



Utkarsh

Vol. IX
2022-2023

A PEER REVIEWED RESEARCH JOURNAL IN COMMERCE AND ALLIED SUBJECTS OF
D.H.S.K. COMMERCE COLLEGE, DIBRUGARH

Anita Baruwa	Influence of Age and Gender on Urban Elderly Mobility in Upper Assam
Tanka Prasad Upadhyaya	Integration of Technology in the Teaching-Learning Process
Gitumoni Rajbongshi	Factors Responsible for Traffic Congestion in Shillong
Ankita Das	A study on the growth of health insurance sector in India
Panchi Haloi Swarup Bharali	Impact of Assam Skill Development Mission on Entrepreneurship in Assam
Mintu Kr. Das Kasturi Saikia	Forecasting Wheat Production in India using Time Series Analysis
Shiva Chakraborty Naina Purkayastha	Evaluation of Customer's Satisfaction Level using Travel Portal services: An Empirical Investigation from Tinsukia Town, Assam
Kaberee Borpuzari Sarmah	Rural Development and Empowerment of Rural Women in India
Dipak Jain Richika Kedia	A Comparative Study of Risk and Return of Selectequity Funds of Aditya Birla Sunlife (ABSL)

Editor : Bidisha Mahanta



Utkarsh

VOL. IX
2022-2023

A Peer Reviewed Research Journal in Commerce and Allied Subjects of
D.H.S.K. Commerce College, Dibrugarh

CONTENTS

Anita Barua	Influence of Age and Gender on Urban Elderly Mobility in Upper Assam	3
Tanka Prasad Upadhyaya	Integration of Technology in the Teaching-Learning Process	10
Gitumoni Rajbongshi	Factors Responsible for Traffic Congestion in Shillong	19
Ankita Das	A study on the growth of health insurance sector in India	26
Panchi Haloi Swarup Bharali	Impact of Assam Skill Development Mission on Entrepreneurship in Assam	33
Mintu Kr. Das Kasturi Saikia	Forecasting Wheat Production in India using Time Series Analysis	46
Shiva Chakraborty Naina Purkayastha	Evaluation of Customer's Satisfaction Level using Travel Portal services: An Empirical Investigation from Tinsukia Town, Assam	54
Kaberee Borpuzari Sarmah	Rural Development and Empowerment of Rural Women in India	64
Dipak Jain Richika Kedia	A Comparative Study of Risk and Return of Selectequity Funds of Aditya Birla Sunlife (ABSL)	70

UTKARSH, Vol. IX : A Peer Reviewed Research Journal in Commerce and Allied Subjects Published Annually by D.H.S.K. Commerce College, Dibrugarh, Assam, India

ISSN : 2347 - 8381

D.H.S.K. Commerce College, Dibrugarh, Assam, India

EDITOR

Bidisha Mahanta

MEMBERS OF THE EDITORIAL BOARD

K.M.Bhagawati | B. Bhagawati | T.P. Upadhyaya | N.Dutta | S.R. Doley | T.Mattack | S.S. Gogoi | P. Sahu

EDITORIAL ADVISORY BOARD

J. Hazarika

Vice-Chancellor
Dibrugarh University, Dibrugarh

P. Bezborah

Retd. Professor, Department of Commerce
Dibrugarh University

A.B. Rajkonwar

Vice-Chancellor
Assam Women's University, Jorhat

P.K. Deka

Professor, School of Social Science
Nagaland University

N.M. Panda

Professor, Department of Commerce
North Eastern Hill University, Shillong

A. Saha

Professor, Department of Commerce
Dibrugarh University

S.S. Singha

Professor, Department of Commerce
Dibrugarh University

K.C. Goswami

Professor, Department of Commerce
Dibrugarh University

D.K. Chakraborty

Professor, Department of Economics
Dibrugarh University

PRICE : Student : **Rs. 100/-** Individual : **Rs. 200/-** Institutions : **Rs.500/-**

No part of this publication may be reproduced or transmitted in any form or by any means, electronic, mechanical, photocopy, recording or otherwise, without the prior written permission of the publisher except short citation in academic works with complete reference.

DISCLAIMER

The facts, information, opinions, conclusion etc. published in this journal are those of the Authors and the Editorial Board is not responsible for those.

PRINTED AT :

M/s Creative Design
Barbari, Dibrugarh, Assam | Phone : +91 9706154535, 8011144223

Influence of Age and Gender on Urban Elderly Mobility in Upper Assam

Anita Baruwa*

Abstract

With the onset of old age, locomotive abilities decline which leads to overall deterioration in the quality of life of the elderly, as well as to their diminished roles in terms of economic contribution, household responsibilities and community roles. This creates increased elderly economic and health dependencies. The steady increase in the proportion of the elderly in the total population over the decades will eventually pose burdensome at both the household and the macro levels if not managed early on.

The objectives of this paper are to analyse the age-wise and gender-wise differences in mobility of the elderly persons of the study area.

A sample of 655 was randomly drawn from elderly population aged 60 years and above living in the municipal district headquarters of Upper Assam. A structured interview schedule helped to collect the primary data for the study. Chi-square test gave the results of the relationship between urban mobility and socio-demographic variables, namely, age and gender of the sample elderly persons.

It was found that overall, more than three-fourth of the elderly respondents could travel alone, though significant differences emerged in their mobility with respect to both age and gender.

A proactive attitude on the part of both the young and old as well as interventionist measures for the physically vulnerable elderly would ensure that the elderly will be able to lead a socially and economically independent life.

Keywords: Ageing; Elderly; Gender; Locomotion; Mobility; Transportation.

Introduction

With the onset of old age, locomotive abilities decline. This leads to overall deterioration in the quality of life of the elderly as well as to their diminished roles in terms of economic contribution, household responsibilities and community roles. This leads to increased economic and health dependencies. The proportion of elderly population in Assam stood at 8.2 per cent (2021) which is a drastic jump from 6.2 in 2001 and 6.7 per cent in 2011 (MoSPI, 2021). This steady increase in the proportion

*Associate Prof., Department of Economics, D.H.S.K. Commerce College, Dibrugarh
email: anitabarua@gmail.com

of the elderly in the total population over the decades will eventually pose burdensome both at both the household and the macro levels, if not managed early on.

Some elderly persons function well physically, others function poorly. Some of them are severely restricted in their mobility, others are able to maintain themselves in the ordinary activities of daily living. The variations among the elderly in their physical health and in their degree of impairment is enormous. Widespread pathology exists among the older population compared to the younger and middle-aged groups (Shanas, 1968a). Severe and minor chronic conditions trouble those who live long enough, though this cannot be generalised.

Among the degenerative changes that is brought on as a person grows older, the ability to travel without assistance is a noteworthy one. As in the case of other changes, this ability also changes at different paces and degrees among different individuals. Mobility is a crucial factor in the physical, mental, social and also economic well being of each and every person, irrespective of age and gender. On the basis of the prevailing mobility norms and patterns, the general presumption is that elderly women tend to be less mobile than their male counterparts. However, there is a dearth of studies to substantiate this view. The present study is an attempt to understand if there is any significant influence of age and gender on elderly mobility.

Objectives of the Study

This paper specifically seeks to:

1. Analyse differences in mobility of the elderly persons of the study area with respect to age.
2. Analyse differences in mobility of the elderly persons of the study area with respect to gender.

Materials and Methods

Primary data for this paper have been obtained from a sample of 655 elderly persons (aged 60 years and above). The sample which was drawn randomly from the elderly population living in the municipal towns of Dibrugarh, Golaghat, Jorhat, North Lakhimpur, Sivasagar and Tinsukia, is a part of a larger study, covering the socio-economic and demographic aspects of the elderly persons residing in these places. A structured interview schedule helped to collect the data for the study. Secondary information have been gathered from books, published research articles, papers, government reports and websites.

Taking $p < 0.05$ as statistically significant, chi-square tests gave the results of the relationship between urban elderly mobility and the selected socio-demographic variables, namely age and gender.

In this study, the binary division of gender has been adhered to. Mobility connotes physical locomotive ability. Ability to travel by oneself (i.e. alone) has been taken as the criterion of mobility for the purpose of this paper. Thus, the total sample of 655 elderly respondents have been categorised into two as: (a) Can travel alone and (b) Cannot travel alone. Shanas et al. (1968b) had classified the elderly on the basis of

their locomotive abilities as - (a) bedfast, (b) housebound and (c) ambulatory. The bedfast (confined to bed) and housebound (mobility confined within the house) elderly respondents have been considered as part of the ones who cannot travel alone. Among the ambulatory (mobile) elderly persons also, the question was put whether they could travel alone. For those who could travel alone, a question was put whether they could travel (a) Within the town, (b) Within the state, (c) Outside the state and (d) Outside the country.

Findings and Analysis

The findings of the paper have been presented in terms of analyses of cross tables with the help of percentages and chi square results. The source of the tabulated data in this section is field study carried out in the places mentioned in the methodology section.

Elderly Mobility with respect to Age

The distribution of the elderly respondents has been done according to their age groups, viz. 60-69 years (Young Old), 70-79 years (Older Old) and 80+ years (Oldest Old) in order to get a more meaningful interpretation instead of grouping the entire elderly persons into one whole. Their ability to travel alone (a) Within town, (b) Within the state (Assam), (c) Outside the state but within India and (d) Outside India has been cross-tabulated against the three age groups.

Table 1
Age-wise Distribution of Spatial Mobility

Age Groups	Within Town	Within Assam	Within India	Outside India	Row Totals
60-69 years	110 (34.2%)	102 (31.7%)	97 (30.1%)	13 (4.0%)	322 (100%)
70-79 years	75 (56.0%)	32 (23.9%)	26 (19.3%)	1 (0.8%)	134 (100%)
80+ years	39 (76.4%)	06 (11.8%)	06 (11.8%)	0 (0.0%)	51 (100%)
Column Totals	224 (44.2%)	140 (27.6%)	129 (25.4%)	14 (2.8%)	507 (100%)

Table 1 represents data according to the locomotive abilities of the elderly respondents distributed age-wise.

It was found that out of 655 elderly persons, 507 persons, i.e. 77.4 per cent reported that they could travel alone. Out of these 507 respondents, majority, i.e. 63.5 per cent belonged to the 60-69 years age group, more than a quarter, i.e. 26.4 per cent belonged to the 70-79 years age group and the rest, i.e. 10.1 per cent belonged to the 80+ years age group.

It can be seen from Table 1 that among those who could travel alone in the 60-69 years age group, spatial mobility (in terms of extent of travel), was divided almost in equal proportion (ranging from 30.1 per cent of the respondents being able to travel within India to 34.2 per cent of them being able to travel within the town), except for those who were able to travel alone abroad (4.0 per cent). In the 70-79 years group, majority, i.e. 56 per cent could travel alone within the town and the least, i.e. 0.8 per cent could undertake solo foreign travel even at this age. In the 80+ years group, over three quarters, i.e. 76.4 per cent could travel independently within the town, whereas a few (11.8 per cent each) could travel within Assam and within India. None in this age group could travel abroad alone.

Overall, it can be seen that locomotion among the elderly respondents within town was the highest (44.2 per cent) and the outside the country (foreign travel) was the lowest (2.8 per cent).

In order to test for differences in age with respect to the ability of the elderly persons to travel alone, Table 1 has been abridged to Table 2, with the categorical groups of elderly respondents who (a) Can travel alone, and (b) Cannot travel alone.

Table 2
Differences in Mobility with respect to Age

Age Groups	Can Travel Alone	Can't Travel Alone	Row Totals
60-69 years	322 (87.3%)	47 (12.7%)	369 (100%)
70-79 years	134 (78.4%)	37 (21.6%)	171 (100%)
80+ years	51 (44.3%)	64 (55.7%)	115 (100%)
Column Totals	507	148	655 (Grand Total)

$$\chi^2 (2) = 92.44, p\text{-value} < .00001 (\alpha=.05)$$

A chi-square test of independence was performed to examine the relation between the three different age groups and their ability to travel alone. The relation between these variables was significant, $\chi^2 = 92.44$, p-value is $< .00001$. The ability to travel alone diminished significantly with age for the sample population. *The first objective of the paper, viz. to analyse differences in mobility of the elderly persons of the study area with respect to age, thus stands fulfilled.*

Elderly Mobility with respect to Gender

Table 3 represents data according to the locomotive abilities of the elderly respondents distributed gender-wise.

Table 3
Gender-wise Distribution of Spatial Mobility

Gender	Within Town	Within Assam	Within India	Outside India	Row Totals
Male	98 (30.7%)	103 (32.3%)	105 (32.9%)	13 (4.1%)	319 (100%)
Female	126 (67.0%)	37 (19.7%)	24 (12.8%)	1 (0.5%)	188 (100%)
Column Totals	224 (44.2%)	140 (27.6%)	129 (25.4%)	14 (2.8%)	507 (100%)

It can be seen from Table 3 that out of the 507 elderly respondents who could travel alone, 319, i.e. 62.9 per cent were males. Among males, except for those able to travel alone abroad (4.1 per cent), spatial mobility for the rest of them was divided almost in equal proportion (ranging from 32.9 per cent of the respondents being able to travel within India to 30.7 per cent of them being able to travel within the town). Among females, majority, i.e. 67.0 per cent could travel alone within the town and the least, i.e. 0.5 per cent could undertake solo foreign travel. Comparatively higher percentage of females (67.0 per cent) than their male counterparts (30.7 per cent) could travel alone within the town. In the rest of the spatial movements, females markedly lagged behind the males (within Assam: 32.3 per cent males and 19.7 per cent females; within India: 32.9 per cent males and 12.8 per cent females; outside India: 4.1 per cent males and 0.5 per cent females).

Again, in order to test for differences in gender with respect to the ability of the elderly persons to travel alone, Table 3 has been abridged to Table 4, with the categorical groups of elderly respondents who (a) Can travel alone, and (b) Cannot travel alone.

Table 4
Differences in Mobility with respect to Gender

	Can Travel Alone	Can't Travel Alone	Row Totals
Male	319 (88.4%)	42 (11.6%)	361 (100%)
Female	188 (63.9%)	106 (36.1%)	294 (100%)
Column Totals	507	148	655 (Grand Total)

$$\chi^2(1) = 55.25, p\text{-value} < .00001 (\alpha = .05)$$

A chi-square test of independence was performed to examine the relation between the two genders and their ability to travel alone. The relation between these variables was significant, $\chi^2(1) = 55.25$, p-value is $< .00001$. Elderly men were significantly more likely than elderly women to be able to travel alone. *The second objective of the paper, viz. to analyse differences in mobility of the elderly persons of the study area with respect to gender, thus stands fulfilled.*

Discussion

As revealed by the findings, 22.6 per cent of the sample reported inability to travel alone. Significant associations of both age and gender were found with respect to mobility. Significantly higher percentage of elderly persons in the older age groups reported inability to travel alone than their relatively younger counterparts (63.5 per cent in 60-69 years age group, 26.4 per cent in 70-79 years age group and 10.1 per cent in 80+ years age group). It is praiseworthy that 10 per cent among the 80+ years possessed the will power and ability to travel alone. They stand as role models for not only the elderly but mostly for the younger generation. Similarly, significantly more males (62.9 per cent) reported their ability to travel alone than elderly females (37.1 per cent). Thus, the general premise of lesser mobility among the more aged and among the elderly women stands validated from the findings of the present paper.

Elderly female respondents and those in the comparatively higher age groups travelled relatively shorter distances within town areas. The reasons for this may not only be due to physical and physiological constraints, but also because of socio-cultural inhibitions, as pointed out by Mitra et al. (2017). They referred to such inhibitions as local norms and values adopted during use of public space by the elderly. Apart from culture, negative perceptions about personal safety and financial ability diminished the willingness to travel alone even for a physically fit elderly. This is more likely a carry over tendency in case of the female elderly persons, who have been conditioned since early years about the actual and perceived threats of travelling alone. This explains the comparatively higher percentage of female elderly persons found in the "Can travel within town" category.

Limitations of the Study

Ability of solo travelling is one of the many dimensions of mobility. However, as described in the methodology section, only the ability to travel alone has been taken as the criterion of mobility. The study covers only the age and gender aspects of elderly mobility of the urban population of Upper Assam region. Association of mobility with other socio-demographic and economic variables such as working status, health status, marital status, education level etc., were outside the purview of the present paper. Aspects of rural elderly mobility would not only be interesting but also necessary, keeping in mind the rapid ruralisation of the elderly in the coming times. Nonetheless, in view of the scarcity of studies on this aspect, the findings of the present study assumes importance primarily from the point of view of the transportation and allied infrastructural facilities for the elderly segment of the population.

Conclusion and Suggestions

Restrictions in elderly mobility is imminent with advancing ages. However, locomotive abilities are a matter of degree and not uniform for all in the same age group and hence even an elderly person in the Oldest Old (80+ years) group may possess the ability to be perfectly mobile. For the present sample, overall, more than three-fourth, i.e. 77.4 per cent could travel alone, though significant differences in mobility of the elderly persons of the study area were found with respect to both age and gender.

Physical mobility ensures that an elderly person could lead an independent life and also the possibility of being economically productive. Mobility constraints can seriously hamper social and economic prospects of the elderly persons, thereby pushing them to isolation and financial loss. This can further affect their mental well-being. The findings of the paper have many practical policy implications which needs to be addressed in order to enable age-oriented and gendered mobility. With the median age of the population gradually moving upwards, it is of utmost necessity to take steps towards making modes of transportation elderly friendly and safe. At the same time, segregated modes of transportation will make it more secured for women (Hidayati et al., 2020). Public places including roads, footpaths, toilets and resting areas need to be made elderly friendly and gender friendly so that venturing out by the able elderly persons becomes easier, safe and secured.

The current younger generation will be gradually encountering a world which will definitely be housing more older population than at present. Hence it is time to proactively realise that they will have to be working and earning for a longer period of time than their parents and grandparents have done. Mobility has been always an important factor in employment. As such, on personal, familial and societal levels, it is time to shed inhibitions and age old patriarchal notions which restrict mobility, particularly that of women and girls. On the physical front, Maroof et al (2017) suggested interventionist measures such as rehabilitation services and screening of the elderly for early detection of locomotor problems in order to improve the quality of life of the vulnerable elderly population.

