

Government expenditure towards knowledge economy:

An analysis of recent Kerala budgets

Shimnamol M¹ Christabell P.J²

¹ Ph.D. Research Scholar, Department of Economics, University of Kerala

² Associate Professor, Department of Economics, University of Kerala

1. Introduction

The knowledge economy is the tale of how cutting-edge technology and human creativity work together to revolutionize the fundamentals of economic activity (Brinkley, 2006). The Organization for Economic Cooperation and Development (OECD) economies' knowledge-based industries, which comprise more than half of their GDP, teach us valuable insights about what propels a knowledge-based economy. The growth of the knowledge-based economy can be attributed to two factors - the push for innovation and technological changes (OECD, 2001). The emphasis on productivity-led economic growth and its key drivers has increased over the last few decades. Due to the predominance of diminishing marginal returns, rapid factor accumulation has failed to guarantee sustainable economic growth, necessitating the search for an alternate strategy (Chen & Dahlman, 2004).

Government plays a crucial role in creating the regulatory and policy framework that supports and encourages knowledge-based activities. This includes establishing laws and regulations related to intellectual property, data protection, and competition. By creating a favorable legal environment, governments can stimulate innovation and knowledge creation. Governments often provide funding for research and development (R&D) activities directly through grants and indirectly through tax incentives. This financial support can help universities and businesses engage in collaborative research projects and invest in

knowledge-intensive activities. A knowledgeable and skilled workforce is essential for a knowledge economy. Governments can support education and skills development by funding universities and vocational training programs. They can also promote STEM (Science, Technology, Engineering, and Mathematics) education to ensure a steady supply of skilled workers (Etzkowitz & Leydesdorff, 1995).

In this context, the present paper tries to analyze the contribution of Kerala towards the Knowledge Economy in ways of investment in various aspects. The paper is divided into five sections. Following the introduction section, the second part gives an overview of existing literature related to the topic. The third section portrays the data collection methods used in the paper. The fourth section presents the findings and discussion of the paper. Finally, the fifth session concludes the paper.

2. Literature review

Government intervention is necessary to correct market failures, ensure equitable outcomes, and create the conditions for sustainable economic growth. The exact role and extent of government involvement may vary depending on a given country's specific circumstances and economic philosophy (Stiglitz, 1997).

The shift from the industrial economy into a knowledge economy shows how people think and what value they assign to all parts of their lives. In a knowledge-based economy, the role of Government is particularly significant as it needs to facilitate and support the transition from traditional industries to those driven by knowledge, innovation, and information (Rollyson, 2006).

In the study on the effects of knowledge investment in OECD nations, Hwang and Gerami (2007) identified knowledge as the cornerstone of economic development. They have identified globalization and the rise of the knowledge economy as the main driving forces of Economic Development. The OECD's work on the knowledge economy is instrumental in helping member countries adapt to the challenges and opportunities of rapid technological advancements, globalization, and the shift toward information and innovation-driven economies. It promotes policies and practices that encourage economic growth, competitiveness, and improved well-being through the effective use of knowledge and innovation.

The modern world's economy is moving quickly toward being more information-based, and fostering knowledge is a crucial component of economic progress. All continents, regions, and nations are now actively participating in the global economy due to the current trend of globalization, making competition the primary driver of advancement. Competitive environments are essential in knowledge-based economies (Barkhordari et al., 2019).

Switzerland has the highest Global Innovation Index score of 64.6 out of 100 in 2022, making it the most inventive nation globally. With a 61.8 score, the United States commands the second position while Sweden follows them closely. Countries that prioritize research and development funding to establish strong research institutions tend to perform better in innovation indexes (WIPO, 2023).

The State of Kerala clearly stated its purpose in transitioning to a knowledge economy through its recent Budget 2022-23 with the spate of projects under the Knowledge Economy Mission. A knowledge economy develops, consumes, and disseminates knowledge to support growth and development. A state should, in theory, implement inclusive strategies that include but are not limited to, an adequate institutional framework, good education, a robust communications infrastructure, and a supportive financial environment that is open and free to assimilate and absorb the global exchange and transfers to participants in the knowledge economy fully (Government of Kerala, 2023).

