by Government to revive Kerala's handloom sector

### Methodology of the study

The study is conducted on the basis of secondary data. The study on the current status of handloom industry in Kerala covers various aspects like production employment trends in handloom sector. Secondary data is collected from various magazines, newspapers, articles in journals, authorized websites of handloom textile industry, Annual report 2017-18, Ministry of textiles, economic review, state planning board etc. The period of study is from 2010-11 to 2016-17

### Production of handloom sector in India

Since the post globalization era the handloom sector in India is facing serious challenges in the form of competition from power loom sector, shortage of workers mainly due to low wages in this sector, low productivity, lack of technological interventions, competition from textile units from other states. Other issues include the lack of product diversification in accordance with new trends, shortage of working capital and fluctuations in prices of yarn and cotton. Owing to productivity differences and low wages employees of handloom sector are shifting employment to power loom units.

The Government of India have adopted new policy for promoting and encouraging handloom sector through a series of measures and schemes. Due to various policy initiatives and scheme intervention, cluster approach, aggressive marketing and social welfare measures, handloom sector has shown positive growth. Production in the handloom sector from 2010-11 to 2016-17 is given under the table

### Cloth production by handloom sector (in million square meters)

| year    | Handloom cloth production Million sq.meters | Total cloth production (Rs.in crores) | Share of Handlooms in cloth production |
|---------|---|---------------------------------------|--|
| 2010-11 | 6907  | 61761                                 | 11.58                                  |
| 2011-12 | 6901  | 59605                                 | 11.57                                  |
| 2012-13 | 6952  | 61949                                 | 11.22                                  |
| 2013-14 | 7104  | 62624                                 | 11.34                                  |
| 2014-15 | 7203  | 64332                                 | 11.19                                  |
| 2015-16 | 7638  | 64584                                 | 11.82                                  |
| 2016-17 | 8007  | 63480                                 | 12.61                                  |

Source: Ministry of textiles Annual report 2017-18

### Handloom sector in Kerala- Its origin, history and its development

Kerala handloom industry plays a vital role in states economy as well as in the field of employment. In early days majority of handloom weavers followed the hereditary line. The main communities *Padma Saliyas* and *devangas* engaged in spinning and weaving, two major aspects of textile production. This occupational group had migrated to Kerala from Andhra Pradesh or Tamil Nadu, where cotton cultivation and weaving had widely prevailed. As an artisan class the chieftains and rulers encouraged these craftsmen to settle in their respective jurisdiction and extended some sort of patronage. In early days majority of handloom weavers followed the hereditary line.

During 15th century French and Portuguese people who visited Kerala were attracted by the beauty of handloom fabrics. They began to purchase large quantities and exported to their countries. French people started to give training in weaving. They imported versatile loom and introduced principle designs from the hooks. After the British captured India they took up and

nourished handloom industries for their purposes. At the end of the 18th century the monopoly came to an end. Since 19<sup>th</sup> century during the period of industrial revolution when under foreign rule, the weavers of Kerala learned all techniques of the production of fabrics according to new style of demand.

The handloom sector in Kerala employs about 1.75 lakh of people directly and indirectly and this stands second to the coir sector in providing employment among the traditional industries of the state. The handloom industry in the State is mainly concentrated in Thiruvananthapuram and Kannur District and in some parts of Kozhikode, Palakkad, Thrissur, Ernakulam, Kollam and Kasargod Districts. The industry is dominated by the co-operative sector, covering 96 per cent of total looms. The remaining 4 per cent of handloom units are owned by industrial entrepreneurs. The 'keralakasavu sarees' are praised by the women all over India for their fineness of count and natural colours, texture and gold borders. Kerala is also known for its unbleached cotton handloom crepe popularly known as 'kora' cloth this has entered in the foreign market and occupied a proud place in the garment industry. Chendamangalam, in the Ernakulam district is also an important handloom centre in Kerala. Here they have been producing the double dhoti and 'Mundu' and 'Neriyathu'.

The major varieties of products produced in the handloom sector of the State are dhotis, furnishing material, bed sheets, shirting, saree and lungi. Considering the traditional value and heritage, the following products of the State are registered under the Geo Indication Act of India.

1. Balaramapuram Sarees and Fine cotton Fabrics
2. Kasargod Sarees
3. Kuthampully Sarees
4. Chendamangalam Dhoti
5. Cannannore Home Furnishings.

The GIA protects the particular form of handicrafts from its misuse and commercialization by patenting it in the name of community that holds the traditional wisdom of crafting.

### Overall performance of Handloom Industry in Kerala

Handloom industry in Kerala is dominated by the co-operative sector. About 99% of the weavers and 82% of the total looms in the state are covered under the co-operative fold. There are 665 registered Primary Handloom Weavers Cooperative Societies in Kerala (PHWCS) as on September 2017 consisting of 440 cottage type and 185 factory type societies. But, out of 665 societies, 409 are in working condition. The number of factory type co-operative societies functioning at present is 99 (24.2 per cent) and cottage type societies is 310 (75.8 per cent). Further, 13,097 looms and 11,690 worker households are engaged in Handloom sector of Kerala.

| Sl.No. | Name of Districts  | Number of PHWCS | Percentage of total |
|--------|--------------------|-----------------|---------------------|
| 1      | Thiruvananthapuram | 309             | 52.29               |
| 2      | Kollam             | 50              | 8.46                |
| 3      | Pathanamthitta     | 4               | 0.68                |
| 4      | Alappuzha          | 11              | 1.86                |
| 5      | Kottayam           | 13              | 2.20                |
| 6      | Idukki             | 9               | 1.52                |
| 7      | Ernakulam          | 19              | 3.21                |
| 8      | Thrissur           | 19              | 3.21                |
| 9      | Palakkad           | 37              | 6.26                |
| 10     | Malappuram         | 13              | 2.20                |
| 11     | Kozhikode          | 39              | 6.60                |
| 12     | Wayanad            | 4               | 0.68                |
| 13     | Kannur             | 54              | 9.14                |
| 14     | Kasargod           | 10              | 1.69                |
|        | Total              | 591             | 100                 |

Source: (Handloom census, 2010).

