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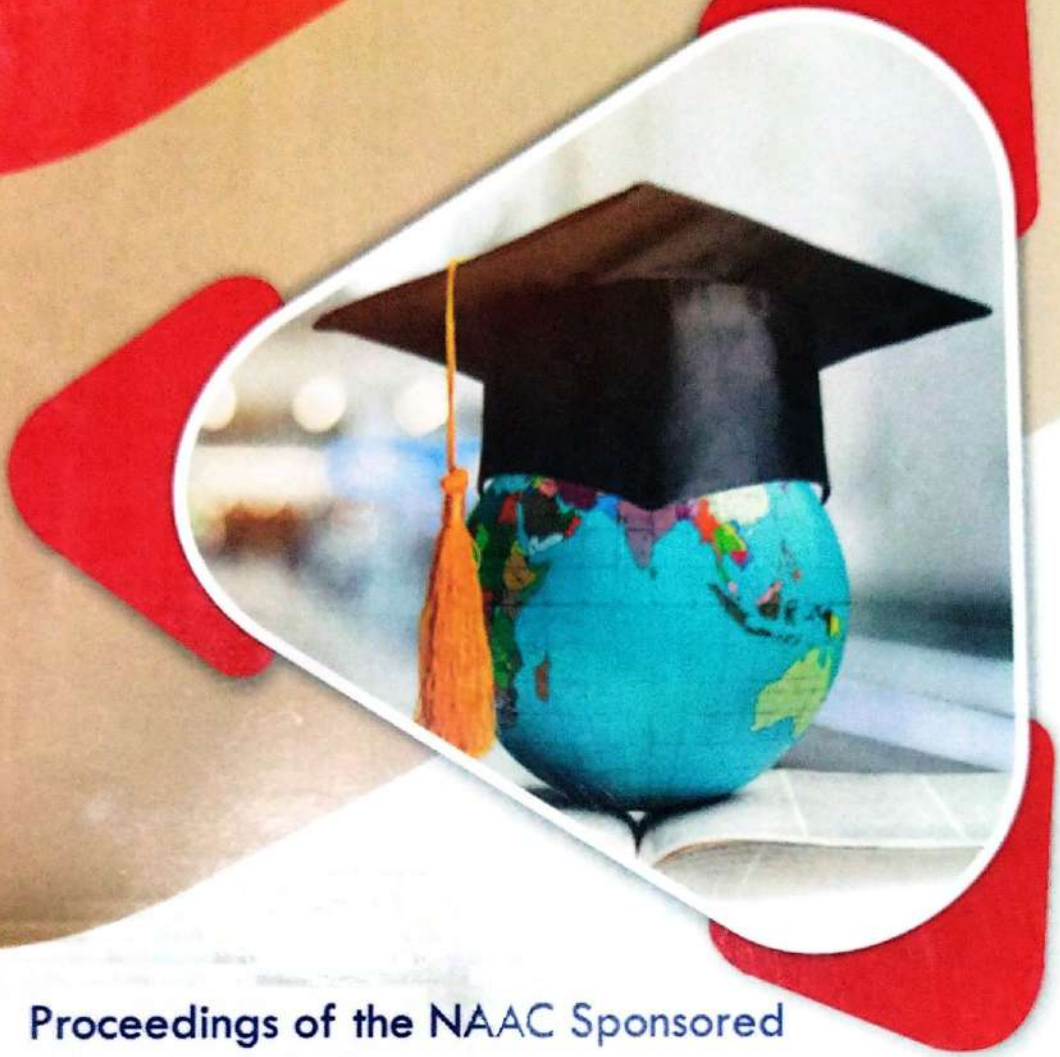

Proceedings of the NAAC Sponsored

Two Day Virtual National Conference on

Quality Enhancement of Institutions of Higher Learning: Transformational Role of NEP 2020

Editor | Dr. Libison K B

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St.Aloysius College

Elthuruth, Thrissur, Kerala – 680 611, India

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PREFACE

The NAAC sponsored 2 Day Virtual National Conference on "Quality Enhancement of Institutions of Higher Learning: Transformational Role of NEP 2020" conducted by IQAC, St. Aloysius College, Elthuruth, held on 28th and 29th November 2022 provided deep insights on the changing educational landscape of India.

352 participants from different parts of India and abroad including those from Colombia, Nigeria and Myanmar registered for the National Conference and 24 of them contributed papers for presentation in the conference. The first day of the Conference had an introductory session, 2 technical sessions and Two paper presentation sessions. On the second day, 3 technical sessions were held and the Conference concluded with a valedictory session.

The workshop was an effective exercise for the participants because it addressed the prerequisites needed for teaching, learning, and research from the perspective of NEP 2020 and advised the importance of learning, re-learning, and unlearning in order to engage with teaching, learning, and research in a creative and constructive manner.

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NEW EDUCATIONAL POLICY (NEP) 2020: A ROADMAP TO KNOWLEDGE ECONOMY IN INDIA

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Abstract

Education is a nation's greatest asset. The higher education system has a substantial impact on the country's overall growth, which includes industrial, social, and economic development. A developed country is invariably an educated country. After the United States and China, India has the world's third-largest higher education system. Since its independence, India has made a tremendous development in the sphere of education. Although there have been many problems to India's higher education system, there have also been many possibilities to overcome these challenges and make higher education far better. Greater openness and accountability are required, as is the role of colleges and universities in the new millennium, and increasing scientific study on how individuals learn. India requires highly qualified and educated individuals to propel our economy ahead. The current objective of Indian higher educational institutions, such as colleges and universities, is to empower young people for self-reliance and financial independence by providing quality-based education in education, research, and other areas. This research paper discusses the major difficulties that India is now dealing with in higher education, as well as some government efforts to solve those issues through the New Educational Policy (NEP) 2020.

Keywords: *Education, Higher Education Institution (HEI), Knowledge Economy, Ministry of Human Resource Development (MHRD), National Education Policy (NEP) 2020.*

Introduction

Next to China and the United States, India has the world's third-largest higher education system. India will one of the biggest centres for education in the future. Since India's independence, the number of universities, college-level institutions, and other higher education institutions has significantly increased. According to data, enrolment in schools in India has increased dramatically over the past four years as a result of the "Right to Education Act," which mandates free and compulsory education for all children between the ages of 6 and 14 years. The government has established numerous educational categories to take into account the nation's numerous communities and cultures, including education in the primary and secondary grades, higher education, adult education, and technical and vocational training, in an effort to meet those needs. The country is committed to providing all citizens with access to high-quality education. The country has built a very comprehensive educational system over the past 50 years, despite considerable financial and resource constraints, generating a sizable population of men and women who are highly talented in science and technology as well as in humanist and philosophical thought and creativity. Despite a sizable portion of the population lacking the requisite facilities, the bulk of those with the greatest levels of education leave the nation in search of career opportunities with higher income. Because it is a fundamental right, the Indian

government places a high priority on education and is doing everything in its power to guarantee that every child has access to it. This ensures that there are barriers to progress even as the rate of literacy rises. By 2030, India is expected to have the third-largest economy in the world, with a projected GDP of $10 trillion. It is clear that knowledge resources, not the nation's natural riches, will power the 10 trillion-dollar economy. The current administration made the decision to overhaul the Indian education system by announcing a comprehensive National Education Policy 2020 in order to foster the sector's growth. This is consistent with the recent appeal from the Prime Minister to use the Fourth Industrial Revolution to propel India to new heights. The recently unveiled National Education Policy 2020 envisions an education system focused on India that, by offering high quality education, directly contributes to the sustainable transformation of our country into an equal and thriving knowledge economy.

Discussion

Nation is becoming more concerned about the quality of programmes, public evaluations, and global rankings of higher education institutions as higher education systems expand and diversify. However, these comparisons frequently place an excessive emphasis on research, interpreting research output as a gauge of institutional worth. India has certainly provided the globe many remarkable personalities who serve as an inspiration to us all. One may feel that Indian education is not as advanced as that of other countries. India must therefore make gains over time if it wants to keep up in the drive for growth. We produce students who are less knowledgeable and latent because we keep using the same theory and exam style. The Indian educational system is now dealing with a variety of issues that are preventing students from developing and growing. The grading system, in particular, determines a student's IQ based on their academic performance. Despite their other skills, students are thus less confident. This approach disregards the idea that every individual is different and that it is illogical to judge someone solely based on a test score. The students try their hardest to perform well on the exam even though they might not fully grasp what they are writing. As a result, they are bookworms with little practical experience. Since they are competing and must perform well to move forward, they miss out on learning. Lack of practical knowledge has caused many students to lose their careers and their value in society. They are unable to find employment due to their credentials and education. Such occurrences imply that there will be a huge revolution in the educational system. Global transformation is being sparked by fresh and fascinating research on how the brain works and how individuals learn. It is seen to be crucial for students to learn the knowledge, but also the abilities, attitudes, and values that will help them succeed as people. If this is to happen, they must be motivated by their learning and actively engage in it. Since technology is evolving so quickly, even learning is functioning as a catalyst for change.

Students now have more options for connecting with people throughout the world. A single button click provides access to an almost infinite amount of information. The sole

source of knowledge cannot longer be the instructor. They are now referred to as "mentors," and they guide the students on how to pick, organise, expand, and use material effectively. Many educational systems throughout the world feel challenged by having to educate students for the quickly changing world of today. People throughout the world grapple with how to motivate students to pursue their academic goals. Through education or training, a student can learn the skills and knowledge required for the workplace of today and tomorrow.

Background of National Education Policy (NEP) 2020

According to the most recent All India Survey of Higher Education Report (AISHE 2019–20), its reach is vast: 1,043 universities, 42,343 colleges, and 11,779 stand-alone institutions along with 3.85 Crore students, 15.03 Lakh teachers, Gross Enrolment Ratio of 27.1, Gender Parity Index of 1.01 and Pupil Teacher Ratio of 26 making it one of the largest higher education sectors in the world. According to a significant 2019 research from the Brookings Institution, Reviving Higher Education in India, the number of institutions has increased by more than 400% since 2001, with much of the development taking place in the private education sector. According to the AISHE report for 2019–20, this growth persisted throughout that year. To accommodate India's sizable youth population and expanding college-age cohort, capacity is expanding quickly. The Gross Enrolment Ratio (GER), which calculates the total enrolment in education as a percentage of the population of school-age children that are eligible, is one important indicator. The Ministry of Education's goal of obtaining 32 percent by 2022 appears to be at risk of being missed given India's GER of 27.1 percent in 2019–20.

The first education policy in India was introduced in 1986, which is a very long time ago. The Indian government releases a new plan dubbed National Education Policy 2020 (NEP 2020) some 34 years later. Thus, NEP 2020 replaces the National Policy on Education from 1986. The programme marks a significant turning point for India's educational system, making India unquestionably a highly sought-after site for higher education. As a result of the Government of India's effort, the New Education Policy's actual consultation process was started in January 2015, and it was led by former Cabinet Secretary Shri. T. S. R. Subramanian.

Based on the committee's report from June 2017, a panel led by Dr. K. Kasturirangan, a former leader of the Indian Space Research Organization (ISRO), submitted the draught NEP in 2019. The Draft New Education Policy (DNEP) 2019 was subsequently unveiled by the Ministry of Human Resource Development (MHRD), and it was the focus of multiple public consultations. Following extensive deliberation, the Ministry developed the draught strategy. The Indian Union Cabinet revised, rewrote, and then accepted the new policy paper on July 29, 2020.

Knowledge Economy and NEP 2020

The constantly evolving international economy and society are driven by knowledge. An economy based on informed workers is referred to as a "knowledge economy" by Peter F. Drucker. These days, the phrase is frequently used to refer to the economy of high-tech industries, information technology, and advanced electronic communication methods. Extending this, a lot of people associate a knowledge society with e-literacy and perceive such an economy as being built on Information Technology (IT). The majority of policymakers believe that implementing IT-based communication, e-governance, and online commerce is enough to create a knowledge society and knowledge economy. Undoubtedly, IT plays a crucial role in the economy, but only as a tool. It is not just computer-automated information technology as an economy, but also a network of relationships and procedures that transform knowledge into a good or service.

Apart from the above concept, a system of consumption and production built on intellectual capital is also known as the knowledge economy. It specifically refers to the capacity to profit from scientific breakthroughs and applied research. Most highly developed economies have a sizable portion of their activities in the knowledge economy. In a knowledge economy, intangible assets like the knowledge of its workers or intellectual property may make up a sizeable portion of value. Higher education in particular and education in general are very nation-specific activities that are influenced by national priorities and culture. India's transformation into a knowledge-based, service-oriented economy has made its human capital a key strength and growth opportunity. India's rise has not been driven by manufacturing, in contrast to China or other Asian economic superpowers. Instead, India has been able to fast advance up the economic value chain in a number of knowledge-based businesses because to its pool of skilled individuals.

The goal of the New Educational Policy (NEP), 2020 policy is to establish an education system that is focused on India and directly aids in the country's long-term transition into a fair and vibrant knowledge economy. The programme provides a comprehensive foundation for education from early life through higher education in both rural and urban India. It also includes career training. Unmistakably supported and demanded by the strategy is a large rise in the amount of money that the federal government and state governments devote to education.

NEP 2020 aims to create an education system rooted in Indian culture that directly helps to transforming India into a sustainably egalitarian and thriving knowledge society in order to make it a global knowledge superpower. The policy states that our institutions' curricula and pedagogy must cultivate in students a deep respect for the Constitutional principles and Fundamental Duties, a sense of patriotism, and a conscious awareness of one's responsibilities in a changing world. The Policy's vision is to instil in educators a deep sense of pride in being Indian, not just in thought but also in spirit, intellect, and deeds, and to assist them in acquiring knowledge, skills, values, and dispositions that support a responsible commitment to upholding human rights, promoting sustainable

development and living, and promoting global well-being, thereby exemplifying what it means to be a truly global citizen.

Structure of NEP 2020

To better satisfy the interests and needs of students at various developmental phases, which correspond to the age groups of 3–8, 8–11, 11–14, and 14–18 years, respectively, the curriculum and pedagogy of the educational system will be reorganised as per New Education Policy 2020. As a result, the curriculum, methodology, and structure for school instruction will all be based on a 5+3+3+4 design. It is divided into four stages: the Foundational Stage (covering ages 3-8), the Preparatory Stage (Grades 3-5, covering ages 8-11), the Middle Stage (Grades 6-8, covering ages 11-14), and the Secondary Stage (Grades 9–12 in two phases, spanning ages 14–18; 9–10 in the first phase and 11–12 in the second). The structure of NEP 2020 is summarised in the table below.

Table 1: NEP 2020 Structure

NEP 2020 Structure: 5+3+3+4				
Type of the pedagogical and curricular structure	**Method of learning**	**Age**	**Class**	**Years of Schooling**
Foundational Stage	Multilevel, play/activity based learning	3 - 6	Pre-school/ Angawadi/ Balvatika	3
		6 - 8	1 - 2	2
Preparatory Stage	Play, discovery and activity based and interactive classroom learning	8 - 11	3 - 5	3
Middle Stage	Experiential learning in the sciences, mathematics, arts, social sciences and humanities	11 - 14	6 - 8	3
Secondary Stage	Multidisciplinary study, greater critical thinking, flexibility and student choice of subjects.	14 - 18	9 - 12	4

The Foundational Stage will consist of five years of flexible, multilevel, play/activity-based learning using the Early Childhood Care and Education (ECCE) curriculum and pedagogy. The Preparatory Stage will be made up of three years of instruction that builds on the play, discovery, and activity-based pedagogical and curricular style of the Foundational Stage. This will help students lay a solid foundation in a variety of subjects, including reading, writing, speaking, physical education, arts, languages, science, and mathematics. Additionally, it will begin to include some light textbooks as well as components of more formal yet engaging classroom instruction. The Preparatory Stage's

pedagogical and curriculum design will be continued in the Middle Stage, which will last three years of instruction. To help students study and explore the more abstract topics in each subject they will be prepared for at this point, including the sciences, mathematics, arts, social sciences, and humanities, subject teachers will be introduced. Experiential learning within each subject and research into the connections between many courses will be promoted and highlighted, despite the inclusion of more specialised disciplines and subject teachers. The Secondary Stage will be a four-year multidisciplinary programme that expands on the Middle Stage's subject-oriented pedagogy and curriculum but with a greater emphasis on in-depth study, critical thinking, and life objectives as well as greater subject flexibility and student choice. Students may choose to leave after Grade 10 and return in the succeeding phase to study any other courses or occupational training that are offered in Grades 11–12, including ones at a more specialised school, if they so want.

Table 2: NEP 2020 – After Secondary Stage

Under-Graduation Education Stage	Every subject will have three- or four-year undergraduate degrees with a variety of exit choices, such as a certificate after the first year, a diploma after the second year, or a bachelor's degree after the third. The four-year undergraduate programme with a major, minor, and research projects is preferred.
Post-Graduation Education Stage	The Master's degree is available as a one-year degree for students with a four-year bachelor's degree, a two-year degree for students with a three-year bachelor's degree, and an integrated five-year degree with an emphasis on quality research in the final year. To improve professional competence and prepare students for a research degree, the Master's degree will have a significant research component.
Research Stage	The Ph.D. research stage entails conducting quality research in any core subject, multidisciplinary subject, or interdisciplinary subject for a minimum of three to four years for full-time study and separately for part-time study. They should take an 8-credit course in teaching, education, or pedagogy that is linked to the Ph.D. subject they have chosen. The previous M.Phil programme of one year has been discontinued.
Lifelong learning	The NEP 2020 recommends lifelong learning and research to prevent people from losing the information, abilities, and experience necessary to lead pleasant lives in society. Education and study are thought to increase maturity for life happiness at any stage of life.

The National Education Policy 2020 aims to create an education system that is focused on India by taking into account its tradition, culture, values, and ethos in order to actively contribute to the transformation of the nation into a fair, sustainable, and thriving

knowledge economy. The entire Indian educational system is founded and built by taking cues from its vast and lengthy historical heritage and taking into account the contributions of many scholars to the world in diverse fields like mathematics, astronomy, metallurgy, medical science and surgery, civil engineering and architecture, shipbuilding and navigation, yoga, fine arts, chess, etc.

Highlights of NEP 2020

To this new education effort, which intends to mainstream more than 2 crore learners, the Government of India hopes to achieve 100% GER (Gross Enrolment Ratio) from pre-school through secondary schools by the end of 2030. The education system for schools and universities needs to be made more flexible, holistic, and multidisciplinary in order to maximise each student's unique skills if India is to become a "global knowledge superpower" as part of NEP 2020. The following is a summary of the significant reforms mentioned in NEP 2020:

- The current 10+2 system will be replaced by a 5+3+3+4 structure when it is implemented.
- The new system will consist of 12 years of formal education and three years of preschool/anganwadi using the Early Childhood Care and Education (ECCE) curriculum and pedagogy.
- According to the NEP 2020, pupils now take a school test that was given by the appropriate authority in Grades 3, 5, and 8. The board exams for grades 10 and 12 will still be administered, but they will be changed to place more of an emphasis on holistic growth.
- Till the fifth grade, this policy will give priority to instruction in the student's mother tongue, regional language, or local language.
- Students at all stages of secondary and postsecondary education will also have access to Sanskrit, a language that uses three linguistic formulas.
- No student will be required to learn any language, and they will have the option of reading literature in other classical languages or from India.
- Students will start to think mathematically and scientifically in the sixth grade. The student will start getting vocational education, which includes internships, in the sixth grade.
- Higher education will provide subject flexibility.
- The core elements of the curricula for each subject have been removed. By doing this, MHRD focuses on instruction that emphasises analysis, comprehensive learning strategies, critical thinking, discovery, inquiry, and conversation.
- There will be a minimal yet strong regulatory framework for higher education.
- PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic growth), a new national assessment platform, will be designed.
- There are several ways to enter and leave higher education with the right qualifications. With the proper certification, a three- or four-year undergraduate school may provide a number of exit alternatives. For instance, after one year, a certificate,

two years for an advanced diploma, three years for a degree, and four years for a bachelor's with research may be granted.

- Students' academic credit from multiple HEIs will be transferred to the Academic Bank of Credit (ABC), saved digitally, and used to their final degree.
- To achieve complete adult and youth literacy.
- Focus on e-learning to reduce students' reliance on textbooks.
- Each region or adjacent area should have at least one significant multidisciplinary HEI by 2030.
- NTA will administer a common entrance exam for admission to HEIs.
- The MHRD desired that all higher education institutions have at least 3000 students and be multidisciplinary by the year 2040.
- The National Scholarship Portal (NSP) will be improved to assist and motivate pupils while monitoring their development so they can qualify for scholarships. Private HEIs would be urged to offer their students various studentships and fellowships.
- Instead of being classified as extracurricular or co-curricular activities, curricular activities include yoga, sports, dance, music, sculpting, woodworking, gardening, and electrical work.
- In order to incorporate these subjects into the curriculum, the NCERT (National Council of Educational Research and Training) will create syllabi and textbooks in accordance with the NCF (National Curriculum Framework), which SCERTs (State Councils of Educational Research and Training) in states will edit, rewrite, and supplement as necessary.
- Under this comprehensive and inclusive national curriculum framework for teacher education, which will be designed by NCTE (National Council for Teacher Education) with aid from NCERT, the minimum qualification for teachers will be a four-year B.Ed. degree programme by the end of 2030.
- The importance of physical education will be emphasised throughout the entire curriculum, with a focus on what is entertaining and secure for each age group.
- Furthermore, because they want every student to have an equal chance to develop both skills, there is no clear separation between the "academic" and "vocational" streams.
- In 15 years, college affiliation will progressively disappear and be replaced with a system that grants institutions varied levels of autonomy. Furthermore, it is anticipated that each institution will eventually develop into a degree-granting entity that functions independently of a university.
- Except for medical and legal education, HECI (Higher Education Commission of India) will be the only organisation overseeing all higher education.
- Instead of the National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA), a strong National Certification Council (NAC) will be established.
- The four independent verticals that make up HECI are the National Higher Education Regulatory Council (NHERC), the Generation Education Council (GEC), the Higher Education Grants Council (HEGC), the National Accreditation Council (NAC), and the Higher Education Grants Council (HEGC).

In reality, the new plan envisions an education system that is centred on India and directly contributes to our nation's sustainable transformation into a just and prosperous knowledge economy by providing everyone with access to top-notch instruction.

Conclusion

Since education is the main driver of social and economic growth, any country needs to have a clearly defined, prospective education strategy. Based on their respective traditions and customs, several countries have adopted various educational systems. The New Education Policy 2020 seeks to provide everyone with access to high quality education in order to gradually transform our nation into a just and vibrant knowledge economy. This Policy proposes rewriting and reforming every aspect of the educational system, including its regulation and governance, in order to create a new one that is in keeping with the aspirational goals of 21st century education and builds upon India's traditions and value systems. It aims to create an education system that is focused on India by taking into account its tradition, culture, values, and ethos in order to actively contribute to the transformation of the nation into a fair, sustainable, and thriving knowledge economy with a lifelong learning opportunities.

NEP 2020 places a high focus on the development of each person's creative potential, as well as higher order cognitive abilities like problem-solving and critical thinking, as well as social, ethical, and emotional aptitudes and dispositions. Most importantly, this Policy was created with inspiration from the extensive body of traditional, age-old Indian wisdom. It is a start in the right direction that will trigger a paradigm shift in India's educational system and transform it into one that is modern, progressive, and egalitarian. The effectiveness of this new educational policy will depend on how it is implemented. Given that India has the youngest population in the world, it is reasonable to conclude that giving the children access to excellent educational opportunities will be crucial to India's future. India has a chance to successfully unlock the last remaining pockets of untapped potential throughout the nation if it can achieve the challenging objectives specified in the NEP and related plans. India can better satisfy the requirements of its own students and attract talent from around the world by capitalising on the strengths of its higher education system and recognising the areas in need of improvement.

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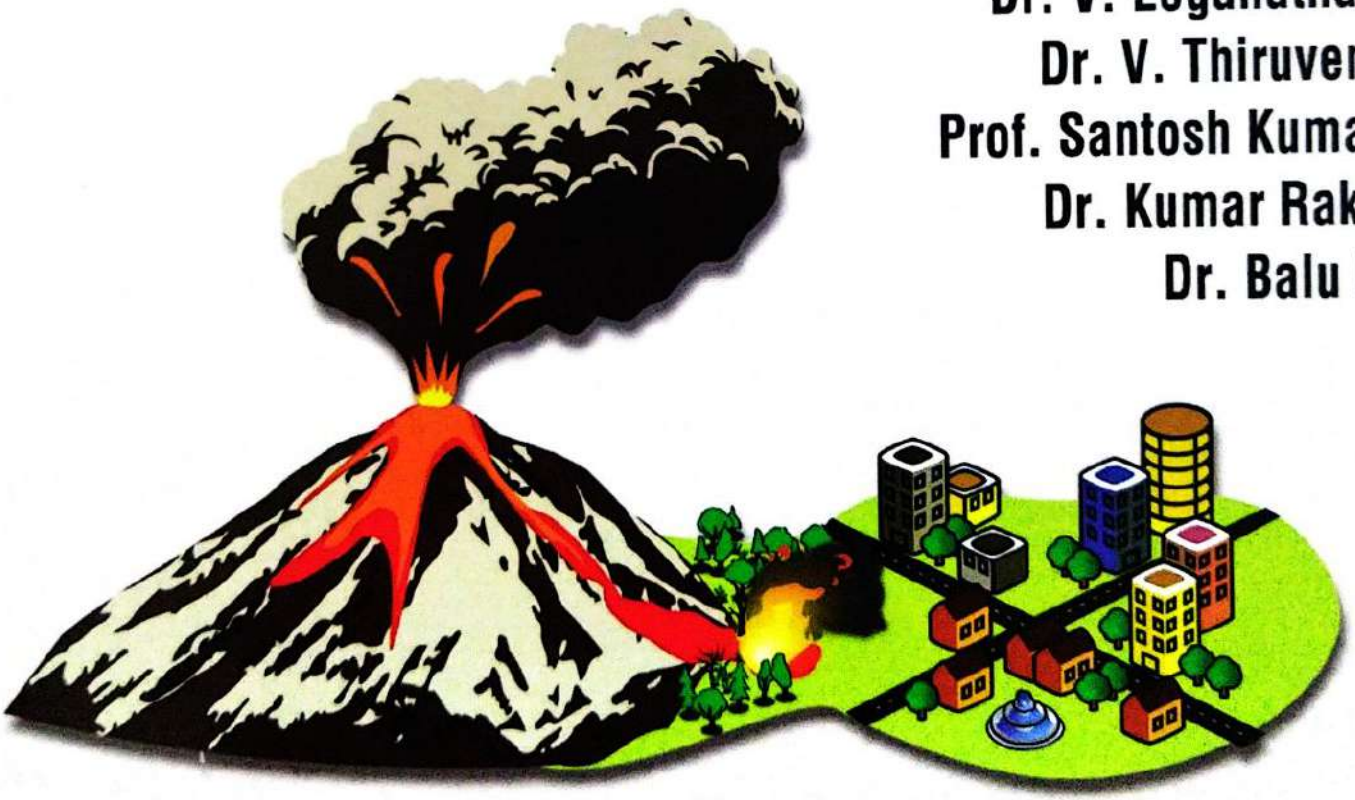

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VOLUNTEERING MOTIVES OF YOUTH DURING KERALA FLOOD 2018 – A CASE STUDY OF CHALAKUDY MUNICIPALITY, KERALA

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Abstract

The August 2018 flood in Kerala was a catastrophe of epic proportions. It is the biggest to ever hit the state as a result of a once-in-a-century rainfall storm. The mid-August disaster altered the ecosystem on land and in the water, which had a negative impact on the biodiversity, livelihood, and infrastructure. As the dam water scourged the riverbeds and swamped the low-lying areas, there were several openings. All of these factors contributed to the flood and its associated issues. The sea was particularly turbulent due to the high tide and wave setting. An estimate of the environmental harm is impossible. While the tragedy claimed the lives of 483 people and thousands of animals, it also caused significant damage to the state's infrastructure, including the loss of several highways, bridges, and hundreds of homes. Large amounts of agricultural products were lost, endangering farmers' ability to make a living. A total of 5.5 million people were affected by the flooding and landslides brought on by the rain, which resulted in 500 fatalities, 19,000 homes being demolished, 1.1 million people being temporarily displaced, and 19,000 dwellings being destroyed. The UN system predicted 3.7 billion USD in recovery costs, whereas the World Bank assessed a total economic loss of USD 3.4 billion. Kerala received the finest assistance possible from youth volunteering, NGOs, political organisations, media outlets, religious groups, and the fishermen who ended up as superheroes saving many lives. The youth of Kerala did an impeccable volunteer work. Even though they were aware that death was close at hand, they leaped into the perils in order to rescue countless lives. It was an act of generosity that cannot be valued. They performed all of their tasks admirably, including rescue operations, management of the flood camps, massive cleaning after the flood, and rehabilitation.

***Keywords:** Flood, Kerala, Rescue, Volunteers, Youth.*

INTRODUCTION

The untold floods that hit Kerala in August 2018 destroyed its wealth, natural treasures, and communal peace in an area that was known as "Incredible God's Own Country". Under a warming

climate, there has been an increase in extreme precipitation events and flooding that result in dama to infrastructure and human life. Massive floods struck the Indian state of Kerala in August 20 affecting millions of people and killing at least 400. Kerala received rainfall that was 53 per c above average from June through August of 2018. On August 8, 2018, prior to Kerala's severe rai six of the seven major reservoirs were at or over 90 per cent of capacity. The return period for extreme rainfall that occurred in August 2018 in the catchments upstream of the three major reservo such as Idukki, Kakki, and Periyar, was more than 500 years. Extreme rainfall and nearly reservoirs caused a substantial water release in a short period of time. As a result, Kerala's flood was made worse by above average seasonal rainfall before August 8, 2018, high reservoir storage, a unheard-of heavy rainfall in the catchments where reservoirs are located. Utilising a skilful forecast extremely heavy rainfall at the longer lead time, reservoir operations need to be improved by 4 t days.

It is impossible to evaluate the environmental harm. Since the release of the Madhav Gad Report, there have been repeated warnings that Kerala is in danger from major upcoming disasters at least 124 villages in the Western Ghat ranges and from flooding in lower coastal inhabitants. addition to killing 483 humans and tens of thousands of animals, the catastrophe seriously damag the state's infrastructure, resulting in the destruction of numerous roadways, bridges, and hundreds residences. Large quantities of agricultural produce were lost, putting farmers' livelihoods at jeopar The rain-induced flooding and landslides, which affected 5.5 million people, resulted in 500 fatalit 19,000 destroyed homes, 1.1 million people who were temporarily relocated, and 19,000 dwellin The World Bank estimated a total economic loss of USD 3.4 billion, whereas the UN system expec recovery expenditures would cost USD 3.7 billion.

Youth volunteering, NGOs, political organisations, media outlets, religious organisations, and fishermen who ended up becoming superheroes by saving many lives provided Kerala with the l aid available. Kerala's youth performed excellent voluntary activities. They jumped into danger e though they knew that death was imminent in order to save numerous lives. It was a selfless ac kindness that cannot be measured. They excelled in everything they were tasked with, including management of the flood camps, extensive post-flood cleanup, and rehabilitation.

Objectives

1. To examine how social engineering was effective in Kerala during the 2018 floods.
2. To enable youth and local communities to actively take part in the creation of emerge services that deal with flood mitigation measures.

METHODOLOGY

The suggested study is descriptive and was created with a focus on quality. The population of proposed study is drawn from Chalakudy Municipality in Kerala, which was one of the areas wh the 2018 floods had the most severe and far-reaching effects. The study employs both primary secondary data. The primary data was gathered by 14 specialised employees from various segment the Chalakudy Municipality using focused group discussions (FGD). The secondary data was gathe from a variety of publications, including journals, newspapers, essays, and online reading materials.

BRIEF DESCRIPTION OF THE STUDY AREA

Between North latitudes, 10°09'44" and 10°22'00," and East longitudes 76°15'56" and 77°07'30", is where the Chalakudy river basin is located. With a length of 145.5 km, it is the fifth-longest river in Kerala, India. In Kerala, the river passes through the Thrissur, Palakkad, and Ernakulum districts. A total of 1704 km^2 are drained by it, of which 1404 km^2 are in Kerala and the remaining 300 km^2 is in Tamil Nadu. The average annual streamflow is about 1630 Mm^3, and about 17 per cent of the basin area is below the mean sea level. The yearly rainfall ranges from 1800 to 3600 mm. The Central Water Commission of India maintains a river gauge station at Arangali, which is downstream. The river basin's total area is made up of 54 per cent woodland, 12 per cent plantations, 14 per cent agricultural plantations, and 16 per cent homesteads with paddy fields and crops.

DISCUSSION

During the 2018 monsoon, the state was subjected to the wrath of nature in the form of floods and landslides. With numerous locations under water, landslides in the hills, and floods in the valleys and plains, the disaster left a path of devastation across the state. Particularly in the highland districts of Idukki and Wayanad, where the average amount of rainfall is roughly 290 mm, the continuous rainfall from August 8 to August 18 was excessive and unprecedented and was the cause of the floods.

By July 2018 alone, the state's dams had more water stored in them. Additionally, more water than necessary was also stored in them due to the tremendous rain that fell in August. The dams' intended function of flood control was not taken into consideration; this water was merely utilised as a resource for power generation. Without thinking about the effects it would have on those downstream and along the river banks, the shutters of all 34 reservoirs were opened when the reservoirs were nearly full, and there was no longer any room for manipulating the water inside them.

There was a knowledge gap since the district administration did not have enough information to share with the residents of the flood-prone areas. The lack of providing appropriate information to the appropriate individuals at the appropriate time made the situation worse. The district administration was also unaware of how much land would be submerged if reservoir shutters were opened as well as the duration of the downpour. The stakeholders' issues were exacerbated by the lack of flood mapping because they were unaware of the places that would be flooded. The district administration failed to model and transmit this information to the appropriate authorities for disaster mitigation. Moreover, the populace could not receive a sufficient evacuation warning.

Upstream of Poringalkuthu Dam, there are five dams: Upper Sholayar in Kerala, Lower Sholayar in Tamil Nādu, Neerar, Thoonakadavu, and Parambikulam. Tamil Nadu discharged a significant amount of water during the 2018 flood, quickly filling the Lower Sholayar dam. Despite having all of its shutters raised, the Poringalkuthu dam overtopped because of the massive flow. On August 16, 2018, at 4.30 a.m., the Poringalkuthu dam began to flood, and water began pouring in. Even two-storey homes in Chalakudy town were submerged by 7.00 a.m. due to the 16-foot rise in the Chalakudy river's water level.

In those days, it rained a lot. Around the Chalakudy riverbank homes, water began to rise. There was flooding and severe rain from August 15 to 17. No one anticipated the height of the water rise. Family elders thought that the flood would soon recede. But, it didn't; instead, it kept going up. Household items were moved to higher locations inside the home. However, they had to evacuate their house when the water level began to rise to such levels. There was no electricity or phone service

during those days. This made the issue worse. Roads, drainage systems, and waterways were inundated and became unrecognisable. Because of the flooding, it was impossible to hold funerals for the deceased. Documents were lost from houses, students, books, luggage, uniforms, everything. It took three months to get back to normalcy.

Nearly every home was submerged upto the first floor. The walls started to fracture. Mud piled up inside many homes. It was filled with a foul scent. Damage was done to electrical equipment, electronic equipment, furnitures, and switchboards. Wells were flooded, making it impossible to acquire drinking water. Well cleaning was difficult because it was the rainy season and they could be emptied and chlorinated. All of the farms, workshops, buses, irrigation facilities, showrooms, shops were destroyed. People faced several issues such as loss of home, loss of employment for several days, loss of money, damage to shops' livelihoods and machinery. Most of the merchants in Chalakudy market suffered huge losses. They had a lot of stock for Onam. They lost everything. Roads got damaged with potholes. Some schools got damaged. Sacred Heart College, Chalakudy was severely affected. Laboratories, library, office, and documents of students got destroyed. The railway station was waterlogged and train service was disrupted. People were unable to interact with one another due to the lack of electricity and cell service. Many people experienced terrifying panic episodes because they were secluded in their homes without access to communication. No information about family members, including whether they were safe or not, caused NRI families to have difficulties due to improper communication. Homes' floors were covered with thick layers of mud. House compound walls had crumbled. Trees had been uprooted. The streets were scattered with automobiles that had been swept away by the floodwater. The air was thick with the stink of dead rabbits, dogs, and calves. Since hundreds of electric poles had been uprooted, there was no power supply. Well water had grown murky and was no longer potable.

The house and grounds were cleaned with the assistance of volunteer organisations, college volunteers, merchant association, young people, fishermen, members and officers of Panchayat, Kudumbasree, the military, navy, police, fire, revenue, health departments, local body councillor/ward member, local church, NGOs, business associations, and government organisations etc. Major road damage was repaired by the municipality. No outside source provided financial support to the Sacred Heart College. However, a number of organisations, such as the military force, NSS volunteers, church, political organisations, police, NCC, offered free cleaning assistance. Local churches and temples were among the first to offer assistance, especially by setting up relief camps and distributing food. Relief kits were given with supplies of food, cloth, services, medicine, sanitary napkins, etc. The amount of compensation was granted regardless of the water level. The original financial assistance was given without accounting for the actual loss that had occurred. Compensation was not proportional to damage.

In 2018, Kerala experienced the disaster of the century. Economically, environmentally, socially and culturally, the state was forced to suffer. The United Nations (UN), the Asian Development Bank (ADB), and the World Bank were among the international bodies that paid attention to the calamity. On November 12, 2018, the Discovery Channel aired a one-hour documentary about the Kerala Flood of 2018. The calamity has shown the flaws in the procedures being used, the weaknesses at several levels, including weather forecasting, water management, and a lack of coordination in the administration of dams and reservoirs. It is necessary to draw conclusions about the future steps to prevent further destruction of years of development and assets, both private and public since the flood and landslide of 2018 had a significant impact on all spheres.

