

AFFORDABLE HEALTHCARE AND AFFORDABLE HOUSING: NEED FOR AN INTEGRATIVE APPROACH FOR THE HOLISTIC GROWTH OF THE DIGITAL ECONOMY OF KERALA, INDIA

Dr. Manoj P. K.

Head, Department of Applied Economics,
Cochin University of Science and Technology (CUSAT), Kochi, Kerala.
E-mail: manoj_p_k2004@yahoo.co.in, ORCID: <https://orcid.org/0000-0002-5710-1086>

DOI: [10.5281/zenodo.8404953](https://doi.org/10.5281/zenodo.8404953)

Abstract

Introduction: Despite the significant achievements of Kerala in diverse socio-economic variables, especially in the healthcare and allied fields, recurring instances of epidemics have been haunting the State. Though the global pandemic Covid-19 has subdued, health issues still continue. The latest instance is the Nipah virus outbreak in 2023, for the fourth time since 2018. This causes undue hardships to the public as it affects their livelihood. Besides, it severely affects sectors like tourism as tourists get repelled due to such epidemics. Given the high out of pocket (OOP) costs to the patients due to the low government health expenditure (GHE) even in a State like Kerala with high hospital and allied health infrastructure, shows the looming need for more affordable healthcare services through public private partnership (PPP) mode or other such alternatives. Equally vital is the need for putting in place an affordable housing system that ensures 'Affordable Housing For All' (AHFA) as housing is a key determinant of good health. In fact, AHFA is a national goal of the Govt. of India (GOI), and so also is Universal Health Coverage (UHC). Given the mutual relation between housing and health, the paper suggests an integrative approach to attain AHFA and UHC goals. More extensive ICT integration by the Govt. of Kerala (GOK) is noted in this paper. Kerala having already set its goal to transform itself into a 'Knowledge Society' it should now go for an integrative approach to refine its housing and healthcare sectors, the paper suggests. **Methodology:** A descriptive-analytical cum exploratory approach was used. Primary data from 120 households in Ernakulam, and also secondary data from Government and other authentic sources were used. Basic statistical tools were used for data analysis. **Results:** From an extensive survey of the past studies, a looming need for ICT for better efficiency and competitiveness of varied sectors of Kerala economy is noted. Good ICT infrastructure could support the State to more effectively suppress the Covid-19 threats, than any other State in India, and Kerala emerged as a global role model also. Despite this Kerala suffers from various health-related threats. An ICT-based integrated system that ensures universal health (in line with UHC national goal), and affordable housing (in line with AHFA national goal) has been suggested. Higher GHE by governments, both GOI and GOK, and alternative investments in healthcare sector through PPP mode have been suggested, since then only OOP costs can be reduced to affordable levels. **Conclusion:** Given the vast capacity of the affordable housing units to keep most of the epidemics at bay in respect of the poor and homeless masses on the one hand, and the immense potential of the housing sector to attract investments in many other sectors given the wide linkages of housing on the other hand; a holistic approach that ensure universal health (UHC) and housing for all (AHFA) is an imperative for a nation like India. This is especially relevant for a State like Kerala as it faces recurring cases of health-related issues which affect Kerala's strategic sectors like tourism. ICT-use is vital in this process given its key benefits, like, integration of the varied sectors.

Keywords: Universal Health Coverage, GHE, OOP, Affordable Housing, PPP, ICT.

1. INTRODUCTION

It is widely acknowledged that health has a key role to play in human capital formation. For the nation as a whole, proper health of its citizens ensures that they have high level of productivity too. Thus, from a macro perspective, the government health expenditure (GHE) can significantly improve its health capital. Higher the GHE lower

will be the out of pocket (OOP) costs on healthcare. So, higher GHE supports affordable healthcare for the masses.

From a micro perspective of the health, the basic determinants of the health of a person can vary from person to person. So also, the diverse motives of health expenses vary from individual to individual, such as spending for preventive healthcare, spending for promotive healthcare, and spending for tertiary healthcare. While both the macro and micro perspectives are vital for an economic analysis of healthcare, this paper focuses on the macro perspective and seeks to ensure universal and affordable healthcare for all, and also to keep the health of the individuals (citizens) at high levels by ensuring housing for all (HFA) (universal housing) in an affordable manner. In fact, affordable housing for all (AHFA) is a national priority in India, a key goal that India wanted to attain by 2022 – when the country attained 75 years since it gained independence in 1947. The above housing goal could not be attained by India in 2022 as it dreamed, and hence the country seeks to attain the goal in the immediate future itself, say, by Dec. 2024 or so. Since empirical evidence suggests that affordable housing can substantially reduce the susceptibility to epidemics (like, Covid-19, for instance). Naturally, the AHFA goal of the Govt. of India (GOI), if duly attained, ensures better health of citizens by keeping various epidemics at bay. This in turn ensures healthier citizens with higher level of productivity. A holistic approach to universal housing and universal health is relevant in this context. Here, ICT-adoption adds another dimension to this Housing-Health integration. The vast capacity of the ICT to provide qualitative services to the masses at low cost, and also ICT's potential for seamless integration of diverse sectors (like, housing and health, for instance) comes in handy in the aforesaid holistic approach. Such an approach appears like an imperative nowadays and just a choice, with regard to a State like Kerala in the Indian union.

It is a well-documented fact that Kerala could attain certain unique attainments in the public health front, its position being the best in India and comparable with advanced nations of the world (e.g. maternal mortality rate of 30 among 1,00,000 child births in Kerala). Besides, despite having the highest incidence of Covid-19, Kerala could very effectively contain the spread of Covid-19 in the recent past and maintain the lowest fatality rate in the country (and at the global level too), and the vast ICT infrastructure in this State helped it to attain such unique achievements. Prompt initiatives GOK could contain the spreading of virus and reduce fatality rates to globally low rates. As the excellent ICT and allied resources is prompting Kerala to attain the 'Universal health' target, there is the need to draft housing strategies that ensure good health to the households. There is a need for integrating the healthcare system with the housing infrastructure in the State as the health greatly depends on the housing conditions. Though the State of Kerala is having one of the best healthcare facilities in India, it still suffers from many epidemics even in this post-Covid-19 era. The Nipah virus outbreak in Kozhikode (Kerala) for the fourth time in Sept. 2023 (after the first outbreak in 2018, then in 2019 and 2021) is the latest example for the continuing instances of health threats in Kerala, a State that used to be in the forefront in public health. Kerala has the highest cases of Covid-19 in India of 13.6 percent. (WHO Situation Report 116, July 2022).

2. OBJECTIVES

- (i) To study India's public health system with special reference to Kerala and to examine the relation between housing and health, from a global view in the Covid-19 context;
- (ii) To study why 'affordable housing for all' (AHFA) goal must be linked to 'universal health coverage' (UHC) goal for sustained economic growth in this Digital (ICT) era;
- (iii) To suggest strategies for utilising Kerala's superior ICT resources for attaining AHFA as well as UHC, growth in the allied sectors, and hence growth in the whole economy.

3. RESEARCH QUESTIONS

- (i) How is the public health status in Kerala (India) in terms of GHE, OOP expenses etc.?
- (ii) How the poor housing conditions could adversely affect the health of households?
- (iii) What is the role of ICT in sustained economic growth in India, especially in Kerala, and how ICT helps to bring about holistic and integrative growth in housing, health etc.?

4. LITERATURE REVIEW

Firdaus and Ahmad (2013)^[1] "Relationship between Housing and Health: A Cross-Sectional Study of an Urban Centre of India" have noted, based on an empirical investigation in India in an urban setting that proper housing condition could ensure better health of the households.

Dey et al. (2013)^[2] has observed that various social health issues primarily affect the poor, often in rural areas, since they have only very less access to the latest and high-technology healthcare services that are available mostly in the urban areas alone. Such vast disparities in the access to healthcare being a reality in India, the scarce resources do not reach the majority of the rural masses in the country. World Health Organization (2018)^[3] "WHO Housing and Health Guidelines" has suggested broad guidelines for housing designs for a healthier living, good human health being greatly dependent on proper housing conditions of the households. Saini (2020)^[4] "Availability of Primary Health Facilities in Rajasthan: Spatial Analysis" has observed in his Rajasthan-based research study that Government's intervention is crucial to augment the very limited facilities for public healthcare, particularly in ensuring trained healthcare staff.

Many international and Indian studies (including Kerala-based ones) have noted the key role that ICT plays for the better performance of diverse sectors (including the health sector) of the economy and hence rapid economic development. Thus, ICT can accelerate growth by empowering the rural masses especially women, farmers, fisher folk, etc. and strengthen the sectors like banks, housing, tourism, services etc. Selected among such ICT-oriented studies and/or studies on rural development, SMEs, women empowerment are briefly noted below: Manoj (2007)^[5] "ICT industry in India: a SWOT analysis" *Journal of Global Economy* has done a macro analysis of the

ICT industry in India, its key role in national economic growth etc. Pickens (2009)^[6] has noted the crucial role of a popular ICT device (viz. mobile phone) in financial inclusion ('banking the unbanked') in the context of Philippines. Manoj (2010)^[7] "Impact of technology on the efficiency and risk management of old private sector banks in India: Evidence from banks based in Kerala" has noted that ICT enhances banking efficiency. Robert Wood Johnson Foundation (RWJF)(2011)^[8] "Housing and Health" has noted that better housing conditions have positive relationship with health of the households and also that the three vital determinants are: (i) health are housing affordability, (ii) neighbourhood conditions and (iii) 'within the home' environment. Manoj (2012)^[9] "Information and Communication Technology (ICT) for effective implementation of MGNREGA in India: An analysis" in *Digital Economy of India-Security and Privacy*, has pointed out that ICT has vital relevance in implementing MGNREGS initiatives. Nasar and Manoj (2013)^[10] "Customer satisfaction on service quality of real estate agencies: An empirical analysis with reference to Kochi Corporation Area of Kerala State in India" have suggested for imparting of education and development efforts to the real estate agents, maintaining high transparency in real estate deals and usage of social networks. Manoj (2013)^[11] "Prospects and Challenges of Green Buildings and Green Affordable Homes: A Study with Reference to Ernakulam, Kerala" has noted the wide development potential of green homes for employment generation and sustained economic growth. James and Manoj (2014)^[12] "Relevance of E-Banking Services in Rural Area—An Empirical Investigation" point out vast potential in ICT-based products of banks for women empowerment and rural development, and suggest extension of ICT-based banking products in rural areas. Manoj and John (2014)^[13] "Prospects of Cattle Feed Industry in India and Strategies for Utilizing the Market Potential: A Study in Kerala with a Focus on Factors Influencing Buyer Behaviour" have recommended strategies for using the vast market potential for the cattle feed industry—one that can greatly help the livelihood of the poor and the marginalised and reduce social inequality. Continuing with this study, another study on this strategic industry by Manoj (2015)^[14] "Cattle feed industry in India: a macro perspective" analyses elaborately India's cattle feed industry because this industry can ensure inclusive and sustainable growth and lessen inequalities in Indian society.