References

- Hidayati, I., Tan, W. Yamu, C. (2020). How gender differences and perceptions of safety shape urban mobility in Southeast Asia. *Transportation Research Part F: Traffic Psychology and Behaviour, Elsevier*, 73, 155-173. Retrieved from <https://www.sciencedirect.com/science/article/pii/S1369847820304514>
- Maroof, M., Ahmad, A., Khalique, N., Ansari, M.A. (2017). Locomotor problems among rural elderly population in a District of Aligarh, North India. *Journal of Family Medicine and Primary Care*, 6(3), 522-525. Retrieved from https://journals.lww.com/jfmpc/Fulltext/2017/06030/Locomotor_problems_among_rural_elderly_population.14.aspx
- Mitra, Suman & Yao, Mingqi & Ritchie, Stephen G. (2021). Gender differences in elderly mobility in the United States. *Transportation Research Part A: Policy and Practice, Elsevier*, 154 (C), 203-226. Retrieved from <https://ideas.rcepc.org/a/eee/transa/v154y2021icp203-226.html>
- MoSPI (2021). *Elderly in India*. 5th Report: Social Statistics Division, National Statistical Office, Ministry of Statistics and Programme Implementation, GOI, New Delhi.
- Shanas, E. (1968a). The Psychology of Health. In E. Shanas, P. Townsend, D. Wedderburn, H. Friis, P. Milhoj and J. Stehouwer (eds.) *Old People in Three Industrial Societies*, 49-70. Routledge and Kegan Paul.
- Shanas, E. (1968b). Health and Incapacity in Later Life. In E. Shanas, P. Townsend, D. Wedderburn, H. Friis, P. Milhoj and J. Stehouwer (eds.) *Old People in Three Industrial Societies*, 18-48. Routledge and Kegan Paul.

INTEGRATION OF TECHNOLOGY IN THE TEACHING - LEARNING PROCESS

Tanka Prasad Upadhyaya*

Abstract

Technology ushers in fundamental structural changes that can be integral to achieving significant improvements in productivity. Used to support both teaching and learning, technology infuses classrooms with digital learning tools, such as computers and hand held devices; expands course offerings, experiences, and learning materials; supports learning 24 hours a day, 7 days a week; builds 21st century skills; increases student engagement and motivation; and accelerates learning. Educational technology has helped and supplemented the teachers in their instructional programmes through the structured lessons for remedial, enrichment or drill purposes. The learners get training for self instruction and teachers are relieved of the burden of routine repetition for exercise and revision purposes. Through a systematic organization of content and instructional materials, educational technology has provided well-integrated structured materials for teachers thus saving a lot of their time which in turn may be utilized for creative work and quality improvement. The training and use of educational technology contributes towards the professional growth of teachers. It equips them in the use of scientific methods for solving educational and administrative problems. It adds to the teaching competence of teachers and inculcates a scientific outlook and scientific temper in teachers and students. The NEP 2020 also considers the benefits of online and digital education, recognizing that the initiatives under it must be carefully initiated, designed and formulated not to have a negative impact.

Keywords: *Digital, Multimedia, NEP 2020, Technology, Transformation, Teaching-learning.*

INTRODUCTION:

The 21st century has seen a rapid rise in the use of technology in all aspects of life, and education is no exception. The Indian educational system has seen a significant transformation in recent years. Technology is becoming more prevalent in schools and paving the way for an updated educational system. Technology has transformed the way we learn, communicate and process information. It has made learning more interactive and engaging, and opened up new possibilities for collaboration and knowledge sharing. Technology can be used in various ways to

*Associate Professor, Department of Banking & Insurance, DHSK Commerce College, Dibrugarh

support teaching and learning, from providing access to online resources and tools, to facilitating communication and collaboration between students and teachers. It can also be used to create engaging and interactive learning experiences. These technology-enabled classrooms or digital infrastructure offer a wealth of new opportunities for teaching and learning by integrating technology such as interactive whiteboards or projectors, audio-visual capabilities, ICT labs or multimedia centres, educational games, classroom activities, management software, homework submission, review software, cloud-based e-learning initiatives, and so on. Students benefit from virtual tools in a controlled setting that helps them to understand complex ideas. Further, AR and VR technologies are seen as the future of education, despite India's adoption still being in its infancy. Educational technology is still not being applied sufficiently, mostly for reasons of lack of school equipment necessary resources and insufficient qualification of teachers for the implementation of these funds.

OBJECTIVES AND SIGNIFICANCE OF THE STUDY:

The aim of the study is to state the evolving technologies used in education today and their impacts. This paper will try to provide an opportunity to identify various factors that affect teaching-learning process in education faculty's technology use. The study tries to examine the use technology in the classroom and its benefits & effects. Study of different stages of concern will give them insight into the benefits of awareness, management and collaboration for use of emerging technology of teaching-learning process in education. The study also tries to highlight the national education policy 2020 in the light of use of technology in education system

METHODOLOGY:

The study is based on use of secondary sources of data. The main sources of data are different types of journals, books, newspapers, websites etc. The methodology adopted in this work is text reference and secondary data are analyzed and findings are abstracted from these sources.

ROLE OF TECHNOLOGY IN EDUCATION

Technology in education refers to the use of various technological tools, resources, and applications to support and enhance teaching and learning processes in educational settings. It involves leveraging digital devices, software, online platforms, and other technological advancements to create engaging and effective learning experiences. Integration of technology in education simply refers to the use of technology to enhance the student learning experience. Utilizing different types of technology in the classroom, including a virtual classroom, creates learners who are actively engaged with learning objectives. Educational technology has three domains of use: (i) Technology as a tutor, (ii) Technology as a teaching tool; and (iii) Technology as a learning tool. Depending on the use and benefits, the research by suggests that education technology has not yet taken its place, in spite of their recommendations.

- Technologies facilitate in-service teachers by providing professional development opportunities and individualized training opportunities.
- Technology develop pre service teachers' training by providing access to more and better educational resources, offering multimedia simulations of good teaching practices, catalyzing teachers to trainee collaboration and increasing productivity of non-instructional tasks.
- Technology is helpful as a powerful tool for problem solving, conceptual development and critical thinking. It involves the person using technology to gather, to organize and analyze information and using this information to solve problems.
- Access to internet has opened doors to global learning. Teachers as well as students can use this facility. It is ocean of knowledge. Sitting at a place they can have access to libraries, dictionaries and the latest information, which is not available in the text books. Thus, it gives freedom to learn at the learners' own interest, pace, time, energy and money.
- Use of technology has reduced the distance among the people of the world. People can share their ideas and can have a discussion over a prominent issue. E-mail provides the facility to connect with others in a short period of time.
- Using technology students can spend less time in doing calculations and more time in creating strategies for solving complex problem and developing a deep understanding of the subject matter.
- Technology encourages student collaboration, project based learning and higher order thinking. It makes students more engaged and more active learners, because there is a greater emphasis on inquiry and less on drill.
- Technology helps the teachers meet the individual learning needs of their students more effectively and to provide learning experience ranging from remediation to enrichment.
- Technology speed up and enriches basic skills development in reading, writing mathematics and the sciences. It can engage the students in real life applications of academics

The implementation of technology also creates pathways for differentiated instruction to meet the unique needs of students as individual learners within a broader classroom climate. The integration of technology in education aims to enhance engagement, improve access to information, foster critical thinking and problem-solving skills, facilitate personalized learning, and prepare students for the digital age. However, it is important to use technology purposefully, considering pedagogical principles and the specific needs of learners. Technology in education encompasses a broad range of tools and approaches, including:

Educational software and applications: These are software programs and applications designed specifically for educational purposes. They can provide interactive and engaging content, support learning objectives, and facilitate assessment and feedback. Examples include educational games, simulations, learning management systems (LMS), and productivity tools.

Digital devices: This includes computers, laptops, tablets, interactive whiteboards, projectors, and other hardware that enables access to digital content and facilitates interactive learning experiences.

Online resources and digital content: The internet provides access to vast amounts of educational resources, online libraries, research databases, and websites. Online resources enable students to explore subjects in-depth, conduct research, and access educational content beyond the traditional classroom.

Mobile learning: The use of mobile devices, such as Smartphone's and tablets, allows learners to access educational content anytime and anywhere. Mobile apps and platforms offer flexibility and personalized learning experiences.

Virtual reality (VR) and augmented reality (AR): These technologies create immersive learning experiences by simulating real-world environments or overlaying digital information onto the physical world. VR and AR can be used to explore historical sites, conduct scientific experiments, or provide interactive visualizations.

Adaptive learning systems: These systems utilize artificial intelligence (AI) and machine learning algorithms to personalize learning experiences based on individual student needs and progress. Adaptive systems can adjust the pace, content, and difficulty level of instruction to optimize learning outcomes.

Collaboration and communication tools: Technology enables students and teachers to collaborate on projects, engage in discussions, and communicate with peers and experts remotely. Examples include video conferencing tools, collaborative document editing, and online discussion forums.

Data analytics and assessment: Technology facilitates the collection and analysis of data to track student progress, identify areas for improvement, and inform instructional decision-making. It enables formative and summative assessments through online quizzes, automated grading, and performance analytics.

EVOLVING TECHNOLOGIES IN EDUCATION:

Cloud Technology, Distance Learning and MOOCs:

Cloud technology is an information technology model that facilitates omnipresent access to collective pool of resources and higher level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing relies on sharing of resources to achieve coherence and economies of scale. Distance education is the education of students who may not always or at all be physically present at an educational institution. Traditionally, this usually involved correspondence courses wherein the student corresponded with the school via posts. Today it involves online education in which courses that are conducted are either hybrid, blended or 100% distance learning. Massive open online courses (MOOCs), offering large-scale interactive participation and open access through the web or other network technologies, are recent developments in distance education.

Mobile Technology:

Mobile technology encompasses mobile devices, and mobile devices comprise of portable, wireless connected technology, such as basic mobile phones, PDAs, e-

readers, Smartphones and tablet computers, as well as embedded technologies like smartcard readers. Mobile technology is labeled to be the fastest evolving computing platform. Various educational applications of mobile technology have been reported, such as apps, language teaching, vocabulary, and many experiential learning situations and informal problem-solving.

USE TECHNOLOGY IN THE CLASSROOM: BENEFITS & EFFECTS

Technology provides immediate accessibility to information, which is why its presence in the classroom is so vital. Smart phones, computers, and tablets are already an omnipresent element of everyday life for students and teachers alike. It's only natural that the use of technological devices in the classroom is explored to create meaningful learning experiences for students of all ages. Utilizing different types of technology in the classroom, including a virtual classroom, creates learners who are actively engaged with learning objectives. The implementation of technology also creates pathways for differentiated instruction to meet the unique needs of students as individual learners within a broader classroom climate. Using technology in the classroom offers numerous benefits and can have positive effects on both students and teachers; some of them are as follows:

- **Prepare students with life skills:** Technology has become its own form of literacy because of how often it is used in everyday life. Many careers use at least one aspect of Microsoft Office or Google Drive on a daily basis: balancing budgets on spreadsheets, creating decks or slide shows to be presented, or attaching documents to emails to communicate important information. Allowing students to learn and refine these skills prepares them for life beyond the classroom.
- **Enhancing engagement:** Technology provides interactive and dynamic learning experiences that can capture students' attention and foster active participation. Multimedia presentations, educational games, and online activities can make learning more engaging and enjoyable.
- **Increasing access to information:** The internet and digital resources offer a wealth of information that can be accessed quickly and easily. Students can conduct research, explore various perspectives on a topic, and access up-to-date information from around the world, expanding their knowledge beyond what traditional textbooks may offer.
- **Promoting personalized learning:** Technology allows for personalized instruction tailored to individual student needs and learning styles. Adaptive learning systems and educational software can adjust content and pace according to each student's abilities, providing targeted support and challenging them appropriately.
- **Facilitating collaboration and communication:** Digital tools enable students to collaborate on projects, engage in discussions, and share their work with peers and teachers. Online platforms, video conferencing tools, and collaborative document editing facilitate communication and teamwork, even outside the physical classroom.
- **Developing digital literacy skills:** As technology becomes increasingly prevalent in society, it is crucial for students to develop digital literacy skills. Integrating technology in the classroom helps students become proficient in using digital tools, navigating online resources, and critically evaluating information.

- **Promoting creativity and innovation:** Technology offers students opportunities to express their creativity and engage in innovative projects. They can create multimedia presentations, produce videos, design digital artwork, and develop multimedia projects that showcase their understanding of concepts.
- **Streamlining administrative tasks:** Technology can simplify administrative tasks for teachers, such as grading, record-keeping, and lesson planning. Online platforms and educational software automate certain processes, freeing up time for teachers to focus on instruction and student support.
- **Preparing for the future:** Using technology in the classroom equips students with the digital skills and competencies needed for the workforce of the future. It prepares them to navigate an increasingly digital and technology-driven world and enhances their prospects in higher education and future careers.

NATIONAL EDUCATION POLICY 2020 & USE OF TECHNOLOGY:

The NEP 2020 Policy focused on the future of education in India empowered by technology and recognizes the same, with a view to making this integration of technology into education stronger in order to establish an alternative mode of education when the traditional, physical methods cannot be availed. The NEP considers the benefits of online/digital education, recognizing that the initiatives under it must be carefully initiated, designed and formulated not to have a negative impact. In order to make education available and accessible to all without discrimination, the 2020 Policy recognizes the need to overcome the issues associated with technological and practical aspects. The key technology-powered changes brought by the 2020 Policy are reviewed below.

The National Educational Technology Forum:

NEP 2020 opined for the establishment of the National Educational Technology Forum to provide a platform for the free exchange of ideas on the use of technology to enhance learning, assessment, planning, administration and also the management of the same. With the innovational aspects of the NEP, new and latest technologies like artificial intelligence, blockchain, machine learning, smart boards, computing devices, adaptive computer testing will be integrated into all levels of education to improve classroom process, support teachers' professional development, enhance educational access for non-benefited groups and streamline educational planning, administration and management. It talks about integrating existing e-education platforms like SWAYAM and DIKSHA into schools, colleges and universities. These changes will become accessible very soon in all educational institutions, and the knowledge of students and teachers will also be upgraded to the latest standards. The major functional obligation of the NETF is to advise the Central and State government to educate the students through technical and technological methods. It has been established to build more intellectual capability and institutional capacity in the education's tech areas.

E-libraries: NEP 2020 advocates utilizing technology by providing access to e-libraries to both teachers and students for easy access to books, materials, question banks, the latest syllabus, journals and manuscripts. These services can be availed by teachers via their devices, such as mobile phones, tablets, laptops, etc, which will

have access to the digital library. Similarly, students can use any of their educational institution's authorized devices to access the digital library.

HOW TO INTEGRATE TECHNOLOGY IN THE CLASSROOM:

There is a common misconception that the integration of technology in the classroom can be a financial burden for the educational institutions, but students do not necessarily need their own tablets or laptops to succeed with technology. The use of technology during whole-class instruction can foster student engagement for auditory and visual learners. Integrating simple technologies Power Points, games, internet homework assignments, or online grading systems can be difference makers in students' growth in the classroom.

- **Power Points and Games:** PowerPoint presentations can be used to introduce a classroom concept while providing the opportunity for engagement. Along with the use of graphics and bulleted information, links to videos that accompany the ideas presented in the PowerPoint can be embedded within the slides. Various educational apps in the classroom can be used to review information after a lesson or unit.
- **Classroom Tablets:** For classrooms that are fortunate enough to have tablets for students, technology can allow teachers to implement differentiation throughout instruction. Students can work at their own pace during assignments and teachers have the opportunity for one-on-one instruction.
- **Introduction of LMS:** A learning management system (LMS) is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, materials or learning and development programs.
- **Setting clear learning goals:** Begin by identifying the learning objectives we want to achieve through the integration of technology. Determine how technology can enhance and support those goals, whether it's improving student engagement, fostering collaboration, or promoting critical thinking.
- **Assessment of available resources:** The institution should take stock of the technology resources it has access to, such as computers, tablets, software applications, and internet connectivity and both the hardware and software that align with the learning goals should be considered.
- **Providing necessary training and support:** It is to be ensured that both teacher and students are familiar with the technology tools and resources that plan to be used. If needed, offer training sessions or workshops to help everyone gain the necessary skills and confidence. Seeking support from technology specialists or colleagues who are proficient in using educational technology may be helpful.
- **Choosing appropriate technology tools:** Selection of technology tools that align with institutions learning goals and meet the needs of students is a must. Considering factors such as ease of use, accessibility, relevance to the subject matter and suitability for different learning styles also matters. We should look for tools that promote engagement, collaboration, and critical thinking.
- **Planning and designing technology-enhanced lessons:** There should be developed lesson plans that integrate technology seamlessly into instruction. Designing activities that require students to actively use technology to achieve

the learning objectives. It should be ensured that technology serves as a tool to enhance learning rather than a mere add-on.

- **Encouraging collaboration and interaction:** Use of technology to foster collaboration among students should be encouraged. The tools that allow for peer collaboration, such as online discussion boards, shared document editing, or collaborative project creation should be incorporated. Students may be encouraged to work together, share ideas, and provide feedback to one another.
- **Emphasizing critical thinking and problem-solving:** efforts should be made to integrate technology in ways that encourage students to think critically, analyze information, and solve problems. Use of online research activities, simulations, or multimedia presentations that require students to apply their knowledge and skills should be emphasized.
- **Providing ongoing feedback and assessment:** Use of technology tools to facilitate formative assessment and provide timely feedback to students may be initiated. Online quizzes, interactive assessments, and digital portfolios can help track student progress and identify areas for improvement.
- **Reflecting and adapting:** Proper analysis of the impact of technology integration on student learning outcomes and adjustment of the strategies as needed should be done. Seeking of proper feedback from students to understand their experiences/grievances and making necessary improvements is necessary.

CONCLUSION:

The integration of technology in teaching - learning aims to enhance engagement, improve access to information, foster critical thinking and problem-solving skills, facilitate personalized learning, and prepare students for the digital age. However, it is essential to ensure that technology is used purposefully and in a balanced manner, considering pedagogical principles and the specific needs of learners.