The objective has gained momentum thanks to funding allocated to the budget for 2022-2023, which will help to improve higher education and foster a skilled ecosystem. While improving the caliber of the State employment force is a positive beginning, improving the educational system would only address a portion of the issue. Average Keralites now have higher educational aspirations thanks to the State. However, the State's economy has not done much to give them job chances that align with their skills and certifications. As has been the case thus far, underutilization of the labor force will emerge from excess labor and insufficient growth to convert it into productive employment in the State. It does not deal with the core problem of high-end jobs (Aiswarya, 2022).

3. Methodology

According to NITI Aayog's report on the India Innovation Index for 2021, Kerala is rated eighth with a score of 13.67 (Government of India,2022). The amount of investment allocated

to Research and development (R&D) activities within the State can significantly impact its innovation potential (Government of Kerala, 2022).

In this context, the present study analyses the contribution of Kerala's Budget allocation as well as State Plan allocation and outside borrowings towards the Knowledge Economy from 2018 to 2023. The study used secondary data sources like the official budget documents, including the Budget Speech, Budget Highlights, Budget Estimates, Expenditure Reports, planning board reports, etc., made by the Government of Kerala, published from 2018 to 2023. These publications offer comprehensive information on the distribution of funds among various programs and sectors, of the sectors the present study emphasizes more on the Higher education sector, Research and Development (R&D), and Information and Communication Technology (ICT).

4. Findings and Discussion

The Kerala economy and its developmental history have received global attention, as the State achieved developmental targets comparable to developed economies with a fraction of the investment. The State has realized "an economy growing with extraordinary rapidity" despite its failure to achieve large-scale industrial development. It achieved better human development compared to other states in India despite poor performance in employment and income. (Véron, 2001). While the productive sectors like agriculture and industry remained sluggish, the service sector achieved rapid progress.

In Kerala, restrictive elements prohibit an orderly shutdown of industries, stifling innovation and entrepreneurship. A society that denigrates business owners and treats financial failure as a source of litigation or agency involvement only discourages entrepreneurship (Shah, 2019).

A government budget is always a tool for carrying out choices and policies made by the Government. A country, State, or local community's budget reflects its economic, social, and political decisions, including what is valued and what is not, as well as who is rewarded and who is not (Sharp & Dev, 2004).

A strong knowledge economy increases a region's worldwide competitiveness. Kerala can gain a competitive edge in industries where knowledge and experience are essential by investing in education, Research, technology, and innovation. This may draw international

collaborations, investments, and partnerships, boosting the State's worldwide influence and establishing it as a knowledge hub. Budgetary support for Kerala's knowledge economy is essential for the growth of its human capital, economic diversification, job creation, innovation, sustainable development, and international competitiveness. The State's economy could change due to these investments, which could also spur growth and raise inhabitants' standard of living.

4.1. Budgetary allocation towards knowledge economy.

To promote economic growth, the state budget for the year 2023 places a strong emphasis on the knowledge economy, skill development, and infrastructure development. The budget considers Kerala's unique needs, which differ slightly from those of other Indian States; the "Kerala Model" of development is suggested to achieve growth while ensuring environmental preservation, sustainable development, and social justice.

The expenditure of the Kerala Government towards the knowledge economy can be summarized in.

Table 1 Kerala Budget Allocation toward Knowledge Economy from 2018 to 2023

(Figures in Crores)

Major Heads	Year				
	2018-2019 Accounts	2019-2020 Accounts	2020-2021 Accounts	2021-2022 Accounts	2022-2023 RE
Higher Education at the University Level	2915	3216	2501	3209	3228
Research and Development (R&D)	2581	2527	2954	NA	NA
Information and Communication Technology (ICT)	269	146	385	286	350

Source: Kerala budget documents (2018-2023) Kerala development report (2023) etc.