Lauer and Timothy (2015)^[15] have observed the positive role of ICT (Digital channels) of speeding up financial inclusion and the need for ICT-based interventions. Manoj (2015)^[16] "Socio-Economic Impact of Housing Microfinance: Findings of a Field based Study in Kerala, India" in *International Research Journal of Finance and Economics* points out vital role for housing microfinance to bring about sustained economic growth. Manoj (2015)^[17] "Deterrents to the Housing Microfinance: Evidence from a Study of the Bankers to 'Bhavanashree' in Kerala, India" in *International Research Journal of Finance and Economics*, has pointed out various roadblocks in the path of growth of housing microfinance (HMF) in Kerala, with remedies. Joju J, Vasantha S, and Manoj PK (2015)^[18] "E-CRM: A Perspective of Urban & Rural Banks in Kerala" have noted ICT-based CRM or Electronic-CRM (E-CRM) has positive impact in both urban and rural banking and have suggested separate strategies for both, based on the findings of their empirical research study. Manoj and Viswanath (2015)^[19] "Socio-Economic Conditions of Migrant Labourers - An Empirical Study in Kerala" has noted the vital need for enhancing the working and living conditions of migrants. Rajesh and Manoj (2015)^[20] "Women Employees work life and challenges to Industrial Relations: Evidence from North Kerala" have observed vital significance in striking a balance between work and life by the women employees for healthier industrial relations. Asian

Development Bank (2015)^[21] in its report as noted that the positive impact of sustainable urban development project in Kerala on the livelihood and living standards of women and girls could empower them and create more avenues for earning income too. Manoj (2016)^[22] “Employment Generation from Rural Tourism: A Field Study of the Local Community at Kumbalangi, Kerala” observes the high capacity of tourism for employment creation and suggests, inter alia, developing better ICT infrastructure (online booking etc.) for tourism development, and hence economic growth through tourism sector. Manoj (2016)^[23] “Determinants of sustainability of rural tourism: a study of tourists at Kumbalangi in Kerala, India” has identified various factors influencing sustainability of rural tourism, and improving ICT infrastructure and facilitating online reservation etc. is one among these factors recommended by the author. Manoj (2016)^[24] “Real Estate Investment Trusts (REITs) for Faster Housing Development in India: An Analysis in the Context of the New Regulatory Policies of SEBI” has noted financial innovations like REITs are crucial for the faster housing development in India and hence the rapid economic growth of India. Manoj (2016)^[25] “Bank marketing in India in the current ICT era: Strategies for effective promotion of bank products” observes crucial need for ICT-integrated bank marketing in this digital India era when ICT-adoption is the new normal. Lakshmi and Manoj (2017)^[26] “Service quality in rural banking in north Kerala: A comparative study of Kannur district co-operative bank and Kerala Gramin bank” have noted better ICT-usage in Gramin bank and thus superior service as against in Co-operative bank. Lakshmi and Manoj (2017)^[27] “Rural Customers and ICT-based Bank Products A Study with a Focus on Kannur District Co-operative Bank and Kerala Gramin Bank” have noted better acceptance for the ICT-based products and greater customer satisfaction with the products of Kerala Gramin Bank (KGB). Joju, Vasantha, and Manoj (2017)^[28] “Future of brick and mortar banking in Kerala: Relevance of branch banking in the digital era” have noted that even when ICT is imminent and so also virtual banking, there is a need for a ‘human touch’ in ‘brick and mortar’ banking.

Joju, Vasantha, and Manoj (2017)^[29] “Financial technology and service quality in banks: Some empirical evidence from the old private sector banks based in Kerala, India” have noted that financial technologies (fin-techs) can greatly improve service quality and are vital or success in modern days. Manoj (2017)^[30] “Construction costs in affordable housing in Kerala: Relative significance of the various elements of costs of affordable housing projects” wherein elements of cost are prioritised for selective and focused cost control and ICT is an effective tool for the same. Manoj (2017)^[31] “Cost management in the construction of affordable housing units in Kerala: A case study of the relevance of earned value analysis (EVA) approach” has proved EVA as an effective tool for managing construction costs. Joju, Vasantha, and Manoj (2017)^[32] “Electronic CRM & ICT-based banking services: An empirical study of the attitude of customers in Kerala, India” have pointed out vital relevance of electronic (ICT) enabled modern practice in banking viz. Electronic-CRM (e-CRM) for efficiency and competitiveness of the banks and also noted favourable customers’ opinion towards such modern ICT-enabled products in their study. A similar study on CRM adoption in the banking sector by Manoj (2018)^[33] “CRM in old private sector banks and new generation private sector banks in Kerala: A comparison” points out that new private sector banks (NPBs) rank superior to the old private sector banks (OPBs) in adopting CRM especially in high-tech platforms (like, E-CRM) and hence NPBs have a better command among the customers by giving high-tech services. Manoj (2019)^[34] “Social banking in India in the reforms era and the case of financial inclusion: Relevance of

ICT-based policy options” makes suggestions on ICT-enabled policies to boost social control in banking in the ongoing ICT regime. Manoj (2019)^[35] “Dynamics of human resource management in banks in the ICT era: A study with a focus on Kerala based old private sector banks” has noted the need for ICT-based HRM policies for the competitiveness of banks. Manoj (2019)^[36] “Competitiveness of manufacturing industry in India: need for flexible manufacturing systems” has noted the need for adopting ICT and modern manufacturing technologies like FMS (flexible manufacturing systems) for the better competitiveness for the manufacturing industry in India. Joju and Manoj (2019)^[37] “Digital Kerala: A study of the ICT Initiatives in Kerala state” have analysed Kerala-based ICT initiatives– Kerala State being the one with the highest internet penetration and universal literacy and have made suggestions to better utilise ICT in this State for its fast growth. Joju and Manoj (2019)^[38] “Banking Technology and Service Quality: Evidence from Private Sector Banks in Kerala” observe that as ICT in banks enhances quality, ICT in banks needs to be promoted. Ali and Manoj (2020)^[39] “Impact of Falling Price of Rubber-A Case Study of Kothamangalam Taluk in Ernakulam District” has noted the poor productivity due to falling prices, its impact on other industries, the need for maintaining scientific methods, and the need for governmental interventions.

A report by United Nations (UN), Digital Financial Inclusion, July 2016^[40] has noted the significant role of ICT and digital financial services in inclusive growth, through poverty reduction and providing the benefits of financial inclusion in developing nations. Besides the IT sector, the IT/ITES applications in many sectors or industries have been noted to have positive effect on the growth of such sectors or industries. It is also noted that ICT adoption ensures more eco-friendly and hence sustainable growth than the traditional models and that ICT supports women empowerment. UN’s report, UNDESA World Social Report 2020^[41] has noted growing inequality globally, mainly arising from four causes viz:1) technological innovation, 2) urbanisation, 3) international migration, and 4) climate change. It has noted wage inequality as an adverse effect of technological innovation. So, like the Indian studies, the global studies too support ICT integration. So, all the studies on IT sector, including those on the implication of IT or ICT on other sectors or industries, have noted ICT’s inevitability. Harapana, et.al. (2020)^[42] “Corona virus disease 2019 (COVID-19): A literature review” have made a systematic review of authentic studies on Covid-19.

Thongrawd (2020)^[43] “Factors managing the effective diffusion of information: a case study. Journal of Security and Sustainability Issues” has noted that information diffusion in internet marketing is influenced by (i) relevancy of information, (ii) its clarity, (iii) its dependency, (iv) its responsiveness and also that customer relations doesn’t influence information diffusion. NCHFA (2020)^[44] observes that affordable housing promotes better health. Elias (2021)^[45] “Kerala’s Innovations and Flexibility for Covid-19 Recovery: Storytelling using Systems Thinking” has discussed how Kerala could effectively fight against the Covid-19 with its ICT infrastructure. Ummer, et. al. (2021)^[46] observe that good ICT resources of Kerala’s healthcare sector, ensured the remarkable resilience of the State to threats caused by Covid-19 pandemic. It has been noted that Kerala could leverage heavily on its excellent digital (ICT) infrastructure in the health sector and could effectively fight against this global pandemic. The clear superiority of the State of Kerala in various health-related indicators compared with India as a whole is specifically noted in this Kerala-focused study in the Covid-19 context. It may be noted that ICT-adoption is well-acknowledged

strategy in the Kerala context whether it is in the realm of healthcare (say, fight against Covid-19) or faster development of other sectors of the economy, like, banking. Karat et. al. (2022)^[47] in their empirical study on disastrous impact by Corona virus-19 has analysed its impact on the volatility of the shares of the top pharma companies in India, and noted that technical analysis is worth for making prudent decisions. Das et.al. (2022)^[48] Have sought to trace the origin of Covid-12 and the relevance of effectively controlling the spread of this global pandemic through vaccination drives. Xieu et. al. (2022)^[49] observe that risk to health, unemployment and funds crunch restrain the tourists to travel. Muraleedharan and Chandak (2022)^[50] have done a PRISMA-based systematic literature review and have noted: (i) a significant share of Kerala's population has chronic diseases, (ii) Kerala has poorly complied with emergency medical systems, and (iii) healthcare expenses are high in Kerala and health insurance coverage is poor. RBI's Working Paper-6 Sardar, Sanyal & Das, (2023)^[51] underlines the consumers' poor outlook in the Covid-19 times and in the period thereafter, including the future years. Saritha and Manoj (2023)^[52] have noted social inequalities in Kerala's IT sector and suggested affirmative actions and the right use of Kerala's IT resources, physical and human, for the faster and equitable growth of IT sector and the whole economy. Reports by the Central and State Governments, GOI (2023)^[53] and GOK (2023)^[54] show 'still persisting evils' of Covid-19. IMF (2023)^[55] has observed high growth prospects for Indian economy.