The COVID-19 pandemic has further boosted the recognition of online education in India. With schools and colleges closed across the country, students have turned to online platforms to continue their studies. Many educational institutes have quickly adapted to this new reality and are now offering online courses. The rise of online education in India is revolutionizing the way students learn. With more people having access to quality education, the country is on its way to becoming a knowledge powerhouse. Technology has reshaped the education sector in India. It has disrupted the way we used to perceive and consume information. The internet has broken all barriers, and Distance learning is no longer a new concept. With the rise of MOOCs (massive open online courses) and EdTech startups, there is a growing demand for online courses in India. Students are now more comfortable learning digitally. They can access course material from anywhere at any time. This flexibility and convenience attract students to opt for online courses. Teaching aids helps teachers in providing up to date information to the students. Teachers can use audio-visual aids which helps students to retain facts. Technology can reduce the tremendous effort given by students to gather number of printed book and journals for acquiring knowledge and increase students' focus on more important knowledge gathering process.

REFERENCES:

- Chinmoy Goswami, (2014). Role of Technology in Indian Education, International Proceedings of Economics Development and Research, V79.2
- Retrieve from [https://education.stateuniversity.com/pages/2496/Technology in higher-education.html](https://education.stateuniversity.com/pages/2496/Technology+in+higher-education.html)
- Rohatgi, Anubha, ed. (7 August 2020). "Highlights | NEP will play role in reducing gap between research and education in India: PM Modi". Hindustan Times.
- Sahu, N.(2013). 'A study of the use of technology by the teachers of professional courses in terms of stages of concern and contributive factors'. Lucknow, India.
- Stosic, L.(2015). 'The importance of educational technology in teaching'. Aleksinac, Serbia.
- Stanley Ahalt, Karamarie Fecho, (2015). Ten Emerging Technologies for Higher Education. *Renaissance Computing Institute (RENCI)*, RENC White Paper series 3(1), <http://dx.doi.org/10.7921/GOPN93HQ>
- Retrieved from <https://link.springer.com/article/10.1007/s10639-021-10527-x>
- Retrieved from <https://scholarsjournal.net/index.php/ijer/article/view/1433>
- Retrieve from <https://timesofindia.indiatimes.com/readersblog/theaitics/implications-of-the-nationaleducation-policy-2020-on-higher-education-in-india-2-24729/>
- Retrieve from <https://www.researchgate.net/publication/346654722> Impact of New Education Policy 2020 on Higher Education

FACTORS RESPONSIBLE FOR TRAFFIC CONGESTION IN SHILLONG

Gitumoni Rajbongshi*

Abstract

Traffic congestion is a day-to-day problem which is faced frequently by various regions and economies. Over time, severity of road traffic congestion has been increasing posing serious threats to development of various economies. This paper is an attempt to study the various factors responsible for traffic congestion in Shillong city. Principal Component Analysis (PCA) has been adopted to find major factors leading to traffic congestion. Result showed that inappropriate road infrastructure, locational misdistribution of government offices, dumping of refuse on the road, badly located filling stations, narrow road and human attitude towards driving were the main cause of traffic congestion within the city.

Keywords: *Traffic congestion, Factors, Urbanization, Road infrastructure, Shillong*

JEL: *R1, R2, R4*

I. Introduction

Shillong, the capital city of Meghalaya has undergone substantial change both in structure and character. Over the years, there has been a gradual increase in the population of Shillong from about 223366 in 1991 to over 267662 in 2001 and further to 354759 in 2011 (Census Reports 1991, 2001 and 2011). Number of vehicles registered per year has also shown an increasing trend. Data reveal that there is an accelerated growth of registered vehicles in Shillong and its surrounding areas. As it is true that some of the registered vehicles move out of the region every year; a number of old cars also come from outside every year and many of them do not get them registered in regional transport office, Shillong.

Continuous and rapid increase in the number of registered vehicles in Shillong with rising affordability of the people has resulted in chaotic traffic situation. Majority of the road corridors suffer from several inadequacies like capacity constraints in the road 5 networks, poor definition of road hierarchy, on street parking, mixed traffic, poor traffic management, slow journey speeds, poor safety situations, inadequacy enforcement of traffic rules, lack of pedestrian facilities and other street furniture. Further, passing of two National Highways i.e., NH-40 & NH-44 through the heart of the city has aggravated the problem. Also, the construction of activity

*Assistant Prof. Department of Economics, Jagiroad College, Morigaon, Assam
Email: gitueco23@gmail.com

centres and shopping centres along already congested road are putting additional pressure on these congested roads. However, it is important to note that gradual increase in population and vehicles registered over time are not the sole causes of severe traffic congestion. Unplanned growth educational institutions and administrative centres across places within the town compound the traffic congestion problem during school or office opening and closing hours.

The Shillong Traffic Police put their efforts to manage traffic congestion problem by monitoring vehicles on the road, time to time diverting traffic as per the urgency of needs, rigorously clamping vehicles for violating traffic rules and imposing fines etc. However, due to the scarcity of proper parking places and inconveniences of location of parking site whatever available the problem is compounded. Thus, it is important to analyse the factors responsible for traffic congestion so as to come up with some policy suggestions to solve the problem.

II. Literature Review

According to Azeem Uddin (2009) traffic congestion is highly associated with the rapid growth of passenger vehicles on account of rising income and the development of low-cost cars into the market. Ukpata and Etika (2012) also tried to find out the causes of traffic congestion in Nigeria and to offer possible remedies to the problem. The results showed that poor driving habits, poor road networks, inadequate road capacity and lack of parking facilities constitute the greatest cause of traffic congestion.

Increasing number of vehicles, inadequacy of traffic police, narrow roads, illegal parking as the causes of traffic congestion in Dhaka city. Further, congestion occurs due to particular urban lifestyles where everyone has to move almost at the same time because of both timing of economic activities and school hours. They suggested for the clarity in bus services, strict lane management, restricting routes for rickshaw, imposition of penalty on law breakers, increasing road capacity, building bus stoppages, widening of road, bus route franchising, parking restrictions, congestion pricing in order to combat traffic congestion (Shamsher and Abdulla, 2013).

According to Jain et al (2012) and Chama (2013), poor road traffic management, lack of adequate town planning, lack of space for expansion of road infrastructure were also identified as the reasons for traffic congestion in the developing nations.

Harish (2013) has shown that with increasing urbanization and increase in the purchasing power of people, growth of vehicle population has shown an increasing trend since 1995 to 2015. By 2020 the growth in vehicles in total were forecasted from 16.44 percent in 2015 to 16.49 percent in 2020. The suggestions given by the author were car-pooling, automated toll collection, installation of LED based signals, construction of flyovers, etc to reduce the menace of traffic congestion.

Inadequacy of traffic police, narrow roads, illegal parking, increasing number of populations, higher purchasing power of the public, improper planning of city development, are also cited to be some important reasons for traffic congestion in the city places (Rahane and Saharkar, 2014; Bhatt and Gandhi, 2014).

III. Methodology

This paper tries to analyse the factors responsible for traffic congestion in Shillong city. Primary method of data collection has been used for the study. Data has been collected through structured questionnaire from various respondents, such as from private individuals, taxi drivers and businessmen of the Shillong city. A structured questionnaire was distributed among 600 randomly selected individuals in the city (200 private individuals, 200 taxi drivers and 200 businessmen) (De and Rajbongshi, 2020). Five major road intersections were chosen, they were Mawlai, Garikhana, Police Bazar, Dhankheti and Nongthammai. In order to analyse factors responsible for traffic congestion the Principal Component Analysis (PCA) has been used for dimension reduction. A total of 20 possible variables (obtained from review of literature and personal experience) has been considered for the analysis.

IV. Observations and Analysis

Before running the PCA, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test has been conducted. Prior to running the PCA, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy Test has been conducted. This test is usually applied to check the adequacy of the data. PCA has been evaluated for each category of respondents separately, the results of which are shown below.

Private Individuals:

Results showed that land use factors such as locational misdistribution of government offices and institutions, dumping of refuse, etc as the primary factors responsible for traffic congestion. In addition to that, physical factors such as multiple cross junctions and poor road conditions have been listed in the first component.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.611
Bartlett's Test of Sphericity	Approx. Chi-Square	1929.06
	df	190
	Sig.	0.000

Table 2: Component Matrix^a for Pvt Individuals Owning Car and Daily Commuters

	Components						
	1	2	3	4	5	6	7
Multiple_Intersection	-.862						
Bad_Rd_Condtn	.807						
Dumping_refuse	.766						
locational_misdistribution	-.762						
badly_locatedFillingStn.	.762						
Impatient_veh_drivers	.636						
Disobey_trf_regu		.861					
avoiding_rd_bumps		.822					
Veh_breakdown		.674					
Rd_curvature		.663					
Absence_trf_police		.617					
Illegal_parking			.113				
Lack_Footpath			.793				
Unskilled_drivers				.389			
Unplanned_building				.123			
SlowMoving_front_veh				-.700			
Inapp_busStops					.595		
Encroachment_hawkers						-.200	
Rd_Space						.157	
Trfc_Vol							.239
Extraction Method: Principal Component Analysis.							
a. 7 Components Extracted.							

Taxi Drivers:

Taxi drivers revealed great disturbances with the encroachment of hawkers near the locations like Police Bazar and Barabazar. Result showed that impatient vehicle drivers, dumping of garbage on road, inappropriate road condition, encroachment by hawkers and locational misdistribution are the main factors responsible for traffic congestion.

Table 3: KMO and Bartlett's Test (Taxi drivers)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.629
Bartlett's Test of Sphericity	Approx. Chi-Square	2297.81
	df	190
	Sig.	0.000

	Component					
	1	2	3	4	5	6
Impatient_veh_drivers	-.918					
Dumping_refuse	.797					
Bad_Rd_Condtn	.787					
Unskilled_drivers	.773					
Encroachment_hawke rs	.759					
locational_misdistri bution	.533					
badly_locatedFillingSt n.		-.751				
Lack_Footpath		.731				
Multiple_Intersection		-.637				
Rd_Space		.620				
SlowMoving_front_veh		.527				
Illegal_parking			-.727			
avoiding_rd_bumps			.693			
Rd_curvature			.666			
Absence_trf_police			.590			
Unplanned_building				.795		
Trfc_Vol				-.646		
Inapp_busStops					.589	
Disobey_trf_regu					.509	
Veh_breakdown						.757

Extraction Method: Principal Component Analysis., a. 6 Components Extracted.

Businessmen:

Results showed that physical factors and land use factors were responsible for affecting the normal traffic flow within the city. Multiple intersections and heavy traffic volume the flow of traffic further aggravated the problem. Also badly located filling stations, disobeying traffic regulations, avoiding road bumps and locational misdistribution of institutions adversely affect the flow or speed of vehicles on the city roads (Table 6).

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.571
Bartlett's Test of Sphericity	Approx. Chi-Square	1615.95
	df	190
	Sig.	.000

	Component						
	1	2	3	4	5	6	7
Multiple_Intersection	.875						
Impatient_veh_drivers	-.786						
badly_locatedFillingStn	-.771						
locational_misdistribution	.596						
Trfc_Vol	.484						
Disobey_trf_regu		.849					
avoiding_rd_bumps		.826					
Veh_breakdown		.657					
Rd_curvature		.587					
Absence_trf_police		.557					
Encroachment_hawkers			.754				
SlowMoving_front_veh			-.714				
Bad_Rd_Condtn			-.552				
Lack_Footpath			-.546				
Unplanned_building			.190				
Dumping_refuse			.442				
Unskilled_drivers				-.107			
Rd_Space					.529		
Inapp_busStops						.796	
Illegal_parking							.539
Extraction Method: Principal Component Analysis.							
a. 7 Components Extracted.							

V. Conclusion

It has been found that road infrastructural facilities in Shillong have not kept pace with the rapid growth of vehicle population in the area, thereby leading to pressure of vehicles on road leading to the problem of traffic congestion. Dumping refuse on road, badly located filling stations and inappropriate road infrastructures are the most prominent reasons of traffic congestion within the city.

VII. Policy Suggestions

1. Steps should be taken for reallocation of the institutions to the city outskirts, to divert traffic flow towards less congested roads.
2. Institutional bus facilities should be introduced to reduce traffic on the roads.
3. Drivers' behaviour should be strictly observed so that overtaking and parking vehicle in inappropriate places would be checked.
4. Dumping of construction materials and garbage etc. should be prevented.
5. Provision of proper parking locations should be arranged to prevent traffic congestion.

References:

- Bhatt, B. V., & Gandhi, F. R. (2014). A Study of Parking Needs at Intersections- Case of Surat T.P. Schemes. *International Journal of Engineering Research*, 3(7), 449-452.
- Chama, N. C. C. (2013). Investigating the Contributory Factors to Traffic Congestion in Nairobi City, Kenya. *International Journal of Science and Research*, 4(5), 3252- 3256.
- De, U. K. and Rajbongshi, G. (2020). Statistical Application for the Analysis of Traffic Congestion and Its Impact in a Hill City. *International Journal of Statistical Sciences*, 20(1), 19-48.
- Harish, M. (2013). Urban Transport and Traffic Management- For Sustainable Transport Development in Mysore City. *International Journal of IT, Engineering and Applied Sciences Research (IJIEASR)*, 2(3), 86-92.
- Jain, V., Sharma, A., & Subramanian, L. (2012). Road Traffic Congestion in the Developing world. (Online) Accessed from: <https://cs.nyu.edu/~lakshmi/traffic.pdf>. (Accessed 12.12.2018).
- Rahane, S. K., Patil, D. Y., & Saharkar, U. R. (2013). Traffic Congestion Causes and Solutions: A study of Telegaon Dabhade. *Journal of Information, Knowledge and Research in Civil Engineering*, 3(1), 160-163.
- Shamsher, R. & Abdullah, M. N. (2013). Traffic Congestion in Bangladesh- Causes and Solutions: A study of Chittagong Metropolitan City. *Asian Business Review*, 2(3), ISSN: 2304-2613.
- Ukpata, J.O., & Etika, A.A. (2012). Traffic Congestion in Major Cities of Nigeria. *International Journal of Engineering and Technology (IJET)*, 2(8), 1433-1438.
- Uddin, A. (2009). Traffic Congestion in Indian Cities: Challenges of a Rising Power. *Kyoto of the Cities, Naples*, 26-27.

A STUDY ON THE GROWTH OF HEALTH INSURANCE SECTOR IN INDIA

Ankita Das*

Abstract

A healthy population is considered as an asset for the growth of the nation; a healthy population indicates higher productivity leading to higher per capita income. Health insurance is the policies undertaken by the insured which are expected to protect the insured from financial losses in case of medical emergencies. Health insurance is an emerging sector, soon after the pandemic this sector has witnessed an immense growth. The study has been conducted to study the growth and performance of health insurance sector in India from the financial year 2016-2017 to 2021-2022. Data were collected from the annual reports of IRDAI from 2016 to 2022. As a result it was found that public sector insurance are leading in the business on the other hand private sector and stand alone sector are growing at a very slow pace. The business of government sponsored insurance is gradually decreasing On the other and the lives covered under group business and individual business are less in number but its increasing over the year. Overall the lives covered and the annual growth rate under health insurance is constantly increasing.

Introduction

Health is an important aspect of every individual. As stated by Ralph Waldo Emerson "Health is wealth". As the recent pandemic strike the world, people around the world has become more and more conscious toward their health. This has boosted the growth of Indian health insurance sector in India as well as in Abroad. Rise in the cost of living, expensive health care, increasing health awareness among the people leads to the growth of health insurance sector. It is emerging as the leading sector after life and automobile insurance. Health insurance contributes around 29% of premium amongst all sector of general insurance in India (M.M Dutta, 2020).

As per IRDAI (Insurance Regulatory and Development Authority of India) the term 'Health Insurance' relates to a type of insurance that essentially covers your medical expenses. A health insurance policy like other policies is a contract between insurers and an individual / group in which the insurer agrees to provide specific health insurance coverage at a particular "premium" subject to terms and conditions specified in the policy⁽¹⁾. Market share as well as lives covered by health insurance is constantly increasing leading to increase in the total business of general insurance (Siddiquie, S.A , 2021). A healthy population is considered as an asset for the nation.

*Research Scholar, Department of Commerce, Dibrugarh University

As per WTO healthy population indicates higher productivity and higher per capita income ⁽²⁾. So, Government of India is taking various initiatives to improve health and to reduce out of the pocket health expenditure of its citizen. Various health insurance schemes have been initiated by the government to facilitate underdeveloped section of the society.

Health insurance in India

The history of health insurance in India dated back to 1923 when the Workmen's Compensation Act was passed. With the nationalization of Indian insurance industry in the year 1986 insurance policy were first introduced in the market. In the year 1999 IRDA act was passed, with the passing of the Act new era of health insurance has begin in India leading to the growth of health insurance Market in India as well as paves the way for international players to invest in Indian Health insurance market. Health insurance market has been changing continuously. In the year 2018, 80% of the population was not covered under any health insurance scheme (report by 75th National Sample Survey) ⁽³⁾ but in the year 2021 as reported by NITI Aayog 70 % of the population are covered under health insurance scheme ⁽⁴⁾.

COVID 19 has made people realize the uncertainties of life and their unpreparedness in case of emergencies related to health. The health segment has shown a rapid growth by 34.2% in the year to date July 2022 as compare to the growth in the year July 2021. Thus the study is to trace the growth of health insurance sector in India.

Review of literature

Dutta, M.M (2020), As per the study 29% of the insurance premium are contributed by health insurance sector. Through the study it was found that there is a significant relation between income earned and underwriting loss. The increasing premium increases its underwriting loss instead of increasing profit. Health insurance scheme is growing but still unable to earn an underwriting profit. ⁽⁵⁾

Ito, S., & Kono, H. (2010), The main objective of the paper was to find out why take up of insurance is low in India. Data were collected from household in India and examined using prospect theory, hyperbolic preference, and adverse selection. As per prospect theory they analysed that people love taking risk so they don't take insurance and ready to face the risk of uncertainty. Another reason they found was people has low income in rural area because of that they face various financial problems so they don't want to invest their money in insurance and faces difficulties in paying premiums. ⁽⁶⁾

Kumar, et.al (2021) in the study stated that health insurance in India is changing continuously. It has been challenged and affected by number of development in the health care sector. The study tries to provide a strategic insight to health insurance as a mechanism for overall health financing. High claim ratio is one among the key challenges faced by the insurance companies. The study identified six success factors for health insurance development they are building strong distribution channel, identify niche customer market, long term partnership with banking channels, prudent underwriting & networking and claim management. ⁽⁷⁾

Nayak B. et al (2019), the aim of the study was to light up the strategic imperative of digital tech for the growth of health insurance and social health of below poverty customer. The data were collected through an in debt personal interview with 53 Indian health insurance CXOs. As per the study it was found that adoption of digital technologies for improving health insurance is linked with the cost of digitalization. Adoption of digital technology will increase the scale of implementation of health insurance⁽⁸⁾

Siddique S.A. (2021), the study highlight the technological efficiencies and productivity growth of Indian health insurance sector. It studied the growth of 27 health insurance companies from 2015- 2019 using slack based measured of envelopment analysis. As a result of the study stand alone insurance are more efficient as compare to other general health insurance. As per the researcher's further study need to be conducted considering the effect of firm level, industry level, macro economics factors on the efficiency of health insurance⁽⁹⁾

Objective of the study

The main objective of the study is to analyse the growth of health insurance sector in India from the financial year 2016-17 to 2021-22.