The Apex Handloom Weavers' Co-operative Society of Kerala 'HANTEK' and Kerala state Handloom Development Corporation 'HANVEEV' are the two promotional institutions for the development of handloom industry in Kerala- The HANVEEV clusters are formed to provide adequate employment opportunities to the weavers outside the co-operative fold. Kerala handloom products are primarily manufactured for local consumption.

Government assistance extended for the development of handloom industry was 74.31 lakh as loan and 565.00 lakh as grant in 2016-17. The total value of production in the handloom sector showed a decrease of 31 per cent from 339.25 crore in 2015-16 to 233.58 crore in 2016-17. The figure below exhibits that there was a steady increase in production and value of production in the handloom sector from 2012-13 to 2015-16, and a decline in 2016-17.

Source; Directorate of Handloom and textiles

### Employment Generation in the Handloom sector

A major reason for the fall in the number of workers engaged in the sector in Kerala is the migration of workers to better paying jobs in other sectors or for higher education. The sector has been plagued by issues like non-availability of sufficient raw-material for large-scale production, boom in the growth of the power looms industry in the country, shift in the nature of demand for clothing, and the use of low productivity charkhas, looms and other accessories.

The strengths of the handloom sector are in its ability to produce intricate woven fabric, its versatility and wide variety, diverse design base and ability to switch to new designs. Workers in

the handloom sector have specific skills. The sector makes use of eco-friendly technologies and processes. The employment generated, however, exhibits an increasing trend during the initial two years and thereafter shows a decreasing trend.

Source: Directorate of Handloom and Textiles, Govt. of Kerala

The employment generated in this sector was relatively high in 2012-13 and 2013-14, but declined considerably in the next three years. The total number of weavers employed declined by 4 per cent, from 20,135 in 2015-16 to 19321 in 2016-17. The number of women employed decreased from 15,093 in 2015-16 to 13,780 in 2016-17. The total employment generated in the sector also decreased from 67.37 lakh man days in 2015-16 to 65.34 lakh man days in 2016-17. Total turnover for the handloom industry in 2016-17 was 78.94 crore, which includes money, man, and material costs. The average wage rate prevailing in the industry ranges between 150 to 200 per day, which is very meagre.

### Age wise distribution of workers in the Handloom sector

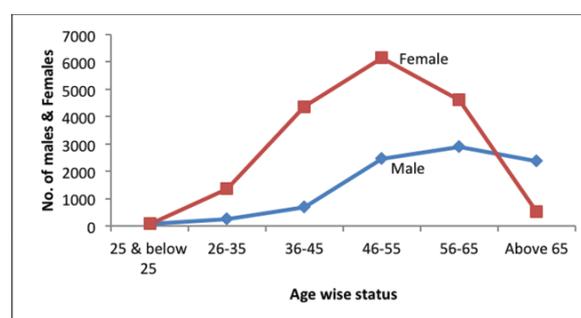


Figure shows that approximately 2/3rd of all female workers in the handloom sector are aged 46 years or more. Workers who are less than 25 years are negligible. Workers who are 35

or less are only 5 per cent or even less. Among male workers 90 per cent are above 46 years.

**Plan outlay & Expenditure of the handloom sector during the 12th Five Year Plan period, in lakh**

| year     | Plan outlay | Plan expenditure | Expenditure as Per cent of outlay |
|----------|-------------|------------------|-----------------------------------|
| 2012-13  | 6807        | 7168.1           | 105.3                             |
| 2013-14  | 7676        | 8687.04          | 113.2                             |
| 2014-15  | 6714.5      | 6652.48          | 99.1                              |
| 2015-16  | 6715        | 9326.06          | 139                               |
| 2016-17* | 7073        | 1967.14          | 27.81                             |

Source: Budget 2012-13 to 2016-17, State planning Board and Plan space

\*Expenditure upto October 30, 2016

The plan outlay and expenditure of the handloom sector from the financial year 2012-13 to 2016-17 is given in the above table. The expenditure recorded in the handloom sector during the reference period has been more than 100 per cent except in 2014-15 when it was 99 per cent. The trend of allocation and expenditure for the first four years of 12th five year plan period (2012-13, 2013-14, 2014-15 & 2015-16) are shown in the above figure.

**Problems and challenges faced by handloom sector in Kerala**

The handloom weavers are facing severe competition from power-loom industry. Though people are attracted to handloom products, the availability of power-loom clothes at cheaper prices persuade them to purchase power-loom. Most of the handloom production have an unorganized nature. But the power loom sector is functioning under an organized structure. This is also one reason to quote low prices for their products as the production is proceeded with low cost technology.

The supply of raw materials for handloom products becomes unavailable in some seasons. This will result in the increase of prices of cotton yarns. This will not be matched with the increase in the prices of handloom products.

Unavailability of trained skilled weavers also contributes to the problem of handloom sector. Even though it is a source of rural employment, 77percentage of the workers are women. Most of them lack technological know-how which will in turn bring them back to low living standard. Nearly 47 percent of handloom worker households own Below Poverty Line (BPL) ration cards.