Most studies suggest that evils of Covid-19 and other epidemics still persist in Kerala [Ummer, et. al. (2021)^[46], Xieu et. al. (2022)^[49], RBI's Working Paper-6 (2023)^[51] etc.], and also that ICT-adoption is vital, not only in healthcare but also in other sectors. Thus, Kerala's excellent ICT infrastructure could be leveraged in healthcare and also in other sectors like tourism, housing, banking etc. However, despite Kerala's high resources in health, ICT etc., its public health situation is still poor as noted by Muraleedharan and Chandak (2022)^[50]. So, in view of the above, the research gaps identified are: (i) the status of the public health system in Kerala in the post-Covid-19 era in terms of GHE, OOP costs etc., (ii) studies on the need for linking the housing conditions with the health issues, and (iii) studies on ICT-adoption for the integrative growth of housing and health sectors, and hence holistic economic growth.

5. SIGNIFICANCE OF THE STUDY

An analysis of the poor GHE (Government Health Expenditure) in India, especially in Kerala, including its negative effect upon the household health expenditure (say, OOP costs) is worthwhile. Given the Governmental budget constraints, both at the Central and the State levels, GHE continues to be low both of GOI and also of GOK. The prevailing disparities in healthcare affordability and access are gradually growing in India (Dey, et.al. 2013) and this fact applies to Kerala too. Covid-19 has given another dimension to the prevailing challenges of the masses, particularly the rural poor and other vulnerable groups, because often they lack access to the healthcare services which are mostly available in the urban centres only. The poor housing conditions adds up to their worries, as poor housing attracts health issues especially the epidemics like Covid-19. So, an integrative approach to affordable housing and also affordable healthcare alone can bring about long term prosperity to the masses in India. The immense potential of ICT needs to be leveraged in healthcare and housing sectors too, especially by a State like Kerala which is in the forefront in terms of ICT resources;

as many studies have already proved the vast potential of ICT as a powerful tool for inclusive growth.

The present study examines the housing and healthcare concerns of masses holistically, at a time when ‘Affordable Housing for All’ (AHFA) and ‘Universal Health Coverage’ (UHC) are the national goals that India seeks to attain. In India, national schemes of Pradhan Mantri Awaas Yojana (PMAY) and Pradhan Mantri Jan Arogya Yojana (PM-JAY) strive to attain respectively the AHFA and UHC goals. A more holistic and ICT-integrated approach is imminent in a State like Kerala which is now facing the Nipah virus issue for the fourth time.

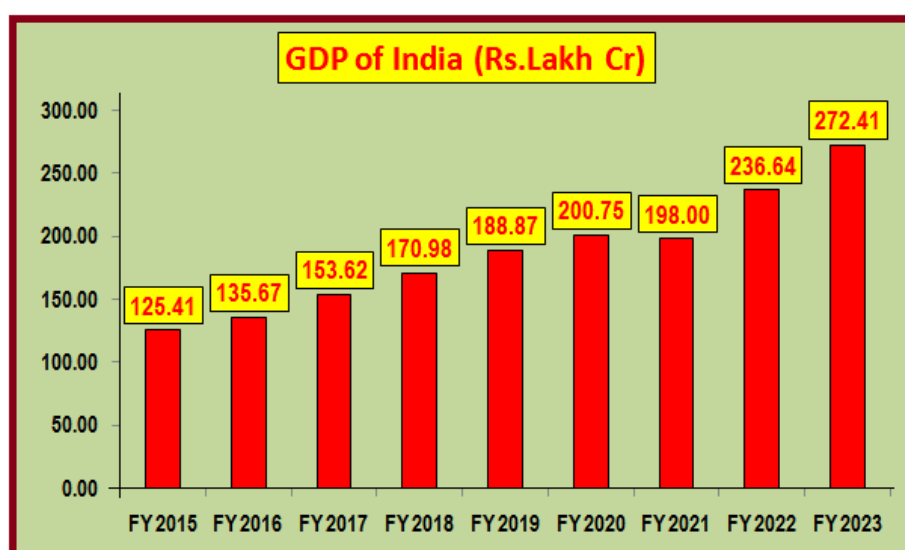
6. RESEARCH DESIGN

This study is structured as an exploratory study that is descriptive-analytical too. It draws inputs from authentic secondary sources, like, the reports of the Governments at Union level (viz. GOI) and also at State level (viz. GOK), the reports of the RBI, and those of global agencies like WHO. Primary data collected from 120 households (60 with rural/agricultural setting 60 with urban/industrial setting) in Ernakulam area of Kerala during Covid-19 times using a pre-tested Questionnaire are used. Relevant statistical tools, to the extent that is really required for this study alone are used. Findings of authentic studies by others, both at national and global levels, in this area have been duly corroborated to arrive at rational conclusions.

7. PUBLIC HEALTHCARE IN INDIA: POOR PEOPLE, POOR GHE, HIGH OOP HEALTH EXPENSES

India has been making steady progress in economic growth in absolute terms i.e. GDP at current prices (Figure I); so it ranks fifth among the largest economies in the world with a GDP of 2.6 USD Trillion (Table I). IMF has estimated the GDP growth of India for the ongoing fiscal (FY 2024) to be 6.1 percent, a very appreciable rate at the global level.

Figure I: India’s GDP shows steady growth (Rs. Lakh Crore) (Rs. Trillion)



Source: GOI (2023), *Yojana*, Sept., p.32.

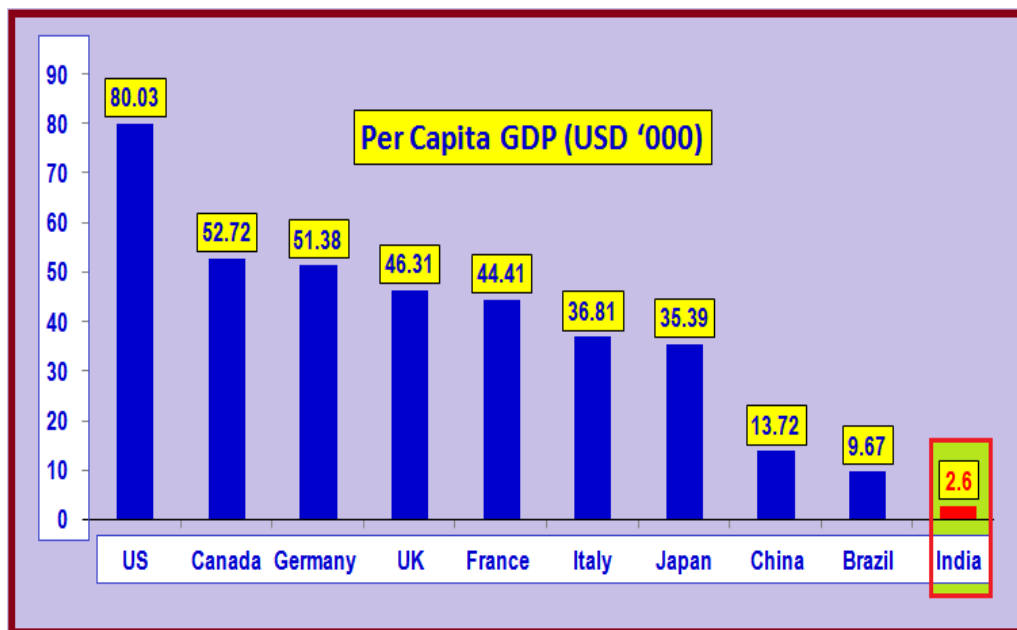
Table I: India’s GDP is fifth largest in the world, but per capita GDP is very poor.

| Top 10 countries in terms of GDP | GDP in USD Trillion | Per Capita GDP (USD ‘000) |
|----------------------------------|---------------------|---------------------------|
| I. United States (US) | 26.754 | 80.03 |
| II. China | 19.374 | 13.72 |
| III. Japan | 04.410 | 35.39 |
| IV. Germany | 04.309 | 51.38 |
| V. India | 03.740 | 02.60 |
| VI. United Kingdom (UK) | 03.160 | 46.31 |
| VII. France | 02.924 | 44.41 |
| VIII. Italy | 02.170 | 36.81 |
| IX. Canada | 02.090 | 52.72 |
| X. Brazil | 02.080 | 09.67 |

Source: IMF official data, retrieved on 31 August 2023. (www.imf.org)

Despite the high and growing GDP Figures (Figure I and Table I), the fact is that India’s Per capita GDP (USD ‘000s) is very low compared with other nations (Table I and Figure II). It may be noted that while India is the fifth largest economy in terms of GDP 10 percent Indians live below poverty line (BPL) (Figure III). This points to the fact that India’s growth story has not been an equitable and balanced one, and the poor people are not getting their due share in the fruits of the so called ‘fast economic growth in India).

Figure II: India’s GDP shows steady growth (Rs. Lakh Crore) (Rs. Trillion)



Source: IMF official data, retrieved on 31 August 2023. (www.imf.org)

Figure III: One-tenth of Indians live below the international poverty line



Source: Statista (2023) dt. 04 Sept. 2023.

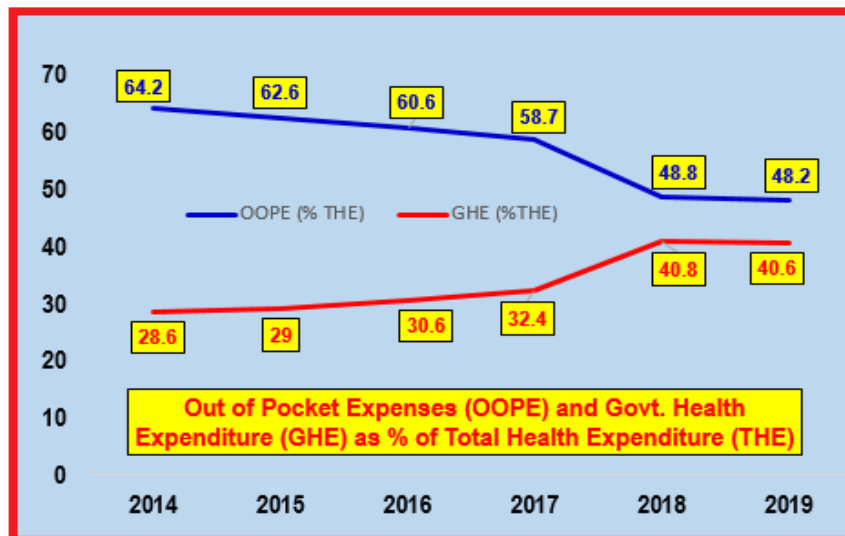
The dichotomy of high GDP in India and at the same time a large share of India's population (10 percent) living in extreme poverty has got vast implications when it comes to the affordability of basic requisites of human life, especially (i) healthcare, and (ii) housing.