The 2017 drought, 2018 flood, and continuous flood threats after 2018 till date during monsoon and the month of August are direct effects of climate change, which has become a reality. All local/Panchayat development plans must incorporate disaster management, which must be managed successfully in a coordinated manner by combining resources. The requirements of all individuals affected should be taken into consideration as well as a quicker rehabilitation and rebuilding process must be instated. So that a resilient Kerala can be constructed to meet any such calamities, keeping everyone safe and secure from disasters, respecting nature and all environmental laws and standards is necessary.

The carbon footprint of all restoration and rehabilitation efforts should be as small as possible. Over the past few decades, climate change has had a significant impact on our way of life. In order to reduce the effects of climate change related environmental degradation and biodiversity loss as well as to reconstruct a greener, cleaner Kerala, and restore it as "God's own Country", scientific studies and methodologies should be used at all levels.

The youth of today, who are sometimes chastised for their irresponsibility, disobedience, and lack of responsibility, have repeatedly shown that they do care about those in need and are willing to lend a hand despite huge obstacles. The youth's volunteer activity in Kerala is remarkable. Youth energy is advancing the relief collection from the school gates up the drive to the auditorium and classrooms in surrounding facilities. The youth have provided unwavering support throughout it all, bringing supplies, gathering, sorting, packing, and loading. Although the group of volunteers is not homogeneous, there have been no conflicts or issues with the work that has been undertaken. Most of them have never participated in social services. We have IT specialists, medical, engineering, or college students as well as people who are just starting their careers. Parents are bringing in their children to assist as well. For the upcoming stage of reconstruction efforts, it is necessary to harness the technological know-how and entrepreneurial zeal of the youth.

Everyone, from aspiring actors to fishermen, gave willingly to support their fellow human beings. Additionally, tens of thousands of anonymous volunteers have intervened. The fishermen of Kerala undoubtedly contributed the most as volunteers. 500 fishing boats and about 1,000 fishermen took part in the rescue efforts, which were extensively reported by TV, print, and social media. Many of them even paid for the cost of trucking their boats to the flooded inland districts and brought their own initial supplies of fuel. Their special equipment — motorised boats and GPS — as well as their bravery in navigating floodwaters — proved to be crucial to the success of the rescue operations. The leadership exhibited by young bureaucrats and other civil workers is exceptional, even though they are paid employees and not volunteers. A number of young IAS officers actively participated in organising the campaign and even served as foot soldiers. Even movie stars have made quite great contributions. The majority of Malayalam and Tamil film industry actors have contributed to the relief effort. Some, though, took it even further.

CONCLUSION

The hierarchy of needs is a crucial factor in the realm of disaster management and must be taken into account by volunteers during disasters. Workers in physical and mental health are crucial when working with impacted individuals. Setting priorities for the various demands that must be attended to in disaster management are difficult. The use of social media was meticulously controlled and coordinated with the measures and actions taken by the authorities. There was monitoring and

evaluation of those actions. The team in charge of disaster management on the ground and online to into account the victims' physical and mental well-being. Majority of the people's needs were ne Youth volunteers used social media, such as Facebook and WhatsApp, in a commendable manne They located the casualties and saved women and elderly people first. They later saved other peop This demonstrates how young people can effectively use technology, and the Kerala youths used th technique to start a revolution. The way young people came together using accessible technology fo good cause mesmerised the entire world. Because of the new gen's eagerness, involvement, inclusiv teamwork, and hard effort, the perception of them has completely transformed. The older generati bemoaned the newer generation's lack of awareness of its surroundings. However, they entered t fray when the occasion called for it while still being quite sensitive. They were everywhere, savi lives in real-time, setting up the facilities, cooking food, distributing the necessities, etc. at the rese camps. In any case, it provided a great boost to our youths' confidence.

The fishermen of Kerala travelled hundreds of miles with their fishing boats on the back of truc to flood-ravaged districts and saved individuals when their fellow humans' lives were in danger. Th searched through the murky waters for people and saved them. These boats are their source of incom Without asking for anything in return, they risked everything — including their lives — to save th fellow humans.

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As a Planning Specialist and Head of Department, Disaster Management Cell, Noida Authority, he established a vibrant Disaster Management mechanism in twin-cities of Noida and Greater Noida and a Mega School Earthquake Evacuation Drill was successfully organised, coordinated and conducted in 110 Schools "on the Same Day at the Same Time" in which about one lakh stakeholders including students and faculties participated. This was the first of its kind mega drill to be conducted by a local authority in the country and earned a place in Limca Book of World Records in 2018 edition.

Apart from his professional brilliance, Dr. Kumar has pursued his academic excellence quite vigorously by engaging himself in writing articles and books, and presenting his ideas in Seminars and workshops. In lieu with visionary initiatives of the Executive Director, NIDM; presently, Dr. Kumar is proactively engaged in establishing Child Centric Disaster Risk Reduction (CCDRR), Centre of NIDM as 'Centre of Excellence'.

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Sustainable Transitions in India

Progress and Directions



Editors

J.V. Arun

A. Premkumar

This book addresses the progress and future directions for India to achieve Sustainable Development Goals (SDGs) by 2030. To realise the 2030 Agenda, progress needs to be made at a quicker pace such that it can make a real difference in people's lives across the nation. The chapters in the book attempted to cover some of the UN SDGs including Zero Hunger, Good Health and Well-being, Quality Education, Clean Water and Sanitation, Climate Action and Reduced Inequality. Recent reports on SDGs shows that India is falling short of most of the targets set under 17-SDGs. This book makes an attempt to deal with the factors that contributed to the enhanced magnitude of the issue, the imbalances caused in the society, and the measures to get hold of SDGs. This book will be a valuable resource for researchers, scholars working in the field of SDGs and readers can gain in-depth understanding on various dimensions in sustainable transitions of India.

Sustainable Transitions in India
Progress and Directions

Editors

J.V. Arun
A. Premkumar

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SUSTAINABLE TRANSITIONS IN INDIA

Editors: J.V. ARUN AND A. PREMKUMAR

Foreword

This volume, consisting of eighteen chapters, bearing on the topic of sustainable development goals, contributed mostly by young scholars, examines India's position in global sustainable development index and maps the direction of the progress in achieving the goals by 2030. It is an outcome of a national seminar, organized in the context of Covid-19 and makes an attempt to measure the setback to achieving SDGs by 2030 as a result of the prolonged pandemic and consequent disruption of educational, social, economic and other activities. Though this volume does not deal with all the seventeen goals, yet it touches upon them while remained focussed on poverty and hunger, health, education, agriculture, and water and sanitation. It also bears upon the issues of discrimination and equitable access to various resources, with a greater focus on caste than on gender.

While India remains at a low position, ranked 121 out of 163 countries, as per the global SDG Index 2022, its various efforts in achieving the SDG goals are appreciable. This book highlights that there are 11 SDG goals in which India remains poor performer and must give focussed attention to obtain them by 2030. It also underlines that Covid-19 crisis has increased the challenge, as it led to massive disruption in economic and other activities, leading to loss of livelihoods to the vast section of India's working population engaged in informal sectors. Many of them have got back to their normal economic activities, but a large number of them have suffered huge losses, difficult to recover, thereby affecting, India's progress in achieving various SDGs.

The important message of this book lies in emphasizing the urgency of giving more focussed attention to some vital goals, like SDG-2 (hunger), SDG-3 (good health and well-being), SDG-5 (gender equality), SDG-6 (water and sanitation), and SDG-8 (decent work and economic growth). Contrary to India's position that requires her to give priority to social sector development, the government has been shirking from the responsibility and inviting private sectors to take the lead role. The government budgetary allocation on social sector development remains stagnant in real terms and even declines in some sectors. As such there appears a gap between commitment to achieving SDGs and action on the ground, especially priority in resource allocation. A number of the essays in this book are based on empirical examination and provide a true picture of ground reality, based on micro-level study that is often obfuscated under the macro-picture, i.e., all India average

I appreciate the efforts of the editors and contributors in drawing our attention to India's position in achieving various SDGs by 2030 and underlining various challenges in this regard. I congratulate them for their endeavour in giving attention to such vital aspects, which often get lost amidst growth-fetishism and GDP-centric approach.

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Survival of the Destitute in Kerala: A Grassroots Level Plan by Kerala Institute of Local Administration (KILA)

Nijil Jacobi

Introduction

Kerala is the region where many models were created before the world. The Kerala model of development refers to the practises followed in Kerala, which are distinguished by strong social indicators like high literacy, improved access to healthcare, high life expectancy, low infant mortality, and low birth rate—indicators that are frequently comparable to those seen in developed countries despite having a lower per capita income. These accomplishments, as well as the factors that contributed to them, have been identified as typical Kerala model outcomes. The state, which has launched programmes such as absolute literacy, family planning, and Kudumbashree, is now preparing for a historic achievement: identifying destitute and devising a plan for their survival. A population, free from poverty, is a very important factor in development standards. Kerala has also met human resource indicators such as high living and educational standards, as in

developed countries. However, the state cannot be proud because extreme poverty exists in the midst of development and progress. Preparing survival plans and execute successfully is very urgent and significant in this contest. The present flagship programme for the destitute is a continuation of many government programmes aimed at the poor, such as Ashraya, Hunger Free Kerala, and Destitute Free Kerala. One of the government's top priorities is to eliminate extreme poverty within the next five years. The main goal of the programme is to identify destitute who should have been covered by the Ashraya scheme but were not, and to provide aid and programmes to help them to come out of the vicious circle of poverty. Thus, it is an important government project aimed at eradicating extreme poverty.

Discussion

We shall look into the planning strategy of Government of Kerala in this regard to eradicate the extreme poverty from the state and build a destitute free state. This research paper discusses many aspects of identification of destitute and planning proposals initiated by Kerala Institute of Local Administration (KILA) such as distinction between extreme poverty and poverty, prior interventions for the extreme poor by the state, participatory process to identify the extreme poor, advantages of participatory process, Local Self-Government Institutions (LSGIs) and poverty alleviation, objectives of the new scheme for the destitute, various stages of project implementation, and from extreme poverty determination process to micro-plan.

Extreme poverty and poverty

The term "poverty" is frequently used. Poverty is defined by the various types of disabilities that humans face like deprivation. Poverty was initially measured on the basis of food deprivation and caloric intake from food. That was a consideration when compiling the list of people living below the poverty line (BPL). However, rather than just food availability, the calculated indicators include clothing, housing, education, health, access to services,

infrastructure, basic income, social poverty, and inaccessibility of welfare measures. Human Development Index (HDI) of United Nations Development Programme (UNDP) has become a primary index for accessing human resource development using the aforementioned life expectancy, education, and per capita income indicators. Kerala is a leading state in human development indices. But the studies show that the means the scars of poverty still remain in Kerala.

It is a trend to see poverty and extreme poverty are often lumped together in discussions. It acts as a barrier to resolution of extreme poverty by giving more emphasis on it. If poverty is defined as a general lack of capabilities, then the extreme poor are those who face the most severe conditions. The poor frequently face problems in obtaining basic necessities like food, clothing, and a safe place to live. But they always do not face difficulties in survival. A struggling family with little money to buy groceries on non-working days falls into the poor category mentioned above. They may also have difficulties in preparing the safe living space perfectly. But they may have basic accommodation. The extreme poor are a vulnerable group for whom meeting basic needs such as food, clothing, safe shelter, and a basic income is extremely difficult.

The following conditions can be seen as characteristics of the extreme poor,

- Those who are unable to overcome their condition by convincing others.
- Those who lack the physical and mental capacity to earn a living and survive.
- Daily those who do not have the ability to move their lives daily forward due to mental challenge, old age, chronic illness etc.

In general, the poor with employment capacity, basic income and basic living conditions are not the extreme poor. Destitute and destitute families should be considered extremely poor if they are unable to obtain even basic rights and are helpless, unable to go on with their lives without external assistance.

Families or people living on the streets, families with only categories such as surviving without other means of income or assets, the differently-abled, the elderly, physically and mentally challenged in crisis, families without a breadwinner (died or left) and no regular income source, families without opportunities, assets or work capacity, families with inpatients only and having no working family members and no other assets or income, are beyond absolute poverty and are extremely poor with no means of survival.

If we distinguish the poor and destitute, a family with relatively small house or limited space to each individual can be considered as poor. Whereas, a family wandering the streets with no place, no home or shelter is destitute. A family with basic living, availing food grains through Antyodaya Anna Yojana (AAY) scheme and has family members employed through employment guarantee scheme, is considered to be poor. At the same time, a family without ration card to access food grains and unable to take up employment is destitute. A family with inpatients, but family members taking employment is poor. Whereas, a family where one member is able to work but is unable to do so because of taking care of family member or members who are in sick beds. A poor family with elderly people can be considered to be a poor family. But a poor family with only elderly people and no one is able to go for work is said to be destitute.

The most severe form of poverty is extreme poverty. Those living in extreme poverty cannot advance in life or get out of poverty without the strong support of the government and general society on the outside. The ordinary poor, on the other hand, have income and work capacity and can progress, though somewhat gradually over time. In general, the government employs various methods to get the poor out of the poverty. The employment guarantee schemes to provide employment and income, ration system to provide food and housing schemes for shelter are all part of this. These aids generally enabling the poor to survive. But for various reasons, families are in dire straits without access to even these basic services. They may be at risk of extreme poverty.

Prior Interventions for the Extreme Poor

To find the very poor and needy, and help them to live many projects have been implemented in Kerala. The following are the important interventions for the extreme poor by the Government of Kerala.

Kudumbashree Mission

The Kudumbashree programme to end poverty and empower women is being carried out by the State Poverty Eradication Mission (SPEM) of the Government of Kerala. The name Kudumbashree refers to "prosperity of the family" in Malayalam. The name stands for "Kudumbashree Mission" or "SPEM" as well as the Kudumbashree Community Network. The Kudumbashree Mission, the Kudumbashree Community Network, or both may be referred to as "Kudumbashree". Kudumbashree is essentially Kerala's state-wide community network. In this three-tier organization, which also includes Area Development Societies (ADS) at the ward level and Community Development Societies (CDS) at the local government level, Neighbourhood Groups (NHGs) serve as the primary level units. It is one of the largest women's networks in the globe. Even though the community network's main objectives are the eradication of poverty and the empowerment of women, democratic leadership and support networks created from the "Kudumbashree family" are some of its most distinguishing features.

Ashraya

Ashraya is a comprehensive effort with the goal of locating and helping poor families. The Kudumbashree effort was continued in 2002 with the goal of identifying the families who had been overlooked by decentralised planning and poverty alleviation initiatives. According to the plan, each Grama Panchayat must develop unique micro projects for each recognised poor household. The Grama Panchayats' annual plans are then merged with these micro projects. The Grama Panchayat plan funding, Block

and District Panchayat contributions, centrally sponsored initiatives, and State government funds are all combined to fund the programme.

101 Grama Panchayats in the State developed initiatives including the rehabilitation of 8233 impoverished families during the first year of implementation. The simultaneous field implementation of numerous micro plans was made possible by the institutional frameworks that the Grama Panchayats were able to secure.

By 2015, Ashraya had been put into practise in 32 urban local bodies and 890 Grama Panchayats. Projects totaling Rs 4107.6 million have been prepared for a total of 72,116 families. Thousands of initiatives are currently being carried out around the State.

Rehabilitation for the homeless involves a process-oriented approach under Ashraya. The Kudumbashree community organization has been instrumental in the scheme's ability to produce a number of success stories. The following unique qualities of the system are largely responsible for its successes:

- Destitute families are the project's beneficiaries, not individuals.
- The Grama Panchayat finds the poor family through Neighbourhood Groups; there are no applications to fill out or approval processes.
- If there are no surviving members of the poor family, the house built for them becomes the property of the Grama Panchayat, which may then give it to another family in need.
- Ashraya projects are reviewed through a special system at the District Planning Committee (DPC) level.
- Every Ashraya Project is co-financed by the State Poverty Eradication Mission using funds from the State Plan, up to a maximum of 25 percent of the project's cost, or Rs 10 lakh.

Destitute Free Kerala

When the Ashraya project, which had gone through multiple phases, was reorganised in 2017, a more comprehensive one-time endeavour called Destitute Free Kerala, or Agathirahitha Keralam, was developed. In contrast to earlier efforts to eradicate poverty, Destitute Free Kerala tries to study several facets of poverty rather than focusing on just one. Many of the basic, developmental, and psychological needs of a Destitute Free Kerala beneficiary family are taken care of under the auspices of Kudumbashree, but other needs are taken care of by government organizations like Local Self-Government Institutions (LSGIs), the Health Department, the Public Distribution System, etc.The funding for the various project components comes from projects and plans that are already in operation. Kudumbashree, LSGIs, and generous individuals and groups are funding the project. The Challenge Money is a fund that Kudumbashree allots for essentials. It accounts for 40 percent of the total project cost, with a maximum of 40 lakh for general projects and 50 lakh for ST projects. The lowest tiers of project monitoring are handled by the foot troops of the Neighborhood Groups of Kudumbashree.

Distitute Free Kerala, as contrast to Ashraya, uses better technology for project planning and recipient identification (using a mobile app), which makes the programme more efficient and timely. An appeal can be made, and appeals are reviewed by LSGIs. At the State and District levels, monitoring committees will be set up to keep an eye on the initiatives after they have been implemented. Families that don't meet the project's eligibility conditions but are jobless even 10 days a month will be given support under the category of Special Cases. Additionally, a clause that can be added at any time is included. Thus, it is predicted that Ashraya will more effectively handle the various facets of poverty now that it is renowned as Kerala's Destitute Free State.

Rehabilitation for the homeless involves a process-oriented approach under Ashraya. The government adopted "Agathirahitha Keralam", the Destitute-Free Kerala programme, a modified

version of the Ashraya scheme after 2016. The government envisaged a comprehensive plan for the extremely poor through this programme, who for a variety of reasons are not covered by any of the aforementioned programmes. The Kudumbashree community organization has been instrumental in the scheme's ability to produce a number of success stories.

Participatory Process to Identify the Extreme Poor

It is said that extreme poverty is a condition where there is no ability to survive as indicated. They are not even able to speak up for themselves or advocate for themselves. There will be families or people those who suffer due to different types of social isolation. A family that was isolated by society due to mental challenges is an example for the same. Street vagrants don't have a home they can call their own. People who reside in slums or public places are not considered as part of a family or of the community. Empirically identifying the extremely poor via conventional methods may not be successful because they frequently go unnoticed and are unable to speak up for their own rights.

Use of a participatory process including a cross-section of the community and the poorest families at the local level with local support is therefore crucial. As a result, it enhances the significance of clusters and ward-level linkages within the ward where it is common to find extremely impoverished households. For this reason, it's critical to use the technique of locating the extremely poor through participatory discussions with representatives of diverse groups that are constantly present in society. In fact, through this participatory discovery process the entire community is involved in locating the extremely impoverished and providing for their survival.

Through a participatory discussion with each indicator of extreme poverty at and below the ward level, the difference between poverty and extreme poverty was made. Thus, the participatory identification of the extreme poor is possible with greater precision. This participatory process enables decision-making by recognising

the extreme nature of extreme poverty beyond the general nature of poverty.

Advantages of Participatory Process

The following are the major advantages of the ward level or community based participatory process put forward by the Kerala government in finding the destitute and solving the problem of extreme poverty from the state.

1. This participatory process plays a key role to identifying the most deserving extreme poor.
2. It is possible to find those who are desperate and needy who usually go unnoticed.
3. It helps to recognise precisely the deserving people by distinguishing between poverty and extreme poverty.
4. As a participatory process, it becomes a general social approach to extreme poverty and its solutions by entrusting responsibilities to all the members of a community.

Local Self-Government Institutions and Poverty Alleviation

In Kerala, Local Self-Government Institutions (LSGIs) have been essential in efforts to reduce poverty. The project operations have greatly aided the poor, who have been receiving basic services from local government institutions like housing, drinking water, sanitation, and electrification for more than past 25 years. Along with this, special emphasis has been given to combat poverty in the sub-projects for Scheduled Tribes and Scheduled Castes. But extreme poverty was addressed with the ASRAYA scheme of 2002-2003. There were certain interventions to formulate programs at the local government level. Then an anti-poverty sub plan was introduced to coordinate all kinds of poverty eradication efforts of the government.

The Kudumbashree project, which aims to reduce poverty, was launched in Kerala in 1998. It is a pivotal moment in Kerala's history. Following the projects, Kudumbashree and local self-

government organizations participated in every initiative of poverty alleviation. Kudumbashree is also in charge of the Ashraya project. Additionally, a local self-government body's sub-scheme for reducing poverty was put into action. The extreme poor are the focus of the "Agati Rahitha Keralam" (Destitute-Free Kerala) scheme, which was introduced after 2016. The destitute-free Kerala initiative placed a strong emphasis on the requirements for fundamental living conditions, survival, and development. The new project is a continuation of the various projects implemented to eradicate extreme poverty. A new approach that incorporates the extremely poor—who were either left out of poverty alleviation efforts or weren't given much attention in earlier programmes—is supported for a number of reasons.

Objectives of the new scheme for the destitute

The new scheme for the destitute aims at the following objectives.

1. Eliminate extreme poverty in the state within five years.
2. Identify those experiencing extreme poverty for various reasons through the social participation process in every Local Self-Government area of the State.
3. Carry out the collection of comprehensive data on the status of each extreme-poor family.
4. Prepare family-based micro plans to enhance the livelihood of survival and the standard of living for the poorest families.
5. Prepare and implement local body level plan by coordinating micro plans.

Various stages of project implementation

The current project has to be implemented gradually in a continuous process. There has to be a well-organised strategy to achieve the stated goal of destitute free Kerala. The following are the proposed stages of the plan.

1. The idea of the micro plan has to be given to the public representatives, officers and volunteers through training sessions regarding the process and methodology of identifying the extreme poor.
2. People's Committees have to be formed at Local Self-Government level and Ward level.
3. Formation of state level coordination committee and district level committee for project coordination.
4. Preparation of preliminary list of extreme poor.
5. Conducting primary data collection based on fixed criteria in listed families.
6. Super checking of data collection process to distinguish poor and destitute.
7. Compilation of collected data and preparation of ward-wise list of extreme poor.
8. Preparation of the list of eligible persons and approval of local body.
9. Presentation and approval of ward level lists in Ward/Grama Sabhas.
10. Preparation of final list of eligible persons at local body level.
11. Planning and preparation of Local Self-Government level scheme and separate micro plan for each family.
12. Acquiring and Mobilising necessary resources for the implementation of Local Self-Government level plan and micro-plans.

From extreme poverty determination process to micro-plan

The government has taken up the big goal of eradicating extreme poverty in five years. The remarkable decision was taken in the first cabinet meeting of the new Kerala government that came to power in 2021. A wide-ranging action to eradicate extreme poverty at the local level was organised under the leadership of Local Self-Government Department and Kerala Institute of Local

Administration (KILA) in 2021. State-level extreme poverty determination cell headed by Development Commissioner, Rural Development Department worked for this purpose. Extensive training programmes from state level to ward level were organised for this initiative. More than 4,00,000 people were trained and over 60,0000 focus group discussions in the state were organised as part of this process. More than 13 lakh people participated in this project. The process of identifying the extremely poor was done through the focus group discussions held at ward levels. The lists of destitudes prepared in this way were approved by the Gram Sabha. Finally, it is discovered that 64006 families are destitudes as a result of extreme poverty. The process of determining extreme poverty is based on the major indicators such as food, basic income, health and housing. Along with this, special treatment was given in the selected indicators to include the Scheduled Castes, Scheduled Tribe families, coastal dwellers, etc. Special consideration is also given to poor families belonging to HIV victims, families protecting orphaned children, LGBTQIA+ categories and urban poor.

Conclusion

The United Nations' Sustainable Development Goals (SDGs) state that their top priority is to end all forms of poverty by the year 2030. It also aims to increase access to key services, give the poor and vulnerable social protection, and help individuals who have been impacted by natural disasters, economic shocks, and extreme weather conditions. The government of Kerala has proposed a flagship initiative complete eradication of extreme poverty from the state, which needs to be accomplished within five years, in this strict Covid-19 scenario, when the globe attempts to reduce the amount of poverty into the half percent of the current level. The government of Kerala has started the initial stages right away with a grassroots participatory strategy engaging local self-governing institutions and the general public.

The most critical step ahead is to prepare a micro plan for the families identified through the extreme poverty identification process. Micro plan has to be prepared by identifying the situation

of each family and their immediate survival needs for both short-term and long-term activities. And from where each of these will get resources should be included in the micro plan. The committees formed at the local body level are responsible for preparation of micro plans. Local bodies also aim to coordinate family-based micro-plans and prepare local body level sub-plans. In this regard, with the intention of alleviating extreme poverty, Kerala Institute of Local Administration (KILA) of the Government of Kerala began the training programme by developing comprehensive strategies to assist the poorest households by raising their standard of living. KILA began training Local Self Government officials to create micro plans in order to improve the lives of the families that have been designated as the poorest in the state.

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CHAPTER 29

A Call For Disaster Risk Management: A Study Based On Recent Environmental Disasters In Kerala

Mr. Nijil Jacobi
Dr. Bindu Balagopal

A. Introduction

Environmental disasters are often the result of negative externalities caused by human activities that prioritize short-term gains over long-term sustainability. These activities, such as deforestation, sand mining, excessive quarrying, garbage dumping, hill degradation, and pollution, can have severe consequences on the environment and the people who depend on it. One of the significant challenges with these activities is that the benefits are often restricted to a small segment of society, such as the companies or individuals who profit from them. Meanwhile, the costs and negative externalities are felt by the entire population, including those who do not benefit from these activities. Moreover, in some cases, the benefits of these activities are entirely private, while the cost is entirely public. For example, a company that engages in excessive quarrying for its benefit may not bear the full cost of the environmental degradation and the impact on the local communities. Instead, the cost is borne by the public in terms of damage to the environment and health risks.

Kerala, a state in south-western India, has been facing severe floods since 2018, causing significant economic, social, and environmental consequences. The floods have caused widespread damage to infrastructure, livelihoods, and the environment. The present paper examines the social and economic repercussions

of the floods in Kerala since 2018. The land Kerala can be split into three zones on the longitudinal profile: the high land, the middle land, and the low land which includes the coastal plain. Kerala is home to numerous lakes and rivers. The state has 44 major rivers that start in the Western Ghats and empty into the Arabian Sea, as well as 21 significant lakes and numerous backwater canals. 41 rivers flow west and discharge into the Arabian Sea. The other three rivers run east to the Cauvery river basin. The overall average yearly yield of Kerala's 44 rivers is estimated to be 70,323 cubic millimetres. (Kerala Development Report 2021).

Kerala has a humid tropical climate, with high temperatures and abundant rainfall throughout the year. Kerala is popularly known as the 'Gateway of summer monsoon' (Krishnakumar K. N et al., 2009). The South-West and North-East monsoons, which last from June to September and October to December respectively, are the two main climatic patterns. Due to the fact that it contributes about 80% of the annual rainfall, the South-West monsoon is more significant. Kerala receives 3000 mm of precipitation on average each year. During the monsoon season, rainfall amounts to about 90% of the total. High intensity monsoon storms result in significant river flows and floods. Kerala is a flood-prone state. It is the biggest and most common risk in the state. 14.8% of the region is at risk of floods. Like landslides, floods can also cause subsequent calamities, as was the case with the 2018 floods. Kerala's land area is moderately to severely drought prone about 50% of the time. Global climate change is predicted to have an adverse effect on extreme rainfall, which will increase the likelihood of urban flooding during the north-east monsoon season, cause a water shortage during the hot summer months, raise the temperature in urban areas, and cause coasts to erode along populated coastlines due to rising sea levels. Floods, droughts, and mudflows are predicted to occur more frequently and more intensely as a result of climate change. Progressive coastal erosion, which affects roughly 63% of the State's 580 km of coastline, is another effect that is currently being seen (Walia, A. and Nusrat, N. 2020).

B. Review of literature

It was thought desirable to have an understanding of the conclusions of some past studies and the techniques used to arrive at the same in order to evaluate the objectives of the study. It is believed that a review of the literature on a topic related to the study's main goal will serve as a basis for supporting or refuting past findings, and so serve as a starting point for future research.

Abraham George, 2019 - The 2018 floods have exposed not only the disaster vulnerability of Kerala, but also the lack of sufficient disaster preparedness, timely response and risk reduction measures. Considering the high probability of natural disasters occurring in future due to climate change, the authorities need to develop a detailed and scientifically validated Disaster Risk Reduction (DRR) strategy for Kerala. However, such a DRR strategy need to be based on the experiences and perspectives of different stakeholders not only from Kerala, but also from India and

abroad. Such a shared understanding of experiences would enable us to build feasible strategies for DRR in the State. Kerala also needs to take lessons from the failures and challenges it encountered while dealing with 2017 Ockhi cyclone. Further, we have to learn from the disaster management strategies evolved by other Indian states like Odisha and also from other countries across the globe. Based on such collective wisdom, authorities should come out with clear cut DRR policies to help the State mitigate the impacts of future disasters in a better manner.

Apoorva R. et al., 2019 - The forecasting of floods in the country is carried out by the Central Warehousing Corporation (CWC). It issues daily flood bulletins to all the relevant government agencies during the monsoon season. The government machinery at the state and district levels have adequate flood-preparedness and flood relief measures, including flood warnings and evacuation measures.

Bhagat R. B. and Irudaya Rajan S., 2018 - Climate change manifests in two forms, namely gradual and sudden. Gradual changes are increasing aridity and desertification, loss of biodiversity, rising sea level and so on, while sudden changes include extreme weather events like cyclone, floods, severe droughts and more.

Economic and Political Weekly (EPW), 2018 - The recent tragedy in Kerala seems to have evoked public responses at three levels. At the first and basic level, it evoked a spontaneous humanitarian response from several segments of society, which transcended regional and national boundaries. Responses at this level seem to have been unmediated by any prior calculations or instrumental factors. The humanitarian aid that continues to flow into Kerala both from within the country and abroad, particularly from the non-governmental organisations, has been quite phenomenal.

Irudaya Rajan S et al. 2022 - Mismanagement of dams and the lack of proper Emergency Action Plans, which is a basic requirement for major dams worldwide, aggravated the situation further. In 2011, the Western Ghats Ecology Expert Panel (WGEEP), a committee set up under the renowned ecologist Madhav Gadgil, suggested the classification of the Ghats into three zones based on sensitivity. Directives on land utilization were also given, however, the government of Kerala rejected most recommendations of the committee and continues to follow the outdated Kerala Forest (Vesting and Management of Ecological Fragile Land) Act2003, which was widely criticized following the flood.

Kerala State Disaster Management Plan, 2016 - The 570 km long coast line of Kerala is prone to erosion, monsoon storm surges and sea level rise. Land subsidence due to tunnel erosion or soil piping which is a slow hazard, is recently noticed to be affecting the hilly areas in the state. This often goes unnoticed and is a hazard with potential of causing landslides, infrastructural damages and crop loss covering vast areas in the high land regions of the state.

Krishnakumar K.N et al., 2009 - The State of Kerala is popularly known as the 'Gateway of summer monsoon' over India. It is a strip of land running almost in

North-South direction and is situated between the West Arabian sea on the West and the ranges of Western Ghats and Nilgiri hills on the East both running parallel to each other. From the Western Ghats, the State undulates to the West and presents a series of hills and valleys intersected by numerous rivers. On extreme West, the State is more or less flat. These characteristics demarcate the State into three natural regions viz., the eastern high lands, the hilly midlands and western low lands. The changes in the geographical and topographical features due to man-made interventions are likely to influence atmospheric circulation altitudinally to a large extent. It may be one of the reasons in recent times for uncertainties in monsoon variability and rainfall distribution over Kerala.

Oommen Thomas et al., 2018 - Being in tropical climate, the state of Kerala, India experiences monsoon. It is characterized by two spells of monsoon: Southwest monsoon (SWM) during June-September and Northeast Monsoon (NEM) during October-December. During 2018 SWM rainfall events, between June 1 and August 29, the amount of rainfall was 36-percent more than the normal rainfall for that period (IMD, 2018). Sporadic events of intense rainfall (e.g. 177.5 mm on August 17, 2018, at Idukki) in the Western Ghats triggered several landslides and inundated parts of the Pathanamthitta, Alappuzha, Kottayam, Idukki, Ernakulam, Thrissur and Wayanad districts. Moreover, the floodwaters that resulted from the dam release disrupted the life of hundreds of thousands of citizens and warranted the need to open safe shelters to the affected populations.

Priya P, 2018 - The result was that all the rivers running west to the sea carried more water than their usually high banks could hold and flooded the country around for many days. The Kallayi river on the seventeenth morning was almost up to the girders of the bridge, all the eastern parts of Calicut were flooded as they had never been within living memory, and the isolation of Calicut from the east and south. The other main rivers of South Malabar- Bharathapuzha (Ponnani puzha), Tutha puzha (Puamanthol river), Kadalundi and Chaliyar (Beypore river) behaved similarly. In Edavanna and Mambad, the houses in the bazzars suff ered severely from the floods of Chaliyar river. Bharathapuzha wrecked the railway line. In several places people had to be rescued from the tops of houses and coconut trees where they had taken refuge.

Rajiv Gandhi Institute of Development Studies (RGIDS), 2018 - While at least 483 human lives and thousands of livestock were lost, the disaster incurred immense losses to the state's infrastructure, as many roads and bridges, thousands of houses were damaged or washed away. Large quantities of agricultural produce were lost putting the livelihood of farmers at risk. The disaster dented the tourism industry of the state. It drew the attention of world organisations including the United Nations (UN), Asian Development Bank (ADB) and the World Bank. The total loss is estimated around Rs 40,000 Crore. The flood and associated events made lakhs of Keralites suffer for the next five to 10 years. It will take many years for the state to recover from this huge setback. However, this calamity needs to be accepted as

a challenge and yet an opportunity to rebuild the state and to provide a better standard of living to all sections of its society.

Robert et al., 2022 - At the household level, we found that both income and expenditure in Kerala declined from June to August relative to households in the bordering districts. Household income recovered by September and then kept increasing during the remaining sample period. However, expenditure continued to remain lower for the entire period, driven by lower spending on non-essentials. The negative impact of this disaster was initially more severe in the districts with the heaviest rainfall districts (Idukki, Kottayam and Kollam), but had more long lasting effects in the worst floods (Alappuzha, Kottayam, Ernakulam and Thrissur).

Shailendra Rai, 2018 - Fourth, a committee was set up in 2011 under a renowned ecologist Madhav Gadgil which come up with a report called Western Ghats Ecology Expert Panel (WGEEP) and suggested classification of Ghats into three zones: Ecologically highest sensitive zones (ESZ1), where certain types of areas would be "no-go", including water courses, water bodies, special habitats, biodiversity rich areas, and sacred groves; ecologically high sensitive zones (ESZ2), where construction of new railway lines and major roads would not be allowed, except when "highly essential"; and ecologically moderately sensitive zones (ESZ3), where new energy projects and infrastructure such as roads may be allowed but with "strict environmental regulations" suggested prevention of any stone quarrying, construction activities, deforestation, sand mining. But most of the recommendation of Gadgil was rejected.

Srivastava A. K. et al., 2019 - Flood- and heavy rain-related incidents reportedly claimed over 800 lives from northern-to-north eastern, central, and peninsular parts of India during the pre-monsoon, monsoon, and post-monsoon seasons. Of these deaths, 223 were reported from the southern state of Kerala, 158 from the northern state of Uttar Pradesh, 139 from Maharashtra, and 116 from West Bengal during the monsoon season. Kerala witnessed one of its most severe floods on record as heavy-to-extremely heavy rains lashed central and northern parts of the state during 8-23 August. The most affected district, Idukki, received an all-time record rainfall of 710.2 mm for a three-day period on 15-17 August. This region had already received above-normal rainfall through July.

United Nations Development Programme (UNDP), 2018 - Kerala, however, is highly vulnerable to natural disasters and the changing climatic dynamics given its location along the sea coast and with a steep gradient along the slopes of the Western Ghats. The Kerala State Disaster Management Plan identifies 39 hazards categorised as naturally triggered hazards (natural hazards) and anthropogenically triggered hazards (anthropogenic hazards). Kerala is also one of the most densely populated Indian states (860 persons per square kilometres) making it more vulnerable to damages and losses on account of disasters.

Floods are the most common of natural hazard in the state. Nearly 14.5% of the state's land area is prone to floods, and the proportion is as high as 50% for certain

districts. Landslides are a major hazard along the Western Ghats in Wayanad, Kozhikode, Idukki, and Kottayam districts. Seasonal drought-like conditions are also common during the summer months. Kerala experienced 66 drought years between 1881 and 2000.8 Dry rivers and lowering water tables in summer have led to water scarcity both in urban and rural areas. Other major natural hazards are lightning, forest fires, soil piping, coastal erosion, and high wind speed. The state also lies in seismic zone III.

Walia, A. and Nusrat, N. 2020 - All the districts in the state were affected. People had to be evacuated from various districts of Chengannur, Pandanad, Edanad, Aranmula, Kozhencherry, Ayiroor, Ranni, Pandalam, Kuttanad, Malappuram, Aluva, Chalakudy, Thrissur, Thiruvalla, Eraviperoor, Vallamkulam, North Paravur, Vypin Island and Palakkad Chellanam. The state government reported that one sixth of the population was directly affected by floods and ensuing secondary disasters. The central government declared the floods as "calamity of a severe nature". 35 out of 54 dams in the state were opened for the first time in the history. In the Idukki dam, all the five overflow gates were opened simultaneously and in Malampuzha dam of Palakkad, 5 gates were opened for the first time in 26 years.

