# KERALA ECONOMY

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## A PUBLICATION OF GULATI INSTITUTE OF FINANCE AND TAXATION

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# Editorial
## Beneath the Trump Tariffs and the future of Globalisation

Concerned about the present plight of the US economy on 2 April 2025 American president, Mr Donald Trump, imposed reciprocal tariff on most their trading partners, making WTO redundant and drawing much global attention. There was a general consensus on the decline in global trade and investment, setting the stage for a third global recession after the global financial crisis of 2007 and the once in a century pandemic. With catastrophic consequences for the less developed countries, the hardest hit was predicted on the US itself. Although the tariff was soon suspended for 90 days for all but China, with whom the perilous trade war is at its full swing, the uncertainty is at its peak. The unequal and unsustainable world inherited from the four decades of globalisation has become unpredictable and unstable, to say the least. The moot question is on the role of globalisation, orchestrated and pursued and at the instance of WTO, in the making of the America's concerns and the lessons that the tariff episode offers for the future directions of globalisation.

### America's concerns

Justifying the imposition of reciprocal tariff President Trump argued that the lack of reciprocity in the bilateral trade relationships, disparate tariff rates and non-tariff barriers, have led to a large trade deficits ($1.23 trillion) accounting for about 4.5% of the GDP of United States. The prevailing MFN tariff rates under the globalisation have been arrived at through the Uruguay Round multilateral trade negotiations lasted from 1986 to 1994. But Trump observed that under the WTO, the US holds the lowest simple average MFN tariff rates of 3.3%, when their key trading partners like Brazil (11.2%), China (7.5%), the European Union (5%), India (17%), and Vietnam (9.4%) have much higher simple average MFN tariff rates. The trading partners also suppress their domestic wages and consumption, adversely affecting the demand for the US exports, while artificially increasing their competitiveness in global markets.

The result has been the hollowing out of the US manufacturing base that undermined the critical supply chains and rendered the defence-industrial base dependent on foreign adversaries. The share of US in the global manufacturing output declined from 28.4% in 2001 to only 17.4% in 2023 and the share of US manufacturing in GDP stood at only 11% in 2023. More importantly, during 1997-2024 the United States lost around five million manufacturing jobs, the largest decline in its history. To Trump, the future of American competitiveness depends on reversing these trends as the manufacturing is the main engine of innovation responsible for 55 percent of all US patents and 70 percent of all research and development (R&D) spending.

**Beneath the concerns**

Trump attributes the underlying reason to the "lack of reciprocity in their bilateral trade relationships". But any careful enquiry will take one to the doorsteps of unbridled globalisation driven by private profit with the state taking a backseat. There are reasons to believe that the establishment of global production networks and global innovation networks driven by the market has disrupted the specialisation of production and trade across countries leading to the adverse outcomes for America.

Analytically, the trade between the global North and global South is governed by their revealed comparative advantage and specialisation in production. Accordingly, prior to globalisation the new products, mostly embodying high technology, originated in the Global North, notably the US thanks to their comparative advantage in the production of knowledge, the key resource for high tech products. Having only one or a few producers, they enjoyed monopoly power and thus acted as price makers. For example, when Reynolds introduced the ball point pen in 1945, it was priced at $12.95 (about $200 at current prices). The producers of such goods could afford higher wages, retain higher profits and paid higher tax revenue to the government. This explained to a great extent the higher per capita income of the countries in the North, including the US.

As the product matured, the production base shifted to the global South, say China, often at the instance of Multinational Corporations (MNCS) in the North and also at the instance of firms from the Global south. Large scale production backed by higher demand across the world and low labour cost resulted in lower cost of production and are exported to the North at a lower price where they originated. The large number of producers and growing competition, they are no more price makers, but price takers and the price declines. Given the abysmally low price, they attract low or no tariff in the Northern market and the consumers are benefitted. The developing countries are also better off because of the new employment and income earning opportunities generated in these countries. Being price takers, their wages and profits are at a lower level which explained their lower per capita income. In the meanwhile, the countries in the North come up with newer products enabling them to maintain their higher per capita income.

**MNCs, China and India**

The unbridled globalisation drastically disrupted the status quo. Subsequent to the the establishment of global production networks, production of knowledge also got globalised through Global Innovation Networks (GINs) at the instance of large MNCs driven by profit motive. As a result R&D investment in China by the MNCs from the US increased at a rate of 13.6% during 2003-17 as compared to only 5% growth in their R&D in the US. Simultaneously China also invested heavily in R&D. Since 1990 their R&D intensity increased more than fourfold to reach nearly 2.5% of

the GDP at present. The scale and impact of their R&D is evident from the fact that the absolute amount spent on R&D by China is nearly nine times that of South Korea which spends as high as 4.9% of their GDP on R&D. China also undertook various strategic initiatives like Chunhui program to attract non-resident Chinese scholars to harness their capabilities for the national economy and also for addressing the issue of brain drain. As a result, the South (read as China) emerged as a major player in the production of new products threatening the monopoly of the North (read as the US). Further, the share of the US in the global merchandise export declined from 11 % in 1980 to 8.5 % in 2023 while that of China increased from 0.8% to 14% and emerged as the key player in the high-tech exports. The US needs to dig deeper to locate the root of the problem.

India responded differently, unlike China. Despite being the home for over 1300 Global Capability Centres engaged in R&D for the MNCs, mostly from the US, India adheres religiously to the TRIPS and TRIMS Agreement under WTO. Unlike China, India's own R&D reduced from about 0.8% of the GDP in the early 1990s to 0.64% at present. India emerged as the largest supplier of highly skilled manpower for the US with large number of Indians holding key positions in the US corporate giants. Although India announced the make in India program the share of manufacturing GDP declined, do not compete with US in high-tech exports while being happy with $100 million software service exports to the US. The plight of the US would have been much worse had India also followed China way.

**The future of globalisation**

Tariff episode tends to indicate wrong diagnosis and wrong prescription. It reinforced the generally held view that the globalisation is at the crossroads. Noble Laurite Joseph Stiglitz and scholars of international repute like Deepak Nayyar, among others, have already made the case for governing globalisation along with the reform of the institutions that laid the foundation of today's globalisation. We have provided evidence to show that the present plight of America in terms of declining innovation capability, increasing trade deficit, fractured value chains and declining manufacturing output and employment cannot be delinked from the behaviour US MNCs whose prime concern is profit not the national security or sovereignty. The state cannot afford to be in the backseat any more. Instead, there is the need to regulate guide, and govern the market to ensure capability building at all levels for the national interest. This is an issue that should attract the immediate attention of Mr Trump and other national leaders including India. While there are challenges in the tariff episode, it would provide rich dividends if it work towards reforming globalisation.

**K J Joseph**

# Institutional adaptation of a few selected public sector institutions in Kerala in the context of climate change

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**Abstract**

*The paper investigates the adaptation strategies of public sector institutions in Kerala in response to climate change, highlighting their eco-friendly initiatives. The study underlines the critical role of institutional frameworks in facilitating effective adaptation measures that align with sustainable development goals. For realisation of the objective this study used a case study approach on adaptation strategies of selected public sector institutions in Kerala. The work focuses on three public institutions MG University, Kochi Metro Rail Limited & Kochi Water Metro Limited, and Cochin International Airport Limited (CIAL), which serve as models for implementing eco-friendly projects. By utilizing both primary and secondary data, the study analyses the economic valuation of their eco-friendly initiatives and their effectiveness in addressing climate vulnerabilities. The findings underscore the necessity for tailored solutions that address local vulnerabilities while promoting resilience against climate impacts. This work contributes to the broader discourse on climate adaptation by providing insights into how public institutions can lead in implementing sustainable practices that mitigate environmental challenges.*

*Keywords:* *Climate Change Adaptation, Institutional Frameworks, Sustainable Development, Resource Conservation, Residue Disposal and Management.*

## Introduction

The increasing climate vulnerabilities has prompted the world towards the need for effective adaptation strategies. This paper delves into the intricate relationship between institutional-level eco-friendly projects, climate change adaptation, and sustainable development while analysing some of the cost-benefit dimensions of such initiatives. The institutions selected for the analysis are Mahatma Gandhi University (MGU), Kochi Metro Rail Limited (KMRL), Kochi Water Metro Limited (KWML) and Cochin International Airport Limited (CIAL). These are pivotal public sector institutions in Kerala, which contributing significantly to the region's

socio-economic landscape along with attracting international appreciation for its performance in different areas. MGU, established in 1983, is a prominent state university known for its emphasis on research and sustainable development. KMRL plays a crucial role in enhancing urban mobility through the implementation of eco-friendly metro services and along with this Kochi Water Metro Limited (KWML

) aimed at enhances urban transportation in Kochi, by integrating water-based transit systems with existing public transport networks. While CIAL stands out as the world's first fully solar-powered airport, showcasing innovative approaches to sustainability and environmental stewardship. Together, these institutions exemplify the integration of eco-friendly practices within public infrastructure, addressing climate change challenges while promoting sustainable development.

Apart from the introduction this section contains the review of literature. The second section deals with method of study and conceptual framework. While the ensuing section delves with the data analysis of the selected public sector institutions. Then concluding remarks are given in the last section.

**1.1 Climate change**

According to the United Nations Framework Convention on Climate Change (UNFCCC), "Climate change means a change in the climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is addition to the natural climate variability observed over comparable time periods" (UNFCCC's Article-1 Definitions). The United Nations defines climate change as the long-term shift in the temperature and the weather patterns. Before 1800 the shifts had been natural because of volcano eruptions etc. but since 1800 the human activities have been playing a major role in these shifts through the burning of the fossil fuels, deforestation etc. (IPCC Sixth Assessment Report, 2023). Early observation of the climate change, in terms of increase in the temperature, was first tracked by the French Mathematician and Physicist Fourier in 1824, and he wrote that different gases in the atmosphere trap the heat and make the planet warmer. After him there were a series of publications presented by various scholars and researchers like Newton Foote, John Tyndall and Guy Callender revealed the increase of gases like the carbon in the atmosphere that leads to varying the climate. In 1953 Canadian Physicist Gilbert Plass (1953) warned that the anthropogenic carbon dioxide emissions give rise to an increase in the surface temperature at a rate of 1.5 degrees per century. Followed by him an array of publications entered the mainstream mainly by researchers like Syukuro Manabe, Richard Wethrald and many other palaeoclimatologists (Gomystym, 2024). The study related to the weather and the climate change became easy for the scientists with the adoption of the sophisticated modern technologies,

which enabled them to launch the satellite programs for studying the Earth's weather and atmosphere. The first satellite was launched in the 1960s to study the earth's climate by NASA, for example, Nimbus, TIROS-1 etc. Recent initiatives include the PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment) mission, PACE (National Aeronautics and Space Administration, 2024), Earth CARE (European Space Agency, 2024) etc.

**1.2 Impact of climate change**

The sudden changes in climate have a significant impact on the survival of life forms on the earth. It has a far-reaching effect on the earth and on its living creatures. The impact of the climate change is diverse and many, it can be analysed from different dimensions, and the effect of the climate change is considered detrimental or beneficial according to the negative and positive aspects evolved from that action (Review of Environmental Economics and Policy 2018). The possible impacts of the climate change are the varying temperature patterns, seasonal variation, ocean dynamics which include the sea level rise and marine currents, increasing the concentration of the CO2, which in turn lead to the variation in the pH of the ocean, in addition, the increased or reduced amount of precipitation will lead to the floods, otherwise extreme drought, both in turn pose threat to both biotic and abiotic organisms. All these impacts affect the species, biodiversity, population, ecosystem and the biome scale (Céline Bellard et.al, 2012).

Human actions from the ancient times also affected the environmental system in the form of deforestation, with the advent of agriculture and the increased population, even so the pressure exerted by human activities was at a tolerable level and the earth had the capacity to regenerate. But innovations like the steam engine, which paved the way for the industrial revolution resulted in the increased burning of fossil fuels and ultimately the major cause for the temperature variations. The initial evidence of the climate change is observed through the reduction in the glaciers and the decreasing amount of the snow cover in the mountain ranges and the reduction in the extent of the arctic ice, in addition to these the other facts about the climate change is noticed through the research conducted on the tree rings and the desertification happened in the Sahelian countries of the Sub-Saharan Africa (Markham, 1996). Recent evidence such as, reduction in the thickness of the arctic ice sheets (it was typically 2 to 3 meters and in some regions it was 5 meters and now it reduced to 1 to 3 meters) indicates the artic sea is warming highly ( National Snow and Ice Data Center,2024), compound weather events leads to the simultaneous flood in Portugal and the Saharan dust outbreak (Pons, F. et.al., 2024), landslide in the Wayanad district of Kerala, the increasing vegetation cover and the changes in the soil chemistry of Antarctica (Nature Geoscience, Cannone, N.et.al., 2021) etc.

Human induced issues related to the climate change is viewed at a global scale,

but the effects are highly detrimental for the local communities residing over the areas that are very vulnerable to climate change. The hurricane Ida did not create a landslide but caused rain effects which led to flooding in New Jersey (New York State Department of Environmental Conservation ,2021), decreasing the lobster population in New England due to the rising of the ocean temperature which affected the economic base of the communities that rely on the lobster fisheries.

### 1.3 Economics of climate change adaptation

Climate change adaptation is all about adjustment mechanism which tries to deal with the effects of increasing environmental issues. The Economics of Climate Change Adaptations (ECA) studies how to keep down the negative impact of climate change on the economy while amalgamating adaptation into economic development. The ECA methodology is a tool that helps decision makers understand the impact of climate change and identify cost-effective adaptation measures. In 2007 Intergovernmental Panel on Climate Change (IPCC) defined adaptation to climate change as "adjustments in natural and human systems in response to actual or expected climate stimuli or their effects, which moderate harm or exploit beneficial opportunities" (IPCC, 2007). The Adaptation activities can take on different forms, there is no 'one-size-fits-all-solution', depending on the context of a community, business, organization, country or region it will differ. Such

initiatives can range from building flood defences, setting up early warning systems for cyclones, switching to drought-resistant crops, to redesigning communication systems, business operations and government policies. Many nations and communities are already taking steps to build resilient societies and economies. However, this needs cost-effective inventions and innovations (UNFCCC, 2024).

### 1.4 Institutional level adaptation to climate change

Institutional adaptation means the actions taken to adjust the governance to the new (experienced or expected) climate conditions to moderate the impacts of the climate change on the individuals, infrastructure and ecosystems (Patterson, 2021). Here the institutions refer as the rights, rules and the decision-making procedures. This can be formal or informal. The formal aspects include the laws, procedures and policies and the informal aspects refers to the routines, beliefs and norms. Among the different dimensions of the climate adaptation, the institutional level adaptation primarily focuses on the planning (Patterson, 2021). These institutions such as the norms, rules etc. will affect the collective action and govern the social behaviour (Helm, et.al, 2024). According to the UNFCC Adaptation Committee the institutional adaptation does not have a single definition, and the term can be used in many different forms and contexts. They state that the institutional arrangements for the adaptation are those structures, approaches, practices or rules set for the

stakeholders to steer adaptation at all levels for: assessing impacts, vulnerability and risks; planning for adaptation; implementation of adaptation measures; and monitoring and evaluation of adaptation (UNFCC Adaptation Committee,2014). Even though the institutional level adaptation is crucial for adapting to the existing climate variations, it must face many challenges like concentrations of the central government in the policy formulation, ineffective implementations, non-inclusive nature of the government, the inadequate governance etc. For example, in the case of the Kyoto Protocol 180 counties ratified the protocol but the United States has not and there are many issues evolved regarding the large amount of the reduction in the emissions (Ampaire, et.al, 2017; Ostrom, 2009). So, in contrary to the collective action proposed by the classical many economists like the Elinor Ostrom raises the idea or the slogan "Think Globally but Act Locally", in essence it means the adaptation should be focus on the micro level that is from the individuals, families, community and the society (act locally) because the more vulnerable groups of the climate change will be the local communities (Ostrom, 2009).

In the study related to climate change adaptations of coastal communities in South India by Thomson explains how Governance and Institutional constraints act as one of the barriers to climate change adaptation. It includes institutional constraints, missing legal basis, administrative structure, institutional

governance issues along with institutional fragmentation (adaptation strategies depend on the interaction of various sectors and policy levels) and different institutional settings and standards (Artistic Report, 2019).

**1.5 Institutional level adaptation and sustainable development goals**

The Sustainable Development Goals (SDGs) are a universal framework established by the United Nations in 2015, comprising 17 goals aimed at addressing global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. These goals are part of the 2030 Agenda for Sustainable Development, which seeks to transform the world by ensuring that all people enjoy peace and prosperity while protecting the planet (https://www.undp.org). In the context of this study the question is that which is the most appropriate SDG in relation with institutional level adaptation. Within the 17 SDGs, Sustainable Development Goal 12 (SDG 12) emphasizes the necessity of ensuring sustainable consumption and production patterns as a fundamental approach to addressing environmental challenges and promoting sustainability is accurate to this context. This goal is crucial for adapting to environmental changes and mitigating resource depletion. SDG 12 aims to achieve several targets by 2030, including halving per capita global food waste at retail and consumer levels and achieving the environmentally sound management of

chemicals and all wastes throughout their life cycle (United Nations, 2023). The effective implementation of SDG 12 requires collaboration among governments, businesses, and consumers to foster practices that reduce waste generation, enhance resource efficiency, and promote sustainable practices across various sectors (Bengtsson et al., 2018).

## 2. Method of the study

This study focuses on institutional adaptation and three public institutions are selected which are models to a certain extent in adapting eco-friendly projects. They are MG University (State Public University), Kochi Metro Rail (State-Central Project) and CIAL (State- Pvt. Participation). Both secondary and primary data are used in this study, but the former one is prominent. The study is related to the eco-friendly projects of the above-mentioned institutions. Economic valuation of technical data provided by these institutions are used for data analysis other than the usual descriptive statistics. Fisher's exact test is used in certain cases. The conceptual frame of the study outlined in the 2.1.

## 2. 1 Conceptual framework

As mentioned in section 1.1, the deviation from the equilibrium of nature can occur due to natural and anthropogenic factors. The former factor has a prolonged tradition but the latter is relatively new. Climate change is one of the serious ramifications of the human intervention on environment. As climate change is a long run phenomenon it can

generate long lasting impacts on earth. The impacts cause temporary or sustainable changes in the ecological system. When the living and non-living communities are exposed to such impacts the members of the community and the system itself would try to adapt to the impacts in due course of time. The preliminary impacts or effects may be naturally adjusted (autonomous adaptation) which may culminate in restoring the equilibrium. It need not happen always. However, such adaptations will not be sufficient to meet all the impacts especially those with sustainable effects. If the remaining impacts have a negative dimension the climate change would result in scenarios of vulnerabilities. In fact, vulnerabilities are the negative residual effect of climate change. In certain circumstances a policy maker or community can foresee such vulnerabilities and can adopt early interventions. To minimise the expected vulnerabilities flood control measures and shifting coastal inhabitants to a reasonably distant location from the coast are two examples of early action. This falls under mitigation measures. All the impacts cannot be foreseen so that policy makers and communities need to make schemes to minimise the occurred vulnerabilities. Adaptations beyond autonomous are relevant in this context. Adaptations can be done at personal, household, community and formal institutional level. The first two types of adaptation can be done at micro level and the latter two can adopt at macro or meso level. In the present study adaptations by

**Figure 2.1:** Conceptual Framework for Climate Change, Mitigation and Institutional Adaptation
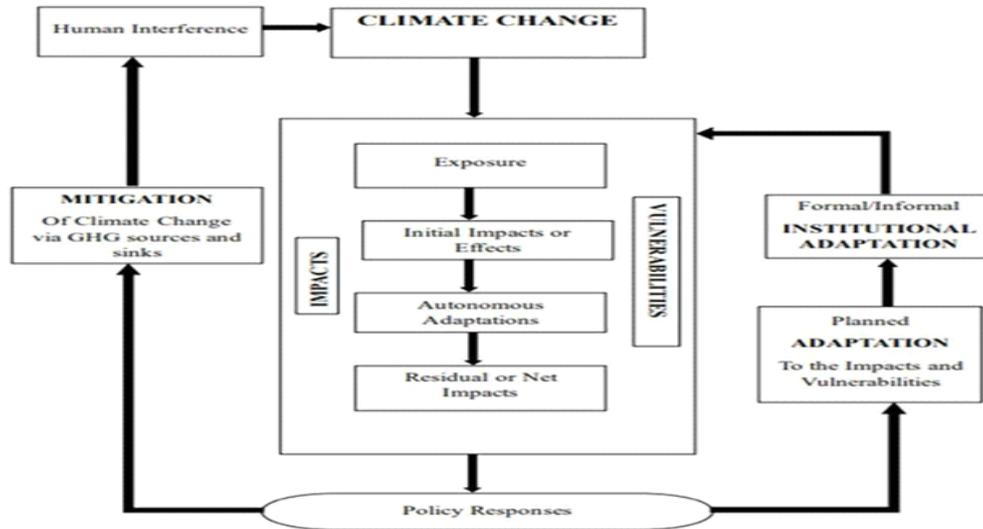


*Source: Adapted from Africa Climate Change Ambassador Program (Youniz,2022)*

**Figure 2.2:** Alpha to Omega of Residue Formation and its Disposal
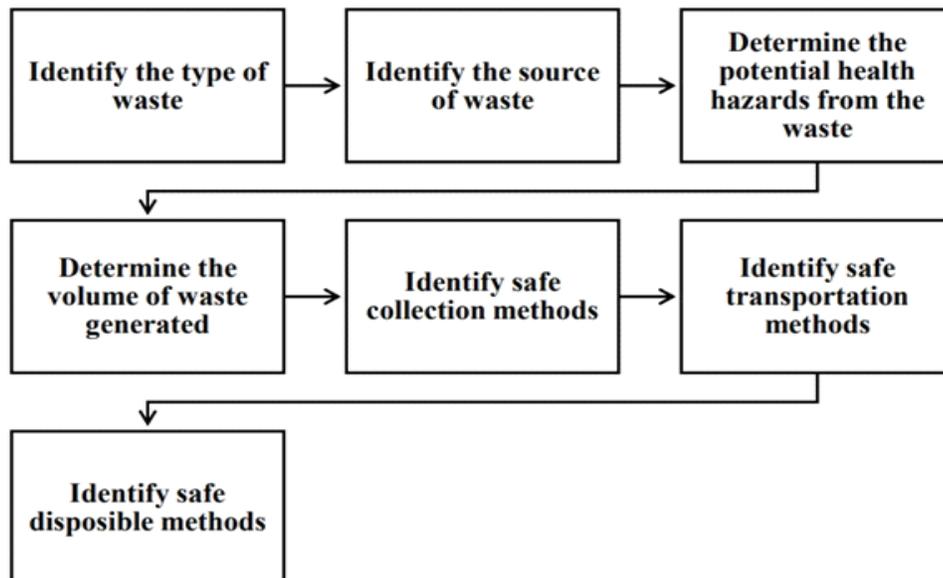


*Source: European Commission, (2025)*

a few formal institutions are accounted that falls under planned adaptations. Such adaptations are the results of policy responses.

Human interventions including formal institutions generate residues (waste). Policy responses must be able to minimise residue formation or the system should be able to dispose it properly. European Commission has excellently compiled its procedure (2025). This study also refers to steps in the solid waste management envisaged by European union for anlaysing the food residue disposal/conversion discussed in the data analysis Section 3.1.1. Figure 2.2 represents the different steps involved in solid residue management from identifying types of residues, its source,

possible health hazard, its volume to its safe collection, transportation & safe disposal methods. This procedure is part of transforming from unsustainable to sustainable stage. The figure 2.3 indicates the environmental unsustainability and sustainability dynamics discussed in this study. Specially in the context of eco-friendly projects and resource conservation projects of selected public institutions. As already mentioned in the introduction the concepts.

Described in this section come under the SDG 12 which deals with responsible consumption and production[1]. (https://www.un.org/sustainabledevelopment/). The unsustainability phenomena like global warming, deforestation etc. have

**Figure 2.3:** From Unsustainable to Sustainable
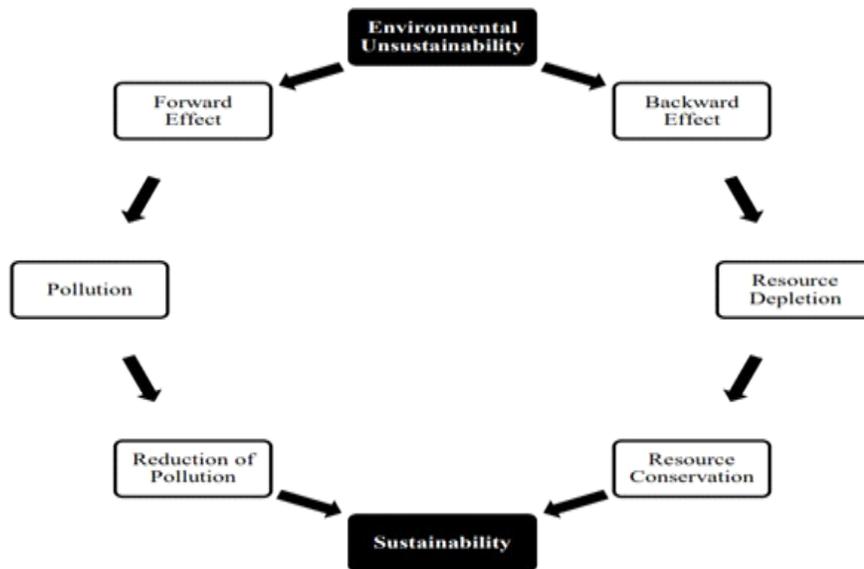


*Source: Conceptualised from Ekins, 2000*

both forward and backward effects. Pollution is an example of forward effect while resource extraction is a case of backward effect. If solid residue dumping is unsustainable, its safe disposal is sustainable. Meanwhile, resource conservation is (ex. Rain harvesting and tree planting) is a sustainable action from the backward side. Institutional adaptations can occur in this backdrop.

The scenario in figures 2.2 and 2.3 can be observed from another angle too. The circular economy method and institutional adaptation strategies are two critical approaches for addressing climate change. The circular economy focuses on sustainable resource use, while institutional adaptation involves structural changes to enhance societal resilience towards climate change. Together, they offer a framework for reducing emissions and building adaptive capacity.

The European Union's approach to solid waste management is fundamentally linked to its circular economy initiatives, which aim to transition from a linear economic model to one that emphasizes sustainability and resource efficiency. The Waste Framework Directive (2008/98/EC) establishes a comprehensive regulatory framework that prioritizes waste prevention, reuse, recycling, and recovery, mandating specific recycling targets for member states. Through such actions, the waste transform to residue which promotes sustainable design and value addition (European Commission, 2020).

## 3. Selected cases

Mahatma Gandhi University (MGU), established on October 2, 1983, is a prominent public educational institution located in Kottayam, Kerala, India. The university is situated on a 110-acre campus in Priyadarsini Hills, Athirampuzha. It serves a diverse student body, including both national and international scholars, through its comprehensive range of academic programs across various disciplines. In the context of residue (waste) generation and disposal methods, MGU has undertaken significant initiatives aimed at promoting eco-friendly practices. The university's commitment to sustainability is exemplified by its Advanced Centre of Environmental Studies and Sustainable Development (ACESSD), which focuses on interdisciplinary research and education in sustainable resource management and residue management practices.

The KMRL project is one of Kerala's influential public transport systems. It was inaugurated on June 17, 2017, marking the commencement of passenger services on the 13.2 km Aluva Palarivattom corridor and now it is extended to Thrippunithura railway station. KMRL aims to make Kochi the first city in the country where the entire public transport system: the metro, the buses, the boats, the auto-rikshaws and the taxis work together as an integrated system; with a common timetable, common ticketing and centralised 'command and control.' Complementing KMRL is the Kochi Water Metro Limited, launched in December 2021, India's first water metro project, designed to

**Figure 3.1** Organisational Structure Mahatma Gandhi University
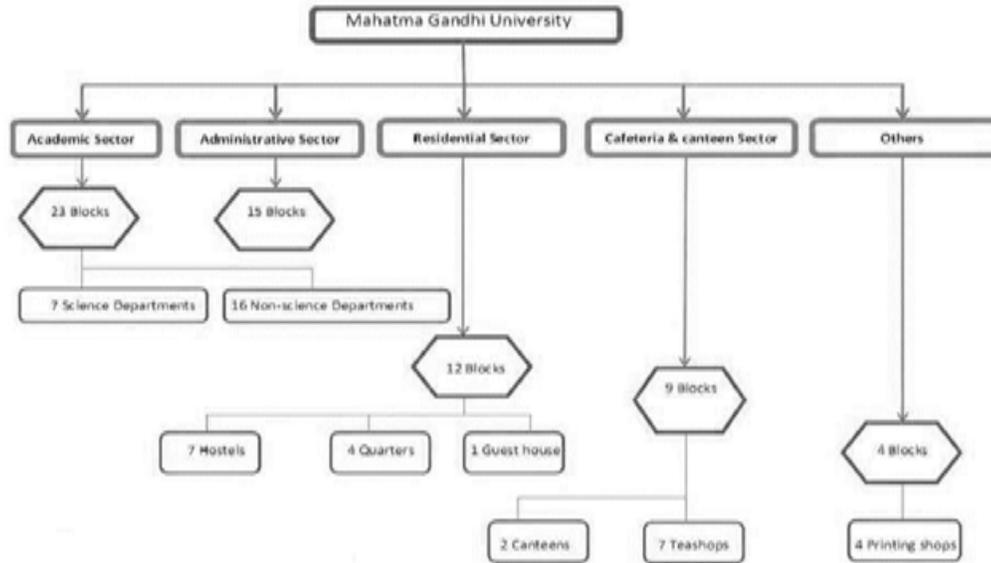


*Source: Waste Audit Mahatma Gandhi University 2024*

integrate water transport with existing urban transit systems, further improving connectivity across the region.

The Cochin International Airport Limited is the first ever fully solar powered airport in the world which was started its operations on 25th May 1999, owned and operated by Cochin International Airport Limited (CIAL). It is the first airport in India built under Public Private Partnership (PPP).

Now green initiatives of these three institutions can be considered starting with MG university.

### 3.1 Mahatma Gandhi University

MGU has implemented innovative residue management strategies that convert organic residue generated on campus into valuable products such as plant food and potting mixtures through aerobic composting. Such initiatives not only address residue disposal challenges but also contributes to the university's sustainability goals by transforming residue into a source of revenue. Through these efforts, MGU exemplifies how educational institutions can lead in adopting ecofriendly practices while simultaneously providing economic benefits. Also, the water storage and distribution system and management of other types of waste items are commendable. Figure 3.1 provides an overview of the organisational structure

**Figure 3.2**
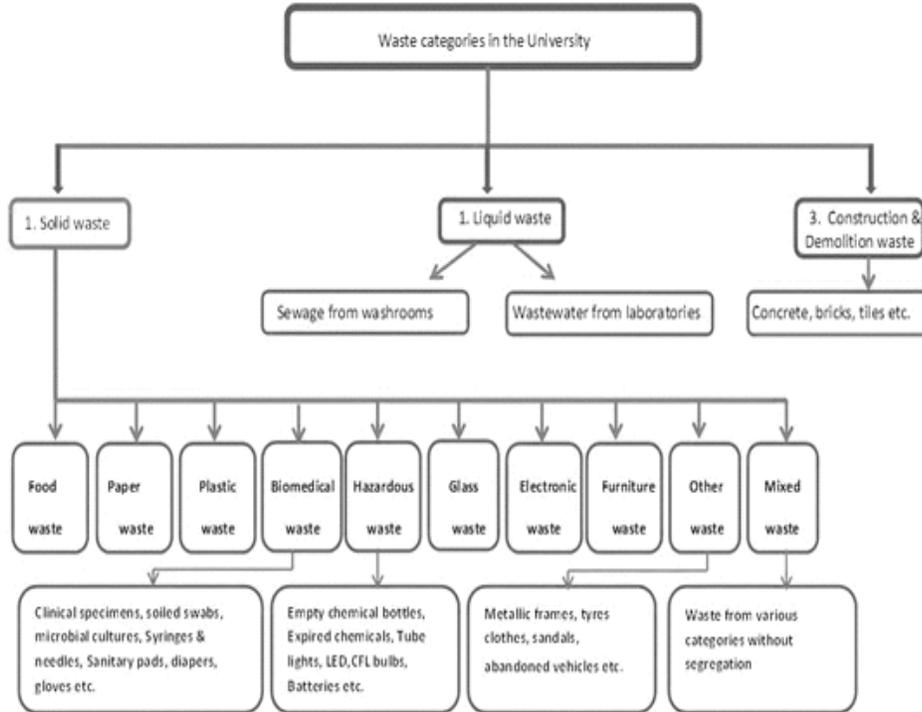


*Source: Waste Audit, Mahatma Gandhi University 2024*

**Figure 3.3:** Sector Wise Residue Generation In Percentage
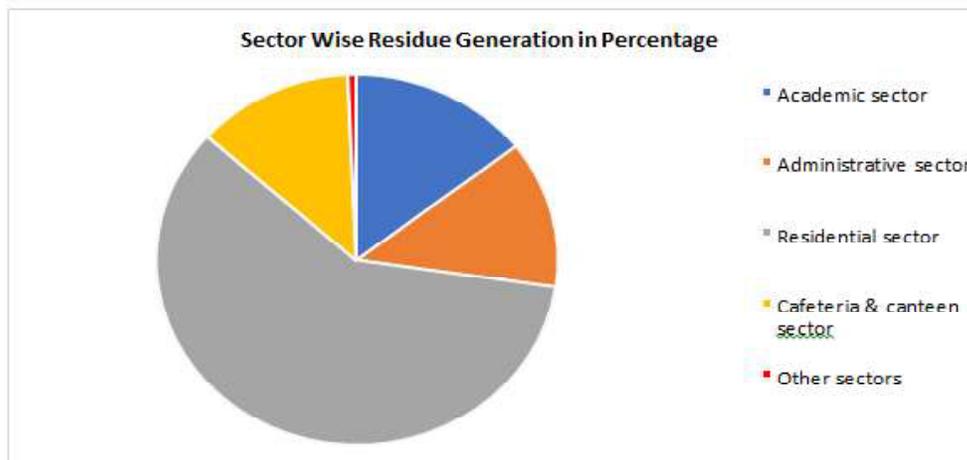


*Source: Waste Audit, Mahatma Gandhi University, 2024*

**Figure 3.4:** Different Categories of Residue Generation From Different Sectors (%/yr.)
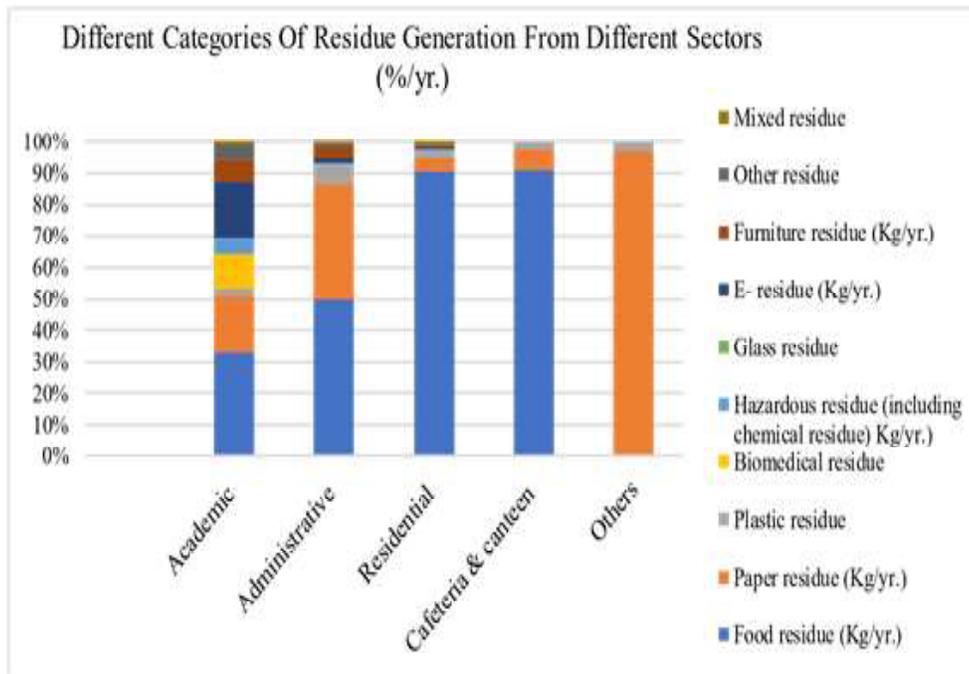


*Source: Waste Audit, Mahatma Gandhi University 2024*

**Figure 3.5:** Percentage Wise Contribution of Different Sectors in Various Residue Categories



*Source: Waste Audit, Mahatma Gandhi University, 2024*

and facilities available at the institution and each produces distinct types of residues, and the intensity varies.