The global pandemic Covid-19 could clearly demonstrate the vulnerability of the poor and other marginalised groups in hard times. It is noted that ICT and ICT-based services play a crucial role in ensuring that essential services reach the poor as well as other marginalised segments.

Regarding Kerala in particular, proper use of its vast ICT resources could help this small southernmost State in India to attract global attention by containing the spread of Covid-19 (the intensity of which in Kerala was one of the highest in the whole of India) and to keep fatality rates at globally low levels (Elias, 2021)^[45] (Ummer et. al., 2021)^[46]. Besides these studies done in the Covid-19 scenario in Kerala, many other studies noted ICT's vital role in faster growth of diverse sectors and hence suggested for wide ICT-adoption in Kerala.

Given the low health expenditure by the Govt. of India (GOI), the Out of Pocket (OOP) expenditure in India is high at about 50 percent. Govt. Health Expenditure (GHE) being about 40 percent, the relatively high OOP is unaffordable for the poor in India. (Figure IV).

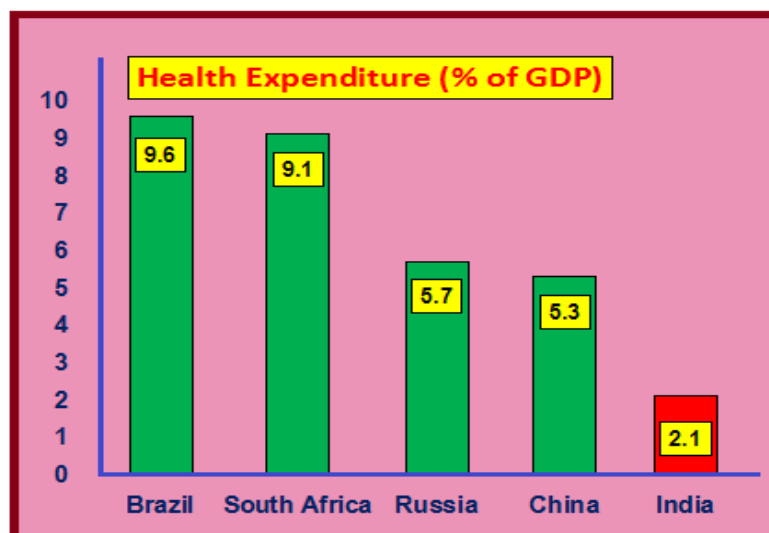
Figure IV: Health Spending-OOP and GHE



Source: GoI (2023), *Economic Survey*. [3]

It is noted that India’s expenditure on health as a share of GDP (2.1 percent) is very low compared with its peers in BRICS i.e. Brazil (B), Russia (R), China (C) and South Africa (S). Health expenditure of India is less than half that of Russia or China, and less than one-third that of Brazil or South Africa in GDP terms. India needs to double it at least. (Figure V).

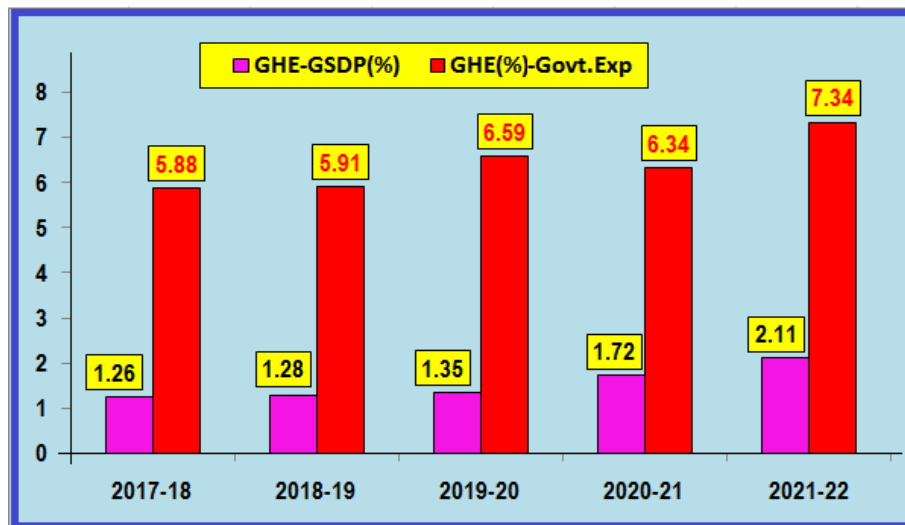
Figure V: Health Expenditure (Percentage of GDP) in India



Source: GOI (2023) (www.pib.indexd.aspx)

Now, if the specific case of Kerala State in India is taken, then the share of Kerala’s GHE in the total State GDP (or, GSDP) of Kerala has been steadily growing from 1.26 percent in 2017-18 to 2.11 percent in 2021-22. Kerala’s GHE to GDP share of 2.11 percent (2021-22) matches with the GHE to GDP share of 2.1 percent for India as a whole. The GHE of Kerala as a share (percentage) of the total Governmental expenditure has also been growing over the years, and it is 7.3 percent (2021-22) as against 5.88 percent in 2017-18. (Figure VI).

Figure VI: GHE’s Share in GSDP and GHE’s Share in Total Govt. Expenditure



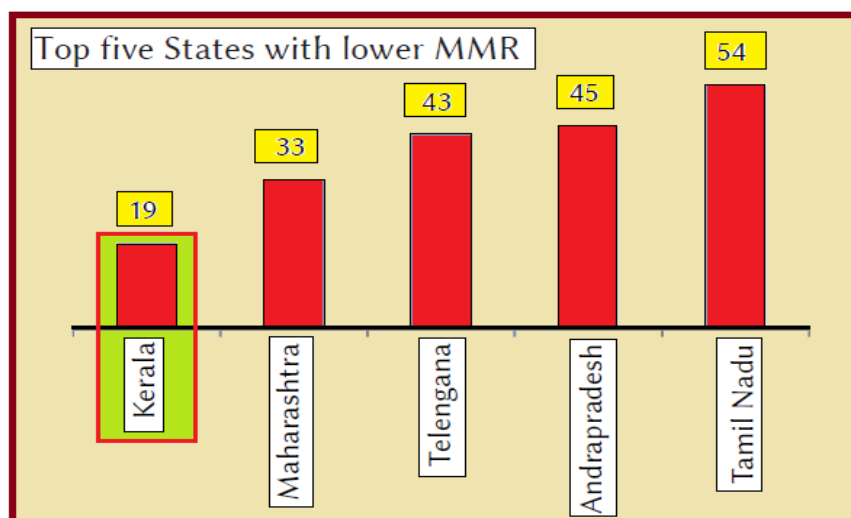
Source: GOK (2023), *Economic Review 2022*, Jan., p. 299.

From the Figures (V) and (VI), the poor GHE by the governments, both GOI and GOK, is evident. This in turn makes the OOP expenditure higher for the common man, the masses. As a long term solution higher GHEs by GOK and GOI is vital to bring down the OOP costs.

8. INDIAN PUBLIC HEALTH SYSTEM IN COVID-19 TIMES: AN ANALYSIS FOCUSING ON KERALA

Having already examined the high proportion of people (one-tenth) who live in extreme poverty, let us now look closely into the public health system in India with special reference to Kerala – a State having one of the finest health infrastructure in India as a whole. Kerala has been the best performing State in Maternal Mortality Rate (MMR) in India (Figure VII), and so also has been its extremely better position vis-a-vis the national average. (Figure VIII).

Figure VII: Kerala’s Top Health Performance: The Case of MMR



Source: GOK (2023), *Economic Review 2022*, Jan. p. 293.

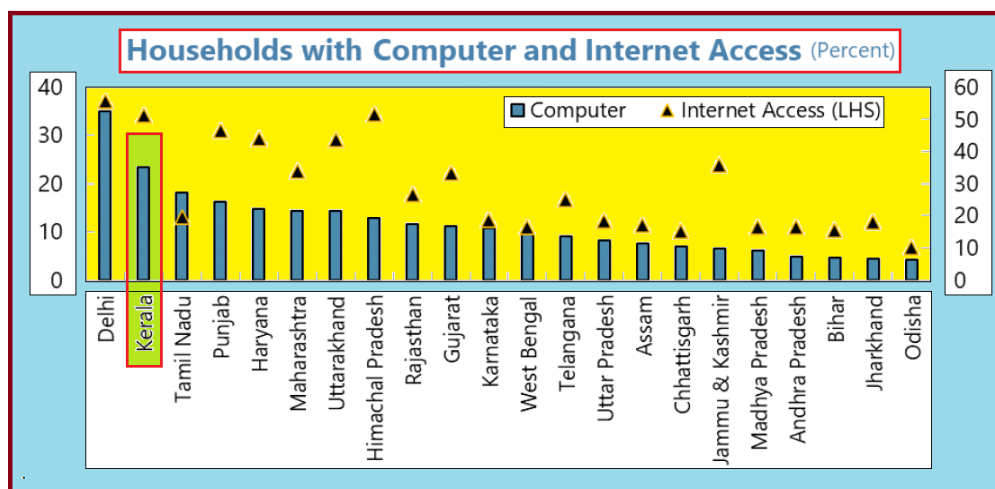
Figure VIII: Kerala’s Top Performance in Health Front – The Case of MMR

| Sl. No | Indicators | Kerala | India |
|--------|--|--------|--------|
| 1 | Total population (in crore) (Census 2011) | 3.34 | 121.06 |
| 2 | Decadal Growth (per cent) (Census 2011) | 4.90 | 17.7 |
| 3 | Sex Ratio (Census 2011) | 1084 | 943 |
| 4 | Child Sex Ratio (Census 2011) | 964 | 919 |
| 5 | Birth Rate # | 13.2 | 19.5 |
| 6 | Death Rate* | | |
| | (a) Children (0-4) | 1.8 | 8 |
| | (b) Children (5-14) | 0.5 | 0.4 |
| | (c) Persons (15-59) | 2.7 | 2.9 |
| | (d) persons (60 and above) | 39.1 | 42.3 |
| 7 | Natural Growth Rate # | 6.2 | 13.5 |
| 8 | Per cent of death receiving medical attention* | | |
| | Government | 43.3 | 29.9 |
| | Private | 37.4 | 18.9 |
| | Qualified professional | 16.0 | 33.2 |
| | Untrained/others | 3.4 | 18.0 |
| 9 | Still Birth Rate* | 4 | 3 |
| 10 | Crude Birth Rate* | 13.2 | 19.5 |
| 11 | Maternal Mortality Ratio** | 19 | 97 |
| 12 | Expectancy of Life at Birth*** | 75 | 70 |
| | Expectancy of Life at Birth*** – Male | 71.9 | 68.6 |
| | Expectancy of Life at Birth*** – Female | 78 | 71.4 |

Source: GOK (2023), *Economic Review 2022*, Jan. p. 294.