C. Discussion

Kerala is extremely vulnerable to natural disasters and the effects of climate change due to its geographic location along the sea's coast and on the Western Ghats' hills. According to the Kerala State Disaster Management Plan, the state is susceptible to 39 natural disasters as well as various human-caused disasters. Kerala has a high population density of 860 people per km2 (Census, 2011), making it more vulnerable to disaster losses and damages. The Western Ghats are frequently plagued by floods and landslides. Most landslides happen in the districts of Wayanad, Kozhikode, Idukki, and Kottayam. During the summer, there are frequently drought-like circumstances. Between 1881 and 2000, 66 drought years were recorded (UNDP 2018). Due to drier riverbeds and lower water tables in the summer, the problem of water scarcity is exacerbated. In addition to these, the state is plagued by lightning, forest fires, and strong winds. The region is particularly susceptible to dangers and calamities because of coastal erosion and soil piping. Additionally, the state is located in seismic zone III, Moderate Damage Risk Zone which is liable to Medvedev-Sponheuer-Karnik scale (MSK) VII (National Disaster Management Authority - NDMA), a sign of earthquake susceptibility.

The flood was brought on by a number of factors. On August 8, 2018, there was heavy rain, and the dams were completely full. The Ecologically Sensitive Zone (ESZ) was primarily affected within the first 24 hours of rainfall. Ecology specialists' suggestions and directives were either disregarded or ignored. Both Kerala's economy and human life have been impacted by the flood. It had an impact on many facets of the Keralan economy. The entire state of Kerala was gripped by a gigantic, unprecedented flood during the month of August 2018; the last time something similar

occurred was in 1924, and there were extremely heavy floods in practically all of Kerala's rivers.

There were severe losses in terms of life of people, property, crops, etc. This will have an even greater impact on the living and working situations of those who reside in flood affected areas. According to the Kerala Government statistics, one-sixth of the total population of Kerala was directly impacted by the floods and other associated events. A million people were evacuated, mainly from the districts of Chengannur, Pandanad, Edanad, Aranmula, Kozhencherry, Ayiroor, Ranni, Pandalam, Kuttanad, Malappuram, Aluva, Chalakudy, Thrissur, Thiruvalla, Eraviperoor, Vallamkulam, North Paravur, Chellanam, Vypin Island, and Palakkad (Walia, A. and Nusrat, N. 2020). The state's 14 districts were all placed on red alert. Out of a total of 1,664 villages in 14 districts, the state administration reported that 1,259 villages were affected. Alappuzha, Ernakulam, Idukki, Kottayam, Pathanamthitha, Thrissur, and Wayanad were among the seven districts that were seriously damaged. According to the Report on Kerala Flood 2018: The Disaster of the Century by Rajiv Gandhi Institute of Development Studies (RGIDS, 2018), approximately 483 lives have been lost, and 140 individuals are reported missing. Along with human lives, the state witnessed the deaths of close to 12,000 dairy animals and the damage of over 57,000 hectares of arable land. Over 80000 relief camps opened with over 250000 homeless people. Kerala's economy sustained a loss of nearly 2000 crore rupees. The floods were described as a "calamity of a severe nature" by the central government (AIR Worldwide, 2020).

The Kerala State Disaster Management Plan Report 2016 observes that the monsoon storm surges, sea level rise, and erosion are all threats to Kerala's 570 km of coastline. Recently, it has been observed that the state's hilly regions are being affected by land subsidence caused by tunnel erosion or soil piping, which is a slow-moving hazard. This is a danger that frequently goes unrecognised and has the potential to cause landslides, damage to infrastructure, and agricultural loss that covers large areas in the high land regions of the state. According to a recent study by the Rajiv Gandhi Institute for Development Studies (RGIDS, 2018), the Indian Meteorological Department's (IMD) warning proved ineffective in getting people to realise how critical the situation was and start making preparations. The weather forecast was disregarded by local, district, and state authorities in addition to the general public, which delayed rescue and recovery efforts as well as the coordinated operation of government organisations, including the Disaster Management Authority (DMA) (Irudaya Rajan S et al. 2022). The circumstance made clear the importance of promptly providing the necessary information to the appropriate individuals and the relevant authorities in order to effectively handle situations of this nature.

Despite Kerala's abundance of natural resources, the state is growing challenged in terms of two key resources: land and water. As a result, efficiency in their use is fundamental (Lathik M 2010). Kerala is truly "the land of rivers and rains." There are two rainy seasons: the Southwest monsoon, or Edavapathi, which arrives in late

May or early June, and the Northeast monsoon, or Thulam, which strike the middle of October. Every year, the State's season depends on these monsoon rains (Oommen Thomas et al, 2018). The 2018 Southwest monsoon brought disaster along with it, resulting in a catastrophic flood. According to the Indian Meteorological Department (IMD) projection 2018, Kerala was the sole state in the excess rain category. The flooding in Kerala was among the worst the state had seen in a century. This was brought on by unexpectedly heavy rains and the unintentional release of water from nearby states' dams. Since the water level had increased to almost overflow level as a result of severe rain, flooding nearby low-lying areas, nearly all dams had been opened. Districts across the board have been on high alert. All five overflow gates at the Idukki dam were opened simultaneously (India Today, 2018) and five gates at the Malampuzha dam in Palakkad were opened for the first time in 26 years. 35 of the state's 54 dams have been opened (Walia, A. and Nusrat, N. 2020) for the first time ever to manage the situation. Landslides were also brought on by floods in various parts of the state. The districts of Wayanad and Idukki experienced intense rainfall, which led to major landslides. The hilly areas became isolated as a result.

According to Bhagat and Irudaya Rajan (2018), floods, landslides and other natural disasters phenomena are only expected to become more prevalent in the next years. India Meteorological Department (IMD) and the United Nations (UN) have already issued warnings on the same. Kerala has been recognised as a climate change sensitivity hotspot within India, and India as a whole is considered to be one of the most vulnerable countries in terms of global climate change. The state suffered extensive damage from the landslides and extreme flooding that were brought on by the 164 percent above average rainfall in August 2018, which also resulted in the deaths of 433 people. Another study on Post-Disaster Needs Assessment conducted by the United Nations Development Program (UNDP, 2018) following the flood in Kerala found that 5.4 million people were affected by the flood in 775 villages, where 1,186 dwellings were entirely destroyed and 19,588 were partially destroyed. The flood caused $4.4 billion in damage, uprooting over 500,000 people and severely damaging roads, electric lines, and other infrastructure facilities.

The importance of water management programmes and flood prevention measures has been underscored by the flooding in Kerala. It appears that the situation may have worsened in part due to poor water management. Now, the government has taken a few initiatives, like the Dam Safety Bill 2018, which includes these protocols and also recommends the establishment of a Dam Safety Authority, which is a solid start toward reducing the risk of flooding (Shailendra Rai, 2018). The problem was made worse by poor dam management and the absence of adequate Emergency Action Plans, which is a fundamental necessity for all significant dams worldwide. The categorization of the Ghats into three zones based on sensitivity was proposed in 2011 by the Western Ghats Ecology Expert Panel (WGEEP), a body established under the direction of renowned ecologist Madhav Gadgil. There

were also instructions on how to use the land, but the Kerala government ignored the majority of the committee's suggestions and has continued to apply the antiquated Kerala Forest (Vesting and Management of Ecological Fragile Land) Act 2003, which came under fire after the flood (Irudaya Rajan S et al. 2022). Kerala needs to establish adequate disaster risk management in this context by taking lessons from previous failures.

The flood of 2018 is one of the worst catastrophes faced by Kerala state after the great flood of 1924. There were no such devastating floods in the recent history of Kerala. But following the 2018 flood, Kerala had a slew of terrible natural disasters in the form of floods and landslides due to heavy rain in different parts of the state in 2019, 2020, 2021 and 2022. So this climate change is also a serious concern.

Natural disasters not only have an impact on people's lives, the economy, and public infrastructure, but they also inflict severe psychological stress, such as anxiety, fear, and depression. Although these catastrophes always have a detrimental effect, they also inspire the local community to pursue new economic avenues. More so than giving them food and shelter, it is crucial to provide them with resources, such as financial or technical, to help them reclaim their livelihoods. We seldom offer them this essential component that enables them to support their livelihoods.

In addition to Kerala's vulnerability to disasters, these natural calamities also highlighted the state's poor disaster preparedness, quick response, and risk reduction efforts. A proper disaster risk management is essential in Kerala with an effective and efficient use of policies and techniques for Disaster Risk Reduction (DRR) in order to prevent new disaster risks, lower current disaster risks, and manage residual risks as natural disasters have been a threat to Kerala since the floods 2018. A thorough and scientifically supported DRR strategy for Kerala needs to be developed, given the high likelihood that natural catastrophes including floods, droughts, earthquakes, landslides, and cyclones may occur in the future as a result of climate change. However, such a DRR plan must be founded on the experiences and viewpoints of other stakeholders from India and beyond in addition to Kerala. Developing effective DRR initiatives for the State would be possible with such a collective understanding of experiences. Only then will the State be better equipped to reduce the repercussions of disasters in the future.

Kerala, like many other parts of the world, is experiencing the effects of climate change. The state has been witnessing changes in its weather patterns and natural systems, which are affecting its environment, economy, and society. Some of the impacts of climate change in Kerala include:

- Extreme weather events: Kerala has been experiencing more frequent and intense rainfall events, which have led to flooding and landslides. The state has also witnessed prolonged dry spells, which have resulted in water scarcity and drought.
- Rising sea levels: The sea level along Kerala's coast has been rising, which has increased the risk of coastal flooding and erosion. This is a particular concern for low-lying areas and coastal communities.

- Changes in agriculture: Climate change is affecting Kerala's agriculture, which is a major source of livelihood for many people in the state. Changes in rainfall patterns, temperature, and humidity are affecting crop yields, and farmers are having to adapt to new conditions.
- Biodiversity loss: Kerala is known for its rich biodiversity, but climate change is threatening many of its plant and animal species. As temperatures rise and rainfall patterns change, many species are struggling to adapt, which could lead to their extinction.

To address these impacts, Kerala has taken steps to mitigate and adapt to climate change. The state government has implemented programs to promote renewable energy, reduce greenhouse gas emissions, and improve water management. Additionally, efforts are being made to increase public awareness and mobilize community action to address climate change. Kerala has been implementing several disaster management strategies to minimize the impact of natural disasters and emergencies. Given the state's vulnerability to floods, landslides, and other natural hazards, disaster management has become an essential part of its governance and development policies. Some of the strategies adopted by Kerala for disaster management include:

- Early warning systems: The state has implemented an effective early warning system that uses various technologies such as weather forecasting, flood modeling, and satellite imagery to predict disasters and warn the public.
- Disaster response teams: Kerala has well-trained disaster response teams comprising police, fire and rescue, and other emergency services. These teams are equipped with necessary resources such as boats, helicopters, and communication equipment to respond to disasters.
- Evacuation plans: The state has developed evacuation plans for communities that are prone to disasters. These plans involve identifying safe shelters, transportation arrangements, and providing necessary support to those affected.
- Community-based disaster management: Kerala has been encouraging community-based disaster management by involving local communities in disaster planning and response. This approach emphasizes the participation of local people in decision-making, risk assessment, and response actions.
- Disaster Risk Reduction (DRR): Kerala has been adopting measures to reduce the risks of disasters by implementing land-use planning, strengthening infrastructure, and promoting sustainable development practices.
- Rehabilitation and reconstruction: After a disaster, Kerala has been focusing on the rehabilitation and reconstruction of affected communities. This involves providing temporary shelters, medical support, and livelihood assistance to those affected.

Even though, Kerala's disaster management strategies are aimed at minimizing the impact of disasters, protecting lives and property, and promoting the sustainable development of the state, they find to be revised since the natural disasters become common in the state.

D. Conclusion

It was observed from the reviews of the literature cited here so far that before 2018, Kerala had no effective disaster management strategies since natural catastrophes were not common here. Social and economic dimensions of the disaster management policies have not studied well yet to validate whether the existing disaster management policy measures are adequate and support the resilience of the catastrophe victims. We used to adopt disaster risk mitigation methods like rehabilitation and compensations in the form of money for the victims once it occurs. The devastating flood 2018 and a series of terrible natural disasters in the form of floods and landslides due to heavy rain in different parts of the state in 2019, 2020, 2021 and 2022 urges that we require a proper Disaster Risk Management (DRM) policy in the future that meets the socio-economic needs of the people. It was also observed that there are some unexplored or underexplored research areas, such as DRM policies for sustainable livelihoods, Disaster Risk Reduction (DRR) using community engaged social engineering, nature-based solutions for natural disasters and climate resilience, and so on.

There is a significant need for Disaster Risk Management (DRM) in Kerala due to the state's vulnerability to natural disasters. Kerala is prone to various natural hazards such as floods, landslides, droughts, cyclones, and earthquakes. These hazards have caused severe damage to the state's infrastructure, economy, and people's livelihoods in the past. DRM in Kerala can help to reduce the risk of disasters by implementing appropriate measures such as early warning systems, preparedness plans, and response mechanisms. As Kerala is situated in a region prone to various natural hazards, making it necessary to have a comprehensive DRM plan to address the risks associated with these hazards. Kerala has a high population density, particularly in urban areas, making it more challenging to manage disasters and evacuate people quickly. Natural disasters can cause significant damage to Kerala's infrastructure, agriculture, and other economic sectors, which can affect the state's economic growth. Climate change is exacerbating the risks of natural disasters in Kerala, making it necessary to develop and implement DRM strategies that consider the changing climate patterns. Many people in Kerala depend on agriculture, fisheries, and other livelihoods that are vulnerable to natural disasters. DRM can help to protect these livelihoods and ensure the resilience of the communities. In short, DRM is necessary in Kerala to address the risks associated with natural hazards and ensure the resilience of communities. By implementing appropriate DRM measures, Kerala can minimize the impacts of disasters and promote sustainable development.

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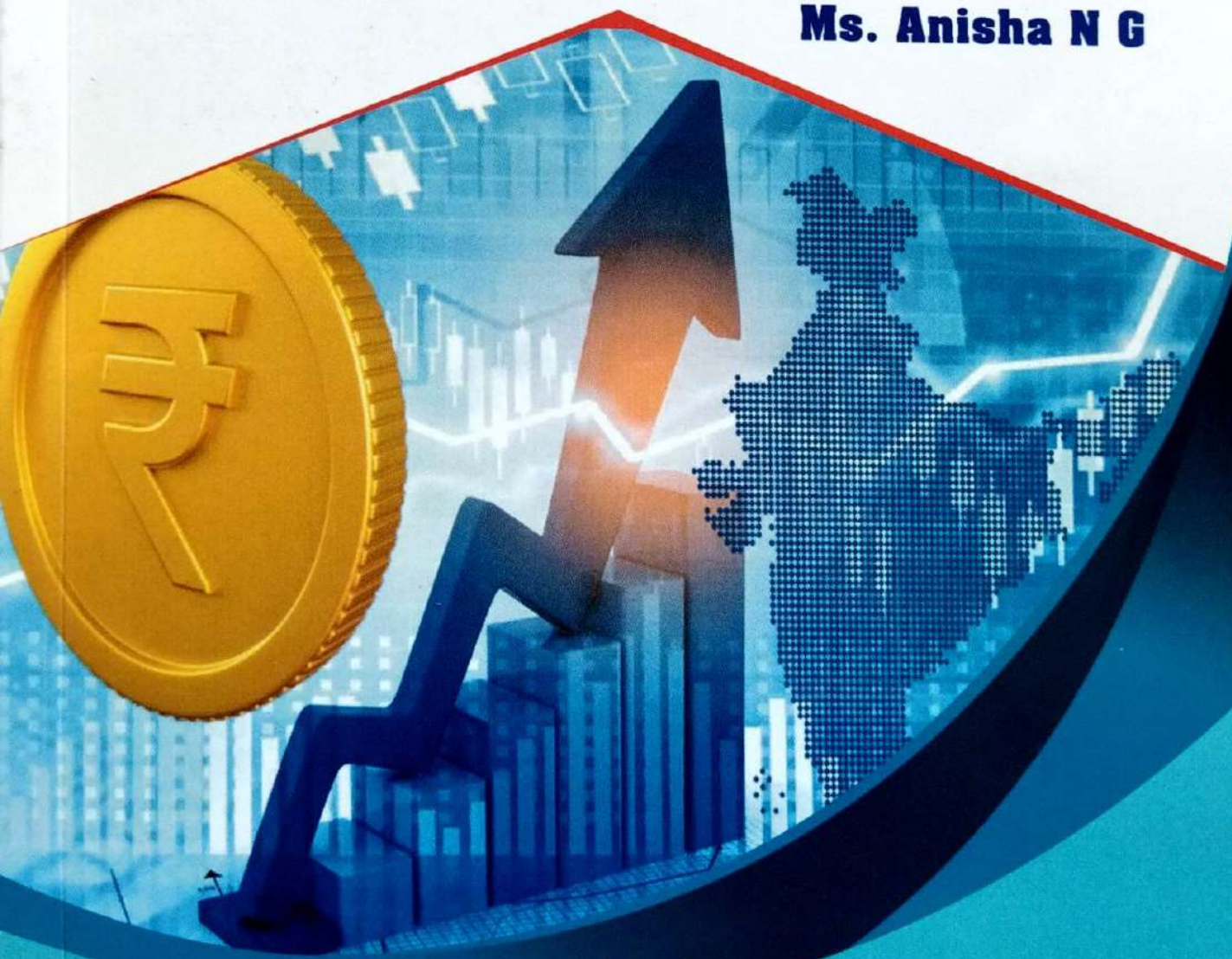

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Ms. Daisy P K
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Environmental Extremes and Disaster Risk Management (DRM) in Kerala

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Abstract

Environmental extremes and Disaster Risk Management (DRM) are crucial aspects of understanding and addressing the challenges posed by natural disasters and extreme environmental events. Environmental extremes encompass a range of severe and abnormal natural events, including hurricanes, earthquakes, landslides, floods, droughts, heat waves, wildfires and even climate change. These events have far-reaching implications for human societies, ecosystems, and infrastructure, resulting in loss of life, property damage, displacement, and environmental degradation. Kerala, a southern state of India, is prone to a variety of environmental extremes, including floods, landslides, and cyclones and faces many such threats in recent years. Understanding the causes, patterns, and impacts of environmental extremes is essential for effective Disaster Risk Management (DRM).DRM involves a comprehensive framework of policies, strategies, and actions aimed at reducing the risks associated with natural disasters. It encompasses various phases, including risk assessment, mitigation, preparedness, response, and recovery. Key elements of disaster risk management include hazard identification and mapping, vulnerability assessment, early warning systems, emergency planning, community engagement, and institutional coordination.

Keywords: *Disaster Risk Management (DRM), Environmental extremes, Kerala, Hazard, Vulnerability assessment*

Introduction

Kerala, the picturesque southern state of India, is known for its captivating landscapes, rich biodiversity, and tranquil backwaters. However, beneath its natural beauty lies a region prone to a wide range of environmental extremes that pose significant challenges to its development and the well-being of its population. From devastating floods and landslides to the impact of tropical cyclones, Kerala faces an array of hazards that demand effective disaster risk management (DRM) strategies and interventions. Nestled between the Western Ghats mountain range and the Arabian Sea, Kerala's unique geographical location exposes it to various environmental hazards. The state experiences heavy monsoon rains, leading to the swelling of rivers and triggering frequent floods. Its hilly terrain is also vulnerable to landslides during periods of intense rainfall. Moreover, the coastal areas are at risk of tropical cyclones, which bring strong winds, storm surges, and heavy rainfall. The vulnerability of Kerala to these environmental extremes is compounded by a combination of factors, including deforestation, urbanization, improper land-use practices, and inadequate infrastructure. Deforestation in the Western Ghats reduces the natural capacity of forests to regulate water flow, increasing the risk of flash floods and soil erosion. Uncontrolled urbanization and encroachment on riverbanks disrupt natural

drainage systems, exacerbating flood risks. Improper land development practices and weak soil structures heighten the susceptibility to landslides. These factors, combined with the state's high population density, intensify the impact of extreme events, resulting in widespread destruction and loss of life.

Surviving Nature's Fury: Kerala's Battle with Natural Disasters

Keralais no stranger to natural disasters. The state's unique geographical features, including its hilly terrain, abundant water bodies, and coastal areas, make it vulnerable to a range of natural hazards. Kerala has experienced devastating floods, landslides, cyclones, droughts, and occasional earthquakes. These events have had severe consequences, causing loss of life, displacement of communities, damage to infrastructure, and disruption of livelihoods. Some of the major natural disasters in Kerala include:

1. Floods: Kerala experiences heavy monsoon rains, resulting in frequent floods. The state's intricate network of rivers and water bodies, coupled with deforestation and improper land-use practices, exacerbates the flooding. In 2018 and 2019, Kerala witnessed severe floods that caused widespread destruction, displacement of people, and loss of lives.
2. Landslides: The hilly terrain of Kerala makes it susceptible to landslides, especially during periods of intense rainfall. Deforestation, unregulated construction activities, and improper land development contribute to the increased vulnerability. Landslides have resulted in loss of lives, destruction of infrastructure, and displacement of communities.
3. Cyclones: Kerala's coastal areas are vulnerable to tropical cyclones originating in the Arabian Sea. Cyclones bring strong winds, heavy rainfall, storm surges, and coastal erosion. In 2017, Kerala faced the impact of Cyclone Ockhi, which caused significant damage to coastal regions, particularly affecting fishing communities.
4. Drought: Despite receiving abundant rainfall, Kerala also experiences occasional drought periods. These droughts have adverse effects on agriculture, water availability, and overall socio-economic conditions. They can lead to crop failures, water scarcity, and impact the livelihoods of farmers and agricultural workers.
5. Earthquakes: Kerala falls in a seismically active zone due to its proximity to the Western Ghats and the presence of multiple fault lines. While major earthquakes are relatively rare, the state has experienced tremors in the past. These earthquakes can cause damage to buildings and infrastructure, posing risks to human life and property.

These natural disasters highlight the need for effective disaster management and preparedness in Kerala. The state has been working on strengthening its disaster response mechanisms, including early warning systems, evacuation plans, and community-based disaster management programs. By implementing comprehensive disaster risk reduction

strategies, Kerala has to minimize the impacts of these natural disasters, protect lives and infrastructure, and build resilience in the face of future events.

Disaster Risk Management (DRM): A Critical Necessity

Disaster Risk Management (DRM) refers to the systematic approach and comprehensive framework of policies, strategies, and actions aimed at reducing the risks associated with natural and man-made disasters. It involves the process of identifying, assessing, and understanding the potential hazards, vulnerabilities, and capacities of communities, ecosystems, and infrastructure, and implementing measures to mitigate and manage those risks.DRM encompasses various phases, including risk assessment, mitigation, preparedness, response, and recovery.

Here are the key elements of disaster risk management:

- Risk Assessment: This involves identifying and analyzing the hazards, vulnerabilities, and capacities of a particular area or community. It includes understanding the potential threats, their likelihood of occurrence, and the potential impacts on human lives, infrastructure, and the environment.
- Mitigation: Mitigation focuses on reducing or eliminating the risks posed by hazards. It involves implementing measures to prevent or minimize the impact of disasters, such as constructing resilient infrastructure, adopting land-use planning practices, and promoting sustainable development.
- Preparedness: Preparedness involves developing plans, procedures, and capacities to effectively respond to disasters. It includes activities like developing emergency response plans, establishing early warning systems, conducting drills and exercises, and enhancing community awareness and education.
- Response: Response refers to the immediate actions taken to address the impacts of a disaster. It involves mobilizing resources, coordinating emergency services, providing relief and rescue operations, and ensuring the safety and well-being of affected individuals and communities.
- Recovery: Recovery focuses on restoring and rebuilding the affected communities and infrastructure after a disaster. It includes activities like rehabilitation, reconstruction, livelihood restoration, psychosocial support, and economic recovery.

Key principles that underpin effective DRM include community participation and engagement, coordination among various stakeholders and agencies, integration of disaster risk reduction into development planning, and a focus on building resilience and adaptive capacity.

Disaster risk management (DRM) is critical for sustainable development because it helps to promote resilience and reduce vulnerability to natural disasters and other hazards. By investing in DRM, governments and communities can minimize the risks associated with disasters and build a more sustainable and resilient future.

Some of the ways in which DRM is important for sustainable development include:

- Saving lives: DRM can help save lives by ensuring that people are prepared for disasters and know what to do in the event of an emergency. This includes providing emergency training, conducting drills, and establishing evacuation routes and shelters.
- Reducing the impact of disasters: DRM helps reduce the impact of disasters by identifying potential hazards and developing strategies to mitigate their effects. This can include measures such as building codes, evacuation plans, and early warning systems.
- Protecting property and infrastructure: DRM can help protect property and infrastructure by identifying vulnerable areas and implementing measures to strengthen them. This can include retrofitting buildings, reinforcing critical infrastructure, and implementing measures to protect against floods and other hazards.
- Economic stability: Disasters can have a significant impact on the economy, resulting in loss of income and damage to infrastructure, businesses, and industries. DRM measures such as risk assessment, insurance, and contingency planning can help to minimize the economic impact of disasters.
- Environmental sustainability: Disasters can have a negative impact on the environment, including soil erosion, deforestation, and water pollution. DRM can help to mitigate these impacts by promoting sustainable land use practices, protecting natural resources, and reducing greenhouse gas emissions.
- Enhancing community resilience: DRM can help to build community resilience by promoting awareness, preparedness, and response to disasters. It involves engaging with communities and stakeholders to develop effective risk reduction strategies that are tailored to local needs and contexts.
- Humanitarian assistance: DRM is essential for the effective delivery of humanitarian assistance in the aftermath of disasters. It involves coordination between various stakeholders, including government agencies, civil society organizations, and international aid organizations, to ensure a timely and effective response.

DRM is essential for protecting life and property, ensuring economic stability, promoting environmental sustainability, building community resilience, and facilitating effective humanitarian assistance. It is a crucial aspect of ensuring the safety and well-being of individuals, communities, and nations in the face of disasters.

Safeguarding Kerala: Building Resilience through Disaster Risk Management

Disaster Risk Management (DRM) plays a crucial role in safeguarding Kerala, a region prone to natural disasters. The state's geographical location, characterized by its coastal

areas, hilly terrain, and heavy monsoon rains, exposes it to various hazards such as floods, landslides, cyclones, and occasional droughts. Effective DRM strategies and interventions are essential to minimize the impact of these disasters on human lives, infrastructure, and the environment. By implementing comprehensive risk assessment, mitigation measures, preparedness plans, and efficient response and recovery mechanisms, Kerala can enhance its resilience and reduce vulnerability to natural disasters. The importance of DRM in Kerala has been highlighted by the devastating floods in 2018 and 2019, which resulted in significant loss of life and widespread damage. To address these challenges, the government of Kerala has been actively implementing DRM initiatives, including the establishment of early warning systems, the strengthening of disaster response capabilities, and the integration of risk reduction measures into development planning. These efforts are essential for protecting lives, safeguarding infrastructure, and ensuring the sustainable development of the state in the face of natural disasters.

Building Resilience: Evaluating and Enhancing Kerala's DRM Structure

In Kerala, disaster risk management is primarily handled by the State Disaster Management Authority (SDMA) and its associated agencies. The SDMA is responsible for the overall planning, coordination, and implementation of disaster management activities in the state. It operates under the guidance and supervision of the State Government.Here are the key components of the disaster risk management structure in Kerala:

1. State Disaster Management Authority (SDMA): The SDMA is the apex body responsible for disaster management in the state. It is headed by the Chief Minister of Kerala and comprises various government officials, experts, and representatives from relevant departments and agencies.
2. State Emergency Operations Center (SEOC): The SEOC serves as the nerve center for emergency response and coordination during disasters. It operates round-the-clock and is equipped with communication systems, data management tools, and trained personnel. The SEOC facilitates real-time information exchange and decision-making during emergencies.
3. District Disaster Management Authorities (DDMA): At the district level, DDMA oversees disaster management activities. Each district has its own DDMA, headed by the District Collector or District Magistrate. DDMA coordinates disaster preparedness, response, and recovery efforts within the district and works closely with local authorities, NGOs, and other stakeholders.
4. State Disaster Response Force (SDRF): The SDRF is a specialized force trained to respond to various types of disasters. It is responsible for search and rescue operations, medical assistance, evacuation, and other emergency response activities. The SDRF units are stationed in different parts of the state and can be deployed quickly during disasters.

5. State Fire and Rescue Services (SFRS): The SFRS plays a crucial role in responding to fire incidents, building collapses, and other emergencies. They provide fire suppression, rescue services, and assistance during disasters. The SFRS personnel are trained in disaster response and often collaborate with other agencies during multi-hazard situations.
6. Kerala State Disaster Management Plan: The state has a comprehensive disaster management plan that outlines the strategies, protocols, and guidelines for various stages of disaster management, including preparedness, response, relief, and recovery. The plan covers a wide range of hazards, including floods, landslides, cyclones, earthquakes, and industrial accidents.
7. Community-Based Disaster Management: Kerala emphasizes community participation in disaster risk reduction and management. Local communities, village councils, and other grassroots organizations are encouraged to develop disaster management plans, conduct risk assessments, and undertake preparedness measures at the local level.

It's important to note that the disaster risk management structure may involve other government departments, agencies, and stakeholders depending on the nature and scale of the disaster. Additionally, Kerala has experienced severe flooding and landslides in recent years, and these events have led to the adoption of specific strategies and initiatives to address the region's unique challenges.

The disaster risk management structure in Kerala has been praised for its proactive approach and efficient response to disasters. However, there are also certain criticisms and areas that need improvement.

Here are some critical aspects of the disaster risk management structure in Kerala:

1. Preparedness and Early Warning Systems: Kerala has made significant progress in disaster preparedness and early warning systems. However, there have been instances where the early warning systems did not effectively reach all vulnerable communities. There is a need for more robust mechanisms to ensure timely dissemination of warnings to remote areas and marginalized communities.
2. Infrastructure and Planning: Kerala's rapid urbanization and inadequate infrastructure have contributed to increased vulnerability to disasters. Unplanned construction, encroachment on water bodies, and poor drainage systems have exacerbated the impacts of floods and landslides. There is a need for stricter enforcement of building regulations and better urban planning to reduce disaster risks.
3. Interagency Coordination: While the disaster management structure in Kerala involves multiple agencies and departments, there have been concerns about coordination and communication gaps during emergencies. Improved coordination

mechanisms, regular joint training exercises, and efficient information-sharing protocols are essential to enhance the effectiveness of the response.

4. Climate Change Adaptation: Kerala is susceptible to the impacts of climate change, including rising sea levels, increased intensity of rainfall, and changes in weather patterns. The disaster risk management structure should incorporate long-term climate change adaptation strategies and consider future risks in its planning and preparedness efforts.
5. Community Engagement: While Kerala emphasizes community participation in disaster management, there is room for improvement in engaging and empowering local communities. Capacity-building programs, awareness campaigns, and active involvement of community-based organizations can enhance the effectiveness of disaster risk reduction initiatives.
6. Post-Disaster Recovery: While Kerala has demonstrated commendable efforts in post-disaster recovery and rehabilitation, challenges remain in terms of timely and equitable distribution of relief aid and support. Strengthening the mechanisms for efficient distribution of relief materials, ensuring transparency, and prioritizing the needs of vulnerable and marginalized communities are crucial.
7. Data Management and Technology Integration: Effective disaster risk management relies on accurate and up-to-date data. Kerala could benefit from improving its data collection, management, and analysis systems. Integration of advanced technologies such as remote sensing, GIS (Geographic Information System), and real-time data monitoring can enhance situational awareness and decision-making.

It's important to note that Kerala has been continuously learning from past disasters and making efforts to improve its disaster risk management structure. Addressing these critical aspects can further enhance the state's resilience and ability to mitigate and respond to future disasters.

Conclusion

The disaster risk management structure in Kerala showcases both strengths and areas for improvement. Kerala has been praised for its proactive approach, effective response, and emphasis on community participation in disaster management. The State Disaster Management Authority (SDMA), District Disaster Management Authorities (DDMA), and specialized forces like the State Disaster Response Force (SDRF) and State Fire and Rescue Services (SFRS) play vital roles in coordinating and implementing disaster management activities.However, there are critical aspects that require attention. Improving preparedness and early warning systems to reach all vulnerable communities, addressing infrastructure and planning challenges, strengthening interagency coordination, and incorporating climate change adaptation strategies are key areas for improvement. Furthermore, enhancing community engagement, particularly empowering local communities and marginalized groups, and ensuring equitable post-disaster recovery and

relief aid distribution are crucial steps to be taken. The integration of advanced technologies and efficient data management systems can further enhance disaster risk management efforts in the state.By addressing these critical aspects and continually learning from past experiences, Kerala can further strengthen its disaster risk management structure, enhance its resilience, and better protect its communities from the impacts of disasters.

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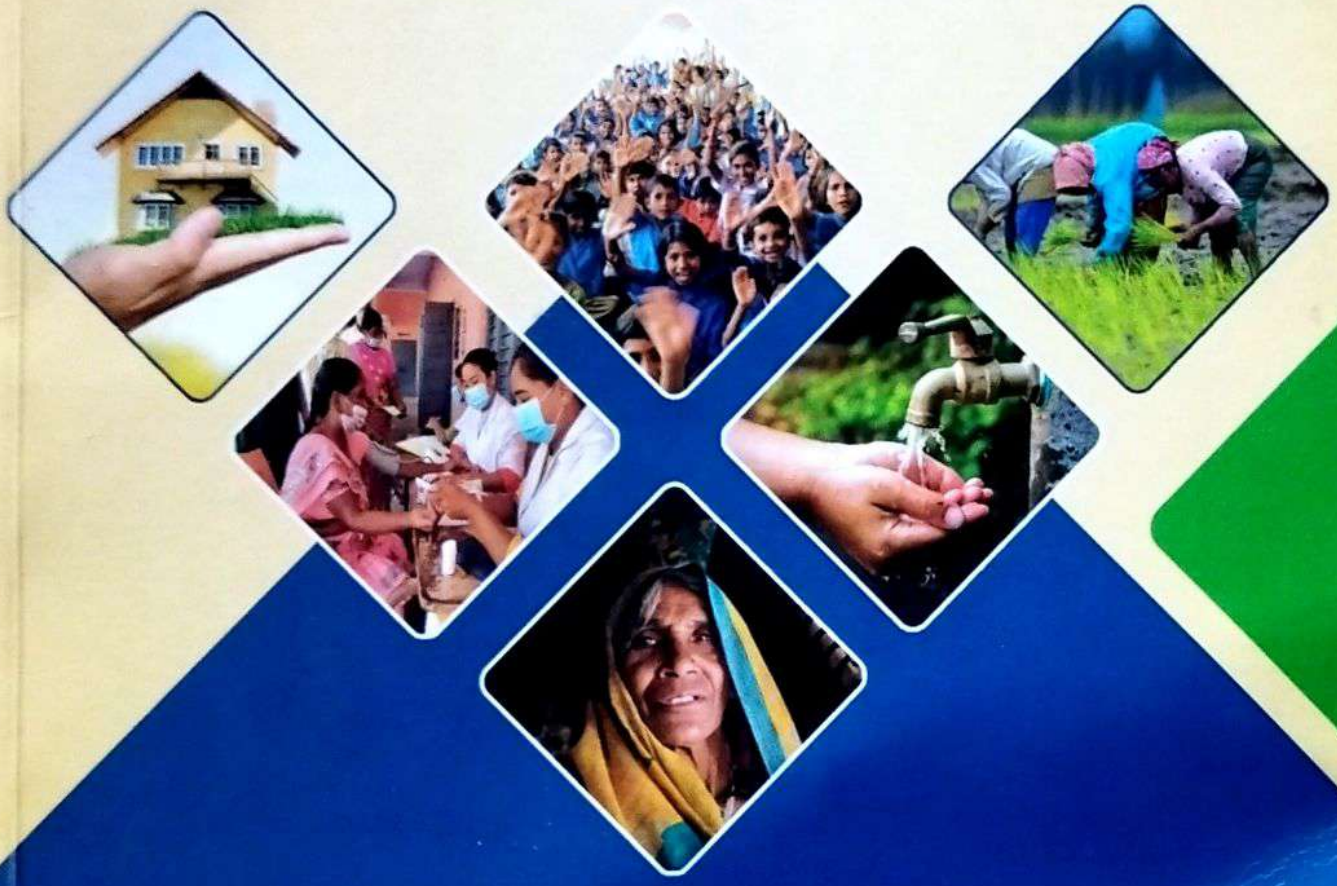

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Chapter-8

Fighting Poverty and Building Futures : The Dynamic Synergy of Social Safety Nets and the SDGs

Nijil Jacobi

Abstract : *The convergence of the Social Safety Net (SSN) and the Sustainable Development Goals (SDGs) represents a pivotal synergy in addressing global challenges related to poverty, inequality, and sustainable development. The social safety net, comprising an array of policies and programs aimed at providing essential support to vulnerable populations, aligns closely with the overarching objectives of the SDGs. Together, they offer a potent framework for eradicating poverty, reducing inequality, improving access to healthcare and education, promoting gender equity, stimulating economic growth, and fostering collaborative partnerships among nations. This research paper encapsulates the profound interplay between these two constructs, highlighting their combined potential to advance the shared vision of sustainable development and human flourishing on a global scale.*

Keywords : *Inequality reduction, Poverty alleviation, Social Safety Net (SSN), Sustainable Development Goals (SDGs)*

Introduction

In an era marked by complex global challenges, the intersection of the Social Safety Net (SSN) and the Sustainable Development Goals (SDGs) stands as a critical juncture where policy, equity, and sustainable development converge. The social safety net, a multifaceted system of policies and programs designed to provide essential support to individuals and families in need, forms the bedrock of social welfare and economic stability in many nations. On a parallel track, the SDGs, established by the United Nations as a universal call to action, represent a visionary blueprint for addressing pressing global issues, ranging from poverty and hunger to environmental degradation and gender inequality. Together, these two constructs not only share common objectives but also offer a synergistic approach to addressing the world's most pressing challenges. This exploration delves into the intricate interplay between the social safety net and the SDGs, shedding light on their shared goals, complementary roles, and collective potential to pave the way for a more equitable, prosperous, and sustainable future.