The university generates diverse categories of residue, reflecting the varied activities within its campus. These include solid residue, such as food, paper, plastic, biomedical, hazardous, glass, electronic, furniture, and mixed waste, often comprising clinical specimens, chemicals, and discarded materials (Figure 3.2). Figure 3.2 exhibits the residue categories. This study uses secondary data from the 'Waste Audit' conducted by Mahatma Gandhi University in 2024 along with the primary data for detailed analysis. In the context of this study, the items referred to as waste in the original study are redefined as residue. According to WHO waste is defined as any substance or object that the holder discards, intends to discard or is required to discard and here the discussion is related to value addition and effective management of the mentioned items, which keep them out of the conventional definition of waste as waste is something that is problematic in day-to-day life.

The pie diagram (Figure 3.3) shows the overall sector-wise residue generation in percentage, highlighting that the residential sector is the largest contributor to campus residue generation, followed by the cafeteria and Canteen sectors. The figure 3.4 complements the facts by displaying the share of different categories of residue generation from different sectors of the university. The data (Figure 3.4) reveals the predominance of food residue in most

sectors, particularly in the cafeteria and canteen and residential sector.

The figure 3.5 depicts the percentage-wise contribution of different institutional sectors to various residue categories, highlighting distinct patterns in residue generation. The residential sector dominates in food residue generation followed by Cafeteria & Canteen sectors, while Academic and Administrative sectors contribute significantly to paper, biomedical, and hazardous residue, reflecting their operational activities. Additionally, e- residue is primarily linked to academic activities. This information underscores the need for tailored residue management strategies that address the specific residue profiles of each sector to promote sustainability and efficiency.

The academic sector has its contribution in the generation of every type of residue even if it varies in the amount. Further analysis is associated with academic sector.

The pareto chart in figure 3.6 depicts residue generation from various institutions in the academic sector, with the bars showing the quantity (in descending order) and the cumulative line indicating the percentage contribution of each institute to the total. It highlights that a few institutes, such as SCS, SBS, and SES, contribute significantly to the overall waste, while the others have comparatively lower contributions. Then for deriving more insights, the academic sector is divided into 3 subsectors and 5 major residues are selected from these subsectors. Such selected residues have weight more than 1000kg/year.

**Figure 3.6:** Residue generation from different institutes in academic sector
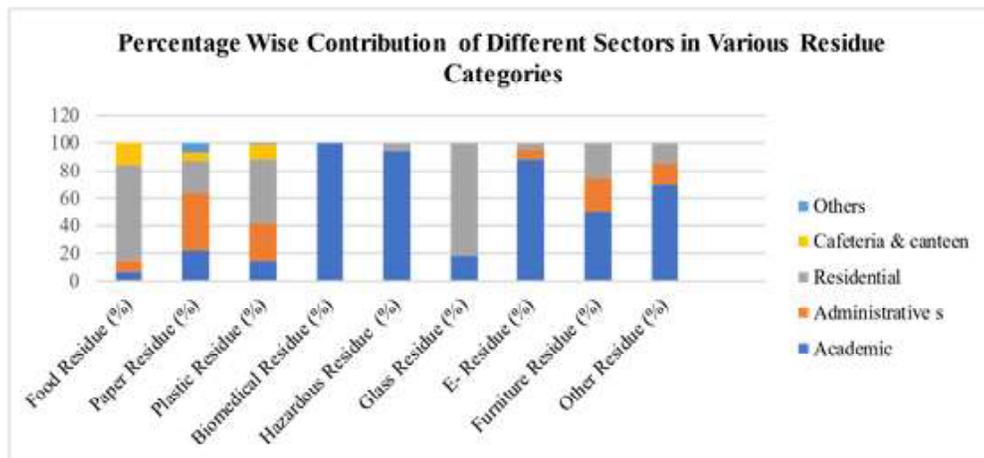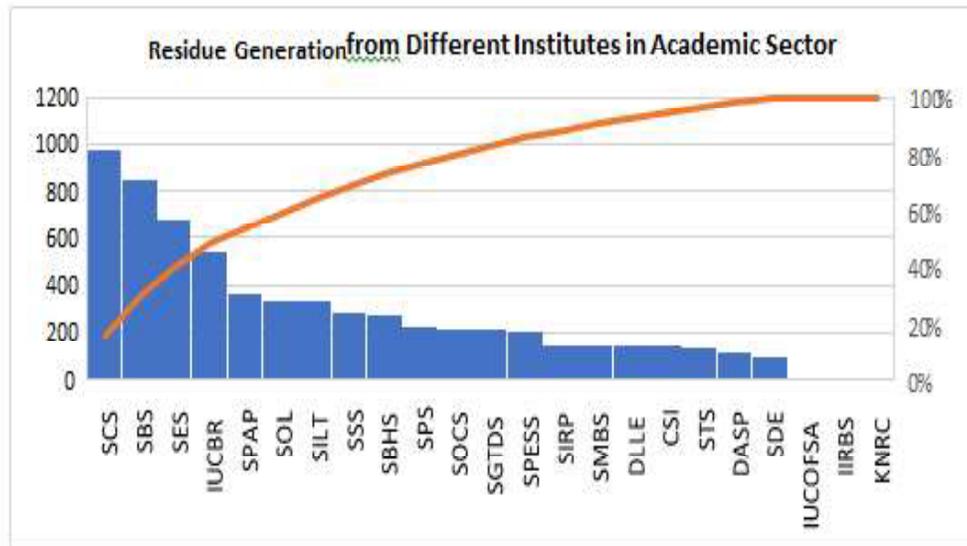


*Source: Waste Audit, Mahatma Gandhi University, 2024*

**Figure 3.7**: Sub-sectoral Selected Residue Generation from Academic Sector
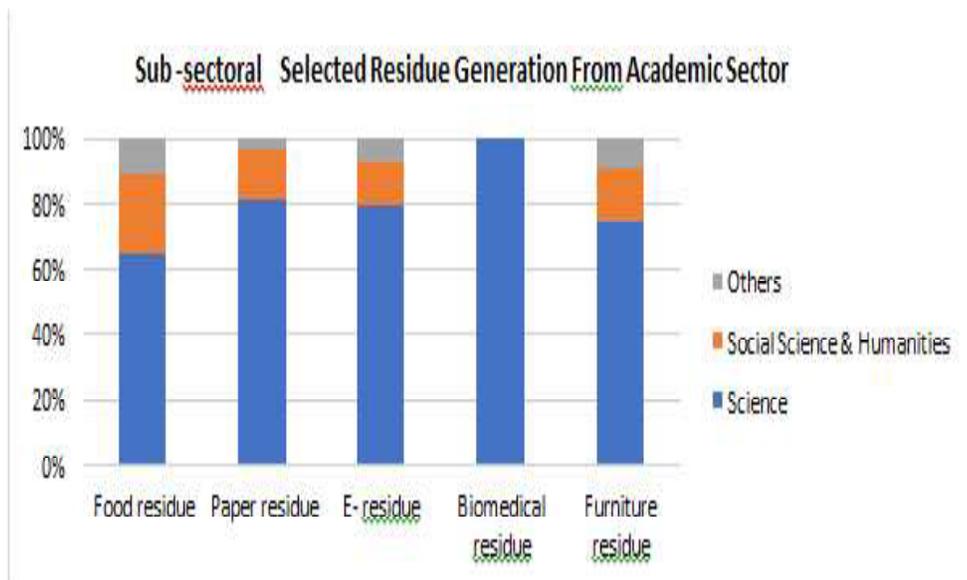


*Source: Waste Audit, Mahatma Gandhi University, 2024*

**Table 3.1:** Institution-wise paper residue generation

| Department | High | Paper Low | Total |
|---|---|---|---|
| Others | 0 | 5 | 5 |
| Science | 6 | 4 | 10 |
| Social Science & Humanities | 1 | 7 | 8 |
| Total | 5 | 18 | 23 |
| | | Fisher's Exact Test P-Value=0.02843 | |

*Source: Waste Audit, Mahatma Gandhi University 2024*

**Table 3.2:** Scrap value of residue in rupees (June 2021 - April 2022)

| Sl No | Type | Items | Weight (Kg) | Price/Kg$^2$ (Rs) | Amount (Rs) |
|---|---|---|---|---|---|
| 1 | | Carton | 4130 | 14 | 57820 |
| 2 | | Valued Answer Sheet (VAS) | 26985 | 14 | 377790 |
| 3 | Paper Residue | Waste paper | 8670 | 14 | 121380 |
| 4 | | Old question paper | 3280 | 14 | 45920 |
| 5 | | News paper | 587 | 19 | 11153 |
| 6 | | Iron | 8134 | 29 | 235886 |
| 7 | Other/furniture Residue | Aluminum | 230 | 160 | 36800 |
| 8 | | Tire-Vehicles | 1270 | 10 | 12700 |
| 9 | **Total** | | | | **899449** |

*Source: Waste Audit, Mahatma Gandhi University, 2024*

The full forms of names of different academic institutions in figure 3.6 are given in the appendix I

Within the selected residues from all the departments, statistically significant result is found in the case of paper residue according to the fishers exact test (table 3.1).The test is used to overcome the constraints in data for running chi Square. The paper residue generaton is significant at 5% level which seems in tune with a learning centre. In the case of other residues, no significant differences are found.

The paper residue acts as a source of income as it consists more than 68 % amount received through sales of residue by open tender and, considering the quantity of the residue, above 81% consist of different types of paper residue. The quantities and amounts are given in the table 3. 2.

The table 3.2 showcases the scrap value of residues collected from different sectors of the university, providing insights into the potential for recycling and waste management as part of institutional adaptation to environmental issue like climate change. The total estimated income comes about 9 lakhs during the period. The data highlights the type, weight, and corresponding monetary value of different residues sold, indicating the economic and environmental benefits of resource recovery.

The Valued Answer Sheets (VAS), with a weight of 26,985 kg and a scrap value of Rs. 3,77,790, represent the largest contributor to the total revenue, showcasing the significant potential for recycling paper products. Similarly, iron contributes ?2,35,886 with a weight of 8,134 kg, indicating the value of metal recovery from institutional residue. Materials such as used paper, old question papers, and cartons collectively add substantial value, with combined revenue exceeding

Rs. 2,25,000, despite their relatively lower price per kilogram. These items emphasize the importance of systematic collection and recycling of paper residue. importance of proper segregation[3].sidue, although smaller in quantity (230 kg), fetch a high price per kilogram (Rs.160), contributing significantly to the overall revenue (Rs. 36,800). This highlights the importance of proper segregation[3]. Tyres from vehicles, with a price of Rs.10 per kilogram, represent the least lucrative category in terms of unit value, but their presence underscores the institution's commitment to managing all types of residues.

In short scrap value demonstrates the institution's effort to minimize residue accumulation by facilitating chances of recycling and reuse practices. By segregating materials and monetizing them, the institution contributes to reducing landfill use, conserving natural resources, and promoting sustainable practices and the data reflects the institution's proactive approach to addressing environmental issues through efficient residue management strategies.

**Figure 3.8:** Details of components in pot mixture
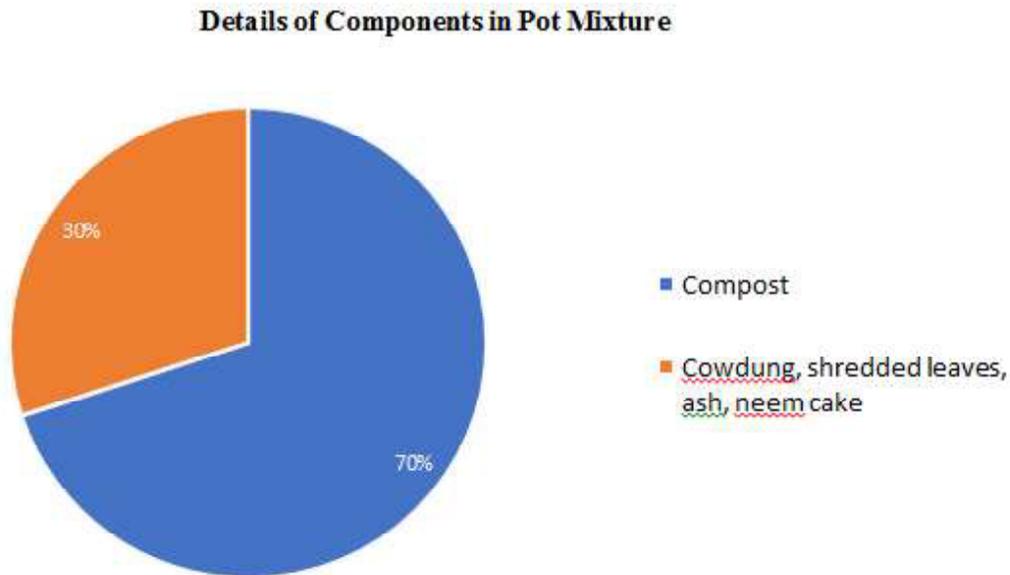


*Source: Coordinator, Nirmalam MGU*

### 3.1.1 Nirmalam MGU

Nirmalam MGU is a green protocol project initiated by Mahatma Gandhi University (MGU) in Kerala, aimed at transforming organic residue into valuable resources. There are other resource management initiatives under this programme. This initiative emphasizes sustainable agriculture, indicating how residue management can lead to economic opportunities (Value Addition) while promoting environmental sustainability (https://www.mgu.ac.in/nirmalam-mgu). This represents the safe disposal method of solid residue management as part of the final step in SR management as shown in figure 2.2. The major roles of this initiative are.

- Resource Conversion: The project transforms various types of organic residue into marketable products, demonstrating the potential for economic viability in residue management (Figure 3.8 and 3.9).

- Skill Development and Environmental Stewardship: It provides students with practical skills that are essential for careers in environmental science, agriculture, and entrepreneurship. The project promotes a sense of responsibility among students and the community towards environmental conservation and sustainable practices (Figure 3.9).

- Research and Innovation: Nirmalam MGU fosters research initiatives that explore new methods for residue

**Figure 3.9**: The price spread of the value of the pot mixture (Rs 175)



The price spread of the value of the pot mixture (Rs 175)
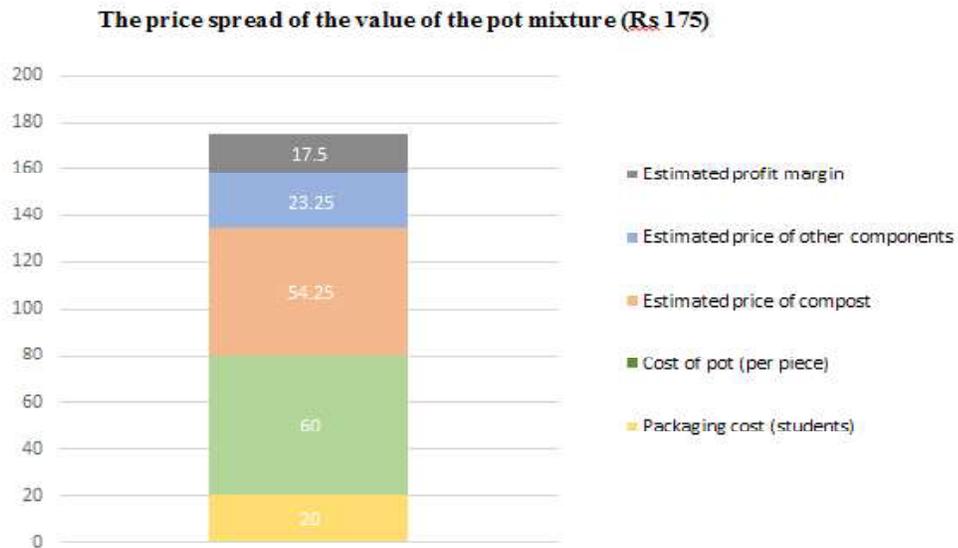
*Source: Coordinator, Nirmalam MGU*

management and sustainable agriculture, contributing to academic knowledge and practical applications. University is in the process of achieving this objective.

- Economic Opportunities: By creating products from residue, the initiative opens new avenues for income generation for students and local communities (Figure 3.9).

The major scheme with in the nirmalam project is the aerobic compost and the products created using the compost made of the food residue generated within the university. The associated details are given in the figure 3.8.

Figure 3.8 displays the composition of pot mixture provided under Nirmalam MGU. 70% of the mixture constitutes compost generated by Nirmalam while the balance consists of shredded leaves from the university, cow dung, ash and neem cake from outside from university. The compost comprises of food waste, dry leaves, cardboard and cocopeat, in which the first three components are procured from the university and the latter from outside the university. The monetary value of the pot mixture is shown in figure 3.9.

The pot mixture is charged at Rs.175 for 5 kgs. The price of all the components of the mixture could not be ascertained properly. Hence, the value of certain components are estimated by considering the weight and comparable market price. The packaging is done by students of the university who are paid Rs. 20 per pot. This shows that the organizers of

**Figure 3.10:** Per Head Water Consumption With & Without Boarding



*Source: Coordinator, Nirmalam MGU*

Nirmalam include students of the university to take part in sustainability practices and they are paid for their services. The price of the pot also provided as Rs. 60. However, the price of the other components are not directly available but their values are estimated. The price of the compost per kg near MG University is Rs.16 which is assigned to the compost portion of the materials of the pot mixture (i.e. 16*3.5 ? Rs 54.25). As other materials like cow dung, shredded leaves etc, comprise 30% of the pot mixture, the balance value except 10% profit margin is attributed to the other materials (i.e. Rs. 23.25). The total compost generated during six months is computed as 3500 kg which is equal to Rs. 56000. This is equal to Rs. 1,12,000 per year.

### 3.1.2 Raveendra sarovaram

Raveendra Sarovaram is a reclamation project of Mahatma Gandhi University which was named after Sri. N. Raveendranadh, former pro Vice-Chancellor of the University who monitored the project. The foundation of this water reservoir emerged as part of quarrying during the initial days of inception of the university. The place was abandoned for being useless and later the idea of reclaiming and converting it into a giant rainwater reservoir emanated. Besides the natural down streams, rainwater directed through pipes from some twenty buildings located around it kept on enriching Sarovaram. Among these twenty buildings the Silver Jubilee Pareeksha Bhavan with a roof area of 25,000 Sq. ft offers the most. The reservoir can accommodate 4.5 crore Liters of water and has the potential to meet almost entire demand of the university (mgu.ac.in/nirmalam/, 2025).

As per a data provided by central ground water authority, government of India the per head water consumption in an educational institution with boarding is

135 liters and without boarding is 45 liters. And in the case of MG University that number comes 194400 liters and 107370 liters for with boarding and without boarding respectively. On that basis the total consumption is 301770 liters (1440*135+2386*45), that means 64% of the water in the campus is consumed by those who are residing inside the campus (figure no). This is the daily water consumption of the campus, and the annual water consumption of the campus is more than 11 crore liters. Raveendra sarovaram with a storage capacity of 4.5 crore liters can satisfy this requirement once replenished by a normal monsoon.

### 3.2 Kochi Metro Rail Limited (KMRL) and Kochi Water Metro Limited (KWML)

The KMRL needs 20 Mega Watts (MW) per day to operate and currently around 11MW of electricity, which is more than 50% of the total energy requirement sourced from its own solar plants. It has solar panels on the roof of metro stations with a capacity of 2.67MWp and Ground mounted solar panels at Muttom within 40000 sq.m land area with a capacity of 2.719MWp.

Together it has a capacity to generate 5.389MWp.

KMRL is one of the model examples for formal institutional adaptations in Kerala. For example, 50% of the energy requirement of KMRL is from renewable energy, i.e. solar power. The solar power is generated from three models: roof top solar project, ground mounted solar project and roof top & ground mounted solar project. Almost half of (49%) of the solar power generation is from the third model and the least (23%) is from the

**Table 3.3:** Details of solar power generation in physical and monetary terms

| 1 | 2<br>Roof Top<br>Solar Project | 3<br>Ground<br>Mounted Solar<br>Project | 4<br>Roof Top and<br>Ground Mounted<br>Solar Project | 5<br>Total<br>5=2+3+4 |
|---|---|---|---|---|
| Capacity (MWp) | 2.67 | 2.719 | 5.19 | 10.57 |
| Avg. daily generation (KWh) | 8735 | 10575 | 18234 | 37544 |
| $CO_2$ equivalent (tons) | 7.1627 | 8.6715 | 14.95188 | 30.78608 |
| Carbon saving (Rs) | 12176.59 | 14741.55 | 25418.196 | 52336.336 |
| Avg. annual generation (KWh) | 3188275 | 3859875 | 6655410 | 13703560 |
| $CO_2$ equivalent (tons) | 2614.3855 | 3165.0975 | 5457.4362 | 11236.9192 |
| Carbon saving (Rs) | 4,444,455.35 | 5,380,665.75 | 9,277,641.54 | 19,102,762.64 |

*Source: Kochi Metro Rail Limited, 2024*

first model. The annual CO2 equivalent carbon saving is 11236.9192 tons and its monetary value is about Rs 2 crore (table 3.3)

### 3.2.1 Recycled Plastic Furniture in KMRL

Another sustainable initiative of KMRL is the use of recycled plastic furniture in the platforms of metro stations. Recycling as mentioned in section 2 is an important strategy of adaptation. One firm named Carbon and Whales recycled used plastic to make furniture. Kochi Metro permitted the firm to place 160 slanting bunches made of recycled plastics. One such furniture has a cost of Rs. 10000 and the firm put 160 such units in 15 stations. That is, the total value comes to Rs. 16 lakh and the firm get back

the value by putting advertisements on bunches placed in various metro stations. This demands accounting of carbon emission related to recycling plastic. To produce one kilogram of original plastic there is a carbon emission worth 2.90 kg. Meanwhile, the emission in the case of recycled plastic per kg is 0.38 kg which is 87% less than the manufacturing of the original plastic. It implies that each one kg. of recycled plastic causes a carbon saving of 2.52 (2.90 - 0.38) kg which is equaling to Rs. 214.2 ($1 = Rs. 85 approx.) and Rs. 51.96 (World bank, 2025) in terms of exchange rate and PPP ($PPP 1 = 20.62 in 2023) dollars (Google Finance, 2025) respectively. Thus, the money value of total saving in carbon emission of 160 recycled plastic bunch is equivalent to Rs.

**Table 3.4:** Details of Carbon Saving by Kochi Water Metro Limited 2023-24

| | |
|---|---|
| Ridership (445 days) | 24,28,800 |
| Average | 5458 per day |
| Passenger kilometres | 93,46,540 |
| No. of passenger trips | 53900 |
| Propulsion hours | 21191 |
| Idle working hours | 10596 |
| Equivalent diesel consumption | 372 tons |
| Actual consumption | 128.2 tons |
| Net savings in diesel use | 243.8 tons |
| CO2 equivalent | 758 tons |
| Per passenger -km CO2 emission savings | 81.1g |
| Average CO2 equivalent private transport per pass -km | 103g |
| CO2 emissions savings in modal shift | 962.7 tons |
| CO2 emissions savings from use of electric ferry | 758 tons |
| Net CO2 equivalent | 1720.7 tons |
| Per passenger-km CO2 emission savings | 184.1g |

*Source: Kochi Water Metro Limited (KWML), 2024*

1.71 crore (25 *2.52*160*20*85) and 41. 57 lakhs in terms of exchange rate and PPP dollars respectively.

Passenger traffic and the resultant carbon saving under Kochi Water Metro Limited are presented in table 3.4. Passenger survey was done by the KWML during 2023-24 (445 days) to assess the magnitude of carbon saving. In 445 days about 25 lakh passengers used the Kochi Water Metro and on average, 5458 passengers per day travelled. The water metro boats covered more than 93 lakhs passenger kilometres which were close to 54000 passenger trips. The shift from diesel boats to electric ferry reduced the diesel consumption by 758 tons. CO2 emission savings in modal shift and from electric ferry are 962.7 and 758 tons respectively, the net CO2 equivalent becomes 1720.7 tons. This can be expressed in monetary terms as 1ton of carbon emission is estimated as equal to $20 (20*85=1700) (Harris, 2013). It implies that 1720.7 tons carbon saving is equivalent to Rs. 2,925,190 lakhs (around Rs.3 million). Information regarding CO2 emission savings for per passenger-km is also available. The CO2 emission savings for per passenger km is 184.1g and it is equivalent monetary value is Rs 54.27.

## 3.3 Cochin International Airport Limited (CIAL)

CIAL started its solar initiative in 2013, with a 100KWp pilot plant and by 2015 attained the status as 'World's first Airport to be fully powered by solar energy' with an installed capacity of 13.1MWp. Today it has a total installed solar capacity of 50MWp. CIAL is now the 2nd largest power producer in Kerala after KSEB. It has reduced the carbon footprint by 1,60,000 metric tonnes. CIAL

**Table 3.5:** - Solar power generation and carbon saving in CIAL from 2013 to 2025

| | |
|---|---|
| Initial investment | Rs. 270 crores |
| Number of modules | 1,60,000 nos |
| Power generation per month | 54,00,000 units |
| Maintenance cost per month | Rs. 15 lakhs |
| Type of modules | Polycrystalline & Monocrystalline |
| Year of installation | Plant 1 - 1 MWp - 2013<br>Plant 2 - 14.4 MWp (cargo) - 2015<br>Plant 3 - 2 MWp (near STP) - 2017<br>Plant 4 - 3 MWp (hangar premises) - 2017<br>Plant 5 - 2.7 MWp (carport Intl) - 2017<br>Plant 6 - 2.6 MWp (carport domestic) - 2019<br>Plant 7 - 7.2 MWp - 2019<br>Plant 8 - 5.8 MWp (Opp Trade Centre) - 2021<br>Plant 9 - 12 MWp Payyannur - 2022 |
| Carbon equivalent (till 2025) | 176,369.76 tonnes |
| Carbon saving (Rs) | 299,828,592 (approx. 30 crore) |

*Source: PRO CIAL, 2025*

**Table 3.6:** Monetary value of the Residues, Scrap and Carbon Saving in Selected Institutions of the study in crores

| | |
|---|---|
| Total scrap value (June 2021-April 2022) | 0.0899449 |
| Total value of compost (per year) | 0.0112000 |
| Money equivalent value of renewable water generation in MGU campus (per year) | 0.5951000 |
| Annual CO2 equivalent carbon saving (Rs) (KMRL) | 36238762 |
| Annual CO2 equivalent carbon saving (Rs) (KWML) | 2,925,190 |
| Total carbon saving in CIAL (2013-2025) | 299,828,592 |
| Grand Total | 338,992,545.3362449 |

*Source: Tables 3.2, 3.3, 3.4 and 3.5, Figures 3.9 and 3.10*

has generated more than 25 crores units of green power from various solar pv installations at the airport. In March 2022, a 12MWp solar plant was inaugurated at payyannur which has generated approximately one crore units of green power.

From the initial investment of Rs 270 crores for solar power project CIAL has generated 54 lakhs units of green power per month which is equivalent to 176,369.76 tonnes of carbon saving till date.

The carbon saving in monetary terms is approximately 30 crore (20*85*176,369.76) (Harris, 2013). It implies that CIAL could recover 11.11% of original cost in terms of the external benefits (30/270*100). The monetary value of the residue management carbon saving and resource conservation aur samurai send the table 3.6. The total gain in Monetary terms is around 34 crores.

## 4 Conclusion

In the three institutions under consideration the study examined the institutional level adaptation in the context of climate change. In the case of residue, the major items are food residue, e-residue, hazardous residue, paper residue and furniture residue as far as MG University is concerned. Safe disposal of these generates income to university. Along with the safe disposal method as suggested in European style, university also has resource conservation practice like rain harvesting. Carbon saving acts as a major external beneficial factor in two institutions KMRL (KWML) and CIAL. The total money generated because of institutional adaptation strategies by the selected institutions is around thirty-three crores. This realisation must be a guideline for other public institutions in Kerala as far as institutional adaptation is concerned.

**Appendix I**

| Full Form | Abbreviation |
|---|---|
| School of Environmental Sciences | SES |
| School of Ghandian Thoughts and Development | SGTDS |
| School of Pure and Applied Physics | SPAP |
| School of Letters | SOL |
| School of Behavioral Sciences | SBHS |
| School of International Relations and Politics | SIRP |
| School of Chemical Sciences | SCS |
| School of Biosciences | SBS |
| Institute for Integrated Programmes and Research in Basic Sciences | IIRBS |
| School of Management and Business Studies | SMBS |
| School of Computer Sciences | SOCS |
| School of Pedagogical Sciences | SPS |
| School of Tourism Studies | STS |
| School of Physical Education and Sports Sciences | SPESS |
| Directorate of Applied Short Term Programme | DASP |
| School of Distance Education | SDE |
| Department of Lifelong Learning and Extension | DLLE |
| Civil Service Institute | CSI |
| School of Social Sciences | SSS |
| School of Indian Legal Thought | SILT |
| Inter University Centre for Organic farming and Sustainable Agriculture | IUCOFSA |
| Inter University Centre for Biomedical Research and Super Specialty Hospital | IUCBR &SSH |
| K. N. Raj School of Economics | KNRSE/KNRC |

residue and value addition process in MG University, Kottayam. However, errors if any, are rest with the authors.

■

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**End Note**

1    Goal 12 is related to ensuring sustainable consumption and production patterns, which is core to sustain the intergenerational livelihoods

2    Data regarding price was collected from scrap shop in kolani, Thodupuzha, Kerala. The Analysis is based on the current price of the scrap. As per the collected information there is no notable fluctuation in the price of these items during the past 3-4 years.

3    In the absence of proper sorting or segregation the scrap dealers follow a policy of a 'distress price' (alarmingly low price generally). In this context the university would have got a few thousands (approximately 5000 to 6000). However, the university earns a huge amount because of segregation (see Figure 2.2) of the mentioned residues.

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GULATI INSTITUTE OF FINANCE AND TAXATION

# Unpaid domestic labour and time allocation: A comparative analysis of employed and unemployed women in ernakulam district

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## Abstract

*Household labour, which is often regarded as 'invisible work' is a vital, yet, an underestimated component of economic activity in a country. Applying Becker's time allocation concept, this paper inspects how employed and unemployed women allocate their time between paid work in the job market and unpaid household duties and their leisure time, uses replacement cost approach to value the activities and captures the extent of their known male participation in household chores. The study found that on average, the total women respondents spend around eight hours of their time in household work, with non-working women respondents devoting only about an additional 16 minutes of their time to household work than their counterparts. Younger women are overburdened with household chores without receiving much help or support when compared to the older women. Education-wise analysis highlights that regardless of the level of education of women, ultimately, the responsibility of unpaid household work primarily fall on them. Another significant finding is that working women enjoy less leisure time than their counterparts while around 26 per cent working women reported to have no leisure time, including lesser sleeping time. The involvement of men in household work is evidently minimal.*

**Keywords:** *Domestic Work, Time, Working, Non-Working, Allocation, Unpaid, Women*

## Introduction

Unpaid domestic work[1], be it household work, childcare or elderly care, disproportionately and inevitably falls on women alone, particularly in developing nations (Ferrant et al., 2014; Singh & Pattanaik, 2020; UN Women, 2019, 2020).

Social norms, which are informal rules and shared beliefs governing societies, often prescribe domestic chores as expected behaviour based on gender and familial relations, which are termed as gender norms. This gravely impacts women's bargaining power in the families, especially

when they are married and have young children. Married women worked two to three times more than single women while they do intense domestic work when they have young children (UN Women, 2019). In effect, unpaid domestic work by women provides a transfer of hidden subsidies to others in the society placing a lifelong invisible time-tax upon themselves (Antonopoulos, 2008; UN Women, 2020).

Over the past decades, rising women's education, falling fertility rates and transformations in aspirations and social norms have supported women to step into the labour market. However, women entering the labour market are still expected to do a major share of domestic work and is yet to be offset by an increase in men's contribut9ion to unpaid work. When the sharing of domestic work responsibilities is unequal and sufficient time-saving support system in the form of paid help, daycare facilities, transport systems etc. is unavailable, women work for long working hours relative to men and bearing the dual burden of both paid and unpaid work (UN Women, 2019) leading to time poverty (Rodgers, 2023) especially during the Covid pandemic (Krishna, 2024). Time poverty is the feeling of having substantial amount of work to do, paid or unpaid, but not having sufficient time to do it (Trupia et al., 2024). Spending more time in either paid or unpaid activities results in less time for leisure leading to higher time poverty (Wodon & Bardasi, 2006). In addition, this twin burden affects the type and quality of paid work opportunities leading to jobs in low-paid informal sector (Ferrant et al., 2014; UN Women, 2020).

In global context, women do three times more unpaid domestic work than men and this gender disparity vary across nations, with predominant disparity in developing nations and not so evident, but still existent in advanced nations (UN Women, 2019). Women in East and South-East Asia, Europe and North America spend the least amount of time in household chores (3.6 - 3.8 hours per day) whereas women in Central and South Asia, North Africa and West Asia spent a substantial amount of time in domestic work (five hours per day) (Hanna et al., 2023). The lower gender gap in advanced nations is because firstly, men are found to allocate their time, though not fair share, in less routine household chores such as grocery purchase and house repair works (Ferrant et al., 2014; UN Women, 2019). Handling less feminine activities like running errands, washing vehicles etc. are observed among men in Kerala (Krishna, 2024). Secondly, modern technology in the form of consumer appliances and outsourcing of domestic work to paid workers have reduced the unpaid work responsibility of women in such nations (UN Women, 2019). However, outsourcing of domestic work is unaffordable to many women around the globe leaving them with no option but to do it themselves (Ferrant et al., 2014).

Women's work has drastically changed in the Indian economy and even in this contemporary era, women's unpaid job has only escalated, with no recognition or redistribution of work in the society (Sengupta, 2016; Singh & Pattanaik, 2020). The Time Use Survey 2024 reported women's participation in unpaid household production to be 84 per cent

and that of men to be 46 per cent. However, in paid activities, men obviously stand at the forefront with 61 per cent while women's participation being only 21 per cent. Compared to the Time Use Survey in 2019, in 2024, men's participation shows a negligible increase in the unpaid activities by two per cent, from 44 per cent in 2019 to 46 per cent in 2024, whereas, unsurprisingly, women's participation in unpaid work remains the same at 84 per cent in both the surveys (Ministry of Statistics and Programme Implementation, 2024). Urban Indian women employ extra time in domestic work in comparison to rural women, though the difference is narrowing down. Age serves as an indicator of women's collective experiences over time in terms of social roles such as wife, daughter-in-law, mother and other such roles. The prevalence of domestic work is higher among Indian women in the 25 - 34 age category. Interestingly, educated women's participation in unpaid work in the country has increased (Sengupta, 2016; Singh & Pattanaik, 2020), especially in urban areas which can be attributed to low opportunity costs of unpaid work in the economy. Since the dual burden may land women in low-paid informal sector jobs, it restricts educated women from choosing to go for paid work (Singh & Pattanaik, 2020). In Kerala, substantial gender skewness specifically in cooking and childcare responsibilities is prevalent among working parents of middle and upper-middle class families (Krishna, 2024). Thus, irrespective of whether women are employed or unemployed, the average time spent on household chores remained the same (Sengupta, 2016).