Weavers also lack basic entitlements such as healthcare. The nature of weaving which involves repetitive movement is linked to occupational health hazards. Body pain, pulmonary problems, chronic bronchitis, decrease in hand-grip and eye problems are common. According to the Third Handloom Census of India, only 25 per cent of weaver households report that their children are interested in taking up handloom as a profession.

The handloom units have limited financial resources to spare to put even simple marketing concepts into practice. Handloom weavers need a greater design support through workshops and recognition of their role as designers and innovators.

One of the important financial problem is irregular payment of dues of the products supplied. Lack of rebate assistance to weaving accessories and charging of high interest rate by financial institutions are other financial problems. Another major problem faced is lack of assistance from the government in the form of subsidies to

purchase weaving accessories. The banks are not ready to pay loan to the handloom sectors. Some scheduled banks are giving loans by charging high rates of interest.

### **Devastating effects of flood 2018 on Chendamangalam handloom unit in Kerala**

Chendamangalam is a handloom weaving cluster consists of five societies with more than 600 weavers. Known for their GI certified products, weaving factory under the Chendamangalam Handloom Society has 40 weavers, of which 38 are women, with a majority of them aged over 50 years old and a few of them, widowed. These women have been earning their daily wages through this profession for the past 30 years. Women here weave 6 metres to 7 metres per day. Their wage depends on the metre of yarn they have woven.

This year's floods in Kerala have destroyed all their looms, yarns and raw material. They need assistance to restart their work and to rebuild their houses.

Chendamangalam. Handloom Co-operative Weavers Society Ltd (CHCWS: No. H 47) has 113 looms in total, of which 108 are damaged. While 35 of these are partially damaged, the rest 73 are severely affected. It was estimated that at least Rs 50,000 was required to repair a single loom. At the same time, an intensively damaged loom will require at least Rs 44,000. They have incurred a loss of 52 lacs including 21 lacs worth clothes and 8 lacs worth loom and machinery.

### **Resilience of Handloom weavers**

Several handloom societies in Chendamangalam societies have found innovative

ways to rehabilitate their weavers from the effects of flood and bring them back to their occupation. They found innovative ways to make use of sarees destroyed in floods to make "Chekkutty dolls" or Chendamangalam dolls fashioned like a child. One handloom saree which costs around Rs. 1500 will be used to make 300 dolls will be then sold each for Rs.25. It will bring atleast Rs 7500. The funds will be utilised to help the weavers to restart their weaving at the earliest. The doll looks like a hex bag with a smile drawn on them. It is not that much attractive, but it is a symbol of resilience of weavers. The home page of website (chekutty.in) set up recently displays a poem. "*Chekkutty has scars. Chekkutty has stains. But chekkutty represents each one of us who survived the floods*". It is estimated that under Chendamangalam weavers' Cooperative society, nearly 300 weavers have to leave the jobs in search others if the looms were not operational soon.

Another problem faced is Rs 40 lakhs worth yarn lying in the yarn bank where all the handloom weavers' societies in Chendamangalam source their yarn from. These can't be used in a loom any longer. One of the possible solution they found was they could use them for making "*Ammomathiris*", a flagship product to engage elderly people confined to old age homes. Department of social justice has offered support transforming more than 30+old age homes into production units of *Chekkutthiris*.

The weavers of Chendamangalam came to the village to be the royal weavers of Paliam family many centuries ago and this gesture from the temple owned by the family is also sort of thanking the weavers for the service they rendered and for how they brought fame to the

village with their exquisite skills. Young inmates of *Nirbhaya* units across Kerala are also possible beneficiaries of this projects. The managed to find markets to sold it through kudumbasree units. Cochin Shipyard, PetronetLNG and Hantex will participate in the rehabilitation of the weavers of Chendamangalam.

SavetheLoom.org, a grass-root level national advocacy and change organisation which is in the forefront of rehabilitating the weavers in Chendamangalam weaving cluster, believed that beginning with revival of looms, and assessing the skill sets and possibilities, designer interventions, new and improved product lines, marketplace distribution, and rightful placement of handloom as a luxury and privilege can bring back the handloom sector.

Due to various social media appeals, they managed to sell all unaffected finished products. Kerala government has estimated that an amount of Rs 5.13 crore was required for rejuvenating the handloom sector in Chendamangalam. Various interventions are needed to help the sector.

### **Measures to revive and restructure Kerala's Handloom sector**

The peoples' company called "Hornbill" a joined initiative by the state government and social entrepreneurship was launched with the objective of reviving Kerala's handloom sector, and supporting the state's struggling weaver craftsmen community. It has associated itself with a start-up of graduates from College of Engineering (CET), Thiruvananthapuram, with the objective of rebranding the the Keral handloom globally. The people's company, the start-up is a partner in 'Operation Phoenix', a

government initiative to revive the handloom sector in the State. As part of the initiative, The People's Company will integrate weavers' societies into a single production system. It will also create linkages between new-generation fashion designers passing out of national institutes and traditional weavers for breathing fresh life into the industry. All products will be commissioned as per approved designs and market viability. Besides redoing and renovating showrooms, the programme will also try to expand market.

### **Development of Handloom through Primary Handloom Weavers' Co-operative Societies**

A scheme named Development of Handloom through Primary Handloom Weavers' Co-operative Societies is meant for enhancing the Net Disposable Resources position of the Handloom co-operative societies for creating assets and meeting a part of their immediate working capital requirements. It is proposed to assist at least 30 PHWCS in the financial year 2013-14.