The intersection of the Social Safety Net (SSN) and the Sustainable Development Goals (SDGs) represents a pivotal nexus where social policy and global development objectives converge. As nations strive to achieve the ambitious targets set forth by the SDGs, the role of SSNs becomes increasingly significant. These programs, ranging from cash transfer initiatives to healthcare access, serve as critical mechanisms to ensure that the most vulnerable members of society are not left behind in the pursuit of sustainable development. However, realizing this synergy requires nuanced strategies that balance immediate needs with long-term sustainability, foster cross-sector collaboration, and harness innovative solutions to address evolving global challenges. Policymakers and stakeholders must navigate these complexities to harness the full potential of SSNs in achieving the shared vision of a more equitable, prosperous, and sustainable world for all. Let us discuss the role of SSNs and SDGs alignmnet in detail.

1. Poverty Alleviation and Inequality Reduction:

Social Safety Net's Role : Social Safety Nets (SSNs) consist of various programs designed to provide financial assistance to individuals and families facing economic hardship. Cash transfer programs and food assistance initiatives, among others, offer a financial cushion to vulnerable populations, preventing them from falling into extreme poverty.

SDGs Alignment : The social safety net aligns directly with SDG 1 (No Poverty) by addressing immediate financial needs. It prevents people from descending into extreme poverty, which is a key target of SDG 1. Moreover, by reducing income inequality through targeted assistance, it contributes to SDG 10 (Reduced Inequality), which aims to create a more equitable society.

2. Health and Well-being :

Social Safety Net's Role : Accessible healthcare coverage provided by social safety nets ensures that individuals can seek medical attention without encountering significant financial barriers. This includes subsidized healthcare, health insurance, or direct provision of healthcare services.

SDGs Alignment : SDG 3 (Good Health and Well-being) focuses on ensuring healthy lives and promoting well-being for all at all ages. The role of the social safety net in providing healthcare aligns directly with this goal by contributing to universal health coverage. It helps achieve SDG 3's target of ensuring everyone has access to necessary healthcare services without suffering financial hardship.

3. Education Access :

Social Safety Net's Role : Educational support programs within social safety nets aim to promote access to quality education, particularly for disadvantaged communities. These programs may include scholarships, school supplies, or other forms of support to ensure that children can attend school and access educational opportunities.

SDGs Alignment: SDG 4 (Quality Education) focuses on providing inclusive and equitable quality education for all. The role of social safety nets in ensuring access to education aligns closely with this goal by addressing barriers that prevent children from attending school. By promoting educational opportunities, social safety nets contribute to SDG 4's objectives.

4. Gender Equality :

Social Safety Net's Role : Gender-sensitive aspects of social safety nets address gender disparities by empowering women and girls. These programs may include targeted support, such as cash transfers or vocational training, to enhance economic independence and reduce gender-based discrimination.

SDGs Alignment : SDG 5 (Gender Equality) seeks to achieve gender equity and empower all women and girls. Social safety nets play a crucial role in advancing this goal by addressing gender disparities in access to resources and opportunities. When designed with a gender-sensitive approach, these programs directly contribute to SDG 5.

5. Economic Stability and Decent Work :

Social Safety Net's Role : By providing economic stability through financial assistance and promoting access to decent work through job training and support, social safety nets help individuals and families achieve financial independence and economic stability.

SDGs Alignment : SDG 8 (Decent Work and Economic Growth) focuses on promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. Social safety nets, through their support for decent work and economic stability, align with this goal by contributing to improved economic conditions and employment opportunities.

6. Partnerships and Collaboration :

Social Safety Net's Role: Effective social safety nets often require collaboration among governments, civil society organizations, and international institutions. These partnerships are essential for designing, implementing, and monitoring safety net programs.

SDGs Alignment: SDG 17 (Partnerships for the Goals) underscores the importance of collaboration and partnerships to achieve the SDGs. Social safety nets align with this goal by highlighting the need for cooperation between various stakeholders to ensure the effective implementation of programs that address poverty, inequality, and sustainable development.

7. Sustainability and Environmental Considerations :

Environmental Focus of SDGs: Some SDGs, such as SDG 13 (Climate Action) and SDG 15 (Life on Land), emphasize environmental sustainability and conservation.

Social Safety Net's Role : While social safety nets primarily address social and economic dimensions, they can be designed to support sustainability efforts. For instance, they can incorporate eco-friendly job training programs or promote sustainable practices among beneficiaries.

8. Challenges and Trade-offs :

Resource Allocation: Policymakers often face the challenge of balancing resource allocation between social safety nets and broader sustainable development initiatives. Striking this balance is crucial to maximize the impact on poverty reduction and sustainable development.

Long-term vs. Short-term : Social safety nets typically address immediate needs, while the SDGs require a long-term commitment. Policymakers must ensure that social safety net programs align with the longer-term objectives of the SDGs.

9. Measuring Impact :

Metrics and Evaluation: To assess the impact of social safety nets on SDG attainment, comprehensive metrics and evaluation mechanisms are essential. This includes tracking poverty reduction, healthcare access, education outcomes, gender equity, and more.

10. Adaptation and Innovation :

Dynamic Nature of Global Challenges : Policymakers must be prepared to adapt social safety net programs to address emerging

issues as global challenges evolve over time. This adaptability ensures that safety nets remain effective in changing circumstances.

Innovative Approaches : Leveraging technology and innovative financing mechanisms can enhance the effectiveness of social safety nets and contribute to achieving SDGs. Innovations may include digital payment systems, data analytics for targeting beneficiaries, public-private partnerships, and climate-resilient initiatives. In essence, the social safety net not only addresses immediate financial needs but also aligns with and contributes significantly to the broader global agenda of eradicating poverty and reducing inequalities, creating a foundation upon which sustainable development can flourish.

Conclusion

The relationship between social safety nets and the Sustainable Development Goals (SDGs) is multifaceted and highly relevant to addressing global challenges. Social safety nets play pivotal roles in alleviating poverty, reducing inequality, providing healthcare, promoting education access, empowering women, fostering economic stability, and encouraging collaboration. They align with specific SDGs such as No Poverty (SDG 1), Good Health and Well-being (SDG 3), Quality Education (SDG 4), Gender Equality (SDG 5), and Decent Work and Economic Growth (SDG 8), and partnerships (SDG 17). Moreover, these safety nets can be adapted to incorporate sustainability and environmental considerations and are essential for addressing long-term sustainability objectives. Challenges include resource allocation dilemmas and balancing short-term needs with the SDGs' long-term goals. Measuring the impact of safety nets on SDG attainment is crucial, and innovation, technology, and collaboration are key drivers for enhancing their effectiveness. Overall, social safety nets form a critical nexus for achieving the SDGs, promoting a more equitable, prosperous, and sustainable world.

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15.

Nurturing Strength In Adversity : Sacred Heart College's Journey of Community Resilience During The Kerala Floods 2018

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Abstract

This case study explores the profound impact of community engagement in disaster management, using Sacred Heart College, Chalakudy, Kerala as a poignant illustration during the Kerala Floods of 2018. The paper investigates how the college community, despite facing severe losses, actively participated in relief operations and collaborated in the implementation of a comprehensive recovery plan. Inspired by ElinorOstrom's theories on common-pool resource management, the study examines the application of collective action, polycentric governance, and monitoring/enforcement principles in the disaster context. Through an analysis of the institution's unity, successes, and challenges, the paper underscores the pivotal role of community engagement in fostering resilience and effective disaster preparedness. The findings provide insights into the dynamics of community involvement and present valuable lessons for shaping future disaster management strategies.

Keywords: Community Engagement, Disaster Management, Resilience, Kerala Floods 2018

Introduction

The year 2018 marked a significant chapter in the history of Kerala, India, as the state grappled with the devastating consequences of unprecedented floods. During this challenging period, Sacred Heart College, Chalakudy, emerged as a beacon of resilience and community strength. This case study explores the intricate interplay of community engagement in disaster management, using the experiences of Sacred Heart College during the Kerala Floods of 2018 as a focal point.Established in 1980, Sacred Heart College, Chalakudy, stands as a testament to academic excellence and communal harmony. Affiliated with the University of Calicut and aided by the Kerala government, the college has been a nurturing ground for holistic education. Its motto, "LUX IN TENEBRIS LUCET" (Light Shines in Darkness), took on a profound significance during the dark days of the 2018 floods.

In the wake of catastrophic floods triggered by relentless rainfall in Kerala, Sacred Heart College found itself submerged for a week, facing damages estimated at 5 Crores INR. The destruction of crucial infrastructures posed a formidable challenge, turning the narrative from one of loss to a testament of community resilience. Despite being victims, faculty, staff, and students united, actively participating in relief and recovery operations. Drawing inspiration from ElinorOstrom's theories on common-pool resource management, this paper explores the dynamic interplay of community engagement. Ostrom's principles - collective action, polycentric governance, and monitoring/enforcement - provide a conceptual framework. Through a focused analysis of the disaster's impact, recovery initiatives, and Ostrom's theories, this case study delves into the multifaceted dimensions of community resilience. Sacred Heart College's collective endeavours echo a broader narrative, highlighting the transformative influence of community engagement in disaster preparedness, response, and recovery.

Discussion

The case study of Sacred Heart College, Chalakudy, in the Kerala Floods of 2018 illuminates the intricate dynamics of community engagement in disaster management, providing valuable insights and lessons for both academic and practical contexts.

Community Resilience and Active Participation

Sacred Heart College's response to the Kerala Floods serves as a compelling example of community resilience, where various stakeholders, including students, teaching and non-teaching staff, management sisters, students and teachers from different parts of Kerala, NSS and NCC students, volunteer youths, volunteer organizations, police, military, fire-force, and the forest department, actively participated in relief operations. The active involvement of students was particularly noteworthy, as they not only grappled with personal losses but also dedicated their time and efforts to assist in relief operations. Student volunteers played a crucial role in distributing essential supplies, providing aid to affected families, and contributing to the overall clean-up and rehabilitation efforts. Their engagement went beyond the traditional role of students, transforming them into integral contributors to the community's recovery.Teaching and non-teaching staff exhibited exemplary dedication by not only navigating personal challenges but also leading the way in coordinating relief efforts. Their roles ranged from organizing logistics, managing resources, and liaising with external agencies to ensure a seamless and effective response. The commitment of the management sisters further emphasized the unity within the college community, acting as a guiding force throughout the challenging period.

The collaboration extended beyond the college's immediate community, as students and teachers from different parts of Kerala joined hands to support Sacred Heart College. This broader participation showcased the interconnectedness of communities and the collective responsibility to aid those in need during a crisis. NSS and NCC students, with their training in social service and discipline, played instrumental roles in organizing relief camps, providing medical assistance, and supporting evacuation efforts. The engagement of volunteer youths and organizations added a layer of external support, bolstering the college's efforts with additional manpower and resources. The collaboration with the police, military, fire-force, and the forest department highlighted a multi-agency approach to disaster response. Their expertise and resources were crucial in ensuring the safety and well-being of the community, emphasizing the significance of a coordinated and integrated response to complex disasters.

Implementation of Ostrom's Theories

The implementation of ElinorOstrom's theories within the context of disaster management, as observed in Sacred Heart College's response to the Kerala Floods of 2018, revealed insightful and effective strategies. Ostrom's principles, primarily focused on common-pool resource management, were found to be highly adaptable to the unique challenges presented by a disaster scenario.

The first principle, that of collective action, manifested in the community's response by establishing rules and norms for resource management during and after the disaster. This collective decision-making process involved not only the internal stakeholders of the college but also external entities, fostering a sense of shared responsibility and collaboration. The community actively engaged in determining how resources, both human and material, would be allocated, ensuring an equitable and efficient distribution.

A polycentric governance approach, central to Ostrom's theories, was evident in the multi-tiered collaboration witnessed during the disaster response. Sacred Heart College's concerted efforts were not confined to its immediate community but extended to encompass external support from various organizations and government entities. The involvement of students and teachers from different parts of Kerala, volunteer organizations, and public service agencies created a decentralized yet coordinated response system. This polycentric structure allowed for flexibility, adaptability, and efficient resource utilization, aligning with Ostrom's emphasis on the benefits of governance structures operating at multiple levels.

Furthermore, the application of Ostrom's theories extended beyond collaborative decision-making to include mechanisms for monitoring and enforcing adherence to disaster management plans. This aspect proved crucial in maintaining order and ensuring that the

agreed-upon rules were followed. The adaptability of Ostrom's principles to disaster scenarios was particularly highlighted in this context, showcasing that her theories on common-pool resource management can be successfully transposed to the complexities of disaster preparedness, response, and recovery.

The external support from agencies such as the police, military, fire-force, and the forest department provided an additional layer of monitoring and enforcement, reinforcing the importance of interagency collaboration. This collective oversight ensured that relief efforts were carried out efficiently, resources were allocated judiciously, and that the community's recovery plan was executed effectively.

Successes and Challenges in Recovery

The triumphant implementation of Sacred Heart College's post-flood recovery plan vividly showcased the unwavering dedication of the community to restore and rebuild the institution. The meticulous reconstruction of essential infrastructure, encompassing physics, chemistry, and computer labs, stood out as a testament to the community's resilience. The successful resolution of accessibility challenges further demonstrated the commitment to inclusive recovery.

A notable aspect of the recovery efforts was the community's embrace of environmental initiatives, including extensive tree planting and garden reconstruction. This holistic approach reflected a commitment to sustainable practices, transforming the campus into a lush and aesthetically enhanced environment.

Despite these successes, the community encountered formidable challenges, prominently the financial strain of approximately 5 Crores INR. Notably, it's essential to underscore that the college didn't receive financial support from government or external agencies for reconstruction; instead, all expenses were borne exclusively by the management. This financial burden emphasized the need for resourceful problem-solving and resilience in navigating challenges.

Remarkably, amidst the challenges, the college managed to construct a new AC hall, showcasing adaptability and a forward-looking approach. Anticipating potential future disasters, strategic decisions were made to rebuild key areas such as the college office, principal's room, chemistry, physics, and computer labs on the first floor. This proactive measure aimed at mitigating potential damages, considering the entire ground floor had been submerged during the 2018 flood.

Implications for Future Disaster Preparedness

The experiences of Sacred Heart College, as delineated in this case study, present

profound implications for shaping future disaster preparedness strategies. Beyond being a reactive response, the engagement of the community emerges as a proactive and integral strategy for building resilience against unforeseen adversities.

The successes and challenges encountered during the recovery process provide a comprehensive roadmap for enhancing future disaster preparedness initiatives. The meticulous reconstruction of vital infrastructure, combined with the resolution of accessibility challenges, underscores the importance of strategic planning and infrastructure resilience. This calls for a proactive approach to construction and development, incorporating measures that mitigate potential risks associated with natural disasters.

Furthermore, the emphasis on environmental initiatives, such as tree planting and garden reconstruction, advocates for sustainability in future preparedness plans. Integrating ecological considerations into disaster management strategies not only contributes to the overall well-being of the community but also enhances the ecological resilience of the region, fostering a more sustainable and adaptive approach to future disasters.

The proactive recognition and incorporation of mental health considerations into Sacred Heart College's disaster recovery efforts serve as a significant model for future disaster preparedness plans. The presence of a licensed clinical psychologist within the college community becomes a crucial asset in addressing the long-term impact of trauma on survivors and underscores the importance of comprehensive and holistic recovery strategies.Mental health often takes a backseat in the immediate aftermath of a disaster, overshadowed by the pressing need to address physical damages and logistical challenges. However, Sacred Heart College's approach highlights the recognition that psychological well-being is intrinsically linked to the overall recovery and resilience of a community.

The financial strain faced by the college, estimated at 5 Crores INR, highlights the need for robust financial planning in disaster preparedness. Future strategies should include mechanisms for securing financial resources, be it through insurance, government partnerships, or community fundraising efforts. A financially resilient approach ensures that the institution is well-equipped to navigate the aftermath of a disaster without compromising its recovery and rebuilding efforts.

Conclusion

In conclusion, Sacred Heart College's exemplary response to the Kerala Floods of 2018 illuminates a paradigm for community resilience in disaster management. The integration of ElinorOstrom's theories, the institution's commitment to rebuilding, and the recognition of mental health as a pivotal aspect of recovery collectively showcase a holistic approach. The

college's proactive engagement, involving diverse stakeholders and its dedicated internal and external community, presents a blueprint for future disaster preparedness. By addressing infrastructure, sustainability, mental health, and financial resilience, Sacred Heart College not only restored its physical foundations but also fortified its community spirit. This case study underscores the transformative potential of collective action and adaptability, reinforcing the notion that community engagement is not merely a reactive response but a proactive strategy for building resilient societies in the face of adversity.

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PROFILE MANAGEMENT SYSTEMS FOR RESEARCHERS AND ACADEMICIANS

PROFILE MANAGEMENT SYSTEMS

For Researchers and Academicians

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10

LinkedIn As An Academic Profile Management Tool

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INTRODUCTION

The ultimate aim of a researcher is to make his research findings reach maximum people and get recognized among a larger community. Earlier, academicians had limited options to share their publications, research findings, achievements etc. and could only network and collaborate with few people from nearby areas or institutions. The introduction of internet, social media, web 2.0 tools etc. has been a boon for the academic world as the professionals could use them to create their online identity and reach more people. Profile Management system is a web-based tool used by researchers, faculty members, scientists etc. to organize research activities carried out and showcase skills, experience, expertise, projects, publications, etc. It acts as a knowledge management as well as discovery tool and enables people to create their own profile and even network with people across the world (Jeyapragash et al., 2017). It also allows people to follow the works of their

contemporaries, collaborate with them and remain updated about the developments in their research area or discipline. Nowadays having a professional existence online is a must for everyone as it has various benefits both in online and offline world. There are several profile management systems like Vidwan, Orcid, ResearchGate etc. This paper focuses on using LinkedIn as a profile management system, explains various steps in creating a LinkedIn profile and gives tips for effectively using it for professional advancements.

LINKEDIN

LinkedIn is the world's largest professional network with nearly 800 million members in more than 200 countries and territories worldwide. LinkedIn was officially launched in 2003 with a mission to connect the world's professionals to make them more productive and successful (About LinkedIn, n.d.). It has job postings, online learning opportunities, and specific tools like Sales Navigator to help with professional development and networking (Alstyne, 2020). LinkedIn is mainly used by companies, business professionals, investors, job seekers, entrepreneurs, working professionals etc. for recruiting, networking and career development. It has both individual and company profiles with various features. Profiles can be created freely by anyone with an e mail id. LinkedIn also provides premium account with payment for availing additional features like profile boosting, amplifying the content, providing more visibility etc.

LINKEDIN FOR ACADEMIA

Although primarily known for managing job profiles and career related posts, LinkedIn can also be used for academic profile management and is of great use for academicians and researchers. Having a LinkedIn profile which is search engine optimised allows people to find us via a name search on Google and usually provides a link to our LinkedIn account as it is well-indexed by Google. LinkedIn

creates an online framework for documenting our career and enterprise life (Ellson, n.d). LinkedIn is a good platform to make new connections, maintain it and keep in touch with colleagues and alumni. It allows users to create their own events, add their connections, follow several organizations, people, pages etc. and get to know about various events happening in their academic circle. Apart from this, LinkedIn provides opportunity for users to join various groups of their interests, share their knowledge and expertise and even get mentored by experts.

LinkedIn is considered to be one of the best publishing platforms in the world as we can publish whatever we write, with or without references, at any time, free of cost and spread our work more broadly across the internet. The publications can also be listed in the publications section or as a post for others to see. LinkedIn has a unique feature which allows people to both give and receive endorsements and recommendations for their skills and work and it adds to their credibility. LinkedIn profile provides details of our educational qualifications, experience, achievements etc. which can be shared with others as a short biography when being asked to be a speaker, presenter or media commentator. The contact information in LinkedIn gives option to add proof of other virtual presence such as *OrcidID*, website link etc. so that people can track our work and contact us if needed (Ellson, 2020).

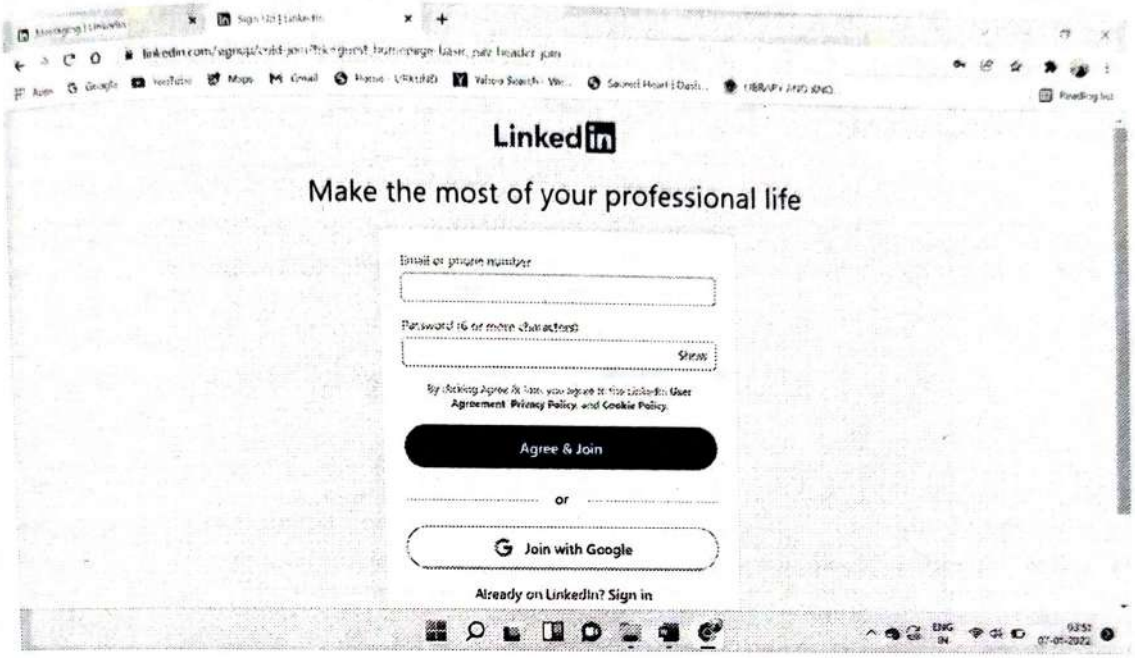
HOW TO CREATE A LINKEDIN PROFILE

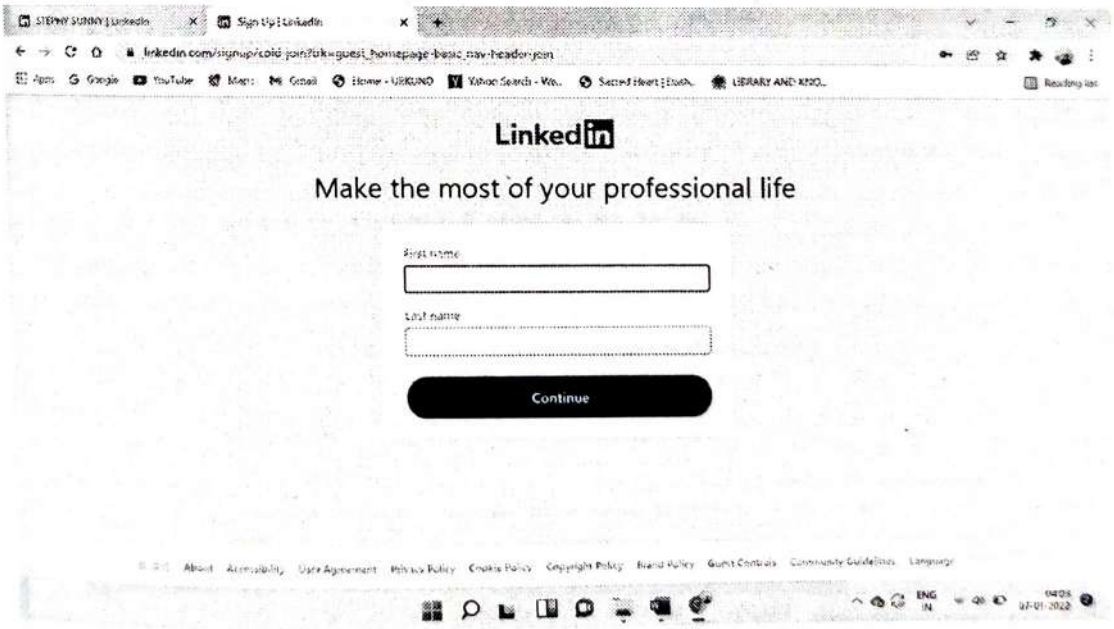
It is very simple to create a profile in LinkedIn. The steps to be followed and some suggestions for creating a good profile are given below.

Step 1. Sign Up Process

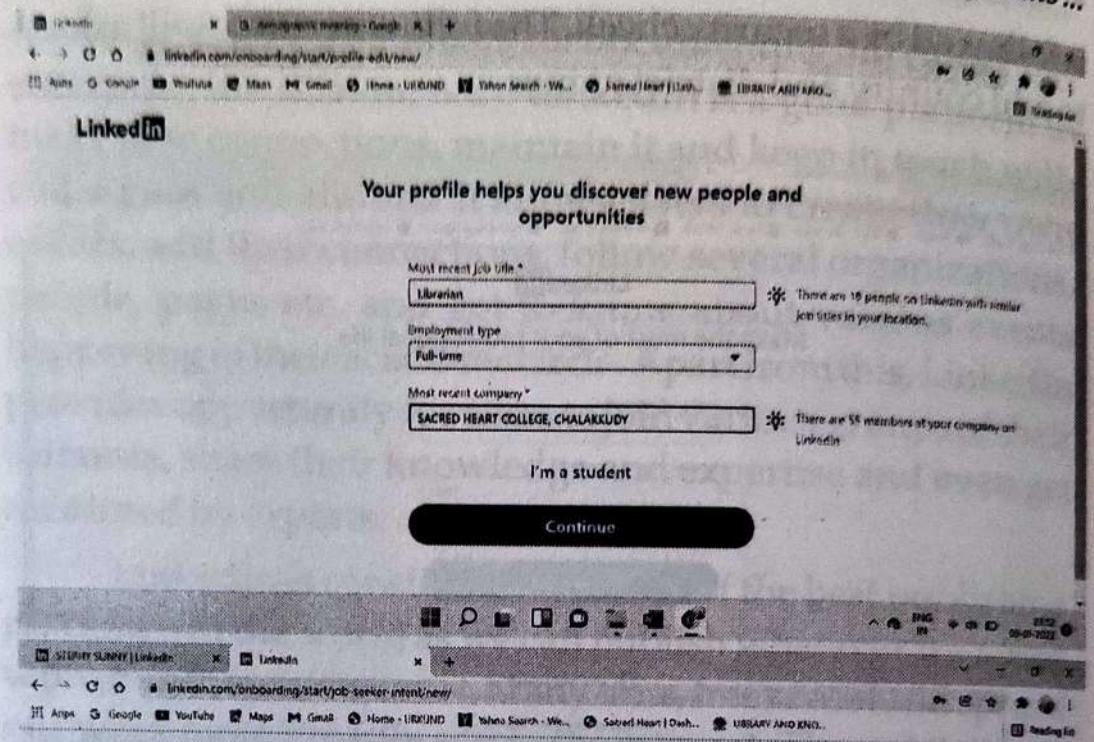
The first step for creating a LinkedIn account is to go to linkedin.com and sign up with our email id and create a password. Then we have to add our first and last name which

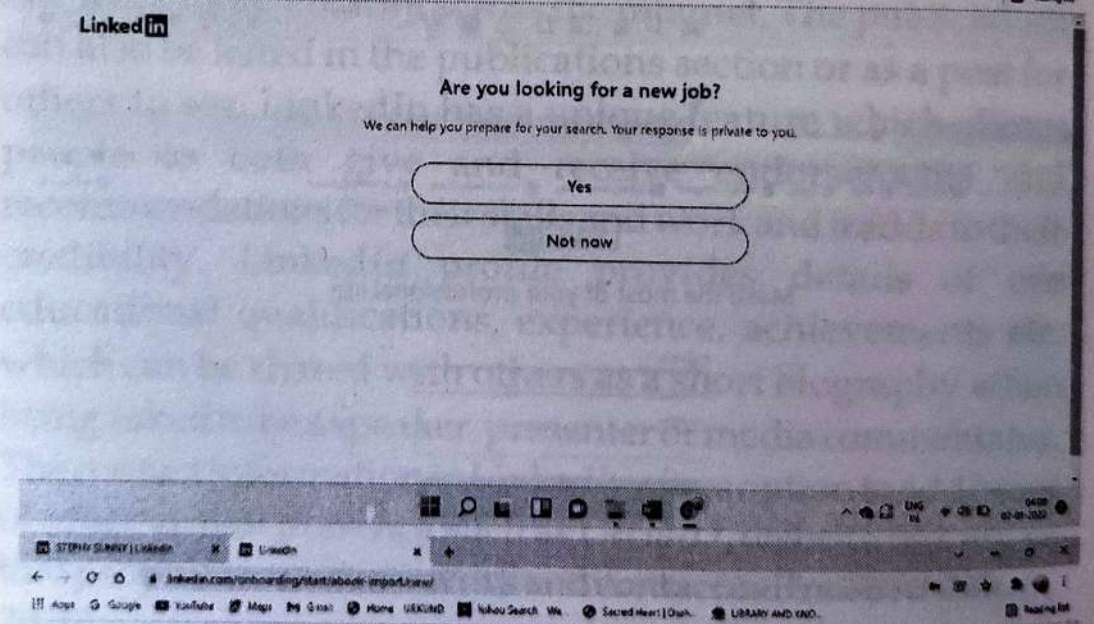
is followed by a security check. The following page will ask us to add country and district names.

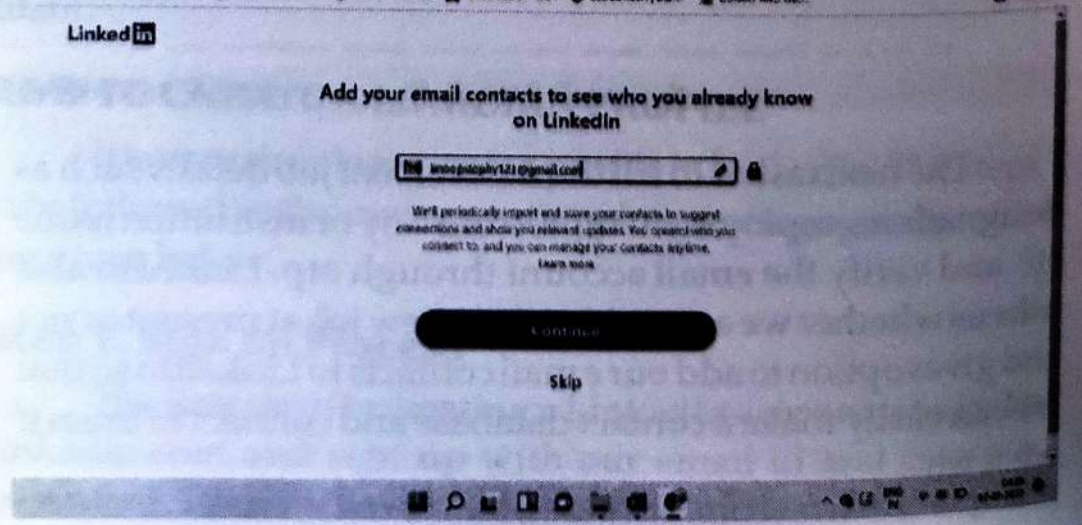




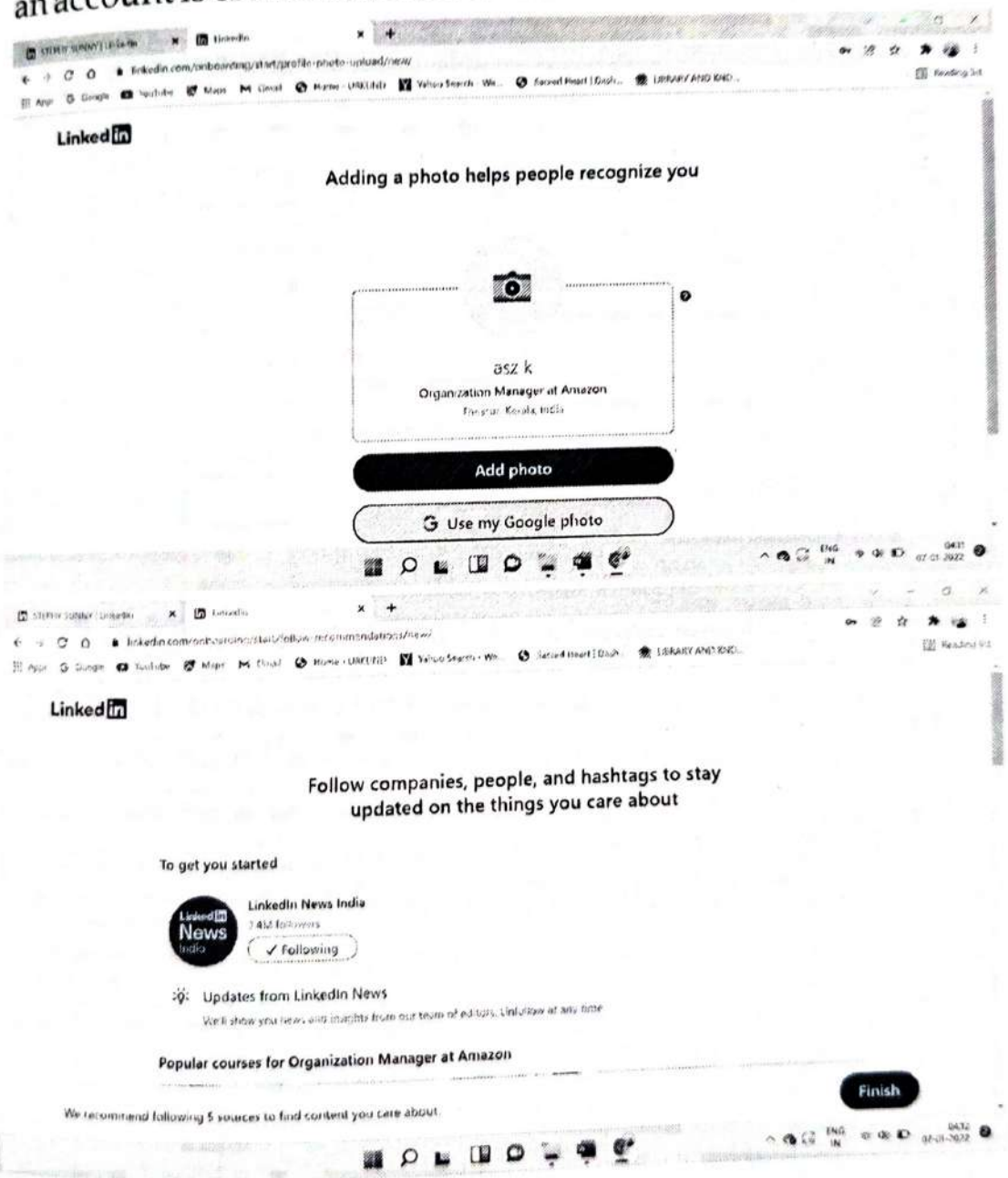
The next task is to fill the most recent job details such as designation, employment type, company or institution name etc. and verify the email account through otp. LinkedIn also asks us whether we are seeking for a new job at present or not and gives option to add our e mail contacts to LinkedIn so that we can easily make a contact database and connect to them if we wish.


LinkedIn
Your profile helps you discover new people and opportunities
Most recent job title *
Librarian
There are 19 people on LinkedIn with similar job titles in your location.
Employment type
Full-time
Most recent company *
SACRED HEART COLLEGE, CHALAKKUDY
There are 58 members at your company on LinkedIn
I'm a student
Continue


LinkedIn
Are you looking for a new job?
We can help you prepare for your search. Your response is private to you.
Yes
Not now


LinkedIn
Add your email contacts to see who you already know on LinkedIn
Continue
Skip

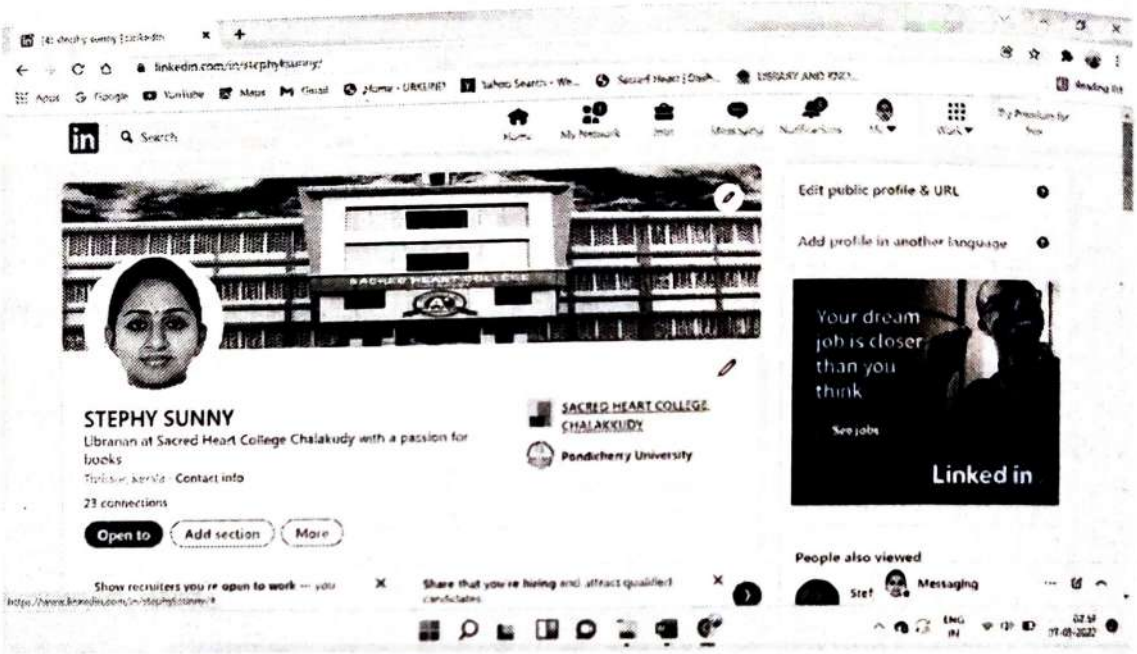
Next step is to add a profile picture to our account for easier recognition. LinkedIn also suggests us to follow pages, hashtags etc. of our interest so that we can find related information in our feed and remain updated about these topics. The sign up process is finished by giving these basic details and an account is created in LinkedIn.