Research methodology

The study is descriptive in nature. It is based on secondary data collected from IRDAI annual report from the financial year 2016-2017 to 2021-2022. Along with that it is also collected from various journals, articles, published and unpublished repots and various websites.

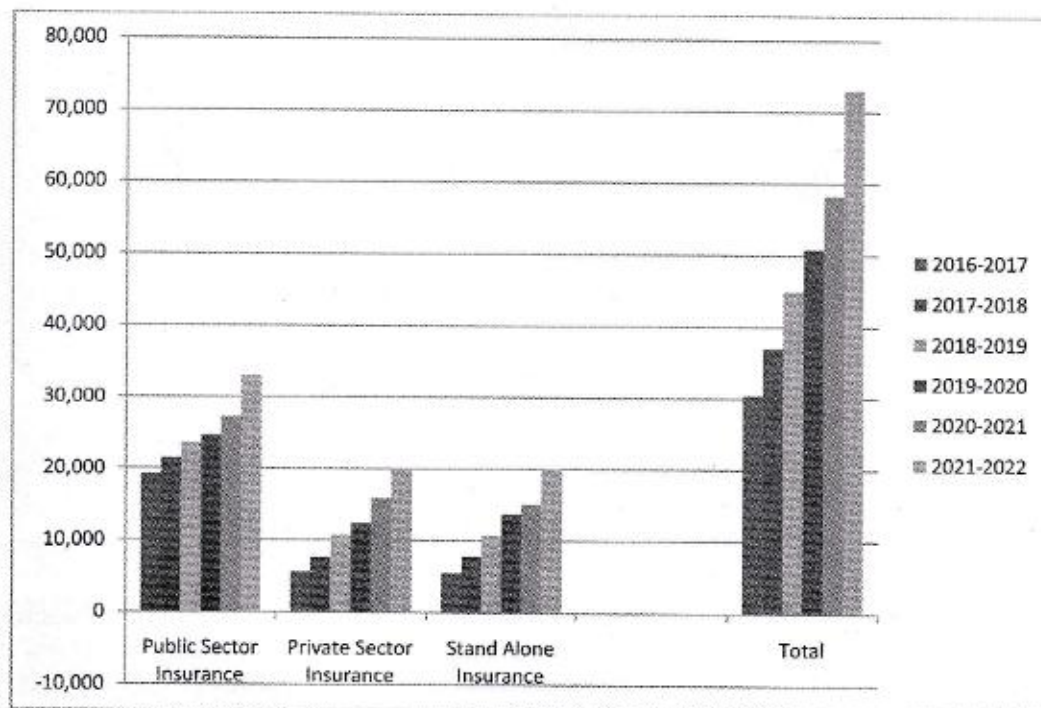
Data analysis

Table 1: Health Insurance Premium Underwritten by General and Health Insurers Insurer (2016 - 2022)

Insurer	Health Insurance Premium Underwritten by General and Health Insurers, (amount in Crore)					
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Public Sector Insurance	19,227 (63)	21,509 (58)	23,536 (9.42)	24,631 (4.65)	27,228 (10.54)	32,942 (20.99)
Private Sector Insurance	5,632 (19)	7,689 (21)	10,655 (38.57)	12,390 (16.29)	15,875 (28.12)	20,107 (26.66)
Stand Alone Insurance	5532 (18)	7,831 (21)	10,681 (36.42)	13,735 (28.59)	15,134 (10.19)	20,001 (32.16)
Total	30,392 (24)	37029 (22)	44,872 (21.18)	50,758 (13.12)	58,237 (14.74)	73,051 (25.44)

Source- IRDAI annual report

Figure 1: chart showing Health Insurance Premium Underwritten by General and Health Insurers Insurer (2016 – 2022)

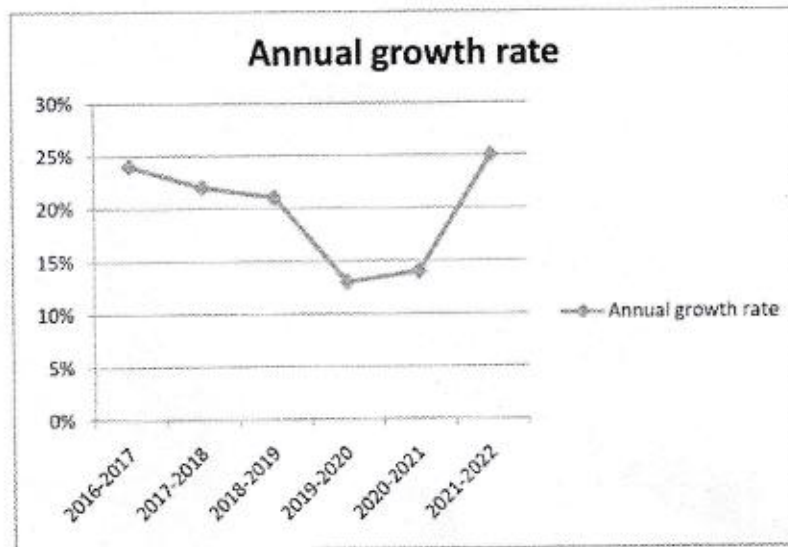


The above table number 1 show Health Insurance Premium Underwritten by General and Health Insurers starting from the year 2016 to 2022. It shows the insurance premium underwritten by three different sectors they are public sector insurance, private sector insurance and stand alone insurance. The growth amount are shown in Crore. In the figure 1 it clearly shown that insurance underwritten by the three sectors are growing rapidly over the year. Under private sector Health Insurance Premium Underwritten for the year 2021-22 is 32,942 Crore as compare to 2016-17 which was 19,227 Crore, under private premium underwritten was 20,107 core for the financial year 2021- 2022 as compare to the financial year 2016-17 which stands at 5,632 Crore on the other hand stand alone insurance Is also constantly increasing over the year.

Table 2: Annual growth rate of health insurance sector from 2016 to 2022

Title	Annual growth rate from 2016 to 2022					
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Annual growth rate	24 %	22%	21%	13%	14%	25%

Source- IRDAI annual report

Figure 2: chart representing the annual growth of health insurance sector

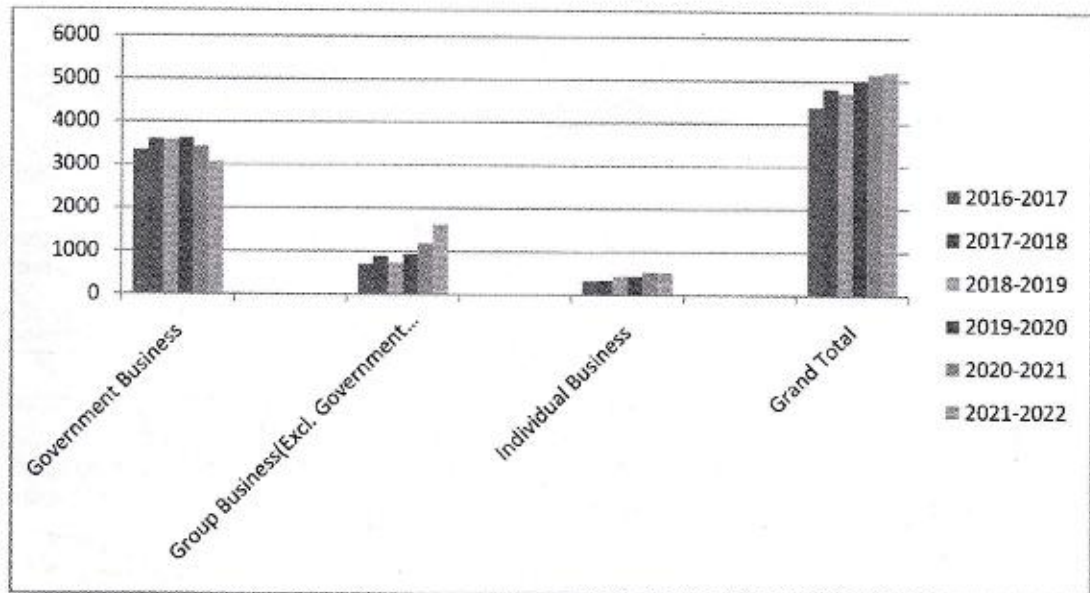
The table number 2 shows the annual growth rate of health insurance sector in India from the year 2016 to 2022. From the figure number 2 it can be stated that during the year 2017, 2018 and 2019 the annual growth rate was diminishing but as stated earlier health insurance sector is changing and emerging as a leading sector it can be evidenced through the growth as shown in the figure from the financial year 2020-21 to 2021-22. The annual growth rate is also increasing rapidly.

Table 3: Number of lives covered under health insurance programme (2016 to 2022)

Class of Business	NUMBER OF LIVES COVERED UNDER HEALTH INSURANCE (EXCLUDING PA & TRAVEL INSURANCE BUSINESS) (amount in lakhs)					
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Government Business	3350	3593	3571	3,619	3,429	3,065
Group Business(Excl. Government Business)	705	894	729	935	1,186	1,622
Individual Business	320	333	421	432	531	516
Grand Total	4375	4820	4720	4,987	5,147	5,204

Source- IRDAI annual report

Figure 3: chart representing lives covered under health insurance programme (2016 to 2022)



The above table shows the number of life covered health insurance (excluding PA & travel insurance business). The lives are covered under three class of business they are government sponsored business, group business excluding government business and individual business. From figure number 3 it can be concluded that lives covered under government business is more in number but we can see that the graph is diminishing which means lives covered by government business is reducing over the year. On the other and the lives covered under group business and individual business are less in number but its increasing over the year. Overall the live covered under health insurance is constantly increasing.

Conclusion

The study was conducted to study the growth of health insurance sector in India. From the table and figure shown above it can be concluded that the overall health insurance sector is progressive in India. The recent years have been very fruitful for sector. The overall sector is growing but the private sector and stand alone sector are growing at a very slow pace this sector needs to develop more in order to satisfy the customer and gain the market share. The business of government sponsored insurance is gradually decreasing which can be evidenced through the reduction in the live covered. It will be a great opportunity for government insurers if they can reach the rural population which will help to increase market share of health insurance business and will be beneficial for the customer. Limitation of the study is that it is completely based on secondary data. Further study can be conducted by doing a primary survey on health insurance industries performance by collecting data from the insurance providers and the customers.

References

1. WHO. (2005, June 5). The World Health Report 2005. Make every mother and child count. The World Health Report 2005. Make Every Mother and Child Count. [https://The World Health Report 2005. Make every mother and child count.](https://TheWorldHealthReport2005.Makeeverymotherandchildcount)
2. INSURANCE REGULATORY AND DEVELOPMENT AUTHORITY OF INDIA (Ed.). (2021). Why Buy Health Insurance. CONSUMER EDUCATION. Retrieved September 14, 2022, from https://www.policyholder.gov.in/Why_Buy_Health_Insurance.aspx
3. GOI. (2020 B.C.E., July 17). Over 80% Indians not covered under health insurance: NSSO survey.
4. NITI AAYOG. (2021, October). Health Insurance for India's Missing Middle. https://www.niti.gov.in/sites/default/files/2021-10/HealthInsurance-forIndiasMissingMiddle_28-10-2021.pdf.
5. Dutta, M. M. (2020). Health insurance sector in India: an analysis of its performance. Vilakshan-XIMB Journal of Management.
6. Ito, S., & Kono, H. (2010). Why is the take up of microinsurance so low? Evidence from a health insurance scheme in India. *The Developing Economies*, 48(1), 74-101.
7. Kumar, R., & Duggirala, A. (2021). Health insurance as a healthcare financing mechanism in India: key strategic insights and a business model perspective. *Vikalpa*, 46(2), 112-128.
8. Nayak, B., Bhattacharyya, S. S., & Krishnamoorthy, B. (2019). Application of digital technologies in health insurance for social good of bottom of pyramid customers in India. *International journal of sociology and social policy*, 39(9/10), 752-772.
9. Siddiqui, S. A. (2022). How efficient is Indian health insurance sector: An SBM DEA study. *Managerial and Decision Economics*, 43(4), 950-962.

IMPACT OF ASSAM SKILL DEVELOPMENT MISSION ON ENTREPRENEURSHIP IN ASSAM

Panchi Haloi*
Swarup Bharali**

Abstract

Unemployment is a serious problem among the youths mainly from age group 18-35. But, along with the phase of time, development of the economy and different initiatives taken by the government has reduced the unemployment rate to some extent. According to the recent statistics released by Centre for Monitoring Indian Economy (CMIE) on 1st March 2023, the unemployment rate in Assam has reduced to 4.7 in December 2022 from 8.5 in January 2022. The Assam Government has given high priority in developing skills and promoting entrepreneurship in the state. In this context Assam Skill Development Mission (ASDM) has been formed with a vision to provide quality skill training with a certified course to the youth and also provide them with gainful employability. This mission is providing ample number of certified courses, training for different skills and placement in different sectors in all the districts of Assam. Thus, ASDM is benefiting both the male and female youths in becoming independent and also to avail there on business. Therefore, it becomes necessary to study the impact of various training programs under ASDM on the youth which will imbibe itself in promoting entrepreneurship. This paper aims to highlight such ongoing schemes under ASDM providing training, employment and also to study about the beneficiaries of ASDM. Also, to find out the gap between total enrollment in ASDM and placement in various sectors. This paper focuses on only 10 sectors. Moreover, the study is based on the comparison of training and placement of beneficiaries by relevant statistics. The paper is based on secondary data and purposive sampling is used for selection of districts and sectors. The study shows that training and skill development has helped in providing employment to the youths and in promoting entrepreneurship. Thus, the government should take more initiatives for such schemes, training programmes benefitting the youths further giving them a scope for entrepreneurship which would again help in the economic development of the state.

Key words: Assam Skill Development Mission (ASDM), Entrepreneurship, Placement, Training.

*Research Scholar, Department of Economics, Assam University. Email- panchih4@gmail.com

**Research Scholar, Department of Economics, Assam University. Email- sbharali4@gmail.com

Introduction:

Skill development refers to the productive capabilities acquired through formal, informal and non-formal way of trainings and learnings. It is a way to foster and nourish the abilities and capabilities in order to pave towards development. Skill development means developing oneself and one's skill in order to add value for the organization and for one's own career development (Kalita et.al., 2016). It is the process of identification of gaps in skills among the youth and providing them with skills, trainings and employment benefits to them.

According to International Labour Organization (ILO), "education, vocational training and lifelong learning are the central pillars of employability, employment of workers and sustainable enterprise development". In India, skilled labour is very less than other Asian economies, therefore it is necessary to grow the skill development programme in India (Kedar, 2015). Providing skill development education or training to the youth of nation helps in making skilled labour. After successfully taking skill development training, a person can be an entrepreneur. Therefore, such skills and trainings help the youth to grow as an entrepreneur and in reducing unemployment. However, the government is failing to give proper skill education in every location. There is less skilled labour in our country due to lack of skill education training thus self-employment rate is also low. The brass industry in Assam is about to shut down because of lack of manpower and skilled labour. The gender participation rate in Assam is also different. Basically, female participation in such skill development education training is less whereas male participation is large.

The Government of India has recognized the importance of youth and their need for skill development and taking various initiatives in building skills of the youth of the nation. Similarly, the Assam government has also emphasized on skill development of youths which will help in generating employment and can pave towards entrepreneurship in the society. Under the direction of the Skill Employment and Entrepreneurship Department, the Assam Skill Development Mission was established. The Mission aims to provide high-quality skill training to enable unemployed children to obtain meaningful work.

The Assam Skill Development Mission (ASDM) was established in 2015 and is a part of the State of Assam's newly established Skill, Employment and Entrepreneurship Department (SEED). The Mission began operating in January 2017 as the State's central organization for all skill-building efforts to meet the year's 1.50 lakh youth skilling target. The main vision is building the skills of unemployed young people and providing high-quality training leads to fulfilling employment. The mission also aims to formulate 24,000 batches, enhance the global competitiveness of Assam, mobilize 30 lakh youth, establish 1000 training centres, place 2000 Overseas, register 7.2 lakh youth, train 6 lakh youth. This mission will also provide quality skill training for gainful employment of educated unemployed youth, to encourage development of entrepreneurs in different sectors. The skill development training helps to generate employment opportunities and to become an entrepreneur.

There are literatures focusing on skill development, skill gap analysis, impact of Assam Skill Development Mission (ASDM) on youth of Guwahati, but there lacks a study on the enrolments, trainings, placement being provided by ASDM. This paper focuses on the enrolments, trainings, placements across the selected districts

and sectors in Assam. We have taken data from various secondary sources mainly from Assam Skill Development portal (ASDM). For the successful implementation and positive outcome of these initiatives, studies should be carried out to understand its effect on generating employment and also to identify the issues, challenges and factors faced by the trainees in getting employment after training so that effective measures can be taken for better performance of these programmes.

Review of Literature:

(Melo & Das, 2020) studied about the participation and their impact on employment and found that 84% participants had completed training and around 58% from total participants were engaged in a business after completing their trainings. Women involvement in economic development are less in UAE. Entrepreneurs could satisfy all the condition of market and policies of the government. Government has sufficient loan facility, infrastructure, technology etc., but lacks in training employees (Al Kaabi et al., 2018). According to the study of (Ansari & Khan, 2018) 12 million young people without formal education join the workforce annually. Consequently, development skills are crucial. The deficiency in skill development in India accounts for the country's poorer labour productivity relative to other ASEAN economies. The Indian government launched a skill development initiative that will produce skilled workers and increase jobs (Kedar, 2015).