From the three sectors, i.e., higher education sector, Research and development, and information and communication technology, the allocation has risen over the years. For example, in 2018-19, higher education at the university level got Rs 2915 crore. It increased to Rs. 3228 crore in the year 2023. Likely, Research and development got Rs.2581 crore in 2018-19. It rose to Rs. 2954 crore in the year 2020-21. In the case of Information and

communication technology, it was Rs. 269 crore in the year 2018-19, and in the year 2022-23, the budget estimated Rs. 350 crore for information and communication technology.

4.1.1 Higher education

Higher education equips people with the specialized knowledge and abilities to work in a knowledge-based economy. Under higher education, there are several heads available, like undergraduate programs, post-graduate programs, various types of professional courses, etc. Graduates are prepared to work in complicated and dynamic domains thanks to their experience, which boosts production and competition across various businesses. Universities produce knowledge and share it with the rest of society. Publications, workshops, community involvement, and industry partnerships can all help convey information. These institutions support the general expansion and improvement of society and the economy through exchanging knowledge. The State expenditure towards the higher education sector shows positive factors. Here, we concentrate more on university level and technical education.

Table 2: Government education and technical education

Expenditure Rs.in crores	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
University Education	2696.75	2676.29	2502.12	3209.29	3228.45
Technical Education	964.09	1050.1	913.99	1150.31	1189.82

Source: Different Budget Document of Kerala

From Table 2, it is clearly understood that the Government gives much importance to higher education and is concerned with a Knowledge Economy. It is noted that in 2018-19, the Government allocated Rs. 2696.75 crores for university education. After five years, it increased to Rs. 3228.45 crores in 2022-23. Similarly, the Government. Allocated Rs. 964.09 crores in 2018-19, which increased to Rs. 1189.82 crores in 2022-23. There is a positive trend in allocating funds towards creating the knowledge economy.

4.1.2 Research and development (R&D)

In order to establish and maintain a knowledge economy, research and development (R&D) is of utmost importance. R&D is the methodical exploration, experimentation, and development of new ideas, concepts, methodologies, and products. It is essential to encouraging innovation, promoting economic expansion, and boosting a country's overall competitiveness.

The Kerala Government has given importance to R&D in recent years. It was Rs. 2581 crores in 2018-2019 and gradually increased. It was Rs. 2954 crores in 2021-2022 (Government of Kerala 2022)

Table 3 - Total Plan outlay and Expenditure for the ICT Sector (in Crores)			
Annual Plan	Outlay	Expenditure	Percentage
2018-2019	587	269	45.8
2019-2020	574	188	32.7
2020-2021	500	196	39.3
<i>Source: Kerala Budget Document, Various Years.</i>			

4.1.3 Information and communication technology (ICT)

Information and communication technology (ICT) primarily develops and advances a knowledge economy. ICT is the use of various technologies for the gathering, storing, processing, and sharing of communication and information. ICT facilitates, accelerates, and enables knowledge generation, sharing, and utilization in a knowledge economy. Here are some significant ways that the development of ICT aids in creating a knowledge economy. Kerala's budget allocated Rs. 269 crore in 2018-2019, but the following year showed a decline to Rs. 146 crore in 2019-2020. Afterward, it shows a positive trend over the years, Rs. 385 crores, 286 crores, and 350 crores in the recent budget 2022-2023.

The progress of ICT in Kerala in recent years has been remarkable. With 32 million homes in the State having access to mobile or telephones, mobile or telephone penetration is exceptional. Kerala leads the nation in broadband and mobile internet penetration, each at very high rates of 20% and 15%, respectively. Kerala has the most significant degree of digital literacy in the 14-to-49 age group, and it also rates extremely highly in other age categories, according to an impact assessment report of the Digital Literacy Mission. Kerala's successes in literacy and education have undoubtedly helped the State attain these literacy levels, showing the importance placed on computer education in the school curriculum. (Government of Kerala, 2021)

4.2. State plan allocation

Knowledge economy is the main idea of Kerala's 14th Five-Year Plan. In order to support universities and other higher education institutions in achieving more outstanding excellence,

a particular action plan will be developed in 2023-24. For this, Higher Education and Technical Education would receive Rs. 816.79 crore. In the State Plan for 2022-2023, Rs. 2546.07 crores are allocated specifically for the education sector. In the State, four science parks are being built for ₹1,000 crores (Government of Kerala, 2023) (Table 3 -).