The scheme of Development of Handloom Through Hantex, Hanveev and Raw Material Bankis for ensuring timely supply of quality raw materials at reasonable cost to weavers. Hank yarn subsidy is given to Hantex, Hanveev and yarn banks, the four existing schemes 'Modernization of Handloom Societies and promoting high value products and value added products', 'Revitalization and strengthening of Handloom Co-operatives, Apex Societies and Handloom Development Corporation', Upgradation to Powerloom

It has been decided to observe 7th August as National Handloom Day every year. Gazette Notification for the same also has been published on 29th July, 2015.

Modernization of Factory Type Societies' and 'Partial Mechanisation of Preloom Processing and grant for replacement of loom accessories' are merged to a new scheme' Modernization of Handloom Societies, Hantex, Hanveev and promotion of value added products'.

Technology upgradation is needed for improving quality of handloom products and increasing productivity. This scheme is for making improvement in looms, upgrading/adopting new technology in dyeing, sizing, processing and printing; modernization of warping yarn sizing facilities, application of IT in production, marketing, quality development, brand creation and technology build up for value addition. Collection and dissemination of National and international technologies/designs will also be included under this scheme. The scheme aims to provide assistance to 40 PHWCS during 2013-14 under guidance of IIHT, Kannur.

The objective of the Revival, Reform and Restructuring Package for Handloom Sector scheme is to revive the handloom sector by one time write off loans extended by banks to handloom weavers and handloom weavers' co-operative societies. The package aims at restructuring of viable and potentially viable Primary Weavers Co-operative Societies (PWCS) and state level Apex Weavers Co-operative Societies (AWCS) and institutions. This is a centrally sponsored scheme with a ratio of 80:20 assistance. The central share is provided directly to the financial institutions like NABARD. The state share is to be released only on approving the project by Government of India.

### Schemes implemented by GoK and GoI for marketing support in handloom sector

| SI no. | Handloom sector                         |
|--------|---|
| 1      | Marketing Incentive Scheme              |
| 2      | Handloom mark scheme                    |
| 3      | Registration under India Handloom brand |
| 4      | Rebate scheme                           |

Source: Data collected from Directorates

### Marketing incentive scheme for handloom sector

Marketing incentive is given at the rate of 10 percent of the average sales turnover to support marketing of handloom products by marketing agencies. Incentive would be shared equallully by Government of India and Government of Kerala. Kerala State Handloom Development Corporation Limited (Hanveev), The Kerala State Handloom Weavers' Co-operative society Ltd (Hantex) and PHWCS are eligible for incentive in the state. Audit examined implementation of Marketing Incentive scheme in five selected districts The scheme also envisaged lending institutions to provide fresh loans to the PHWCSs and individual handloom weavers at 6 per cent rate of interest. NABARD sanctions maximum interest subsidy of 7 per cent on fresh loans given by lending institutions on submission of claims for subsidy.

**Handloom Mark Scheme:** Handloom Mark provides a guarantee to the buyer that the product is genuinely hand woven. PHWCSs manufacturing genuine handloom products could register under the Handloom Mark Scheme after payment of registration fee of `2,000 to the Textiles Committee constituted by GoI for implementation of the Scheme. After registration, PHWCSs can purchase labels18

from the Textile Committee for affixing the same on the handloom products sold. Handloom mark is compulsory for claiming Marketing Incentive and participation in national Expos. GoK reimburses 75 per cent of registration fee and cost of labels.

**Rebate scheme:** With a view to providing marketing support to PHWCSs, Hantex, Hanveev, etc., GoK offers rebate<sup>19</sup> on the sale of handloom cloth during festival seasons of Onam, Christmas, Vishu and Ramadan. The period of rebate sale would extend between 5 days and 21 days. According to the conditions of sanctioning rebate, PHWCSs/Hantex/Hanveev would submit rebate claims within 30 days after the rebate period to the Co-operative Inspectors of the Circles concerned

### Conclusion

The handloom sector in India is a major employment generating sector after agriculture. The richness of handloom clothes have uniqueness in its production and quality. Its glory in the past have comes down today due to low productivity, low wages given to workers and lack of timely intervention on the part of government. Handloom units are spread across the fourteen districts of Kerala. The handloom weavers are facing severe competition from power-loom industry. Unavailability of trained skilled weavers and outdated technology also contributes to the problem of handloom sector. Global recession affected the handloom and textile export of Kerala by 40% since 2008. To overcome this State Government developed regional branding for handloom products. Geographical indication system based patenting of these brands has also been done. The

Directorate of Handlooms and Textiles, Kerala, and the state government with the help of social entrepreneurs have undertaken various marketing incentive schemes and policies for the revival of handloom sector. The combined efforts made by private designers, voluntary organisations and state government to save Chendamangalam handloom units which were seriously affected by floods in Kerala is a positive indication that it have its growth potential in future. As part of the handloom innovation programme, production of organic cloth with "Made in Kerala" branding can be promoted. Designer interventions, new and improved product lines, innovative production and marketplace distribution, can bring back the old lost glory of handloom sector in Kerala.

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# ON THE CATEGORY OF R-MODULES

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## ON THE CATEGORY OF R-MODULES

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**ABSTRACT.** It is well known that  $R\text{-mod}$ , the category of  $R$ -modules is an abelian category. In this paper, it is shown that  $R\text{-mod}$  is an abelian proper category and the category of semi simple  $R$ -modules ' $R\text{-ssmod}$ ' is an abelian normal category which is a semisimple category also. The submodules of a semisimple module  $M$  with morphisms  $R$ -module homomorphisms also form an abelian normal category say  $\mathcal{S}(M)$ . Its normal cones are discussed.