The significant works on unpaid care labour focusses on gender disparity, influence of socio-economic and demographic factors, opportunity cost of unpaid labour, male participation in domestic work and distribution of time allocation of household work by women in the global and national context. However, focus on these same aspects exclusively based on the employment status of women is limited, particularly in Kerala, the State with the highest literacy rate and sex-ratio. Thus, a micro-level study is conducted to understand the time allocation by employed and unemployed women in Kerala for domestic care activities and examine the extent of their invisible contribution to economy in monetary terms, alongside the impact of socio-economic factors and men's participation. For this purpose, the following objectives are formed:

- To study the socio-economic influences on time allocation to the distribution of various household chores by women based on their employment status.

- To understand the extent of contribution by men in domestic activities.

**Research methods**

Ernakulam district, Kerala's highest urbanized district, is chosen as the study area as the district has the highest urban female population of 11.33 lakhs and also leads in private-sector female employment, as per the Population Census (2011).

Married women with children do intense domestic work as observed in UN Women (2019). Hence, to examine the dual burden of waged and non-waged work, 'married women with children' is purposively selected as the criteria to deeply examine the extent of burden borne by them, thus, purposive sampling technique is used. However, since data on married women with children is unavailable, the available data on the age-wise classification of the number of married women is taken from Population Census (2011) (Table 1). A proportional quota sampling is used to select sample women respondents. The overall married women population in Ernakulam constitutes 9,05,242. With 95 per cent confidence interval, the sample size calculated comes to 384 women respondents. However, due to temporal constraints, 26 per cent of the sample size, constituting to 99.84 (rounded-off to 100), is proportionately selected from the age-wise data classification of married women. Respondents aged 19 years and below are not considered in the study. The values and the decimals are rounded-off to the next even number, raising the sample size to 102 women respondents and is equally divided to collect data specifically from working and non-working women(Table 1).

Primary data is collected from working and non-working married women with children using a structured schedule. Secondary data sources such as research papers from journals such as The Economic Journal and Palgrave Communications, global reports such as International Labour Organisation and

**Table 1:** Sample Size Distribution of Total Women and Married Women Population in Ernakulam

| Age (in years) | Total women | Total married women | % of Married Women* | Proportionate Sample* | Round off* | Sample size rounded-off to the next even number* | Working Women* | Non-Working Women* |
|---|---|---|---|---|---|---|---|---|
| < 15 | 339572 | 1724 | 0.19 | - | - | - | - | - |
| 15-19 | 110996 | 7293 | 0.81 | - | - | - | - | - |
| 20-24 | 114746 | 51150 | 5.65 | 5.65 | 6 | 6 | 3 | 3 |
| 25-29 | 121550 | 103534 | 11.44 | 11.44 | 11 | 12 | 6 | 6 |
| 30-34 | 122574 | 113802 | 12.57 | 12.57 | 13 | 14 | 7 | 7 |
| 35-39 | 138147 | 128538 | 14.20 | 14.20 | 14 | 14 | 7 | 7 |
| 40-44 | 135936 | 123582 | 13.65 | 13.65 | 14 | 14 | 7 | 7 |
| 45-49 | 129572 | 112931 | 12.48 | 12.48 | 12 | 12 | 6 | 6 |
| >50 | 448297 | 262688 | 29.02 | 29.02 | 29 | 30 | 15 | 15 |
| Total | 1661390 | 905242 | 100 | 99 | 99 | 102 | 51 | 51 |

*Source: Population Census (2011);\*Calculated by the author*

United Nations Women, working papers and internet sources are used for reviewing literature and to form a robust background of the study. The statistical tools used for analysis of the collected data are percentage, descriptive statistics, correlation, chi-square test of independence, Kruskal-Wallis and Mann-Whitney U test. The data is analysed using JASP and SPSS 25 and graphical representation using MS-Excel.

There are two methods to measure the monetary value women devote to domestic work: the opportunity-cost approach and the replacement-cost approach. Opportunity cost approach takes into account the market wage rate of the individual's paid work and considers it as the foregone earnings for the time allotted for unpaid domestic work. Replacement cost approach takes into account the cost of hiring an actual housemaid for doing the domestic chores to value the time devoted by the individual to unpaid domestic work (Miranda, 2011). In the present study, the replacement-cost approach is used to measure the cost of the time devoted by employed and unemployed women in the study area towards household chores. Using Becker's time allocation concept, the total available time (24 hours) is divided into three: time spent in household production, time spent in labour force and leisure which includes sleeping time (Becker, 1965; Chiappori & Lewbel, 2015) and the respondents are asked the time they allot to each aspect in a day. Kerala government in 2016 revised the minimum wage rate of domestic workers in the State, assuming working for 26 days a month (Labour and Skills (E) Department, 2016), which is presented in Table 2. Only the household works mentioned in Table 2 and its respective minimum wage rates are considered for calculation of unpaid work of women respondents in the present study, as these are the major chores reported to be performed by women in the households (Table 2).

**Table 2:** Revised Minimum Wages for Domestic Workers in Kerala (for 26 working day/month)

| Work | For 1 hour / day (in Rs.) | For Subsequent hours per day (in Rs.) | For 8 Hours a day (in Rs.) | Monthly Wages (in Rs.) |
|---|---|---|---|---|
| Washing clothes | 37.5 | 22.5 | 195 | 5070 |
| Washing vessels | 37.5 | 22.5 | 195 | 5070 |
| Cleaning house | 37.5 | 22.5 | 195 | 5070 |
| Childcare | 38.25 | 23.25 | 201 | 5226 |
| Elderly care | 38.25 | 23.25 | 201 | 5226 |
| Cooking food | 39.75 | 24.75 | 213 | 5538 |
| TOTAL | 228.75 | 138.75 | 1200 | 31200 |

*Source: Labour and Skills (E) Department (2016)*

**Results and discussions**

Regarding the socio-economic background of the respondents (Table 3), the study shows a balance across the age-wise classification as proportional quota sampling based on age is taken. The average age of the respondents is 40.74 years. Education-wise analysis among the respondents show that highly educated women are employed while less educated remain unemployed. A chi-square test of independence shows statistically significant relation between education level and employment status of women (Rs.2 = 10.737, df = 1, p = 0.001) with an odds ratio of 0.244 indicating that women with lower level of education are 0.244 times less likely to be employed than their counterparts, significant at 1 per cent. Of the working women, around 73 per cent women respondents are employed in the informal sector with private jobs or small businesses, of which, around 60 per cent earn a monthly income below Rs. 40,000 which reflects the observation in the study by Ferrant et al. (2014) and UN Women (2020) that the dual burden affects the type and quality of paid work opportunities. Around two-thirds of the working women respondents earn a monthly income between Rs. 20,000 to 60,000 which shows that majority belong to the middle-class population (Table 3).

Majority of the women respondents have 1 - 2 children. Though more than two-fifths of the total respondents receive help from family for household work, employment-wise analysis shows that more than two-fifths of the non-working women handle household work alone compared to their counterparts, while working women have relatively more family support and paid help for household work. Thus, outsourcing of domestic work though reduces the work burden as reported in UN Women (2019), it emanates as an affordable option comparatively for lesser number of women as reported in Ferrant et al. (2014).

**Socio-Economic influences on time allocation for domestic work by women**

Around 70 per cent women respondents reported to allocate 5-10 hours of their total time in domestic work per day. The average time spent by the women respondents for household production is eight hours and 12 minutes. Figure 1 and 2 shows the age-wise and education-wise categorization (based on mean age and years of education) of total time expended by the women respondents in domestic work, which clearly showcases that more women aged 41 years and above (80 per cent) and those with below graduate level of education (74 per cent) spend 5-10 hours a day on household chores than their counterparts. However, the age-wise and education-wise difference is substantial when it comes to spending more than 10 hours of their time for domestic duties. More than one-third of the women respondents aged below 41 years (Figure 1) and more than one-fourth of the respondents with graduation and above level of education (Figure 2) spent more than half of their day on domestic work compared to their counterparts.

Time spent by women on household activities based on age-wise classification was normally distributed for under 41 years of age (Shapiro-Wilk Test with

**Table 3:** Socio-Economic Profile of the Respondents

| Variables | Categories | Employed Women | Unemployed Women | Total |
|---|---|---|---|---|
| Age Group | 20-24 years | 3 (5.9) | 3 (5.9) | 6 (5.88) |
| | 25-29 years | 6 (11.8) | 6 (11.8) | 12 (11.76) |
| | 30-34 years | 7 (13.7) | 7 (13.7) | 14 (13.73) |
| | 35-39 years | 7 (13.7) | 7 (13.7) | 14 (13.73) |
| | 40-44 years | 7 (13.7) | 7 (13.7) | 14 (13.73) |
| | 45-49 years | 6 (11.8) | 6 (11.8) | 12 (11.76) |
| | Above 50 years | 15 (29.4) | 15 (29.4) | 30 (29.41) |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Qualification | Primary | 0 (0) | 4 (7.8) | 4 (3.92) |
| | Secondary | 2 (3.9) | 10 (19.6) | 12 (11.76) |
| | Higher Secondary | 1 (2) | 8 (15.7) | 9 (8.82) |
| | Diploma | 8 (15.7) | 5 (9.8) | 13 (12.75) |
| | Graduation | 18 (35.3) | 17 (33.3) | 35 (34.31) |
| | Post-Graduation | 10 (19.6) | 4 (4) | 14 (13.73) |
| | Professional Degree | 12 (23.5) | 3 (5.9) | 15 (14.71) |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Occupation | Government | 14 (27.5) | No Occupation | |
| | Private | 26 (51) | | |
| | Business/ Self-employed | 11 (21.5) | | |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Monthly Income of the Respondent | Below Rs. 20,000 | 11 (21.6) | No Income | |
| | Rs. 20,000 - 40,000 | 19 (37.3) | | |
| | Rs.40,000 - 60,000 | 14 (27.4) | | |
| | Rs.60,000 - 80,000 | 4 (7.8) | | |
| | Rs. 80,000 & above | 3 (5.9) | | |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Religion | Hindu | 24 (47.1) | 20 (39.2) | 44 (43.14) |
| | Christian | 20 (39.2) | 15 (29.4) | 35 (34.31) |
| | Muslim | 7 (13.7) | 16 (31.4) | 23 (22.55) |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Family Type | Nuclear | 34 (66.7) | 27 (52.9) | 61 (59.8) |
| | Joint | 17 (33.3) | 24 (47.1) | 41 (40.2) |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Number of Children | 1-2 children | 40 (78.4) | 37 (72.55) | 77 (75.49) |
| | Three & above | 11 (21.6) | 14 (27.45) | 25 (24.51) |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |
| Assistance for Household Work | No Help | 16 (31.4) | 23 (45.1) | 39 (38.24) |
| | Paid Help | 11 (21.6) | 7 (13.7) | 18 (17.65) |
| | Help from Family | 24 (47.1) | 21 (41.2) | 45 (44.12) |
| | TOTAL | 51 (100) | 51 (100) | 102 (100) |

*Source: Primary Data, 2025; % in brackets*

**Figure 1:** Age-wise Percentage of Women allocating their Time for Domestic Work
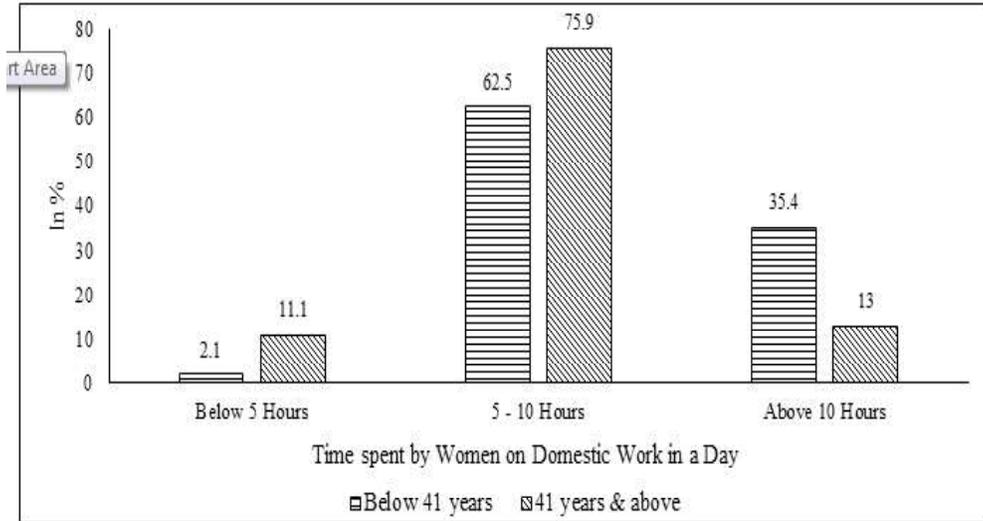


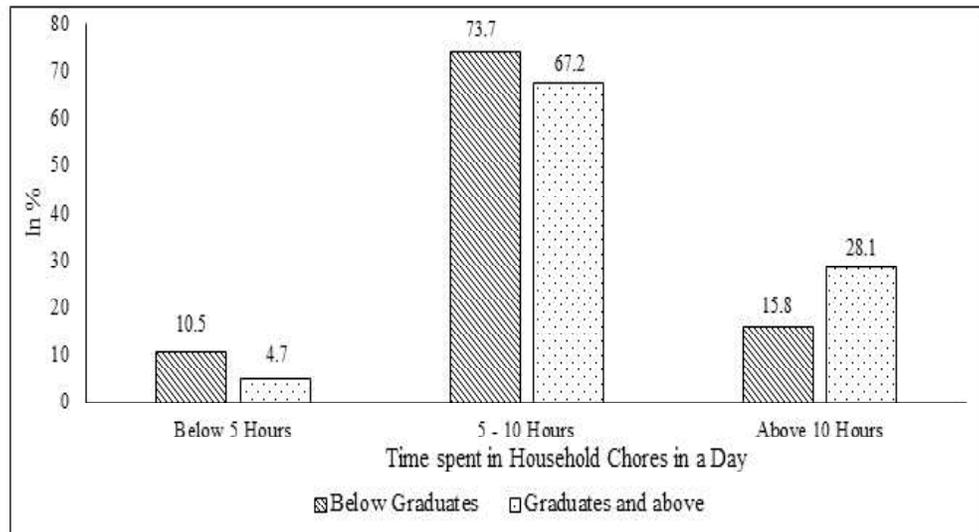*Source: Primary Data, 2025*

**Figure 2:** Education-wise Percentage of Women allocating their Time for Domestic Work



*Source: Primary Data, 2025*

statistic = 0.978, df = 48, p = 0.511) but was not normally distributed for the age category of 41 years and above (statistic = 0.915, df = 54, p = 0.001). So, a Mann-Whitney U test conducted found that there is a significant difference in the time spent on household chores by women based on their age with U = 712, Z = -3.928, p = 0.000 and the mean ranks also exhibits major difference with women under 41 years of age having a higher mean rank of 63.67 and the women aged 41 years and above with a mean rank of 40.69.

In terms of education, the distribution of time spent by women on household activities was not normally distributed for those with graduation and above level of education (Shapiro-Wilk Test with statistic = 0.962, df = 64, p = 0.047) but was normally distributed for those with an education level below graduation (statistic = 0.950, df = 38, p = 0.086 for 41 years and above). So, a Mann-Whitney U test conducted found that there is a no significant difference in the time spent on household chores by women based on their level of education with U = 981, Z = -1.632, p = 0.103 and the mean ranks though exhibits that women with graduation and above level of education do more household chores on average with a mean rank of 55.17 than their counterparts with a mean rank of 45.32, the difference is not statistically significant. This finding throws light on the stark reality that irrespective of women's level of education, the burden of household responsibilities falls upon them. When age is considered, younger women were more prone to spending huge amount of time on domestic work than older women (Table 4(a) & (b)).

Age-wise analysis of the average time spent by working and non-working women in household chores (Table 4a and 4b) shows that working women below 41 years of age allotted nine hours and nine minutes of their time, on average, in a day for household work while working women aged 41 years and above spend only seven hours and 11 minutes a day for household chores. It means that younger working women spend around two additional hours of their time on household duties. Similar time allocation can be observed among non-working women based on age-wise analysis (Table 4b). Non-working women below 41 years of age spend, on average, one hour and 27 minutes more of their time on household work than the non-working women aged 41 years and above (Table 4b). Hence, age-wise analysis showcases that younger working women are loaded with the twin burden, along with shouldering only unpaid work burden by younger non-working women relative to older working and non-working women. This can be due to more childcare responsibilities borne by younger women while more family or other help received by older women.

**Influence of women's employment status on time allocation on various household activities**

Working women spend an average of around eight hours and four minutes in unpaid work while their counterparts spend around eight hours and 20 minutes in unpaid work (Table 5), which means, that the non-working women respondents are devoting only about an additional 16 minutes of their time to household work

**Table 4(a):** Age-wise Analysis of Time Spent by Working Women Respondents in a Day (in Hours)

| Variables (N = 51) | Below 41 years | | | | 41 years & above | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Minimum | Maximum | Mean | Std. Deviation | Minimum | Maximum |
| Time spent on Unpaid Work | 9.15 | 2.25 | 4.50 | 14.00 | 7.18 | 1.93 | 4.50 | 12.00 |
| Time spent on Paid Work including travelling to workplace | 8.70 | 1.16 | 7.00 | 12.00 | 8.09 | 1.41 | 4.17 | 10.50 |
| Time spent for Sleeping | 7.25 | 0.85 | 5.30 | 9.00 | 7.27 | 0.93 | 5.00 | 9.00 |
| Time spent for Leisure | -1.10 | 2.07 | -5.83 | 2.70 | 1.46 | 2.44 | -3.30 | 6.95 |

**Table 4(b):** Age-wise Analysis of Time Spent by Working Women Respondents in a Day (in Hours)

| Variables (N = 51) | Below 41 years | | | | 41 years & above | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Minimum | Maximum | Mean | Std. Deviation | Minimum | Maximum |
| Time spent on Unpaid Work | 9.08 | 2.27 | 5.50 | 15.00 | 7.63 | 2.54 | 4.50 | 14.00 |
| Time spent on Paid Work including travelling to work | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Time spent for Sleeping | 7.69 | 0.74 | 6.00 | 9.00 | 7.53 | 1.08 | 5.30 | 10.00 |
| Time spent for Leisure | 7.23 | 2.34 | 2.70 | 11.70 | 8.83 | 2.11 | 3.00 | 12.20 |

*Source: Primary Data, 2025; categorised based on mean age of 40.74 years*

than their counterparts who have double the burden of bearing the work in labour market as well. Regarding sleeping time, the working women, on average, gets a sleep of seven hours and 16 minutes while their counterparts receive seven hours and 37 minutes of sleep, that is, a meagre 21 extra minutes of sleep. This shows the time poverty prevalent among women, particularly the working women as cited in Wodon & Bardasi (2006) (Table 5).

The total time spent by working and non-working women on household activities were not normally distributed (Shapiro-Wilk Test with statistic = 0.959, df = 102, p = 0.003). A Mann-Whitney U test showed that there is no significant difference in the total time spent on household chores based on the respondents' employment status with U = 1233, Z = -0.453, p = 0.650 and the mean ranks also exhibits minor

difference with working women having a mean rank of 50.17 and the non-working women with a mean rank of 52.82. This finding displays that irrespective of women's employment status, the burden of household responsibilities is borne by them.

Table 6 showcases the distribution of various household work performed by the women respondents. It displays that there is no difference in the minimum and maximum amount of time spent by both salaried and non-salaried women in terms of cooking food and cleaning the house, though significant difference can be seen in average time expended for cooking among both the categories of women. For other household activities like washing clothes, children and elderly care, the maximum and the average time spent time by both categories of women is not much different. This finding corroborates with

**Table 5:** Total Time spent by Women Respondents in a Day based on Status of Employment (in Hours)

| Time spent on Various Unpaid Activities | Working Women (N = 51) | | | | Non-Working Women (N = 51) | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Minimum | Maximum | Mean | Std. Deviation | Minimum | Maximum |
| Time spent on Unpaid work | 8.06 | 2.28 | 4.5 | 14 | 8.34 | 2.49 | 4.5 | 15 |
| Time spent on paid work including travel time | 8.36 | 1.32 | 4.17 | 12 | - | - | - | - |
| Time spent for Sleeping | 7.26 | 0.88 | 5 | 9 | 7.61 | 0.91 | 5.3 | 10 |
| Time spent for Leisure | 0.30 | 2.59 | -5.83 | 6.95 | 8.04 | 2.34 | 2.7 | 12.2 |

*Source: Primary Data, 2025; categorised based on mean age of 40.74 years*

the findings of Krishna (2024) wherein gender skewness in cooking is widely observed in Kerala context (Table 6).

More than half of both working and non-working women had either paid help or help from family members in doing household tasks, though relatively, more of working women are seen to have such assistance than their counterparts, which could be the reason why the minimum time spent on laundry, childcare and elderly care is zero hours (Figure 3). It is also noted that around 31 per cent working women receive no help of any form for doing household chores.

To examine the difference in the time spent by women in domestic work due to external help received, a Kruskal-Wallis test performed among the three groups: no help received, help from housemaid and help from family members, showed a statistically significant difference with statistic = 6.399 and p = 0.041, indicating

that external help did influence the time spent by women in doing household chores. A post-hoc analysis was conducted using Dunn's pairwise comparisons with Bonferroni and Holm corrections to identify the group showing the difference (Table 7).

A statistically significant difference with z = -2.524 and p = 0.012 is found between paid help received and help received from family, with moderate effect, which indicates that women receiving external help from a maid are spending significantly lesser time in doing domestic work in relation to those receiving help from family members. This implies that outsourcing paid work significantly reduces the time spent by women on domestic chores and this time can be devoted by the women respondents to other activities, including leisure. This finding is similar to the pattern witnessed in advanced

**Table 6:** Employment Status-wise Distribution of Total Time spent on Various Unpaid Work by Respondents (in Hours)

| Household Activities | Working Women | | | | Non-Working Women | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Minimum | Maximum | Mean | Std. Deviation | Minimum | Maximum |
| Cooking | 1.99 | 0.67 | 1.5 | 3.5 | 2.40 | 0.72 | 1.5 | 3.5 |
| Cleaning | 1.55 | 0.23 | 1.5 | 2.5 | 1.65 | 0.36 | 1.5 | 2.5 |
| Washing clothes/ utensils | 1.26 | 0.67 | 0 | 2.5 | 1.43 | 0.54 | 0 | 2.5 |
| Child Care | 0.78 | 1.11 | 0 | 3.5 | 0.98 | 1.25 | 0 | 3.5 |
| Elderly Care | 0.63 | 0.78 | 0 | 2.5 | 0.40 | 0.70 | 0 | 2.5 |
| Miscellaneous | 1.83 | 0.47 | 1.5 | 2.5 | 1.47 | 0.80 | 0 | 2.5 |

*Source: Primary Data, 2025; categorised based on mean age of 40.74 years*

**Figure 3:** Percentage of Working and Non-Working Women receiving Support for Household work
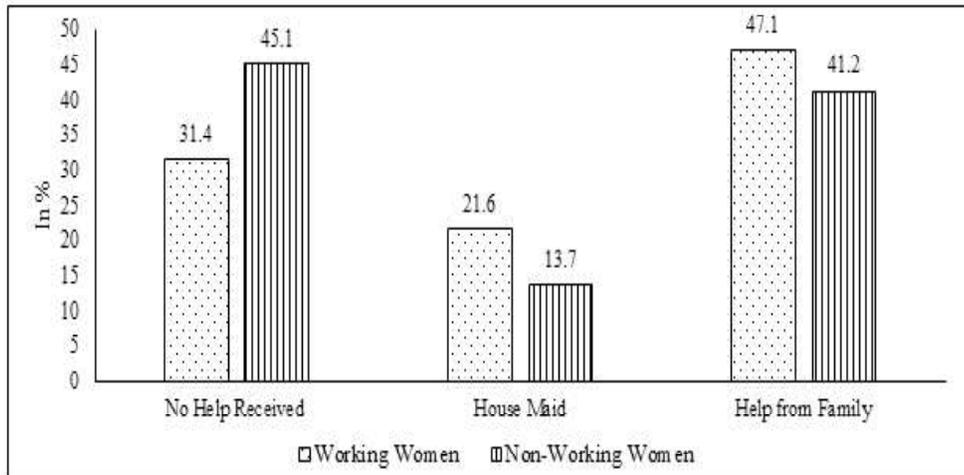


*Source: Primary Data, 2025*

**Table 7:** Dunn's Post Hoc Comparisons

| Comparison | z | Wi | Wj | rrb | p | pbonf | pholm |
|---|---|---|---|---|---|---|---|
| No Help - Paid Help | 1.888 | 52.141 | 36.278 | 0.346 | 0.059 | 0.177 | 0.118 |
| No Help - Help from Family | -0.758 | 52.141 | 57.033 | 0.11 | 0.448 | 1 | 0.448 |
| Paid Help - Help from Family | -2.524 | 36.278 | 57.033 | 0.377 | 0.012 | 0.035 | 0.035 |

*Source: Primary Data, 2025*

nations as reported in (UN Women, 2019), wherein outsourcing domestic work has reduced responsibility of unpaid work among women. However, majority of the working and non-working women reports to have no help or only help received from family members which denotes the reality that outsourcing is not a financially feasible option for all as observed in the findings of (Ferrant et al., 2014)

A significant finding is that zero or negative leisure time was reported by 26 women respondents (25.50 per cent), all of whom were employed (Table 4a). A chi-square test of independence performed between the employment status of the respondents and their leisure time enjoyed revealed a statistically significant with ?2 = 72.143, df = 3, p = 0.000, significant at 1 per cent level. Solely working women having reported zero or negative leisure time indicates the dual burden of compensated and uncompensated work borne by them. However, the socio-economic background of these 26 working women (Figure 4) displays why they do not enjoy any leisure as majority are from nuclear families, and though educated, most of them work in private sector with a monthly income below ?40,000. The highlight is that only 16 per cent of these women have paid help for domestic work, while majority though have stated to have help from family, ultimately, the burden falls upon these women which is why they reported to have zero leisure time. This effectively throws light on the time poverty particularly working women as observed by Wodon & Bardasi (2006).

**Measuring unpaid work of the women respondents in monetary terms**

Kerala government's minimum wage law for domestic workers in 2016 established minimum wages for various domestic works on per hour basis of a day, subsequent hours of the same day, eight hours per day of work and monthly basis (Table 2). Based on the wage rate fixed per first hour of work and subsequent hours of the same day, the mean wage and standard deviation is calculated for the time devoted to domestic chores by the women respondents in the study area and is represented in Table 8. Miscellaneous activities such as noting down home expenses, gardening, tailoring etc. as reported by the women respondents are excluded for ease of calculation (Table 8).

Table 8 shows that on average, a woman engages in Rs.250.55 worth of daily domestic work and Rs.7516.55 worth of monthly domestic work (assuming 30 days a month) in her household in the study area. The average annual contribution per woman towards household production from the study area comes to Rs.91,451.30. The total value of unpaid activities performed by the sample respondents annually comes to Rs.93,28,032.35. This finding highlights the invisible labour and time tax women bear throughout their life as mentioned in Antonopoulos, (2008) and UN Women (2020) (Table 9).

Employment-wise minimum wages calculated for the household work (Table 9) shows that a working woman, on average, engages in Rs.240.47 worth of

**Figure 4:** Socio-Economic Background of the Working Women with Zero/Negative Leisure
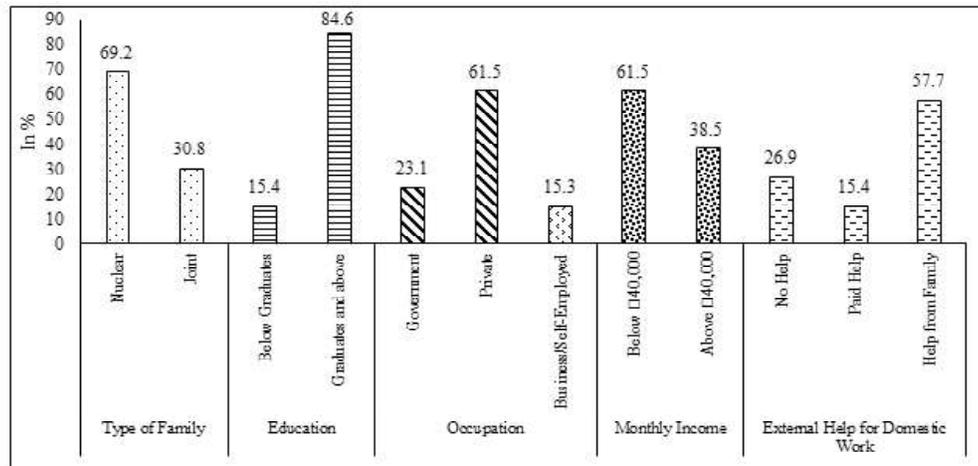


*Source: Primary Data, 2025*

**Table 8:** Wage Rate (in Rs.) for Domestic Work done in a Day by the Respondents as per Kerala Minimum Wage Laws

| Household Activities (N =102) | Mean Wage (in Rs.) | Std. Deviation (in Rs.) |
|---|---|---|
| Cooking | 69.35 | 18.02 |
| Cleaning | 51.17 | 7.01 |
| Washing vessel/clothes | 86.25 | 37.74 |
| Childcare | 26.69 | 34.28 |
| Elderly Care | 17.08 | 24.48 |
| TOTAL | 250.55 | 121.55 |

*Source: Primary Data, 2025*

**Table 9:** Employment-wise Analysis of Wage Rate (in Rs.) for Domestic Work done in a Day by the Respondents as per Kerala Minimum Wage Laws

| Household Activities | Working Women (N = 51) | | Non-Working Women (N = 51) | |
|---|---|---|---|---|
| | Mean Wage (in Rs.) | Std. Deviation | Mean Wage (in Rs.) | Std. Deviation |
| Cooking | 64.26 | 16.69 | 74.45 | 18.02 |
| Cleaning | 50.07 | 5.35 | 52.28 | 8.26 |
| Washing | 81.03 | 41.79 | 91.47 | 32.80 |
| Childcare | 24.12 | 32.56 | 29.26 | 36.07 |
| Elderly Care | 20.99 | 25.54 | 13.17 | 22.96 |
| TOTAL | 240.47 | 121.93 | 260.63 | 118.11 |

*Source: Primary Data, 2025*

unpaid domestic work while a non-working woman engages in Rs.260.63 worth of unpaid domestic work in a day in her household in the study area. Monthly value of household work contributed by a working woman is Rs.7214.12 and by a non-working woman is Rs.7818.97. A Mann-Whitney U test performed between the employment status and calculated wages of various household work indicates that non-working women spend more time in cooking than working women (U = 895.500, Z = -2.953, p = 0.003) while both salaried and non-salaried women spend almost similar amount of time for other domestic works. This is similar to the finding in Table 6.

**Men's Participation in Domestic Work in the Study Area**

When the respondents were asked about the male participation in domestic chores, more than half of the women responded that the men in their household occasionally help them in domestic work, while 19 per cent stated the men in their home help them daily in domestic works (Figure 5). Close to half of the salaried women and more than half of the non-salaried women responded that the men in their homes occasionally help them in domestic work. Nearly one-fourths of the non-working women informed daily help from men in domestic work compared to only 14 per cent working women reporting daily help from men, which display the everyday struggle working women have to go through to balance the dual work at home and workplace.

The respondents informed that men aided them in chores such as cooking, cleaning house, washing vehicles, gardening, child care, chopping vegetables and fish, repairing electrical equipment etc. Though men are engaging in some domestic chores, the unequal distribution of invisible care work between men and

**Figure 5:** Male Participation in Domestic Chores as reported by Women Respondents (in %)
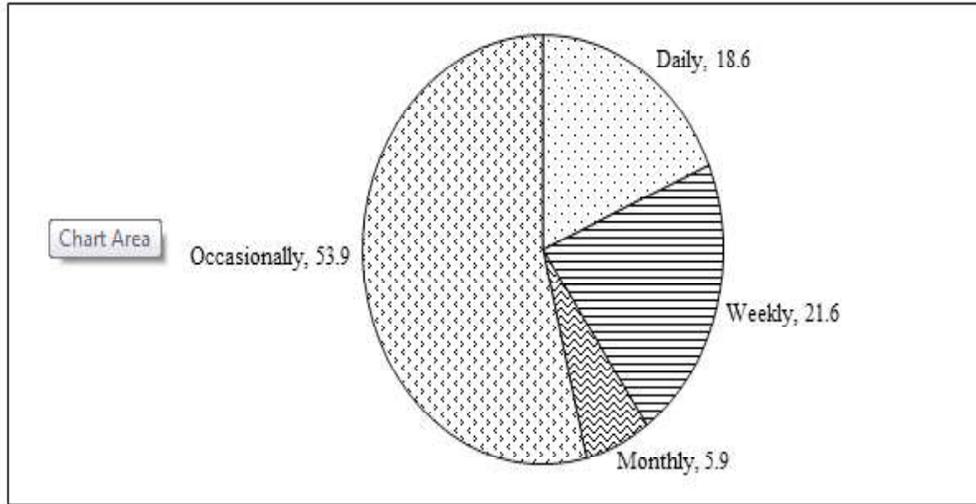


*Source: Primary Data, 2025*

**Figure 6:** Male Participation in Domestic Chores as reported Women Respondents based on their Employment Status (in %)
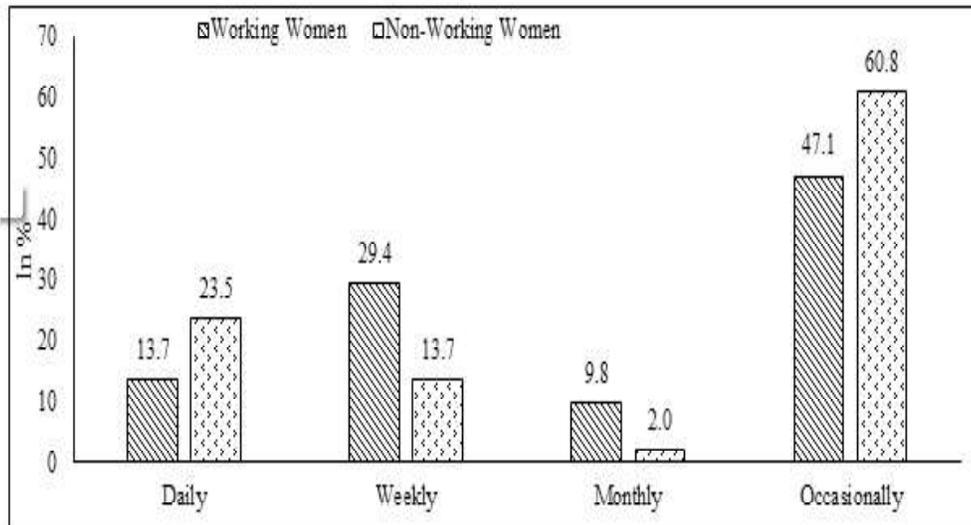


*Source: Primary Data, 2025*

women is evident in this micro-level study, as majority of both working and non-working women reports only occasional help from men as reported in UN Women (2019).

## Conclusion

The present study underscores the firm gender inequalities in unpaid domestic work showcasing that women entering the labour market does not lighten the household burden rather aggravates it with the dual drudgery of both visible paid and invisible unpaid work. Though non-working women devote slightly more time to domestic work than working women, the latter category experiences increased time poverty with reduced leisure and sleep. Younger women bear a heavier workload than older women in household chores highlighting shouldering of childcare responsibilities by them. Despite higher education levels, male participation remains limited and ultimately points toward the unsurprising fact that women's responsibility at home still remain unchanged. Outsourcing domestic work may largely help women's heavy workload, however, financial constraints restrict this option for many women. Future research can explore the impact of unpaid domestic work on women's physical and mental well-being, especially in households with greater caregiving demands.

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## End Notes

1   The work carried out without any remuneration to sustain the well-being, health and maintenance of members in a household, including daily chores (International Labour Organization, 2018).