Young people, especially those with degrees, struggle to compete in the market because they lack the necessary skill sets. Making the professional course curriculum such that it offers comprehensive on-the-job training will help prepare students for the workforce. It is necessary to raise the training standards. Students were not allowed to enrol in skill or vocational oriented courses because of a lack of awareness (Chaurasia & Veeriah, 2023). In 2021 the employment opportunities in various districts of Assam increased due to the hospitality sector and businesses such as hotels, restaurants are beginning to expand (Mehdi, 2018). (Dutta, 2021) discovered that United RSETI of Cachar, Assam was approaching youth involvement in many skill development sectors in Cachar. (Hazarika, 2016) found that around 75% of young people were inspired to launch their own company after finishing their State Institute of Rural Development (SIRD) training, and roughly 23% of them saw an increase in employment from the first year of operation in Assam. (Kalita, 2016) found from their study that the traditional brass metal industry of Assam did not receive any government facilities. They had to learn how to work from generation to generation as there was no official training facility. Ganeshpara in Guwahati is closed because there weren't enough workers or skilled craftspeople. They also found that the artisans faced a shortage of government initiatives, capital, labour, and raw supplies. (Mochahari & Barman, 2021) found that 94% of the learners in Guwahati city struggle with unemployment and get enrolled in the training program in the hopes of finding employment. The majority of the trainees, who were in the age range of 21 to 30, had launched their own businesses. The study found some challenges obtaining employment following a skill development program, however. For establishment, some trainees had to wait seven to nine months. The Assam Skill Development Mission's (ASDM) lack of financial assistance and other forms of support is deterring trainees from launching their own businesses. However, (Minz & Mehta, 2022) found that Rural entrepreneurship is the solution to reduce rural migration for better livelihoods. Skill Development

programme is the urgent need to enhance skills, reduce rural migration and to achieve decent livelihood.

Significance of the Study:

The Assam Skill Development Mission (ASDM) plays an important role for entrepreneurship development in Assam. The mission is developing and working exclusively for development of entrepreneurship in Assam. ASDM is formed with the vision to give a platform for quality skill training to the youth and also providing them with employment. From this study we will come to know about the number of candidates enrolled, trained and placed across the districts and sectors, which will give an insight into how ASDM has helped in unemployment reduction or scope for entrepreneurship initiative taken by government of Assam. Moreover, this study will also provide insights into need for enrolments and trainings in some districts and sectors.

Objectives of the Study:

The objective of the study is –

1. To highlight the number of candidates enrolled, trained and placed across selected districts and sectors.
2. To study the gender gap in placement under Assam Skill Development Mission (ASDM).

Data and Methodology:

The paper collected only secondary data from the Assam Skill Development Mission portal, government of Assam. This portal provided with the number of candidates being enrolled, trained in various courses, passed in the courses, and their placement in different job roles across different sectors and different districts. The data were taken from dated 1st January 2017 to 31st March 2023. The sample of 10 districts namely Barpeta, Chirang, Darang, Dibrugarh, Kamrup Metropolitan, Kokrajhar, Nagaon, Sonitpur, Tinsukia, Udalguri and 9 sectors namely Agriculture, Construction, Apparel, Electronics, IT-ITES, Media and Entertainment, Textile, Retail, Tourism and Hospitality were selected purposively based on the highest number of placements. The statistical tool t-test was done using SPSS software version 27 to see the significant difference of gender and placement across the districts and the sectors.

Results and Findings:

The study depicted that there is a total of 48,621 candidates enrolled in Assam Skill Development Mission under the scheme named Placement Linked Skill Development Training Programme 47,911 candidates were trained, 37,189 were passed and 18,308 were placed out of the selected districts and sectors.

Enrolment:

The study saw that enrolments are not equal over the districts. In some districts the number of candidates enrolled are high and in some districts it is low. The below table shows Table No.1 shows the number of both male and female candidates enrolled.

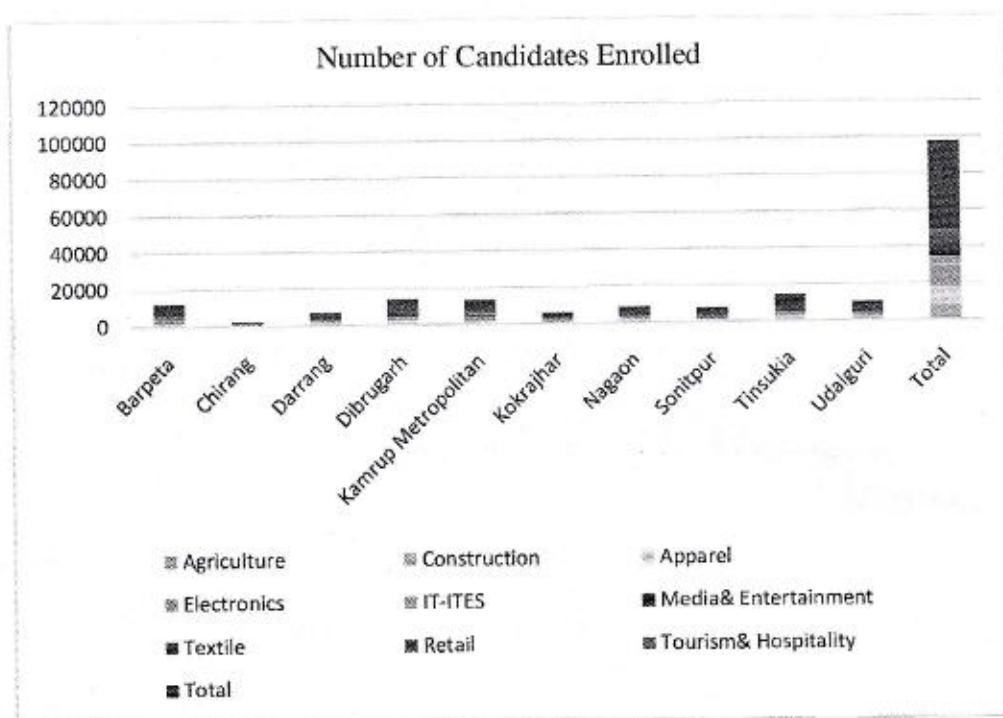
The number of candidates enrolled is shown below table no.1.

Table No.1: The total number of candidates enrolled in ASDM in the selected sectors from the selected districts.

Districts and Sectors	Barpeeta	Chirang	Darang	Dibrugarh	Kamrup Metropolitan	Kokrajhar	Nagaon	Sonitpur	Tinsukia	Udalguri	Total
Agriculture	470	90	386	200	372	240	533	541	871	340	4043
Construction	588	150	439	1032	267	280	80	252	713	839	4640
Apparel	822	60	1036	1262	990	553	1554	533	1338	1057	9205
Electronics	1594	925	1079	1723	1045	1278	620	236	2080	1450	12030
IT-ITES	1125	60	230	215	1337	340	361	200	124	351	4343
Media & Entertainment	708	0	48	1202	370	135	575	339	297	326	4000
Textile	178	0	242	981	57	96	254	242	1380	420	3850
Retail	420	0	90	494	995	0	297	679	209	211	3395
Tourism & Hospitality	248	0	60	40	1281	100	90	947	289	60	3115
Total	6153	1285	3610	7149	6714	3022	4364	3969	7301	5054	48621

Source: Assam Skill Development Mission Portal.

Figure: 1- Graphical representation of number of candidates enrolled under ASDM shown in Table No.1



The above given Table No.1 indicates the total number enrolment of combined male and female candidates of 10 districts and 9 sectors in Assam Skill Development Mission (ASDM). The study found that with district wise comparison taking all the sectors the number of enrolments is high in Tinsukia district i.e., 7301 and low in Chirang district i.e., 1285 across all the districts. With sector wise comparison taking all the districts the number of enrolments is high in Electronics i.e., 12030 and low in Tourism and Hospitality i.e., 3115 across all the sectors. The enrolment number of Chirang district in sectors namely Media and Entertainment, Textile, Retail and Tourism and Hospitality and Kokrajhar district in Retail sector is 0 which means there has been no enrolment taken yet. A total of 48621 candidates including both male and female have enrolled under this mission and scheme named Placement Linked Skill Development Training Programme. From this we can say that if the enrolled students get placed and employment in different sectors then there is a scope of employment reduction. Also, from these candidates some will try to start their own business which is also a scope for entrepreneurship. The government initiative with Assam Skill Development Mission has given these sectors a chance to expand and start their new ventures.

Training:

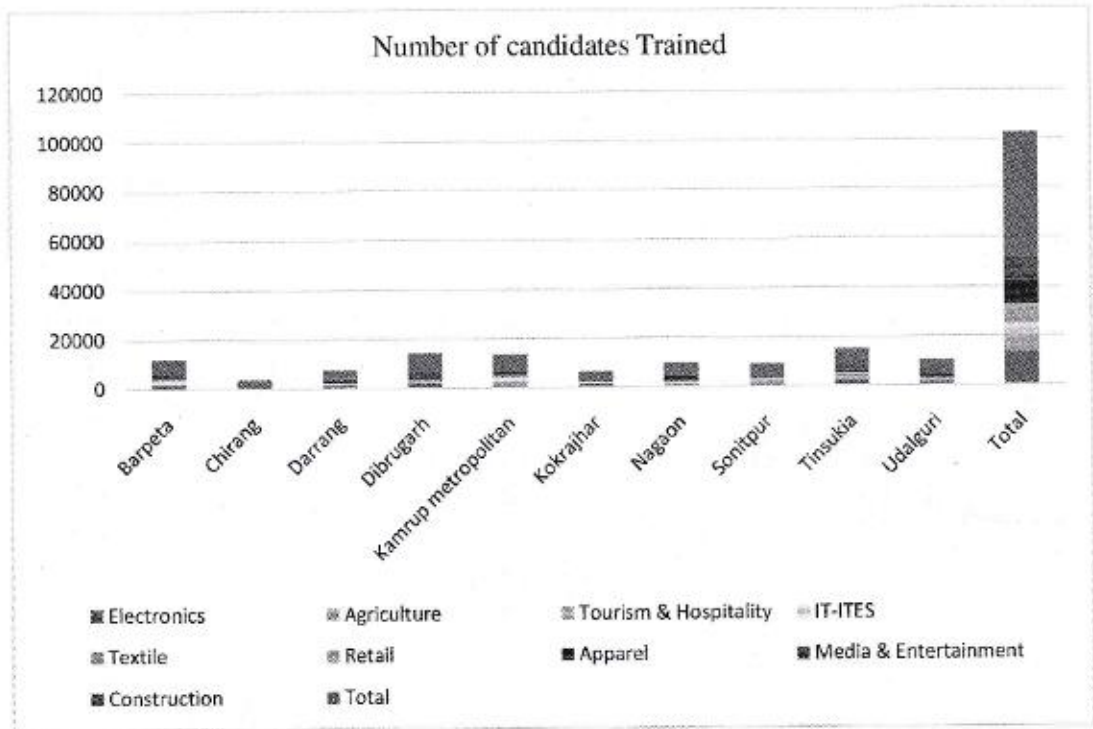
The candidates getting enrolled are trained, the candidates getting training. The study saw these trainings are not equal over the districts. In some districts the number of candidates trained are high and in some districts it is low. The below table shows Table No.2 shows the number of both male and female candidates trained.

Table No.2: The total number of candidates trained under ASDM in the selected sectors from selected districts.

Districts & Sectors	Barpeeta	Chirang	Darang	Dibrugarh	Kamrup metropolitan	Kokrajhar	Nagaon	Sonitpur	Tinsukia	Udalguri	Total
Electronics	1770	925	1249	1748	1145	1458	710	757	2140	1600	13502
Agriculture	470	90	386	200	372	240	533	541	871	340	4043
Tourism & Hospitality	248	0	60	40	1281	100	90	947	289	60	3115
IT-ITES	1184	60	230	215	1367	340	391	230	149	401	4567
Textile	178	0	242	981	57	96	254	242	1440	420	3910
Retail	420	0	90	494	995	0	397	709	209	211	3525
Apparel	882	60	1036	1262	990	553	1744	553	1398	1057	9535
Media & Entertainment	305	708	48	1202	370	135	695	339	357	305	4464
Construction	558	90	439	1032	317	280	80	252	713	889	4650
Total	6015	1933	3780	7174	6894	3202	4894	4570	7566	5283	51311

Source: Assam Skill Development Mission Portal

Fig.2- Graphical representation of number of candidates trained under ASDM as shown in Table No.2



The above given Table No.2 indicates the total number enrolment of combined male and female candidates of 10 districts and 9 sectors in Assam Skill Development Mission (ASDM). The study found that with district wise comparison taking all the sectors the number of candidates trained is high in Tinsukia district i.e., 7566 and low in Chirang district i.e., 1933 across all the districts. With sector wise comparison taking all the districts the number of candidates trained is high in Electronics i.e., 13502 and low in Tourism and Hospitality i.e., 3115 across all the sectors. The number of candidates trained in Chirang district in sectors namely Textile, Retail and Tourism and Hospitality and of Kokrajhar district in Retail sector is 0 which means there has been no training taken yet. A total of 51311 candidates including both male and female are trained under this mission and scheme named Placement Linked Skill Development Training Programme. These trainings have given employment to a lot of candidates. Some are employed under different sectors, i.e., wage employed, some are self-employed and some had started their own business. With the selected districts and sectors the wage employed male candidates are 4987 and female candidates are 7282, and the self-employed male candidates are 950 and female candidates are 3568. The female self-employed candidates are more than male, which also portrays that the gender gap in employment is reducing slowly. These trainings have not only helped the males but is also helping the females to become income independent and getting employment. This in macro perspective depicts a way towards the development of the country too.

Placement:

The candidates who were trained and had passed the examination were eligible for placement. The number of candidates placed in all the sectors and all the districts were not even. Some districts and sectors had high number of candidates placed whereas some has low. The number of male and female candidates placed separately in different districts and sectors is shown in below Table No.3. With district wise comparison and taking all the sectors the number of candidates is high in Udalguri district i.e., 2,996 and low in Nagaon district i.e., 1,327. Again, with sector wise comparison taking all the districts the number of candidates is high Electronics i.e., 5,361 sector and low in IT-ITES sector i.e., 984. The total number of females placed is high in Udalguri district i.e., 1,702 and low in Kokrajhar district i.e., 687. The total number of males is high in Udalguri district i.e., 1,294 and low in Nagaon district i.e., 261. The total number of candidates getting trained were 51,311 whereas the total number of candidates getting placed were 18,298 and there is a gap of 33,013. With the help of student t-test, it was found that the t-test is -3.502 which is negative not significant at 0.876 with 0.01 significance level which is shown in Table No.4. It indicates that there is no significant difference in mean ranks of placement of male and female across the selected districts and sectors. It may be said that difference between male and female taking all the selected districts and sectors were found to have placement at the same level.

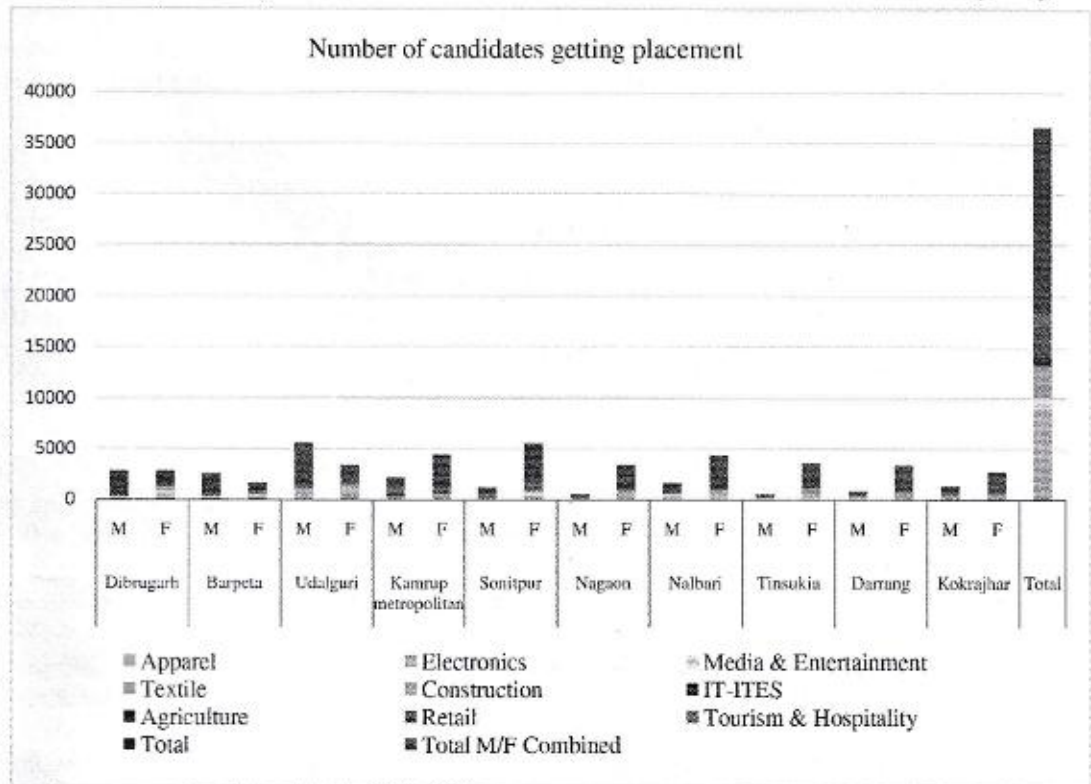
The results from the study shows that, though the distribution of male and female is not equal across the selected districts and sectors, but while comparing them altogether there is no significant difference between male and female. It also says that both men and women are moving together with regard to skill development, independency and entrepreneurship. But there only lacks a huge difference between the training of number of candidates and their placement.

Table No.3. Placement of both male and female separately across the selected districts and sectors.