The better performance of Kerala in the health front (Figures VII and VIII) in India as a whole is beyond doubt. Equally important is Kerala’s better ICT infrastructure which is one of the best in India in terms of availability of computers and internet access (Figure IX).

Figure IX: Kerala’s Top Performance in Health Front – The Case of MMR



Source: IMF (2023), *Stacking up the Benefits—Lessons from India’s Digital Economy*, p.30.

Despite Kerala's superior health indicators (Figures VII and VIII) and very appreciable status in the ICT front (Figure IX), the reality is that Kerala's public health system is still not robust, as clearly noted by a systematic study by Muraleedharan and Chandak (2022)^[50]; and accordingly, the OOP costs on healthcare are very high, vast majority of the households have felt health costs to be 'Catastrophic' (i.e. direct medical expenditure exceeds 40 percent of the effective household income), poor compliance with emergency medical systems, low level of insurance coverage, prevalence of non-communicable diseases (NCDs) etc. Studies like Elias (2021)^[45] and Ummer et. al. (2021)^[46] point out Kerala's exceptional ability to use diverse innovative ICT-based ways to effectively face emergency situations, like Covid-19.

An empirical study in Ernakulam (Kerala) among 120 households (60 with agricultural/rural background and 60 with industrial/urban background) has noted their health expenditure to be so high in the Covid-19 times that it disrupted their family budgets. Over half of them (50.83 percent) had 'Catastrophic' impact due to Covid-19 and the rest (49.17 percent) of them experienced only Non-Catastrophic impact.(Table II). As the OOP costs, many of them become victims of catastrophic impact and some are forced to use 'Distress financing' also.

Table II: Catastrophic Household Health Expenditure.

| Nature of Health Expenditure | Frequency | Percentage |
|------------------------------|-----------|------------|
| Catastrophic | 61 | 50.83 |
| Non-Catastrophic | 59 | 49.17 |
| Total | 120 | 100.00 |

Source: Survey Data

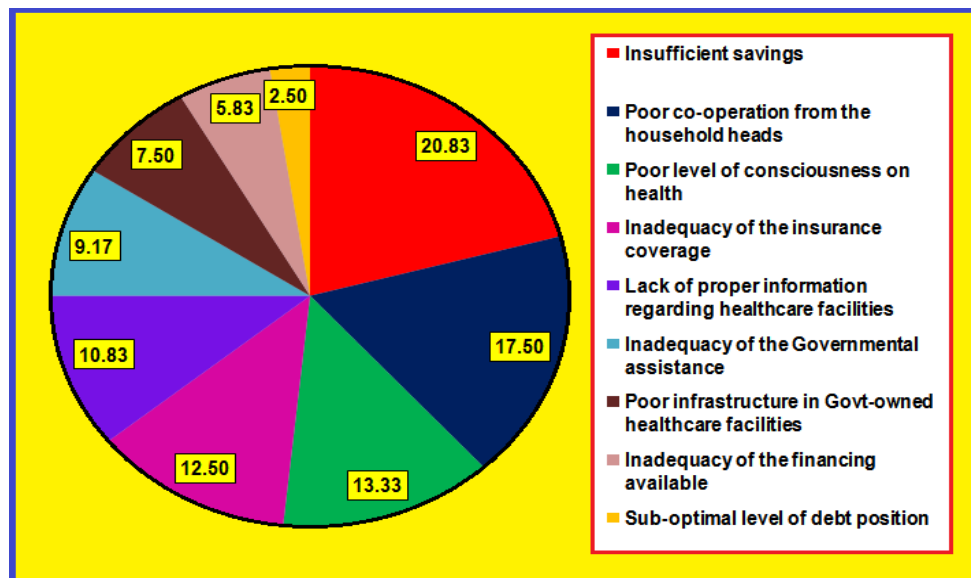
Insufficient savings was the worst issue faced by the households savings; over one-fifth (20.83 percent) of them had this major issue. Another major issue (17.5 percent) was the poor co-operation from the heads of the households. Other issues were poor health consciousness (13.33 percent), inadequate insurance cover (12.50 percent), insufficient Governmental support (9.17 percent), poor infrastructure in Govt. hospitals (7.5 percent). Insufficient financing (5.83 percent) and sub-optimal debt position (2.5 percent) (Table III and Figure X).

Table III: Major Challenges Faced by the Households relating to Health Expenditure

| Challenges faced | Frequency | Percentage |
|---|-----------|------------|
| Insufficient savings | 25 | 20.83 |
| Poor co-operation from the household heads | 21 | 17.50 |
| Poor level of consciousness on health | 16 | 13.33 |
| Inadequacy of the insurance coverage | 15 | 12.50 |
| Lack of proper information regarding healthcare facilities | 13 | 10.83 |
| Inadequacy of the Governmental assistance | 11 | 9.17 |
| Poor infrastructure in Government-owned healthcare facilities | 9 | 7.50 |
| Inadequacy of the financing facilities available | 7 | 5.83 |
| Sub-optimal level of debt position | 3 | 2.50 |
| Total | 120 | 100.00 |

Source: Field Survey

Figure X: Challenges of the Households in Covid-19 Times



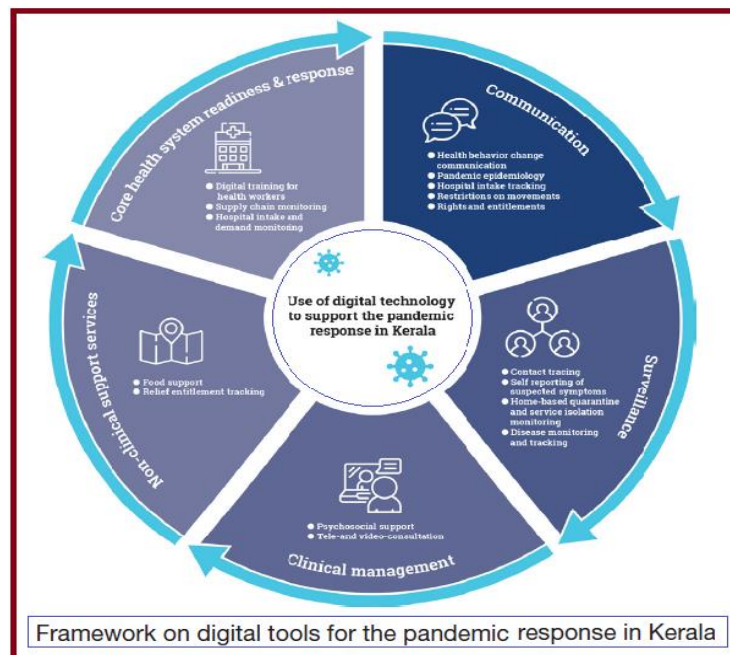
Source: Field Survey Data, as in Table VII

Inadequacy of savings, inadequacy of the Governmental assistance, inadequacy of the financing facilities available etc. being the major challenges faced by the households, it may be inferred that the gravity of the healthcare challenges is more on the poor and marginalised groups and they need better and more affordable healthcare facilities. This in turn suggests greater Governmental interventions that ensure affordable healthcare. Equally important is the need affordable housing facilities to all such poor and marginalised groups as there is a positive association between affordable housing and better healthcare. (NCHFA, 2020)^[44]

9. AFFORDABLE HOUSING FOR ALL (AHFA) AND 'UNIVERSAL HEALTH COVERAGE' (UHC) GOALS

Governmental efforts in Covid-19 times in Kerala have been noted to be appreciable by many studies. The wide-spread testing of Covid-19 infected cases, meticulous treatment and containment Kerala could attain one of the least fatality rates (0.4 percent)– one of the lowest not only in India (1.5 percent) but also globally (2.4 percent in USA, 5.2 percent in China). This globally acclaimed achievement owes a lot to a few unique features of Kerala viz. the first digital state in the whole India having the largest share of households having computers (24 percent) and internet facility (51 percent), superb mobile phone penetration (95 percent), very high digital literacy (75 percent), smart phone penetration (62 percent), and so on. All these features underscore Kerala's excellent ICT infrastructure. Ummer et. al. (2021)^[46] have noted that Kerala aptly used digital (ICT) tools for strictly reining in Covid-19 pandemic with an ICT-based core health system readiness and support, via communication, surveillance, and also clinical management as well as many support services of non-clinical type (Figure XI).

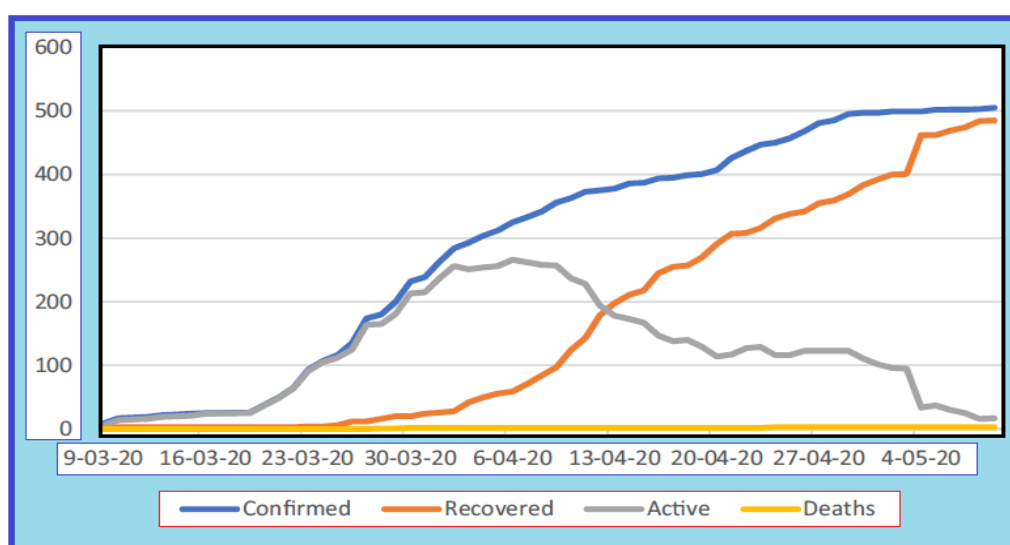
Figure XI: Kerala’s Effective use of ICT Tools in Covid-19 Times



Source: Ummer et. al. (2021)^[46] p.3.