### 1. INTRODUCTION

Normal categories introduced by K.S.S. Nambooripad [4] are used to study the structure theory of class of regular semigroups. The name abelian category was first given by S. MacLane (cf.[3]). Proper category is more general type of category. Proper category and proper cones are generalizations of normal category and normal cones. The category  $R\text{-mod}$  with objects  $R$ -modules and morphisms  $R$ -module homomorphisms  $R\text{-mod}$  is an abelian proper category. If we take semisimple  $R$ -modules as objects then the category  $R\text{-ssmod}$  is *semisimple abelian normal category*. If we restrict the category to a semisimple  $R$ -module  $M$  and its sub modules as objects, morphism  $R$ -module homomorphism, then this is a subcategory of  $R\text{-ssmod}$ , so semisimple and abelian normal category say  $\mathcal{S}(M)$  and the set of all normal cones  $TC$  form semisimple  $R$ -algebra which is isomorphic to endomorphism algebra  $hom_R(M, M)$ . It is also verified that the submodules of  $TC$  with morphism  $R$ -module homomorphism also form a semi simple-abelian normal category say  $\mathcal{S}(TC)$  which is isomorphic to  $\mathcal{S}(M)$ . Throughout this paper  $R$  is a commutative ring with unity.

### 2. PRELIMANIRES

In the following we briefly recall some definitions and basic results regarding categories needed in the sequel and for more details reader is referred to S. MacLane (cf.[3]) and K.S.S.Nambooripad (cf.[4]). The categories we are considering are all small categories - a small category

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is a category in which the class of objects and class of morphisms are both sets. Let  $\mathcal{C}$  be any category, then  $\text{obj } \mathcal{C}$  denotes the set of objects of  $\mathcal{C}$ . For  $a, b \in \text{obj } \mathcal{C}$ , the set consists of all morphisms of the category with domain  $a$  and codomain  $b$  is called the *hom-set* and is denoted as  $\mathcal{C}(a; b)$  or  $\text{hom}(a; b)$ . If  $f : a \rightarrow b$  and  $g : b \rightarrow c$  then the composition is  $f \cdot g : a \rightarrow c$ . A morphism  $f$  in a category  $\mathcal{C}$  is a monomorphism if for  $g, h \in \mathcal{C}$ ,  $gf = hf$  implies  $g = h$ ; that is  $f$  is a monomorphism if it is right cancelable. Dually a morphism  $f \in \mathcal{C}$  is an epimorphism if  $f$  is left cancelable.

An object  $a$  is terminal in  $\mathcal{C}$  if for each object  $b$  there is exactly one arrow  $b \rightarrow a$ . An object  $c$  is initial object if to each object  $b$  there is exactly one arrow  $c \rightarrow b$ . A *zero object* or *null object*  $z$  in  $\mathcal{C}$  is an object which is both initial and terminal. For any two objects  $a$  and  $b$  the unique arrows  $a \rightarrow z$  and  $z \rightarrow b$  have a composite  $O_a^b : a \rightarrow b$  called the *zero arrow* from  $a \rightarrow b$ .

**Definition 1.** (cf.[3]) A *preadditive category* (or *Ab-category*) is a category satisfying:

- (1) each hom-set is an additive abelian group,
- (2) composition of arrows is bilinear relative to this addition,
- (3) category has zero object.

**Definition 2.** An *R-module*  $M$  is an abelian group with law of composition written  $+$ , together with a scalar multiplication  $R \times M \rightarrow M$ , which satisfies these axioms:  $1 \cdot m = m$ ,  $(r+s) \cdot m = r \cdot m + s \cdot m$ ;  $(rs) \cdot m = r \cdot (s \cdot m)$ ;  $r \cdot (m + n) = r \cdot m + r \cdot n$  for  $r; s \in R$  and  $m; n \in M$ .

If  $R$  is a field  $K$ , then  $K$ -module is a  $K$ -vector space.  $\mathbb{Z}$ -module and abelian group are equivalent concepts.

A *submodule* of an  $R$ -module  $M$  is a nonempty subset which is closed under addition and scalar multiplication. The submodules of the  $R$ -module  $R$  are the ideals of  $R$ . A homomorphism of  $R$ -modules  $M$  and  $N$  is a map  $\varphi : M \rightarrow N$  which is compatible with the laws of composition

$$\varphi(m + m') = \varphi(m) + \varphi(m') \text{ and } \varphi(rm) = r\varphi(m),$$

for all  $m, m' \in M$  and  $r \in R$ . A bijective homomorphism is called isomorphism. The *kernel* of a homomorphism  $\varphi : M \rightarrow N$  is a submodule of  $M$ , and *image* of  $\varphi$  is a submodule of  $N$ .

**Definition 3.** A *lattice* is a **partially ordered set** (poset)  $L$  such that every finite subset of  $L$  has a least upper bound (or supremum) called *join* and has a greatest lower bound (or infimum) called *meet*. We say it is modular if the meet and join obey the following law:

$$\forall a, b, c \in L, \text{ and } a \leq c; a \wedge (b \vee c) = (a \wedge b) \vee c$$

If a lattice  $L$  contains a smallest (greatest) element with respect to  $\leq$ , then this uniquely determined element is called the zero element (one

element), denoted by 0 (by 1). 0 and 1 are called universal bounds. Suppose  $L$  is a modular lattice, if  $\forall a \in L, \exists b \in L$  such that (1)  $a \wedge b = 0$ , and (2)  $a \vee b = 1$  then we call  $b$ , a complement of  $a$ . Any modular lattice in which every element has complement is called a *complemented modular lattice*. A complemented modular lattice in which the complement is unique is called complemented distributive lattice or *boolean lattice*. An *ideal* of a complemented modular lattice  $L$  is a subset  $I$  of  $L$  such that  $x \leq y \in I$  implies  $x \in I$ . The *principal ideal*  $L(x)$  of  $L$  generated by  $x \in L$  is  $L(x) = \{y \in L | y \leq x\}$ . It is the smallest ideal of  $L$  containing  $x$ .