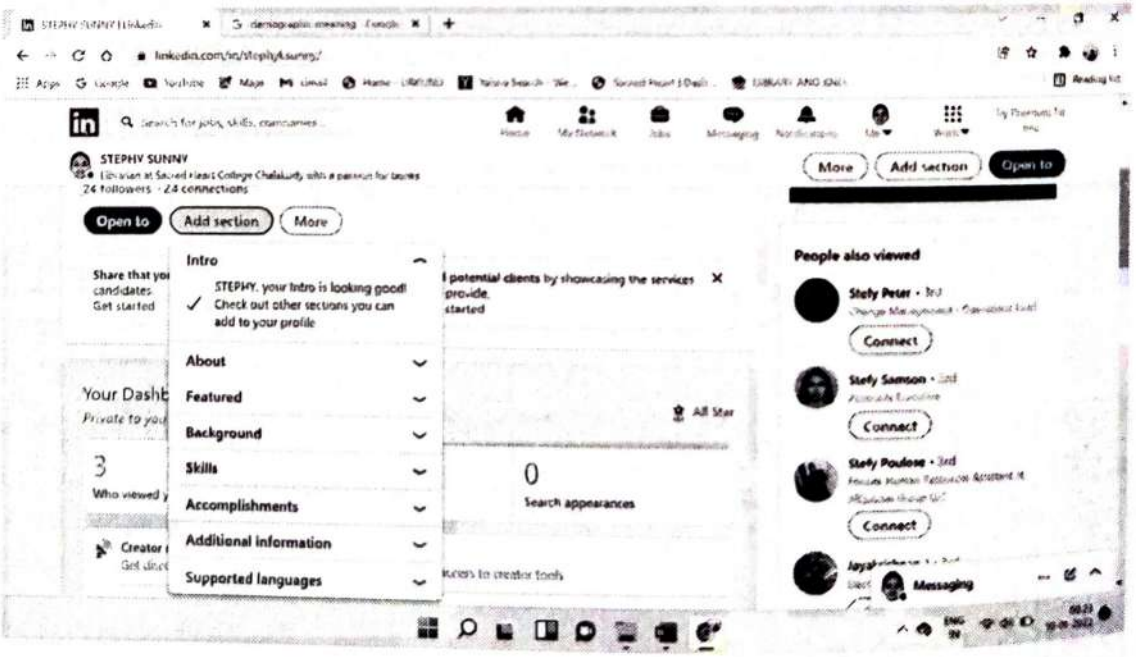


Step 2. Profile Updation

Once the account is created, we need to fill several details to make our profile complete. A complete and updated profile gets more reach and visibility. When the profile is opened, there is an option to upload a background cover image along

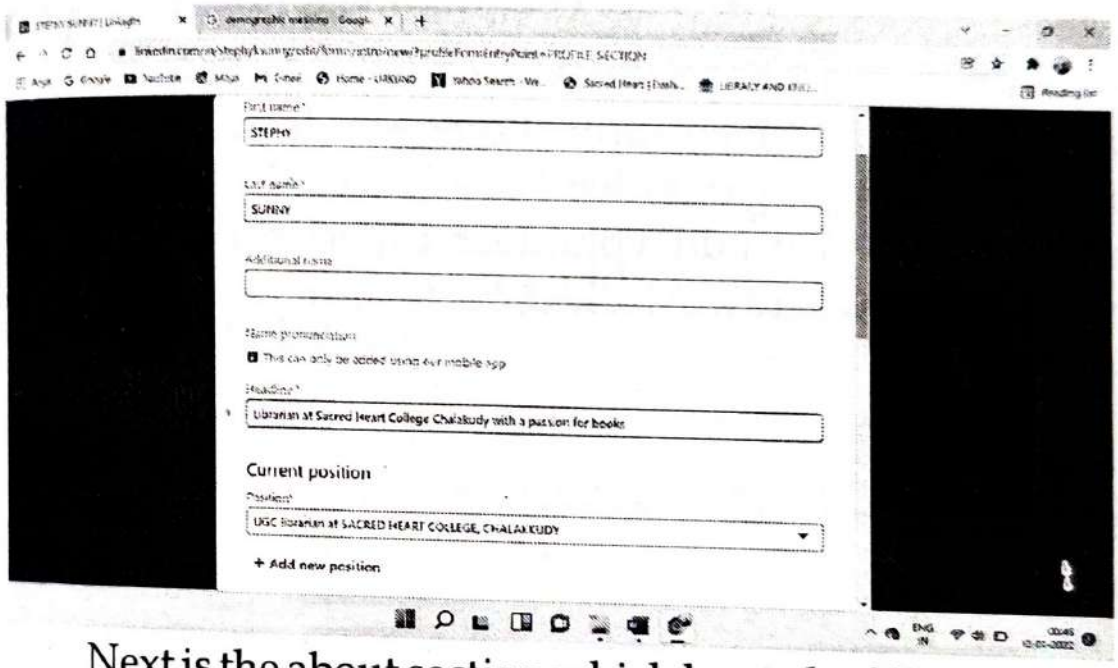
with the profile photo which was already added. It is better to upload a close up picture in formal wear as profile photo for a professional feel. Also, a good cover image can make our profile look much better and attract others to it. After uploading the photo, we have to fill in different sections such as intro, about, background, skills etc.



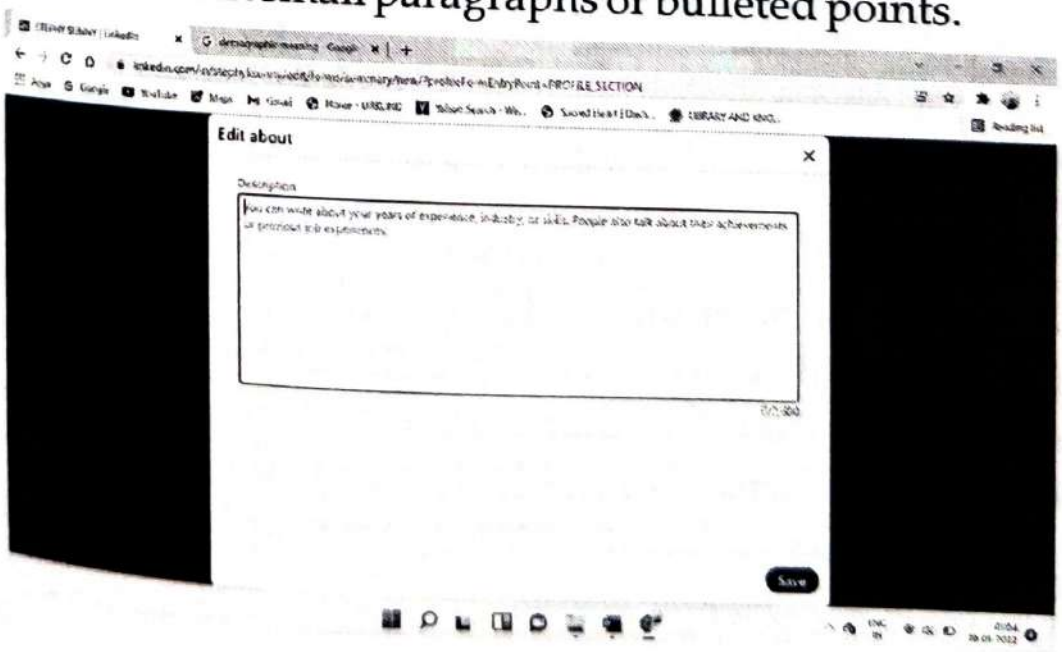


The intro section contains details which are seen at first when someone views our account. It contains details like name, headline, current position, demographic information, location, contact details etc. Headline is like a tagline which describes our work and draws profile visitors' attention.

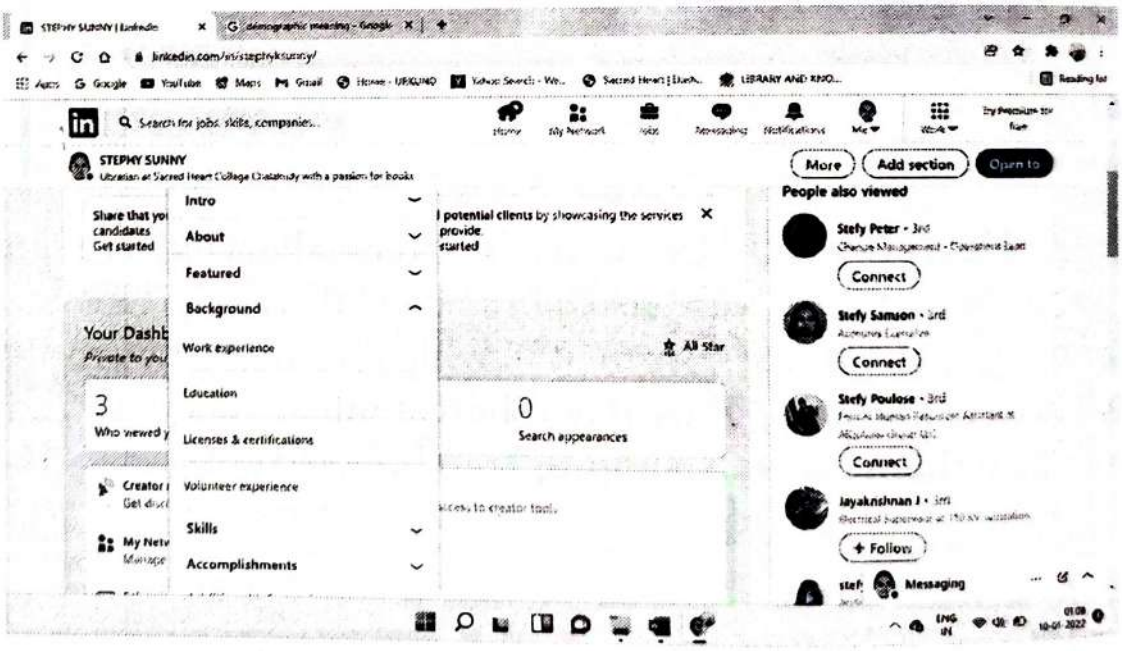
Instead of using a generic headline it is better to be more specific and descriptive as it is meant to stimulate interest rather than just inform about our current job title (Sivula, 2016). LinkedIn gives an option to add contact details such as e mail, phone number, address, website link etc. so that people can get to know more about us if they wish. Also, we can make our profile picture, contact details etc. visible to public or only to connections.



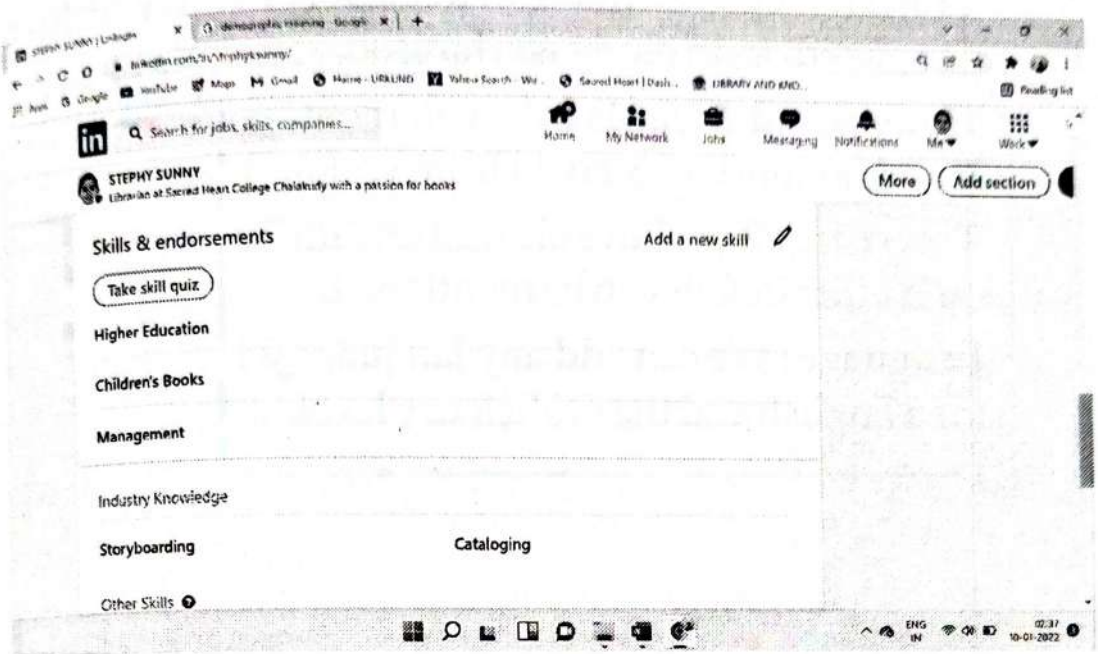
Next is the about section which has to be filled. We can write about our education, experience, skills, achievements, awards or any other information which we want the profile visitors to know about us. It is a short summary about us and can be written in small paragraphs or bulleted points.



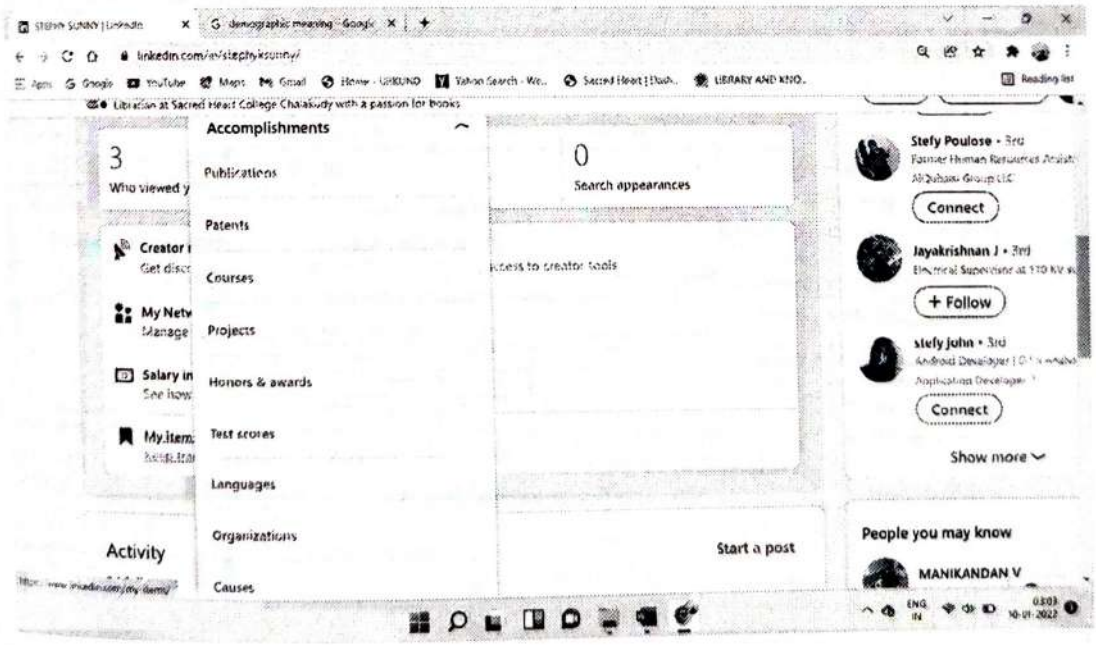
Next is the background section which includes details like work experience, education, licenses and certifications, volunteer experience etc. In the work experience we can write about our current job as well as previous jobs, companies or institutions worked, type of work, start and end date etc. Education details include name of institution, degree, field of study, grade, start and end year, activities and societies etc. It is better to give these in reverse chronological order so that latest one comes at the top. Along with this there is an option to add media such as photos, videos, links etc. LinkedIn gives a provision to add details of our licenses and certifications such as name, issuing organization, issue date, credential details etc. and we can also add volunteer experience such as the organization where we worked, our role, the cause we worked for etc.



Next section is skills and endorsements where we can list the skills we possess and select top three skills which will be featured. People who visit our profile can see our skills and endorse us if they feel that we have those skills. Getting endorsements from others add to the credibility of our profile. We can also give endorsements to other people.



Next is the section to add our accomplishments. It includes the following:



Publications: We can add the details of our publications such as title, publisher, date, url etc.

Patent: We can add the title, application number, issue date, status, url etc. of the patents we have received.

Course: We can mention any specific course we have completed by giving details like name, number etc.

Project: We can mention the details of projects which we have completed or currently working on.

Honors and Awards : We can mention the details of awards and honors we received from various places.

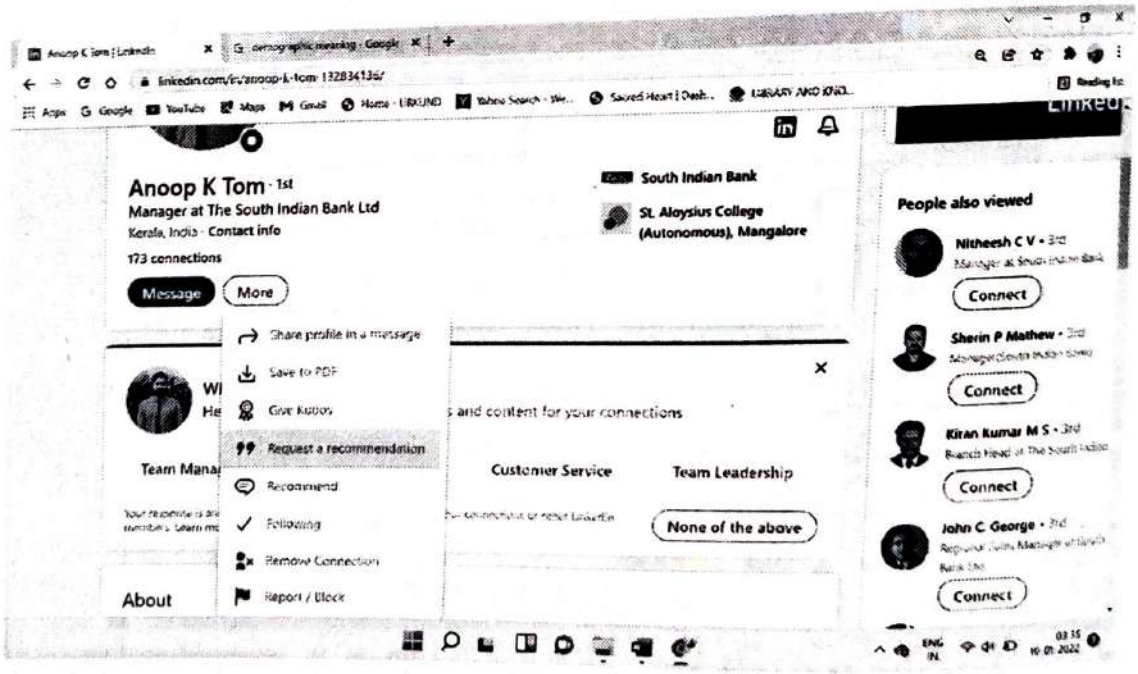
Test score : If we have cleared any important tests, the scores and other details can be mentioned.

Language : We can add any language which we know other than English and the proficiency level.

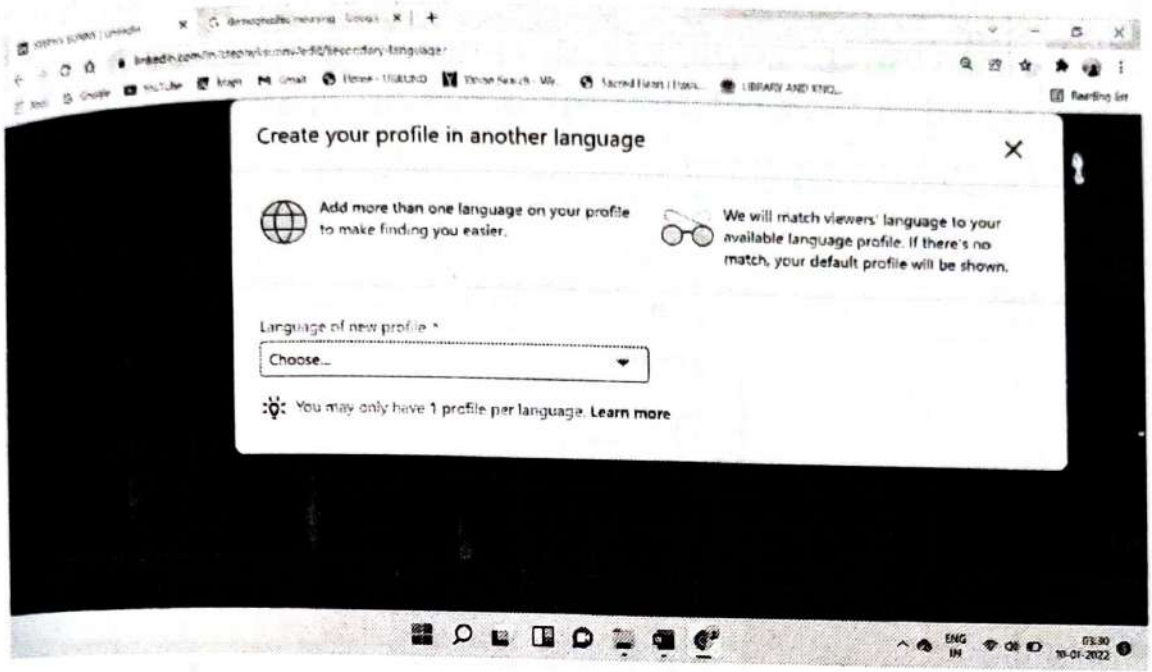
Organization : We can mention the details of the organizations which we are a member of, our position etc.

Causes : LinkedIn allows us to select some causes which we care about from the list.

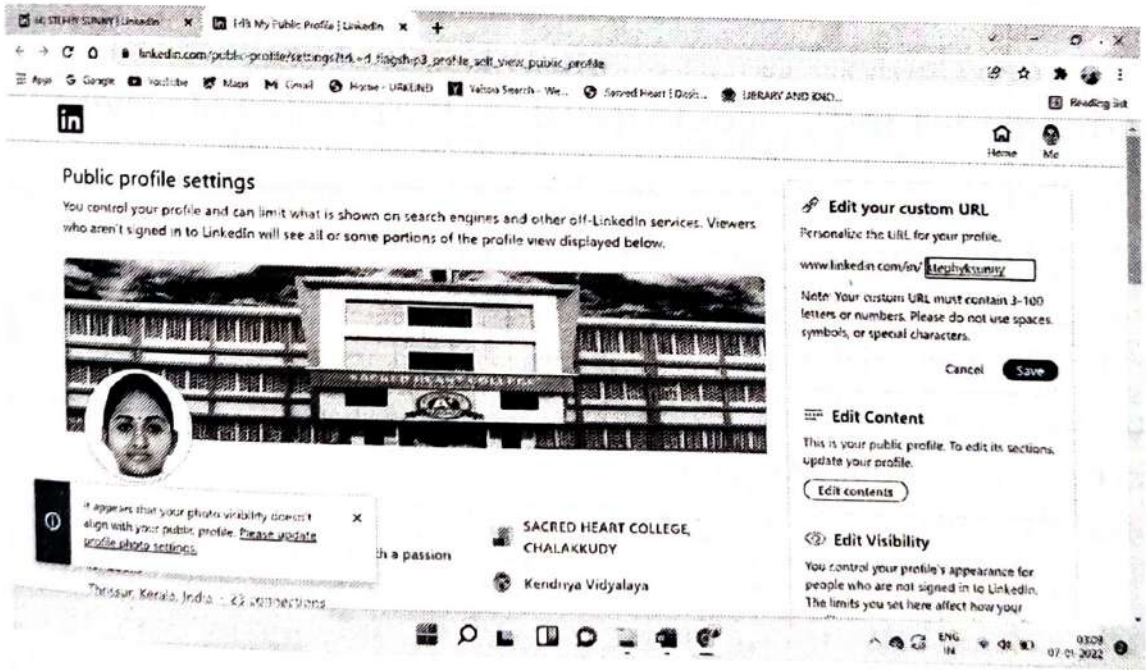
The next section is for adding references. We can visit the account of people whom we know and request for a recommendation so that our profile gets some credibility.



The last section gives us option to create our profile in any other language to make it easier for others to find us in LinkedIn.



LinkedIn allows us to edit our custom url so that our profile can be optimized and easily be found through a google search.



Step 3. LinkedIn Features

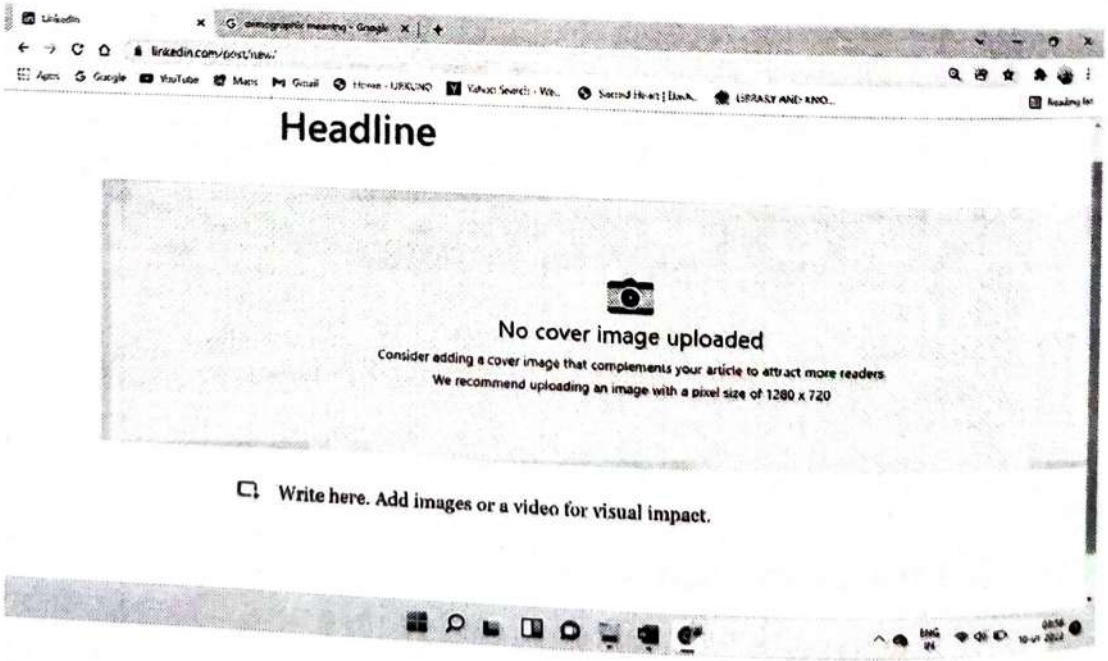
LinkedIn has several features for its users. These can be of great benefit for academicians if used effectively. Some features are:

Posts : The users can post anything they like such as

research findings, publications, achievements etc. so that it appears in other people's feed. There is also provision to add photos and videos, celebrate an occasion, create poll or event, offer help, find an expert etc.



Article: We can publish any article in LinkedIn and even add images and videos to it and see the number of views.



LinkedIn allows us to share our profile, save to pdf and even helps in building our resume with the details given.



Apart from this LinkedIn can be used to follow people and pages, message others, join groups and communicate with members, follow hashtags, subscribe to newsletter, search for jobs etc.

CONCLUSION

Managing profiles in various profile management systems is of great use for academicians who intend to build their online reputation and get global recognition for their works and achievements. The scope of LinkedIn as an academic profile management tool is much bigger and yet to be explored fully by academicians. LinkedIn is a powerful platform for scholarly communication where profiles can be created easily, details can be updated almost instantly and achievements can be highlighted. Even though many academic professionals have profiles in LinkedIn, many are incomplete, not updated regularly and rarely used. A well updated LinkedIn profile can act as digital curriculum vitae and can fetch better jobs for professionals. It is time that the academic world understands the benefits of LinkedIn and uses it more actively for professional development, building network and increasing their online digital footprint.

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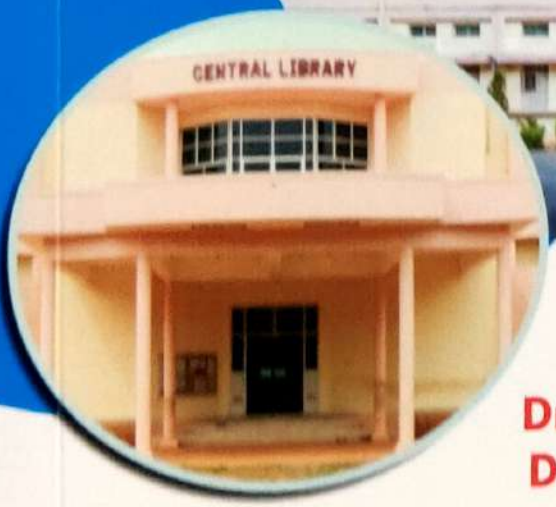
REVITALIZING LIBRARIES IN THE GOOGLE GENERATION







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AI-Powered Libraries: Transforming the Library Experience in the Digital Age

[1]Stephy K Sunny and [2]Ramasamy, K. (Dr.)

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Abstract

Today, artificial intelligence (AI) is omnipresent in the lives of digital natives and Generation Z. Like several other fields, integration of AI technologies is revolutionizing library operations and services. There are diverse applications of AI in libraries, from automating routine tasks to enhancing user experiences and services. AI offers libraries a host of advantages, yet its application also presents several accompanying challenges. Also, this article discusses some strategies to embrace the AI revolution so that libraries can remain relevant and thrive in the era of AI.

Keywords: *Artificial Intelligence, AI, Smart Libraries, Innovative Library Service, Modern Libraries*

Introduction

Artificial intelligence and robotics have become the buzzwords of recent times and are creating huge impact in various fields. The digital natives and gen Z are exceptionally adept at using various AI technologies such as virtual assistants, AI-driven educational platforms etc. in their daily lives. Thus, the libraries have to revamp to cater to these modern users who are aware of the convenience that AI brings in their lives. It is one of the most transformative technologies and has the potential to revolutionize the efficiency of library operations and enhance user experiences. Libraries all over the world are getting smarter by incorporating AI technology in library services and routine works. These tools in libraries go beyond performing traditional tasks like classification, cataloging and circulation but they extend to deliver personalized services to users, showcasing the diverse applications of AI within library settings. Integrating AI in libraries can elevate the status of automated libraries to the next level. It offers numerous advantages, yet they also pose several challenges that must be addressed to ensure their seamless operation. As AI continues to evolve, libraries and librarians must adapt and innovate to ensure they remain valuable and relevant in the google era.

Applications of AI in Libraries: Library automation has become a thing of the past and the new focus is on using artificial intelligence technology to carry out various library operations to effectively and efficiently serve the modern clientele. According to **Omame and Alex-Nmecha (2020)** library automation streamlines routine tasks, but AI transcends mere automation by developing intelligent systems that emulate librarian-like behaviors, demanding minimal human intervention.

Employing diverse AI technologies such as Natural Language Processing (NLP), Expert Systems (ES), machine learning, pattern recognition, optical character recognition, robotics etc., libraries can undergo a profound transformation, enabling the introduction of innovative services for users.

Classification, Cataloguing and Indexing: These are the traditional jobs done by librarians which require a deep understanding of various classification systems and cataloguing rules as well as users' searching patterns. AI Expert systems, when programmed effectively, can execute these tasks more efficiently and rapidly, enabling librarians to redirect their efforts towards more productive endeavours such as designing innovative services for users.

Collection Development: AI tools play a pivotal role in enhancing collection development strategies. They excel in generating insightful reports, drawing from users' circulation history to identify popular collection types and subjects, analyzing their search history to pinpoint trending topics, and efficiently compiling user recommendations to guide collection building. Additionally, AI contributes to efficient serial management by monitoring crucial aspects such as timely receipt of periodicals, periodical renewals and related matters, automating the process of sending notifications to vendors and publishers when necessary. Furthermore, it offers early alerts to library staff regarding problematic vendors, preventing further subscriptions from unreliable sources.

Circulation, Information Retrieval and Security Management: Activities like issue, return, renewal, information retrieval etc. are the main operations of any library. Many libraries already have RFID technology, self check in and checkout kiosks etc. for the users to do these operations without the assistance of library staff. AI integration can further create better experience at circulation. For example, BookBot is a robotic book delivery system of the Hunter Library of North Carolina State University and uses high-density automated shelf technology to store up to 2 million items and deliver any item within five minutes of clicking on the online catalog **(Yu et al., 2019)**. Security management is a critically important area that demands vigilant attention due to the presence of valuable assets within libraries. Artificial intelligence technologies such as face recognition, fingerprint recognition etc. can further improve the library's security management.These technologies can eliminate the need for patrons' id cards, offering both convenience in circulation processes and an enhanced layer of security.

Reference Service: Various library users arrive with diverse information requirements, typically addressed by reference librarians. AI-driven Expert Systems prove to be invaluable aids for librarians in handling diverse and complex reference inquiries. Through the use of natural language processing, semantic analysis, data mining and machine learning, these systems elevate the quality of responses. Users can even directly consult the expert system and get better answers to their queries as the knowledge base of the Expert System is created and updated from the submissions of a team of best experts in the field **("What are the benefits", 2023; Omame & Alex-Nmecha, 2020).**

Personalised User Services: Chiancone (2023) suggests that AI can enhance the users' library experience through the use of chatbots which can provide quick responses to a wide range of queries, analyze user behavior and preferences and recommend resources, give alerts on due dates, new arrivals, new services etc. AI technologies like natural language processing, image recognition, speech recognition, optical character recognition etc. can provide various personalised services to the users such as translating documents into various languages, digitising print books, transcribing audio books for users with hearing impairments, converting visual resources into formats accessible to visually impaired users etc.

Library Administration: AI can provide valuable insights through predictive analysis and can help libraries make more informed decisions about resource allocation, opening hours, and other operational matters. By analyzing user behavior and trends, AI can generate various reports such as the time of peak visitors, the user category who are frequent library users etc. and predict future needs and preferences. This can help libraries plan their services and resources more effectively. For instance, AI can anticipate the periods of highest library utilization, allowing libraries to make strategic staff assignments to efficiently meet peak demand **(Chiancone, 2023).**

Benefits of AI Application: The implementation of artificial intelligence systems in libraries offer numerous advantages for both library staff and users. AI systems are inherently less error-prone compared to humans and can work round the clock continuously without fatigue. Furthermore, they significantly enhance the speed, efficiency, and effectiveness of various library operations **(Omame& Alex-Nmecha, 2020).** AI integration within libraries not only automates administrative tasks but also empowers data-driven decision-making and elevates the user experience through personalized services **(Chiancone, 2023).** Also it optimizes the time of library staff by swiftly handling routine, less productive tasks, allowing them to redirect their focus towards more valuable and productive work.

Challenges of AI Application: In addition to its advantages, AI integration presents a set of challenges that require careful consideration and effective solutions. The primary challenge that libraries face when implementing AI is the technological constraints as many libraries lack the necessary resources and funds to implement and maintain AI technologies.

Furthermore, the ever-evolving nature of technology imposes the challenge of frequent system updates, adding complexity to the ongoing maintenance of these systems. AI systems can frequently give rise to privacy and ethical concerns, particularly when handling sensitive user information, such as reading habits. Moreover, these systems can behave in unpredictable ways if they are programmed with biased or erroneous data **(Chiancone, 2023).**

Omame and Alex-Nmecha (2020) opine that the implementation of Artificial Intelligence systems in libraries raises concerns about potential job displacement or reduction among library professionals, potentially contributing to higher unemployment rates in society. Additionally, these systems lack the human touch that many users prefer in their interactions.

They do not possess a comprehensive foundation of human knowledge and have limited natural language capabilities, which significantly restrict the range of functions they can perform. The creation of customised artificial intelligence systems is very complicated which require great expertise and involve huge expenses. Also, library professionals must possess the necessary technical skills to proficiently manage these systems, and users should have a basic level of knowledge to effectively utilize them.

Strategies for Embracing AI Revolution: In order to stay pertinent and continue delivering valuable services in the digital age, librarians and libraries should take proactive measures to prepare for the impending AI revolution. As many visionaries' advocate, AI's role is not to eliminate jobs but to enhance the capabilities of those who acquire AI knowledge. So, library staff should undergo continuous training and stay updated on AI technologies to effectively integrate AI tools into library operations. Libraries should adopt a user-centric approach, striving to comprehend the distinct needs and preferences of their patrons.

This understanding is crucial as it enables them to collaborate effectively with AI experts and data scientists to design and deploy AI solutions that are custom made for their institution and the specific requirements of their user community, all while carefully budgeting for the implementation of these solutions. The library staff must also take initiative to educate library users about AI services and tools available to them through workshops and training sessions to ensure maximum utilization. Also, it is imperative to establish well-defined policies and guidelines that ensure the responsible and ethical utilization of AI.

Conclusion

Libraries have traditionally stood as strongholds of knowledge and information, acting as central hubs for both learning and research. Today, smart libraries that harness the power of AI offer users an experience that truly transforms their interaction with information and resources. Many library operations have already been ceded to AI tools, and in future, they are likely to become an integral part of majority of the library operations. This revolution is not without its challenges but with careful planning, ethical considerations and a commitment to user-centricity, AI-powered libraries can continue to evolve as vital hubs of knowledge, serving diverse communities in an ever-evolving digital age.