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GIFT GULATI INSTITUTE OF FINANCE AND TAXATION

# Fiscal prudence and states' development: Which way now?

K.J Joseph, Sumalatha B S, Nirmal Roy V P

**Abstract**

*This paper examines the Fiscal Health Index 2025 published by the NITI Aayog and attempts to connect the fiscal health of the states with their overall development. If the Indian states consider fiscal prudence as an end in itself and follow the best practices of the achievers to be fiscally prudent then Vikasit Bharat is likely to remain as a distant dream. An integrated index that combines fiscal health and development indicators is crucial for addressing broader development goals of the State and the country.*

When India is aspiring to become a developed economy by 2047, the NITI Aayog has come up with a Fiscal Health Index (FHI) 2025 of Indian States for the financial year 2023 with a view to promote best practices among the States. The index, however, breeds a paradox. The States with relatively higher development outcomes are ranked low in fiscal indicators, while less developed States are the top performers in terms of fiscal prudence. The key issue is; whether India will be developed economy in 2047 if the States are to take the FHI seriously and follow the best practises that it highlight. A deeper examination of the relevance of the analytical foundations of FHI for a developing country like India and a more nuanced understanding of the interplay between fiscal health and development outcomes is called for.

**The pillars and performance**

The FHI stands on five pillars; quality of expenditure, revenue mobilization, fiscal prudence, debt and debt sustainability. The quality of expenditure is measured using the ratio of total developmental expenditure to total expenditure and the ratio of total capital outlay to Gross State Domestic Product (GSDP). While the revenue mobilisation is measured using the ratio of States own revenue to GSDP and ratio of States own revenue to total expenditure, the ratios of gross fiscal deficit to GSDP and revenue deficit to

GSDP are the indicators used for fiscal prudence. The debt index is estimated using the ratio of interest payments to revenue receipts and the ratio of outstanding liabilities to GSDP. The difference between the growth rate of GSDP and interest payments is the indicator used for debt sustainability.

FHI divided the 18 major States into four cohorts based on their rank in terms of fiscal performance; achievers, front runners, performers and inspirational States. States such as Odisha, Chhattisgarh, Goa, Jharkhand and Gujarat, holding top ranks, are achievers. Maharashtra, Uttar Pradesh, Telangana, Madhya Pradesh and Karnataka are the front runners. While, Tamil Nadu, Rajasthan, Bihar and Haryana are ranked as performing States, the bottom four States Kerala, West Bengal, Andhra Pradesh and Punjab are diplomatically denoted as inspirational States. With a close look at the rank and the grouping one wonders whether the grouping of States itself has been arbitrary. Maharashtra with an index score of 50.3 has been included in the group with lower than 45.9 instead of including in the group of achievers along with Gujarat with an index score for 50.5. Similarly, Kerala with an index score of 25.4 has been included among inspirational States with index score lower than 21.8 instead of including in the group with Haryana having an index of 27.4. Each of these States performed differently in these five the pillars. For example, Chhattisgarh has high rank in quality of expenditure and fiscal prudence, but it lags in the debt index. Similarly, Uttar Pradesh rank high in debt index and debt

sustainability but its performance is poor in revenue mobilisation.

The report also presents a picture of State level performance over time by comparing their average rank during 2014-15 to 2021-22 and 2022-23. During both time points Orissa retained the top position and the States like Chhattisgarh, Jharkhand and Rajasthan have improved their rank at least by two positions. Hence these four States may be termed as sustained performers of which all the States, except Rajasthan, belong to the group of achievers.

**Fiscal health versus development**

A key concern in the context of aspirational India is the clear mismatch among the States in terms of fiscal prudence and developmental outcomes. It is evident except Goa all the four achievers have displayed a poor show with respect to their accomplishments in terms of Human Development Index (Fig 1). At the same time among the bottom five, termed as inspirational States, three of them turns out to be truly inspirational on account of their outstanding human development performance. This paradox raises the question as to why the States with higher human development have higher deficits and debt, while the fiscally prudent ones display poor development performance. Evidently, the present fiscal stress of the inspirational States cannot be delinked from their past investment in human development leading to higher committed expenditure at present. They need to adopt strategies to strengthen their productive sectors by harnessing their human development and improve their tax base while rationalising expenditure where ever

possible. Experience of achievers indicates that fiscal prudence need not necessarily translate into development outcomes. Instead of taking pride in revenue surplus and maintaining fiscal deficit even lower than the FRBM level, while people go hungry, homeless and remain illiterate, these States must embark on higher public expenditure and improve their spending capacity to ensure that they contribute to the national vision of a Vikasit Bharat. Economic history teaches us that development went hand in hand with higher public expenditure. In the OECD countries, for example presently the general government expenditure is as high as 59% of the Gross Domestic Product (GDP) in France and the lowest being 24.4% in Ireland.

**Fiscal health of states: Means or an end?**

Within the fiscal federal context of India where the States shoulder about two-third of the general government expenditure and collect only about one-third of the revenue, the expenditure by the States is contingent on the devolution from the Union government. It is to be noted that in 2022-23 the central transfers accounted for 40.7%, 48.5%, and 52.7% of the total revenue receipts respectively of the achievers like Odisha, Chhattisgarh and Jharkhand indicating the role of devolution in their fiscal performance. When it comes to poor fiscal performers like Kerala and Haryana, their share in devolution was at a lower level of 34.4% and 19.6% respectively. The fiscal stress of

**Figure 1:** Plot on Fiscal Health Index ranking and Human Development Index ranking
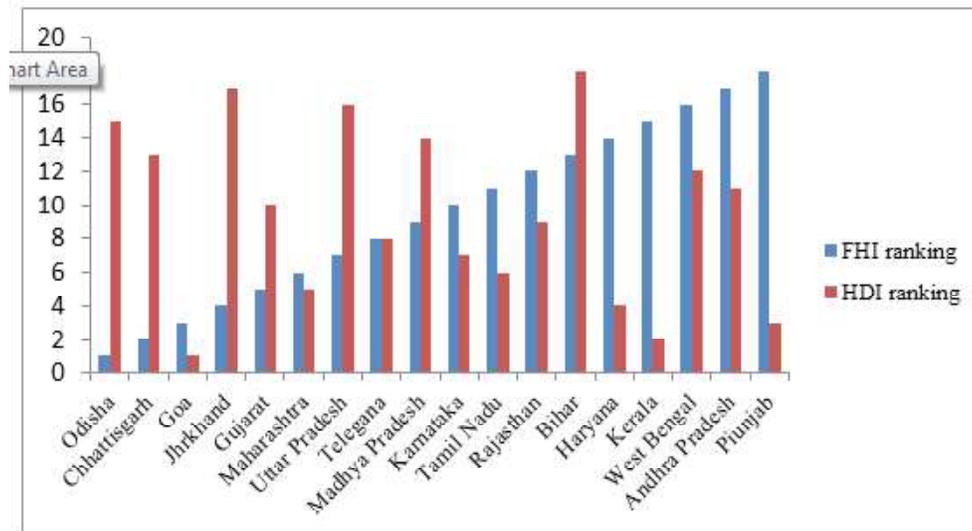


*Source: Authors construction using Fiscal Health Index report 2025 and Human Development Index report 2022*

Punjab cannot be delinked from their specialisation in non-taxable agriculture that brought food security to the country. Kerala specialised in non-taxable human resources by which the country benefitted inter alia through remittances. On the whole, if the Indian States consider fiscal prudence as an end in itself and follow the best practices of the achievers to be fiscally prudent Vikasit Bharat is likely to remain as a distant dream. An integrated index that combines fiscal health and development indicators is crucial for addressing broader development goals of the State and the country (Figure 1).

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# Evidence-based financing for Kerala's knowledge economy: Patent metrics for policy reform

Rajesh Many

## Abstract

*This article examines how evidence-based financing strategies can accelerate Kerala's transition to a knowledge-based economy through enhanced production of economically valuable knowledge. Drawing on analysis of 850 patents and comprehensive R&D budget data (2023-2026), we identify strategic opportunities to optimize Kerala's innovation system through targeted resource allocation aligned with demonstrated patent productivity. Despite Kerala's commendable commitment of 0.30% of GSDP to research-exceeding the interstate average of 0.24%-its current research investments show significant potential for improved alignment with patent generation capacity. Our analysis employs the International Patent Classification (IPC) framework to identify established strengths in medical technologies, analytical sciences, and emergent capabilities in digital domains and nanotechnology, providing a foundation for precision investment targeting. We propose a methodological framework for knowledge financing that leverages Kerala's existing institutional structures while enhancing knowledge flows between individual inventors, research institutions, universities, and industry. The framework emphasizes three core strategies: sectoral resource optimization, IPC-focused investment approaches, and institutional reforms that enable self-regulation in knowledge production according to global standards. By implementing these evidence-driven policy reforms, Kerala can effectively convert its outstanding human capital advantages and vibrant grassroots innovation culture into economically valuable unique knowledge, moving beyond reinvention toward frontier innovation. This approach offers valuable insights for regions globally that aim to leverage strong human development foundations for knowledge-driven economic transformation through responsible and strategically focused knowledge production.*

**Keywords:** *Knowledge Economy, Evidence-based Financing, Patent Metrics, Innovation System, International Patent Classification, Research Investment, Knowledge Production, Regional Development, Policy Reform, Kerala*

**JEL Classification:** *O38, O34, O32, R58, H41, I23*

## 1. Introduction

Kerala presents a compelling paradox in India's developmental landscape. The state has consistently achieved exceptional social indicators, with near-universal literacy, high life expectancy, and positive health outcomes that rival developed nations (Parayil, 1996). These achievements have positioned Kerala as a model of human development within the developing world context. However, this social progress has not translated proportionally into economic prosperity, with persistent challenges including limited industrial growth, high unemployment among educated youth, and significant outmigration of skilled workers (Zachariah and Irudaya Rajan, 2012; Thomas, 2005).

As Kerala confronts these economic challenges, policymakers have increasingly emphasized the transition to a knowledge-based economy as a strategic imperative. This emphasis is evident in recent policy documents, including the state's explicit commitment in the 2021-22 Budget to position Kerala as a knowledge economy hub (Government of Kerala, 2021). The introduction of a separate budget document for Research and Development (R&D) expenditure-unprecedented among Indian states-further demonstrates this commitment. Between 2023-26, Kerala has projected an increase in R&D budgetary allocation from `348,244.27 lakhs to `403,935.99 lakhs, representing a 16% growth and constituting approximately 2.13% of total state allocations by 2025-26 (Government of Kerala, 2025).

Despite these substantial investments, empirical evidence suggests a significant gap in translating research expenditure into economically valuable knowledge outputs, particularly as measured by patent applications. Analysis of data from the Department of Science and Technology (2023) and Reserve Bank of India (2021) reveals that Kerala generates only 0.14 patent applications per crore of research expenditure, ranking 13th among 14 major Indian states despite allocating 0.30% of its Gross State Domestic Product (GSDP) to research-higher than the interstate average of 0.24%. This efficiency gap is particularly striking when compared to states like Telangana and Maharashtra, which achieve patent application rates of 1.77 and 0.94 per crore respectively, despite lower proportional R&D investments.

This discrepancy raises fundamental questions about the effectiveness of Kerala's innovation ecosystem and financial allocation strategies. The state has established a comprehensive institutional framework for knowledge production, encompassing research institutions under the Kerala State Council for Science, Technology and Environment (KSCSTE), state universities, specialized R&D centres, and innovation enablers like Kerala Development and Strategic Innovation Council (K-DISC) and Kerala Startup Mission (KSUM). However, the limited conversion of these institutional capabilities into patentable innovations suggests systemic inefficiencies in the research-to-commercialization pipeline.

The central research question this study addresses is: How can Kerala improve its research financing strategies to enhance economically valuable knowledge production, as measured by patent metrics, while leveraging its existing innovation system? This question has both theoretical and practical significance. Theoretically, it interrogates the relationship between public R&D investment and innovation outputs within a regional context characterized by strong human development but limited industrial base. Practically, it addresses an urgent policy concern for Kerala-how to optimize limited fiscal resources to accelerate the transition to a knowledge economy.

The specific objectives of this study are to:

1. Analyse the current structure and performance of Kerala's innovation system through the lens of patent productivity

2. Identify patterns and gaps in knowledge production across different technological domains using International Patent Classification (IPC) metrics

3. Develop an evidence-based framework for targeted R&D financing based on patent efficiency metrics

4. Formulate policy recommendations to enhance the conversion of research investments into economically valuable knowledge outputs

This paper contributes to the literature on regional innovation systems and knowledge-based economic development by providing empirical evidence on the relationship between R&D financing patterns and patent outcomes in the context of a developing region with strong social indicators. It also offers practical insights for policymakers seeking to optimize innovation investments in resource-constrained environments.

The analysis draws on multiple data sources, including detailed R&D budget allocations from the Government of Kerala (2023-2025), patent application (granted) data from the Indian Patent Advanced Search System (inPASS), and institutional mapping of Kerala's innovation ecosystem. This multi-faceted approach enables a comprehensive assessment of both the inputs (financial and institutional) and outputs (patents) of Kerala's knowledge production system, providing a foundation for evidence-based policy reform.

## 2. Literature review

The transition to knowledge-based economies represents a fundamental shift in economic organization, where knowledge becomes the primary driver of value creation and competitive advantage. This section examines the theoretical foundations of knowledge economies, the role of patents as indicators of economically valuable knowledge, frameworks for measuring regional innovation efficiency, and the relationship between R&D financing and patent outcomes.

## 2.1 Theoretical foundations of knowledge-based economies

The concept of knowledge-based economies has evolved from earlier theoretical frameworks on post-industrial society (Bell, 1999) and information economies (Machlup, 1973) to more comprehensive models emphasizing knowledge as the central factor of production (Drucker, 1993; OECD, 1996). Knowledge, unlike traditional factors such as land, labour, and capital, exhibits non-rivalry and potential non-excludability, leading to distinctive economic properties including increasing returns to scale and positive externalities (Romer, 1990; Stiglitz, 1999).

Lundvall and Johnson (1994) categorized economically relevant knowledge into four types: know-what (factual knowledge), know-why (scientific principles), know-how (skills and capabilities), and know-who (social connections). Of these, know-why and know-how are particularly critical for innovation and technological advancement. Powell and Snellman (2004, p. 199) defined the knowledge economy as "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence."

The endogenous growth theory, pioneered by Romer (1986, 1990) and expanded by Lucas (1988) and others, explicitly incorporates knowledge accumulation as the engine of economic growth. In this framework, investments in research, education, and innovation generate knowledge spillovers that enhance overall productivity. Significantly, this theory suggests that appropriate public policies, including R&D investments, can influence long-term growth rates by affecting the rate of knowledge production (Aghion and Howitt, 1992).

For regions like Kerala, the knowledge economy paradigm offers potential pathways to overcome traditional development constraints. Cooke (2001) and Asheim and Gertler (2005) emphasize the importance of regional innovation systems in knowledge-based development, highlighting how localized learning processes and institutional frameworks shape innovation capabilities. Lundvall (1992) and Nelson (1993) further elaborate on how national and regional innovation systems coordinate knowledge flows between universities, industry, and government-the "triple helix" described by Etzkowitz and Leydesdorff (2000).

## 2.2 Patents as indicators of economically valuable knowledge

Patents represent a critical indicator of economically valuable knowledge by conferring temporary monopoly rights in exchange for public disclosure of inventions that meet criteria of novelty, non-obviousness, and utility (Scotchmer, 2006). While patents capture only a subset of knowledge production-specifically, codified, technical knowledge with commercial applications-they provide a standardized, internationally

comparable metric for innovation output (Griliches, 1990; Hall et al., 2001).

The use of patent metrics has a substantial foundation in the economics of innovation literature. Jaffe and Trajtenberg (2002) demonstrate how patent data enable analysis of knowledge flows and spillovers between regions and sectors. Pavitt (1985) established the use of patents to classify technological trajectories and sectoral patterns of innovation. More recently, Lanjouw and Schankerman (2004) developed patent quality indicators that enhance the utility of patent counts as innovation measures.

For developing regions, patents offer particularly valuable insights into technological catch-up processes. Kim (1997) documented South Korea's transition from imitation to innovation through patent analysis, while Hu and Mathews (2005) used patent data to track China's technological trajectory. Furman and Hayes (2004) identify how "innovative capacity" reflected in patenting activity distinguishes innovation leaders from followers among developing economies.

The International Patent Classification (IPC) system provides a standardized taxonomy for categorizing patents according to technological domains. Studies by Schmoch (2008) and WIPO (2017) demonstrate how IPC analysis can reveal specialization patterns and identify emerging technological strengths. For regions like Kerala, IPC analysis offers a lens to assess alignment between research investments and economically valuable knowledge outputs (Abraham and Moitra, 2001).

However, the literature also acknowledges limitations of patents as innovation metrics. Not all innovations are patentable or patented, with sectoral variations in patent propensity (Cohen et al., 2000). Additionally, patent quality varies substantially, and raw counts may obscure important qualitative differences (Harhoff et al., 2003). These limitations necessitate complementary analyses when evaluating regional innovation systems.

## 2.3 Measuring innovation efficiency in regional economies

The concept of innovation efficiency-how effectively inputs such as R&D investments are converted into innovation outputs-has gained prominence in regional science and innovation studies. Furman et al. (2002) introduced the "national innovative capacity" framework, focusing on how structural, institutional, and policy factors influence the productivity of innovation investments. This framework has been adapted to regional contexts by authors such as Fritsch and Slavtchev (2008), who examine how regional characteristics shape innovation efficiency.

Methodologically, several approaches have emerged to measure innovation efficiency. Data Envelopment Analysis (DEA) has been employed by Guan and Chen (2012) to benchmark regional innovation systems using multiple inputs (R&D expenditure, human capital) and outputs (patents, publications).

Stochastic frontier analysis offers an alternative approach, allowing estimation of innovation production functions while accounting for inefficiency (Fu and Yang, 2009).

For developing regions, comparative efficiency analyses provide valuable policy insights. Mathews and Hu (2007) analysed innovation systems across East Asian economies, identifying how institutional configurations explain performance variations in technological catch-up processes. Similarly, Mani (2009) examined knowledge-intensive entrepreneurship across Indian states, highlighting how regional innovation governance affects technological development outcomes.

Recent literature has also emphasized the importance of analysing efficiency at different stages of the innovation process-from research to development to commercialization. Wang and Huang (2007) distinguish between technical efficiency (optimal use of R&D inputs) and commercial efficiency (conversion of innovations into economic value), noting that regions may excel in one dimension while underperforming in another. Their analysis of national innovation systems demonstrates that effective knowledge production requires both technical capability and commercialization mechanisms.

### 2.4 R&D financing and patent outcomes: Evidence and challenges

The relationship between R&D financing and patent outcomes has been extensively studied, with mixed findings regarding linearity, time lags, and contextual factors. Hall et al. (1986) established that R&D expenditures generally correlate with patent production, though with significant sectoral variations. Subsequent research has identified important moderating factors, including institutional quality (Varsakelis, 2006), absorptive capacity (Cohen and Levinthal, 1990), and industry structure (Cincera, 2006).

For public R&D investments specifically, David et al. (2000) review evidence on whether government funding complements or substitutes private R&D, finding heterogeneous effects across contexts. Guellec and Van Pottelsberghe de la Potterie (2003) demonstrate that public R&D can stimulate business R&D under appropriate institutional conditions. These findings suggest that the effectiveness of public research financing depends critically on policy design and implementation.

In developing economies, distinctive challenges affect the R&D-patent relationship. Intarakumnerd et al. (2002) highlight how weak linkages between universities, research institutions, and industry reduce the commercial impact of public research in Thailand. Similarly, Sutz (2000) identifies structural disconnections in Latin American innovation systems that limit knowledge translation. These challenges echo concerns raised by Kurian (1999) about Kerala's industrial ecosystem, where limited absorption capacity may constrain the economic impact of research.

Strategic approaches to R&D financing have emerged as critical for maximizing innovation returns. Foray et al., (2012) and Rusu (2013) advocate "smart specialization" strategies that target investments toward domains where regions possess comparative advantages. Similarly, Mazzucato (2013) argues for "mission-oriented" research funding that directs resources toward specific societal challenges. These approaches suggest alternatives to undifferentiated research subsidies.

For Kerala specifically, limited research exists on the relationship between its R&D investments and patent outcomes. Joseph and Harilal (2001) examine Kerala's industrial innovation capacity but without direct analysis of patent efficiency. More work by Mani (2004, 2013) on India's regional innovation systems provides comparative context, while not focusing specifically on Kerala's budgetary R&D allocation effects.

## 2.5 Research gap and theoretical framework

This review reveals several research gaps this study addresses. First, while substantial literature exists on innovation systems in developed economies, fewer studies examine knowledge translation challenges in regions with strong human development but limited industrial bases. Second, patent efficiency analysis has rarely been applied to state-level innovation systems in India, particularly with attention to budgetary allocations. Third, the use of IPC classifications to guide public R&D

financing represents a novel approach within regional innovation policy.

Drawing on the reviewed literature, this study employs a theoretical framework that integrates elements of regional innovation systems theory (Cooke, 2001), efficiency analysis approaches (Furman et al., 2002), and strategic R&D allocation models (Foray et al., 2012 and Rusu, 2013). This framework posits that optimal knowledge production requires not only adequate financial inputs but also appropriate institutional arrangements, strategic prioritization based on regional capabilities, and policies that facilitate knowledge flows between research producers and users.

This study contributes to the literature by providing empirical evidence on how public R&D investments translate into patent outcomes within Kerala's specific institutional context, offering insights for both theoretical understanding of regional innovation dynamics and practical policy development for knowledge-based economic transformation.

## 3. Kerala's innovation ecosystem: Current status

### 3.1 Kerala's socioeconomic context and human development achievements

Kerala represents a unique developmental case within India, characterized by what has been termed the "Kerala model" of development-high social indicators despite moderate economic growth (Franke and Chasin, 1994; Parayil, 1996). The state has

consistently outperformed other Indian states on human development metrics, with scholars widely recognizing it as a leader in literacy, healthcare, and social welfare indicators. As Jeffrey (1992) and Ramachandran (1996) have documented, these achievements stem from historical factors including progressive social movements, early investments in public education, and redistributive policies.

Despite these social development successes, Kerala faces persistent economic challenges. Researchers including Thomas (2005) and Kannan (2005) have noted the state's constrained economic growth and limited industrialization compared to other Indian states. Kumar and Yesudian (2007) highlight Kerala's paradoxical combination of advanced social indicators alongside employment challenges, particularly for educated youth. This creates what Zachariah and Irudaya Rajan (2012) describe as a significant "brain drain" phenomenon, with substantial emigration of skilled workers.

A distinctive feature of Kerala's economy has been its reliance on remittances from emigrant workers, primarily to Gulf countries. As documented by Rajan and Zachariah (2019), these remittances contribute substantially to the state's economy, creating what Osella and Osella (2000) characterize as a unique economic structure with high consumption but limited productive investment. While this model has supported high living standards, it has resulted in vulnerabilities including susceptibility to external economic shocks and fiscal constraints (Kannan, 2005).

These structural challenges have prompted Kerala's policymakers to prioritize knowledge-based development strategies. Recent policy documents and development plans from the Kerala government have increasingly emphasized innovation and knowledge economy as strategic priorities for sustainable economic growth. This policy orientation acknowledges both Kerala's strong foundation in human development and the need to create sustainable economic opportunities locally to retain skilled talent.

## 3.2 Structure of Kerala's innovation system: Institutional mapping

Kerala has established a comprehensive institutional framework for knowledge production and innovation, organized into four interconnected pillars that collectively constitute its innovation ecosystem. This four-pillar structure encompasses scientific research institutions, higher education, specialized R&D centres, and innovation enablers (Figure - 1)..

### 3.2.1 KSCSTE (science & technology)

The Kerala State Council for Science, Technology and Environment (KSCSTE) serves as the cornerstone of the state's scientific research infrastructure. Established in 2002 as an autonomous body, KSCSTE coordinates and promotes scientific research through specialized research institutes focusing on areas of strategic importance to Kerala. Key

**Figure 1:** The four-pillar framework of Kerala's knowledge production and innovation ecosystem
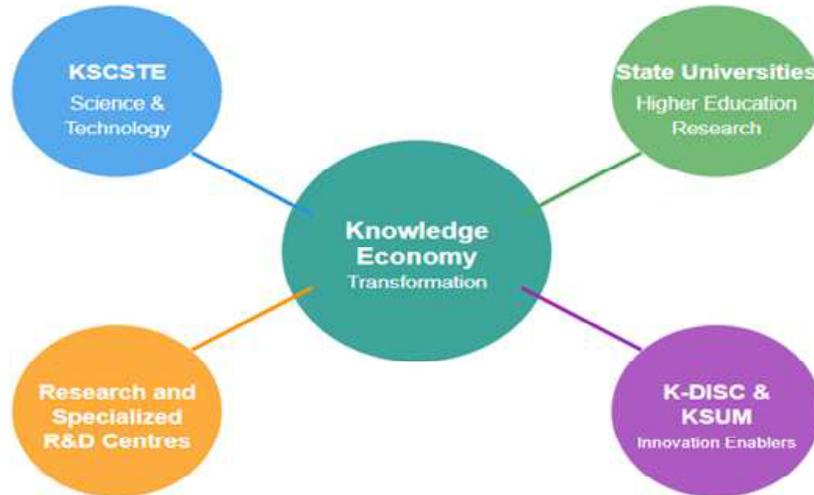


institutions under KSCSTE include the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI), Kerala Forest Research Institute (KFRI), Centre for Water Resources Development and Management (CWRDM), National Transportation Planning and Research Centre (NATPAC), and Institute of Advanced Virology (IAV).

These institutions conduct fundamental and applied research addressing Kerala's environmental, developmental, and health challenges. Their outputs align primarily with IPC categories related to plant sciences (A01H, A61K), environmental technologies (E03B, G01W), and biotechnology (C12N), reflecting Kerala's natural resource advantages and sustainability priorities (KSCSTE Annual Report, 2022). The detailed institutional profiles and their associated IPC categories are presented in Appendix Table 3.1.

**3.2.2 State Universities (higher education research)**

Kerala's university system forms the second pillar of the innovation ecosystem, providing both specialized research capabilities and the human capital necessary for a knowledge economy. The state has 14 universities spanning diverse disciplines, with notable research-focused institutions including University of Kerala, University of Calicut, Cochin University of Science and Technology (CUSAT),

Kerala Agricultural University (KAU), Kerala University of Digital Sciences, Innovation and Technology (KUDSIT), Kerala University of Health and Allied Sciences (KUHAS), and Mahatma Gandhi University (MGU).

These universities generate knowledge across multiple IPC domains, including agricultural technologies (A01B-G), digital computing (G06F, G06N), biotechnology (C12N), and medical sciences (A61B, A61K). The universities also play a crucial role in talent development, creating the skilled workforce required for knowledge-intensive industries (Higher Education Department, Government of Kerala, 2021). Appendix Table 3.2 provides a detailed mapping of universities to their primary research domains and associated IPC categories.

### 3.2.3 Research and specialized R&D centres

Complementing the broader research capabilities of universities, Kerala has established specialized R&D centres focusing on specific technological domains and applied research. These institutions bridge the gap between fundamental research and commercial applications. Examples include the Centre for Engineering Research and Development (CERD), International Centre for Free and Open Source Software (ICFOSS), State Board of Medical Research, India Innovation Centre for Graphene (IICG), and Biological Production Complex for animal vaccines.

The specialized knowledge outputs from these institutions align with IPC categories for digital technologies (G06F, H04L), advanced materials (B82Y, C01B), medical innovations (A61B, A61K), and engineering solutions (G01N, E04B). The focused nature of these institutions accelerates technology development in priority sectors. A comprehensive list of these specialized R&D centres with their technical domains and IPC classifications is provided in Appendix Table 3.3.

### 3.2.4 K-DISC & KSUM (innovation enablers)

The fourth pillar comprises institutional mechanisms that facilitate the translation of knowledge into economic value. Kerala Development and Strategic Innovation Council (K-DISC) and Kerala Startup Mission (KSUM) serve as catalysts for innovation-driven entrepreneurship. Established in 2021, K-DISC provides strategic direction for innovation policy, while KSUM functions as the nodal agency of the State Government for promoting entrepreneurship in the state.

KSUM's mandate encompasses a comprehensive entrepreneurship support framework including expert mentoring, funding support, infrastructure facilities, networking opportunities, and related mechanisms to empower entrepreneurs. With over 40,000 entrepreneurs and more than 5,000 startups, Kerala has established a significant entrepreneurial ecosystem within the state (Government of Kerala, 2025). Despite this entrepreneurial activity, patent data indicates that these startup ventures have not proportionally

translated into intellectual property development.

The structural configuration of Kerala's innovation system exhibits distinctive characteristics that differentiate it from alternative innovation ecosystems in India. The system demonstrates notable public sector predominance, contrasting with regions such as Bangalore or Hyderabad where private enterprise plays a more substantial role in research and innovation activities. Furthermore, the state's innovation infrastructure displays pronounced specialization aligned with Kerala's ecological and social characteristics, particularly in biomedical, environmental, and agricultural domains.

While the institutional framework theoretically encompasses the complete innovation value chain from fundamental research through commercialization, evidence suggests suboptimal knowledge transfer between system components. The innovation system architecture appears designed to facilitate knowledge flows from basic research conducted by KSCSTE and universities, through applied development at specialized centres, to eventual commercialization facilitated by KSUM. However, empirical patent analysis indicates that these components frequently operate with limited integration, creating knowledge translation inefficiencies between research generation and commercial application. This structural discontinuity represents a significant consideration for enhancing system effectiveness in knowledge-based economic development.

## 3.3 R&D Budgetary provisions and financing patterns

Kerala has pioneered a distinctive approach to R&D financing among Indian states, introducing a separate budget document for research and development in 2023-24. This methodological innovation enables detailed tracking of research investments across sectors and institutions. Analysis of budget data from 2023-24 to 2025-26 reveals several notable patterns. (Table-1).

Kerala's total R&D allocation has shown consistent growth, increasing from Rs.348,244.27 lakhs in 2023-24 to a projected Rs.403,935.99 lakhs in 2025-26, representing a 16.0% increase over the three-year period. This growth outpaces the overall budget expansion of 12.9% during the same period, indicating prioritization of research investments (Government of Kerala, 2025).

The state allocates approximately 2.13% of its total budget to R&D activities by 2025-26, significantly higher than most Indian states. This allocation is divided between Plan expenditure (focused on new initiatives and capital investments) and Non-Plan expenditure (covering recurring operational costs). Non-Plan R&D allocations consistently exceed Plan allocations (Rs.231, 547.00 lakhs vs. Rs.172, 389.00 lakhs in 2025-26), suggesting significant resources are directed toward maintaining existing research infrastructure rather than new initiatives.

Analysis of sectoral allocations reveals distinctive prioritization patterns with

**Table 1:** Kerala's R&D budget allocation trends (2023-2025)

| Year | Plan R&D (Rs. lakhs) | Non-Plan R&D (Rs. lakhs) | Total R&D (Rs. lakhs) | Growth Rate | R&D % of Total Budget |
|---|---|---|---|---|---|
| 2023-24 | 150,102.60 | 198,141.60 | 348,244.27 | - | 2.08% |
| 2024-25 | 152,117.40 | 215,734.40 | 367,851.79 | 5.63% | 2.09% |
| 2025-26 | 172,389.00 | 231,547.00 | 403,935.99 | 9.81% | 2.13% |

*Source: State Finance Department, Government of Kerala (2023-2025)*

Education R&D receiving the largest share (44.81% in 2025-26), followed by Medical Health, Family Welfare and Sanitation (25.13%), Agricultural Research (14.03%), and Industrial Research (9.16%). This sectoral distribution reveals a potential misalignment between R&D investments and domains most conducive to patent generation. Industrial, environmental, and infrastructure research-sectors with high patenting potential-receive collectively only 11.72% of R&D allocations, while education and healthcare dominate financing. The detailed sectoral breakdown of R&D allocations is presented in Appendix Table 3.4.

While examining institutional R&D funding patterns, notable observations emerge regarding performance variation across different components of Kerala's innovation system. Central Government Institutions operating in Kerala demonstrate relatively higher patent efficiency, accounting for 34.24% of Kerala's patents.

The KSCSTE institutions, while conducting valuable fundamental research in domains aligned with Kerala's natural advantages, face opportunities to strengthen their intellectual property development strategies. These institutions possess significant research capabilities in areas such as biodiversity, environmental sciences, and transportation, but their patent outputs could be enhanced through more targeted research prioritization and patent-oriented project selection mechanisms.

Specialized R&D Centres represent an area of potential growth in patent productivity. These centres possess domain-specific technical expertise but currently demonstrate varied performance in converting their specialized knowledge into patentable innovations. The centres' position as intermediaries between basic research and application makes them particularly valuable for enhancing the innovation pipeline, suggesting opportunities for policy interventions to strengthen their patent orientation.

The innovation enablers (K-DISC and KSUM) have successfully fostered

entrepreneurial activity but show room for improvement in facilitating patent development among supported startups. While KSUM has created a dynamic startup ecosystem, the entrepreneurial ventures tend to focus on service models and incremental innovations rather than developing novel patentable technologies. This suggests a need for initiatives that specifically encourage IP-focused innovation within the startup community.

## 4. Empirical analysis and findings

### 4.1 Methodology for patent landscape analysis

This study employs a mixed-methods approach to analyse Kerala's patent landscape and R&D investment patterns, combining quantitative analysis of patent data with qualitative assessment of institutional structures and financing frameworks. The investigation focuses on identifying knowledge production patterns, technological specializations, and structural characteristics of Kerala's innovation system to inform evidence-based policy recommendations.

The primary data sources include the Indian Patent Advanced Search System (inPASS) for patent information, Kerala's R&D budget documents (2023-2026) for expenditure data, and complementary institutional information from annual reports and policy documents. The analysis focuses on granted patents rather than applications to ensure examination of validated innovations, with a dataset of 850 patents where the first applicant is from Kerala.

For patent data extraction, a systematic methodology was employed. The Indian Patent Advanced Search System (inPASS) was queried using the keyword "Kerala" in the Applicant Address field, which initially yielded 3,860 patent submissions as of March 25, 2025. From these submissions, only granted patents were selected, resulting in 1,000 patents. Further refinement of the dataset included exclusion of approximately 50 patents showing group patent status where Kerala-based entities collaborated with institutions from other regions, due to data discrepancies in the collaborative information. Patents lacking IPC classification information were also removed. Following this data cleaning process, the final sample consisted of 850 patents with first applicants from Kerala.

Each patent record was manually classified by applicant type after carefully examining the applicant's name, address, and institutional affiliation. The field of invention and IPC classifications were extracted directly from the inPASS system, which already contained this information for each patent record, enabling multi-dimensional analysis of technological domains and institutional patterns.

Budget data was extracted from Kerala's official R&D budget documents for the fiscal years 2023-24 through 2025-26, with sectoral and institutional allocations systematically coded to enable comparison with patent output patterns. This approach allowed for analysis of investment-patent relationships across

different sectors and institutional categories.

The methodology acknowledges certain limitations, including the cumulative nature of patent data representing innovations granted over multiple years rather than annual outputs, the imperfect nature of patents as innovation indicators (particularly for domains where patenting is less common), and challenges in precisely allocating R&D expenditures to specific institutions. Despite these constraints, the approach enables robust identification of structural patterns in Kerala's knowledge production landscape.

### 4.2 Comparative context of Kerala's research investment and patent production

To provide context for Kerala's knowledge production patterns, a comparative analysis of research investment and patent application data across Indian states reveals important insights. While this comparative data represents a specific time period (2020-21) rather than cumulative granted patents, it offers a valuable reference point for understanding Kerala's position within the broader national innovation landscape.

According to data from the Department of Science and Technology (2023) and Reserve Bank of India (2021), Kerala allocates a higher percentage of GSDP to research (0.30%) than the interstate average (0.24%). However, this substantial investment generated only 0.14 patent applications per crore of

expenditure in 2020-21-significantly below the average of 0.63 and ranking 13th among 14 major states examined. This positioning contrasts markedly with states like Telangana and Maharashtra, which despite lower proportional R&D investments (0.10% of GSDP each), achieved patent application rates of 1.77 and 0.94 per crore respectively during the same period (Table-2).