**Definition 4.** (cf.[10]) Let  $L$  and  $L'$  be two complemented modular lattices. A mapping  $f : L \rightarrow L'$  is said to be a normal mapping if it is order preserving,  $im f = L'(a)$  for some  $a \in L'$  and  $\forall x \in L, \exists z \leq x$  such that  $f/L(z)$  is an isomorphism from  $L(z)$  onto  $L'(xf)$ . In particular, if  $f$  is normal, then there exists at least one element  $b \in L$  such that  $f$  is an isomorphism of  $L(b)$  onto  $L'(a) = im f$ .

A preorder  $\mathcal{P}$  is a category such that, for any  $p, p' \in v\mathcal{P}$ ; the hom-set  $\mathcal{P}(p, p')$  contains at most one morphism. In this case, the relation  $\subseteq$  on the class  $v\mathcal{P}$  defined by  $p \subseteq p' \Leftrightarrow \mathcal{P}(p, p') \neq \phi$  is a quasi-order on  $v\mathcal{P}$ . In a preorder,  $p$  and  $p'$  are isomorphic if and only if  $\mathcal{P}(p, p') \neq \phi \neq \mathcal{P}(p', p)$ . Therefore  $p \subseteq p'$  is a partial order if and only if  $\mathcal{P}$  does not contain any nontrivial isomorphisms. Equivalently, the only isomorphisms of  $\mathcal{P}$  are identity morphisms, and in this case  $\mathcal{P}$  is said to be a *strict preorder*.

Let  $\mathcal{C}$  be a category and  $\mathcal{P}$  be a subcategory of  $\mathcal{C}$ . Then  $(\mathcal{C}, \mathcal{P})$  is called a *category with subobjects* if the following hold:

- (1)  $\mathcal{P}$  is a strict preorder with  $v\mathcal{P} = v\mathcal{C}$ .
- (2) Every  $f \in \mathcal{P}$  is a monomorphism in  $\mathcal{C}$ .
- (3) If  $f, g \in \mathcal{P}$  and if  $f = hg$  for some  $h \in \mathcal{C}$ , then  $h \in \mathcal{P}$ .

In a category with subobjects, if  $f : a \rightarrow b$  is a morphism in  $\mathcal{P}$ , then  $f$  is an *inclusion* and we denote this inclusion by  $j(a, b)$ . If there is a morphism  $e : b \rightarrow a$  such that  $j(a, b)e = I_a$ , then  $e$  is called a retraction from  $b \rightarrow a$  and is denoted by  $e(b, a)$ . In case a retraction from  $b$  to  $a$  exists, then we say that the inclusion  $j(a, b) : a \rightarrow b$  splits.

A morphism  $f \in \mathcal{C}$ , where  $\mathcal{C}$  be a category with subobjects has factorization if  $f = p \cdot m$  where  $p$  is an epimorphism and  $m$  is an embedding. A category  $\mathcal{C}$  is said to have the *factorization property* if every morphism of  $\mathcal{C}$  has a factorization. Thus, if  $\mathcal{C}$  has the factorization property, then any morphism  $f$  in  $\mathcal{C}$  has atleast one factorization of the form  $f = qj$ , where  $q$  is an epimorphism and  $j$  is an inclusion and such factorizations are called *canonical factorizations*. A *normal factorization* of a morphism  $f$  in  $\mathcal{C}$  is a factorization of the form  $f = eu_j$  where  $e$  is a retraction,  $u$  is an isomorphism and  $j$  is an inclusion.

A morphism  $f$  in a category with subobjects is said to have an *image*

if it has a *canonical(epi-mono)factorization*  $f = xj$ , where  $x$  is an epimorphism and  $j$  is an inclusion with the property that whenever  $f = yj'$  is any other canonical factorization, then there exists an inclusion  $j''$  such that  $y = xj''$  ([4]). A category is said to have *images* if every morphism in  $\mathcal{C}$  has an image. In this case, the codomain of  $x$  is said to be the *image* of  $f$ . When the morphism  $f$  has an image we denote the unique canonical factorization of  $f$  by  $f = f^o j_f$ , where  $f^o$  is the *unique epimorphic component* and  $j_f$  is the inclusion of  $f$ .

Let  $\mathcal{C}$  be a category with subobjects, images, every morphism in  $\mathcal{C}$  has normal factorizations in which the inclusion splits and  $d \in \mathcal{v}\mathcal{C}$ . A cone from  $\mathcal{v}\mathcal{C}$  to the vertex  $d$  is a map  $\gamma : \mathcal{v}\mathcal{C} \rightarrow d$  such that

- (1)  $\gamma(c) \in \mathcal{C}(c, d)$  for all  $c \in \mathcal{v}\mathcal{C}$ .
- (2) If  $c' \subseteq c$  then  $j(c', c)\gamma(c) = \gamma(c')$ .

The cone  $\gamma$  is called a *normal cone* if there exists an  $a \in \mathcal{v}\mathcal{C}$  such that  $\gamma(a)$  is an isomorphism. The vertex  $d$  of the cone  $\gamma$  is usually denoted as  $c_\gamma$ . The set of all normal cones in  $\mathcal{C}$  is denoted by  $\mathcal{TC}$ .