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ABOUT THE BOOK

"Journey to Sustainability : A Roadmap for Green Libraries" is an inspiring guidebook that navigates the intersection of libraries and environmental stewardship. Authored Dr. S. Dhanavandan this book serves as a comprehensive roadmap for libraries aspiring to embrace sustainability principles and practices. "Journey to Sustainability" is a book that provides strategies for libraries to reduce their environmental footprint, promote eco-friendly practices, and raise environmental awareness. It offers practical advice, case studies, and examples of implementing green initiatives, focusing on energy-efficient building designs, waste reduction, green literacy, and environmental justice. "Journey to Sustainability" advocate for libraries to adopt a holistic approach to sustainability, considering environmental impact, social equity, and economic viability. It emphasizes collaboration, community engagement, and integrating green initiatives into library programming to promote a sustainable culture. Overall, "Journey to Sustainability : A Roadmap for Green Libraries" is a timely and empowering resource for libraries seeking to make a meaningful impact on both their communities and the planet. By following the roadmap outlined in this book, libraries can not only reduce their environmental footprint but also inspire others to join them on the journey towards a more sustainable future.

ABOUT THE AUTHOR



Dr. S. Dhanavandan, is working as Deputy Librarian at Central University of Tamil Nadu, Thiruvarur-610005 from 2017 onwards, He is having more than twenty fie years in the LIS profession. Under his guidance, six Ph.D. degrees were awarded. In addition to more than 175 papers presented and published in national and international conferences, he has over 145 publications published in national and international journals. In the field of library and information science, he has written or edited over 44 books and contributed 70 chapters to edited volumes. He has participated in over 100 training sessions, webinars, and seminars/workshops. He has won the Cash Award (more than One Lakh) three times from Konkuk University in South Korea for the best writings. In addition to organizing seventeen workshops and conferences, he chaired several of them and served as a resource person. Numerous honors have been bestowed upon him, including recognition as one of India's Top 50 Eminent Librarians, the President of Knolwedge Content Development & Technology's Outstanding Article Award, a Certificate of Appreciation from Turnitin, a National Special Appreciation and Meritorious Service Award from SALIS, Tamil Nadu, and many more.

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A Roadmap for Green Library
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Green Libraries in the Digital Age: Navigating Sustainability through digital transformations

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Introduction

Technological advancements have undoubtedly brought numerous benefits to the world, enhancing the quality of life and simplifying daily tasks. However, this progress has also taken a toll on the environment. In response to the global environmental challenges, the United Nations has established Sustainable Development Goals, aiming to forge a more sustainable future. While libraries may not be significant contributors to environmental harm, they do consume considerable energy in providing their services, thus contributing to the issue. The concept of green libraries has emerged as a response, focusing on eco-friendly practices such as sustainable architecture, efficient waste management, and resource conservation. Recent times have witnessed an exploration of digital transformations within green libraries, encompassing areas like green IT, digitization of library activities, eco-friendly data management and preservation and raising awareness about sustainable development. Librarians, as custodians of knowledge, can play a pivotal role in steering libraries towards greener practices. By embracing sustainability, libraries have the potential to serve as exemplary models for other sectors, contributing to the creation of a better future for generations to come.

Green Library

The notion of a green library has gained prominence in recent times, propelled by a growing awareness of environmental pollution

and the imperative to curtail it for a sustainable future. According to the Online Dictionary of Library and Information Science (ODLIS), a green or sustainable library is defined as one designed to minimize its negative impact on the natural environment while maximizing indoor environmental quality through careful site selection, use of natural construction materials, and the incorporation of biodegradable products. This approach also involves resource conservation, encompassing water, energy, and paper, as well as responsible waste disposal and recycling (Gupta, 2020). Going beyond physical considerations, a green and sustainable library embraces environmental, economic, and social sustainability, encompassing green buildings and equipment, green office principles, a sustainable economy, library services, environmental management, and a commitment to overarching environmental goals and programs (What is a Green Library, n.d.).

Various national and international standards and ratings exist for green libraries, with LEED (Leadership in Energy and Environment Design) being the most widely utilized system. LEED provides specific protocols and standards for assessing green buildings. Other global green-rating systems include NABERS (National Australian Built Environment Rating System) in Australia, BREEAM (Building Research Establishment Environmental Assessment Method) in the UK, China Green Building Label, and the European Union's Energy Performance of Buildings Directive (EPBD), among others. Noteworthy green libraries in India, such as the Asia's first LEED Gold rated library building, the Anna Centenary Library, as well as the Karnataka University Library, Dharwad, Mumbai University Library, and Madras University Library, exemplify the implementation of sustainable practices (Gupta, 2020). Recognizing and promoting these efforts, organizations like IFLA (International Federation of Library Associations and Institutions) have introduced awards such as the Best Green Award to encourage libraries worldwide to embrace eco-friendly practices and contribute to the broader concept of sustainable development.

Digital Transformations for a Greener Library

In the pursuit of greener libraries, the primary emphasis often revolves around eco-friendly architecture, efficient waste management, and energy conservation. However, a multitude of digital transformations holds the potential to significantly enhance the sustainability of libraries. This discussion delves into several key aspects:

Green Information Technology (Green IT)

As libraries increasingly integrate digital collections and are

becoming automated, information technology becomes integral to their operations. Decisions regarding IT infrastructure can profoundly impact the library's carbon footprint, operational costs, and overall social responsibility. To measure and monitor energy efficiency, greenhouse gas emissions and waste management, libraries can employ tools and frameworks such as the Green Grid, the IT Infrastructure Library (ITIL), or the ISO 14000 series. Strategies to reduce energy consumption include optimizing hardware, software, and network configurations, leveraging virtualization or cloud computing and implementing smart metering and power management systems. Furthermore, the adoption of renewable energy sources or the purchase of green energy certificates can contribute to lowering the library's carbon footprint and supporting clean energy production. Implementing circular economy principles, such as designing for durability, modularity, and recyclability, reusing or refurbishing old equipment, and responsibly recycling electronic waste, can help minimize waste generation and maximize recovery. Libraries can also promote energy efficiency by using electronic equipment with the latest star ratings, recycling computers and procuring recycled ink cartridges and supplies, aligning with green principles (How do you incorporate, 2024; Prasanth & Vasudevan, 2019).

Eco friendly digital practices in library

Libraries can digitise many of its routine activities to achieve sustainability. Circulation of books can be completely done through software, eliminating the need for reader's tickets and traditional issue registers. Furthermore, accepting membership applications, suggestions, and complaints digitally via email not only enhances efficiency but significantly reduces paper consumption. Procuring more e-books and e-journals over printed materials, encouraging the scanning of documents as an alternative to photocopying and issuing electronic receipts further contributes to paper conservation. In addition to these practices, libraries can leverage web2.0 technologies to expand their online services. Offering a broader range of services digitally, such as virtual consultations, online library orientation programmes, online events, and collaborative platforms, enhances accessibility while minimizing the need for physical resources.

Sustainable data management and preservation

Efficient data management and preservation are critical aspects of library operations, given the substantial volume of data related to collections and patrons which the libraries deal with. The advent of new technologies enables libraries to store data in digital devices and

library software, thereby saving valuable physical space and resources. The incorporation of cloud-based storage solutions further enhances data management efficiency while diminishing the reliance on traditional physical storage infrastructure. In the realm of preservation, libraries can adopt sustainable practices by employing natural products for the conservation of old and valuable collections. Moreover, the digitization of physical documents and their storage in electronic repositories not only ensures their preservation but also enhances accessibility, contributing to a more sustainable approach. To further bolster sustainable data management, libraries can implement data deduplication and compression techniques, minimizing unnecessary duplication and optimizing storage space. Regularly updating and maintaining digital repositories ensures the longevity of the stored information, preventing data loss and degradation over time.

User Education through green libraries

The responsibility for advancing the sustainability agenda within green libraries extends beyond librarians and institutions to the users who hold the key to propelling this movement forward. Raising awareness among users becomes paramount for fostering a sustainable future. Librarians can effectively disseminate this awareness through avenues such as seminars, social media and orientation classes, empowering users to comprehend the benefits of green library initiatives. By cultivating a socially committed user community, green libraries can not only contribute to environmental protection through their operational practices but also nurture a responsible user base. Librarians play a pivotal role as sustainability role models, leading by example to cultivate a culture of responsible environmental practices within the library and inspiring positive change. They further champion green libraries by promoting green literacy, guiding proper collection development, fostering behavioral change, and educating individuals on integrating green practices into their lives. Various education, awareness, and literacy programs serve as effective tools to promote and uphold the ideals of a green library (Gupta, 2020; Prasanth & Vasudevan, 2019).

Conclusion

Incorporating sustainable development is not just a choice but a necessity for all sectors to coexist harmoniously and contribute to making the world a better place to live. As community organizations, libraries bear a social responsibility to minimize their environmental impact(Prasanth & Vasudevan, 2019). The rising trend of green libraries holds immense potential in championing sustainable development. By instigating digital

transformations within these green havens through the integration of green IT, the digitization of routine activities, the implementation of efficient data management and preservation measures, and a dedicated focus on user education, libraries can undergo a substantial metamorphosis towards increased sustainability. Librarians, in their influential role, serve as key drivers of this transformation, steering libraries toward eco-friendly practices and becoming prominent advocates for sustainable development. Recognizing that every small effort counts, these collective endeavors hold the promise of catalyzing significant positive change for the future.

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Transforming Education: Unveiling the Dynamics of Online Education in India

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Abstract

The evolution of the Indian education system from the traditional Gurukul model to the contemporary era of online learning marks a transformative journey.The surge in online education post-pandemic has democratized learning across every corner of India. E-learning is characterized by digital acquisition of educational content through various means with or without payment. Online programs offer a broad spectrum of subjects to choose from and are widely recognized as credible and high-quality sources of education. Various types of online learning platforms exist, delivering content through different modes to meet the demands and convenience of diverse learners. Popular e-learning platforms in India are explored along with their features and offerings. Digital education aims to overcome numerous barriers, ensuring education for all, with flexibility, accessibility, and affordability as key benefits. It also comes with few challenges such as digital divide, difficulties in identifying legitimate certifications, limitations in teaching practical-oriented subjects etc. However, despite these challenges, the advantages of online learning position it as a strong contender to traditional education, with the potential to reshape the Indian education system. The continued refinement and expansion of online learning platforms hold the promise of a more inclusive and dynamic educational experience for learners in the coming years.

Keywords: *Digital era, Online learning, E-learning, Affordable education, Indian Education*

1. Introduction

The evolution of the Indian education system is a fascinating journey, transitioning from the traditional Gurukul system, deeply rooted in teacher-centric approaches, to the contemporary era marked by a student-centric online learning paradigm. For an extended period, conventional classrooms stood as the primary gateway to education. With the advent of the technological revolution, e-learning gradually gained traction, especially in the higher education sector. The UGC's approval for higher education institutions in India to provide online Certificate, Diploma, and Degree Programs reflected a government endorsement of the evident benefits of online learning, paving the way for its improvement. Initially, only a fraction of the population was aware of it and engaged in online learning. Majority were staunch believers of the effectiveness of traditional offline education, opting for it as their preferred mode of learning. The COVID-19 pandemic brought about significant changes in all sectors, particularly revolutionizing the education landscape. With lockdowns and social distancing measures in place, online learning became the sole viable option for an extended period across the globe. It was during this period that people not only became acquainted with online education but also experienced its tangible benefits. As traditional education systems gradually resumed post the pandemic's peak, a significant number of students demonstrated a newfound inclination towards online courses. Numerous platforms offer online education with both free and fee-based

models and a substantial number of Indian students are embracing this mode of learning. Some of these prominent platforms are discussed in this paper. Online education comes with a multitude of advantages, but it also carries a few challenges that require careful consideration and remedy. It stands as a transformative wave that has the capability to make education accessible and affordable for a large population, holding immense potential to reshape the future of the Indian education system.

2. E - Learning

Online learning involves acquiring educational content digitally through various means such as video tutorials, audio classes, digital study materials, and virtual training. Essential prerequisites for online learning include basic technological devices and an internet connection. Students have the flexibility to choose between group-based and one-on-one online courses, allowing them to select the most convenient option. While online learning may involve less peer interaction, there are opportunities to clarify doubts through discussion forums, comments, and direct interaction with tutors. E-learning empowers individuals to gain new skills and knowledge in their areas of interest, and they can obtain certificates and degrees by taking online examinations. Unlike traditional offline courses offered by institutions, online platforms offer both free and paid courses with a broad spectrum of subjects to choose from. Online programs are widely recognized as credible and high-quality sources of education, spanning from virtual degree programs to skill-specific classes with interactive learning environments (**ACO Staff Writers, 2023**).

Online learning can happen either in synchronous or asynchronous mode. Synchronous learning involves real-time delivery of lectures with live communications with the teacher using teleconferencing and other similar technologies. In asynchronous learning, learners progress through the curriculum at their own pace and schedule, accessing pre-recorded course content at their convenience while adhering to weekly deadlines. Interaction with teachers is facilitated through video comments, quizzes, and conversations (**Coursera Staff, 2023**). Additionally, various types of online learning platforms exist. Learning destination sites (LDS) or Massive Open Online Courses are accessible to everyone and allow unlimited enrolment, offering a variety of courses in one place. Software programmes used by businesses and organisations for training and learning are called learning management systems, or LMSs. An LMS is a gateway where teachers share information with students, not a stand-alone website. It can exist online or as installed software and can be paid or open-source. A Learning Management Ecosystem (LME) combines features of an LDS and an LMS, offering diverse courses but is internal to specific organizations, accessible only to members of the corresponding organization (**Perry, 2024**).

3. Popular E-Learning Platforms in India

- **SWAYAM** is the Government of India's MOOC platform which offers diverse courses ranging from science and technology to humanities, from various universities and faculty members across the country. Courses on SWAYAM incorporate interactive content such as quizzes, discussion forums and assignments, enhancing student engagement and facilitating collaborative learning. It offers downloadable content for offline use and employs a rigorous review process to ensure the quality of course content. Also, collaboration with reputed institutions and subject matter experts contributes to maintaining high academic standards. While courses are available free of cost,

students are required to pay a nominal fee for examinations and certificates (**Top 10 online learning, 2023***)*.

- **Udemy**, a popular LDS, provides over 11,000 professional and personal development courses through video-based lessons covering various topics.
- **Coursera**another prominent platform, offers virtual courses, professional certificates, and degrees from esteemed universities and companies, catering to both beginners and professionals seeking skill enhancement or career advancement
- **Edx**a massive open online course (MOOC) provider, delivers 4000+ high-quality online courses from 250+ leading institutions globally.

All these learning destination sites provide both free and paid courses and offer both website and mobile applications for user convenience. Additionally, some platforms operate on a non-profit basis, providing free courses.

- **Khan Academy**, a free learning platform, focuses on school students from 1st to 12th standard, offering subjects like math, history, science, economics, and more.
- **Duolingo,** an American educational technology company, provides free courses in over 40 languages and offers language certification accepted by over 4500 universities. It also offers a premium subscription with benefits such as an ad-free experience and mistake reviews.

Apart from these platforms, esteemed institutions like IITs, IIMs, VIT, etc., offer online courses to their students and external learners through their websites and learning management software like Moodle. Companies such as Google, Microsoft, LinkedIn, etc., have also launched online courses in trending subjects to attract students.

4. E – Learning-Benefits

Digital education breaks numerous barriers and pledges to bring education to all, ensuring uniformity in the syllabus so as to mitigate global disparities. (**How e-learning, 2019**). In a developing nation like India, it serves as a blessing for many who are deprived of educational benefits due to various social, financial, and other reasons. Some of the advantages of e-learning are explored here.

4.1 Flexibility

Traditional offline education often proves unsuitable for some students as it employs a uniform structure and pace that can lead fast learners to waste time and slow learners to struggle to keep up. Online learning, on the other hand, offers significant flexibility, enabling students to learn at their own convenience and pace, creating a more personalized and enjoyable learning experience. Additionally, students benefit from increased autonomy as they are not bound by strict schedules and other regulations typical of traditional classrooms. This flexibility also allows adept learners to pursue multiple courses simultaneously while effectively managing their time. Online education addresses the delays inherent in traditional systems, providing a streamlined process for examinations and results. Students can take exams from the comfort of their homes, receiving results promptly, which not only reduces stress but also saves valuable time. Particularly advantageous for working professionals, online education allows them to acquire new skills and

upskill without having to sacrifice their current jobs. Consequently, it empowers each individual to tailor their learning experience according to their unique situations and preferences.

4.2 Accessibility

E-learning provides another significant advantage in the form of accessible education. Often, students encounter challenges in finding courses aligned with their interests in their hometowns or countries, and relocation might be impractical for various reasons. E-learning proves to be a boon for such individuals, enabling them to pursue subjects of their interest from the comfort of their homes without compromising on their circumstances. Through online learning, students from remote corners of the country can access top-quality education delivered by the best faculty and institutions. Unlike the constrained options in offline education, digital learning presents a broad spectrum of programs for them to choose from.

4.3 Affordability

In India, where higher education is not affordable for all, digital learning emerges as a cost-effective alternative compared to traditional education, saving expenses related to commuting, class materials, infrastructure fees, and more. Numerous free courses are available, enabling individuals to enhance their knowledge without making any monetary investments. Many platforms also provide diverse payment options, allowing users to pay in instalments or per class, facilitating better budget management. Additionally, the availability of numerous scholarships for online studies further contributes to fulfilling the educational aspirations of people.

5. E – Learning-Challenges

In addition to its numerous benefits, online education also presents some challenges or drawbacks that require addressing for its effective implementation. The primary challenge lies in the digital divide, particularly prevalent in rural India, where individuals from low-income families may lack access to digital devices, internet connectivity or consistent power supply, hindering their ability to avail the advantages of online education. Additionally, not everyone possesses sufficient digital literacy to effectively use these services and technologies. Another challenge arises from the proliferation of online certifications and courses by various platforms and companies, making it challenging to identify credible and legitimate certifications while avoiding falling victim to online scams. Furthermore, online education faces limitations in effectively teaching practical-oriented subjects like medicine and engineering, which involve hands-on training, laboratory sessions, field trips and other practical experiences that cannot be adequately replicated even with virtual labs and similar online facilities.

The success of online learning predominantly lies in the hands of the student, requiring them to be self-motivated and disciplined to effectively manage time, stay on track, and successfully complete the course. The limited face-to-face interaction between students and instructors can diminish engagement and pose challenges for students in receiving the necessary support and guidance, potentially impacting their overall learning experience. The increased use of digital devices in the learning environment can lead to distractions during classes and potentially impact the physical and mental health of learners. While online education may be ideal for those pursuing higher education, offline education remains more suitable for young children, taking into consideration their attention span and overall well-being.

6. Conclusion

In the contemporary era, technological advancements have transformed education, making it an accessible and affordable pursuit that transcends economic barriers and other constraints. The surge in online education after the pandemic has played a pivotal role in democratizing education across every corner of India. Currently, a plethora of platforms offer online courses and degrees, with numerous individuals actively engaged in learning through them and reaping the associated benefits. Despite the challenges such as the digital divide, online education is anticipated to experience substantial growth in the coming years, given its overwhelming advantages. The recent infusion of technologies like AI and Robotics into the education sector, coupled with the popularity of concepts like blended learning suggests that online education possesses the potential not just to compete with but perhaps even outperform traditional classroom learning in the future. The continued refinement and expansion of online learning platforms hold the promise of a more inclusive and dynamic educational experience for learners in the coming years.

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Smart Libraries

Navigating Technology, Content and Services

"Smart Libraries: Navigating Technology, Content and Services" is a book that explores the modern library landscape, focusing on the integration of technology, diverse content, and innovative services. It provides insights, strategies, and best practices for librarians, educators, and information professionals to navigate the complexities of the digital age. The book covers technology integration, content curation and management, service innovation, user experience design, and data-driven decision making. Technology integration involves the use of artificial intelligence, machine learning, Internet of Things, and augmented reality to improve user experiences and streamline operations. Content curation and management involve managing diverse content, from traditional print materials to digital resources and multimedia collections. Service innovation involves innovative library services designed to meet the evolving needs of users in the digital age, such as personalized recommendation systems, virtual reference services, maker spaces, and digital literacy programs. User experience design involves designing user-friendly interfaces, optimizing information discovery, and enhancing accessibility for diverse user groups. Data-driven decision making involves leveraging data to measure performance, track user behavior, and identify areas for improvement. This book is intended for librarians, information professionals, educators, and students interested in the intersection of technology, content, and services within library settings. It offers practical insights, case studies, and best practices for navigating the complexities of the digital age and maximizing the potential of smart libraries.



Dr. S. Dhanavandan, is working as Deputy Librarian at Central University of Tamil Nadu, Thiruvarur-610005 from 2017 onwards. He is having more than twenty five years in the LIS profession. Under his guidance, six Ph.D degrees were awarded. In addition to more than 175 papers presented and published in national and international conferences, he has over 145 publications published in national and international journals. In the field of library and information science, he has written or edited over 44 books and contributed 70 chapters to edited volumes. He has participated in over 100 training sessions, webinars, and seminars/workshops. He has won the Cash Award (more than One Lakh) three times from Konkuk University in South Korea for the best writings. In addition to organizing seventeen workshops and conferences, he chaired several of them and served as a resource person. Numerous honors have been bestowed upon him, including recognition as one of India's Top 50 Eminent Librarians; the President of Knolwedge Content Development & Technology's Outstanding Article Award, a Certificate of Appreciation from Turnitin, a National Special Appreciation and Meritorius Service Award from SALIS, Tamil Nadu, and many more.

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Chapter 29

Mapping Digital Literacy in Higher Education: Insights from Empirical Studies in India

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Introduction

In today's fast-changing world, digital literacy is not just an ability, it's a survival skill required for navigating our digital-driven lives. Being able to use devices, handle online tasks, and understand digital platforms is now as important as basic reading and writing skills. Digital literacy is crucial for students in school and college, as the professional world increasingly prioritizes candidates with the necessary digital skills. In its endeavor to create a digitally empowered nation, India has implemented notable initiatives like the Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA) with the aim of ensuring that at least one person in every family becomes digitally literate. However, despite these commendable efforts, challenges persist, with the digital divide posing a substantial obstacle in achieving the envisioned 'Digital India.' Recognizing the need for a comprehensive evaluation of the digital literacy landscape, numerous studies have been conducted across different regions of India, focusing on students within various higher education institutions. These serve as invaluable resources for gauging the current state of digital literacy

among Indian students. This review article delves into the analyses and interpretations of seven such empirical studies. By synthesizing the findings, this paper aims to provide a nuanced understanding of the current scenario, offering valuable insights that can guide future interventions and propel India toward the realization of its 'Digital India' dream.

Digital Literacy

The concept of digital literacy is multifarious and is interpreted in various ways by different people and organizations over the years. Gilster (1997) presented digital literacy as an essential literacy for the digital age and gave multiple definitions for the concept such as the 'the ability to access networked computer resources and use them,' (p.1) "ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers"(p.1), it is about 'mastering ideas, not keystrokes' (p.15) etc. He also mentioned about four core competencies of digital literacy viz. internet searching, hypertext navigation, knowledge assembly, and content evaluation. Spires and Bartlett (2012) organized the various cognitive and social processes associated with digital literacy into three categories: locating and consuming digital content, creating digital content, and communicating digital content. Thus digital literacy can be understood as a set of skills or competencies required by an individual to operate and sustain in today's digital world. These include ICT skills, proficiency in information search and evaluation, resource literacy, digital content creation abilities, communication and collaboration skills, safety awareness etc.

Evaluation Of Digital Literacy Skills

The chosen studies assessed a range of digital literacy skills among students, predominantly employing the self-assessment method, which is one of the two primary approaches for evaluating these skills, the other being performance assessment. This review is organized into distinct sections, each dedicated to the assessment of different digital literacy skills.

Access to Digital Devices

Access to basic digital devices like mobiles, laptops, and computers is fundamental for acquiring digital literacy skills and this was examined in several studies. Parvathamma and Pattar (2013) investigated the utilization of various ICT tools and web-based services among 135 management students in Davanagere district, Karnataka

and revealed that all students owned personal computers, with the majority having internet access. Similarly, Sarman et al. (2018) assessed the digital literacy skills of research scholars at Punjab Agricultural University, Ludhiana, finding that a significant number had access to digital devices such as laptops and cell phones. In another empirical study focusing on the digital literacy of 119 postgraduate MBA students in Puducherry, Sevukan and Gomathy (2015) noted that 79% of students possessed their own computers, while the remaining 21% did not.

Expertise in using ICT tools and Internet

Possessing technical know-how is a crucial element of digital literacy, as mere ownership of digital devices may not guarantee effective usage. Krishnamurthy and Shettappanavar (2019) aimed to assess the digital literacy skills of female postgraduate students at Karnatak University, Dharwad. Among the 77 respondents, 57.14% agreed, and 41.55% strongly agreed that they were familiar with computer basics and hardware component functions. More than half of the participants demonstrated knowledge about URL, domain names, IP addresses, and the ability to download and use various apps on different digital devices, indicating their proficiency in computer use. Similarly, Swapna and Manjula (2017) investigated the digital information literacy of students at Ayurvedic medical colleges in Mysore, finding that the majority were well-versed in internet use, MS Word, desktop publishing, and multimedia applications. Sevukan and Gomathy's (2015) study also highlighted a high level of awareness among students regarding the latest technologies such as mobiles, laptops, digital cameras, and tablets. Furthermore, 74% of students had undertaken computer courses like PGDCA, DCA, MS-Office to stay updated, while 26% had not enrolled in such courses.

Resource literacy: Search and Evaluation Skills

A crucial digital literacy skill involves the knowledge of credible information resources and the ability to effectively find needed information by evaluating the source. In their analysis of science research scholars' digital literacy, Bibina and Kabir (2016) discovered that a majority were familiar with open access e-books/e-journals (98.68%), search engines (97.37%), and web portals (78.95%). However, their familiarity with other internet resources such as meta-search engines (27.63%), web OPAC (32.89%), and directories (32.89%) was limited. Regarding awareness of information providers, most were

familiar with Google Scholar (90.79%), Shodhganga (63.16%), and PubMed (60.53%), but awareness of other providers like INIS (10.53%), Academic.Edu (13.16%), and Ebsco (14.47%) was limited. In a similar study, Bibina and Kabir (2018) assessed digital literacy among research scholars in social science and arts faculties at the University of Kerala. Social science scholars showed greater familiarity with almost all internet resources or search tools than arts scholars. A majority (80.50%) of social science scholars were aware of Shodhganga, JSTOR, Google Scholar, and UGC consortium, but awareness of other providers like INIS, Science Direct, and Ebsco was limited. Comparatively, a smaller number of arts research scholars were aware of almost all information providers.

Krishnamurthy and Shettappanavar (2019) tested the students' literacy towards the use of search engines. Google search engine was the most preferred search engine by the respondents as all of them had used it. The results also depicted that majority (83.11%) of the respondents used simple keywords, 48.05% of the respondents were familiar with boolean operators and least number of respondents used other search strategies like field search, natural language search, controlled vocabulary, phrase search, truncation, wildcards etc. On investigating about the awareness on databases, consortiums and academic social networking sites, it was found that majority were aware of Web of Science and Google Scholar but less respondents were aware of other resources like Biological Abstracts, ProQuest, e-Shodhasindhu, Research Gate, Slideshare etc. Parvathamma and Pattar (2013) found that even though majority of the respondents were familiar with web portals and search engines, they had very little awareness about other web resources such as subject gateways, open access e-journals, e- books, institutional repositories etc. Also, very few had knowledge about subject databases like Capitaline, Indiastat etc. Similarly, Sevukan and Gomathy (2015) found that more than 70% percent of the respondents were not aware of even the popular subject-based digital resources like Business source complete, INFORMS journals, CMIE, Blackwell/Wiley journals etc.

Skills for Digital Communication, Collaboration and Content Creation

In the contemporary era, individuals are not merely consumers but active creators of digital content. Numerous researchers have delved into students' capabilities in crafting and disseminating digital content, coupled with their aptitude for digital collaboration. It was

found that students were conversant with social media and web 2.0 tools such as Facebook, YouTube, E mail, Google + etc. as they were widely used. The students also displayed proficiency in employing these tools for both digital communication and content creation (Bibina & Kabir, 2016; Parvathamma & Pattar, 2013; Sevukan and Gomathy, 2015).

Awareness on Copyright, Licenses and Cyber Security

Possessing knowledge about copyright, licenses, intellectual property rights, and cybersecurity skills to navigate the online realm safely are crucial for today's digital citizens. Swapna and Manjula (2017) observed that the majority of respondents were familiar with concepts such as plagiarism and intellectual property rights (IPR). On the other hand, Krishnamurthy and Shettappanavar (2019) discovered that among 77 respondents, 55.84% were aware of copyright issues, while the rest were not. Furthermore, 51.94% acknowledged their understanding of protecting information from viruses and digital threats.

Purpose and Frequency of Using Digital Technology

Enhancing digital literacy skills, like any other skill, comes through frequent usage of digital devices. Users gain a variety of skills by employing these devices for diverse purposes. Bibina and Kabir (2016) discovered that all science-research scholars accessed the internet daily for both academic and personal reasons. Similarly, Krishnamurthy and Shettappanavar (2019) found that students utilized the internet for various purposes, with a majority using it for searching general or current information and for entertainment. The comprehensive study by Sevukan and Gomathy (2015) indicated that students predominantly used digital technology for entertainment rather than academic purposes. In line with this, Parvathamma and Pattar (2013) reported that 42.9% and 20.8% of students utilized various software and web-based services daily and at least three times a week, respectively. However, the primary use was for personal rather than academic purposes.

Need for Digital Literacy Training

The majority of the studies examined the respondents' views on the necessity of digital literacy training programmes. A significant number expressed the need for training in digital information literacy,

covering skills such as online resource searching, accessing/browsing institutional repositories, and filtering irrelevant information during searches, as well as participation in workshops and seminars (Bibina & Kabir, 2016; Bibina & Kabir, 2018; Krishnamurthy & Shettappanavar, 2019; Sevukan & Gomathy, 2015; Swapna & Manjula, 2017). Krishnamurthy and Shettappanavar (2019), Bibina and Kabir (2018) and Swapna and Manjula (2017) recommended that library authorities can organize training programmes and information literacy sessions to enhance students' skills. Sevukan and Gomathy (2015) further recommended integrating digital literacy as a dedicated subject in the curriculum to ensure students attain digital proficiency. Likewise, Parvathamma and Pattar (2013) advocated for a model curriculum aimed at cultivating fundamental ICT and cognitive skills, enabling students to proficiently leverage digital resources.

Conclusion

By reviewing a few studies on digital literacy, an attempt was made to get a better understanding of it in the context of higher education in India. The works dealt with many aspects of digital literacy and some inferences were obtained from the analysis. Despite India's developmental challenges, such as the digital divide and limited internet access in certain regions, a majority of respondents across studies demonstrated access to technological devices and the internet, indicating the efficacy of initiatives promoting digital access. Moreover, respondents generally exhibited basic to proficient skills in utilizing digital devices, the internet, and web-based applications. Noteworthy is the commitment of some respondents to stay updated through diverse means. While resource literacy tended to be average, and search and evaluation skills were often minimal, respondents displayed a strong familiarity with popular search engines and information resources, signaling the need for broader awareness.

A notable strength identified in most studies was the adept use of Web 2.0 tools for communication, collaboration, and content creation. Varied levels of understanding among respondents regarding copyright, plagiarism, licenses, and digital safety were observed across studies, suggesting a need for focused education in these areas. The pervasive use of digital technology and the internet among respondents was evident, with some studies highlighting a predominant focus on entertainment, social networking, and communication. However, others

reported a balanced use for both academic and leisure purposes. The consensus across most studies emphasizes the imperative need for targeted training in digital skills. Recommendations include the integration of digital literacy into college curricula, supplemented by workshops and seminars. Additionally, some studies proposed model curricula and programmes as potential avenues for nurturing enhanced digital proficiency among students. These discoveries offer detailed insights to steer forthcoming initiatives, propelling India towards a future empowered by digital advancements

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A Reliable Hybrid Cryptosystem for Colour Image Encryption

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Abstract. Abstract—In recent years, more information has been transferred in electronic form, so the science of cryptography got more attraction. Cryptography is an efficient and effective procedure to ensure that our data is accessed only by the intended receiver. Also, it makes sure that the data is not adulterated. In this paper, we have proposed hybrid cryptography for colour images which could provide a reliable resistance against differential security attacks. We have observed that the use of the blowfish algorithm and chaos logistic maps could ensure improved image security and performance, providing stable results in most conditions.
Keywords: Cryptography, Security attacks, Blowfish algorithm, Chaos, logistic maps

INTRODUCTION

Nowadays, information is extensively stored and transmitted across undefined networks, so the security of this in- formation is in high need. To ensure security features such as confidentiality, integrity, authenticity, access control, and non-repudiation cryptography is indispensable. It converts data into some unintelligent form called cipher data, thereby restricting access to that data only by the intended receiver. The conversion of data into cipher is known as encryption, and the reverse procedure to converting cipher data into intelligent data is known as decryption. The perfect selection of cryptographic algorithms is crucial in providing required security results [1].

Images are widely used in data communications. Some images need special protection for intimate, personal, health, financial, diplomatic, military-related, etc. Any outside security attacks and tampers on these is least appreciated. Today, as image encryption has become an integral part of image delivery, it should target to ensure efficiency accompanied by preservation of the high-security level. Many encryption algorithms are proposed in the literature. In general, conventional cryptographic algorithms are classified into symmetric and asymmetric. In asymmetric cryptography, different keys are used for encryption and decryption. Contrariwise, symmetric cryptographic algorithms share a single key for encryption and decryption procedures. Symmetric key algorithms include Advanced Encryption Standard (AES), Data Encryption Standard (DES), Triple Data Encryption Standard (3DES), and Blowfish Algorithm (BA). Among these, BA is known to be more efficient along being harder in decryption [2, 3].

Designed by Bruce Schneier in 1993, Blowfish Algorithm has acquired a lot of attention in the last two decades. Researchers have been widely utilizing the blowfish algorithm for being fast and patent-free. Landgeet al. [4] and Singh et al. [5] have used blowfish algorithm to encrypt the image. A combination of cryptography and stenography using a conventional blowfish algorithm was proposed by S. N. Gowda [6] and Gunjalet al. [7]. Hashimet al. [8] has applied scrambling and decomposition of the image prior to the application of the enhanced blowfish algorithm. Security analysis of blowfish algorithm is discussed by ALabaichiet al. in [9]. Ali et al. [10] tried to increase the efficiency and security of blowfish algorithm with a modification in original by utilizing multiple keys.

Standard encryption techniques such as AES, DES are not highly encouraged in image encryption due to image properties like bulk capacity, data redundancy, and high pixel correlation [11]. In recent years chaos-based cryptographic techniques have been highly used. Pareeket al. [12] proposed two chaotic logistic maps along with the 80-bit external secret key. Similarly, Safi et al. [13] also employed a double chaotic logistic map; they have XOR-ed two keys produced in a particular way so that better-secured image encryption is achieved. A combination of chaotic logistic and economic maps was introduced by Askaret al. [14]. In the same way, a combination of chaotic logistic map and hyper chaos was proposed in [15]. Mandal et al. [16] have presented image encryption using chaotic logistic map and performed a detailed security analysis of its working.

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Most chaotic methods hinder the system's performance security and suffer small key space problems. So, to increase the robustness and security of cryptographic algorithms using combinations, many researchers in recent times also tried combination procedures. [17] has used a hybrid method for image encryption by combining cyclic elliptic curve and chaotic system. They generated the initial key using chaotic system and also used an external secret key of 256-bit. They mixed this keystream with key sequences derived from the cyclic elliptic curve points. Another hybrid cryptosystem was proposed by Hazraet al. [18]. They have combined Diffie Hellman algorithm and blowfish algorithm in such a manner that, first they encrypted image using blowfish algorithm followed by Diffie Hellman generating a shared key for the sender and the receiver. Data compression accompanied with chaotic key planning algorithms is proposed by Burhan et al. [19]. A novel perturbation algorithm was introduced by Yasser et al. [20]. Their method combined Discrete Wavelet Transform (DWT) to decompose chaotic image states for permutation and diffusion, and their proposed maps are used to carry out operations like shuffling and substitution of image pixels.

This paper is organized as follows; in section 2, we will discuss the proposed methodology and blowfish algorithm, and chaotic logistic map in detail. Section 3 will cover the experiments and results we have obtained with the proposed procedure. We will also have a small comparison of the proposed method against images encrypted with blowfish and logistic map separately. To end, section 4 will conclude that we have inferred from the experiments carried.

PROPOSED METHODOLOGY

Considering the facts such as blowfish algorithm is unpatented, faster than other classical encryption algorithms, has lesser amount of operations, and is resistant to brute force attacks, we have used it to encrypt the image. Even being secured against most security attacks, it has its flaws to specific attacks like birthday attacks. So, we have proposed the use chaotic logistic map along with blowfish algorithm to encrypt colour images. We have firstly decomposed the colour image into three different colour channels, namely, red, green and red. Then we converted 2-D grayscale matrix into a single dimensional array and concatenated one after the other. We then encrypted three resultant arrays separately using blowfish algorithm. Further, we have used chaotic logistic map for applying confusion and diffusion to the array elements, that is, to encrypted pixel values. We have encouraged the exchange of dimension information through the network along with key information so that the image could be reverted back during decryption rather than converting to 3-D form and transferring image.

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A. BLOWFISH ALGORITHM

Introduced in 1993 by Bruce Schneieras a fast, unpatented, and license-free alternative to existing encryption algo- rithms, blowfish algorithm has achieved a lot of appreciation from cryptographic researchers. It is a symmetric 64-bit block cipher encryption algorithm that can be used for protecting data. Blowfish employs Feistel network to iterate the encryption and decryption function 16 times, one after the other. The elementary operations in blowfish algorithm include table lookup, addition, and XOR. Formerly, the blowfish algorithm contained two phases; in the first phase, the key is converted into many sub-keys. The second phase consists data encryption, where 16rounds of Feistel structure network is implemented, each round has its own key permutation and data substitution operations. All operations of addition and XOR are implemented with words of 32-bit length in each round. The only additional operations are four indexed array data lookups per round.