It is noted that so as to effectively curb Covid-19 and such other epidemics as well as to make the healthcare facilities in Kerala more equitable, inclusive and pro-poor, there is the need to leverage the ICT infrastructure in Kerala. Elias (2021)^[45] too has noted the immense ability of ICT to integrate the activities of diverse stakeholders to curb Covid-19 pandemic and to flatten the Covid-19 curve very successfully and hence could emerge as an exemplar not in India alone, but the whole world as well. Figure XII shows the impressive success of Kerala in ensuring a ‘globally low’ fatality rate and also flattening the Covid-19 curve.

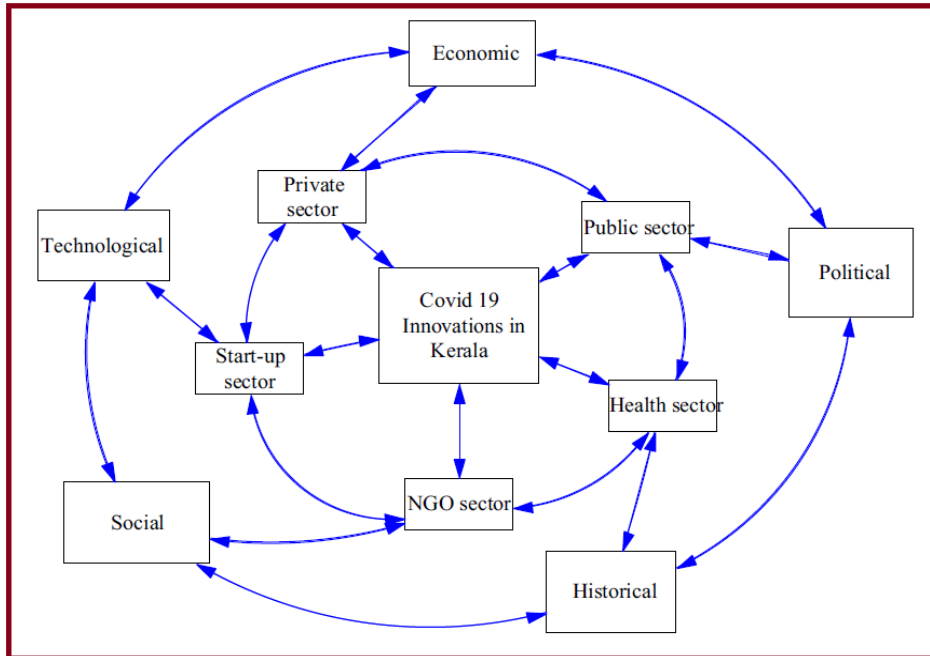
Figure XII: Impressive Performance in Combating Covid-19 in Kerala using ICT Tools



Source: Adapted from, Elias (2021)^[45] p.S37.

Figure XIII shows the diverse stakeholders who could be effectively integrated through information interchange using the huge potential of ICT during the Covid-19 times in Kerala, thus enabling this small south Indian State to gain global attention in curbing Covid-19.

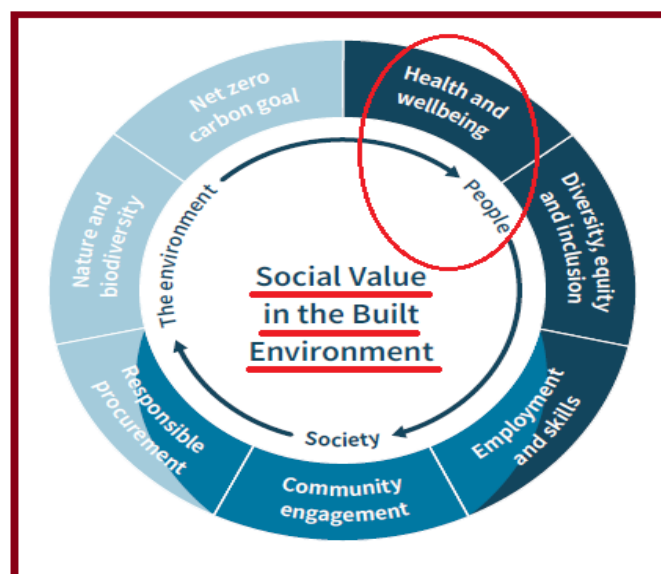
Figure XIII: Kerala’s Effective use of ICT Tools in Covid-19 Times



Source: Adapted from, Elias (2021)^[45] p.S38.

A study by JLL has noted that social value (S) of housing (built environment) is greatly dependent on the ‘Health and wellbeing’ since it is one of the key levers of S. So, in an ESG (Environment, Social, Governance) setting of housing, health is a key element. (Figure XIV).

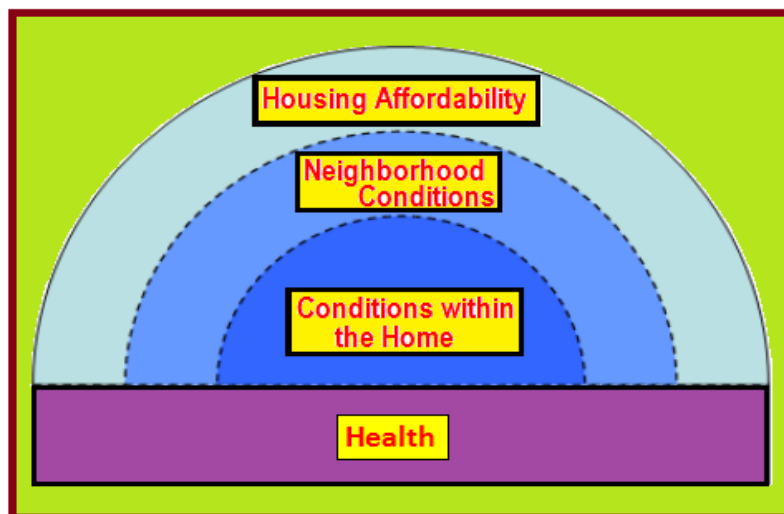
Figure XIV: Health-a key lever of Social value



Source: JLL (2023), *Responsible Real Estate*

Health aspect needs due attention during the design of housing units. Affordable healthcare and affordable housing should go hand in hand. From earlier studies, an inextricable relation between one's housing situation and his/her health status is revealed, and also the fact that a sizeable share of the household savings is spent for housing purpose. For example, a study by the US-based Robert Wood Johnson Foundation (RWJF, 2011)^[8] has noted that a significant share of the US population has spent over 50 percent of their income for housing purpose and that health depends primarily on (1) Housing affordability (2) Neighbourhood conditions, and (3) Indoor (within the house) conditions. These facts shows the key need for 'health-focused' housing policy in India and a holistic approach to healthcare and housing. (Figure XV).

Figure XV: Relation-Health and Housing



Source: RWJF (2011)^[8], US, May. p.1.

10. INTEGRATIVE AFFORDABLE HOUSING AND UNIVERSAL HEALTHCARE IN INDIA: NEED FOR ICT

From the aforesaid discussion, it may be observed that many Kerala-based studies have clearly noted the key need for ICT adoption for inclusive economic growth. These include, studies that pointed out (i) ICT for better efficiency and risk management (Manoj, 2010)^[7], (ii) the positive linkage of ICT-based banking on financial inclusion, rural development and women empowerment (James and Manoj, 2014)^[12], (iii) superior service quality in banking through E-CRM (Vasanth, et. al., 2015)^[18], (iv) effective marketing of bank products using ICT (Manoj, 2016)^[25], (v) efficient delivery of social banking in ICT era (Manoj, 2019)^[34], (vi) ICT integrated HRM for enhanced HR productivity (Manoj, 2019)^[35], (vii) ICT adoption for better service quality (Joju & Manoj, 2019)^[38], and so on. It may be noted that ICT-driven and inclusive healthcare system is a crucial need in Kerala, because most of the challenges identified (Table III & Figure X) Kerala-based study can be addressed, cost-effectively and qualitatively, through ICT (digital) tools or by ICT-integration. It may be pointed out that necessary skills should be imparted to the users or beneficiaries as they often lack such skills. Accordingly, efforts towards attaining a more inclusive and equitable healthcare system are very much required. For this systematic ICT integration in Kerala's healthcare sector is vital.

Needless to mention, enhanced public expenditure on the healthcare sector is vital for human capital formation since it can improve the health capital. Striking an optimal balance between public and private health expenditure is a pre-requisite for enhancing the standard of living and thus the productivity of the population in a nation, equitably and hence sustainably. GHE (Govt. Expenditure on Health) in India is very less. Household expenditure on health is thus relatively high. This increases the OOP expenses and sometimes forces people to adopt distress financing in situations like Covid-19. Kerala's scenario is far better in comparison with other Indian States, regarding the healthcare services, trained medical professionals, and various health-related indices. In spite of this, majority of the households felt healthcare expenses to be catastrophic in the Covid-19 times, as per the empirical study in Kerala.

As health expenditure has two broad elements viz. (i) GHE, what the Government spends for the health purpose, (ii) OOP costs by the patients concerned. If GHE improves, then the patients can cut their OOP expenses to manageable (affordable) levels. This aspect is vital for the poor and other vulnerable groups who have less or nil savings for health purpose. The Governments at the Central and the State levels, both face budget constraints. So, the governmental investments on healthcare infrastructure tend to be low. This shows the need for alternative models like PPP (public private partnership) mode healthcare services. Higher GHEs or PPP mode healthcare etc. provides relief to the poor as it reduces OOP costs.