District	Dibrugarh		Barpeta		Udalguri		Kamrup metropolitan		Socitpur		Nagaon		Nalbari		Tinsukia		Darrang		Kokrajhar		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Alipore	4	353	0	307	7	567	3	414	3	340	2	656	0	21	1	134	36	512	27	266	3653
Electronics	147	148	314	126	457	456	189	110	95	126	80	118	539	879	170	303	225	223	385	269	5361
Media & Entertainment	2	363	1	113	1	171	0	52	3	216	1	35	0	52	1	108	0	0	0	0	1119
Textile	0	325	0	0	6	267	0	0	11	173	0	107	0	0	2	455	0	40	1	78	1465
Construction	172	47	89	0	537	54	128	3	61	22	52	1	73	2	42	49	110	0	158	5	1625
IT/JES	23	24	52	105	50	87	194	172	26	39	59	44	6	18	6	34	13	32	0	0	984
Agriculture	6	56	47	56	196	42	172	100	49	144	29	52	8	20	46	24	73	179	95	59	1453
Retail	115	90	83	128	0	40	76	104	192	309	38	53	143	119	0	0	0	0	0	0	1490
Tourism & Hospitality	0	0	0	0	20	18	338	146	175	265	0	0	49	81	16	0	0	0	30	10	1148
Total	469	1406	586	835	1294	1702	1100	1101	615	1634	261	1066	818	1192	284	1109	457	986	696	687	1829
Total M/F Combined	1875		1421		2996		2201		2249		1327		2010		1393		1443		1383		8

Source: Assam Skill Development Mission Portal

Fig.3- Graphical representation of number of candidates both male and female getting



placement under ASDM as shown in Table No.3

Table No.4. Significance of placement of male and female across the selected districts and sectors.

Gender	N	Mean	Mean Difference
Male	10	657.70	-515.400
Female	10	1173.10	-515.400

Source: Author's calculation

Limitations:

However, the study is not free away from some limitations, like use of primary data of the particular individuals who are enrolled, trained and placed. Also, the awareness regarding this mission, problems faced by the individuals on getting placement after trained and factors of these problems is also a scope for further research.

Conclusion:

Assam Skill Development Mission is an appreciating initiative of Government of Assam for skill development of youth and imparting them with employment opportunities. The study shows that more than 90% of the trainees have been facing the problem of unemployment due to which they have joined the various training

programmes under ASDM with a hope of getting employed. The ASDM training programmes has benefitted both male and female youths across different districts in Assam. However, the lack of proper and regular financial assistance and other support from the mission is hindering the trainees on the path of their new business establishment.

The study suggests that more effort from the mission will help in linking the trainees with the employer and financial institutions for availing funds so that the new youths can start their own ventures and go towards the way of entrepreneurship. Also, some districts and sectors have no enrolments and trainings, government should take up steps to fill that gap too. Thus, ASDM training programs can fill up the needs of making skilled worker. Only skilled worker can contribute well to the development of different sector which in turn will pave towards the rise of entrepreneurship and thus the economy in the country.

References:

1. Al Kaabi, K., & Sandhu, M. (2018). The role of workforce skills development for entrepreneurship: an Emiratisation perspective. In *Int. J. Business Excellence* (Vol. 14, Issue 14, Issue
2. Burton, D. (1989). The impact of goal specificity and task complexity on basketball skill development. *The Sport Psychologist*, 3(1), 34-47.
3. Dutta, M. R., and Dey, J. (2021). Skill development opportunities and perceptible social work practice: a case study on united rseti of cachar, assam. *Towards Excellence*, 13(3).
4. Hazarika, S. (2016). Skill development for rural entrepreneurship: A study on state institute of rural development (SIRD), Assam. *International Journal of Research and Analytical Reviews*, 3(3), 61-66.
5. <https://asdm.assam.gov.in/>
6. <https://assam.mygov.in/cn/group/assam-skill-development-mission-asdm/>
7. <https://www.nationalskillsnetwork.in/>
8. <https://www.skillmissionassam.org/>
9. <https://www.skillreporter.com>
10. Hazarika, S. (2016). Skill Development for Rural Entrepreneurship: A study on State Institute of Rural Development (SIRD), Assam. In *Research Paper IJRAR-International Journal of Research and Analytical Reviews* (Vol. 3). <http://ijrar.com/>
11. Jindal, M. K., and Bhardwaj, A. (2016). Entrepreneurship development in India: A new paradigm. In *Proceedings of the world congress on engineering* (Vol. 2, pp. 724-726).
12. John, J. (2009). Study on the nature of impact of soft skills training programme on the soft skills development of management students. *Pacific Business Review*, 19-27.
13. Kaabi, K. A., & Sandhu, M. (2018). The role of workforce skills development for entrepreneurship: an Emiratisation perspective. *International Journal of Business Excellence*, 14(1), 101-120.
14. Kalita, K., & Sarma, M. D. (2016). Skill development of Manpower-A Study on the Traditional Brass Metal Industry of Assam. *Pratidhwani the Echo-A Peer-Reviewed International Journal of Humanities & Social Science*, 5, 45-55.
15. Kedar, M. S. (2015). Skill Development in India Challenges and Opportunity. *International Research Journal of Multidisciplinary Studies*, 1(5).

16. Melo, Y., & Das, A. K. (2020). The Extent of Participation in Skill Development Trainings and Its Impact on Employment. *Indian Journal of Human Development*, 14(2), 290-303.
17. Mochahari, S., & Barman, J. (2021). Impact of Assam Skill Development Mission among the youth of Guwahati city. *Journal of Contemporary Issues in Business and Government*, 27(1), 2021. <https://cibg.org.au/2976>
18. Ndedi, A. A. (2013). Challenges and perspectives facing the development of entrepreneurship education and training in South Africa. *World Journal of Entrepreneurship, Management and sustainable development*, 9(2/3), 126-132.
19. Niharika Minz, R., & Chandra Mehta, M. (2022). Skill Development through Rural Entrepreneurship for Better Livelihood. *International Journal of Advances in Engineering and Management (IJAEM)*, 4, 1020. <https://doi.org/10.35629/5252-040410201025>
20. Pandey, A., & Nema, D. K. (2017). Impact of skill India training programme among the youth. *International Journal of Multidisciplinary Research and Development*, 4(7), 294-299.
21. Sharma, R., Kour, D., & Sharma, I. (2021). Towards atmanirbhar bharat abhiyan through skill development and entrepreneurship: A review. *Indian Journal of Economics and Development*, 17(2), 454-461.
22. Sidhu, K., & Kaur, S. (2006). Development of entrepreneurship among rural women. *Journal of Social Sciences*, 13(2), 147-149.
23. Singh, S. K., & Ram, P. (2017). Entrepreneurship development in India: Opportunities and challenges. *Splint International Journal of Professionals*, 4(3), 75-81.
24. Unachukwu, G. O. (2009). Issues and challenges in the development of entrepreneurship education in Nigeria. *African Research Review*, 3(5).
25. Vyas, A. (2018). The impact of skill development on women empowerment. *International Journal for Advance Research and Development*, 3(1), 8-11.
26. Yeoman, K. H., & Zamorski, B. (2008). Investigating the impact on skill development of an undergraduate scientific research skills course. *Bioscience Education*, 11(1), 1-14.

FORECASTING WHEAT PRODUCTION IN INDIA USING TIME SERIES ANALYSIS

Mintu Kr. Das*
Kasturi Saikia**

ABSTRACT

Wheat is one of the most popular staple foods of India, after rice. India has been the second-largest producer of wheat in the world. The production of wheat in India from 1960 to 2022 has grown considerably over time, but in comparison, the import and export trend has shown fluctuations. In this paper, an attempt has been made to forecast the production of wheat using time series analysis. Results have indicated that the production of wheat is expected to rise at an average growth rate of 1.62 percent (approx.) annually during the period 2023 to 2030. With proper planning and execution, India will also have the opportunity to increase global wheat exports.

KEYWORDS: *Wheat production, time series analysis, ARIMA, forecasting.*

Introduction:

Wheat is widely cultivated in many parts of the world, where Russia, China, and India account for around 41% of total wheat production around the world. According to the latest report, China leads the top spot, with India in the second position.¹ The major wheat-growing states in India are Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan, Bihar, and Gujarat. Even though India is the second largest producer, it barely accounts for 1% of global wheat exports, since it is used for local consumption. But India has been taking steps to improve the export situation with the help of the Agricultural Products Exports Development Authority (APEDA), which is entrusted with the responsibility of conducting exhibitions in different parts of the world to attract potential markets. India mainly exports its wheat products to Bangladesh, followed by Nepal, UAE, and Sri Lanka. But recently, in 2020-21, Indian wheat has found four new markets in Yemen, Afghanistan, Qatar and Indonesia.²

The production of wheat in India from 1960 to 2022 has grown considerably over time, but in comparison, the import and export trend has shown fluctuations. The growth in the production of wheat is mainly owed to the inception of the All India Coordinated Research Project (AICRP) on wheat improvement, after deficit food production, as a result of which imports rose in the later years. During this phase, in 1967-68, India adopted the green revolution, which also led to surplus production

*Assistant Prof., Department of Statistics, D.H.S.K. Commerce College, Assam, India

**Assistant Prof., Department of Business Management, D.H.S.K. Commerce College, Assam, India

of wheat.² Thereafter, an inverse relationship can be noticed in the import and export of wheat from 1960 to 2022. In the 1960s, India depended on imports of wheat from other countries hence no question of exports arose. In the 70s also, the trend was similar to that of the 60s when India had to import wheat, but during the 80s, the scenario changed with the increase in exports and a decline in imports. The rise in exports was due to high production in the 80s owing to changes in the agricultural sector, viz. use of tractors in the cultivation of wheat. And since then, India has been doing well with high exports compared to imports, with few exceptions in certain years. The production of wheat increased to 6.5 million tons in 1995, due to the introduction of high-yielding crops and frontline demonstrations of crop production and protection technologies.³ The year 1995 acted as a turning point in the production of wheat. With the increase in production, the exports also rose for the initial two years (1995 and 1996) while simultaneously balancing the imports. Interestingly, exports for the next two years (1997 and 1998) were nil while India had to import for the succeeding years. This may be a result of good harvesting in particular years, which led to the piling of wheat, ultimately contributing towards export. But it is seen that high exports are usually followed by imports in succeeding years because of insufficient availability for domestic demands.⁴

India, in the last few years, has been able to capture a global market by exporting wheat to countries for the first time. Though the increase in the export of wheat is a welcome initiative, there is a high risk of an increase in prices for the domestic market. Thus, it becomes crucial for policymakers to formulate such policies that will lead to a balancing state between exports and domestic requirements. In such a scenario, historical data plays a pivotal role in predicting the future production of any crop. Forecasting plays an important role when deciding on future strategies in a dynamic and uncertain environment. There are several techniques for forecasting future values. Time series analysis is the common way of forecasting if past information is available. In a study Dasyam et al., (2015) found ARIMA (1,1,0) as the most appropriate model to forecast wheat production for the period 1961-2013.⁵ Nath et al., (2018) found ARIMA (1,1,0) to be the best model to forecast the future production of wheat for the period 1950-2017.⁶ Kumar et al., (2019) tried to forecast the wheat production in Haryana using data from 1981 to 2010. They compared random walk, linear trend, moving average, simple exponential smoothing, and ARIMA models and found ARIMA (0,2,2) as the best model to forecast wheat yield in Haryana.⁷ Boruah et al., (2020) used ARIMA(2,2,4) as the best-fitted model to forecast wheat production for the period 1967-2020.⁸ Mishra et al., (2021) studied the trend in the production of total pulses in India using the ARIMA method for the period 1961-2019.⁹ Selvakumar and Kasthuri (2022) used ARIMA in comparison with the radial basis function (RBF) method for wheat production prediction in India using data for the period 2001-2021.¹⁰ They found ARIMA (1,1,0) to be the most suitable model to forecast the future production of wheat although RBF model performed better than ARIMA.

Thus, the literature reviewed on forecasting wheat production in India and its different states, clearly suggests ARIMA to be most suitable in production prediction. As the temporal data of each study are different, the models are also different. One obvious reason for these discrepancies is that the addition of new observations always enriches the output information with a modification of the model parameters.

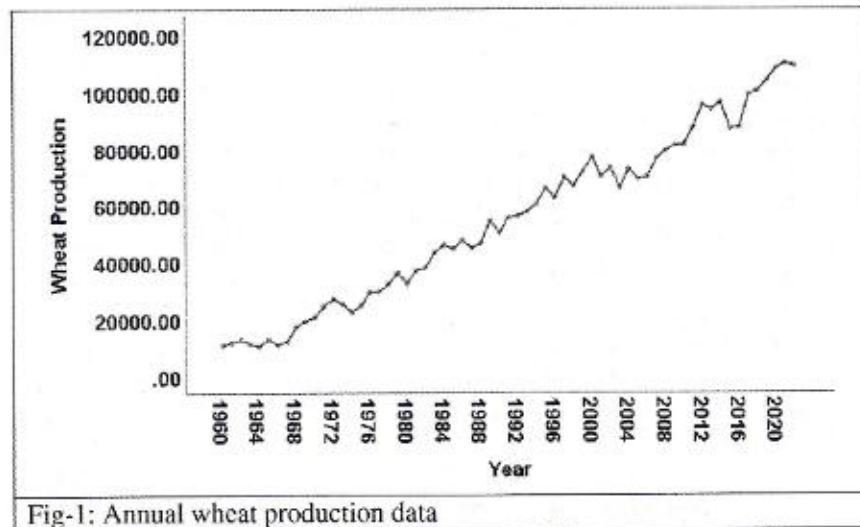


Fig-1: Annual wheat production data

Objectives:

This paper is an attempt to forecast the future of wheat production using time series analysis with the following objective:

1. To identify the trend of wheat production in India for the period 2023-2030.

Research questions:

With this objective, the following research question is framed:

1. Will the production of wheat increase for the period 2023-2030?
2. If yes, what will be the average annual growth rate?

Methodology:

The present investigation is an empirical one, which is based on secondary data. The historical data for the period 1961 to 2022 have been taken from Index Mundi data portal (<https://www.indexmundi.com>). The data set consisting of 63 observations was divided into two parts for model building and validation purposes. Statistical software R and IBMSPSS were used for statistical analysis.

4.1: ARIMA Model:

The dependence of the future on present observations and present on the past observations has been the basis of the autoregressive structure. In an autoregressive (AR) structure the current value of an observation is a linear function of the previous observation with a disturbance term. Thus, a first order AR equation is given as: $y_t = c + \phi_1 y_{t-1} + u_t$ with $E(u_t) = \mu$. While, in a moving average (MA) process the current observation is a linear combination of the current disturbance with one or more previous perturbations.¹¹ Thus a MA term in a time series model is a past disturbance multiplied by a coefficient. A first order MA equation is given as: $y_t = \mu + u_t + \theta_1 u_{t-1}$. Depending upon the time-invariant behavior, there may

be stationary and non-stationary time series. A time series exhibiting stationary nature can be well modeled with the joint structure of autoregressive moving average (ARMA) process. The first order ARMA model without the constant terms is given as: $y_t = \phi_1 y_{t-1} + u_t + \theta_1 u_{t-1}$. Expanding this model for ARMA (p, q), it can be written as,

$$y_t = \phi_1 y_{t-1} + \phi_2 y_{t-2} + \dots + \phi_p y_{t-p} + u_t + \theta_1 u_{t-1} + \theta_2 u_{t-2} + \dots + \theta_q u_{t-q}$$

where p and q are the number of autoregressive terms and moving average terms respectively. If it is observed that the series is non-stationary in nature, then differencing is used to make the series stationary. Considering an ARMA (p, q) with differenced terms, an autoregressive integrated moving average structure can be obtained. Taking the differences of y_t and y_{t-d} , the structure is labeled as an ARIMA (p, d, q); with d as differences. This is also known as Box-Jenkins model as it was proposed by George Box and Gwilym Jenkins in 1970. Basically, the ARIMA methodology consists of four steps (a) model identification, (ii) parameter estimation, (iii) diagnostics checking and (iv) forecasting. For operational convenience in fitting a time series data to an ARIMA model, the process may be as follows.⁹

- a) From the time plot, check whether there is any unusual observation. Transform the series to stabilize the variance if necessary.
- b) Plot the autocorrelation function (ACF) and partial ACF (PACF). Using these plots determine the values of p and q .
- c) From the selected models identify the best fitted one using different error criteria.
- d) From the best model examine the residuals by plotting the ACF and PACF. In case the residuals found to be a white noise process, calculate the forecasts.
- e) If the residuals do not look like a white noise process, then modify the model and repeat the above steps.

Here the goodness-of-fit approach to select the best fitted model is based on residuals. The model residuals should be uncorrelated and normally distributed.

Analysis & Interpretation:

The original data was plotted in Fig-1 that indicates that the time series data is non-stationary with a clear increasing trend. So we took the first differenced series and then examined its stationarity with Augmented Dicky-Fuller (ADF) test. The series became stationary after first differencing and results are shown in Table-1.

Test statistic	p-value
-5.5169	0.01

The next task was to examine the autocorrelation function (ACF) and partial autocorrelation function (PACF) to determine the number of autoregressive and moving average terms. Fig-2(a) shows that ACF up to 15 lags are statistically significantly different from zero and Fig-2(b) shows that after the first lag, the PACF decreases dramatically. Thus, more than a dozen of significant spike in ACF for the

original series along with a prominent increasing trend. Fig-2(c) and 2(d) shows the ACF and PACF plots respectively for the integrated series. These plots do not indicate a specific model of forecasting.