B. CHAOTIC LOGISTIC MAP

A chaotic system shows a deterministic noise-like behaviour that is reproducible if we have its parameters and initial values. One of the most utilized chaotic systems is the logistic map. The logistic map is a polynomial mapping of degree 2. Equation [1] presents the mathematical formula producing the logistic map. It shows chaotic behaviour when it ranges from 3.56994 < u 4. In this paper, we have taken r=3.62.

$$x_{n+1} = rx_n(1 - x_n) \qquad (1)$$

PROPOSED HYBRID METHODOLOGY

We propose a hybrid scheme for color image encryption by combining blowfish algorithm and chaotic logistic maps. For this purpose, we have firstly decomposed the color image into three different color channels namely, red, green and red. Then we converted 2-D grayscale matrix into single dimensional array and concatenated one after the other. We then encrypted three resultant arrays separately using blowfish algorithm. Further, we have used chaotic logistic map for applying confusion and diffusion to the array elements, that is, to encrypted pixel values. The final cipher will be in a vector form rather than a three-dimensional matrix. There is total 6 keys generated during the procedure which makes inference of the intruder difficult. A block diagram of the proposed encryption system is given in figure[1].

In the decryption procedure we first use logistic map decryption and then blowfish. Then the vector is reshaped back into 3-D matrix. The dimension information (x, y, z) of the color image should be concatenated along with the cipher array during the transfer so that the image could be reverted back to the original form during decryption procedure.

We have encouraged the exchange of dimension information through the network along with key information, rather than converting to 3-D form and transferring image.

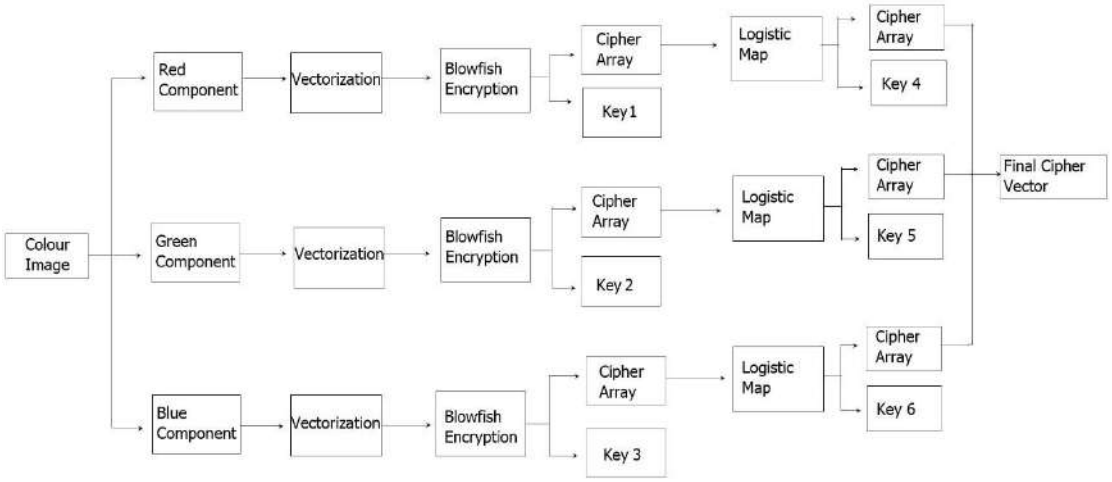

FIGURE 1. Block diagram of proposed color image encryption procedure.

EXPERIMENTS AND RESULTS

For the acceptance of any algorithm or proposals, experiments should be carried out properly with some standard techniques triggering acceptable results. We have used standard images from UPC-SIPI miscellaneous image database. We have used MATLAB R2016a to simulate encryption and decryption operations. We have provided results we have obtained with color images. Also, we have compared the results of the proposed system against the results we got using blowfish and chaotic logistic maps separately with grayscale images.

A. VISUAL SIMILARITY

There is no visual similarity between original images and encrypted images. If we see only encrypted images, then all encrypted images look similar, having the slightest resemblance with their original image. Also, original and decrypted are visually identical. We can perceive the dissimilarity between original and encrypted and similarity in original and decrypted images from figures [2] and [3].

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(a) (b) (c)

Figure 2*:* Visual Analysis of Image1 (a) Original (b) Encrypted and (c) Decrypted.



(a) (b) (c)

Figure 3: Visual Analysis of Image2 (a) Original (b) Encrypted and (c) Decrypted

B. ENTROPY ANALYSIS

Entropy is a commonly used metric that is used to measure the resistance of cryptographic algorithms against security attacks for retrieving the original image from the encrypted one without knowing the key used. The ideal result is expected to be eight. Equation (2) presents a formula to find entropy, where the probability of the Event of the image, and n is the total number of pixels in the image. Table [1] shows entropy information of the proposed cryptographic procedure. You can note that the proposed system produces reliable results without showing many deviations; results are directly proportional to the size of the image.

$$H(s) = \sum_{x=1}^{2n-1} P(S_x) log2 \frac{1}{S_x} \qquad (2)$$

TABLE 1. Entropy Analysis of Color Images.

Test Image Description	Size of the Image in Pixels	Entropy Original Image	Entropy Encrypted Image
Female (NTSC test image)	256x256	6.8980	7.9990
Couple (NTSC test image)	256x256	6.2940	7.9990
Female (from Bell Labs)	256x256	5.9710	7.9990
Female	256x256	7.4270	7.9990
House	256x256	7.0690	7.9990
Tree	256x256	7.5370	7.9990
Jelly beans	256x256	6.5830	7.9990
Jelly beans	256x256	6.8530	7.9990
Splash	512x512	7.2430	8.0000
Mandril (a.k.a. Baboon)	512x512	7.7620	8.0000
Airplane(F-16)	512x512	6.6640	8.0000
Sailboat on lake	512x512	7.7620	8.0000
Peppers	512x512	7.6700	8.0000

C. HISTOGRAM ANALYSIS

Histogram analysis illustrates the distribution of image pixels along with the image. If the histogram of the encrypted image is evenly distributed, then gaining any useful information from that is challenging. We can note from figure [4] that histograms obtained from original images and encrypted images are incredibly different. Further, we can state that the histogram of the encrypted image is more or less uniformly distributed.

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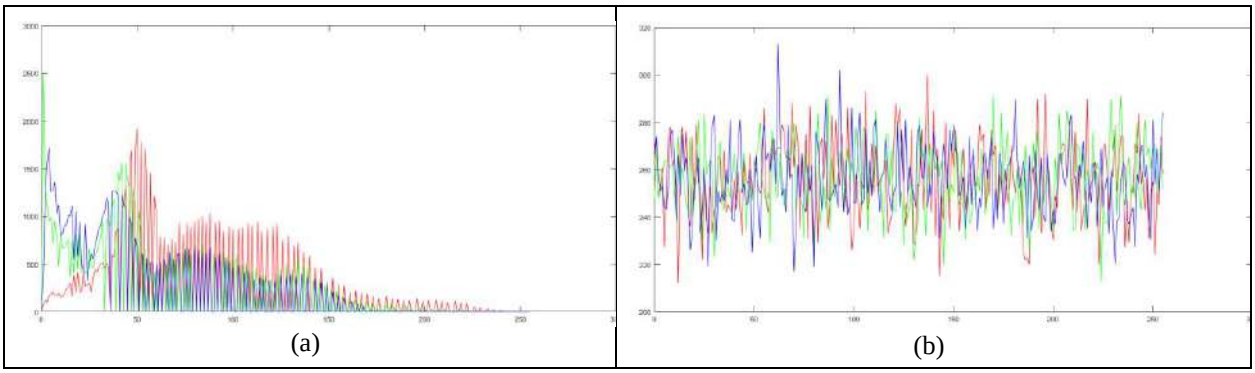


(a) (b)

Figure 4*:* Histogram of Women image (a) Original and (b) Encrypted.

D. CORRELATION ANALYSIS

Image encryption should target to decrease the correlation among the pixels in the image so that attackers cannot acquire much information out of it. In any image, a pixel has a high correlation with its adjacent pixels. So, if the encryption could result in less correlation among adjacent pixels in the encrypted image, then it would point to better cryptography and lesser likely to be prone to security attacks. The correlation analysis focuses on the relationship between horizontal pixels, vertical pixels, and diagonal pixels in the image. We have selected 3000 pixels randomly from the image and carried out a correlation analysis. Equation [3] gives the coefficient of correlation for each pixel pair. We have shown a visual representation of correlation over horizontal, vertical and diagonal directions a selected image in figure [5]. The results obtained are noted in the table [2–4].

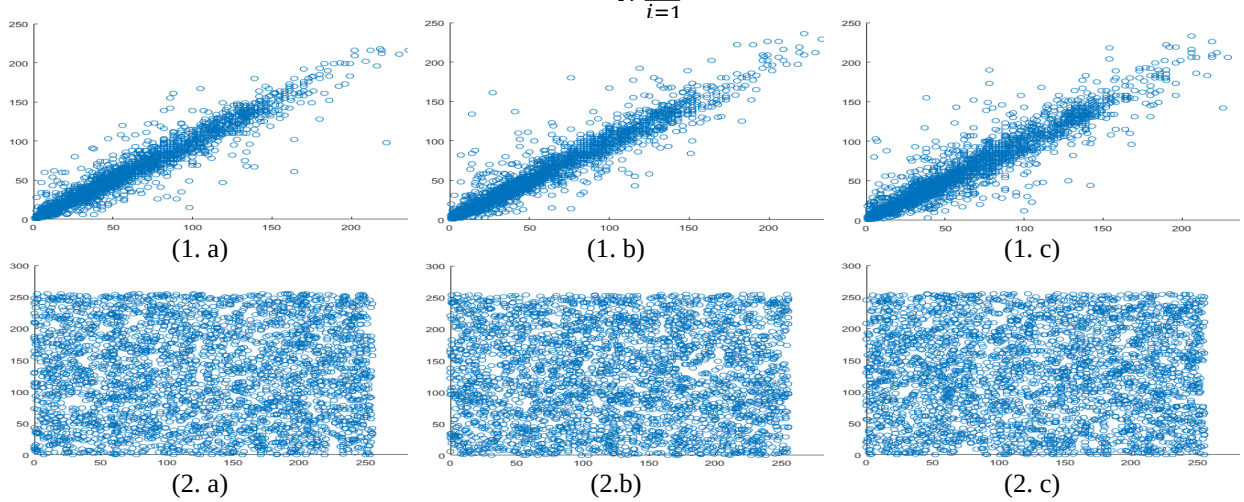
$$r_{xy} = \frac{cov(x,y)}{\sqrt{D(x)\sqrt{D(y)}}} \tag{3}$$

where,

$$cov(x,y) = \frac{1}{N}\sum_{i=1}^{N}(x_i - (E(x_i))(y_i - (E(y_i)),$$

$$D(x) = \frac{1}{N}\sum_{i=1}^{N}(x_i - (E(x_i)),$$

$$E(x) = \frac{1}{N}\sum_{i=1}^{N} x_i$$



(1. a) (1. b) (1. c)

(2. a) (2.b) (2. c)

Figure 5: Correlation Analysis of Women Image (1) Original, (2) Encrypted, (a) Horizontal, (b) Vertical and (c) Diagonal

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TABLE 2: Correlation Analysis of Color Images in Horizontal Direction

Test Image Description	Original Image			Encrypted Image		
	Red	Green	Blue	Red	Green	Blue
Female (NTSC test image)	0.96880	0.97272	0.96126	0.00278	0.02122	-0.03396
Couple (NTSC test image)	0.94942	0.93630	0.91830	-0.01975	-0.00436	0.00393
Female (from Bell Labs)	0.96861	0.97165	0.97540	-0.01787	0.01232	0.01041
Female	0.97700	0.96369	0.95836	-0.01394	0.00018	0.00175
House	0.97377	0.95235	0.97191	0.00021	-0.00289	-0.00428
Tree	0.95184	0.96879	0.96094	-0.05545	0.00219	0.01239
Jelly beans	0.97721	0.97615	0.98816	0.01033	-0.04929	0.00484
Jelly beans	0.97295	0.96580	0.97896	-0.00532	-0.00707	0.03708
Splash	0.99380	0.98121	0.98268	0.00799	-0.02126	0.03708
Mandril (a.k.a. Baboon)	0.97240	0.94946	0.96402	-0.00331	0.00223	0.02499
Airplane(F-16)	0.92258	0.87643	0.90426	0.00143	-0.00700	-0.04245
Sailboat on lake	0.95268	0.97445	0.97399	-0.01358	0.00813	-0.03004

TABLE 3: Correlation Analysis of Color Images along Vertical Direction

Test Image Description	Original Image			Encrypted Image		
	Red	Green	Blue	Red	Green	Blue
Female (NTSC test image)	0.96523	0.96595	0.95954	-0.00887	-0.00038	-0.02424
Couple (NTSC test image)	0.95285	0.95220	0.95344	-0.00133	0.03414	0.05025
Female (from Bell Labs)	0.94536	0.90391	0.92142	0.01024	0.00288	-0.02212
Female	0.99025	0.98634	0.97986	0.02093	0.01819	-0.00250
House	0.94767	0.97154	0.94847	-0.01439	-0.00332	0.03286
Tree	0.95300	0.94563	0.93647	0.00807	0.01438	-0.00188
Jelly beans	0.97442	0.97875	0.98793	0.02205	-0.01233	-0.03738
Jelly beans	0.97893	0.97642	0.97863	0.03325	0.00538	-0.02203
Splash	0.99436	0.98852	0.97917	-0.00394	0.01810	0.00874
Mandril (a.k.a. Baboon)	0.86630	0.77008	0.88051	-0.01515	-0.00127	0.02787
Airplane(F-16)	0.95431	0.96555	0.93470	-0.00410	0.02834	0.00379
Sailboat on lake	0.94919	0.96618	0.96601	0.03476	0.01194	-0.00914

TABLE 4: Correlation Analysis of Color Images along Diagonal Direction

Test Image Description	Original Image			Encrypted Image		
	Red	Green	Blue	Red	Green	Blue
Female (NTSC test image)	0.93593	0.95771	0.94283	0.01655	0.02680	0.04424
Couple (NTSC test image)	0.91726	0.89207	0.89362	0.01355	0.04911	0.00005
Female (from Bell Labs)	0.92948	0.88878	0.90458	-0.00774	0.03022	-0.01595
Female	0.96559	0.94838	0.93242	-0.02298	-0.00099	0.01754
House	0.93000	0.92181	0.91253	-0.00839	-0.03686	0.01415
Tree	0.94173	0.93035	0.93318	-0.02304	0.00534	-0.00414
Jelly beans	0.95126	0.95882	0.98152	0.01586	0.00268	0.01362
Jelly beans	0.95493	0.94857	0.96297	0.00906	0.03606	0.02691
Splash	0.98754	0.97236	0.95664	-0.03108	-0.01009	0.01290
Mandril (a.k.a. Baboon)	0.85500	0.72221	0.83524	-0.00338	-0.02411	-0.01320
Airplane(F-16)	0.94016	0.93370	0.90365	0.03823	0.00879	-0.01525
Sailboat on lake	0.95268	0.94952	0.95294	-0.01980	0.00412	-0.00981

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E. INFLUENCE OF PIXEL CHANGE

Metrics like Number of Pixel Change Rate (NPCR) and Unified Average Changing Intensity (UACI) are used to predict the resistance of cryptographic algorithms to resist differential attacks. NPCR and UACI scores could be computed using equations [4] and [5], respectively. Table [5] presents NPCR and UACI scores obtained with the proposed methodology.

$$NPCR = \frac{\sum_{i,j} D(i,j)}{WxH} \quad (4)$$

$$UACI = \frac{1}{WxH}\left[\sum_{i,j} \frac{|I_1(i,j) - I_2(i,j)|}{255}\right] \quad (5)$$

where,

$$D(i,j) = \begin{cases} 1 \; if \; I_1(i.j) \neq I_2(i,j) \\ 0 \qquad otherwise \end{cases}$$

TABLE 5: Influence of Change in Pixels of Image.

Test Image Description	NPCR Score	UACI Score
Female (NTSC test image)	0.996342976	0.353510000
Couple (NTSC test image)	0.995869954	0.403261511
Female (from Bell Labs)	0.996144612	0.268188636
Female	0.996307373	0.298234967
House	0.996063232	0.325868339
Tree	0.996109008	0.321783427
Jelly beans	0.996139526	0.305761000
Jelly beans	0.995936075	0.303061810
Splash	0.996228535	0.338920573
Mandril (a.k.a. Baboon)	0.996143341	0.299745088
Airplane(F-16)	0.996063232	0.325868339
Sailboat on lake	0.996109008	0.321783427

F. COMPARATIVE ANALYSIS

We have made a comparison of the proposed methodology against blowfish algorithm and chaotic logistic map sep- arately using the above-mentioned metrics in tables [6–10]. Instead of color image, we have used UPC-SIPI miscel- laneous grayscale images for comparison purposes. We could clearly say that the proposed method produces slightly better with highly reliable results. From the results tables, it can also be seen that the results produced with the pro- posed methodology don't change much with a change in test images.

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TABLE 6. Comparative Entropy Analysis.

Image Description	Original Entropy	Blowfish Entropy	Logistic Entropy	Proposed Entropy
Moon surface	6.7090	7.67584	7.9850	7.9970
Aerial	7.3120	7.30021	7.9910	7.9970
Airplane	6.4520	7.89351	7.9880	7.9980
Clock	6.7060	7.37997	7.8910	7.9970
Resolution chart	1.5480	6.22398	7.9930	7.9970
Chemical plant	7.3420	7.58964	7.9910	7.9970
Couple (NTSC test image)	7.2010	7.37450	7.9960	7.9990
Aerial	6.9940	7.36077	7.9970	7.9990
Stream and bridge	5.7060	6.37715	7.9980	7.9990
Male	7.5240	7.36723	7.9940	8.0000
Airport	6.8300	7.37960	7.9860	8.0000
Truck	6.0270	6.84582	7.9740	7.9990
Airplane	4.0040	5.71103	7.9840	7.9990
Tank	5.4960	6.37630	7.9890	7.9990
Car and APCs	6.1070	7.37632	7.9910	7.9990
Truck and APCs	6.5630	7.37178	7.9880	7.9990
Truck and APCs	6.6950	7.34574	7.9870	7.9990
Tank	5.9920	6.37026	7.9740	7.9990
APC	5.0530	6.37488	7.9760	7.9990
Tank	6.1900	7.36693	7.9880	7.9990
Car and APCs	5.9090	6.03595	7.9870	7.9990
Airplane (U-2)	5.6410	6.03639	7.9740	8.0000
Fishing Boat	7.1910	7.37540	7.9930	7.9990
21 level step wedge	4.3920	6.00002	7.9950	7.9990
Pixel ruler	0.5000	5.40706	7.8840	7.9990

Table 7: Comparative Analysis of Correlation along Horizontal Direction.

Image Description	Original Entropy	Blowfish Entropy	Logistic Map	Proposed Entropy
Moon surface	0.9026	0.0048	-0.0017	0.0070
Aerial	0.9002	-0.0183	0.0024	0.0010
Airplane	0.9523	0.0175	0.0018	-0.0033
Clock	0.9566	-0.0028	0.0064	0.0162
Resolution chart	0.8842	0.6808	0.0021	-0.0196
Chemical plant	0.9476	-0.0012	0.0052	-0.0121
Couple (NTSC test image)	0.9309	0.0254	0.0017	-0.0163
Aerial	0.8942	-0.0109	0.0002	0.0018
Stream and bridge	0.9408	0.0163	0.0002	0.0193
Male	0.9773	-0.0056	-0.0006	0.0226
Airport	0.9109	0.0009	-0.0007	0.0120
Truck	0.9625	0.0028	-0.0015	0.0432
Airplane	0.9598	0.0344	0.0022	-0.0171
Tank	0.9458	0.0186	-0.0018	-0.0397
Car and APCs	0.9792	0.0029	-0.0003	0.0200
Truck and APCs	0.9403	0.0053	0.0007	0.0128
Truck and APCs	0.9369	0.0264	0.00008	0.0186
Tank	0.8941	-0.0171	0.0036	-0.0193
APC	0.9590	0.0027	-0.0004	0.0372
Tank	0.9648	-0.0094	0.00008	-0.0217
Car and APCs	0.9652	-0.0116	0.0036	0.0033
Airplane (U-2)	0.9664	-0.0066	-0.0006	0.0242
Fishing Boat	0.9382	0.0038	-0.0022	-0.0116
21 level step wedge	0.9963	0.9971	-0.0012	0.0067
Pixel ruler	0.4045	0.8517	0.0012	0.0109

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Table 8*:* Comparative Analysis of Correlation along Vertical Direction.

Image Description	Original Entropy	Blowfish Entropy	Logistic Map	Proposed Entropy
Moon surface	0.9423	0.0074	0.0010	0.0028
Aerial	0.8684	0.0151	-0.0034	0.0043
Airplane	0.9377	0.0049	0.0443	0.0029
Clock	0.9714	-0.0165	0.0402	-0.0264
Resolution chart	0.8515	-0.0716	0.0524	-0.0196
Chemical plant	0.8998	0.0268	-0.0053	-0.0046
Couple (NTSC test image)	0.8938	-0.0182	0.0005	0.0026
Aerial	0.8555	-0.0059	0.0250	0.0009
Stream and bridge	0.9286	-0.0014	0.0006	-0.0154
Male	0.9809	-0.0076	0.0119	0.0317
Airport	0.9047	-0.0005	0.0150	-0.0228
Truck	0.9184	0.0248	-0.0076	0.0183
Airplane	0.9423	-0.309	-0.0251	-0.0220
Tank	0.9370	-0.0127	-0.0040	0.0145
Car and APCs	0.9686	-0.0308	0.0009	-0.0030
Truck and APCs	0.9123	-0.0133	0.0037	0.0210
Truck and APCs	0.9046	-0.0203	0.0009	0.0013
Tank	0.8849	0.0207	-0.0035	0.0194
APC	0.9355	-0.0029	-0.0095	-0.0042
Tank	0.9297	0.0165	0.0009	-0.0170
Car and APCs	0.9455	0.0135	-0.0035	0.00003
Airplane (U-2)	0.9413	-0.0025	0.0809	-0.0069
Fishing Boat	0.9742	-0.0121	-0.0056	0.0010
21 level step wedge	0.9998	0.1529	0.0009	-0.0058
Pixel ruler	0.4465	-0.1526	0.0570	0.0040

Table 9: Comparative Analysis of Correlation along Diagonal Direction.

Image Description	Original Entropy	Blowfish Entropy	Logistic Map	Proposed Entropy
Moon surface	0.9069	0.0055	0.0047	-0.0133
Aerial	0.8345	-0.0061	0.0021	0.0199
Airplane	0.8675	0.0047	0.0057	0.0118
Clock	0.9421	0.0086	-0.0035	-0.0092
Resolution chart	0.7532	-0.0674	0.0029	0.0125
Chemical plant	0.8583	0.0086	-0.0025	-0.0089
Couple (NTSC test image)	0.8379	-0.0119	0.0023	0.0008
Aerial	0.8002	0.0181	0.0012	-0.0140
Stream and bridge	0.8931	0.0026	-0.0017	0.0209
Male	0.9701	-0.0048	-0.0007	-0.0061
Airport	0.8711	-0.0229	0.0002	0.0033
Truck	0.9151	0.0019	-0.00001	-0.0432
Airplane	0.8895	-0.0246	-0.0001	-0.0281
Tank	0.9033	0.0083	-0.0029	-0.0232
Car and APCs	0.9583	0.0035	-0.00004	-0.0320
Truck and APCs	0.9032	-0.00006	0.0012	-0.0252
Truck and APCs	0.8916	0.0269	-0.0001	0.0132
Tank	0.8457	-0.0058	-0.0004	-0.0093
APC	0.9293	0.0185	0.0009	0.0011
Tank	0.9198	-0.0136	-0.0001	-0.0004
Car and APCs	0.9320	-0.0253	-0.0004	0.0136
Airplane (U-2)	0.9456	-0.0223	0.0005	-0.0133
Fishing Boat	0.9278	-0.0113	-0.0022	0.0263
21 level step wedge	0.9962	0.1109	0.0023	-0.0133
Pixel ruler	-0.0327	-0.1284	-0.0015	0.0215

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Table 10: Comparative Analysis of NPCR and UACI Scores.

Test Image Description	Blowfish		Logistic Map		Blowfish + Logistic Map	
	NPCR	UACI	NPCR	UACI	NPCR	UACI
Moon surface	0.9959	0.2621	0.9956	0.2462	0.9967	0.2812
Aerial	0.9959	0.2859	0.9957	0.2767	0.9962	0.3011
Airplane	0.9961	0.3322	0.9960	0.3286	0.9953	0.3526
Clock	0.9963	0.3541	0.9960	0.3514	0.9950	0.3700
Resolution chart	0.9990	0.3209	0.9930	0.4770	0.9964	0.5027
Chemical plant	0.9963	0.2869	0.9953	0.2778	0.9969	0.2974
Couple (NTSC test image)	0.9959	0.2768	0.9957	0.2641	0.9965	0.2915
Aerial	0.9963	0.3179	0.9957	0.3118	0.9961	0.3100
Stream and bridge	0.9962	0.2996	0.9961	0.2936	0.9961	0.3300
Male	0.9959	0.3252	0.9958	0.3200	0.9961	0.3300
Airport	0.9961	0.3007	0.9958	0.2918	0.9968	0.3051
Truck	0.9958	0.2685	0.9957	0.2526	0.9965	0.2824
Airplane	0.9962	0.2933	0.9953	0.2763	0.9960	0.3142
Tank	0.9958	0.2628	0.9953	0.2463	0.9968	0.2820
Car and APCs	0.9959	0.2710	0.9957	0.2576	0.9968	0.2868
Truck and APCs	0.9961	0.2765	0.9958	0.2642	0.9964	0.2889
Truck and APCs	0.9959	0.2886	0.9955	0.2766	0.9963	0.2964
Tank	0.9960	0.2656	0.9955	0.2488	0.9966	0.2800
APC	0.9959	0.2597	0.9955	0.2426	0.9970	0.2792
Tank	0.9959	0.2706	0.9956	0.2582	0.9967	0.2872
Car and APCs	0.9960	0.2628	0.9960	0.2469	0.9970	0.2801
Airplane (U-2)	0.9961	0.3991	0.9956	0.3893	0.9948	0.3850
Fishing Boat	0.9959	0.2845	0.9959	0.2753	0.9967	0.3001
21 level step wedge	0.9947	0.3594	0.9958	0.3382	0.9959	0.3505
Pixel ruler	0.9999	0.3952	0.9928	0.4872	0.9960	0.5161

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CONCLUSIONS

In this paper, we have proposed a hybrid color image encryption system that could contribute reliable and trustworthy results. We have used a combination of block cipher symmetric blowfish algorithm and chaotic logistic maps for this purpose. The use of combination has managed to produce higher security and performance by diminishing pixel correlations, increasing entropy value, and reducing mutual information. So, we can conclude that the proposed cryptosystem could result in better encryption for the storage and transmission of images.

Author' s Contribution

We have solely made this paper thinking about a more secure cryptosystem to offer more trustworthiness and performance. We have combined a fast and free Blowfish algorithm with a dynamic, chaotic logistic map. The experiments and comparison to blowfish and the logistic map was done separately.

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ജിനി എം.ടി.

സാഹിത്യവ്യവസ്ഥയുടെ അനുപേക്ഷണീയമായ ഭാഗമാണ് വിവർത്തനം. മലയാളഭാഷയുടെയും സാഹിത്യത്തിന്റെയും വളർച്ചയിൽ മറ്റ് ഭാഷകളുമായുണ്ടായ സമ്പർക്കത്തിന് അതിപ്രധാനമായ പങ്കുണ്ട്. വാൾട്ടർ ബെഞ്ചമിൻ തന്റെ വിവർത്തകന്റെ ദൗത്യം എന്ന പ്രബന്ധത്തിൽ ഭാഷകൾക്ക് അന്യോന്യമുള്ള രക്തബന്ധങ്ങൾ പൂർത്തീകരിക്കപ്പെടുന്നത് അവ പരിഭാഷകളിലൂടെ ആദർശമണ്ഡലത്തിലേക്ക് സഞ്ചരിക്കുമ്പോളാണെന്ന് വാദിക്കുന്നു.[1] ഭാഷകൾ പരസ്പരപൂരകങ്ങളാണ്. വിവർത്തനം അവ തമ്മിലുള്ള സംഭാഷണമാണ്.

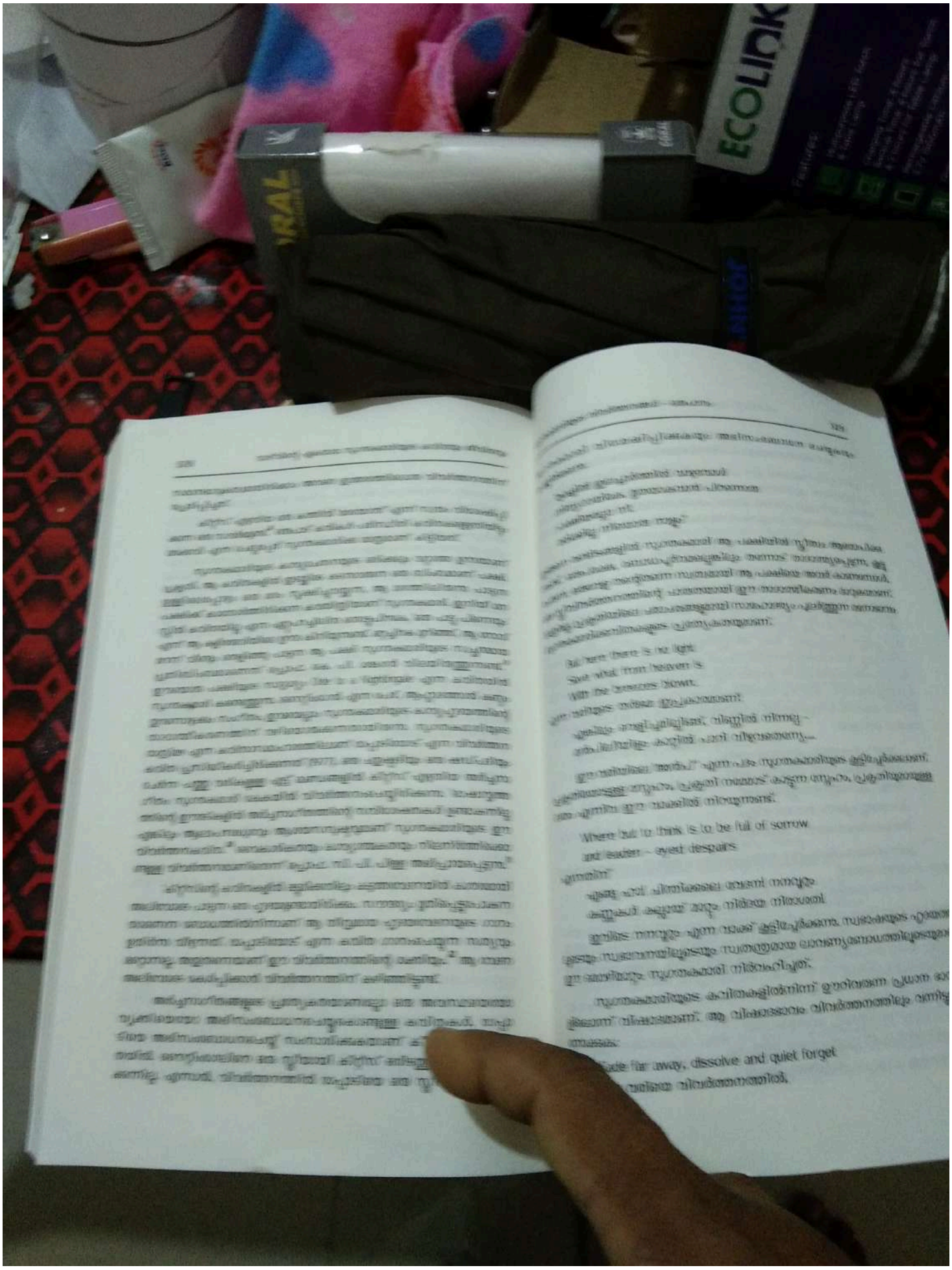
കവിതാരചനപോലെതന്നെ ഏറെ ശ്രമകരമായ ഒരു സൃഷ്ടികർമ്മമാണ് കവിതാവിവർത്തനം. ഒരു നിർദിഷ്ടഭാഷയിൽ ഒരു കവി സൃഷ്ടിക്കുന്ന ഭാവപ്രപഞ്ചം മറ്റൊരു ഭാഷയിൽ, സന്ദർഭത്തിൽ പുനഃസൃഷ്ടിക്കുന്ന ഒരു തീവ്രധ്യാനമാണത്.[2] വിവർത്തിതകവിതയിൽ മൂലകവിതയുടെ ആത്മചൈതന്യം പൂർണമായും പ്രതിബിംബിക്കുവാൻ വിവർത്തകന് കഴിയുകയില്ലെന്ന് ഡോ. ജോൺസൻ അഭിപ്രായപ്പെടുന്നുണ്ട്.[3] എന്നാൽ, മൂലകൃതിയുടെ വിമർശനാത്മകമായ വ്യാഖ്യാനമാവുകയും അതേസമയം സ്വതന്ത്രകൃതിയെപ്പോലെ വിമർശനവും വ്യാഖ്യാനവും ക്ഷണിച്ചു വരുത്തുകയും ചെയ്യുന്ന കാവ്യവിവർത്തനത്തിന്റെ ഇരട്ട മുഖത്തെക്കുറിച്ച് ഹോംസ് പറയുന്നതിങ്ങനെയാണ്: "എല്ലാ വിവർത്തനങ്ങളും വിമർശനാത്മകമായ ഒരു വ്യാഖ്യാനമാണെങ്കിലും കവിതാവിവർത്തനം അവയിൽനിന്നെല്ലാം വേറിട്ടു നില്ക്കുന്നത് അതിന് കാവ്യമായി പെരുമാറുക എന്ന ലക്ഷ്യംകൂടിയുള്ളതിനാലാണ്. ഒരേ സമയം അധിസാഹിത്യമായും (Metalanguage) അടിസ്ഥാനസാഹിത്യമായും പെരുമാറുന്ന ഈ ഇരട്ട സ്വഭാവമുള്ളതിനാൽ ഈ പ്രത്യേക സാഹിത്യരൂപത്തിന് അധികവിത എന്ന സ്ഥാനം നൽകുന്നതായിരിക്കും ഉചിതം."[4]

ഭാവം എത്രതന്നെയായാലും നല്ല വിവർത്തനം തന്മയീഭാവത്തിന്റെ കൂടിയാണ്. നിർവൃതിയുടെ ലയമാണ്. കവിക്ക് അനുദ്ഗതമായ ഭാവസമാധി ക്കുശേഷം സ്ഥാനമായ തരംഗദൈർഘ്യത്തിൽ സംവദിക്കാനാവുന്നവനുമാത്രമേ നല്ല കവിതാവിവർത്തകനാകാൻ കഴിയൂ എന്ന് എൻ. ആർ. ഗോപിനാഥപിള്ള അടിവരയിട്ടുപറയുന്നു.[5] സുഗതകുമാരിയുടെ വിവർത്തനകവിതകളുടെ തിരഞ്ഞെടു പ്പിലും മൂലഗ്രന്ഥകാരന്മാരുമായുള്ള സമാനഹൃദയത്തിന്റെ ഇഴയടുപ്പങ്ങൾ ദർശിക്കാ നാകും. മൂലകൃതിയുമായുള്ള മനപ്പൊരുത്തം, ആത്മബന്ധം ഉണ്ടാക്കുന്ന കൃതികൾ പലപ്പോഴും ആനുകരണത്തിന് പ്രേരിപ്പിക്കുന്നു. തന്റെ മൗലികരചനകളുടെ വിഷയങ്ങളുമായി അങ്ങേയറ്റം പൊരുത്തപ്പെടുന്ന പ്രമേയങ്ങൾ സ്വീകരിച്ചിട്ടുള്ള കവിതകളാണ് സുഗതകുമാരി വിവർത്തനത്തിന് എടുത്തിട്ടുള്ളതെന്ന കാര്യം ശ്രദ്ധേയമാണ്. അത്തരത്തിൽ ആകെ ഇരുപത്തിയൊന്ന് കവിതകളാണ് സുഗതകുമാരി വിവർത്തനം ചെയ്തിട്ടുള്ളത്.

കവിത്വം ചോർന്നുപോകാത്ത കവിതാവിവർത്തനങ്ങൾ മലയാളത്തിൽ ധാരാളം ഉണ്ടായിട്ടുണ്ട് എന്നത് നിസ്തർക്കമാണ്. ഇംഗ്ലീഷ് സാഹിത്യത്തിലെ ഏറ്റവും ശ്രദ്ധേയരായ പ്രതിഭകളും കാല്പനികപ്രസ്ഥാനത്തിന്റെ നായകസ്ഥാ നീയരുമായി വിലയിരുത്തപ്പെടുന്ന ജോൺ കീറ്റ്സ്, ഷെല്ലി എന്നിവരുടെ മാത്രം കവിതകൾ സുഗതകുമാരി വിവർത്തനംചെയ്തിട്ടുള്ളത് കവിത്വം ഒട്ടും ചോർന്നുപോകാതെയാണ്.