This comparative context suggests that structural factors beyond simply funding levels may significantly influence patent production. States with stronger industrial bases and manufacturing sectors (Maharashtra, Tamil Nadu) demonstrate higher patent application rates than Kerala, suggesting that the presence of industrial R&D and commercialization pathways may enhance knowledge production. Similarly, institutional configuration appears significant, as high-performing states feature greater private sector participation in research and stronger industry-academia linkages than Kerala.

This contextual analysis provides a backdrop for examining Kerala's patent landscape in greater depth, with attention to the specific patterns and characteristics that may inform targeted policy interventions.

### 4.4 Knowledge production patterns in Kerala: IPC analysis

Analysis of International Patent Classification (IPC) data provides granular insights into Kerala's knowledge production strengths, specialization patterns, and potential misalignments

**Table 2:** Research-to-Patent Conversion Efficiency Across Indian States (2020-21)

| State | Research as % of GSDP | Research Expenditure (Rs.Crore) | Patent Applications | Patent Applications per Rs.1 Crore Spent | Efficiency Rank |
|---|---|---|---|---|---|
| Telangana | 0.10% | 938.30 | 1,662 | 1.77 | 1 |
| Punjab | 0.20% | 1,160.20 | 1,650 | 1.42 | 2 |
| Rajasthan | 0.00% | 342.70 | 449 | 1.31 | 3 |
| Maharashtra | 0.10% | 4,476.90 | 4,214 | 0.94 | 4 |
| Tamil Nadu | 0.20% | 4,504.70 | 3,945 | 0.88 | 5 |
| Karnataka | 0.20% | 3,824.70 | 2,784 | 0.73 | 6 |
| Andhra Pradesh | 0.20% | 2,187.00 | 709 | 0.32 | 7 |
| Haryana | 0.30% | 2,617.10 | 765 | 0.29 | 8 |
| Uttar Pradesh | 0.40% | 8,028.30 | 2,317 | 0.29 | 9 |
| Madhya Pradesh | 0.20% | 1,503.50 | 398 | 0.26 | 10 |
| Gujarat | 0.20% | 3,706.00 | 921 | 0.25 | 11 |
| West Bengal | 0.20% | 2,342.40 | 505 | 0.22 | 12 |
| Kerala | 0.30% | 2,954.30 | 426 | 0.14 | 13 |
| Bihar | 0.50% | 3,139.70 | 62 | 0.02 | 14 |
| Average | 0.24% | 2,863.64 | 1,737.57 | 0.63 | - |

*Source: DST (2023) and RBI (2021)*

between research investments and patenting outcomes. Kerala's patents demonstrate concentration in specific technological domains, with notable strengths in medical technologies, mechanical engineering, chemical compositions, and increasingly in digital technologies (Table - 3).

The technological distribution exhibits several notable patterns. The most prominent feature is the overwhelming representation of medical technologies, with A61K (preparations for medical purposes) appearing in 21.65% of patents and A61B (diagnostics, surgery) in 14.47%. G01N (investigating materials by determining properties) appears in 10.12% of patents, indicating capability in analytical sciences. Digital technologies show significant representation with G06F (electric digital data processing) at 8.35% and H04L (transmission of digital information) at 6.35%. A detailed breakdown of the top IPC subsections is provided in Appendix Table 4.1.

**Table 3:** Distribution of Kerala patents by IPC section

| IPC Section | Description | Patents (%)* | Top Subsection |
|---|---|---|---|
| A: Human Necessities | Medical, agricultural, food, personal items | 96.94% | A61K (21.65%) |
| G: Physics | Measuring, computing, control, signalling | 54.24% | G01N (10.12%) |
| C: Chemistry; Metallurgy | Organic, inorganic compounds, metallurgy | 47.65% | C12N (4.35%) |
| B: Performing Operations; Transporting | Mechanical engineering, transport | 47.53% | B82Y (5.18%) |
| H: Electricity | Electric elements, generation, communication | 33.41% | H04L (6.35%) |
| F: Mechanical Engineering | Engines, pumps, mechanical elements | 22.71% | F16K (2.94%) |
| E: Fixed Constructions | Building, mining, water supply | 15.76% | E04B (3.41%) |
| D: Textiles; Paper | Textiles, flexible materials, paper | 5.65% | D01F (1.41%) |

*Percentages sum to more than 100% as patents can be classified under multiple sections.*

*Source: Analysis based on in PASS data (2025)*

Cross-analysing IPC classifications with applicant types reveals distinctive specialization patterns across different components of Kerala's innovation ecosystem. Central Government Institutions demonstrate concentrated strength in A61K (18.21%), G01N (17.87%), and A61B (17.53%). Individual Inventors show particular focus on A61K (22.55%), A61B (11.76%), and H04L (8.50%), with distinctive activity in kitchen equipment (A47J: 7.19%) and horticulture (A01G: 6.54%). Private Companies specialize in G06F (22.35%) and A61K (21.18%), while State Government Universities demonstrate pronounced specialization in A61K (38.71%). Private Universities show distinctive capabilities in energy technologies (H01M: 21.28%). The complete distribution of IPC subsections by applicant type is presented in Appendix Table 4.2, and the distribution of patents by field of invention (as per inPASS

system) is available in Appendix Table 4.3.

This differentiated pattern suggests that Kerala's innovation system features complementary specializations across institutional types, with potential for greater synergy through enhanced knowledge flows. However, the distribution reveals limited overlap between academic research strengths and private sector innovation domains, suggesting challenges in the commercialization pipeline.

The analysis of multiple IPC classifications reveals substantial cross-domain knowledge integration, with 58.12% of Kerala's patents including multiple IPC classifications. The specific patterns of cross-domain integration are detailed in Appendix Table 4.4, highlighting the most frequent combinations. The most prominent pattern involves combinations of medical technology classifications with digital technologies, reflecting the growing integration of computational approaches in healthcare. Patents combining nanotechnology with medical preparations represent a second significant pattern, indicating interdisciplinary research at the interface of nanoscience and biomedicine. This cross-domain integration represents a positive aspect of Kerala's innovation landscape, indicating capacity for interdisciplinary research despite challenges in overall patent production rates.

### 4.5 Research investment allocation and patent production patterns

Comparing the distribution of R&D investments across sectors with the pattern of patent outputs reveals significant misalignments that may contribute to Kerala's patent production challenges. Analysis of sectoral allocation of R&D funding against the distribution of patents by field of invention highlights several critical gaps.

**Table 4:** Comparison of R&D investment and patent output by sector

| Sector | Share of R&D Budget (2025-26) | Share of Patents* | Investment-Patent Ratio** |
|---|---|---|---|
| Education | 44.81% | 7.29% | 6.15 |
| Medical & Health | 25.13% | 10.00% | 2.51 |
| Agriculture | 14.03% | 1.65% | 8.50 |
| Industrial | 9.16% | 24.00% | 0.38 |
| Infrastructure | 2.16% | 2.59% | 0.83 |
| Environmental | 0.40% | 0.94% | 0.43 |

*Patent share based on primary field of invention classification

**Ratio of budget share to patent share; values above 1 indicate lower patent productivity
Source: Analysis based on budget data (Government of Kerala, 2023-2025) and inPASS data (2025)

Several striking patterns emerge from this comparison. Despite receiving 44.81% of R&D allocations, education-related institutions generate only 7.29% of Kerala's patents, yielding an investment-patent ratio of 6.15-the second-highest among major sectors. Agricultural research receives 14.03% of funding but generates only 1.65% of patents, resulting in the highest investment-patent ratio (8.50).

In contrast, industrial research demonstrates the highest patent productivity, generating 24.00% of patents while receiving just 9.16% of R&D allocations (ratio: 0.38). The environmental sector, though small in both budget share (0.40%) and patent share (0.94%), shows relatively high productivity (ratio: 0.43), suggesting potential for strategic expansion given Kerala's natural advantages and sustainability challenges.

This analysis reveals that Kerala's current R&D allocation pattern may not be optimally aligned with patent generation potential across sectors. The concentration of resources in sectors with lower patent productivity may contribute to the overall challenges observed in the state's research-to-patent conversion.

### 4.6 Summary of key findings

The empirical analysis reveals several critical insights about Kerala's innovation ecosystem and knowledge production patterns. Despite substantial R&D investments and comprehensive institutional infrastructure, Kerala's patent landscape shows distinctive structural characteristics that influence its knowledge production capacity.

A significant misalignment exists between sectoral R&D allocations and patent production patterns, with education and agriculture receiving disproportionately high funding relative to their patent outputs, while industrial research demonstrates higher productivity. This sectoral imbalance suggests opportunities for strategic reallocation to enhance overall knowledge production.

Patent production varies substantially across institutional types, with individual inventors and Central Government Institutions dominating the landscape, while State Universities show modest contributions despite substantial funding. These variations indicate potential for institutional learning and adaptation of successful practices across the innovation system.

Kerala shows distinct technological strengths in medical technologies (A61K, A61B), analytical sciences (G01N), and emerging capabilities in digital technologies (G06F, H04L) and nanotechnology (B82Y), with complementary specializations across different institutional categories. This technological profile offers a foundation for building distinctive competencies in targeted domains.

Individual inventors represent the largest single category of patent applicants (36.00%), indicating a vibrant grassroots innovation culture that exists somewhat independently of formal institutional frameworks. Better integration of these

individual innovators with the formal innovation system could enhance overall knowledge production.

These findings point to both structural challenges in Kerala's innovation ecosystem and potential opportunities for enhancing patent productivity through evidence-based financing strategies, institutional reforms, and targeted initiatives to strengthen knowledge flows among the various components of the innovation system.

## 5. Policy framework for enhancing patent production

### 5.1 Evidence-based financing strategies

Kerala's substantial R&D investments demonstrate commitment to knowledge production, but patent landscape analysis indicates need for strategic resource reallocation. The significant misalignment between sectoral R&D allocations and patent outputs necessitates investment recalibration. Industrial research allocation should increase from the current 9.16% to approximately 15-20% of total R&D budget, given its superior productivity (24% of patents from less than 10% of funding). Environmental research merits increased allocation from 0.40% to approximately 2-3%, given its relatively high productivity and alignment with Kerala's ecological advantages.

Education and agricultural sectors require structural reforms in incentive systems and institutional practices alongside funding. As Intarakumnerd et al. (2002) observe in Thailand's

innovation system analysis, sectoral rebalancing alone is insufficient without addressing underlying institutional challenges in research translation.

Kerala should implement performance-based allocation mechanisms rewarding patent productivity and commercialization outcomes. A patent performance premium model would allocate institutional funding based on patent metrics, creating direct incentives while maintaining core research. Matching grants for industry-academia partnerships would leverage state investments to attract private sector engagement, while staged funding would establish milestones-based support for research commercialization.

### 5.2 IPC-focused investment approach

Analysis of Kerala's patent landscape through International Patent Classification (IPC) reveals distinct technological strengths and opportunities that should guide targeted investments.

Kerala should prioritize three technological domain categories: established strength domains (medical technologies, analytical sciences, mechanical engineering); emergent opportunity domains showing promising capabilities (digital technologies, nanotechnology, energy conversion); and strategic gap domains with limited current activity but high future relevance (agricultural biotechnology, sustainable construction, advanced materials).

This domain-based approach provides greater precision than traditional sectoral allocations, aligning with Foray et al.'s (2012) "smart specialization" strategy emphasizing comparative advantages while developing new capabilities in adjacent domains.

The high prevalence (58.12%) of patents with multiple IPC classifications highlights interdisciplinary research importance. Convergence research programs should fund cross-domain projects at the intersection of Kerala's strength areas, while problem-cantered innovation platforms should establish frameworks focused on major societal challenges, integrating knowledge from multiple technological domains.

### 5.3 Institutional reform for innovation efficiency

State Government Universities, despite substantial R&D funding, contribute only 7.29% of Kerala's patents-indicating systemic barriers to knowledge translation. University IP policy harmonization, technology transfer office strengthening, and patent-linked academic incentives would address the current incentive structure prioritizing publication over patenting.

Central Government Institutions demonstrate higher patent productivity (34.24% of patents), suggesting practices for system-wide adoption. Institutional specialization enhancement and cross-institutional coordination mechanisms would improve research productivity based on established effectiveness principles (Nelson, 1993; OECD, 2010).

Individual inventors, representing 36.00% of patent holders, operate largely outside formal institutional frameworks. Inventor-institution fellowship programs, regional innovation hubs, and patent agent networks would integrate this valuable innovation resource while preserving its distinctive creativity.

### 5.4 Reforming innovation governance: K-DISC and KSUM

Critical analysis of Kerala's innovation enablers reveals misalignment between intended functions and operational focus. K-DISC, established to provide strategic innovation direction, has focused disproportionately on peripheral activities rather than core knowledge economy facilitation. The Kerala Knowledge Economy Mission (KKEM) under K-DISC duplicates conventional skill development initiatives already undertaken by educational institutions, reflecting conceptual misalignment with contemporary understanding of knowledge economies, which emphasizes novel knowledge generation and application.

KSUM has successfully nurtured startup quantity, but the overall low level of private industry patents in Kerala (10% of total) indicates limited development of technology-intensive ventures generating intellectual property. This orientation fails to leverage Kerala's research base for economic transformation through high-value knowledge enterprises.

These institutions require fundamental restructuring to prioritize knowledge translation. K-DISC should focus

on strategic coordination across innovation pillars, with explicit metrics for knowledge flow enhancement and IP generation. The Kerala Knowledge Economy Mission should be reoriented toward analysing knowledge production patterns, identifying strategic investment domains, and designing targeted interventions that enhance economically valuable knowledge creation.

KSUM requires strategic reorientation toward technology-intensive entrepreneurship with specific IP development objectives, including specialized incubation tracks for research commercialization and technology transfer partnerships with research institutions. Performance metrics should emphasize quality indicators including technologies licensed and research-based ventures established.

## 5.5 Implementation framework

Implementation requires appropriate governance structure through a Kerala Innovation Council as an apex body coordinating innovation policy across departments and institutions, with direct oversight of R&D resource allocation. A phased implementation strategy would progress from institutional reforms through financing strategy implementation to establishing long-term governance models, with regular performance evaluation using standardized innovation metrics.

## 6. Discussion and implications

### 6.1 Critical evaluation of findings

Kerala's innovation system presents a paradox: substantial R&D investment coexists with patent production dominated by individual inventors and government institutions rather than commercial entities. The education sector's high funding (44.81% of R&D budget) with limited patent contribution (7.29%) indicates misalignment between academic priorities and patentable innovation. Similarly, agricultural research shows low patent productivity despite significant investment.

Individual inventors (36.00% of patents) and Central Government Institutions (34.24%) dominate Kerala's patent landscape, contrasting with established innovation hubs where private enterprises lead. This structure reveals both strengths in grassroots innovation culture and weaknesses in private sector engagement (10.00% of patents) and university contribution (7.29%).

IPC analysis shows technological strengths in medical, analytical, and mechanical domains, with emerging capabilities in digital technologies and nanotechnology-a profile differing from leading regions with stronger representation in information technologies and advanced manufacturing.

### 6.2 Theoretical implications for knowledge economy development

The Kerala case challenges linear innovation models by demonstrating that R&D inputs do not automatically translate to innovation outputs without appropriate institutional contexts. It highlights institutional design

importance in innovation systems, showing how structural factors significantly influence knowledge production patterns.

The dominance of public institutions and individual inventors suggests alternative innovation configurations for contexts with different institutional histories and industrial structures, questioning universal application of Western innovation models.

Kerala's case demonstrates that exceptional educational achievements do not automatically generate proportional innovation outputs without institutional frameworks channelling knowledge toward economic applications. This observation supports Acemoglu and Robinson's (2013) emphasis on inclusive economic institutions as innovation determinants.

The prominence of individual inventors highlights grassroots innovation importance in regional development, aligning with emerging perspectives on "inclusive innovation" recognizing diverse knowledge sources beyond formal institutions (Chataway et al., 2014).

### 6.3 Practical implications for policymakers

Policymakers should strategically rebalance research investments toward domains with demonstrated patent productivity, while implementing comprehensive reforms in academic innovation systems including technology transfer mechanisms and patent-linked incentives.

The vibrant grassroots innovation culture merits systematic support through mechanisms connecting individual inventors with institutional resources and market opportunities, while the limited private sector participation in patenting requires targeted incentives for corporate R&D and industry-academia engagement.

Strategic investment guidance should prioritize domains where Kerala demonstrates comparative advantage while developing capabilities in high-growth fields, coordinated through an overarching innovation council harmonizing research priorities and institutional policies.

### 6.4 Limitations and future research directions

Study limitations include dependence on patents as innovation indicators despite their capturing only a subset of valuable knowledge, focus on quantitative counts rather than qualitative assessment, limited historical analysis, and minimal examination of organizational practices explaining performance variations.

Future research directions include comparative case studies of high-performing institutions, sectoral innovation studies, analysis of commercialization pathways, and research on grassroots innovation dynamics.

### 7. Conclusion

Kerala presents a compelling case in transitioning to a knowledge-based economy despite strong human

development foundations. The state has established a comprehensive innovation system with significant R&D investments, yet shows distinctive patent production patterns dominated by individual inventors and government institutions rather than private enterprises.

The empirical analysis reveals technological strengths in specific domains and significant challenges in institutional performance and sectoral allocation. Policy recommendations include evidence-based financing strategies, IPC-focused investment approaches, and institutional reforms including K-DISC and KSUM reorientation toward effective knowledge production facilitation rather than peripheral activities.

Kerala's knowledge economy transition requires fundamental reconfiguration of innovation governance, incentive structures, and institutional practices. By addressing these structural challenges while building on existing strengths in human capital and grassroots innovation, Kerala can enhance patent productivity and accelerate knowledge-based economic development.

■

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# Appendix Tables

**Appendix Table 3.1:** Key KSCSTE research institutions and focus areas

| Institution | Primary Research Focus | Main IPC Categories |
|---|---|---|
| Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) | Medicinal plant research, biodiversity conservation, biotechnology | A01H, A61K, C12N |
| Kerala Forest Research Institute (KFRI) | Forest ecology, biodiversity, sustainable forestry | A01G, A01N, G01N |
| Centre for Water Resources Development and Management (CWRDM) | Water resource management, hydrology, watershed development | E03B, G01W, E02B |
| National Transportation Planning and Research Centre (NATPAC) | Transport engineering, traffic management, infrastructure planning | G08G, E01C, B60P |
| Kerala School of Mathematics | Mathematical modeling, theoretical mathematics, computational methods | G06F, G06N |
| Malabar Botanical Garden and Institute for Plant Sciences | Plant taxonomy, conservation biology, botanical research | A01H, A01G, C12N |
| Srinivasa Ramanujan Institute for Basic Sciences | Basic research in physics, chemistry, mathematics | G01, B01J, C01B |
| Institute of Climate Change Studies | Climate modeling, environmental impact assessment, sustainability | G01W, Y02A, Y02E |
| Institute of Advanced Virology | Viral diagnostics, vaccine development, epidemiology | C12N, A61K, G01N |
| Regional Cancer Centre, Thiruvananthapuram | Cancer research, diagnostics, treatment protocols | A61B, A61K, G01N |

**Appendix Table 3.2:** Major state universities and research domains

| University | Research Specialization | Primary IPC Categories |
|---|---|---|
| University of Kerala | Interdisciplinary research, biotechnology, physics | G06Q, G01N, C07 |
| University of Calicut | Social sciences, natural sciences, materials research | G06Q, C01, G01 |
| Cochin University of Science and Technology (CUSAT) | Material science, ocean sciences, photonics | G01N, B01J, G02B |
| Kerala Agricultural University (KAU) | Agricultural technology, crop improvement, farming systems | A01B, A01C, A01G |
| Kerala University of Digital Sciences, Innovation and Technology (KUDSIT) | Digital technologies, AI, information systems | G06F, G06N, H04L |
| Kerala University of Health and Allied Sciences (KUHAS) | Medical research, healthcare technologies, biomedical engineering | A61B, A61K, A61N |
| Kerala University of Fisheries and Ocean Studies (KUFOS) | Aquaculture, marine biotechnology, fisheries management | A01K, C12N, A01G |
| Mahatma Gandhi University (MGU) | Environmental sciences, biochemistry, nanoscience | B82Y, C01B, G01N |
| Sree Sankaracharya University of Sanskrit | Sanskrit studies, ancient texts, cultural heritage | G10L, G06F |
| Kannur University | Regional studies, social sciences, natural sciences | G06Q, G01N |
| Malayalam University | Language studies, literature, cultural research | G10L, G06F |
| Kerala Veterinary and Animal Sciences University | Animal health, veterinary medicine, animal biotechnology | A61D, A23K, A01K |

**Appendix Table 3.3: S**pecialized R&D centres and their focus areas

| R&D Centre | Technical Domain | Primary IPC Categories |
|---|---|---|
| Centre for Engineering Research and Development (CERD) | Engineering solutions, material testing, structural analysis | G01N, E04B,B01D |
| Transportation Engineering Research Centre (TERC) | Transport infrastructure, traffic management, road safety | E01C, G08G,B60P |
| Product Design & Development Centre | Industrial design, product innovation, ergonomics | B29C, B44C,G06F |
| Rural Technology Development Centre | Appropriate technologies, rural innovations, small-scale solutions | A01D, F24S, F03D |
| Centre for Bamboo Technology | Bamboo applications, sustainable materials, construction techniques | B27K, E04C,C08L |
| Robotics & AI nodal Centre | Robotics, automation, artificial intelligence applications | G05B, G06N, B25J |
| Centre of Excellence in Systems, Energy & Environment | Energy efficiency, environmental technologies, systems engineering | F03G, Y02E,Y02B |
| Centre for High Performance Computing | Computational modeling, data analytics, parallel computing | G06F, G06N |
| International Centre for Free and Open Source Software (ICFOSS) | Open source software, digital solutions, IT frameworks | G06F, H04L,G06Q |
| India Innovation Centre for Graphene (IICG) | Graphene applications, advanced materials, nanotechnology | B82Y, C01B,H01L |
| Biological Production Complex | Vaccines, biological products, veterinary pharmaceuticals | A61K, C12N, A61D |
| Kerala Livestock Development Board | Animal breeding, genetic improvement, livestock management | A01K, C12N, A23K |
| State Board of Medical Research | Clinical research, medical diagnostics, public health | A61B, A61K, G01N |
| International Research Institute of Ayurveda (IRIA) | Ayurvedic medicine, herbal formulations, traditional knowledge | A61K, A61P, A61B |
| Interdisciplinary Research Centres at Govt. Engineering Colleges | Cross-disciplinary engineering solutions, applied research | G06F, H01L, B01J |

**Appendix Table 3.4:** Sectorial distribution of Kerala's R&D budget (2023-2026)

| Sector | 2023-24 (` lakhs) | 2024-25 (` lakhs) | 2025-26 (` lakhs) | Growth (2023-26) | Share (2025-26) |
|---|---|---|---|---|---|
| Education R&D | 161,168.43 | 170,640.35 | 181,020.47 | 12.32% | 44.81% |
| Medical Health, Family Welfare and Sanitation | 80,212.18 | 87,104.55 | 101,498.96 | 26.54% | 25.13% |
| Agricultural Research | 51,011.25 | 54,095.94 | 56,692.10 | 11.14% | 14.03% |
| Industrial Research | 27,615.00 | 34,443.35 | 37,020.70 | 34.06% | 9.16% |
| Infrastructure Research | 5,606.98 | 6,456.37 | 8,736.89 | 55.82% | 2.16% |
| Others | 14,622.74 | 7,138.92 | 9,955.94 | -31.91% | 2.46% |
| Social Security and Welfare | 3,294.00 | 3,583.86 | 3,030.37 | -8.00% | 0.75% |
| Welfare of SC/ST | 871.37 | 984.17 | 2,294.46 | 163.31% | 0.57% |
| Environmental Research | 1,943.13 | 1,431.64 | 1,629.07 | -16.16% | 0.40% |
| Housing and Urban Development | 1,169.41 | 1,282.00 | 1,260.57 | 7.80% | 0.31% |
| Fiscal Research | 668.67 | 624.52 | 707.20 | 5.76% | 0.18% |
| Labour Research | 61.11 | 66.12 | 89.26 | 46.07% | 0.02% |
| Total | 348,244.27 | 367,851.79 | 403,935.99 | 16.00% | 100.00% |

**Appendix Table 4.1:** Top 10 IPC Subsections in Kerala Patents

| IPC Subsection | Description | Count | Percentage |
|---|---|---|---|
| A61K | Preparations for medical, dental, or toilet purposes | 184 | 21.65% |
| A61B | Diagnosis; Surgery; Identification | 123 | 14.47% |
| G01N | Investigating materials by determining properties | 86 | 10.12% |
| A61F | Prostheses; Orthopedic, nursing devices | 75 | 8.82% |
| G06F | Electric digital data processing | 71 | 8.35% |
| A61L | Sterilizing materials; Bandages; Surgical articles | 63 | 7.41% |
| H04L | Transmission of digital information | 54 | 6.35% |
| H01L | Semiconductor devices; Electric solid state devices | 48 | 5.65% |
| B82Y | Applications of nanostructures | 44 | 5.18% |
| H01M | Conversion of chemical energy into electrical energy | 42 | 4.94% |

**Appendix Table 4.2:** IPC Subsection Distribution by Applicant Type

**4.2.1:** Central Government Institution (Total: 291 patents)

| IPC Subsection | Description | Count | Percentage |
|---|---|---|---|
| A61K | Preparations for medical, dental, or toilet purposes | 53 | 18.21% |
| G01N | Investigating materials by determining their properties | 52 | 17.87% |
| A61B | Diagnosis; Surgery; Identification | 51 | 17.53% |
| A61F | Prostheses; Orthopedic, nursing devices | 49 | 16.84% |
| A61L | Sterilizing materials; Bandages; Surgical articles | 39 | 13.40% |

**4.2.2:** Individual (Total: 306 patents)

| IPC Subsection | Description | Count | Percentage |
|---|---|---|---|
| A61K | Preparations for medical, dental, or toilet purposes | 69 | 22.55% |
| A61B | Diagnosis; Surgery; Identification | 36 | 11.76% |
| H04L | Transmission of digital information | 26 | 8.50% |
| A47J | Kitchen equipment; Coffee mills; Apparatus for beverages | 22 | 7.19% |
| G06F | Electric digital data processing | 22 | 7.19% |
| A01G | Horticulture; Cultivation of vegetables, flowers, etc. | 20 | 6.54% |

**4.2.3:** Private Company (Total: 85 patents)

| IPC Subsection | Description | Count | Percentage |
|---|---|---|---|
| G06F | Electric digital data processing | 19 | 22.35% |
| A61K | Preparations for medical, dental, or toilet purposes | 18 | 21.18% |
| A61B | Diagnosis; Surgery; Identification | 12 | 14.12% |
| H04L | Transmission of digital information | 10 | 11.76% |
| B01J | Chemical or physical processes | 10 | 11.76% |
| G06Q | Data processing systems for administrative purposes | 8 | 9.41% |
| G06T | Image data processing or generation | 8 | 9.41% |

**4.2.4:** State Government University (Total: 62 patents)

| IPC Subsection | Description | Count | Percentage |
|---|---|---|---|
| A61K | Preparations for medical, dental, or toilet purposes | 24 | 38.71% |
| C08L | Compositions of macromolecular compounds | 9 | 14.52% |
| G01N | Investigating materials by determining properties | 9 | 14.52% |
| B82Y | Specific uses of nanostructures | 8 | 12.90% |
| C08K | Use of inorganic or non-macromolecular organic substances as compounding ingredients | 8 | 12.90% |

**4.2.5:** Private University (Total: 47 patents)

| IPC Subsection | Description | Count | Percentage |
|---|---|---|---|
| H01M | Processes for direct conversion of chemical energy into electrical energy | 10 | 21.28% |
| A61B | Diagnosis; Surgery; Identification | 10 | 21.28% |
| G06F | Electric digital data processing | 10 | 21.28% |
| A61K | Preparations for medical, dental, or toilet purposes | 9 | 19.15% |
| A61L | Methods for sterilizing materials; Bandages; Surgical articles | 8 | 17.02% |
| H04L | Transmission of digital information | 7 | 14.89% |

**Appendix Table 4.3:** Distribution of Field of Invention in Kerala Patents

| Field of Invention | Count | Percentage | Primary Applicant Type |
|---|---|---|---|
| Mechanical Engineering | 204 | 24.00% | Individual (56.4%) |
| Chemical | 128 | 15.06% | Central Government Institution (42.2%) |
| Bio-Medical Engineering | 85 | 10.00% | Central Government Institution (55.3%) |
| Electrical | 59 | 6.94% | Central Government Institution (42.4%) |
| Physics | 49 | 5.76% | Central Government Institution (42.9%) |
| Electronics | 44 | 5.18% | Central Government Institution (43.2%) |
| Communication | 44 | 5.18% | Central Government Institution (27.3%) |
| Computer Science | 38 | 4.47% | Private Company (26.3%) |
| Biotechnology | 35 | 4.12% | Central Government Institution (37.1%) |
| Polymer Technology | 29 | 3.41% | Central Government Institution (55.2%) |
| Other Fields | 135 | 15.88% | Various |
| Total | 850 | 100.00% | - |

**Appendix Table 4.4:** Cross-Domain integration patterns in Kerala patents

| Primary-Secondary IPC Combination | Count | Percentage of Multi-classified Patents | Primary Applicant Type |
|---|---|---|---|
| A61K - A61B (Medical Preparations - Diagnostics) | 68 | 13.73% | Central Government Institution |
| A61K - A61P (Medical Preparations - Therapeutic Activity) | 42 | 8.48% | State Government University |
| G06F - G06Q (Digital Processing - Business Methods) | 26 | 5.25% | Private Company |
| A61B - G06F (Medical Diagnostics - Digital Processing) | 24 | 4.85% | Private University |
| B82Y - A61K (Nanotechnology - Medical Preparations) | 23 | 4.65% | State Government University |
| G01N - C12Q (Analytical Testing - Measuring Enzymes) | 19 | 3.84% | Central Government Institution |
| C02F - H01M (Water Treatment - Energy Conversion) | 14 | 2.83% | Private University |
| Other Combinations | 279 | 56.37% | Various |
| Total Multi-classified Patents | 495 | 100.00% | - |

*Note: 495 patents (58.12% of total) have multiple IPC classifications*

GULATI INSTITUTE OF
FINANCE AND TAXATION

# Family financial socialization: A critical factor in developing financial literacy in young adults

Rema Devi V N

## Abstract

*Financial literacy is a crucial life skill that significantly influences individuals' financial well-being and stability. Young adults often develop their financial attitudes, skills, and behaviours through family financial socialization processes. This study investigates how parental financial role modelling, financial communication, parental financial support, and overall family financial socialization influence young adults' financial literacy. By examining these relationships, the study aims to identify key factors that enhance financial knowledge, skills, and behaviours among young adults. The insights gained can guide educational institutions, policymakers, and families in improving financial literacy initiatives for young adults.*

***Keywords:*** *Financial literacy, family financial socialization, budgeting, financial communication, financial role modelling, financial support, financial management skills.*

## Introduction

Financial literacy is increasingly recognized as an essential life skill. It encompasses the knowledge, skills, and behaviours needed to make sound financial decisions that contribute to long-term financial well-being (Lusardi & Mitchell, 2014). In particular, young adults often face challenges in managing finances due to limited experience (Gerrans, 2016). Family plays a crucial role in shaping their financial knowledge and behaviours, with the family being one of the primary sources of financial education (Gudmunson & Danes, 2011). Family financial socialization refers to the processes through which parents influence their children's financial attitudes, behaviours, and knowledge through financial role modelling, communication, and support (Perry, 2008; Shim et al., 2010).

This study focuses on the impact of family financial socialization on financial literacy among young adults

in Kottayam district, Kerala. It examines how parental financial role modelling, communication, and financial support contribute to young adults' financial behaviours, knowledge, and decision-making skills.

## 1.2. Statement of the problem:

Many young adults struggle with financial decision-making due to a lack of financial literacy, often stemming from insufficient education and limited exposure to financial concepts in their early years. Family financial socialization, through which parents and caregivers impart financial knowledge and behaviours, plays a critical role in shaping financial understanding. However, the specific ways in which family influences financial literacy in young adults remain under-researched.

## 1.3. Objectives of the study

1. To examine the influence of parental financial role modelling on the financial knowledge, skills, and behaviours of young adults

2. To assess the role of financial communication between parents and young adults in shaping financial attitudes and decision-making.

3. To evaluate the impact of parental financial support on young adults' financial security and planning.

## 1.4. Hypotheses of the study

1. There is no significant relationship between parental financial role modelling and young adults'

financial literacy (knowledge, skills, and behaviours).

2. There is no significant association between financial communication and young adults' financial attitudes and decision-making.

3. There is no significant association between parental financial support and young adults' financial security and planning.

## 1.5. Significance of the study:

This study aims to explore the impact of family financial socialization on young adults' financial literacy. By understanding how parental guidance affects financial behaviours and knowledge, the research will contribute to the development of targeted strategies for improving financial education, helping young adults build stronger financial foundations for their future well-being.

## 1.6. Scope of the study

This study employs a quantitative research approach to explore the relationship between family financial socialization and financial literacy among young adults in Kottayam district. A descriptive research design was adopted to gather insights on financial socialization practices and their impact on financial decision-making.

## 1.7. Methodological limitation

One key limitation of this study is the use of purposive sampling, which involves selecting participants who are

specifically chosen for their knowledge or experience relevant to the research. While this method allows for a targeted sample, it limits the generalizability of the findings to the broader population. The results may not be fully representative of all young adults in Kerala or other regions, as the sample is restricted to specific demographic and geographical characteristics. Future research may consider using random sampling to enhance the external validity and generalizability of the findings.

## 2. Materials and methods

### 2.1 Research methodology

This study employs a quantitative research approach to explore the relationship between family financial socialization and financial literacy among young adults in Kottayam district. A descriptive research design was adopted to gather insights on financial socialization practices and their impact on financial decision-making. Primary data were collected using a structured questionnaire administered through Google Forms. The questionnaire was designed to gather responses from young adults about their financial behaviours, parental influence, and financial literacy. The data collected via Google Forms were analysed using statistical techniques to identify the influence of family financial socialization on financial literacy.

### 2.2 Participants

The sample consists of 200 young adults from Kottayam district, selected using purposive sampling. Participants were chosen based on specific inclusion criteria: they must be young adults aged between 18 and 30 years and have experience in financial decision-making. The study focuses on individuals who engage in financial management practices, excluding those who do not actively manage their finances. The participants' responses were collected through the Google Forms questionnaire to capture a broad range of insights efficiently.

### 2.3 Variables of the study

The study investigates the relationships between various components of family financial socialization and financial literacy. Each of the following variables is defined, along with an explanation of how they were measured using a Likert scale:

1. Parental Financial Role Modelling (PR):

o   This variable measures the influence of parental financial behaviours on young adults' financial knowledge, skills, and behaviours. It reflects how young adults perceive their parents' financial habits, such as saving, investing, and managing debt.

o   Measurement Scale: The five items assessing Parental Financial Role Modelling are rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

2. Financial Communication (FC):

o   This variable assesses the frequency and quality of financial discussions

between parents and young adults. It reflects the extent to which parents engage in meaningful conversations about finances with their children.

o Measurement Scale: The five items assessing Financial Communication are also measured using a 5-point Likert scale.

3. Parental Financial Support (FS):

o This variable represents the assistance provided by parents in managing finances, such as budgeting guidance, monetary support, and financial advice.

o Measurement Scale: The five items measuring Parental Financial Support are rated on a 5-point Likert scale.

4. Family Financial Socialization Factors (FFS):

o This is a combined measure of Parental Financial Role Modelling, Financial Communication, and Parental Financial Support. It reflects the overall influence of the family on a young adult's financial socialization and learning.

o Measurement Scale: This is based on the cumulative effect of the above-mentioned variables, with corresponding items from the PR, FC, and FS scales.

5. Financial Literacy (FL):

o This variable encompasses knowledge of financial concepts, effective budgeting, debt management skills, and financial

decision-making behaviour. It reflects how well a young adult understands and applies financial knowledge in real-world scenarios.

o Measurement Scale: The five items measuring Financial Literacy include both knowledge and skills components, assessed through a 5-point Likert scale.