**Definition 5.** A *normal category* is a pair  $(\mathcal{C}, \mathcal{P})$  satisfying the following:

- (1)  $(\mathcal{C}, \mathcal{P})$  is a category with subobjects
- (2) every inclusion in  $\mathcal{C}$  splits
- (3) Any morphism in  $\mathcal{C}$  has a normal factorization
- (4) for each  $a \in \mathcal{v}\mathcal{C}$  there is a normal cone  $\gamma$  with vertex  $a$  and  $\gamma(a) = I_a$ .

**Lemma 1** (Lemma1[4]). If  $\gamma$  is a normal cone with vertex  $c_\gamma$  and  $f : c_\gamma \rightarrow a$  is an epimorphism for  $a \in \mathcal{v}\mathcal{C}$ , then the map  $\gamma \star f$  defined by

$$(\gamma \star f)(a) = \gamma(a) \cdot f$$

from  $\mathcal{v}\mathcal{C} \rightarrow \mathcal{C}$  is a normal cone with vertex  $d$ .

**Theorem 1.** Let  $\mathcal{C}$  be a normal category. Then set of all normal cones  $\mathcal{TC}$  with respect to the binary operation defined by

$$\gamma \cdot \eta = \gamma \star \eta(c_\gamma)^o$$

for all  $\gamma, \eta \in \mathcal{TC}$  is a regular semigroup.

**Definition 6.** An *Abelian proper category*  $\mathcal{C}$  is a preadditive category satisfying the following:

- (1)  $\mathcal{C}$  has a null object,
- (2)  $\mathcal{C}$  has binary products and coproducts,
- (3) Every arrow in  $\mathcal{C}$  has a kernel and a cokernel,
- (4) Every monic arrow is a kernel, and every epi a cokernel,
- (5)  $\mathcal{C}$  has sub objects,
- (6) every inclusion in  $\mathcal{C}$  splits,
- (7) every morphism has unique canonical factorization,
- (8) for each  $a \in \mathcal{v}\mathcal{C}$  there exists a proper cone  $\gamma$  with  $\gamma(a) = I_a$ .

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Abelian normal category is an abelian proper category with every morphism has normal factorization and proper cones become normal cones.

3.  $R$ -MOD IS ABELIAN PROPER CATEGORY

The category  $R$ -mod with objects  $R$ -modules and morphisms  $R$ -module homomorphisms is an abelian category for a commutative ring  $R$ [6].

**Proposition 1.**  $R$ -mod is a proper category.

*Proof.*  $R$ -mod is a small category and the set of all morphisms whose underlying maps are inclusions is a choice of sub objects for  $R$ -mod so that sub objects correspond to submodules in the usual sense. In this case all monomorphisms are embeddings. Hence  $R$ -mod is a category with sub objects. If  $M \subseteq N$  and  $\phi : M \rightarrow N$ , an inclusion then we can find  $\phi' : N \rightarrow M$  as for each  $x \in N$ ,  $\phi'(x) = x$  if  $x \in M$  and  $\phi'(x) = 0$  if  $x \in M'$  such that  $\phi \cdot \phi' = I_M$ , where  $M \cup M' = N$ . **Hence every inclusion splits.**

Let  $M$  and  $N$  are two  $R$ -modules with  $\phi : M \rightarrow N$  an  $R$  module homomorphism. Image of  $\phi$  is defined as a triple  $(f, I, j)$  where  $I$  is an object in  $R$ -mod and  $f : M \rightarrow I$  and  $j : I \rightarrow N$  are morphisms in  $R$ -mod with  $j$  a monomorphism such that  $\phi = fj$  and if  $k : J \rightarrow N$  is any other monomorphism with  $\phi = gk$  for some  $g : M \rightarrow J$ , then there exists a unique morphism  $\psi : I \rightarrow J$  such that  $\psi k = j$ . We write  $I$  for image of  $\phi$ . Thus  $\phi = fj$  gives the epi-mono(canonical) factorization and image of  $\phi$  is the codomain of  $f$  and we write  $f = \phi^o$ , epimorphic component of  $\phi$ . Since every inclusion in  $R$ -mod splits, canonical factorization is unique.(cf. [4])

Let  $\gamma : vR - mod \rightarrow R - mod$  is a cone such that it satisfies the following properties. For each module  $N$ ,  $\gamma(N) : N \rightarrow M$ , and whenever  $N \subseteq L$ ,  $j(N, L)\gamma(L) = \gamma(N)$ . Since every morphism has epi-mono factorization, for some module  $D$  in  $R$ -mod, the map  $\gamma(D) : D \rightarrow M$  is epimorphism. This collection of morphisms  $\{\gamma(N) : N \in vR - mod\}$  form a proper cone  $\gamma$  with vertex  $M$  in the category  $R$ -mod. For each object  $N \in R - mod$ ,  $Id : M \rightarrow M$ , identity map is an  $R$ -module homomorphism. So there arise idempotent proper cone such that  $\gamma(M) = Id_M$  for each object  $M$  in the category  $R$ -mod. Hence  $R$ -mod is an *abelian proper category*.  $\square$

The direct product of any two modules is also an  $R$ -module which acts as the product in the category  $R$ -mod and direct sum acts as the coproduct. The submodules and quotient modules of any  $R$ -module is also an  $R$ -module.

Addition of two  $R$ -module homomorphism is again an  $R$ -module homomorphism. This turns  $hom(M, N)$  into an abelian group and further

$\text{hom}(M, N)$  is an  $R$ -module for any two  $R$ -modules  $M$  and  $N$ .

$$\text{hom}(M_2(R), M_2(R)) = \{\phi_i : M_2(R) \rightarrow M_2(R) \text{ s.t. } \phi_i(rx+y) = r\phi_i(x) + \phi_i(y)\}$$

Kernel of  $\phi : M \rightarrow N$  for two  $R$ -modules  $M$  and  $N$  is  $\ker\phi$  with inclusion map  $i : \ker\phi \rightarrow M$  and co kernel of  $\phi$  is  $N|_{\text{im}\phi}$  with the natural projection map  $\pi : N \rightarrow N|_{\text{im}\phi}$ . Zero module is the zero object.