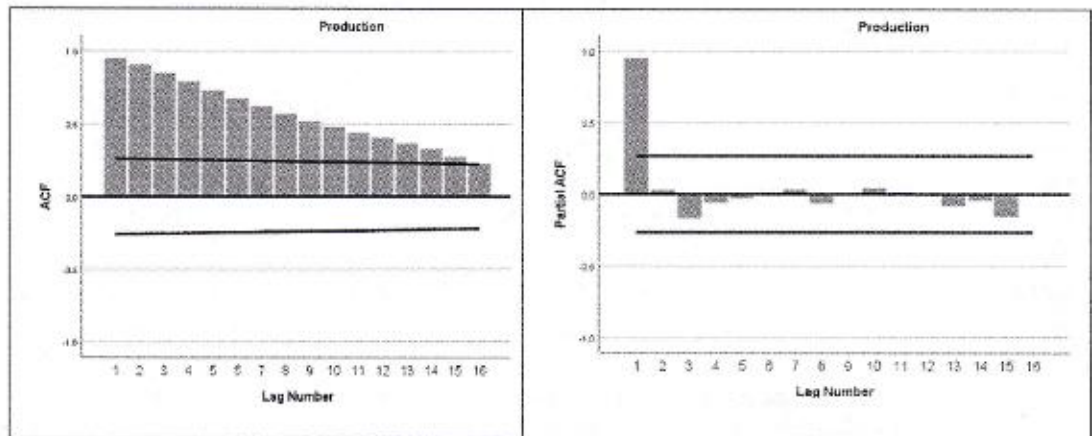


Fig-2(a) : ACF plot of the original series

Fig-2(b): PACF plot of the original series

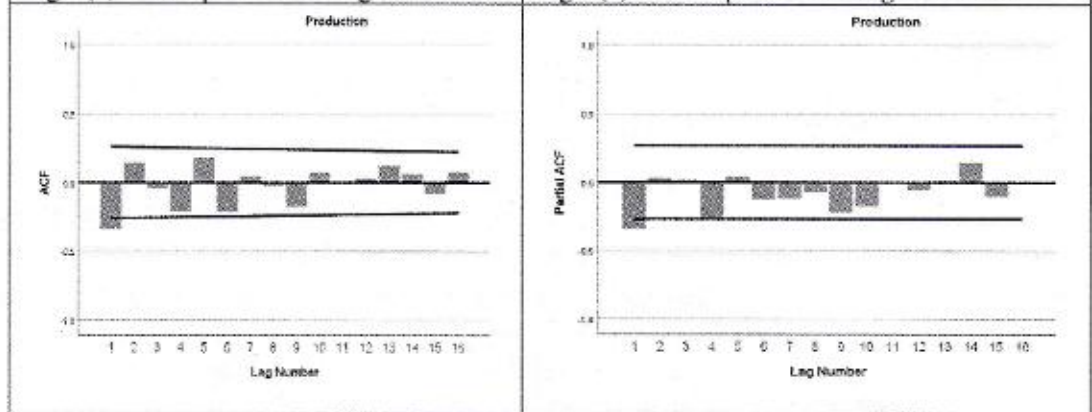


Fig-2(c): ACF plot of the differenced series

Fig-2(d): PACF plot of the differenced series

Therefore, three possible ARIMA (p,d,q) models as (1,1,0), (1,1,1) and (0,1,1) are considered and time series data for the period 1960 to 2016, was used for model building. The results in Table-2 show that out of the three models ARIMA(1,1,0) is comparatively better than the others with minimum error criteria. Also the inclusion of the constant term is not significantly important ($p\text{-value} = 0.946$). So, it is better to consider the ARIMA(1,1,0) model excluding the constant term with least error criterion value. Table-3 shows the final model parameters where the coefficients are significantly different from zero ($p\text{-value} = 0.011$) and the equation of the ARIMA model was formulated as:

$$y_t = -0.336 y_{t-1} + u_t$$

To validate the selected model, the residuals for the period 1960 to 2022 were used. From the residual ACF and PACF plots it was clear that all autocorrelations and partial autocorrelations lie within the control limits which indicate that the residuals are uncorrelated as shown in Fig-3. Also the residual histogram and

Shapiro-Wilk test of Normality (p -value = 0.792) confirms that the model residuals look like white noise. Therefore, our model can be used for prediction purpose. The forecasted production values with 95% prediction intervals are shown in Table-4. The forecasted values in Fig-4 show an increasing trend for the next eight years.

Model Characteristics			ARIMA(1,1,0)	ARIMA(1,1,1)	ARIMA(0,1,1)	ARIMA(1,1,0) without constant
AR(1)	ϕ_1		-0.336	-0.400		-0.336
	SE of reg. coefficient		0.129	0.409		0.128
	t-value		-2.598	-0.979		-2.622
	p-value		0.012	0.332		0.011
MA(1)	θ_1			-0.073	0.332	
	SE of reg. coefficient			0.450	0.137	
	t-value			-0.163	2.431	
	p-value			0.871	0.18	
Constant	value		3072.266	3264.209	-1052.572	
	SE of reg. coefficient		45465.979	47099.284	41540.766	
	t-value		0.068	0.069	-0.025	
	p-value		0.946	0.945	0.980	
Error criteria	RMSE		3643.985	3677.617	3663.727	3610.215
	MAPE		7.381	7.385	7.398	7.354
	MAE		2784.514	2787.571	2803.379	2783.375
	BIC		16.617	16.708	16.628	16.527

Table-3: ARIMA (1,1,0) model parameters

		Estimate	SE	t	Sig.
Production	AR Lag 1	-0.336	0.128	-2.622	0.011

Table-4: Forecast for the period 2023-2030

Year	Point Forecast	95% CI	
		Lower	Upper
2023	107722	100083	115361
2024	108640	99322	117959
2025	110405	99305	121504
2026	111915	99381	124449
2027	113503	99657	127349
2028	115069	100031	130106
2029	116642	100499	132785
2030	118214	101037	135391

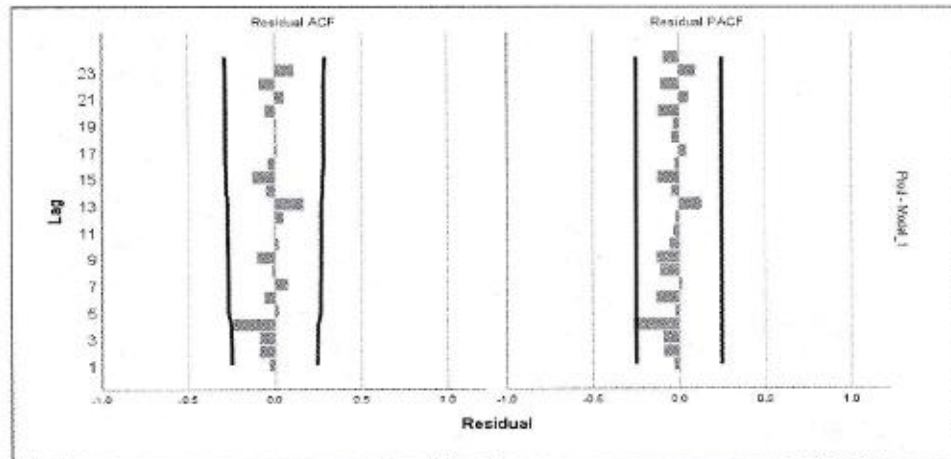


Fig-3: ACF and PACF of residuals of the fitted model

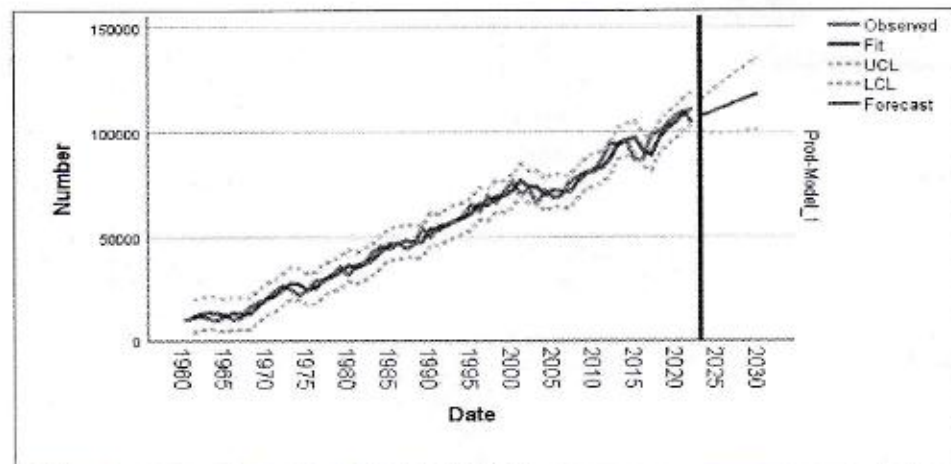


Fig-4: Forecasts and 95% prediction intervals

Findings & Conclusion:

The findings of the study reveal that the production of wheat in India will increase in the coming years which is a good sign for the Indian economy. For the period 2023 to 2030, India will observe an average annual growth rate of 1.62 percent (approx.). With an increase in production, there is a possibility of increased exports. But, at the same time, it must also be noted that India is not self-sufficient for domestic consumption, nor can it afford to import wheat from other countries. Thus, a major decision was taken in May 2022 to ban wheat exports, to ensure sufficient supplies of wheat and other food grains for the domestic market in India. It was also done as a part of a measure to control rise in prices in the domestic market.¹² Such decisions are crucial for the economy of a country and thus Government must try to balance these situations. In such a decision-making situation the results of this study may be helpful for the policy makers and other researchers.

References:

1. <https://worldpopulationreview.com/country-rankings/wheat-production-by-country>
2. [https://pib.gov.in/PressReleasePage.aspx?PRID=1786624#:~:text=The%20top%20ten%20importing%20countries,Intelligence%20and%20Statistics%20\(DGCIS\)](https://pib.gov.in/PressReleasePage.aspx?PRID=1786624#:~:text=The%20top%20ten%20importing%20countries,Intelligence%20and%20Statistics%20(DGCIS))
3. <https://www.intechopen.com/chapters/67311> accessed on 2/8/22.
4. Chand, R. (2001). Wheat Exports: Little Gain. *Economic and Political Weekly*, 36(25), 2226-2228. <http://www.jstor.org/stable/4410769>
5. Dasyam R, Pal S, Rao VS, Bhattacharyya B. Time series modelling for trend analysis and forecasting wheat production of India. *International Journal of Agriculture, Environment and Biotechnology*. 2015;8(2):303-308. <http://dx.doi.org/10.5958/2230-732X.2015.00037.6>.
6. Bhola Nath, DS Dhakre and Debasis Bhattacharya, Forecasting wheat production in India: An ARIMA modelling approach *Journal of Pharmacognosy and Phytochemistry* 2019; 8(1): 2158-2165.
7. Ajay Kumar, Deepankar, P.K Muhammed Jaslam, Anil Kumar. Wheat Yield Forecasting in Haryana: A Time Series Approach. *Bull. Env. Pharmacol. Life Sci.*, Vol 8 [3] February 2019: 63-69.
8. Bidyut Bikash Boruah, Pinky Roy, Kuki Kalpita Mahanta and Kabir Barhoi, Forecasting Rice and Wheat Production of India using Arima Models, *International Journal of Management (IJM)*, 11(11), 2020, pp. 3117-3128. <https://iaemc.com/Home/issue/IJM?Volume=11&Issue=11>
9. Pradeep Mishra, AynurYonar, Harun Yonar, Binita Kumari, Mostafa Abotaleb, Soumitra Sankar Das, S.G. Patil, State of the art in total pulse production in major states of India using ARIMA techniques, *Current Research in Food Science*, Volume 4, 2021, Pages 800-806,
10. Subbiah Selvakumar, VeluchamyKasthuri. Forecasting Wheat Production in India Using ARIMA and Radial Basis Function. *International Journal on Data Science and Technology*. Vol. 8, No. 4, 2022, pp. 61-66. doi: 10.11648/j.ijdst.20220804.11.
11. Fattah J, Ezzine L, Aman Z, El Moussami H, Lachhab A. Forecasting of demand using ARIMA model. *International Journal of Engineering Business Management*. 2018;10. doi:10.1177/1847979018808673.
12. <https://economictimes.indiatimes.com/news/economy/foreign-trade/wheat-export-ban-to-continue-for-now-piyush-goyal/articleshow/99462437.cms> accessed on Feb, 2023

EVALUATION OF CUSTOMER'S SATISFACTION LEVEL USING TRAVEL PORTAL SERVICES: AN EMPIRICAL INVESTIGATION FROM TINSUKIA TOWN, ASSAM

Shiva Chakraborty*
Naina Purkayastha**

Abstract

The purpose of the current study is to evaluate the customer's satisfaction level after using different travel booking web portal and its significant associated factors. To fulfil the desired objectives, a survey using mailed questionnaire method and collected data from 107 respondents. Statistical tools named Chi square test and binary logistic regression analysis was done to get appropriate answers to the research objectives. Findings from the current study has encountered that around three fifth of the customers were satisfied with the quality of service received from the travel booking application and rated it to be above average. Most of the satisfied customers have used MakeMyTrip for their travel booking purpose. Predictors like age, place of residence, type of online application used, discount availed and frequency of using online application have suggested the presence of significant impact on the customers satisfaction level. However, such in-depth study would be more beneficial for both the customers as well as the travel portal services where the former would get value for money whereas the latter could achieve more efficient and optimal profits.

Key Terms: Customer satisfaction level, travel portal services, binary logistic regression, online application, predictors.

Introduction

Globally, with the advancement of science & technology tourism industry has also widen up its wings with the adoption of online applications for transparency that has resulted gaining significant digital sales in the market with strong sustainability and optimistic prospects (Vinodan 2019). Apart from this, tourism Industry also contributes 10% of the world's Gross Domestic Product (GDP). Almost two fifth of the Indians are more prone to opt for online mode of booking airline tickets and reservations (Nielsen Consumer Report 2010). Digitization has brought a radical transformation in travel industry with a substantial upsurge in the share

*Assistant Professor, Dept of Commerce & HRM, DHSK Commerce College,
Email id- shiva97068@gmail.com

**Research Scholar, Department of Statistics, Dibrugarh University,
Email id - nainapurkayastha33@gmail.com

of online travel through e-ticketing (Kumra & Singh, 2010). The online travel booking or e-ticketing space is the largest and the fastest developing web-based business worldwide (Natarajan, 2020). In India, an absolute conversion in the societal practices became more intense through the use of mobile telephones which has influenced the domain of travel and tourism to a large extent, however different benefits and stimulant offered by e-Travel Portals have played the key role in this field (Dickinson et al., 2014 ; Pandey & Kakkar, 2018). Research on customer's feedback, customer's review and their satisfaction level in any field is of prime concern, and it has recently been one of the top most research priorities in marketing and tourism sector, by offering the customers greater access to online data (Grissemann & Sauer, 2012 ; Choi & Sparks, 2018).

Customer's feedback and different organization websites on different travel portal services suggested that global trend has significant influence on customer satisfaction level (Chin et al., 2020). Good service quality at e-ticketing, route of departure of a transportation company, discount availed during travel booking, getting the value for money are some of the key indicators of customer satisfaction level, which has become important nowadays due to rapid growth of web service providers (Rohminatin & Hidayat, 2020 ; Kumra & Singh, 2008). A negligible work has been done to explore the customer's satisfaction after using online travel booking application, in Assam. This study aims to capture and understand the customer's satisfaction level after using different travel booking web portal or applications and different factors associated with the service quality and customers ratings.

The main objectives are stated below:

1. To evaluate the customer's satisfaction level after using different online travel booking application
2. To identify significant factors associated with customer's rating for the same.

Data and Methodology

Data

Data considered in this study is primary in nature. Questionnaires are formed using google form and are sent through mail to the respondents. The filled in questionnaire are then collected back through online mode. Data is collected from 107 samples residing in Tinsukia Town, Assam.

Methodology

A Chi-square test is used to test the association between the two variables at 5% level of significance. Further, bivariate analysis and chi-square tests are carried out to check the association between the response variable (customers rating for the online travel booking application) and each of the predictors. To assess the potential determinants of rating the online application used for travel booking, a binary logistic regression model was fitted where the dependent variable has been categorized as "1 = rated the application to be above average" and "0 = rated the application to be below average". The "age" of the customers, "sex", "place of residence", "type of online booking application", "occupation of the customers", "frequency of using such online applications", "travel type" and "discount availed if

any" have been included as the predictors. The mathematical structure of the binary logistic regression model is mentioned below;

$$\text{logit}(p) = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

Where X_i 's are independent variables (predictors), and β_i 's are regression coefficients. Odds ratio is used to interpret the results from logistic regression. All the analysis has been carried out with the help of SPSS (Version 22).

Analysis and Findings

(Figure 1 about here)

Figure 1 depicts that 99.1% of the total respondents prefers the online mode of travel booking application respectively.

(Figure 2 about here)

Figure 2 depicts the percentage share of customers using any travel booking application. It clearly shows that 96.3% of the customers have ever used any travel booking application.

(Figure 3 about here)

Figure 3 depicts the percentage share of respondents who have admitted that they received the value for money after using any of the travel booking application. It clearly shows that, exactly 84.8% of the customers has reported that they received the value for money after using the travel booking application respectively. Whereas on the other hand 15.2% of the same admitted that, they have not received the value for money.

(Figure 4 about here)

Figure 4 depicts the review of the customers regarding the quality of service provided by the travel booking application. More than half of the customers reported that, they were satisfied by the service provided by the application, followed by 24.5% of the customers who have reported that the service provided was OK. Almost 10% of the customers were very satisfied by the service providers. Whereas on the other hand, almost 5% of the customers has reported that they were dissatisfied by the quality of service provided by the travel booking application respectively.

(Table 1 about here)

Table 1 shows the background characteristics under study. Findings from this table suggests that, 63.55% of the customers rated the online travel booking application as above average whereas the rest has rated the same below average. Around 70% of the respondents under study were below 31 years of age. More than half of the respondents in the sample were females. 80% of the respondents belongs to urban area. More than 50% of the respondents were involved in service for their livelihood. Half of the respondents have used MakeMyTrip for travel booking purpose, followed by 14% of them using EaseMyTrip application. Around 57% of the respondents has used any of the online travel booking application multiple times. Around 48% of the respondents have used the travel booking application for booking a flight, whereas 41% of them have used the same for booking both bus/train and flight respectively.

Almost 45% of the respondents have reported to receive discount coupon while using such travel booking application.

(Table 2 about here)

Table 2 represents the bivariate analysis using cross tabulation and chi square test, to check for the significant association between the response variable and the predictors. Findings from this table suggests that, age, place of residence, online application used, frequency of using online application, and the discount variable are found to be significantly associated with the customer's rating, at 5% level of significance respectively. This table also shows that, 43% of the customers who has reported the application to be above average are less than 31 years of age. Around 47% of the customers with above average ratings belongs to urban area, whereas 15.9% of them are from rural area for the same. Highest percentage of customers who has reported the application to be above average have used MakeMyTrip for their travel booking purpose, followed by 9% of them who has used EaseMyTrip respectively. Findings also suggests that, Maximum number of customers responding in the favour of online travel booking application has used those application for more than once respectively. On considering the discount variable under study, it is seen that, highest percentage of customers rating the application to be above average have availed discount coupon while making any booking, followed by 22% of them who have availed none of any such discount, cash back or free gift voucher.