To further explain how specific constructs are measured:

• Financial Attitude (FA):

o This is measured using a 5-point Likert scale with items that assess respondents' mindset toward finances, such as their comfort with financial planning and saving.

• Self-Efficacy (SE):

o This construct is measured using five items that reflect young adults' confidence in managing their finances. The 5-point Likert scale assesses the degree of agreement with statements.

## 2.4 Inclusion and exclusion criteria

Inclusion Criteria: Young adults aged between 18 and 30 years who are actively engaged in financial decision-making and have experienced parental financial influence.

Exclusion Criteria: Individuals below 18 years of age or those who do not actively participate in financial decision-making.

## 2.5 Data collection

Data were collected using a structured

questionnaire created on Google Forms. The questionnaire included multiple-choice questions, Likert-scale items, and close-ended questions designed to assess young adults' financial management behaviours and their experiences with family financial socialization. Specific sections focused on parental role modelling, financial communication, and financial support. The use of Google Forms allowed for efficient data collection and ensured participants could complete the survey remotely, maintaining convenience and confidentiality.

**2.6 Data analysis**

Several statistical techniques will be applied to analyse the collected data:

- Reliability Analysis: The reliability of the questionnaire will be assessed using Cronbach's alpha to ensure that the instrument consistently measures the constructs of interest. Several statistical techniques will be applied to analyse the collected data:

- Reliability Analysis: The reliability of the questionnaire will be assessed using Cronbach's alpha to ensure that the instrument consistently measures the constructs of interest.

**Reliability statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .963 | 47 |

- Hypothesis Testing: The hypotheses will be tested using regression analysis to determine how each component of family financial socialization influences financial literacy.

**3.Results and discussions**

**3.1 Demographic analysis**

The results are summarized in the following tables, which show the statistical analysis for each of the study's objectives. (Table - 1).

Table presents the demographic profile of the 200 respondents who participated in the study.

- Age: The largest proportion of respondents (41%) was between the ages of 21-23, followed by 26% aged 24-25. Participants aged above 25 made up 20%, while the youngest group (18-20 years) constituted 13% of the sample. This reflects a predominantly young adult population within the typical university or early-career age range.

- Gender: The sample comprised more females (68%) than males (32%), indicating a higher female participation rate in the study.

- Education Level: Most respondents held a Master's degree or higher (42%) or a Bachelor's degree (41%), reflecting a well-educated sample. Only a small proportion reported having education below a diploma level (3%).

- Occupation: Over half of the participants (52%) were students, while 25% were employed full-time, and 12% were working part-time. The rest were either unemployed

**Table: 1**

**Demographic Characteristics of Respondents (N = 200)**

| Demographic Characteristic | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Age | 18-20 | 26 | 13.0 |
| | 21-23 | 82 | 41.0 |
| | 24-25 | 52 | 26.0 |
| | Above 25 | 40 | 20.0 |
| Gender | Female | 136 | 68.0 |
| | Male | 64 | 32.0 |
| Education Level | High School or below | 6 | 3.0 |
| | Diploma | 28 | 14.0 |
| | Bachelor's Degree | 82 | 41.0 |
| | Master's Degree or above | 84 | 42.0 |
| Occupation | Student | 104 | 52.0 |
| | Working Full-time | 50 | 25.0 |
| | Working Part-time | 24 | 12.0 |
| | Self-Employed | 4 | 2.0 |
| | Unemployed | 18 | 9.0 |
| Monthly Income (PKR) | Less than 50,000 | 112 | 56.0 |
| | 50,000 to 1,50,000 | 24 | 12.0 |
| | 1,50,000 to 2,50,000 | 44 | 22.0 |
| | Above 2,50,000 | 20 | 10.0 |
| Parents' Highest Education Level | High School or below | 118 | 59.0 |
| | Diploma | 44 | 22.0 |
| | Bachelor's Degree | 26 | 13.0 |
| | Master's Degree or above | 12 | 6.0 |

(9%) or self-employed (2%), showing that the majority were still in academic or early professional stages of life.

- Monthly Income: A majority of respondents (56%) reported earning less than PKR 50,000 per month, which aligns with the high proportion of students. A smaller segment earned between PKR 1,50,000-2,50,000 (22%) or above PKR 2,50,000 (10%).

- Parents' Highest Education Level: A substantial portion (59%) of respondents' parents had completed high school or less, whereas 22% had diplomas, and 19% had attained a bachelor's or master's degree. This suggests a relatively mixed socioeconomic background among participants.

Overall, the demographic distribution illustrates that the sample primarily consists of young, educated females, with a considerable proportion still engaged in education or in the early stages of their careers. This demographic context is important when interpreting the study's findings related to financial behaviours and influences.

### 3.2 Descriptive analysis

The results are summarized in the following tables, which show the statistical analysis for each of the study's objectives.

### 3.2.1 Objective 1: To examine the influence of parental financial role modelling on the financial knowledge,

skills, and behaviours of young adults.

Null Hypothesis (H?): There is no significant relationship between parental financial role modelling and young adults' financial literacy (knowledge, skills, and behaviours).

The results indicate a statistically significant positive relationship between parental financial role modelling and young adults' financial literacy. This suggests that when parents model responsible financial behaviours (e.g., budgeting, saving, and investing), young adults are more likely to adopt similar financial habits and practices. The strong correlation coefficients (Pearson's R = 0.638 and Spearman Correlation = 0.556) confirm that parental financial behaviors play a crucial role in enhancing financial knowledge, skills, and overall financial decision-making among young adults. The null hypothesis is rejected, and it can be concluded that parental role modelling has a significant and positive influence on financial literacy.

**3.2.2. Objective 2:** To assess the role of financial communication between parents and young adults in shaping financial attitudes and decision-making.

Null Hypothesis (H?): There is no significant association between financial communication and young adults' financial attitudes and decision-making.

The findings from the statistical analysis reveal a significant positive relationship between financial

## Descriptive statistics

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Financial literacy: Behaviour | 200 | 5 | 21 | 12.02 | 3.547 |
| Financial literacy: Skill200 | 4 | 20 | 8.46 | 3.101 |  |
| Financial literacy: Knowledge | 200 | 5 | 25 | 12.06 | 3.417 |
| Parental role model200 | 5.00 | 23.00 | 11.9900 | 4.10538 |  |
| Valid N (listwise)   200 |  |  |  |  |  |

## Symmetric measures

|  | Value | Asymp. Std. Errora | Approx. Tb | Approx. Sig. |
|---|---|---|---|---|
| Interval by IntervalPearson's R | .638 | .046 | 11.658 | .000c |
| Ordinal by OrdinalSpearman Correlation | .556 | .048 | 9.404 | .000c |
| N of Valid Cases          200 |  |  |  |  |

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

## Descriptive statistics

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Financial Communication | 200 | 5.00 | 25.00 | 12.7100 | 5.08282 |
| Financial Attitude | 200 | 5.00 | 24.00 | 10.9800 | 4.15765 |
| Valid N (listwise) | 200 |  |  |  |  |

**Symmetric Measures**

|  | Value | Asymp. Std. Errora | Approx. T[b] | Approx. Sig. |
|---|---|---|---|---|
| Interval by Pearson's R Interval | .701 | .041 | 13.839 | .000[c] |
| Ordinal by Spearman Correlation Ordinal | .703 | .048 | 13.921 | .000[c] |
| N of Valid Cases | 200 |  |  |  |

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation

communication and young adults' financial attitudes and decision-making. With a high correlation (Pearson's R = 0.701, Spearman Correlation = 0.703), the data suggest that open discussions about finances between parents and young adults are crucial for developing strong financial decision-making abilities. Regular conversations about topics such as budgeting, saving, and managing debt help to shape how young adults approach financial decisions. This finding underscores the importance of fostering open communication within families to support the development of positive financial attitudes. The null hypothesis is rejected, confirming that financial communication significantly impacts financial literacy and behaviour.

**3.2.3. Objective 3:** To evaluate the impact of parental financial support on young adults' financial security and planning.

*Null Hypothesis (H?): There is no significant association between parental financial support and young adults' financial security and planning.*

The results of the Wilcoxon Signed Ranks Test show a significant relationship between parental financial support and young adults' financial security and planning (p-value = 0.001). The Z-value of -3.315 indicates a meaningful and significant difference between the perceived impacts of parental financial support on financial security. Parental financial assistance, both in terms of monetary support and guidance, significantly contributes to young adults' ability to manage and plan for their financial future. This support helps reduce financial stress and allows young adults to focus on long-term financial goals such as saving for retirement, purchasing a home, and building financial security. Therefore, the null hypothesis is rejected, and it is evident that parental financial support

**Descriptive**

|  |  | Statistic | Std. Error |
|---|---|---|---|
| Financial Experience and Behaviour | Mean | 13.0600 | .29821 |
|  | 95% Confidence Interval for Mean Lower Bound | 12.4720 |  |
|  | Upper Bound | 13.6480 |  |
|  | 5% Trimmed Mean | 12.9667 |  |
|  | Median | 13.0000 |  |
|  | Variance | 17.785 |  |
|  | Std. Deviation | 4.21727 |  |
|  | Minimum | 5.00 |  |
|  | Maximum | 25.00 |  |
|  | Range | 20.00 |  |
|  | Interquartile Range | 7.00 |  |
|  | Skewness | .447 | .172 |
|  | Kurtosis | -.194 | .342 |

**Ranks**

|  |  | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Financial Support - Financial Experience and Behaviour | Negative Ranks | 14a | 7.50 | 105.00 |
|  | Positive Ranks | 0b | .00 | .00 |
|  | Ties | 0c |  |  |
|  | Total | 14 |  |  |

a. Financial Support < Financial Experience and Behaviour

b. Financial Support > Financial Experience and Behaviour

c. Financial Support = Financial Experience and Behaviour

**Test Statistics**

|  | Financial Support - Financial Experience and Behaviour |
|---|---|
| Z | -3.315b |
| Asymp. Sig. (2-tailed) | .001 |

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

plays a significant role in fostering financial security and planning among young adults.

**3.2.4 Objective 4:** To investigate the relationship between family financial socialization and young adults' ability to manage budgeting, debt, and long-term financial goals.

*Null Hypothesis (H?): There is no significant association between family financial socialization factors and young adults' financial management skills.*

### Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Family financial socialization variable | 200 | 4.75 | 21.75 | 11.1925 | 3.64003 |
| Self efficency | 200 | 5.00 | 25.00 | 13.0400 | 3.86953 |
| Valid N (listwise) | 200 | | | | |

## Hypothesis Test Summary

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Self efficency is the same across categories of Family financial socialization variable. | Independent-Samples Kruskal-Wallis Test | .000 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

## Conclusion

The results of this analysis show a statistically significant relationship between family financial socialization and young adults' financial management skills (p-value = 0.000). Family financial socialization, including role modelling, communication, and support, plays a critical role in shaping young adults' ability to manage their finances effectively. The significant p-value indicates that as young adults receive more guidance and support from their families, they are better equipped to manage budgeting, debt, and long-term financial goals. The null hypothesis is rejected, and it can be concluded that family financial socialization is a key factor in enhancing young adults' financial management skills.

## 4. Discussion

The findings from the statistical analyses highlight the crucial role of family financial socialization in shaping young adults' financial literacy. Each dimension-parental financial role modelling, financial communication, and parental financial support-was found to have a statistically significant impact on various aspects of financial behaviour and decision-making.

## Parental financial role modelling

The results revealed a strong positive relationship between parental financial role modelling and young adults' financial literacy (Pearson's R = 0.638). This indicates that young adults who observe responsible financial behaviours in their parents-such as budgeting, saving, and cautious spending-are more likely to internalize and replicate these behaviours themselves. This aligns with Bandura's Social Learning Theory, which posits that individuals learn by observing and imitating significant figures in their lives.

Similar findings have been reported by Ali et al. (2015), who found that parental influence was a strong predictor of financial satisfaction and responsible financial behaviour among young Malaysians. The current study corroborates such conclusions, especially within the South Asian context, where family values and interdependence are culturally emphasized.

## Financial communication

The significant association between financial communication and young adults' financial attitudes (Pearson's R = 0.701) highlights the transformative power of open dialogue about money within families. Financial conversations help demystify complex concepts and encourage proactive financial planning. When parents regularly communicate about budgeting, saving, and debt management, it fosters confidence and preparedness in young adults.

This finding is consistent with Khawar & Sarwar (2021), who emphasized the mediating role of financial communication in developing responsible financial behaviour. Their study in Pakistan supports the notion that such conversations not only

increase knowledge but also build trust and encourage independence in financial decision-making.

**Parental financial support**

The Wilcoxon Signed Ranks Test confirmed a significant relationship between parental financial support and young adults' financial security and planning (p = 0.001). Beyond monetary assistance, this also includes emotional and informational support. Young adults receiving financial support are better positioned to avoid high-risk debt, pursue educational and career opportunities, and plan for future expenses.

This supports earlier work by Marinov (2023), who found that financial assistance from parents provides a psychological safety net that encourages long-term planning. In high-context cultures such as those in South Asia, family financial support often extends well into adulthood, underlining the significance of this finding.

**Family financial socialization and financial management**

Finally, the analysis showed a significant correlation between family financial socialization and self-efficacy in financial management (p < 0.001). This includes the ability to manage budgets, control debt, and work toward long-term financial goals. Young adults exposed to comprehensive financial socialization-from observing role models to receiving guidance and support-are more likely to exhibit high

financial self-efficacy and responsible money management.

This finding resonates with Rasool & Ullah (2020), who found that early financial socialization reduces behavioural biases and enhances rational financial behaviour. It also reflects Galperti's (2019) argument that personal budgeting and financial discipline are not only learned through formal education but significantly through lived experiences and family practices.

**Unique contributions and contextual insights**

While much of the existing literature comes from Western settings, this study provides contextually relevant data from a South Asian sample, thus contributing to the global discourse on financial literacy. It also shows that financial literacy interventions in such regions may benefit significantly from incorporating the family unit, particularly in societies where intergenerational financial dependencies are common.

**5. Conclusion**

This study offers compelling evidence that family financial socialization plays a pivotal role in shaping the financial literacy of young adults. The findings indicate that parental financial role modelling, open communication about finances, and direct financial support are integral to fostering sound financial behaviors, informed decision-making, and strategic long-term financial planning among young individuals.

## Key conclusions

- **Parental Financial Role Modelling:** The study highlights a strong association between parents' financial behavior and the financial literacy of their children. Young adults who observe responsible financial habits-such as budgeting, saving, and investing-are more inclined to adopt similar behaviors, emphasizing the value of learning by example within the family context.

- **Financial Communication**: Frequent and transparent conversations about money between parents and children significantly enhance financial understanding and confidence. Such communication fosters informed attitudes and equips young adults with the skills necessary to navigate financial choices effectively.

- **Parental Financial Support:** Beyond financial modeling and communication, tangible financial support from parents-both monetary and advisory-contributes meaningfully to financial stability and preparedness among young adults. This support mitigates stress and reinforces planning for future financial milestones.

## Limitations and directions for future research

While the findings are insightful, the study is not without limitations. The use of self-reported data introduces potential bias, and the sample was geographically limited, which may affect the generalizability of the results. Future research should incorporate larger, more diverse samples across various socioeconomic and cultural contexts to validate these findings. Additionally, qualitative methods-such as interviews or focus groups-could provide richer, more nuanced insights into the mechanisms of family financial socialization.

## Implications for policy and practice

The study underscores the need for policy initiatives and educational programs that incorporate families into the financial literacy development process. Policymakers and educators should advocate for:

- Programs that empower parents to serve as effective financial role models;

- Resources and training that facilitate open family discussions about money;

- Initiatives that encourage early financial education, starting at home.

By fostering a supportive and communicative financial environment within families, stakeholders can enhance the financial capabilities of the next generation and promote lifelong financial well-being.

## Items (Scale) Used in the Study for Each Variable:

### 1. Parental Financial Role Modelling (PR)

- PR1: My parents are careful with their finances.

- PR2: My parents save for long-term goals.

- PR3: My parents invest in stocks or other investments.

- PR4: My parents avoid debt.

- PR5: My parents frequently discuss financial matters with me.

## 2. Financial Communication (FC)

" FC1: I frequently discuss finances with my parents.

" FC2: I feel comfortable discussing finances with my parents.

" FC3: My parents explain financial decisions to me.

" FC4: I feel encouraged to ask financial questions.

" FC5: The quality of financial discussions with my parents is high.

## 3. Parental Financial Support (FS)

- FS1: My parents provide a significant amount of financial assistance.

- FS2: My parents help me with financial planning.

- FS3: I feel financially secure with my parents' support.

- FS4: I am satisfied with the level of financial support from my parents.

## 4. Cultural and Socio-economic Values (CS)

- CS1: Financial security is highly valued in my culture.

- CS2: Cultural and socio-economic values significantly influence my financial decisions.

- CS3: My community places a strong emphasis on financial literacy.

- CS4: Financial education is highly valued in my family.

- CS5: My cultural background has shaped my financial attitudes and behaviors.

## 5. Financial Attitude (FA)

- FA1: I enjoy managing my finances.

- FA2: I feel anxious when thinking about finances.

- FA3: I believe financial planning is important.

- FA4: I feel confident in my financial decisions.

- FA5: I think finances are boring.

## 6. Self-Efficacy in Financial Management (SE)

- SE1: I am confident in my ability to create a budget.

- SE2: I can manage my finances effectively.

- SE3: I am able to save for long-term goals.

- SE4: I can invest in stocks or other investments.

- SE5: I am able to avoid debt.

## 7. Financial Experience and Behaviour (FEB)

- FEB1: I have experience with budgeting.

- FEB2: I have a system for organizing financial documents.

- FEB3: I have a strategy for managing my debt.

- FEB4: I have experience with financial planning.

- FEB5: I have made financial mistakes in the past.

## 8. Financial Literacy (FL)

- FL1: I understand the difference between a savings account and a checking account.

- FL2: I understand compound interest.

- FL3: I understand credit scores.

- FL4: I know how to read a financial statement.

- FL5: I understand financial planning.

## 9. Financial Literacy: Behaviour (FLB)

- FLB1: I can create a budget.

- FLB2: I can manage my finances effectively.

- FLB3: I can save for long-term goals.

- FLB4: I can understand financial news and trends.

## 10. Financial Literacy: Skill (FLS)

- FLS1: I regularly review my budget.

- FLS2: I save a portion of my income regularly.

- FLS3: I regularly review my debt obligations to ensure I'm on track.

- FLS4: I prioritize needs over wants.

- FLS5: I have an emergency fund.

## 11. Financial Literacy: Knowledge (FLK)

- FLK1: I understand basic financial concepts.

- FLK2: I can differentiate between savings and investment options.

- FLK3: I have a basic understanding of taxes and their effects on my income.

- FLK4: I am knowledgeable about various types of financial products.

- FLK5: I can recognize financial scams and frauds.

## 12. Family Financial Socialization (FFS)

- FFS: A composite of Parental Financial Role Modelling, Financial Communication, and Parental Financial Support. This variable reflects the influence of family financial practices and discussions on young adults' financial literacy and behaviour.

**Variables:**

- PR = Parental Financial Role Modelling

- FC = Financial Communication

- FA = Financial Attitude

- SE = Self-Efficacy

- FS = Parental Financial Support

- FEB = Financial Experience and Behaviour

- FL = Financial Literacy

- FLB = Financial Literacy: Behaviour

- FLS = Financial Literacy: Skill

- FLK = Financial Literacy: Knowledge

- FFS = Family Financial Socialization Variable

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## Book Review

# Economic transformation of India with special reference to Kerala by Dr. K.V Joseph, Mittal publications, New Delhi

Jose Sebastian

This book by Dr. K.V Joseph is a collection of nine articles on various facets of Kerala's economy from an inter-disciplinary perspective. Each paper presents an overview of the transformation of the sector since the formation of the state and raises pertinent questions about its future in the changed circumstances. Ten academic papers of the author related to each article published in well known professional journals are appended.

The introductory chapter " An Overview of the Economic Transformation" places Kerala's economic transformation in the larger context of Indian economy and briefly summarises each article. This definitely helps a reader to straight away go to the article which may be of immediate relevance to his/her research and study.

The second chapter entitled "Rise and Fall of Agriculture since Independence " is an overview of the trends in area, production and productivity of major crops in Kerala. After discussing the various factors contributing to the dismal state of the agricultural sector in Kerala. the author rightly concludes that Kerala cannot afford to ignore agriculture as the remittance driven prosperity is 'artificial' and cannot be sustained. The third chapter is on the lacklustre performance of the industrial sector of Kerala. The major factors contributing the state's industrial backwardness like labour militancy and the indifferent attitude of the organised labour to work are discussed in detail. Recent developments like Kerala achieving the first position in in 'ease of doing business' seems to address at least partially the anxieties and concerns of the author.

The fourth chapter "Migration in the Development in Kerala" is an overview of the trends and pattern of migration from Kerala. Keralites have always been on the move- from coastal areas and mid-land to the western ghats and later to Gulf countries. Migration is the single most important factor behind the internationally known 'Kerala model of development'. The recent trends in migration to European countries, Canada and United States are discussed in detail. The fifth Chapter " Pattern of Economic Transformation since Independence"

presents a comprehensive view of the structural transformation of Kerala Economy since its formation.

Sixth and seventh chapters are snapshots on rising agricultural wages and growth of tourism industry. These two brief articles could have been part of some of the preceding articles. The eighth chapter " Entry of Culture Industry in Kerala" discusses the emergence of visual media such as film industry and television. Though the approach here is more descriptive than analytical, the contribution of the author is praiseworthy as this is an area where not much work has been done.

The ninth chapter is author's thoughts and observations about the future of Kerala economy in the backdrop of Covid-19 pandemic. There can be differences of opinion about some of his observations depending upon the ideological predilections of the reader. However, as a scholar who has done pioneering work on several aspects of Kerala economy and society, his observations and anxieties are quite pertinent.

For a reader who looks at Kerala's transformation over the last 65 years from a multi-disciplinary perspective, the articles together with the academic papers in this volume provide a fairly good understanding of the path we have trudged and the options before the state to overcome the emerging challenges. As the author has admitted in the introduction, there are repetitions here and there which could have been avoided through a more meticulous editing. That apart, the book is a welcome addition to the growing literature on Kerala economy.

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(Dr. Jose Sebastian, Former faculty, Gulati Institute of Finance and Taxation, Thiruvananthapuram.)

GULATI INSTITUTE OF
FINANCE AND TAXATION

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**GST updates**

Vidya V Devan

# GST council's recommendations for improved tax compliance measures and other rate adjustments: Clarifications on contentious issues, measures aimed at trade facilitation

**I. GST Collection of India during January, February, and March.**

The gross GST revenue collection in January is Rs. 1,95,506 lakh crores, and the net revenue was Rs.171,653. In February gross GST revenue was Rs. 1,83,646, and the total net revenue was Rs. 1,50,528. In March, the gross revenue was Rs. 1,96,141, and net GST revenue is Rs. 1,76,526 Table 1 presents the GST collection of India from January to March 2025. Chart 1 gives the comparison of GST revenue in India during January to March 2025 in comparison to the same period in 2024. Table 1 presents the GST collection of India from January to March 2025. Chart 1 gives the comparison of GST revenue in India

during January to March 2025 in comparison to the same period in 2024.

**II. GST Revenue in Kerala**

GST revenue collection of Kerala during January 2025 to March 2025 in comparison to the same period in 2024 is depicted in Table 2 & Chart 2.

**III. Important updates in GST**

**1. Implementation of mandatory mentioning of HSN codes in GSTR-1 & GSTR 1A**

After the successful implementation of Phase-I & Phase-II now Phase-III regarding Table 12 of GSTR-1 & 1A is being implemented, from return period February 2025. In this phase, manual

**Table 1:** GST collection of India from January 2025 to March 2025 (RS in crore).

| Month | CGST | SGST | IGST | CESS |
|---|---|---|---|---|
| January 25 | 32,460 | 40,172 | 86,012 | 13,009 |
| February 25 | 29,537 | 36,749 | 71,796 | 12,446 |
| March 25 | 35,524 | 46,230 | 82,730 | 12,043 |

**Chart 1:** Comparison of GST Revenue of January -March 2025
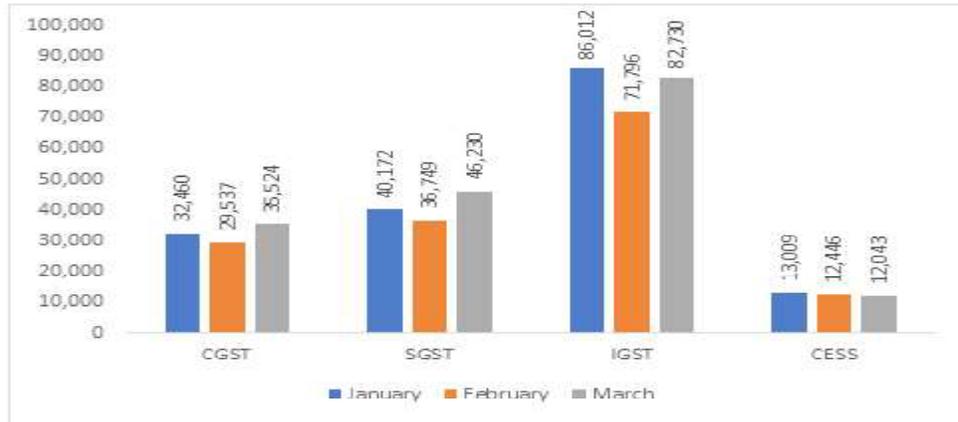


**Table - 2** GST collection in Kerala during January toMarch2025 (Rs. in crore) in comparison with same period in 2024

| Months | 2024 | 2025 | Growth Rate in % |
|---|---|---|---|
| January | 2,776 | 2,989 | 8 |
| February | 2,688 | 2,894 | 8 |
| March | 2,598 | 2,829 | 9 |

**Chart 2:** GST Revenue of Kerala from January 2025 to March 2025 in comparison with the same period in the previous year.



GST Revenue of Kerala from January 2025 to March 2025 in comparison with the same period in the previous year.
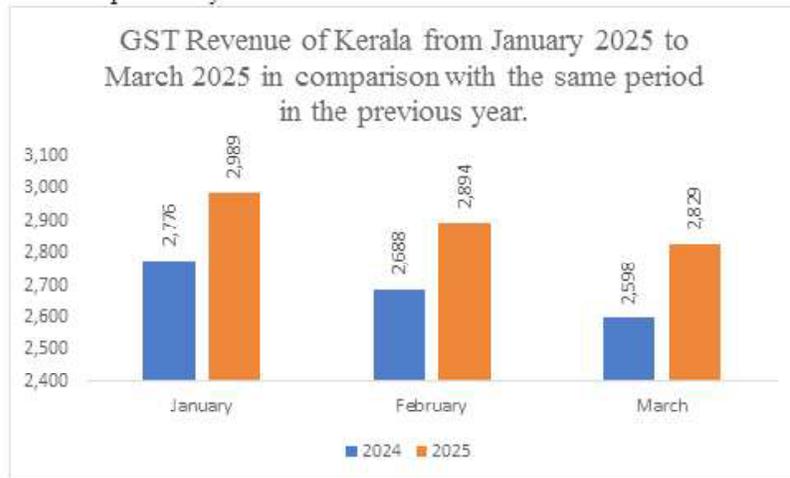
Table 1 & Table 2
Note: Rs. in crore
Source: https://www.gst.gov.in/

entry of HSN has been replaced by choosing the correct HSN from given drop-down. Also, Table 12 has been bifurcated into two tabs, namely B2B and B2C, to report these supplies separately. Further, validation regarding values of the supplies and tax amounts involved in the same have also been introduced for both the tabs of Table-12. However, in the initial period, these validations have been kept in warning mode only, which means failing the validation will not be a blocker for filling of GSTR-1 & 1A.

## 2. CBIC Alerts Taxpayers About Fake GST Summons; Urges Verification Through Official Portal

The Central Board of Indirect Taxes and Customs (CBIC) has issued a warning regarding fraudulent individuals sending counterfeit summons to taxpayers, posing as officials from the Directorate General of GST Intelligence (DGGI) or CGST offices. These fake summons are designed to closely mimic genuine ones by using the Department's logo and fabricated Document Identification Numbers (DINs) to create a misleading sense of authenticity.

Taxpayers are advised to verify the legitimacy of any communication-such as summons, notices, or letters-allegedly issued by CBIC officials through the 'VERIFY CBIC-DIN' feature available on the official CBIC website: https://esanchar.cbic.gov.in/DIN/DINSearch.

If a communication is found to be fraudulent, it should be promptly reported to the respective DGGI or CGST office. Timely reporting will help authorities take appropriate legal action against those attempting to deceive the public with fake documents.

CBIC issued Circular No. 122/41/2019-GST dated November 5, 2019, mandating the generation and use of a Document Identification Number (DIN) on all communications sent by its officers.

## 3. Clarifications regarding applicability of GST on certain services

Based on the recommendations of the GST Council in its 55th meeting held on 21stDecember 2024, at Jaisalmer, and in exercise of the powers conferred under section 168(1) of the Central Goods and Services Tax Act, 2017, clarifications on various issues are being issued through the Circular No. 245/02/2025-GST which includes

1. Applicability of GST on penal charges being levied by the Regulated Entities (REs)in view of RBI instructions dated 18.08.2023 directing such Regulated Entities (REs) to levy penal charges in place of penal interest.

2. Whether GST exemption under Sl. No. 34 of notification No. 12/2017-CTR dated 28.06.2017 is available to payment aggregators in relation to settlement of an amount, up to two thousand rupees in a single transaction, transacted through credit card, debit card, charge card or other payment card services?

3. Regularizing payment of GST on research and development services provided by Government Entities against consideration in the form of grants received from Government Entities

4. Regularizing payment of GST on skilling services provided by Training Partners approved by the National Skill Development Corporation.

5. Applicability of GST on facility management services provided to Municipal Corporation of Delhi (MCD) Headquarters.

6. Applicability of GST on facility management services provided to Municipal Corporation of Delhi (MCD) Headquarters.

7. Regularizing payment of GST on Reverse Charge (RCM) basis on renting of commercial property by unregistered person to a registered person for taxpayers registered under composition levy

8. Regularizing payment of GST on certain support services provided by an electricity transmission or distribution utility.

9. Regularizing the payment of GST on services provided by M/s Goethe Institute/Max Mueller Bhawans.

**4. Clarification regarding GST rates & classification (goods) based on the recommendations of the GST Council in its 55th meeting held on 21st December, 2024, at Jaisalmer-Circular No. 247/04/2025-GST**

**i. Clarification regarding classification and GST rate on pepper of genus Piper**

Based on the recommendations of the GST Council in its 55th meeting, it is hereby clarified that pepper of genus Piper, whether green (fresh), white or black, is covered under HS 0904 and attracts 5% GST vide S. No. 38 of Schedule I of notification No. 1/2017-Central Tax (Rate) dated the 28th June, 2017.

As regards applicability of GST on supply of dried pepper by an agriculturist from their plantations, Section 23 (1) (b) of the CGST Act provides that an agriculturist, as defined in Section 2(7) of the CGST Act, to the extent of supply of produce out of cultivation of land is not liable to take registration.

As per the recommendation of the GST Council, it is hereby clarified that an agriculturist supplying dried pepper is not liable to be registered under Section 23(1) of the CGST Act is exempt from GST.

**ii. Clarification regarding raisins supplied by an agriculturist**

As per the recommendation of the GST Council, it is hereby clarified that an agriculturist supplying raisins is not liable to be registered under Section 23(1) of the CGST Act is exempt from GST.

### iii. Clarification on GST rate on ready to eat popcorn

On the recommendation of the Council, it is hereby clarified that ready to eat popcorn which is mixed with salt and spices are classifiable under HS 2106 90 99. It is also hereby clarified that such ready to eat popcorn mixed with salt and spices classifiable under HS 2106 90 99 attracts 5% GST if other than pre-packaged and labelled vide S. No. 101A of Schedule I of notification No. 1/2017-Central Tax (Rate) dated the 28th June, 2017 and 12% GST if sold as packaged and labelled vide S. No. 46 of Schedule I of notification No. 1/2017-Central Tax (Rate) dated the 28th June, 2017, as it has the essential character of namkeens. However, when the popcorn is mixed with sugar thereby changing its character to sugar confectionary (e.g. caramel popcorn), it would be classifiable under HS 1704 90 90 attracting 18% GST vide S. No. 12 of Schedule III of notification No. 1/2017-Central Tax (Rate) dated the 28th June, 2017

Further, in view of the prevailing genuine doubts regarding the applicability of GST rate on ready to eat popcorn mixed with salt and spices, as recommended by the Council the issue for past period up to 14.2.2025 is hereby regularized on 'as is where is' basis.

### iv. Fly ash based Autoclaved Aerated Concrete Blocks

Fly ash bricks, fly ash aggregates and fly ash blocks classifiable under HS 6815 attract 12% GST vide S. No. 176B of Schedule II of notification No.1/2017-Central Tax (Rate) dated 28.06.2017. Articles of cement, of concrete or of artificial stone, whether or not reinforced classifiable under HS 6810 attract 18% GST vide S. No. 181 of Schedule III of notification No. 1/2017-Central Tax (Rate) dated 28.06.2017.

As per the recommendation of the GST Council, it is hereby clarified that autoclaved aerated concrete (AAC) blocks containing more than 50% fly ash content will fall under HS 6815 and attract 12% GST.

### 5. By Notification No. 07/2025 - Central Tax dated, the 23rd January, 2025, Central Goods and Services Tax (Amendment) Rules, 2025 were issued to include Rule 16A.

Rule 16A - Grant of temporary identification number. - Where a person is not liable to registration under the Act but is required to make any payment under the provisions of the Act, the proper officer may grant the said person a temporary identification number and issue an order in Part B of FORM GST REG-12."

### 6. Waiver of the Late Fee.

Notification No. 08/2025 - Central Tax dated the 23rd January, 2025 In exercise

of the powers conferred by section 128 of the Central Goods and Services Tax Act, 2017 (12 of 2017) the Central Government, on the recommendations of the Council, waives the amount of late fee referred to in section 47 of the said Act in respect of the return to be furnished under section 44 of the said Act, for the financial years 2017-18 or 2018-19 or 2019-20 or 2020-21 or 2021-22 or 2022-23, which is in excess of the late fee payable under section 47 of the said Act upto the date of furnishing of FORM GSTR-9 for the said financial year, for the class of registered persons, who were required to furnish reconciliation statement in FORM GSTR-9C along with the annual return in FORM GSTR-9 for the said financial year but failed to furnish the same along with the said return in FORM GSTR-9, and furnish the said statement in FORM GSTR-9C, subsequently on or before the 31st March, 2025. Provided that no refund of late fee already paid in respect of delayed furnishing of FORM GSTR-9C for the said financial years shall be available.

## 7. Exempting Medicines and Medical Goods from GST

RAJYA SABHA, Unstarred Question No-2770 Answered On - 25.03.2025

The Government of India answered the queries regarding the Goods and Services Tax (GST) on medicines and medical goods in a recent Rajya Sabha session. The GST rates and exemptions are determined by the GST Council, which currently has no recommendations to remove GST on all medicines and medical goods. Jan Aushadhi medicines are sold with GST included in their Maximum Retail Price (MRP) as per existing legislation. Healthcare services, including treatments and inpatients' food, are exempt from GST if room charges do not exceed ₹5,000 per day. State/UT-wise GST revenue from medicines and medical goods for the financial years 2019-20 to 2023-24 indicates a steady rise, with total collections growing from ₹8,861.70 crores in 2019-20 to ₹13,616.48 crores in 2023-24.