Table 3 shows that a significant portion of the budget allocation made by the Kerala Government is toward the development of the ICT sector. It is a highly encouraging indicator for the future. In 2018-19 a significant amount contributed to this sector. In addition to the budgetary allocation, the Government is also keen on yearly marking funds for KE under Plans, schemes, and initiatives.

4.3. Off-Budget borrowing

Off-budget borrowing" refers to borrowing by a government entity or agency that is not included in the official budget figures. This can sometimes be used as a financial manoeuvre to keep the headline budget deficit lower than it would otherwise be. It involves borrowing through entities or mechanisms that are not directly controlled by the government but are still linked to its financial operations. (Gupta & James, 2023). States like Kerala often have ambitious development and infrastructure goals. Off-budget borrowing can be used to secure additional funds for such projects without significantly impacting the official budget deficit. This can help in funding essential development activities.

4.3.1 Kerala Infrastructure Investment Fund Board (KIIFB)

Following the KIIF Act 1999 (Act 4 of 2000), the KIIFB was established on November 11, 1999, to oversee KIIF. The fund's goal was to raise money for Kerala development projects. In August 2016, the enabling laws and plan were modified to raise money for Kerala's infrastructure development. The State's political and administrative leadership oversees KIIFB.

Sixty-four new projects totalling Rs. 5681 crore will be funded by fresh loans totalling Rs. 9000 crore by KIIFB. With this, KIIFB is tasked with carrying out 1057 projects totaling Rs.- 80352 crore. The organisation has so far invested Rs. 23095 crores in a number of development projects. (Government of Kerala,2023)

Here are some of the key initiatives and projects that KIIFB had undertaken or planned up to that point:

Infrastructure Development: KIIFB has played a pivotal role in funding and executing various infrastructure projects, such as the construction and improvement of roads, bridges, and flyovers, which aimed to enhance transportation and connectivity within Kerala.

Education and Healthcare: The agency has allocated funds to develop educational institutions, including schools and colleges, and healthcare facilities like hospitals and medical colleges, to improve access to quality education and healthcare services.

Urban Development: KIIFB has invested in urban development projects, including the rejuvenation of urban areas, the modernization of public transport systems, and the construction of smart cities and housing complexes.

Water Resources and Environment: Initiatives related to water resources management, flood control, and environmental protection have received funding from KIIFB to address Kerala's unique geographical challenges.

Renewable Energy: The agency has supported the growth of renewable energy in the State by investing in solar power projects and other clean energy initiatives.

Technology and Innovation: KIIFB has explored opportunities to invest in technology and innovation-driven projects, such as information technology parks and startup incubators, to promote economic growth and job creation.

Tourism Infrastructure: Kerala's tourism sector has also benefited from KIIFB's investments in infrastructure projects that improve the tourist experience and promote sustainable tourism.

Affordable Housing: KIIFB has been involved in housing schemes to address housing needs for economically weaker sections of society.

4.4. Other initiative by the Kerala government towards knowledge economy

The Kerala Knowledge Economy Mission (KKEM), an initiative of the Kerala Development and Innovation Strategic Council (K-DISC), aims to turn Kerala into a Knowledge Society that produces, consumes, and transacts knowledge for the benefit of its own social and

economic development in order to create jobs for the educated. The Kerala Knowledge Economy Mission's four-year goal is to give 20 lakh people productive work in various industries and occupations. The Knowledge Economy Mission is to advance new knowledge that can be used to address current and future social issues, promote sustainable development, and stimulate intellectual development.(2023).

5. Conclusion

The State of Kerala's administration has been working to advance and promote the idea of a knowledge economy there. Kerala is renowned for prioritizing education and human development, and the Government has realised the need to switch to a knowledge-based economy to promote long-term development and progress. The Kerala government has been making significant investments in education, emphasizing raising educational standards and encouraging skill development. Programs like the Kerala State Education Programme (KSEP) are designed to improve student talents and give them the necessary tools for the knowledge economy.

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