Beyond the confines of the healthcare sector and the overall health of all the citizens (like in the UHC mandate of the GOI), an ICT-based and integrative approach to healthcare needs to be considered from the broader perspective of the whole economy. So, a closely related sector (viz. housing) has been considered and the mutual relationship between the two has been dealt earlier. Now, the significance of an integrative and holistic approach in the health sector deserve special mention. As clearly pointed out by Elias (2021)^[45] the utmost innovative and flexible way of dealing with Covid-19 pandemic by Kerala could be possible only because of the seamless ICT-based integration of diverse sectors and stakeholders by the State. This integrative approach to healthcare that follows the systems approach is subscribed to by Ummer et. al. (2021) also according to whom the incredible success that Kerala could attain in the Covid-19 times has been primarily because of its topmost ICT (digital) resources and also meaningful application of the same in an integrative and holistic manner. The vital need for the furtherance of the ICT-adoption policy of the State is supported by these studies.

Another crucial fact is that health sector has intimate connection with sectors like tourism. Instances of the outbreak of epidemics like Nipah virus would definitely affect the prospects of tourism sector adversely. Tourism is one of the top contributors to the State GDP (GSDP) of Kerala and it accounts for roughly one-tenth (10 percent) of Kerala's GSDP. So, a good healthcare system is essential not to repel the tourists, especially foreign tourists who visit Kerala. Besides, sectors like tourism and housing have vast linkage effects. So, if such sectors are promoted through a duly integrated healthcare sector then that would accelerate the pace of economic growth. This is particularly relevant in a State like Kerala in India.

11. SUGGESTIONS AND CONCLUDING REMARKS

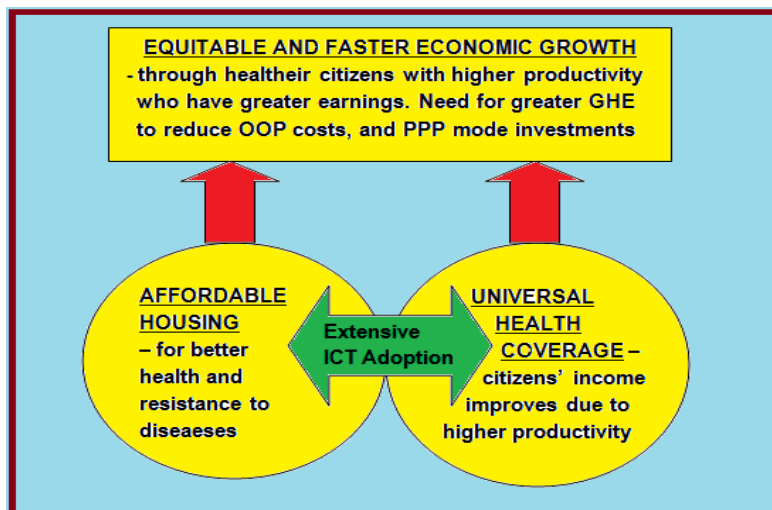
In most of the developed nations, the governments provide the full or near-full health services to citizens through some national health services system. So, either the health costs of the Governments are sourced from their tax revenues, or the population is provided health insurance coverage. In either case, OOP costs for the citizens are minimal. But, in India the health expenses are rather unaffordable to the poor since the OOP health costs are high. This is partly because of poor GHE by the Governments. GOI schemes PMJAY and PMAY seek to attain UHC and AHFA goals respectively for Indians. The following suggestions are made for the holistic growth in India, through attaining the UHC and AHFA in an integrative way:

- (i) Higher GHE by GOI and GOK, both, is vital as the current level of about 2 percent being too low compared to India's peer nations (like, BRICS) and advanced nations. Only then the OOP healthcare costs can be reduced so that the poor will be benefitted. Also, better healthcare facilities be provided by the Governments, both GOI and GOK. Given the governmental budget constraints, approaches like PPP seems to be imminent.
- (ii) In line with the broader policy focus on transforming into a 'Knowledge Society', the State of Kerala needs to give added thrust on ICT-adoption in diverse sectors, and that too in a manner that integrates various sectors through information interchange. The case of healthcare sector and housing, as discussed earlier is just an example. Strategic benefits could accrue if such meaningful linkages are put in place across two or more sectors. Thus, besides the mutual benefits to the sectors involved, the whole economy is also benefited due to the synergistic effects of ICT-based integration of diverse sectors.
- (iii) Proper integration of health sector with other sectors like housing is vital for ensuring holistic welfare of the people, especially the poor and the marginalised. ICT-integrated systems ensures provision of healthcare services and also allied ones, like, housing. ICT enables identification of the deserving citizens with a unique code (Aadhaar or Health). The housing infrastructure in India being very poor, it needs to be scaled up through the initiatives like 'Affordable Housing for All' (AHFA), a governmental priority in India. This in turn needs to be integrated with 'Universal Health Coverage (UHC) through ICT means, as both these are mutually interconnected. So, the poor will be benefitted.

Based on the above analysis a conceptual model (Figure XVI) seems to be meaningful. As depicted in the model, the strategic benefits from the integration of affordable housing and affordable (universal) healthcare could be leveraged by integrating the two through ICT. So, by way of ensuring better housing and healthcare facilities greater quality of living and also productivity of the citizens could be facilitated. This in turn ensures higher levels of income and hence faster and equitable economic development of the nation. Along with supporting the two sectors as above (viz. healthcare and housing) there is a crucial need for greater GHE by the Governments so that the OOP costs on healthcare of the citizens can be reduced. But, as the Governments have budget restrictions alternative models of development like PPP may be required in the days to come. So, vast developmental activities through PPP mode with due regard to their sustainability also (say, by compliance with ESG – Environment, Social, and Governance – norms) would be essential for the faster

growth of the healthcare sector in India. In the specific case of Kerala which has got immense NRI remittances, policies to channel the State's huge remittances into healthcare and allied fields like housing and tourism would be very meaningful. As sectors like housing and tourism have vast linkages, promotion of such sectors can greatly speed up the State's economic growth. (Figure XVI).

Figure XVI: Affordable Healthcare and Affordable Housing – An Integrative View



Source: Author's Compilation

To sum up, ICT-integration in healthcare is an imperative rather than a choice. Equally vital is the need for a holistic approach to universal health and affordable housing, in line with GOI's UHC and AHFA goals respectively. Once these basic requisites of citizens are fulfilled, their quality of life and productivity would improve, thus accelerating the economic growth. The GOI schemes PMJAY and PMAY seek to attain UHC and AHFA respectively. But, an integrative approach to attain both these goals together through ICT (using a unique code, say, Aadhaar or Health) is vital for the holistic welfare of all, especially the poor. The Nipah virus outbreak in Kerala in 2023 (fourth time since 2018) shows the urgency for such an approach; because even a State like Kerala with top credentials in health faces such crises.

12. ACKNOWLEDGEMENT

The author acknowledges the data collection support from Ms. Niveditha Krishnan, research scholar and also the valuable research guidance from Prof. (Dr.) Sankaranarayanan.

13. FUNDING AVAILABLE

No formal fund from any funding agency was used for the purpose of this research.

14. CONFLICT OF INTEREST

The author acknowledges no conflict of interest regarding the contents of this paper.

References

- 1) Firdaus, G. and Ahmad, A. (2013). Relationship between Housing and Health: A Cross-Sectional Study of an Urban Centre of India. London, England: SAGE Publications; Indoor & Built environment, 2013, Vol.22 (3), p.498-507. (DOI: 10.1177/1420326X12443846).
- 2) Dey, B., Mitra, A., Prakash, K., Basu, A., Ray, S. and Mitra, A. (2013). Gaps in Health Infrastructure in Indian Scenario: A Review. Indo Global Journal of Pharmaceutical Sciences, 3(2): 156-166.

- (https://www.iglobaljournal.com/wp-content/uploads/2013/12/7.-Baishakhi-Dey-et-al-IGJPS-2013_Edited.pdf)
- 3) World Health Organization (2018). WHO Housing and Health Guidelines. Switzerland. First Ed.
https://www.ncbi.nlm.nih.gov/books/NBK535293/pdf/Bookshelf_NBK535293.pdf
 - 4) Saini, Tek Chand (2020). Availability of Primary Health Facilities in Rajasthan: Spatial Analysis. *International Journal of Applied Social Science*. 7 (5&6): 240-250.
DOI: 10.36537/IJASS/7.5&6/240-250.
(http://scientificresearchjournal.com/wp-content/uploads/2020/10/Social-Science-7_A-240-250-Full-Paper.pdf).
 - 5) Manoj PK (2007). ICT industry in India: a SWOT analysis. *Journal of Global Economy*, 3(4): 263–282. (Doi: 10.1956/jge.v3i4.143.)
 - 6) Pickens, M (2009). Window on the unbanked: Mobile money in the Philippines.
<https://www.cgap.org/sites/default/files/CGAP-Brief-Window-on-the-Unbanked-Mobile-Money-in-the-Philippines-Dec-2009.pdf>
 - 7) P.K. Manoj (2010). Impact of Technology on the efficiency and risk management of old private sector banks in India: Evidence from banks based in Kerala. *European Journal of Social Sciences*, 14(2), 278-289.
 - 8) Robert Wood Johnson Foundation (RWJF) (2011). Housing and Health. Issue Brief 7, May.
<https://www.rwjf.org/en/insights/our-research/2011/05/housing-and-health.html>.
 - 9) Manoj P.K. (2012), Information and Communication Technology (ICT) for Effective Implementation of MGNREGA in India: An Analysis, *Digital Economy of India – Security and Privacy*, Serials Publications, 4830/24, New Delhi, pp.145-150, First Ed.
 - 10) K.K Nasar and P.K Manoj (2013). Customer satisfaction on service quality of real estate agencies: An empirical analysis with reference to Kochi Corporation Area of Kerala State in India. *International Journal of Management, IT and Engineering*. 3 (6). 213-227.
 - 11) Manoj P.K.(2013). Prospects and Challenges of Green Buildings and Green Affordable Homes: A Study with Reference to Ernakulam, Kerala. *Global Research Analysis*. 2(12).45-49.
 - 12) Neeraja James and Manoj, P.K. (2014), Relevance of E-Banking Services in Rural Area—An Empirical Investigation, *Journal of Management and Science*, 5, 1-14.
 - 13) Manoj PK and John MP (2014). Prospects of Cattle Feed Industry in India and Strategies for Utilizing the Market Potential: A Study in Kerala with a Focus on Factors Influencing Buyer Behaviour. *International Journal of Business and General Management (IJBGM)*. 3(3):1-12.
 - 14) Manoj PK (2015). Cattle feed industry in India: a macro perspective. *International Journal of Commerce and Business Management*, IV (10)(I):96-101.
 - 15) Lauer K., and Timothy L. (2015). Digital financial inclusion: Implications for customers, regulators, supervisors, and standard-setting bodies. <https://www.documents.worldbank.org/>
(<https://documents1.worldbank.org/curated/en/770291468338664476/pdf/952100BRI0Box30I0Inclusion0Feb02015.pdf>).
 - 16) Manoj, P.K. (2015), Socio-Economic Impact of Housing Microfinance: Findings of a Field based Study in Kerala, India, *International Research Journal of Finance and Economics*, 137, 32-43.
 - 17) Manoj, P.K.(2015), Deterrents to the Housing Microfinance: Evidence from a Study of the Bankers to 'Bhavanashree' in Kerala, India, *International Research Journal of Finance and Economics*, 138, 44-53.
 - 18) Jacob Joju, Dr.Vasantha S, and Dr. Manoj, P. K. (2015), E-CRM: A Perspective of Urban & Rural Banks in Kerala, *International Journal of Recent Advances in Multidisciplinary Research*, 2(9), 786-791.
 - 19) Vidya Viswanath & Manoj, P. K. (2015), Socio-Economic Conditions of Migrant Labourers - An Empirical Study in Kerala, *Indian Journal of Applied Research*, 5 (11), 88-93.
 - 20) S Rajesh & Dr. Manoj P.K (2015). Women Employee Work-life and Challenges to Industrial Relations: Evidence from North Kerala. *IPASJ International Journal of Management (IJM)*. 3.5.2015.