## 8. Restaurant Service' supplied at 'Specified Premises'

Clarification regarding GST rules for "restaurant services" within "specified premises," will be effective from April 1, 2025. "Specified premises" now refer to hotels with accommodation value exceeding ₹7,500/unit/day in the prior financial year, or those declared as such by the supplier. Restaurant services in these premises attract 18% GST with Input Tax Credit (ITC), while those outside incur 5% without ITC. The concept of "declared tariff" is replaced with "value of supply." Suppliers can declare premises as "specified" via Annexure VII (existing registrants) or Annexure VIII (new registrants) and opt-out via Annexure IX, filed annually between January 1st and March 31st. Declarations remain in effect until they are opted out. Separate declarations are needed for each location under a single registration. When the value threshold is exceeded, the premises are automatically specified. ITC rules differ for premises with mixed tax rates

## 9. GST Compliance Concerns Of MSMES And Small Taxpayers

Lok Sabha Unstarred Question No. 3854 To Be Answered On Monday, March 24, 2025

Government gave the answer to the question "Whether the Government has taken steps to address the compliance concerns of MSMEs and small taxpayers under GST and to simplify and streamline GST procedures to facilitate trade and commerce in the country, and if so, what are the details of these measures and how do they promote ease of doing business?" which was raised in Lok Sabha.

Yes, Government on the recommendations of GST Council, has proactively taken several measures from time to time to reduce the compliance burden of taxpayers, to simplify the GST and to promote ease of doing business in the country. Some of the major policy measures undertaken/ being taken by the Government in this regard are as under:

(i)     The threshold limit of annual turnover for registration under GST for entities engaged in supply of goods has been increased to Rs. 40 lakhs (other than some special category States) effective from April 1, 2019, which was initially Rs. 20 lakhs. This ensures that no GST compliance is required by such small units below the above threshold turnover and no GST is required to be paid by such units upto the said threshold turnover.

(ii)    The threshold limit of annual turnover for supply of goods under composition scheme has been increased to Rs. 1.5 crore (other than some special category States) effective from 1st April 2019, which was initially 75 lakhs. Such taxpayers under composition scheme are required to file a return on annual basis, thus reducing their compliance burden substantially.

(iii)   A scheme of quarterly return filing and monthly payment (QRMP) has been introduced where small taxpayers with turnover up to Rs. 5 crores have an option to file returns on quarterly basis, instead of monthly return

(iv)    Functionality for filing of NIL GST monthly return through SMS has been created for benefit of taxpayers.

(v)     Refund process has been made completely electronic with the process of filing, processing and sanction of refund done completely electronically.

(vi)    To reduce compliance burden on small taxpayers, exemption has been provided from filing annual return to taxpayers having annual Aggregate Turnover upto Rs. 2 crores.

(vii)   To facilitate and ease return filing process, an auto-generated return with editing facility is

being provided to the taxpayers on the portal based on details of the outward supplies furnished by the taxpayer and their suppliers.

(viii) A new option has been provided to allow the amendment of outward supplies of goods or services for current tax period.

(ix) UPI, Credit Card and IMPS have been provided as additional modes for payment of GST to facilitate taxpayers and to further encourage digital payment.

(x) To facilitate small taxpayers in making supply of goods through e-commerce operators (ECOs), the requirement of mandatory registration for intra-state supply of goods through ECOs has been waived off with effect from 01.10.2023 subject to fulfillment of certain conditions.

(xi) Retrospective amendment e.f. 01.07.2017 has been made to increase the time limit to avail input tax credit in respect of any invoice or debit note pertaining to the financial years 2017-18, 2018-19, 2019-20 and 2020-21, through any GSTR 3B return filed upto 30.11.2021.

(xii) Section 128A has been inserted in Central Goods and Services Tax Act, 2017, leading to waiver of interest and penalties for demand notices issued under Section 73 of the CGST Act for the fiscal years 2017-18, 2018-19 and 2019-20, in cases where the taxpayer pays the full amount of tax demanded in the notice upto 31.03.2025.

(xiii) Amendment has been made in Section 107 and Section 112 of Central Goods and Services Tax Act, 2017, for reducing the amount of pre-deposit required to be paid for filing of appeals under GST.

(xiv) To reduce burden of late fee on smaller taxpayers, late fee structure has been rationalized, from June, 2021 tax period onwards, by aligning the upper cap of late fee with tax liability/ turnover of the taxpayer.

(xv) Decriminalization of certain offences have been carried out in Central Goods and Services Tax Act, 2017.

## 10. GST on Higher Education and Student Affordability

Lok Sabha Unstarred Question No.3789 Answered On Monday, March 24, 2025

Minister of State in the Ministry of Finance Shri Pankaj Chaudhary gave answer to the questions of Shri Vishaldada Prakashbapu Patil such as

(a) whether the Government is aware that reducing GST rates on higher education and educational payments could significantly alleviate the financial burden on students;

(b) if so, whether the Government has considered to reduce GST on higher education and related payments to the slabs 12%, 5% or 0%;

(c) if not, the reasons for maintaining the current GST rates on educational services; and

(d) whether any consultations has been made with stakeholders regarding GST reforms for the education sector particularly addressing the financial burden on students of tier-2 and tier- 3 cities such as Sangli where access to higher education is already constrained by economic factors?

GST rates and exemptions are prescribed based on the recommendations of the GST Council, which is a Constitutional body comprising members from both the Union and State/UT Governments. Any decision regarding change in rates/exemptions or otherwise is made only after GST Council's deliberative process. Currently, no differential GST rates based on category of cities are in effect.

At present various exemptions provided under the GST framework to education sector are as under:

A. Notification 12/2017 - Central Tax (Rate) dated 28.06.2017

1. Sl 66:

a. Services provided by an educational institution to its students, faculty and staff;

b. Services by an educational institution by way of conduct of entrance

c. The following services provided to an educational institution:

  i. Services relating to admission to, or conduct of examination by, such institution;

  ii. If provided to pre-school or upto higher secondary school:

    Transportation of students, faculty and staff;

    Catering, including mid-day meals scheme sponsored by the Central Government, State Government or Union territory;

    Security or cleaning or housekeeping services performed in such educational institution;

  iii. Supply of online educational journals or periodicals (provided to higher educational institution); "educational institution" has also been defined as an institution providing services by way of,-

(i) pre-school education and education up to higher secondary school or equivalent;

(ii) education as a part of a curriculum for obtaining a qualification recognised by any law for the time being in force;

(iii) education as a part of an approved vocational education course; 2. Sl No. 66A: Services of affiliation provided by a Central or State Educational Board or Council or any other similar body, by whatever name called, to a school established, owned or controlled by the Central Government, State Government, Union Territory, local authority, Governmental authority or Government entity.

B. Notification No. 02/2017 - Central Tax (Rate) dated 28.06.2017 provide exemption to various items which are as under: 1. Printed books, including Braille books

2. Newspapers, journals and periodicals, whether or not illustrated or containing advertising material

3. Children's picture, drawing or colouring books

4. Slate pencils and chalk sticks

5. Slates

## 11. Clarification on GST on Educational Services

a. whether Goods and Services Tax (GST) is collected on commercial training and coaching services, educational books, services provided by educational institutions to its students, faculty, and staff;

(i) As per SI. No. 30 of Notification No. 8/2017- Integrated Tax (Rate), dated 28th June 2017, services of "commercial coaching or training" are taxable at 18%.

i. As per SI. No. 69 of Notification No. 9/2017- Integrated Tax (Rate), dated 28th June 2017, services provided by an educational institution to its students, faculty and staff are exempt.

ii. As per S. No. 119 of Schedule I of Notification No. 2/2017-Integrated Tax (Rate), dated 28th June 2017, printed books under HSN Code 4901 are exempt from GST.

■

*(Dr. Vidya V Devan, Assistant professor, Gulati Institute of Finance and Taxation Thiruvananthapuram)*

GULATI INSTITUTE OF
FINANCE AND TAXATION

# New studies on Kerala

Young Scholars' Forum, GIFT
Led by Surya K and Rhwithwik M S

## Investment, Finance, and Financial Institutions

### Scopus - Indexed

1.*Thulasi and Dharmaraj (2025). An analytical study on corporate governance determinants in MFIs in Kerala. Finance India.*

This research aims to analyse crucial factors impacting the corporate governance of MFIs (Microfinance Institutions) and discuss the significance of a robust governance approach to improving sustainable development and enhancing stability and reliability. Efficient governance is crucial in aiding MFIs in decreasing poverty and increasing financial access. This research followed the method of Qualitative and quantitative approaches. The approaches utilized were the distribution of an organized questionnaire to 200 directors from 18 MFI companies and the use of a five-point Likert scale to scrutinize the factors to detect the determinants of governance. Data was accumulated through literature surveys, interviews with stakeholders, and quantitative analysis of data. The findings of this research depict that MFIs face challenges in enhancing their governance framework, allocating resources, and adhering to regulations.

2. *Vishakh and Jayalakshmi (2025). Comparative Analysis of Mutual Fund Investment Awareness in Urban and Rural Areas of Kerala.*

This study presents a comprehensive comparative analysis of mutual fund investment awareness between urban and rural areas of Kerala. Employing a mixed-method approach, data were collected from 500 respondents, with equal representation from urban and rural regions, using structured questionnaires and interviews. The analysis revealed significant disparities in awareness levels, investment preferences, and information sources. Urban investors exhibited higher awareness and a greater reliance on digital media, whereas rural investors depended more on traditional sources. The study identifies key factors influencing these differences, including access to information, educational background, and socio-economic status. It also suggests targeted strategies for enhancing mutual fund awareness in both urban and rural settings, such as customised educational programs and

improved access to digital resources in rural areas.

*3. Varkey and Sujathan (2025). An Alternative Index for Measuring Financial Inclusion: A Study of Scheduled Tribes in Kerala.*

The degree of financial inclusion within the tribes in Kerala is being assessed here through a newly developed metric called the Individual Financial Inclusion Index (IFII). Apart from examining the regressors of financial inclusion, the study underscores the profoundly inadequate levels of financial inclusion observed among the tribes. The article advocates for a fundamental re-evaluation in the determination of financial inclusion strategies, emphasising the need for diligent intervention by governing bodies to facilitate sustained and comprehensive access to enable informed financial services decisions among tribes.

**Other Journals**

*1. Lenin and Ananthi (2025). Perceptions of Credit Access: MSME Owners Versus Bank Employees on MSME Loans.*

Micro, Small, and Medium-Sized Businesses (MSMEs) are vital to economic growth, innovation, and job creation, but they frequently face obstacles in obtaining the capital they need to survive and thrive. A gap in the two groups' comprehension of credit procedures is revealed by this study, which is based on direct data from 100 MSME borrowers and 100 bank employees in Kerala, as well as secondary data from the RBI. The problem is not the availability of credit products, but rather the lack of financial literacy among MSME owners and the frequency of unfair credit evaluations, particularly in rural areas. The report highlights the necessity of improved state regulations, financial literacy initiatives, and the deployment of a Unified Lending Interface (ULI) to streamline lending to address these issues, guarantee quicker, easier access to credit, and foster sustainable growth.

*2. Vishakh and Jayalakshmi (2025). Risk perception and management among mutual fund investors in Kerala.*

India has seen tremendous growth in the mutual fund industry, providing investors with more diversified investment opportunities. This study examines the risk perception and management among mutual fund investors in Kerala, a state known for its rapidly growing financial literacy and investment culture. The authors explore how investors view various risks associated with mutual funds, their risk tolerance levels, and their strategies, including diversification. The study uses quantitative and qualitative methods to understand investor behaviour comprehensively. The findings reveal a significant knowledge gap in advanced risk management techniques, even though a majority of investors in Kerala have moderate to high-risk tolerance. Demographic factors such as age, income, and education levels also influence risk perception and management strategies. The study emphasizes the need for enhanced

financial literacy programs to equip investors with the necessary tools for making responsible decisions.

*3. Vismaya and Sandhya (2025). Working capital management strategies and financial performance of MSMEs in Kerala.*

Micro, Small, and Medium Enterprises (MSMEs) are crucial drivers of economic development, contributing to employment generation, income distribution, and overall economic growth. However, their success and sustainability largely depend on effective financial management practices. This study explores the working capital management and financial practices of micro and small enterprises in Kannur district, utilizing both primary and secondary data sources. The research highlights the critical role of efficient financial planning, budgeting, and resource allocation in enhancing business stability and growth. It also highlights the importance of financial literacy and the adoption of modern financial tools to optimize financial performance. The findings reveal that many enterprises face challenges in maintaining proper financial records, accessing credit, and managing cash flows effectively. Addressing these gaps through targeted financial training and policy interventions can significantly improve the financial resilience of MSMEs. By strengthening financial management practices, these enterprises can achieve long-term sustainability, contributing to the broader economic development of Kerala.

## Society and Culture

### Scopus- Indexed

*1. PP and & Ponmulathodi (2025). Migration, nostalgia of mothers' recipes and technology: narrations from Gulf migrants of Northern Kerala.*

This paper delves into the narratives of male migrants from Northern Kerala who have established their lives in GCC (Gulf Cooperation Council) countries. The migration pattern from Northern Kerala largely involves the male family members seeking employment in Gulf countries while their families remain in the homeland. This geographical displacement often leads to the recreation of their culture, including food, dress, religious and regional celebrations, which is nostalgically attached and embodied with memories of family members and community. Food, the foremost element, and the act of cooking the homeland food or mothers' recipes play a crucial role in alleviating the displacement trauma among the migrants. Moreover, preparing and sharing home food or mothers' recipes with friends and others has become a social networking strategy, allowing migrants to construct a collective social identity in the host nation. This paper is based on semi-structured interviews, both direct and online, from thirty migrants, either active or retired, based in the GCC countries.

*2. Cherian and Natarajamurthy (2025). The socio-cultural impact of rural tourism in India: A regional analysis with special*

*reference to Kerala in the context of the Sustainable Development Goals (SDGs).*

This study investigates the transformative potential of ecotourism in coastal slum areas of developing regions, focusing on its role in poverty alleviation, improved living conditions, and sustainable development. Grounded in the theoretical frameworks of sustainable development and community-based tourism, the research employs a quantitative methodology using Structural Equation Modelling (SEM) in R Studio. Data were gathered from 160 residents through structured surveys and supported by field observations. The results demonstrate that infrastructure investment and active community participation significantly enhance economic opportunities and environmental outcomes. However, limitations in policy support and adherence to sustainable tourism principles constrain the full impact of ecotourism interventions. The study contributes to both theory and practice by proposing an integrated framework for leveraging ecotourism as a strategic tool for slum transformation, offering practical guidance for policymakers, urban planners, and development practitioners.

## Agriculture and Rural Economy

### Scopus-Indexed

*1.Saju and Ramadevi (2025). Post-COVID challenges and strategies for Kerala's spice companies in agro-based rural entrepreneurship.*

Globally, entrepreneurs face a new reality post-COVID-19 due to the unprecedented downturn in the global economy. Rural entrepreneurship, crucial to the rural economy, creates employment and contributes to per capita income. Many entrepreneurs, especially in rural areas, encounter challenges such as capital management, swift decision-making, constraints in purchase, production, and operations, as well as a decline in sales volume and profitability. This study analyses challenges faced by the value-added spice industry in the post-COVID-19 era, including timely availability of quality inputs and labour, purchase and production issues, and communication and marketing obstacles. The study, conducted in Kerala, the spice hub of India, focuses on crops like black pepper, cardamom, nutmeg, ginger, turmeric, clove, and cinnamon. Despite various value-added products, including seasonings, spice blends, oleoresins, and essential oils, the study examines eleven agro enterprises in Kerala to understand post-COVID-19 challenges. These challenges have disrupted the supply chain, increased market uncertainties, and intensified financial constraints for agro enterprises.

*2. Nowfal, et, al (2025). The Role of Agricultural Cooperatives in Enhancing Credit Access, Market Information, and Smart Farming among Rural Farmers.*

This study examines the role of agricultural cooperatives in enhancing Credit Access (CA), Market Information (MI), and Smart Farming (SF) among

rural farmers in Kerala. Agricultural cooperatives serve as vital organizations that design, structured, surveys collect data from 421 cooperative and non-member farmers. The study aims to identify the effects of cooperative membership in CA services, MI, and SF among rural farmers. Analysis of key findings shows that cooperative members loan from multiple financial sectors, are provided with more frequent MI, and have higher adoption of SF practices, thus featuring the importance of cooperatives in financial development, MI, and environmental organization. The analysis employs t-tests, Chi square tests, Pearson correlations, and regression models to compare the impact of cooperative membership on CA, MI, and SF. The results reveal that cooperative members are significantly more likely to secure loans, receive more significant loan amounts, and report higher satisfaction with loan terms than non-members. Cooperative members also receive more frequent and reliable MI, which enables them to adjust their sales approaches and access better market opportunities. In addition, cooperative members exhibit higher adoption rates of SF and perceive more significant economic benefits. The study confirms that agricultural organizations are critical in promoting financial inclusion, market participation, and environmental sustainability among rural farmers.

*3. Valliyangal and Mohammed Kasim (2025). Exploring the contributing factors to agricultural growth in Kerala: an ARDL investigation of the dynamic relationships.*

This study estimates the growth rate of total agricultural output and major crop production in Kerala from 1970 to 2019, while also identifying key determinants of agricultural growth in the state. The Compound Annual Growth Rate (CAGR) is used to assess long-term trends in agricultural output, and an Autoregressive Distributed Lag (ARDL) model is employed to analyze the factors influencing growth. Findings reveal a consistent decline in food crop production and a recent downturn in commercial crop output. Econometric results highlight rainfall, fertilizer consumption, and gross cropped area as significant long-term determinants, with rainfall negatively impacting output, while fertilizer use and cropped area positively contribute. The study is limited by the use of a proxy for agricultural output and data constraints on variables such as agricultural credit and public investment. Nonetheless, it provides original insights into the structural factors driving agricultural performance in Kerala, offering a valuable foundation for informed policy formulation.

**Other Journals**

*1. Bastin and K, S. J. (2025). Blending Traditional Knowledge of Farmers in Agriculture with Modern Scientific Technologies in Coastal Ecosystem of Kerala.*

The limitations of land and increased demand to feed the growing population have changed many of the traditional farming practices in Kerala, which have resulted in the adoption of many new

technologies practiced elsewhere, not suitable for the agroecology of Kerala. Kerala is predominantly an agricultural state with the main cropping system of rice, being cultivated in three seasons, namely, kharif (virippu), rabi (mundakan), and puncha. Farmers have started intensive cultivation, integrating many of the traditional technologies with modern scientific knowledge so as to achieve the goals of improved soil health, increased crop production, and enhanced environmental sustainability. Soil acidity is an important problem which has to be corrected by liming the soil before starting cultivation. Apart from lime, other sources like biochar, ash, charcoal, and rock dust have been tried to reduce soil acidity and Fe toxicity to improve yield. Inclusion of legumes in coconut basins contributes about 15-25 kg of biomass and 100-200 g of N during a growth period of 60-120 days in the monsoon season. Biofertilizers which increase the nutrient use efficiency (NUE) were successfully utilized in vegetables, tuber crops, and banana. Local practices of plant protection avoided 4-5 chemical pesticide sprays (saved about Rs. 4000-5000/ha) and gave 30% increase in yield. Soil application of Trichoderma viride followed by soil drenching with P. fluorescence at 2% recorded the minimum disease incidence (2.77%) and maximum yield of pepper 2.19 kg/vine. By integrating buffaloes and ducks in rice field, in addition to rice and fish in wetlands of Kuttanad, the income can be further increased. With respect to greenhouse gas emission, this system should be promoted to achieve carbon neutrality. The highest amount of carbon sequestration through agroforestry component resulted in the homestead-based Integrated Farming System (IFS) model while the lowest for rice-based model. Hence, integrating the traditional practices with modern technology is the good agricultural practices (GAP) identified in terms of environmental safety and sustainability apart from economic viability. This involves adoption of an integrated approach utilizing farm generated waste, compost, green manure crop, as well as limited use of chemical fertilizer and organic Agritourism in Kerala.

*2. Devi, et, al (2025). Aerial spraying of nutrients and bio-fungicide for enhancing grain yield, grain quality, and economics of rice in Kuttanad, Kerala.*

An experiment was carried out in two clusters of rice fields (polders) in Upper Kuttanad and North Kuttanad during November 2022 to February 2023 to investigate the effect of aerial foliar spray of nutrients and bio-fungicide on yield, grain quality and economics of paddy crop. Aerial spraying of treatments involving bio-fungicide, Pseudomonas fluorescence and macro nutrient formulation $KNO_3$ (13% N and 45% K) and secondary and micro nutrient mixture of Kerala Agricultural University, KAU Sampoorna multimix (Mg, S, B, Zn, Cu, Fe, Mn, Mo) was carried out at different crop stages alone or in combinations. Seven treatments viz., T1-Sampoorna (0.5%) @30 DAS, T2- $KNO_3$ (1 %) @80 DAS, T3- Sampoorna (0.5%)

@30 DAS + KNO3 (0.5%) @80 DAS, T4-Pseudomonas (2%) @30 DAS + Sampoorna (0.5%) @80 DAS, T5-Pseudomonas (2%) @30 DAS+ Sampoorna (0.5%) + KNO3 (0.5%) @80 DAS, T6- Pseudomonas (2%) @ 70DAS + Sampoorna (0.5%) + KNO3 (0.5%) @80 DAS, T7- No foliar spray, were applied randomly with three replications using unmanned aerial vehicle (drone). The foliar applications were carried out as a supplement to soil application of recommended dose of nutrients 90:45:45 kg NPK ha1 and burnt lime as per Kerala Agricultural University package of practices recommendations. Observations on number of panicles, number of grains per panicle, test weight, percentage of blackened grains and grain yield were recorded and analysed with randomized completely block design. The effect of aerial spraying treatments was found to be significant on yield, test weight and percentage of blackened grains in field trials conducted in paddy fields of Upper Kuttanad and North Kuttanad. The treatments involving either KNO3 applied at 80 days after sowing, coinciding with the flag leaf stage, alone or in combination with bio-fungicide or multi nutrient mix Sampoorna showcased better yield, grain quality attributes as well as the economics of rice crop.

*3. Prema (2025). Resource-use Efficiency in Raw Cashew Nut Production in Kerala, India.*

This study examines resource use efficiency in raw cashew nut production in Kerala, with a focus on the Kannur and Kollam districts during 2023-2024. Data were collected from 120 randomly selected farmers using a structured questionnaire. The Cobb-Douglas production function was estimated using the Ordinary Least Squares (OLS) method, and descriptive statistics were applied to analyze the socio-economic profile of the respondents. Results indicate that a majority of farmers were elderly, agriculturally dependent, and predominantly marginal or smallholders with relatively high literacy levels. The analysis identified manure and human labour as significant and positively influencing cashew nut yield, while plant age was found to have a significant negative impact beyond 30 years, indicating a decline in productivity. Furthermore, resource use efficiency analysis revealed underutilization of manure ($r > 1$; 3.65), suggesting potential for improved yield through optimized input use. The findings underscore the need for targeted extension services and input management strategies to enhance cashew productivity and efficiency in Kerala.

**Public Policy**

*1. Sivan, et., al (2025). Enhancing disaster resilience through women's self-help groups: A community-based study of Kudumbashree members in Poonjar Thekkekara panchayat, Kottayam, Kerala, India.*

Effective disaster management relies on equipping local communities, often the first responders, with the necessary skills and resources to reduce the losses. In this context, womenled Self-help groups

(SHG) plays a vital role in strengthening community resilience. This study examines the contributions of women's SHGs in a landslide-prone region within Poonjar Thekkekara panchayat - a local self-government unit in Kottayam district, Kerala, India by developing Disaster Resilience Performance Index (DRPI) based on the surveys conducted across different administrative divisions (wards) and phases of disaster management-before, during, and after disasters. The findings highlight that SHGs provide crucial support in immediate response and long-term recovery efforts, offering financial aid, skills training, and psychological assistance. Additionally, these groups contribute to the economic empowerment of women, fostering financial stability and reinforcing community resilience in disaster-prone areas. The study underscores the effectiveness of community-driven initiatives in disaster preparedness and recovery, suggesting that similar models of women-led SHGs could be adapted to enhance resilience in other vulnerable regions worldwide.

*2. Nandan and Anandharajakumar (2025). Empowering Women through Local Governance: An Exploration of Impact of Kudumbashree on Women Representation.*

This study explores the impact of Kudumbashree, an innovative programme aimed at poverty alleviation and the empowerment of women in Kerala, especially on the representation of women in local governance. Kudumbashree has played a pivotal role in enabling women to navigate and overcome traditional gender limitations by fostering participation in self-help groups, micro-enterprises, and governance systems by prioritizing collective action, community involvement, and leadership development. The programme has developed the confidence among women, allowing them to advocate for their rights and shape policy outcomes firmly. This study highlights the critical role of supportive governmental persistent advocacy in securing the sustainability of political empowerment of women in Kerala. The Kudumbashree programme represent an effective strategy for integrating economic development with political empowerment highlighting the transformative capacity of grassroots movements in fostering inclusive governance.

## Labour

### Book chapters

*1. Satheesh (2025). Labour, Nature and Capitalism: Exploring labour-environmental conflicts in Kerala, India.*

Labour, Nature and Capitalism traces how the alliance between labour and capital manifests in the form of conflicts between organised trade unions and a local environmental movement in the context of the much-acclaimed Kerala model of development. It explores the history of the area's local industrialisation, the presence of varied economic interests and exposes the barriers to forming solidarity networks among the working classes. Situated in the backdrop of the Eloor-Edayar

industrial belt, this book delves deeper into the ways in which capitalism infiltrates and manipulates the social movement landscape in Kerala. It shows how the hegemonic coalition between the state, industries and institutionalised trade unions enable capitalist rationality to mediate and control social movements in postcolonial settings. Using an ethnographic approach, the book seeks to embark on a journey to understand the tensions between two progressive social movements - a trade union collective and a local environmental movement - foregrounding the experiences of members of the respective groups. The analysis presented here shows how the contestations/conflicts between the movements stem from interpretive as well as ideological differences surrounding economic development and environmental justice.

**Other Articles**

*1. Rajan and Rishikesh (2025). Striving for Decent Work: Assessing Kerala's Progress Toward SDG Labour Targets.*

This Article delves into Goal 8 of the Sustainable Development Goals, which is pivotal in ensuring universal access to quality employment, thereby diminishing unemployment and, consequentially, alleviating widespread poverty. It underscores the global consensus on essential facets of equitable employment opportunities, encompassing job availability and social security for workers. Drawing upon data primarily sourced from the State Statistical Office in Kerala, this paper examines the myriad aspects and indicators of decent work and

presents the latest empirical findings. Our analysis reveals that a glut in labour supply coupled with scant employment opportunities escalates unemployment rates, notably affecting women and youth. This challenge is further exacerbated by structural inefficiencies and socioeconomic disparities. To counter these issues, the study proposes several strategic interventions. Enhancing educational and vocational training for women not only equips them with necessary skills but also fosters an inclusive workforce. Additionally, bolstering the capabilities of labour inspectorates can ensure adherence to labour standards and promote decent work conditions. Effective management of the Decent Work phenomenon is crucial and requires comprehensive policy frameworks that integrate these elements. By implementing these strategies, there is potential to significantly transform the labour market dynamics, promoting sustainable economic growth and social equity. This paper aims to contribute to the discourse on employment policies, advocating for informed decisions that are pivotal in achieving the targets set forth in Goal 8 of the Sustainable Development Agenda.

*2. Lakshmi (2025). The Paradox of Skilled Unemployment: Understanding Underemployment among Engineering Graduates.*

Underemployment among engineering graduates remains a critical challenge in India, where the rapid expansion of technical education has not been matched by sufficient job opportunities.

This study employs a survey-based approach, analyzing responses from 100 engineering graduates in Kerala and using Chi-Square tests to identify key factors influencing underemployment. The findings indicate that demographic factors, academic performance, and institution type do not significantly impact underemployment. However, participation in internships and skill development programs significantly reduces underemployment, highlighting the importance of practical experience and industry-aligned training. Major challenges include skill mismatches, weak industry-academia collaboration, outdated curricula, and inadequate career guidance. To address these issues, the study recommends mandatory internships, expanded skill development programs, improved career counseling, and stronger industry partnerships. Additionally, government interventions such as hiring incentives and structured employer-academia collaboration are essential to bridging the education-employment gap. These insights contribute to ongoing discussions on education reform and employability, emphasizing the need for systemic changes to ensure engineering education leads to meaningful careers.

*3. Rakendu and Narayanan (2025). Feminization of Labor-Force in Waste Sector: A Case Study of Kerala, India.*

The informal waste sector in India predominantly sees a large number of women working, while the formal waste management system run by the urban local bodies is dominated by men. Kerala, being one of the first states in the country to shift to a state-wide decentralized model of waste management, has managed to create livelihood opportunities for around 30,000 women in the formal waste management sector. The feminization process replaced municipal sweepers (who are predominantly men) and engaged Haritha Karma Sena women to carry out the collection, segregation, and processing of waste. With this, waste management in the state improved many folds, receiving awards and accolades from across the world, along with large cost savings for urban local bodies. Associated with the feminization process is the issue of precariousness, especially low and unstable income, lack of social security benefits, decent working conditions and bargaining power, high health risks, social stigma, and discrimination. These are typical traits of informal work. Yet women undertake and continue to be part of such jobs. We studied such differentiated and complex realities to identify and explain what facilitates such processes through an empirical study of Haritha Karama Sena in the solid waste sector in Kerala. The study also adds to the literature on the gendered division of labor in the waste sector.

**Gender and Social Inclusion**

*1. Ardra and Cleetus (2024). Impact of digital literacy on women entrepreneurs within Kudumbashree units.*

The rise of e-commerce has transformed global economies, offering wide

opportunities for entrepreneurship with minimal overhead and extensive market reach. Women entrepreneurs, especially within the Kudumbasree units in Kerala, are increasingly entering this digital arena, challenging traditional gender roles and contributing to economic growth. Understanding how digital literacy influences their success is crucial. Digital literacy, empowers entrepreneurs to reach broader audiences, optimize operations, innovate business models, and stay competitive. This study focuses on the current digital literacy levels among women entrepreneurs in Kudumbasree units, the obstacles they face, and the impact of digital literacy on their business growth and market reach. The primary challenges include cost, lack of training, and technical issues, with cultural barriers and safety concerns also playing roles. The positive correlation between digital skills and market reach underscores the potential of digital literacy to enhance business growth. By addressing these challenges through targeted interventions-such as training programs, financial assistance, and technical support-this study aims to empower women entrepreneurs within Kudumbasree units, driving economic growth and promoting inclusivity in Kerala's digital economy.

*2. Beevi (2010). A profile of elderly women living in old age homes: A study in Kerala.*

The UN defines a country as 'ageing' where the proportion of people over 60 years reaches 7 per cent. India exceeded that rate of proportion with 7.8 per cent in 2001 and India comes under the purview of the UN definition of 'ageing country'. The number of elderly is 77 million in 2001 but is expected to cross 100 million in 2013 and 177 million by the year 2025. Among the Indian States, Kerala has the largest proportion of elderly population and the growth rate among the aged is increasing higher and higher. Kerala has the largest number of old age homes in India. Old age homes are the last resort for the aged.

## Growth and Development

### Scopus-Indexed

*1. Anthony and Seiple (2025). Economic growth and community development through decentralized planning: the case of Thalikulam Vikas Trust in Kerala, India.*

Economic development planning in the global South has proven to be a formidable undertaking, riddled with corruption, colossal waste of resources, and underwhelming successes. In 1993, aiming to reform development practices in India, the government of India amended the national constitution to encourage bottom-up development planning, a paradigmatic shift from the top-down approach generally used in the global South. In one Indian state - Kerala - these amendments sparked a "people's planning movement" that over the last two decades has galvanized communities across the state, resulting in development projects that would not have happened otherwise, tangibly improving the quality of many people's lives. In this paper, we review the economic growth and

community development outcomes from these amendments in Kerala, examining one local nonprofit, Thalikulam Vikas Trust, and its accomplishments. Our goal is to share our understanding of the causes and consequences of a remarkable grassroots planning experiment in Kerala.

**Other Articles**

*1. Bishnoi and Boora (2025,). Economic growth and productivity analysis of Kerala: A growth accounting approach.*

Kerala's economy stands out in India due to its stellar achievements in human development indices, vibrant technology, service sector, and major dependency on remittances. However, the state is also confronted by economic issues such as low agricultural productivity, industrial stagnation, and increased unemployment, particularly among the educated workers. This research applies a growth accounting paradigm to assess Kerala's economic development from 1999-2000 to 2023-2024 for assessing the sectoral health of the state economy. The findings reveal a drop in total factor productivity, highlighting inefficiencies in capital and labour usage. The insights gained from the growth accounting are used to project the future growth trajectory of the state economy and suggest appropriate policy instruments to help enhance its growth potential. The projected Gross State Domestic Product (GSDP) and Per Capita GSDP(PCGSDP) growth are converted into US dollars and compared with the World Bank threshold of High-Income Country (HIC). Even this threshold is dynamic, so we have first projected the threshold for HIC and then compared it with Kerala PCGSDP. As per our calculations, Kerala can be a high-income economy by the year 2037-38 in case of ambitious policy reforms, while workable policy reforms make it an HIC by the year 2042-43. A major focus of policy reform should be to improve technology and management practices across different sectors, right from agriculture, manufacturing, trade, transport, finance, and public administration.

*2. Joseph and Nadig (2025). Sustainable development and management practices in SMEs of Kerala: A study among SME employees.*

This study investigates the adoption of sustainable development and management practices among Small and Medium Enterprises (SMEs) in Kerala, focusing on key drivers and barriers to sustainability. SMEs play a critical role in the state's economy, yet many face challenges in integrating sustainable practices due to limited financial resources, insufficient awareness, and sector-specific policy gaps. Using a combination of statistical methods, including Fisher's Exact Test, ANOVA, linear regression, and multiple logistic regression, this study analyzes how factors such as awareness, firm size, industry sector, and government interventions influence the adoption of sustainable practices. The findings reveal that higher awareness is strongly associated with greater adoption of sustainability measures, and larger SMEs are more likely to implement such

practices. Additionally, significant differences in adoption levels are observed across industry sectors, with manufacturing firms leading and retail firms lagging. Government support, including policy frameworks, financial incentives, and training programs, is found to be a critical factor in driving sustainability adoption. The study concludes that a multi-faceted approach, including raising awareness, sector-specific interventions, and enhanced government support, is essential to fostering widespread sustainability practices among SMEs in Kerala. These insights provide valuable guidance for policymakers and industry leaders in promoting sustainable development within the SME sector.

*3. PC,et, al (2025). Impact of Technology-Based Service Innovations on Tourist Site Revisits.*

The tourism industry is a vital component of the economy and is essential for advancing society, culture, and the environment. Digital technology has changed various facets of the tourism industry, increasing accessibility, convenience, and the capacity to accommodate individual preferences. The tourists' intention to revisit can be taken as a measure of the success of a destination, and it depends on the experience they gain from their visit. The present study assesses how revisiting tourist sites is influenced by the variables of technology-based service innovations, service value, and experience sharing through technology. The study was based on primary data collected from tourists who had visited Ernakulam and Thiruvananthapuram in Kerala, India. The data were collected using a questionnaire from a sample of 380 tourists using purposive sampling. SPSS V 26, Process Macro V 4.2, and SMART PLS 4 were used for data analysis. The study finds that technologically based service innovation increases service value, visitor site revisits, and experience sharing online. The study shows that the quality of the service has a favourable and significant impact on visitors' return visits to the site. The study is limited to tourists' perspectives, and conducting a multistakeholder approach to studying digital tourism is recommended.

# What is new(s) from GIFT

## A. Seminars/Webinars

**GIFT organised a seminar on Strategy to Attract IT & ITeS: Learning from Kerala Experience" on 31st January 2025.**

The speaker on the paper was Prof. Narendra Kumar Bishnoi, Chairman Department of Economics GJUST Hisar, Shri C Balagopal, Chairperson KSIDC moderated the session. The event was featured with distinguished panellists, including Shri G Vijaya Raghavan, Founder CEO of Technopark, and Shri V K Mathews, Founding Executive Chairman of IBS Group. Prof K J Joseph welcomed the participants.