Submodules of the above  $R$ -modules are the sub objects in the category  $R\text{-mod}$ . Every morphism has epi-mono factorization. In general  $R\text{-mod}$  category of all  $R$  modules over the set of all real numbers is an abelian proper category.

#### 4. SEMI SIMPLE ABELIAN NORMAL CATEGORY

A nonzero module  $M$  is called *simple* if the only submodules of  $M$  are  $(0)$  and  $M$ . A field is simple viewed as a module over itself. A module is called *semi simple* if it is equal to its socle. Socle of a module  $M$  is the sum of all simple submodules. The module  $M_n(F)$  is semi simple as it contains submodules  $C_j$ , column vectors which are simple modules such that  $M_n(F) = \bigoplus_{j=1}^n C_j$ . Any vector space is a direct sum of simple subspaces (each subspace consists of scalar multiples of a basis vector).

Since a ring is a module over itself, a ring  $R$  is semi simple if it is semi simple as an  $R$ -module. If  $R$  is a semi simple ring, then every nonzero  $R$ -module  $M$  is semi simple. Non zero submodules and quotient modules of a semi simple module are semi simple.

*Shur's Lemma* : Any nonzero homomorphism between simple  $R$ -modules is an isomorphism. If  $M$  is a simple  $R$ -module,  $\text{End}_R(M)$  is a division ring.

**Proposition 2.** *A module is semi simple if it satisfies any of the following equivalent conditions:*

- (1) *it is a sum of simple submodules*
- (2) *it is a direct sum of simple submodules*
- (3) *every submodule has a complement*

Simple module is semi simple. Vector spaces are semi simple. The ring  $\mathbb{Z}$  is not a semi simple module over itself.

If  $M$  is semi simple  $R$ -module, then every submodule and every quotient module of  $M$  is semi simple.

Indeed, let  $M$  be a semi simple module.  $M = \bigoplus_{i \in I} M_i$ . let  $W$  be a submodule and  $J \subset I$ , then  $M = W \oplus W'$  where  $W = \bigoplus_{i: M_i \subset W} M_i$ , hence  $W$  is semi simple. Also  $W' = \bigoplus_{i: M_i \cap W = 0} M_i$ .

As  $M/W \cong W'$ , it is semi simple.

**Definition 7.** *An abelian category  $\mathcal{C}$  is called semi simple category if there is a collection of simple objects  $X_\alpha \in \mathcal{C}$  ie. with no subobject other than the zero object  $0$  and  $X_\alpha$  itself, such that any object  $X$  is the*

direct sum (ie. coproduct or equivalently product) of finitely many simple objects.

**Proposition 3.** *The category  $R\text{-ssmod}$  with objects semi simple modules and morphisms  $R$ -module homomorphisms is an abelian normal category for commutative ring  $R$ . It is a semisimple category also.*

*Proof.* The category  $R\text{-ssmod}$  with objects semi simple modules and morphisms  $R$ -module homomorphisms is a subcategory of  $R\text{-mod}$  which is an abelian proper category. Now to prove that  $R\text{-ssmod}$  is a normal category it is enough to prove that every morphism has normal factorization and there exists idempotent normal cones.

Let  $M$  and  $N$  be two semi simple  $R$ -modules with  $\phi : M \rightarrow N$  be  $R$ -module homomorphism. Let  $K$  be kernel of  $\phi$  which is a submodule of  $M$ . Then  $M = K \oplus K^c$ .  $\phi|_{K^c}$  is an isomorphism, isomorphic to image of  $\phi$ . Hence  $\phi$  has a normal factorization  $quj$  where  $q : M \rightarrow K^c$ , retraction;  $u : K^c \rightarrow im\phi$ , isomorphism and  $j : im\phi \rightarrow N$ , inclusion.

For each  $M \in vR\text{-ssmod}$ , there is a cone  $\gamma \in R\text{-ssmod}$  with  $\gamma(M) = I_M$ . For this consider the morphism  $\theta_M : X \rightarrow X$  defined by  $\theta_M = I_M$  on  $M$  and  $\theta_M(N) = 0$  where  $X = M \oplus N$ . Now for each  $L \in R\text{-ssmod}$ ,  $\gamma(L) = \theta_M|_L$ . Clearly  $\gamma$  is a cone and  $\gamma(M) = I_M$ .

Any object in this category can be expressed as a direct sum of simple modules.  $R\text{-ssmod}$  being an abelian category, it is a semisimple category also. Hence the proof.  $\square$

Example: Let  $F$  be a field. The category of all  $F$ modules is a semi simple abelian normal category.  $\mathbb{Z}\text{-ssmod}$  is a category of semi simple modules over  $\mathbb{Z}$  which is ring of integers. The objects include  $\mathbb{Z}_n$  for square free integer  $n$ .

**Proposition 4.** *The objects of the semi simple abelian normal category  $R\text{-ssmod}$  form a complete complemented modular lattice.*

*Proof.* It is known that the set of submodules of a module  $M$  form a complete modular lattice. For  $A, B, C \in S(M)$ ,

$$A \subseteq C \Rightarrow A + (B \cap C) = (A + B) \cap C$$

By proposition 4, every submodule of a semi simple  $R$ -module has a complement.  $\square$

There is a categorical equivalence between abelian normal category and complemented modular lattice. Abelian categories are closely related to module categories.

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