- 21) Asian Development Bank (2015). *Gender Mainstreaming Case Study India: Kerala Sustainable Urban Development Project*. Asian Development Bank.
- 22) P.K. Manoj (2015). Employment Generation from Rural Tourism: A Field Study of the Local Community at Kumbalangi, Kerala. *International Journal of Applied Services Marketing Perspectives (IJASMP)*, 4(4),1880-1888.
- 23) P.K Manoj (2016). Determinants of sustainability of rural tourism: a study of tourists at Kumbalangi in Kerala, India. *International Journal of Advance Research in Computer Science and Management Studies*. 4 (4). 17-30.
- 24) P.K. Manoj (2016). Real Estate Investment Trusts (REITs) for Faster Housing Development in India: An Analysis in the Context of the New Regulatory Policies of SEBI. *International Journal of Advance Research in Computer Science and Management Studies*, 4(6), 152-167.
- 25) P.K Manoj (2016). Bank marketing in India in the current ICT era: Strategies for effective promotion of bank products. *International Journal of Advance Research in Computer Science and Management Studies*, 4 (3), 103-113.
- 26) Lakshmi and Manoj, P.K. (2017). Service quality in rural banking in North Kerala: A comparative study of Kannur district co-operative bank and Kerala Gramin bank. *International Journal of Applied Business and Economic Research*, 15(18), 209-220.
- 27) Lakshmi and Manoj, P.K. (2017). Rural customers and ICT-based bank products: A study with a focus on Kannur district co-operative bank and Kerala Gramin Bank. *International Journal of Economic Research*, 14(14), 423-434.
- 28) Jacob Joju, Vasantha, S. and P.K. Manoj. (2017). Future of brick and mortar banking in Kerala: Relevance of branch banking in the digital era. *International Journal of Civil Engineering and Technology*, 8(8), 780-789.
- 29) Jacob Joju, Vasantha, S. &Manoj, P.K. (2017). Financial technology and service quality in banks: Some empirical evidence from the old private sector banks based in Kerala, India. *International Journal of Applied Business and Economic Research*, 15(16), 447-457.
- 30) Manoj, P.K. (2017). Construction costs in affordable housing in Kerala: Relative significance of the various elements of costs of affordable housing projects. *International Journal of Civil Engineering and Technology*, 8(9), 1176-1186.
- 31) Manoj, P.K. (2017). Cost management in the construction of affordable housing units in kerala: A case study of the relevance of earned value analysis (EVA) approach. *International Journal of Civil Engineering and Technology*, 8(10), 111-129.
- 32) J Joju, S Vasantha, PK Manoj (2017). Electronic CRM & ICT-based banking services: An empirical study of the attitude of customers in Kerala, India. *International Journal of Economic Research*, 14 (9), 413-423.
- 33) Manoj, P.K. (2018). CRM in old private sector banks and new generation private sector banks in Kerala: A comparison. *Journal of Advanced Research in Dynamical and Control Systems*, 10 (2 Special Issue), 846-853.
- 34) Manoj, P.K. (2019). Social banking in India in the reforms era and the case of financial inclusion: Relevance of ICT-based policy options. *Journal of Advanced Research in Dynamical and Control Systems*, 11(7 Special Issue), 1654-1666.
- 35) Manoj, P.K. (2019). Dynamics of human resource management in banks in the ICT era: A study with a focus on Kerala based old private sector banks. *Journal of Advanced Research in Dynamical and Control Systems*. 11(7 Special Issue), 1667-1680.
- 36) Manoj, P.K. (2019). Competitiveness of manufacturing industry in India: Need for flexible manufacturing systems. *International Journal of Innovative Technology and Exploring Engineering*, 8(12), 3041-3047. (DOI: 10.35940/ijitee.K2452.1081219).
- 37) J Joju and Manoj PK (2019). Digital Kerala: A study of the ICT: Initiatives in Kerala state. *International Journal of Research in Engineering, IT and Social Sciences*; 9: 692-703.
- 38) J Joju and P K Manoj (2019). Banking Technology and Service Quality: Evidence from Private Sector Banks in Kerala, *International Journal of Recent Technology*, 8 (4), 12098-12103.
- 39) Ali, O.P. and Manoj, P.K. (2020). Impact of falling price of rubber-a case study of Kothamangalam Taluk in Ernakulam district. *Indian Journal of Economics and Development*, 16(1), 118-124.

- 40) United Nations (2016). Digital Financial Inclusion. *Issue Brief Series*. International Telecommunication Union (ITU) 2016. (https://www.un.org/esa/ffd/wp-content/uploads/2016/01/Digital-Financial-Inclusion_ITU_IATF-Issue-Brief.pdf).
- 41) United Nations (2020). UNDESA World Social Report 2020. (<https://www.un.org/development/desa/dspd/world-social-report/2020-2.html>).
- 42) Harapan Harapana, Naoya Itoh, Amanda Yufika, Wira Winardi, Synat Keam, Haypheng Te, Dewi Megawatii, Zinatul Hayati, Abram L. Wagner, Mudatsir Mudatsir (2020), Coronavirus disease 2019 (COVID-19): A literature review, *Journal of Infection and Public Health*, 13, 667-673.
- 43) Thongrawd, C. (2020). Factors managing the effective diffusion of information: a case study. *Journal of Security and Sustainability Issues*, 9(M), 275-288. [https://doi.org/10.9770/jssi.2020.9.M\(22\)](https://doi.org/10.9770/jssi.2020.9.M(22))
- 44) NCHFA (2020). Affordable Housing Benefits Health. North Carolina Housing Finance Agency. https://www.nchfa.com/sites/default/files/page_attachments/2020BOHAffordableHousingBenefitsHealth.pdf
- 45) Elias, Arun A (2021). Kerala's Innovations and Flexibility for Covid-19 Recovery: Storytelling using Systems Thinking. *Global Journal of Flexible Systems Management*, 22 (Suppl 1), June, S33-S43. (<https://doi.org/10.1007/s40171-021-00268-8>).
- 46) Ummer O, Scott K, Mohan D, et al. (2021), Connecting the dots: Kerala's use of digital technology during the COVID-19 response. *BMJ Global Health*; 6:e005355. DOI: 10.1136/bmjgh-2021-005355.
- 47) Ranjith Karat, Suraj E.S, Jacob Joju, Manoj PK and Nithin J (2022), Covid 19 and the Healthcare Sector in Digital India: A Case Study of The Top Six Nifty Pharma Companies, *International Journal of Early Childhood Special Education (INT-JECSE)*, 14 (05), Aug., 7595-7604. DOI:10.9756/INTJECSE/V14I5.960.
- 48) Nripendra Narayan Das, Pradeep P, Prasanth C.B., and Manoj P.K. (2022), Sars-Cov-2 Novel Corona Virus: Origin and the Vaccination Survey, *Journal of Pharmaceutical Negative Results*, 13 (1), Oct., 1032-1040. DOI: 10.47750/pnr.2022.13.S01.123.
- 49) Xieu, Wilson; Hur, JungYun "Christine"; Shirsat, Abhijeet (2022). "Returning to Travel: Fear, Coping and Resilience During the COVID-19 Pandemic", *Journal of Tourism Insights*: 12 (1), Article 2. (<https://doi.org/10.9707/2328-0824.1271>).
- 50) Manesh Muraleedharan, and Alaka Omprakash Chandak (2022). Emerging challenges in the health systems of Kerala, India: qualitative analysis of literature reviews. *Journal of Health Research*, 36(2), 242-254. DOI 10.1108/JHR-04-2020-0091. (<https://www.emerald.com/insight/2586-940X.htm>).
- 51) Sourajyoti Sardar, Anirban Sanyal, and Tushar B Das (2023), "Did COVID-19 Affect Households Differently? Understanding Heterogeneity in Consumer Confidence", Reserve Bank of India (RBI), WPS (DEPR): 06 / 2023, April. (www.rbi.org.in).
- 52) Saritha CK, Manoj PK (2023). Social inequalities in IT sector: Evidence from Kerala State in India. *Environment and Social Psychology*; 8(2): 1644. doi: 10.54517/esp.v8i2.1644
- 53) Govt. of India (GOI) (2023). Economic Survey 2022-23. Ministry of Finance. New Delhi. (<https://indiabudget.gov.in>).
- 54) Govt. of Kerala (GOK) (2023). Economic Review 2022. Kerala State Planning Board. Jan. (<https://spb.kerala.gov.in>) (https://spb.kerala.gov.in/sites/default/files/2023-02/ENGLISH%20FINAL%20PRESS%2004.02.2023_0.pdf).
- 55) International Monetary Fund (IMF) (2023). Unleashing India's Growth Potential. (www.imf.org.in).