**Abstract:** India has evolved as a major hub of tech industries including tech-start-ups in the world. For almost last three decades, tech-sector has been a major source of employment for the educated youth of the country. The tech-sector requires an enabling eco-system that include presence of universities and research institutions to survive and thrive. In India, tech-industries are largely concentrated in few large cities. The government's efforts to bring tech industries to smaller towns have largely fallen short, except in Kerala, where the Technopark Thiruvananthapuram model has not only succeeded but has also been replicated in other cities. The paper endeavours to identify key factors responsible for success of Technopark Thiruvananthapuram by applying the Spigel (2017) framework of entrepreneurial culture and suggests strategy to attract IT &amp; ITeS sectors into other smaller towns of the country.

**Kerala Economic Association in association with GIFT organised a three-day seminar Kerala Economic Conference 2025, February 14-16, 2025.**

On 14th February 2025, Hon'ble Chief Minister of the State Shri Pinarayi Vijayan delivered the inaugural address for the seminar, Presidential address by Prof K N Harilal, President KEA and Chairman 7th State Finance Commission and Patron address by Prof M A Oommen, Distinguished Professor of GIFT and a book was released authored by Shri, Tirthankar Roy, London School of Economics and Political Science and Shri K Ravi Raman, State Planning Board, Government of Kerala. The event was felicitated by Sri S M Vijayanand IAS (Rtd.), Former Chief Secretary, Government of Kerala, Prof Irudaya Rajan Chair IIMAD,

Prof K J Joseph Director GIFT, Prof C Veeramani Director CDS, Prof Sheeja S R, Department of Economics, University of Kerala, Smt. Anila J S, Principal Govt College for Women. Sri Santhosh T Varghese General Secretary KEA welcomed the gathering and Dr. Godwin S K, Treasurer KEA proposed the vote of thanks.

The seminar included four plenary sessions on Global Economic and Political Reset, Infrastructure for Development, Care Economy and Issues of Exclusion and Development and a Panel Discussion was conducted on last day of the seminar on the topic Prospects and Challenges Ahead with introductory remarks by Hon'ble Finance Minister Shri K N Balagopal and other Panellists include Prof K P Kannan Former Director CDS, Sri C P John, Former Member Kerala State Planning Board, Prof Alwin Prakash, Chairman 6th State Finance Commission, Smt Anupama Ramachandran, Founder The White Paper Creations and Concluding observations was delivered by Dr. T M Thomas Isaac, Former Finance Minister, Government of Kerala. As part of the KEA Seminar, about 140 submissions were received and more than 120 selected papers were presented in the Conference.

As part of the KEA Seminar, a Pre-conference Workshop was conducted for budding doctoral scholars and early career researchers on 13 February 2025 in the area of Care Economy about 40 young doctoral scholars participated in the preconference workshop.

**An international conference was organised jointly by Gulati Institute of Finance and Taxation (GIFT) and Centre for Public Finance, Madras School of Economics (MSE) on 18-21 March, 2025 titled "Rethinking Public Finance for Emerging Development Challenges".**

The theme of the conference assumes much importance at the current juncture wherein the economic and policy landscape in the developing world, including India, has undergone significant changes. While the globalisation is said to be at the crossroads, the unsustainable and unequal world has become more unstable and unpredictable given the geopolitical reset. At the same time, there are ever new challenges for the subnational entities in India when our fiscal federalism is also at the crossroads. With all this as the backdrop, the conference was expected to set the stage for the deliberations which could provide the board contours of a developing country oriented public finance in general and specific to India.

The conference was conducted through four days including Six Plenary sessions five parallel technical sessions where over 100 paper submissions were presented. The year 2025 being the centenary year of Prof I S Gulati, the conference also scheduled the Prof IS Gulati Centenary Lecture. The conference was conducted partnered with institutions namely Indian Council of Social Science Research, Fiscal Policy Institute, Tapar Institute of Engineering and Technology and Kerala

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included both theoretical and practical components.

In addition to sessions led by the esteemed faculty of the Gulati Institute of Finance and Taxation (GIFT), the programme featured expert lectures and hands-on sessions conducted by external specialists. Notable among them were:Mr. Kiran Lal P S, Joint Commissioner, Kerala GST Department,Shri S. Suresh, Central GST,Adv. Sindhu Manghat, Partner, Swamy Associates.

These experts enriched the learning experience by offering practical insights and real-world perspectives on GST law and administration.

A significant highlight of the programme was the practical training provided to the students. This included simulated exercises on GST registration, return filing, e-way bill generation, and accounting procedures. The training was conducted using the digital platform provided by Nergy Vidya, ensuring a realistic and application-oriented learning environment.

**Coordinators:** *Dr. Vidya V Devan & Dr. Akhil M P*

For more details: *https://www.gift.res.in/index.php/course/detail/14/PGD-GST*

## 2. PhD programme

The activities of the Ph.D programme during January 2025 to March, 2025 are listed below. The course work for the sixth batch Ph.D is ongoing. The proposal confirmation seminar presentations of the fifth batch Ph.D is scheduled for 29 May 2025. The second term paper presentations of the fifth batch of scholars were held from 10th to 11th February 2025. All Ph.D scholars were part of the Kerala Economic Association (KEA) Annual conference organised at the Gulati Institute of Finance and Taxation from 13th to 15th February 2025. Ms. Aisha Ibrahim Mohammad, first batch Ph.D scholar presented her Ph.D pre-submission seminar on 28 February 2025. All Scholars of GIFT were part of the organising team of the GIFT-MSE International conference on Rethinking Public Finance for Emerging Development Challenges held during 18th to 21st March 2025 at GIFT. The work progress seminar presentations of the fourth and first to three batches are proposed to be held during the last week of June and July respectively.

Aisha Ibrahim Mohammed, GIFT Ph.D scholar published a paper titled Unfolding the rise of direct selling formats in India: An explanatory analysis. Journal of Information Systems Engineering and Management, 2025 10(5s). https://www.jisem-journal.com/.

Aswathy M.A, GIFT Ph.D scholar participated in the Faculty Development Programme (FDP) on "Artificial Intelligence (AI) Techniques for Economic Modelling" held on 23rd-25th February, 2025, organized by the Department of Economics, Faculty of Social Sciences, Jamia Millia Islamia, New Delhi.

Lekshmi Prasad, GIFT Ph.D scholar presented a paper titled The Extent of Asset Inequality across Caste Groups: The Curious Case of Kerala in the 59th Annual Conference of the Indian Econometric Society (TIES), Banaras Hindu University, March 3-5, 2025.

Lekshmi Prasad, GIFT Ph.D scholar presented a paper titled Evolution of Caste Discrimination in India's Formal Credit Market: A Temporal Analysis in the International Conference on Social Identities, Institutions, and Economic Development in South Asia Azim Premji University Bhopal, January 17-18, 2025.

George K John, GIFT Ph.D scholar presented a paper titled "Determinants of GST registration: *Insight from Indian MSEs"in the International Conference on "Rethinking Public Finance for Emerging Development Challenges",* jointly organised by GIFT and MSE from 18-21 March 2025.

Jerome Joseph, GIFT Ph.D scholar presented a paper titled " Goods and Service Tax in India: Does Governance Matter?" co-authored with Dr Kiran Kumar Kakarlapudi in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organised by GIFT and MSE from 18-21 March 2025.

Steffy Antony, GIFT Ph.D scholar, presented a paper titled "Asymmetric Effect of Sub-National Fiscal Rules on Public Investment and Growth: The Indian Experience" co-authored with Dr Renjith PS in the 59th TIES conference held in BHU, Varanasi from 3-5 March 2025.

Steffy Antony, GIFT Ph.D scholar, presented a paper titled "Public Investment and Regional Growth Amid Fiscal Consolidation: The Indian Experience" co-authored with Dr Renjith PS in the *International Conference on "Rethinking Public Finance for Emerging Development Challenges",* jointly organised by GIFT and MSE from 18-21 March 2025.

Ashkar K, GIFT Ph.D scholar, presented a paper titled "Population Ageing and Fiscal Dynamics" at the Kerala Economic Association's Annual Conference, held at Gulati Institute of Finance and Taxation from 14-16 February, 2025.

Ashkar K, GIFT Ph.D scholar, presented a paper titled "Revisiting Fiscal Transfers in India: Integrating Population Aging into the Finance Commission's Devolution Formula" in the 59th TIES conference held in BHU, Varanasi from 3-5 March 2025.

Ashkar K, GIFT Ph.D scholar, presented a paper titled "Population Ageing and Fiscal Dynamics" at international conference on rethinking public finance jointly organised by GIFT and MSE from 18-21 March 2025.

Athira Karunakaran, GIFT Ph.D scholar, presented a paper titled "Do Federal Transfers Stimulate Regional Economic Growth? Evidence from India" in the International Conference on Rethinking Public Finance for Emerging Development Challenges, Gulati Institute of Finance and Taxation, March 18-21, 2025.

Athira Karunakaran, GIFT Ph.D scholar, presented a paper titled "Does History

Matters for Economic Performance? Evidence from India" in the International Conference on Social Identities, Institutions and Economic Development in South Asia, Azim Premji University, Bhopal Campus, January 17-18, 2025.

Athira Karunakaran, GIFT Ph.D scholar delivered an invited talk on the topic 'Working with Night Lights Data: Advantages and Limitations' in the CDS Workshop on Database on Indian Economy (Funded by ICSSR) on February 17th to 23rd 2025 at Centre for Development Studies, Thiruvananthapuram, Kerala.

Divya Kannan K R, GIFT Ph.D scholar presented a paper titled "Can Public Infrastructure Drive Regional Manufacturing Performance: Evidence from Indian States" in the International Conference on Rethinking Public Finance for Emerging Development Challenges, jointly organised by Gulati Institute of Finance and Taxation and the Madras School of Economics, 18-21 March 2025.

Divya Kannan K R, GIFT Ph.D scholar presented a paper titled "Performance of Kerala's Manufacturing Sector: A Revisit of Prevailing Hypotheses" at Kerala Economic Conference 2025, at Gulati Institute of Finance and Taxation, 14-16 February 2025.

Indhu T R, GIFT Ph.D scholar presented a paper titled "An Analysis of Capital and Revenue Expenditure on Scheduled Caste Educational Schemes in Kerala" at the International Conference on Rethinking Public Finance for Emerging Development Challenges, jointly organised by the

Gulati Institute of Finance and Taxation and Madras School of Economics on 21st March, 2025.

Rju Mohan A, GIFT Ph.D scholar presented a paper titled "India's Climate Finance Strategy: Analysing the Impact of Public Expenditures on Vulnerability Reduction", co-authored with Dr Renjith P S in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organised by GIFT and MSE from 18-21 March 2025.

Shagishna K, GIFT Ph.D scholar, presented a paper titled Does Faith Drive Finance? Investigating Religious Influence on Financial Inclusion in India" in the DSE Young Scholar Seminar, Centre for Development Economics, Delhi School of Economics, Delhi (February 28th - March 1st, 2025).

Arun Paul, GIFT Ph.D scholar presented a paper titled "Base Erosion and Profit Shifting (BEPS) and FDI inflows: The experience of lower middle income countries" co-authored with Dr.Renjith P.S at the International Conference on Rethinking Public Finance for Emerging Development Challenges, jointly organised by Gulati Institute of Finance and Taxation and the Madras School of Economics, 18-21 March 2025.

Joyal P Joseph, GIFT Ph.D scholar presented the paper titled 'Monetary Policy Transmission in India - A coefficient restricted VAR approach' in the 2nd Meeting of Young Minds organized by Young Scholars Initiative (YSI) and IIT

Bombay from 17th to 19th February 2025.

Joyal P Joseph, GIFT Ph.D scholar attended a workshop on Open Economy Macroeconomics and Economic Integration in Emerging Market Economies, organized by the RBI Endowment at the Centre for Development Studies (CDS), 13th to 18th March 2025.

Meghna Jayasankar, GIFT Ph.D scholar published a paper titled Efficient Market Hypothesis Versus Multifractality: Evidence from the Stablecoin Market. *Comput Econ* (2025). https://doi.org/10.1007/s10614-025-10884-6.

Meghna Jayasankar, GIFT Ph.D scholar presented a paper titled Decoding Market Efficiency and Multifractality in DeFi with Governance Tokens in the 59th TIES conference held in BHU, Varanasi from 3-5 March 2025.

Munawwara Zubair, GIFT Ph.D scholar attended Young Policy Professional Program (YPPP) Fellow for the project titled "Power Sector Reforms: Phase II" at Centre for Energy Regulation, Indian Institute of Technology, Kanpur from 21st November, 2024 to 31st March 2025.

Niveditha P.S, GIFT Ph.D scholar published a paper titled "Testing Safe-Haven Properties of Bitcoin and Gold in the Backdrop of Global Uncertainties: A Rolling Window DCC-GARCH Approach "co-authored with Dr Anoop S Kumar and Meera Mohan in Management Review(Sage Publications).

Niveditha P.S, GIFT Ph.D scholar presented a paper titled "Macroeconomic Drivers of

International Reserve Accumulation in Emerging Market Economies:A Bootstrap ARDL Approach", in the 59th Annual Conference of The Indian Econometric Society, Banaras Hindu University, March 3-5,2025.

Niveditha P.S, GIFT Ph.D scholar presented a paper titled Macroeconomic Drivers of International Reserve Accumulation in the Current International Financial Architecture: A Comparative Analysis of Emerging Market Economies in the workshop on Open Economy Macroeconomics and Economic Integration in Emerging Market Economies, organized by the RBI Endowment at the Centre for Development Studies (CDS) from 13th to 18th March 2025.

Amalu Seby, GIFT Ph.D scholar published a paper titled Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* (2025) LX(1), 49-56., co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Amalu Seby, GIFT Ph.D scholar presented a paper titled "Local Costs, Global Public Good and Compensation: Does the Finance Commission Argument of Opportunity Cost Stand?" at the international conference on 'Rethinking Public Finance for Emerging Development Challenges, jointly organised by GIFT and the Madras School of Economics (MSE), on 20 March 2025.

Anand Babu, GIFT Ph.D scholar

published a paper titled Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* LX(1), 49-56, (2025), co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Anjalikrishna Sudhakaran, GIFT Ph.D scholar published an article titled 'Is Forest Area a Good Proxy in the Horizontal Devolution Formula?" Economic & Political Weekly Vol. 60, Issue No. 1, 04 Jan, 2025 co-authored with with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Anjalikrishna Sudhakaran, GIFT Ph.D scholar presented a paper titled " Financial concurrency of public spending on education in India" in the PhD colloquium Crossroads -2025 at Centre for Development studies, Trivandrum on March 21,2025.

Anjalikrishna Sudhakaran, GIFT Ph.D scholar presented a paper titled "Financial Concurrency of Public Spending on Education in India" in the international conference on 'Rethinking Public Finance for Emerging Development Challenges, jointly organised by GIFT and the Madras School of Economics (MSE), on 20 March, 2025.

Anuraj P.K, GIFT Ph.D Scholar published a paper tilted 'Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* (2025)

LX(1), 49-56. Co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Anuraj P.K, GIFT Ph.D Schoalr presented a paper titled 'Exploring Revenue Expenditure Dynamics: Evidence from Southern Indian States' co-authored with Dr. Shamna Thacha Paramban, Assistant Professor,GIFT, at the International Conference on Rethinking Public Finance for Emerging Development Challenges, jointly organized by Gulati Institute of Finance and Taxation (GIFT) and Madras School of Economics (MSE), on March 20, 2025.

Anuraj P.K, GIFT Ph.D Schoalr presented a paper titled 'Tracing the Evolution of Indian Corporate Taxation - A Systematic Literature Review' co-authored with Dr. Akhil M. P, Assistant Professor,GIFT, at the International Conference 2025 organized by the Kerala University Research Students; Union in collaboration with the Internal Quality Assurance Cell (IQAC), University of Kerala, on March 17, 2025.

Gopika G. GIFT Ph.D scholar published an article in EPW-"Is Forest Area a Good Proxy in the Horizontal Devolution Formula?" Economic & Political Weekly Vol. 60, Issue No. 1, 04 Jan, 2025 co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Gopika G. GIFT Ph.D scholar presented a paper titled "Efficiency Analysis of Public

Expenditure in India: A Sub-National Study " at the international conference on 'Rethinking Public Finance for Emerging Development Challenges, jointly organised by GIFT and the Madras School of Economics (MSE), on 20 March 2025.

Gopika G. GIFT Ph.D scholar presented a paper titled "How efficient are our states? An analysis of public expenditure efficiency among Indian states" in the CDS PhD Colloquium Crossroads-2025 on March 21, 2025, at the Centre for Development Studies (CDS), Thiruvananthapuram, Kerala, India.

Greeshma K S, GIFT Ph.D scholar published a paper titled 'Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* (2025) LX(1), 49-56, co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Greeshma K S, GIFT Ph.D scholar presented a paper titled "Financing the Sustainable Development Goals (SDGs) in India: A pre-post pandemic assessment" at the international conference on 'Rethinking Public Finance for Emerging Development Challenges, jointly organised by GIFT and the Madras School of Economics (MSE), on 21 March 2025.

Jobin George, GIFT Ph.D scholar published a paper titled 'Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* (2025) LX(1), 49-56, co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Jobin George, GIFT Ph.D scholar presented a paper titled "Macroeconomic determinants and the varying composition of household savings: Empirical evidence from India" in the 59th Annual Conference of the Indian Econometric Society from 3rd -5th March, 2025, at Banaras Hindu University, Varanasi.

Rhwithwik MS, GIFT Ph.D scholar published a paper titled 'Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* (2025) LX(1), 49-56, co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Rhwithwik MS, GIFT Ph.D scholar published a paper titled *Households truth: Trends and patterns in durable goods expenditure in India.* Sabar Institute. https://sabarinstitute.org/house-holds-truth-trends-and-patterns-in-durable-goods-expenditure-in-india/ co-authored with Bhatia, S.(2025, March 25).

Rhwithwik MS, GIFT Ph.D scholar Presented a paper titled "Inequality and Indirect Taxes in India: An Inverted U Curve Relationship Between Consumption Expenditure and Goods and Services Tax" at the INET-YSI South Asia Regional Conference on Social Change, hosted by the Institute for Social and Economic Change, Bangalore (ISEC), India. February 24-26, 2025.

Rhwithwik MS, GIFT Ph.D scholar presented a paper titled "How Inequality Drives Indirect Taxes: Evidence from India with respect to GST" at the 59th Indian Econometrics Society (TIES) Annual Conference, held from March 3-5, 2025, at the Department of Economics, Banaras Hindu University.

Rhwithwik MS, GIFT Ph.D scholar presented a paper titled "Inequality and Indirect Taxes in India: An Inverted U Curve Relationship Between Goods and Services Tax and Consumption Expenditure" at the international conference on 'Rethinking Public Finance for Emerging Development Challenges', jointly organised by GIFT and the Madras School of Economics (MSE), on 20 March 2025.

Surya K, GIFT Ph.D scholar published a paper titled 'Is forest area a good proxy in the horizontal devolution formula? *Economic & Political Weekly,* (2025) LX(1), 49-56, co-authored with Narayana, D., Anuraj, P. K., Seby, A., Gopika, G., Babu, A., Surya, K., George, J., Rhwithwik, M. S., Sudhakaran, A., Greeshma, K. S., & B Nair, A.

Surya K, GIFT Ph.D scholar presented a paper titled "Public Debt and Income Inequality: Evidence from Developing Countries" in the 10th Annual Conference of Kerala Economic Association from 14 th -16 th February, 2025, at Gulati Institute of Finance and Taxation, Thiruvananthapuram.

Surya K, GIFT Ph.D scholar presented a paper titled "Public Debt and Income Inequality: Evidence from Developing

Countries" in the 59th Annual Conference of the Indian Econometric Society from 3rd -5 th March, 2025, at Banaras Hindu University, Varanasi.

Surya K, GIFT Ph.D scholar, presented a paper titled "Does Vertical Fiscal Imbalance Influence Fiscal Performance An analysis of Indian states", in the International Conference on Rethinking Public Finance for Emerging Development Challenges, from 18th -21st March, 2025, at Gulati Institute of Finance and Taxation, Thiruvananthapuram.

Annie Antony Pinto, GIFT Ph.D scholar participated in the Kerala Economic Conference-2025 held at Gulati Institute of Finance and Taxation (GIFT), Kerala, during 14-16 February 2025.

Annie Antony Pinto, GIFT Ph.D scholar participated in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organized by Gulati Institute of Finance and Taxation (GIFT) and Madras School of Economics (MSE), on March 18-21, 2025.

Jubairiya P M, GIFT Ph.D scholar participated the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organized by GIFT and Madras School of Economics held from 18-21 March 2025 at GIFT, Thiruvananthapuram.

Jubairiya P M, GIFT Ph.D scholar participated in the Kerala Economic Conference - 2025, held at GIFT, Thiruvananthapuram, from 14-16 February 2025.

Manju Preman, GIFT Ph.D scholar participated in the Kerala Economic Conference-2025 held at Gulati Institute of Finance and Taxation (GIFT), Kerala, during 14-16 February 2025.

Manju Preman, GIFT Ph.D scholar Participated and co-organised in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organized by Gulati Institute of Finance and Taxation (GIFT) and Madras School of Economics (MSE), on March 18-21, 2025.

Muhammed Ijlal Yasir M K, GIFT Ph.D scholar Participated in the Kerala Economic Conference-2025 held at Gulati Institute of Finance and Taxation (GIFT), Kerala, during 14-16 February 2025.

Muhammed Ijlal Yasir M K, GIFT Ph.D scholar participated in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organized by Gulati Institute of Finance and Taxation (GIFT) and Madras School of Economics (MSE), on March 18-21, 2025.

Shahid P.K, GIFT Ph.D scholar Participated in the Kerala Economic Conference-2025 held at Gulati Institute of Finance and Taxation (GIFT), Kerala, during 14-16 February 2025.

Shahid P.K, GIFT Ph.D scholar participated in the International Conference on Rethinking Public Finance for Emerging Development Challenges, jointly organized by Gulati Institute of Finance and Taxation (GIFT) and

Madras School of Economics (MSE), on March 18-21, 2025.

Sona Muraleedharan, GIFT Ph.D scholar participated in the Kerala Economic Conference-2025 held at Gulati Institute of Finance and Taxation (GIFT), Kerala, during 14-16 February 2025.

Sona Muraleedharan, GIFT Ph.D scholar participated in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organized by Gulati Institute of Finance and Taxation (GIFT) and Madras School of Economics (MSE), on March 18-21, 2025.

Vandanan S, GIFT Ph.D scholar presented a paper titled "A Community driven Model for Sustainable Rural Development: Addressing Time Poverty in Women led Diary Cooperatives" at the National Conference on "Sustainable Dairy Farming and Value Chain Development: Innovations & Strategies for Sustainable Livelihood Diversification for Small and Marginal Dairy Farmers", held at Institute of Rural Management Anand (IRMA), Gujarat on March 28, 2025.

Vandanan S, GIFT Ph.D scholar presented a paper titled "Recognizing the Value of Women's Time: A Pathway to Sustainable and Inclusive Development in Rural Areas" at the International Conference on Artificial Intelligence in Economics, Finance & Management (CEFM 2025), held at Bharata Mata Institute of Management, Kochi on April 24 2025.

Vandanan S, GIFT Ph.D scholar participated in the Kerala Economic

Conference-2025 held at Gulati Institute of Finance and Taxation (GIFT), Kerala, during 14-16 February 2025.

Vandanan S, GIFT Ph.D scholar participated in the International Conference on "Rethinking Public Finance for Emerging Development Challenges", jointly organized by Gulati Institute of Finance and Taxation (GIFT) and Madras School of Economics (MSE), on March 18-21, 2025.

**Course Coordinators:** *Dr Sumalatha and Dr Renjith P S*

## C. Publications

### 1. Kerala Tax Reporter (KTR)

November, December 2024 and January 2025 issues of KTR published Online and offline.

https://www.gift.res.in/ktr

### 2.Innovation and Development

A Routledge journal from GIFT, Volume 15, No. 1 (2025) published, Editor in Chief, K J Joseph.

For details, please visit https://www.tandfonline.com/toc/riad20/current

### 3. Weekly update on Finance, Taxation and the Indian Economy

This is an attempt by the Young Scholar' Forum in GIFT, led by Dr. Shency Mathew to update on important developments on Finance, Taxation and the Indian economy. Twelve issues of Weekly updates published during January to March 2025 which are available in GIFT Website. Latest issue: 22-28 March 2025.

For details, please visit https://www.gift.res.in/index.php/publish/publish_list/14/Weekly-Updates-on-Finance

### 4.Monthly Content Alert from GIFT Library

The GIFT library provides a monthly content alert service, extensively designed to support the research endeavors of our PhD scholars. This attempt provides a selection of recently published journal article titles, abstracts, and links, delivering them directly to the GIFT community each month. The content alert service is more than just a monthly update and the initiative aims to be an indispensable tool for scholars, providing them with timely access to the latest research developments in their fields. It is drawn from a wide array of reputed journals.

Twelve issues of the content alert service have been published, covering the period from January to March 2025 The preparation of this content alert is led by Smt Soudhamini GS, Assistant Librarian, GIFT. Latest issue: March 29, Vol. 3. Part 4 , 2025

## D. Faculty Publications

### 1.GIFT Discussion Papers

Aswathy Rachel Varughese, Meenu Mohan, Ajithesh Menon, **How do Economic and Systemic Factors Influence Revenue from Stamp Duty**

**and Registration Fees? An Analysis of Kerala, India (2024), Discussion Paper Series No.8/2024**

**Abstract:**The present study examines the revenue receipts from Stamp Duty and Registration Fee (SRF) in the state of Kerala, India, over the past three decades, focusing on economic and systemic factors influencing the SRF revenue growth. Despite higher SRF rates, Kerala's SRF revenue growth has recently stagnated and trails behind other South Indian states. Key economic factors, including sluggish economic growth and a consequent slowdown in real estate activities, have contributed to this stagnation. The study introduces a novel proxy which is the number of registered documents related to property transactions to capture the momentum of real estate activities during the study period. Besides, systemic issues related to the fixation of the fair value of land significantly impact SRF revenue receipts. The Auto Regressive Distributed Lagged (ARDL) approach reveals a weak co-movement between SRF and related economic and systemic factors in Kerala. To enhance SRF revenue and boost the State's Own Tax Revenue (SOTR), policymakers must address these issues, especially in light of diminishing central transfers to Kerala.

**Key Words:** *Stamp Duty and Registration Fee; Tax Revenue; Real Estate Performance; Kerala; India*

*https://www.gift.res.in/wp-content/ uploads/2025/03/Working-paper-How-do-Economic-and-Systemic-Factors-Final.pdf*

**Shency Mathew, Anitha Kumary L: GST Implementation in India: Some Unresolved Issues (2025), Discussion Paper Series No.1/2025**

**Abstract:** The introduction Goods and Services Tax (GST) in India is often considered as the most significant tax reforms in recent history. While the GST has undoubtedly streamlined indirect taxation and fostered a unified market, several critical issues still remain unresolved. This paper examines some of the persistent challenges, that include, but not limited to, problems in revenue performance, sharing of tax revenue between the Union and the states, IGST settlement, compliance challenges and data related issues. Evidently, these and other issues  impacted the revenue collection and the overall efficacy of the GST regime on the one hand and the fiscal health of the states that surrendered their autonomy for the making of the new system on the other. The study makes the case for addressing these issues sooner than later in the interest of the business and that of the Union and the states.

**Key Words:** *GST, Revenue performance, Unsettled amount, Compensation Cess, Compliance challenges, Rate rationalization*

*https://www.gift.res.in/wp-content/ uploads/2025/05/Working-paper-GST-Implmentation-in-India_-Some-unresolved-Issues-final-version.pdf*

Narendra Kumar Bishnoi: **Strategy to Attract IT & ITeS: Learning from Kerala**

**Experience, (2025), Discussion Paper Series No.2/2025**

**Abstract:** India has evolved as a major global hub of tech industries including tech-start-ups. For almost last three decades, tech-sector has been a major source of employment for the educated youth of the country. The tech-sector requires an enabling eco-system that include presence of universities and research institutions to survive and thrive. In India, tech-industries are largely concentrated in few large cities. The government's efforts to bring tech industries to smaller towns have largely fallen short, except in Kerala, where the Technopark Thiruvananthapuram model has not only succeeded but has also been replicated in other cities. The paper endeavours to identify key factors responsible for success of Technopark Thiruvananthapuram by applying the modified Spigel (2017) framework of entrepreneurial culture and suggests strategy to attract IT & ITeS sectors into other smaller towns of the country.

**Key Words:** *Tech-sector, Tech-parks, Technopark Thiruvananthapuram Strategy, Start-ups*

*https://www.gift.res.in/wp-content/uploads/2025/05/Strategy-to-Attract-IT-ITeS_Learning-from-Kerala-Experience-NKB-Final.pdf*

## 2.Faculty Involvement and publications

### a. Faculty Presentations

- Dr. Vidya V Devan presented a paper titled "Balancing Fiscal Discipline and Autonomy: The Impact of The FRBM Act on Indian States" in the International Conference on Rethinking Public Finance for Emerging Development Challenges, jointly organised by the Gulati Institute of Finance and Taxation (GIFT) & Centre for Public Finance, Madras School of Economics (MSE) during 18 -21 March 2025.

- Anitha Kumary L presented paper on State Finances, in the parallel session I titled Fiscal federalism and state finances of the Kerala Economic Association Annual Conference 2025 held on 15th February 2025 at the Gulati Institute of Finance and Taxation

- Dr Akhil M P presented a paper titled ""Capital, Carbon, and Cartography: Mapping Climate Finance in a Globalized World" in the 'Global Research Forum - Geopolitics and Geoeconomics of Finance conference', held at the National University of Singapore during 26th -28th February 2025.

- Sumalatha B S presented a paper titled Fiscal Federalism and Centrally Sponsored Schemes: Issues and Challenges in the International Conference on Rethinking public finance for emerging development challenges organized by the Gulati Institute of Finance and Taxation and Madras School of Economics held during 19th to 21st March 2025 at GIFT, Thriuvananthapuram, co authored with Anitha Kumary L & Nirmal Roy V P.

### b. Faculty Publications

Vidya V Devan, "GST Provisions for E-Commerce: Key Regulations, Compliance

Requirements & Challenges," in Tax Guru, Complete Tax Solution, on 10th February 2025, https://taxguru.in/goods-and-service-tax/gst-provisions-e-commerce-key-regulations-compliance-requirements-challenges.html

Sumalatha B S & Anitha Kumary L, The cut in the budget size is cause for concern, businessline, opinion article published on 13/02/2025.

K J Joseph, Sumalatha B S & Nirmal Roy V P, should fiscal prudence be an end in itself, businessline, opinion article published on 19/03/2025.

Vidya V Devan, "കേന്ദ്രവും സംസ്ഥാന ത്തിന്റെ കടമെടുപ്പ് അധികാരവും" published in Kerala kaumudhi on 23rd January 2025, https://keralakaumudi.com/news/news.php?id=1466585&u=coloum-1466585.

## c. Faculty Involvement

Sumalatha was a Resource person for Research Assistants Evaluation report workshop of Kerala State Planning Board organised by the Kerala State Planning Board at the Centre for Development studies held during 29th to 30th January 2025.

Sumalatha was a discussant of the parallel session I titled Fiscal federalism and state finances of the Kerala Economic Association Annual Conference 2025 held on 15th February 2025 at the Gulati Institute of Finance and Taxation.

Sumalatha B S was a discussant for a paper titled Sources of Funds and Choice of Expenditure of Rural Local Governments in India presented by Anushka Nagar, IGIDR, Mumbai in the Crossroads, CDS PhD Colloquium held on 22nd March 2025 at the Centre for Development Studies, Thiruvananthapuram

Anitha Kumary L chaired the parallel session I titled Fiscal federalism and state finances of the Kerala Economic Association Annual Conference 2025 held on 15th February 2025 at the Gulati Institute of Finance and Taxation.

Anitha Kumary L was a Resource person for Research Assistants Evaluation report workshop of Kerala State Planning Board organised by the Kerala State Planning Board at the Centre for Development studies held during 29th to 30th January 2025.

# Call for Papers: Kerala Economy Journal

**Dear Scholars and Researchers,**

We welcome submissions for publication in the Kerala Economy Journal, an esteemed peer-reviewed quarterly publication of the Gulati Institute of Finance and Taxation (GIFT).

**Aims and scope of the journal**

Kerala Economy has been a beacon of knowledge, enlightening readers with its monthly publication since its inception in September 2020. As a testament to our commitment to accessibility, we present not only the English edition but also a meticulously translated Malayalam counterpart, ensuring that our invaluable insights reach audiences far and wide. In a world of constant evolution, we adapt and evolve. From 2022 onwards, Kerala Economy has blossomed into a quarterly journal, offering deeper analyses, fresher perspectives, and richer content.

**Priority is given to papers which are**

- relevant to important current research in finance and taxation, macroeconomics and development issues from a public economics perspective either at regional, national, or international levels

- that offer critical evaluations, based on empirical research, of alternative theories, perspectives, or schools of thought

We welcome original research articles, insightful reviews, thought-provoking analyses, and innovative perspectives from scholars, researchers, and practitioners across the globe. Whether your expertise lies in economics, finance, taxation, or multidisciplinary fields, we encourage you to submit your work for consideration.

The editors also welcome surveys of the literature in the relevant fields.

Each research article in this journal undergoes a thorough peer-review process, which includes initial screening by the editor and anonymous peer review.

**Instructions for Authors on how to submit your article**

- Authors/Researchers are encouraged to submit their academically significant and original works for publication.

- Submission of any article/paper will be taken to imply that it is unpublished and not in communication for publication with any other publisher/journal.

- Every article should carry a short abstract between 150-250 words, summarising and foregrounding the significance of the article.

- The article length shall not be more than 4000 words(excluding references).

- The manuscript shall be anonymous in nature

- A separate title sheet with article title, author affiliation and communication address shall be provided

- Images/Tables shall be continuously numbered and appropriately placed in the manuscript

- For initial submissions, there are no formatting requirements. However, the authors are expected to follow a uniform formatting criteria. After acceptance, the authors shall format the article as per journal requirements.

- Spelling, dates, references and footnote numbers should be checked for accuracy.

- All the works of others used for the preparation of the article should be cited appropriately

- Referencing should be done in APA format

Articles submitted for publication will be subjected to anonymous peer-review and the authors are expected to revise/respond to the comments offered by the peer-reviewer(s) in the final submission.

**After Acceptance**

After accepted, the authors shall format the article as per the journal requirements and submit it to the journal. Proofs of the articles in PDF format would be sent to the author who is expected to return them to the Handling Editor within a week. Substantive alterations or additions cannot be made at this stage and hence, authors should ensure that their final submissions must be thoroughly checked for accuracy.

**Journal Information**

**ISSN No. 2583-4436**

**Editor in Chief**- Prof. K J Joseph, Director, GIFT

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**Articles shall be submitted to** *keralaeconomy@gift.res.in*

For details contact: Smt Anitha Kumary L, Associate Editor, Kerala Economy, 9495511136, Dr Aswathy Rachel Varughese, Assistant Professor, GIFT, 9897885522

Gulati Institute of Finance and Taxation (GIFT), Thiruvananthapuram, Kerala, India formerly Centre for Taxation Studies (CTS), is an autonomous institute of the Government of Kerala recognized by the Indian Council of Social Science Research (ICSSR). It is conceived as a premier national institute to promote theoretically grounded empirical research with an interdisciplinary perspective to aid policy-making at the national and sub-national levels. The uniqueness of the Institute is its faculty having a background in Commerce, Economics, and Law. GIFT offers a Ph.D. program in Social Sciences focussing on Public Economics, affiliated with Cochin University of Science and Technology (CUSAT). GIFT conducts two other programs; Post Graduate Diploma in Goods and Service Tax (PGDGST) and the Research Capacity Building Program (RCBP) besides offering training for capacity building of different stakeholders including Government officials. GIFT brings out three publications; *Kerala Economy* (Quarterly) *Kerala Tax Reporter* (Monthly) and *Weekly Updates on Finance, Taxation and the Indian Economy*.

The Governing Body and Executive Committee of GIFT consist of Scholars of Eminence and Senior Administrators representing both the Central and State Governments. Shri K N Balagopal, Minister for Finance, Government of Kerala, is the Chairperson of the Institute.

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