അർച്ചനാഗീതങ്ങളിൽ ഏറെ ശ്രദ്ധേയമായ Ode to a Nightingale എന്ന കവിത, രാപ്പാടിയോട് എന്ന പേരിൽ സുഗതകുമാരി വിവർത്തനംചെയ്തിരി ക്കുന്നത് ഏറെ ശ്രദ്ധേയമാണ്. ജോൺ കീറ്റ്സിന്റെ അർച്ചനാകാവ്യങ്ങളുടെ പരമ്പരാ അവയുടെ ബിംബസമൃദ്ധികൊണ്ട് ഏറെ ശ്രദ്ധിക്കപ്പെട്ടിട്ടുണ്ട്. അതിൽ Ode to a Nightingale 'എല്ലാ കാലത്തെയും എല്ലാ യുഗങ്ങളിലെയും മനുഷ്യ ഭാവനയുടെ അത്യുന്നത നായകശില്പങ്ങളിൽ ഒന്നാണ്'[6] എന്ന് ചാൾസ് സ്വിൻ ബേൺ വിശേഷിപ്പിക്കുന്നുണ്ട്. ഇംഗ്ലീഷ് ഭാഷകളിലെ കവിതകളിൽ ഏറ്റവും കറുമറുഉം സുന്ദരവും എന്ന് എം. ആർ. റിഡ്‌ലിയും ഈ കൃതിയെ വിശേഷിപ്പിക്കുന്നു.

കീറ്റ്സിന്റെയും സുഗതകുമാരിയുടെയും കാവ്യവഴികളിൽ ഒട്ടേറെ സമാ നതകളുണ്ട്. കാല്പനികയുഗത്തിലെ (Romantic Era) കവിയാണ് കീറ്റ്സ്(1795-1821). 'അടിസ്ഥാനപരമായി കാല്പനികവും വ്യക്തിവാദപരവുമായ ഭൂമികയിൽ നിന്നുകൊണ്ടാണ് സുഗതകുമാരിയും കാവ്യജീവിതം ആരംഭിച്ചത്. കാല്പനിക ഭാവനയുടെ മാന്ത്രികഭംഗികളും ഭാവഗീതത്തിന്റെ ഗാനാത്മകതയും ആത്മാവി ഷ്കാരത്തിന്റെ വികാരസാന്ദ്രതയും മുറ്റിയ ആ രചനകൾ ഉടക്കത്തിൽത്തന്നെ ചങ്ങമ്പുഴയ്ക്കുശേഷം അപചയപ്പെട്ട ഉടങ്ങിയ മലയാളത്തിലെ കാല്പനിക കവിതയ്ക്ക് നവോന്മേഷം പകർന്നവയാണ്.'[7] കാല്പനികതയുടെ ശക്തനായ പ്രയോക്താവായിരുന്ന ജോൺ കീറ്റ്സിനോട് സുഗതകുമാരിക്ക് തോന്നിയ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സമാനാശയമായിരിക്കും അവരെ ഇത്തരത്തിലൊരു വിവർത്തനത്തിന് പ്രേരിപ്പിച്ചത്.

കീറ്റ്സ് എഴുതിയ ഒരു കത്തിൽ 'ശ്രദ്ധയാണ് 'എന്ന്' സത്യം വിശ്വസിപ്പിക്കുന്ന ഒരു സന്ദർഭമുണ്ട്.[8] ഒരാൾ കവികൾ പരിശ്രമിച്ച് കവിതകളെഴുതിയിട്ടും മരക്കാൻ എന്ന പെട്ടെന്ന് സുഗതകുമാരിക്ക് മാത്രമാണ് കിട്ടിയത്.

സുഗതകുമാരിയുടെ കാവ്യചേതനയുടെ ഒരിക്കലും വറ്റാത്ത ഉറവയാണ് പ്രകൃതി. ആ കവിതകളിൽ ഇടയ്ക്കിടെ കടന്നുവരുന്ന ഒരു നിരീക്ഷണമാണ് പക്ഷി. ഉള്ളിലെപ്പോഴും ഒരു മാപ സൂക്ഷിച്ചുവയ്ക്കുന്ന, ആ മരത്തിലിരുന്ന പാടുന്ന പക്ഷിക്ക് കാണാൻവിധിക്കപ്പെട്ട കവയിത്രിയാണ് സുഗതകുമാരി. ഇനിയീ മനസ്സിൽ കവിതയില്ല എന്ന ഏറ്റവും പുതിയ കവിതയിലും തൊട്ടുപിറകേ, 'ഒരു പാട്ട് പിന്നെയും' എന്ന് ആ കളിത്തോഴിയിലെ ഉറവ കിനിയുന്നുണ്ട്. ഒറ്റപ്പിറക് മുറിഞ്ഞത്, ആ നോവ് മറന്ന് വീണ്ടും തെളിഞ്ഞു പാടുന്ന ആ പക്ഷി സുഗതകുമാരിയുടെ സ്വച്ഛന്ദമായ പ്രതിബിംബമാണെന്ന് പ്രൊഫ. കെ. പി. ശങ്കരൻ വിലയിരുത്തുന്നുണ്ട്.[9] ഈ പ്രിയപക്ഷിയുടെ സാമ്യം Ode to a Nightingale എന്ന കവിതയിലൂടെ സുഗതകുമാരി കണ്ടെത്തുന്ന നൈറ്റിംഗേൽ എന്ന പേര്, ആഹ്ലാദത്താൽ കണ്ണും മനവുമാർദ്രമാക്കുന്ന ഇതൊന്നുകൊണ്ടും സംഗീതം, ഇവയെല്ലാം സുഗതകുമാരിയുടെ കാവ്യഹൃദയത്തിന്റെ താദാത്മ്യീകരണത്തിന് വഴിയൊരുക്കുന്നതായിരുന്നു. സുഗതകുമാരിയുടെ മാതൃഭൂമി എന്ന കവിതാസ്വാഹാരത്തിലാണ് രാപ്പാടിയോട് എന്ന വിവർത്തന കവിത പ്രസിദ്ധീകരിച്ചിരിക്കുന്നത് (1977). ഒരു ചലച്ഛ്രുദ്ധിയും ഒരു ഷഡ്പദിയും ചേർന്ന പത്തു വരികളുള്ള എട്ട് ഖണ്ഡങ്ങളിൽ കീറ്റ്സ് എഴുതിയ അർച്ചനാഗീതം സുഗതകുമാരി കേരളത്തിൽ വിവർത്തനംചെയ്തിരിക്കുന്നു. 'ഭാഷാവൃത്തത്തിന്റെ ഈടുകളിൽ അർച്ചനാഗീതത്തിന്റെ സവിശേഷതകൾ ഉണ്ടാക്കുന്നില്ല എങ്കിലും ആലാപനമധുരവും ആശയസമൃദ്ധവുമാണ് സുഗതകുമാരിയുടെ ഈ വിവർത്തനകവിത.[10] വൈകാരികതയും കാവ്യാത്മകതയും നിലനിർത്തിക്കൊണ്ടുള്ള വിവർത്തനമാണിതെന്ന് പ്രൊഫ. സി. പി. പിള്ള അഭിപ്രായപ്പെടുന്നു.[11]

'കീറ്റ്സിന്റെ കവിതകളിൽ ഒട്ടുമിക്കതിലും കടുത്തവേദനയിൽ കാമുകിയെ അലിവോടെ പാടുന്ന ഒരു ഹൃദയമുണ്ടായിരിക്കും. സൗന്ദര്യം മൃത്യുവിലേക്കു നയിക്കുന്നു എന്ന ബോധത്തിൽനിന്നാണ് ആ തീവ്രമായ ഹൃദയവേദനയുടെ ഗാനം ഉതിർന്നു വീഴുന്നത്. രാപ്പാടിയോട് എന്ന കവിത ഗാനംചെയ്യുന്ന സത്യവും മറ്റൊന്നല്ല. അതുതന്നെയാണ് ഈ വിവർത്തനത്തിന്റെ ശക്തിയും.[12] ആ വേദന അലിവോടെ കേൾപ്പിക്കാൻ വിവർത്തനത്തിന് കഴിഞ്ഞിട്ടുണ്ട്.

അർച്ചനാഗീതങ്ങളുടെ പ്രത്യേകതയാണല്ലോ ഒരു താവസ്ഥയെയോ വ്യക്തിയെയോ അഭിസംബോധനചെയ്തുകൊണ്ടുള്ള കവിതകൾ. രാപ്പാടിയെ അഭിസംബോധനചെയ്ത് സംസാരിക്കുകയാണ് കീറ്റ്സ് ഈ കവിതയിൽ. നൈറ്റിംഗേലിനെ ഒരു സ്ത്രീയായി കീറ്റ്സ് ഒരിടത്തും വിശേഷിപ്പിക്കുന്നില്ല. എന്നാൽ, വിവർത്തനത്തിൽ രാപ്പാടിയെ ഒരു സ്ത്രീയായിത്തന്നെ

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രാപ്പാടിയും നൈറ്റിംഗേലും

വിവർത്തനത്തിന്റെ സ്ത്രൈണചാരുതയും താദാത്മ്യീകരണവും

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സംഗ്രഹം

ജോൺ കീറ്റ്സിന്റെ 'Odd to a Nightingale' സുഗതകുമാരി 'രാപ്പാടിയോട്' എന്ന പേരിൽ വിവർത്തനം ചെയ്തിട്ടുണ്ട്. ഈ വിവർത്തനത്തിന് മൂലകൃതിയുമായുള്ള സാമ്യവ്യത്യാസങ്ങൾ കണ്ടെത്തുന്നു. സ്ത്രീപക്ഷവായനക്കുള്ള സാധ്യതകൾ ഈ വിവർത്തനത്തിൽ ഒളിഞ്ഞിരിക്കുന്നുണ്ട്. സമാനഭാവുകത്വത്തിന്റെ വക്താക്കളായി കീറ്റ്സിനെയും സുഗതകുമാരിയെയും അടയാളപ്പെടുത്താം എന്നിരിക്കെത്തന്നെ പുരുഷകേന്ദ്രീകൃതവാക്കുകളും അതിന് സ്ത്രീ ബോധപൂർവമോ അബോധപൂർവമോ നൽകുന്ന സ്ത്രീപക്ഷ വിവർത്തനവും ഈ വിവർത്തനത്തെ ശ്രദ്ധേയമാക്കുന്നുണ്ട്. മൂലഗ്രന്ഥകാരനുമായുള്ള സമാന ഹൃദയത്തിന്റെ ഇഴയടുപ്പങ്ങൾ ഇതിൽ ദർശിക്കാനാകും. അത്തരത്തിലുള്ള പഠനത്തിന് ഈ പ്രബന്ധത്തിൽ ശ്രദ്ധയൂന്നുന്നു.

താക്കോൽവാക്കുകൾ : കവിതാവിവർത്തനം, സമാനഭാവുകത്വം, സ്ത്രീപക്ഷവിവർത്തനം, താദാത്മീകരണം.

സാഹിത്യവ്യവസ്ഥയുടെ അനുപേക്ഷണീയമായ ഭാഗമാണ് വിവർത്തനം. മലയാള ഭാഷയുടെയും സാഹിത്യത്തിന്റെയും വളർച്ചയിൽ മറ്റ് ഭാഷകളുമായുണ്ടായ സമ്പർക്കത്തിന് അതിപ്രധാനമായ പങ്കുണ്ട്. വാൾട്ടർ ബെഞ്ചമിൻ തന്റെ 'വിവർത്തകന്റെ ദൗത്യം' എന്ന പ്രബന്ധത്തിൽ ഭാഷകൾക്ക് അന്യോന്യമുള്ള രക്തബന്ധങ്ങൾ പൂർത്തീകരിക്കപ്പെടുന്നത് അവ പരിഭാഷകളിലൂടെ ആദർശമണ്ഡലത്തിലേക്ക് സഞ്ചരിക്കുമ്പോളാണെന്ന് പറയുന്നു[1]. ഭാഷകൾ പരസ്പരപൂരകങ്ങളാണ്. വിവർത്തനം അവ തമ്മിലുള്ള സംഭാഷണമാണ്.

കവിതാരചന പോലെത്തന്നെ ഏറെ ശ്രമകരമായ ഒരു സൃഷ്ടികർമമാണ് കവിതാവിവർ

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താനും. ഒരു വിഭിന്ന ഭാഷയിൽ ഒരു കവി തൂലികയെ ഭാഷയിലെ ഒരു കവിയുടെ കവിതയിൽ, സമർത്ഥനായി, പ്രയോഗിക്കുന്നു എന്നതിനാൽ,' നിരൂപകനായിരുന്നു ഉത്തമ രായുടെ ആശയത്തെക്കുറിച്ചും പ്രതിപാദിച്ചിരുന്നു. കവിതയെക്കുറിച്ചുള്ള കവിതയെ ന്ന് ലോ. ഭാഷയിലെ അഭിപ്രായപ്പെടുന്നു. എന്നാൽ ഉത്തമരായുടെ നിരീക്ഷണത്തെ വ്യാഖ്യാനങ്ങളും അഭിപ്രായം ഒന്നുതന്നെയാണ്. കവിതയെക്കുറിച്ചുള്ള കവിതയെ കണ്ടെത്തിയ വിമർശകരുടെ ഇടയിൽ ഉത്തമരായുടെ പേരും ഉൾപ്പെടുന്നു. കവിതയെക്കുറിച്ചുള്ള കവിതയെ പറയുന്നതിനെയാണ്. "എല്ലാ നിരീക്ഷണങ്ങളും നിരൂപണങ്ങളും ഒരർത്ഥത്തിൽ കവിതയെ കുറിച്ചുള്ള കവിതയാണ്. അതിനാൽ അവയെല്ലാം തന്നെ ഉത്തമരായുടെ വാക്കുകളിൽ മെറ്റാ ലാംഗ്വേജ് (Meta Language) അടിസ്ഥാനമാക്കിയുള്ള കവിതയാണ്. ഒരു സാധാരണ ഭാഷയിലുള്ള ഈ ഉള്ളടക്കത്തിനെ ഈ ഉള്ള പ്രത്യേക സാഹിത്യരൂപത്തിന് അതീതമായി എന്ന സാധാരണ നിരീക്ഷണത്തിനപ്പുറം ഉണ്ടാകുന്നു."

ഭാവം എന്ന് തന്നെ ആധുനിക നല്ല വിമർശനം അതിജീവനത്തിന്റെ കഥയാണ്, നിലനിൽപ്പിന്റെ കഥയാണ്. കവിക്ക് അനുഭവപ്പെടുന്ന ഭാവനാതലത്തെ ഒരു കവിതയിൽ ഒരു വായനക്കാരനിലേക്ക് പകർന്നു കൊടുക്കുമ്പോൾ അതിനെ കവിതയായി കണക്കാക്കാനാവുന്നതെങ്ങനെ എന്ന് എൻ. കൃഷ്ണപിള്ള, ആർ. ഗോപിനാഥൻ നായർ തുടങ്ങിയവർ അഭിപ്രായപ്പെടുന്നു." സൂക്ഷ്മമായ വിശകലനത്തിലൂടെ കവിതകളുടെ തിരഞ്ഞെടുപ്പിലും ചിലപ്പോഴൊക്കെ വായനക്കാരനിലുള്ള സ്വാധീനത്തിന്റെ ഉദാഹരണങ്ങൾ വിശദീകരിക്കാനാകും. ചിലപ്പോൾ ഒരു വാക്കിന്റെ പ്രയോഗം, ആവർത്തനം ഉണ്ടാക്കുന്ന ഭംഗി, ഇവ പലപ്പോഴും അനുകരണത്തിന് പ്രേരിപ്പിക്കുന്നു. തന്റെ മനോഭാവങ്ങളെ വിശ്വസിച്ചായി അങ്ങേയറ്റം പൊരുത്തപ്പെടുന്ന പ്രത്യേകങ്ങൾ സൃഷ്ടിച്ചിട്ടുള്ള കവിതകളാണ് സൂക്ഷ്മകാരി വിവർത്തനത്തിന് എടുത്തിട്ടുള്ളതെന്ന കാര്യം ശ്രദ്ധേയമാണ്. അതുകൊണ്ടുതന്നെ ഇവ പരിധിയൊന്ന് കവിതകളാണ് സൂക്ഷ്മകാരി വിവർത്തനം ചെയ്തിട്ടുള്ളത്.

കവിതാ പോർനാടകമായ കവിതാവിവർത്തനങ്ങൾ മലയാളത്തിൽ ധാരാളം ഉണ്ടാ യിട്ടുണ്ട് എന്നതാണ് നിസ്തർക്കമാണ്. ഇംഗ്ലീഷ് സാഹിത്യത്തിലെ ഏറ്റവും ശ്രദ്ധേയമായ പ്രതി യും കാല്പനിക പ്രസ്ഥാനത്തിന്റെ നായകസ്ഥാനീയരിൽ പ്രമുഖനായി വിലയിരുത്തപ്പെടുന്ന ജോൺ കീറ്റ്സിന്റെ കവിത സൂക്ഷ്മകാരി വിവർത്തനം ചെയ്തിട്ടുള്ളത് കവിതാ ലൂടെ പോർനാടകമായാണ്.

അർച്ചനാഗീതങ്ങളിൽ ഏറെ ശ്രദ്ധേയമായ Ode to a Nightingale എന്ന കവിത മാപ്പി ടിയോട് എന്ന പേരിൽ സൂക്ഷ്മകാരി വിവർത്തനം ചെയ്തിരിക്കുന്നത് ഏറെ ശ്രദ്ധേയമാണ്. ജോൺ കീറ്റ്സിന്റെ അർച്ചനാകാവ്യങ്ങളുടെ പരമാര അവയുടെ വിഷയവൈവിധ്യമാണെന്ന് ഏറെ ശ്രദ്ധിക്കപ്പെട്ടിട്ടുണ്ട്. അതിൽ Ode to a Nightingale "എല്ലാ കാലത്തെയും എല്ലാ സുഖങ്ങളിലെയും മനുഷ്യഭാവനയുടെ അത്യന്തര നായകശില്പങ്ങളിൽ ഒന്നാണ്"" എന്ന് ഹാരോൾഡ് ബ്ലൂം വിശേഷിപ്പിക്കുന്നുണ്ട്.

കീറ്റ്സിന്റെയും സൂക്ഷ്മകാരിയുടെയും കാവ്യജീവിതങ്ങൾ ഒട്ടേറെ സമാനതകളുണ്ട്. കാ ല്പനിക യുഗത്തിലെ (Romantic Era) കവിയാണ് കീറ്റ്സ് (1795-1821). "അടിസ്ഥാനപരമായി കാല്പനികവും വ്യക്തിവാദപരവുമായ ശ്രമികയിൽ നിന്നാകൊണ്ടാണ് സൂക്ഷ്മകാരിയും കാവ്യ ജീവിതം ആരംഭിച്ചത്. കാല്പനികഭാവനയുടെ മാന്ത്രികഭംഗികളും ഭാവഗീതത്തിന്റെ ഗാനാ

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ത്മകതയും ആത്മാവിഷ്കാരത്തിന്റെ വികാരസാന്ദ്രതയും മുറ്റിയ ആ രചനകൾ ഇടശ്ശേരിൽ തന്നെ ചങ്ങമ്പുഴക്കുശേഷം അപചയപ്പെട്ടുതുടങ്ങിയ മലയാളത്തിലെ കാല്പനിക കവിതക്ക് നവോന്മേഷം പകർന്നവയാണ്"[7]. കാല്പനികതയുടെ ശക്തനായ പ്രയോക്താവായിരുന്ന ജോൺ കീറ്റ്സിനോട് സുഗതകുമാരിക്ക് തോന്നിയ സമാനഭാവുകത്വമായിരിക്കാം അവരെ ഇത്തരത്തിലൊരു വിവർത്തനത്തിന് പ്രേരിപ്പിച്ചത്.

കീറ്റ്സ് എഴുതിയ ഒരു കത്തിൽ 'മരയോനത്' എന്ന് സ്വയം വിശേഷിപ്പിക്കുന്ന ഒരു സന്ദർഭമുണ്ട്.[8] ഒരുപാട് കവികൾ പരിസ്ഥിതി കവിതകളെഴുതിയിട്ടും 'മരക്കവി' എന്ന ചെല്ലപ്പേര് സുഗതകുമാരിക്ക് മാത്രമാണ് കിട്ടിയത്.

സുഗതകുമാരിയുടെ കാവ്യചേതനയുടെ ഒരിക്കലും വറ്റാത്ത ഉറവയാണ് പ്രകൃതി. ആ കവിതകളിൽ ഇടയ്ക്കിടെ കടന്നുവരുന്ന ഒരു ബിംബമാണ് പക്ഷി. ഉള്ളിലെപ്പോഴും ഒരു മരം സൂക്ഷിച്ചുവയ്ക്കുന്ന, ആ മരത്തിലിരുന്ന് പാടുന്ന പക്ഷിക്ക് കാതോർത്തിരിക്കുന്ന കവയിത്രിയാണ് സുഗതകുമാരി. ഇനിയീ മനസ്സിൽ കവിതയില്ല എന്ന ഏറ്റുപറച്ചിലിനു തൊട്ടുപിറകേ, 'ഒരു പാട്ടു പിന്നെയും' എന്ന് ആ കളിരുരിയിലെ ഉറവ കിനിയുന്നുണ്ട്. ഒറ്റച്ചിറക് മുറിഞ്ഞ്, ആ നോവ് മറന്ന്, വീണ്ടും തെളിഞ്ഞ് പാടുന്ന ആ പക്ഷി സുഗതകുമാരിയുടെ സ്വച്ഛന്ദമായ പ്രതിബിംബമാണെന്ന് പ്രൊഫ.കെ.പി. ശങ്കരൻ വിലയിരുത്തുന്നുണ്ട്.[9] ഈയൊരു പക്ഷിയുടെ സാദൃശ്യം 'Ode to a Nightingale' എന്ന കവിതയിൽ സുഗതകുമാരി കണ്ടെത്തുന്നു. നൈറ്റിംഗേൽ എന്ന പേര്, ആഹ്ലാദത്താൽ കണ്ണും പൂരപ്പൊഴുക്കും സംഗീതം, ഇവയെല്ലാം സുഗതകുമാരിയുടെ കാവ്യഹൃദയത്തിന്റെ താദാത്മ്യീകരണത്തിന് വഴിയൊരുക്കുന്നതായിരുന്നു. സുഗതകുമാരിയുടെ രാത്രിമഴ എന്ന കവിതാസമാഹാരത്തിലാണ് രാപ്പാടിയോട് എന്ന വിവർത്തന കവിത പ്രസിദ്ധീകരിച്ചിരിക്കുന്നത് (1977). ഒരു ചതുഷ്പദിയും ഒരു ഷഡ്പദിയും ചേർന്ന പത്ത് വരികളുള്ള എട്ട് ഖണ്ഡങ്ങളിൽ കീറ്റ്സ് എഴുതിയ അർച്ചനാഗീതം സുഗതകുമാരി കേകയിൽ വിവർത്തനം ചെയ്തിരിക്കുന്നു. "ഭാഷാവൃത്തത്തിന്റെ ഈരടികളിൽ അർച്ചനാഗീതത്തിന്റെ സവിശേഷതകൾ ഉണ്ടാകുന്നില്ല എങ്കിലും ആലാപനമധുരവും ആശയസമൃദ്ധവുമാണ് സുഗതകുമാരിയുടെ ഈ വിവർത്തനകവിത."[10] വൈകാരികതയും കാവ്യാത്മകതയും നിലനിർത്തിക്കൊണ്ടുള്ള വിവർത്തനമാണിതെന്ന് പ്രൊഫ.സി.ഡി.പിള്ള അഭിപ്രായപ്പെടുന്നു."

"കീറ്റ്സിന്റെ കവിതകളിൽ ഒട്ടു മിക്കതിലും കടുത്ത വേദനയിൽ, കാതരമായി, അലിവോടെ പാടുന്ന ഒരു ഹൃദയമുണ്ടായിരിക്കും. സൗന്ദര്യം ഗ്രഹിപ്പെട്ടു പോകുന്നതാണെന്ന ബോധത്തിൽനിന്നാണ് ആ തീവ്രമായ ഹൃദയവേദനയുടെ ഗാനം ഉതിർന്നു വീഴുന്നത്. രാപ്പാടിയോട് എന്ന കവിത ഗാനം ചെയ്യുന്ന സത്യവും മറ്റൊന്നല്ല. അതുതന്നെയാണീ വിവർത്തനത്തിന്റെ ശക്തിയും".[11] ആ വേദന അലിവോടെ കേൾപ്പിക്കാൻ വിവർത്തനത്തിന് കഴിഞ്ഞിട്ടുണ്ട്.

അർച്ചനാഗീതങ്ങളുടെ പ്രത്യേകതയാണല്ലോ ഒരു അവസ്ഥയെയോ വ്യക്തിയെയോ അഭിസംബോധന ചെയ്യുകൊണ്ടുള്ള കവിതകൾ. രാപ്പാടിയെ അഭിസംബോധന ചെയ്ത് സംസാരിക്കുകയാണ് കീറ്റ്സ് ഈ കവിതയിൽ. നൈറ്റിംഗേലിനെ ഒരു സ്ത്രീയായി കീറ്റ്സ് ഒരിടത്തും വിശേഷിപ്പിക്കുന്നില്ല. എന്നാൽ വിവർത്തനത്തിൽ രാപ്പാടിയെ ഒരു സ്ത്രീയായിത്തന്നെ സുഗതകുമാരി വിശേഷിപ്പിക്കുകയും അഭിസംബോധന ചെയ്യുകയും ചെയ്തിരിക്കുന്നു.

"മുകളിൽ ഇലച്ചാർത്തിൽ വാഴുവോൾ
നിത്യഗായികേ,മൃതയാകുവാൻ പിറന്നൊരു
പക്ഷിയല്ലോ നീ,മരിക്കില്ല നീയൊരു നാളും"

ഇങ്ങനെ രണ്ടിടങ്ങളിൽ സ്ത്രീത്വം സുഗതകുമാരി ആ പക്ഷിയിൽ ആരോപിക്കുന്നുണ്ട്. ഒരുപക്ഷെ ബോധപൂർവ്വമല്ലെങ്കിലും തന്നോട് താദാത്മ്യപ്പെടുന്ന, കൂട്ടുചേരുന്ന, ഒരുവേള തന്റെ തന്നെ സ്വത്വമായി ആ പക്ഷിയെ അവർ കാണുമ്പോൾ, ഒരു സ്ത്രീവിവർത്തനത്തിന്റെ ചാരുതയായി ഈ താദാത്മീകരണം മാറുകയാണ്. മാത്രമല്ല പ്രകൃതിയിലെ ചരാചരങ്ങളുമായി സാഹോദര്യം പുലർത്തുന്ന മനോഭാവം സുഗതകുമാരികവിതകളുടെ പ്രത്യേകതയാണ്.

But here there is no light
Save what from heaven is
with the breezes blown.

എന്ന വരിയുടെ തർജ്ജമ ഇപ്രകാരമാണ്.

എങ്കിലും വെളിച്ചമില്ലിങ്ങ്,വിണ്ണിൽ നിന്നൽപ്പ -
മൻപിലിയിളം കാറ്റിൽ പാറി വീഴുവതെന്യേ .....

ഈ വരിയിലെ 'അൻപ്' എന്ന പദം സുഗതകുമാരിയുടെ കൂട്ടിച്ചേർക്കലാണ്. പ്രകൃതിയോടുള്ള സ്നേഹം, പ്രകൃതി നമ്മോട് കാട്ടുന്ന സ്നേഹം, പ്രകൃതിയുമായുള്ള ലയം ഈ വാക്കിൽ നിറയുന്നുണ്ട്.

Where but to think is to be full of sorrow
and leaden - eyed despairs

എന്നതിന്

എങ്ങു ഹാ! ചിന്തിക്കലെ വേദന! നനവൂറും
കണ്ണുകൾ കല്ലായ് മാറും നിർദയ നിരാശത!

ഇവിടെ നനവൂറും എന്ന വാക്ക് കൂട്ടിച്ചേർക്കുന്നു. സ്വഭാഷയുടെ ഹൃദയത്തിലൂടെയും സ്വഭാവനയിലൂടെയും സ്വതന്ത്രമായ ലാവണ്യബോധത്തിലൂടെയുമാണ് ഈ മൊഴിമാറ്റം സുഗതകുമാരി നിർവഹിച്ചത്.

സുഗതകുമാരിയുടെ കവിതകളിൽ നിന്ന് ഊറിവരുന്ന പ്രധാന ഭാവങ്ങളിലൊന്ന് വിഷാദമാണ്. ആ വിഷാദഭാവം വിവർത്തനത്തിലും വന്നിട്ടുള്ളത് നോക്കുക.

Fade far away, dissolve and quiet forget

എന്ന ഒരു വരിയെ വിവർത്തനത്തിൽ,

മങ്ങിമാഞ്ഞെങ്കിൽ, ദൂര-ദൂരത്തിലലിഞ്ഞെങ്കിൽ...
ഒന്ന് ഞാൻ മറന്നെങ്കിൽ,നീയറിയാത്തീ ശോകം.

എന്ന് ഈരടിയാക്കുന്നു. ഈ വിഷാദാവസ്ഥ വാക്കുകളായി അബോധപൂർവം പുറത്തുവരുന്നു എന്നതിനുദാഹരണമാണ്, ഈ വരിയിലെ നീയറിയാത്തീ ശോകം എന്ന കൂട്ടിച്ചേർക്കൽ. കീറ്റ്സ് പാതിവഴിയിൽ നിറുത്തിയതിന് ഇവിടെ പൂരണം നൽകുക കൂടി ചെയ്യുന്നുണ്ട് സുഗതകുമാരി.

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I cannot see what flowers are at my feet

എന്ന വരിക്ക്

ഞാനറിയുന്നില്ലേയു പൂക്കളോ .....കാൽക്കൽ? തങ്ങി -

യീ മരങ്ങളിലേയു സൗരഭ്യമുലാവുന്നു.

എന്നാണ് പരിഭാഷ. ഇവിടെ എനിക്ക് കാണാൻ കഴിയുന്നില്ല എന്നതിന് ഞാനറിയുന്നില്ല എന്നാണ് സുഗതകുമാരിയുടെ ഭാഷ്യം. സ്ത്രീയുടെ കാഴ്ചകൾ കണ്ണിന്റേതുമാത്രമല്ല, അത് മനസ്സിന്റേതുകൂടിയാണ്. അത് അറിവാണ്. പുറമെയുള്ള ലോകത്തോടൊന്നതിനേക്കാൾ അവൾ അഭിരമിക്കുന്നത് അവളുടെ ആന്തരിക ലോകത്തോടാണ്. ഇവിടെ സുഗതകുമാരിയുടെ പ്രണയസങ്കല്പം കൂടി ചേർത്തുവായിക്കാം. കിനാവും നിലാവും പോലെ മറഞ്ഞു പോകാവുന്ന ഒന്നാണ് അനുരാഗമെങ്കിലും മനസ്സിനുള്ളിൽ നേർത്തൊരു സുഗന്ധം അവശേഷിപ്പിക്കാൻ അതിന് കഴിവുണ്ട്.

"അത് പൂവുപോലെ, കിനാവുപോലെ,
തിരിനാളം പോലെ, നിലാവുപോലെ
മറയും, എന്നാലും മനസ്സിനുള്ളിൽ
ഒരു തെല്ല പൂമണം ബാക്കി നിൽക്കും".

(അനുരാഗികൾക്കായി.....,കുറിഞ്ഞിപ്പൂക്കൾ)

കൂട്ടിച്ചേർക്കലുകൾക്കു പുറമെ അർത്ഥഭേദമുള്ള പദങ്ങൾ പകരം വയ്ക്കുന്നുണ്ടീ വിവർത്തനത്തിൽ.

But on the viewless wings of Poesy

എന്ന വരിയിലെ Poesy (കാവ്യരചന) എന്നതിന് ഗാനം എന്നാണ് സുഗതകുമാരി പകരം വയ്ക്കുന്നത്. സുഗതകുമാരി കവിതകൾ പൊതുവെ സംഗീതാത്മകമാണ്. മാത്രമല്ല, തന്റെ ഒരുപാട് കൃതികളിൽ, കവിതയെ ഗാനം എന്നുതന്നെയാണ് സുഗതകുമാരി വിശേഷിപ്പിച്ചിരിക്കുന്നത്.

ഉദാഹരണമായി

വാടിപ്പോവുകിലാകട്ടെ,യെന്നുയിരിലി -

ഗാനങ്ങൾ പേറി സ്വയം തേടും നിൻപദം

(പാതിരാപ്പൂക്കൾ)

എങ്കിലുമനശ്വരനാക്കട്ടെ നിന്നെ ദീപ്ത -

മെന്റെ ഗാനത്താൽ എന്റെ ആത്മാവിൻ സുഗന്ധത്താൽ

നിഷ്ഫലമല്ലീ ജന്മം തോഴാ,

നിനക്കായി പാടുമ്പോൾ

നിഷ്ഫലമല്ലീ ഗാനം

നീ ഇത് മൂളി നടക്കുമ്പോൾ

(സമാനഹൃദയാ നിനക്കായി പാടുന്നേൻ)

ളുടെങ്കി ഒട്ടേറെ വരികൾ കണ്ടെത്താനാകും.

മരണം ഒരു യാഥാർത്ഥ്യമായി മുന്നിൽ നിൽക്കുമ്പോൾ കീറ്റ്സ് ഏറെ സംഘർഷത്തോടെ വേദനയോടെ യാത്രാമൊഴി ചൊല്ലുന്നു. Adieu എന്ന ഫ്രഞ്ച് പദമാണ് മൂലകവിതയിൽ വിടപറയാൻ കീറ്റ്സ് ഉപയോഗിക്കുന്നത്. Good Bye, Farewell എന്നൊക്കെയാണ് ആ വാക്കിന്റെ അർഥം. അതിന് തുല്യമായ പദങ്ങൾ മലയാളത്തിൽ ഉണ്ടായിരിക്കെ സുഗതകുമാരി പകരം വയ്ക്കുന്നത് 'വന്ദനം' എന്ന വാക്കാണ്. ഭാരതീയസംസ്കാരത്തിന്റെ സവിശേഷതകളിൽ ഒന്നാണ് മരണത്തെ ശാന്തമായി എതിരേൽക്കുക എന്നത്. യാത്രാമൊഴി ചൊല്ലുന്നതിനപ്പുറത്ത് തന്റെ അരികിലെത്തിയ മരണത്തിന് ആഢ്യത്വത്തോടെയുള്ള ഒരു സ്വാഗതവും അടിയറവ് പറയലും ഈ വാക്കിൽ കാണാം.

Adieu! adieu thy plaintive anthem fades
past the near meadows, over the still stream
up the hill side, and now tis buried deep
In the next valley glades

എന്ന വരികൾ

വന്ദനം ഹാ! വന്ദനം ദുഃഖനിർഭരം നിന്റെ
സംഗീതമരികത്തെ പുൽത്തട്ടിൽ മങ്ങികേൾപ്പൂ
സ്സന്ധ്യയാം പുഴക്കുമേലാണിപ്പോൾ! അതാ കുന്നി-
ന്നപ്പുറത്തായി! മുങ്ങിതാണുപോയി താഴ്വാരത്തിൽ

Buried Deep എന്നതിന് 'മുങ്ങിതാണുപോയി താഴ്വാരത്തിൽ' എന്ന് വിവർത്തനം ചെയ്യുമ്പോൾ സൂര്യാസ്തമയത്തിന്റെ വാങ്മയചിത്രമാണ് മുന്നിൽ തെളിയുന്നത്. ഇന്ന് അസ്തമിക്കുന്ന സൂര്യൻ പിറ്റേന്ന് ഉദയശോഭയിലേക്ക് വിടരും. മരണം ഒരു പുനർജന്മത്തിലേക്കുള്ള വാതിൽ തുറക്കൽ മാത്രം. ഭാരതസംസ്കാരത്തിന്റെ പുനർജന്മ വിശ്വാസത്തോട് ഇതിനെ ചേർത്ത് വായിക്കാം. ഒ.എൻ.വി.കുറുപ്പ് സുഗതകുമാരിയുടെ കവിതകളെപ്പറ്റി ഒറ്റവാക്യത്തിൽ കുറിക്കുന്നതിങ്ങനെയാണ്. "സത്യവും സൗന്ദര്യവും രണ്ടല്ലെന്ന് സുഗതകുമാരിയുടെ കവിതകൾ എന്റെ മനസ്സിൽ കുറിച്ചിടുന്നു". ഇതുതന്നെയല്ലേ കീറ്റ്സും പറഞ്ഞത്. Truth is Beauty, Beauty is Truth - That's all. കീറ്റ്സിന്റെ ഈ വാക്കും സുഗതകുമാരിയുടെ കാവ്യസാരവും ഒന്നായി മാറുന്ന തന്മയീഭാവത്തിന്റെ കല ഈ തർജ്ജമയിൽ വായിച്ചെടുക്കാം. സുഗതകുമാരി വിവർത്തനത്തിനായി തിരഞ്ഞെടുത്ത കവിതകൾക്കും കവികൾക്കും പൊതുവായ ചില ഇടങ്ങളും സമാനമായ ചില ഭാവങ്ങളുമുണ്ട്, അവ സവിശേഷ സംസ്കാരങ്ങളെ അടയാളപ്പെടുത്തുന്നവയാണെങ്കിൽ കൂടിയും. മൂലകൃതിയുടെ കർത്താവുമായി പരിഭാഷകനിലുണ്ടാവുന്നത് തികഞ്ഞ ഭാവൈക്യം തന്നെയാണ്. താദാത്മ്യം പ്രാപിക്കാൻ കഴിയാത്ത ഒരാളുടെ കഥയോ കവിതയോ വിവർത്തനം ചെയ്യാനാവില്ല. ആ കവിത അയാളുടെ മുന്നിൽ ഇറങ്ങിവരില്ല. സത്യത്തിൽ പരകായപ്രവേശനമാണ് വിവർത്തനം. സുഗതകുമാരി 'സമാനഹൃദയർക്കുവേണ്ടി' കവിതയെഴുതിയ കവയിത്രിയാണ്. ഒപ്പം, സമാനഹൃദയമുള്ളവരുടെ കവിതകളാണ് അവർ മലയാളത്തിൽ വിവർത്തനം ചെയ്തിട്ടുള്ളതും.

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