(Table 3 about here)

Table 3 represents the results from binary logistic regression analysis showing the presence of significant relationship between customer's ranking and the predictor variables under study. Findings from this table suggests that, age, place of residence, type of online application used and frequency of using online application are found to have some significant impact on the customer's rating, at 5% level of significance respectively. Customers of age 31 years and above are 7% less likely to rate the online travel booking application as above average as compared to their counterpart respectively. People from urban area are 2 times more likely to rate the online travel booking application to be above average, as compared to those coming from rural area. Customers using MakeMyTrip for their travel booking purpose has 2 times higher odds of rating the online application to be above average as compared to the one using others. On considering the third significant variable, it is seen that, customers who have used the online application multiple times are 57% more likely to rate the application to be above average as compared to those who have used it only once.

Discussion and Conclusion

The current study encountered the prevalence of customer's satisfaction level associated with online travel booking application and estimated its significant predictors, using a representative sample from Tinsukia Town, Assam, India. The present study found that around 63% of the customers were satisfied or OK with the quality of service received from the travel booking application and rated it to be above average. More than 80% of the customers among the collected sample reported that they received value for money after using the same. However, 5% of the customers also reported regarding their dissatisfaction. Demographic factors like

age, place of residence and other factors like type of online application used, frequency of using online application, and the discount variable are found to be significantly associated with the customer's rating for the application availed. Most of the customers who has reported the application to be above average are younger adults, and mostly belongs to urban area. Highest proportion of customers with the rating of above average have used MakeMyTrip for their travel booking purpose. Highest percentage of customers who has reported the application to be above average have used MakeMyTrip for their travel booking purpose. Most of the customers rating the application to be above average have availed discount coupon for the booking. While identifying the impact of predictors/factors on customer satisfaction level (measured through the ratings given by them), it was found that, age, place of residence, type of online application used and frequency of using online application played some significant role, as per the current study. Age being significantly associated with customer's satisfaction level with the online travel booking application has further confirmed several earlier studies (Kanani et al., 2020; Natarajan, 2020). In addition, this study witnessed the higher satisfaction level among the customers of MakeMyTrip users, which has supported previous research done in this field (Chin et al., 2020).

The present study addressed the role of different socio-demographic variable in the satisfaction level of customers using online travel booking application. However, this research study has found out that a large portion of respondents were satisfied with the usage of online travel booking applications under study. Hence, conducting such in-depth study would be more beneficial for both the customers as well as the travel websites, where the former would get value for money whereas the latter could provide services that are more efficient and zoom towards optimal profits.

Future Scope

The present study has only focussed on the satisfaction level of online travel booking customers in a small area viz. Tinsukia Town, Assam. The current study is even based on a relatively small sample. This can be further extended with a large sample, which could be a true representative part of the entire state to get a clearer picture of customer's behaviour regarding e ticketing. Apart from this, a comparative study can also be done with respect to different modes of transport like bus, train and airways including different travel booking web portals to understand the best service providers in the region.

References

- Chin, Ming Hooi, et al. "The Impact of Global Trends on Organization and Customer Satisfaction." *Asia Pacific Journal of Management and Education* 3.2 (2020): 109-120.
- Choi, Kijung, Ying Wang, and Beverley Sparks. "Travel app users' continued use intentions: it's a matter of value and trust." *Journal of Travel & Tourism Marketing* 36.1 (2019): 131-143.
- Dickinson, Janet E., et al. "Tourism and the smartphone app: capabilities, emerging practice and scope in the travel domain." *Current issues in tourism* 17.1 (2014): 84-101.
- Grissemann, Ursula S., and Nicola E. Stokburger-Sauer. "Customer co-creation of travel services: The role of company support and customer satisfaction with the co-creation performance." *Tourism management* 33.6 (2012): 1483-1492.

Kakkar, Deepak Pandey1 Amit. "Buying Behavior of Indian Tourists towards Holiday Packages: An Analysis of Tourist Online Applications." (2018).

Kanani, Abhishek, et al. "Predict online customer satisfaction level on the basis of e-commerce services and age group." *Asian Journal For Convergence In Technology (AJCT) ISSN-2350-1146* (2019).

Kumra, Pooja, and Manjit Singh. "Factors Influencing E-Service Quality in Indian Tourism Industry." *Researchers World* 9.1 (2018): 99-110.

Nielson Consumer Report (2010). *Global Trends in Online Shopping*, Retrieved March 30, 2016, from <http://www.indiasocial.in/nielsen-global-online-shoppingreport>.

Nithya, N., and R. Kiruthika. "Factors Determining the Service Quality of E-Ticketing Process in Indian Context-An Empirical Study."

Rohminatin, Rohminatin. "IMPLEMENTATION OF CUSTOMER RELATIONSHIP MANAGEMENT TO ANALYZE TRAVEL CUSTOMER SATISFACTION IN KISARAN CITY." *International Conference on Social, Sciences and Information Technology*, Vol. 1. No. 1. 2020.

Vinodan, A., and S. Meera. "M-tourism in India: Symbolic versus intended adoption." *IIMB Management Review* 32.2 (2020): 177-188.

[APPENDIX]

Tables

Table 1: Profile of the background characteristics under study

Response Variable	Variables Under Study	Frequency	Percentage
Overall rating by the customer	Below average	39	36.45
	Above average	68	63.55
Predictors			
Age	Less than 31 years	75	70.09
	31 and above	32	29.91
Sex	Male	50	46.73
	Female	57	53.27
Place of Residence	Rural	21	19.63
	Urban	86	80.37
Occupation	Student	22	20.56
	Service	62	57.94
	Business	6	5.61
	Others	17	15.89
Type of online travel booking app used	EaseMyTrip	15	14.02
	MakeMytrip	55	51.40
	Trivago	9	8.41
	Yatra	14	13.08
	Others	14	13.08
Frequency of using online travel booking app	Once	15	14.02
	Twice	13	12.15
	Multiple times	62	57.94
Travel type	Bus or train	11	10.28
	Flight	52	48.60
	Both	44	41.12
Discount	Discount Coupon	49	45.79
	Free Gift Voucher	9	8.41
	Cash back offer	9	8.41
	None	40	37.38

Table 2: Bivariate analysis showing the association between the response and the Predictors

Predictors		Response variable		Chi-square value	P-value
		Below average	Above average		
Age	Less than 31 years	27.10%	43.00%	8.24	0.032
	31 and above	9.30%	20.60%		
Sex	Male	17.80%	29.00%	0.32	0.513
	Female	18.70%	34.60%		
Place of Residence	Rural	3.70%	15.90%	5.99	0.049
	Urban	32.70%	47.70%		
Occupation	Student	8.40%	12.10%	1.57	0.662
	Service	22.40%	35.50%		
	Business	1.90%	3.70%		
	Others	3.70%	12.10%		
Online app used	EaseMyTrip	4.70%	9.30%	19	0.044
	MakeMytrip	16.80%	34.60%		
	Trivago	2.80%	5.60%		
	Yatra	4.70%	8.40%		
	Others	7.50%	5.60%		
Frequency of using such online app	Once	6.50%	7.50%	21.66	0.01
	Twice	12.10%	15.90%		
	Multiple times	17.80%	14.20%		
Travel type	Bus or train	5.60%	4.70%	0.783	0.88
	Flight	13.10%	35.50%		
	Both	17.80%	23.40%		
Discount	Discount Coupon	18.70%	27.10%	14.9	0.046
	Free Gift Voucher	0.90%	7.50%		
	Cash back offer	1.90%	6.50%		
	Others	15.00%	22.40%		

Note: p-value less than 0.05 = significant at 5% level of significance

Table 3: Binary Logistic Regression showing the significant relationship between customers ranking and the predictor variables under study.

Predictors		Odds Ratio	Standard Error	P-value	Confidence Interval	
Age	Less than 31 years(ref)					
	31 and above	.930	.502	.048**	.348	1.487
Place of residence	Rural (ref)					
	Urban	2.881	.631	.035**	.836	1.923
Online app used	Others (ref)					
	MakeMytrip	2.906	.852	.021**	.547	1.441
	Trivago	2.847	.681	.124	.750	8.808
	Yatra	2.359	.985	.384	.342	16.256
Frequency of using the app	EaseMyTrip	2.012	.866	.420	.368	10.985
	Once (ref)					
	Twice	.684	.639	.553	.196	2.394
Discount	Multiple times	1.576	.513	.018**	.211	1.575
	Discount Coupon (ref)					
	Free Gift Voucher	1.003	.486	.995	.387	2.599
	Cash back offer	5.781	1.157	.129	.599	55.800
	Others	3.655	.953	.174	.564	23.676
	Constant	.669	.807	.618		

Note: p-value less than 0.05 = significant at 5% level of significance, ref = reference category.

Figures

Mode of travel preferred
107 responses



Figure 1: Mode of travel preferred by the customers

Ever used any travel booking application
197 responses



Figure 2: Percentage of customers using any travel booking application

Received value for money after using any of the travel booking app
105 responses



Figure 3 Percentage of customers received value for money after using any of the travel-booking app

Quality of service provided by the travel booking app
106 responses

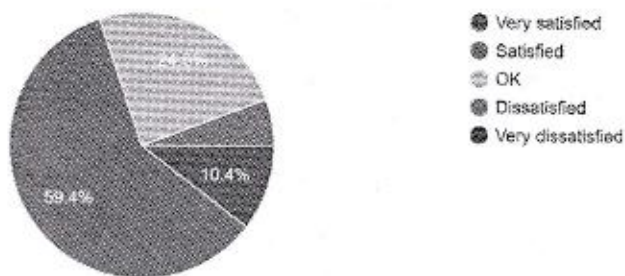


Figure 4: Quality of service provided to the customers by the travel booking application

RURAL DEVELOPMENT AND EMPOWERMENT OF RURAL WOMEN IN INDIA

Kaberee Borpuzari Sarmah*

Abstract

The purpose of this paper is to investigate the connection between rural development and rural women's empowerment in India. The paper evaluates the numerous government programmes and policies intended to advance rural development and the condition of rural women in India through a thorough literature review. The paper concludes by outlining numerous tactics for empowering rural women and improving their involvement in the rural development process, such as expanding their access to opportunities in the fields of education, healthcare, and employment.

Key Terms: *Rural Development, Women, Empowerment, Social, Culture, Economic, Education, Employment*

Introduction:

India has a significant rural population, and women make up a sizable share of that population. The development of this rural population is directly linked with the development of the rural women. The empowerment of rural women must be a top priority if inclusive and sustainable development is to be achieved. Rural women's empowerment has is very essential to improve both their own well-being and the general growth of the rural areas. Rural women in India continue to confront many difficulties, including poverty, illiteracy, poor health, and limited access to resources and opportunities, despite the advancements made in the subject of women's empowerment. There are several difficulties that rural women in India face, such as socio-cultural hurdles, restricted access to healthcare and education, and economic dependence. Rural women frequently work in low-skilled, low-paying jobs and endure severe prejudice. They are frequently left out of decision-making processes and have minimal control over resources like land and finance. Rural women frequently shoulder heavy home burdens and have restricted mobility, which makes it challenging for them to join in the workforce. Although the government has implemented a number of programmes and regulations to support rural women's empowerment, little has been accomplished, and there are still big gaps between rural and urban women in terms of their access to opportunities and resources. These difficulties frequently overlap and restrict rural women's ability to take part in and contribute to the growth of their communities.

**Assistant Professor, Dept. of Political Science, Doomdooma College
Email: kaberee.borpuzarisarmah@gmail.com*

The subject of development of rural women in India is directly correlated with the general improvement of rural areas. Rural development is a multifaceted process that includes raising socioeconomic standards and giving people and communities more influence. In order to achieve inclusive and sustainable development, women must be involved in rural development. However, the limited social and economic options accessible to rural women frequently feed a vicious cycle of deprivation and powerlessness. Rural women's participation in the development process is severely constrained when they do not have access to economic opportunities, healthcare, or education. As a result, the growth of rural areas as a whole is hampered, and which also worsens the inequities between rural and urban areas. Thus, improving the miserable situation of rural women is crucial for advancing rural development in addition to being a question of social justice. Rural communities can become more dynamic, resilient, and sustainable through empowering rural women and expanding their involvement in the development process.

Objective Of the study:

The aim of the paper is to look into the link between rural development and the empowerment of rural women in India. Through a detailed analysis of the literature, the study assesses the many government initiatives and initiatives designed to improve rural development and the situation of rural women in India.

Methodology:

The study includes a mixed-methods strategy that incorporates both qualitative and quantitative techniques. This strategy would give an in-depth understanding of the complicated problems related to rural development and rural women's empowerment in India. The majority of the paper's secondary data was gathered by carefully reviewing numerous journals, books, and government records. The majority of the research is descriptive in nature.

Findings and Discussion:

The process of enhancing the socioeconomic circumstances of those who reside in rural areas is referred to as rural development. It covers a wide range of actions, such as raising living standards, reducing poverty, and fostering economic progress. Rural development has grown in significance in recent years as a strategy for eradicating poverty, advancing equality, and assuring inclusive and sustainable prosperity. The improvement of rural residents' quality of life especially that of the poor and disenfranchised is the ultimate goal of rural development.

The rural population of India was nearly 68.72 percent in the year 2011 (source: censusindia.gov.in), which seems to reduce to 64.61 percent in the year 2021 (source: tradingeconomics.com). This shows that even if there is a decline in the rural population of India, but the rural population holds the major portion than the urban population, which is clearly indicative of the fact that the development of India as a whole can be only achieved through the development of the rural areas.

India is a country that predominantly depends on agricultural sector. According to the 2011 census, 65.1 % of the entire population depends on agriculture, among which most of them belong from the rural areas. This dependence of the majority of

the rural population on agriculture is not because it is remunerative but they do not have any other alternatives. Rural development, which up until the 1970s was synonymous with agricultural development, centred on raising agricultural output. In contrast to prior conceptions of rural development, inclusive rural development now is a more specific notion that focuses on raising the standard of living for all rural residents. More specifically, inclusive rural development encompasses the economic, social, and political components, which are all related yet distinct from one another. The economic dimension includes giving the underprivileged and low-income households in particular, the capacity and opportunities they need to benefit from economic progress. The social dimension encourages gender equality and women's empowerment, assists low-income and low-income households' social development, and offers social safety nets to weaker groups. The political dimension increases the chances for rural residents who are poor or have low incomes to participate effectively and equally in political processes at the village level.

Another important aspect of the rural development is the development and the empowerment of the rural women. Rural women are important development agents. They assist in bringing about the fundamental economic, environmental, and social transformations needed for sustainable development. Given the significant proportion of women working in agriculture globally, empowering them is crucial for the wellbeing of individuals, families, and rural communities as well as for overall economic productivity.. In India, nearly 80% of rural women work in agriculture. Rural women workers' empowerment and mainstreaming in agriculture can lead to a paradigm change in favour of economic growth. In addition to reducing hunger and poverty, it will improve food and nutrition security.

But, in country like India, there are several stereotypic notions that have always hindered the empowerment of women. The patriarchal ideologies that is seen almost every household in India, is significantly responsible for the lower status of women in India and this factors which forms a tough barrier in the development of the rural women in various way which includes-

- 1. Economic insecurity:** Due to their restricted access to resources and opportunities, rural women frequently experience economic insecurity. This involves having access to the resources necessary for economic development, such as land, credit, and training.
- 2. Lack of Education:** Indian rural women continue to struggle with a lack of access to education. Rural women's access to information, involvement in decision-making, and ability to obtain better career possibilities are all hampered by low levels of literacy and educational achievement.
- 3. Poor Health:** Obstacles to maternal and child health are more prevalent for rural mothers. This includes high rates of maternal mortality, restricted access to services for maternal health, and a significant illness load.
- 4. Social and Cultural Barrier:** Rural women encounter social and cultural constraints that restrict their ability to take part in and contribute to their communities. Among them are gender-based violence, early marriage, and poor access to the legal system.
- 5. Health and sanitation problems:** Rural women frequently lack access to healthcare and have serious health problems, such as problems with maternal and child health and a lack of safe and sanitary sanitation facilities.

- 6. Lack of Political Representation:** Because rural women are frequently underrepresented in politics, they have less power to influence decisions that have an impact on their lives and communities.
- 7. Social Stereotypes and Attitudes:** Restrictions on women's participation in public life and gender inequality caused by negative social stereotypes and attitude towards women, such as the notion that they are less valuable than males or solely fit for domestic work etc. create obstacles for rural development .
- 8. Lack of Awareness and Information:** Rural women frequently lack knowledge about their rights and available development efforts, which restricts their capacity to take part in the development process.

In spite of all these factors, the Government of India is taking several measures for the development and the empowerment of the rural women, thereby developing the nation as a whole. The government has introduced several projects and schemes for the women to educate and empower women in rural areas, particularly the women from socially and economically marginalised groups.

- 1. MahilaSamakhya:** In accordance with the objectives of the New Education Policy (1986) and the Programme of Action, the MahilaSamakhya programme was introduced in 1988 as a practical programme for the work.
- 2. National Rural Livelihoods Mission:** : Launched in 2011, the National Rural Livelihoods Mission aims to empower rural women by providing them with livelihood opportunities and access to financial services.
- 3. Pradhan Mantri Ujjwala Yojana:** The Pradhan Mantri Ujjwala Yojana, which was introduced in 2016, intends to give women from Below Poverty Line (BPL) household, free LPG connections.
- 4. The Jan Dhan Yojana:** A Financial inclusion programme, which was introduced in 2014, intends to give all households in India, especially rural women, access to fundamental banking services, such as savings and deposit accounts.
- 5. Mahila Kisan SashaktikaranPariyojana (MKSP):**This programme, which was started in 2010, intends to raise rural women's economic standing by encouraging their participation in related industries like agriculture. The programme assists in the formation of farmer groups led by women and offers training and assistance to female farmers.
- 6. Deen Dayal Antyodaya Yojana:** This initiative, which was started in 2011, intends to help rural women's livelihoods by encouraging entrepreneurship and self-employment. Rural women participating in the programme receive education and assistance to launch their own enterprises and achieve financial independence.
- 7. Pradhan Mantri Awaas Yojana - Gramin (PMAY-G):**This programme, which was started in 2016, intends to provide homes for rural people, including households headed by women. Families that participate in the programme are given financial support to build or renovate homes and enhance living circumstances.
- 8. RashtriyaMahilaKosh (RMK):**This initiative, which was established in 1993, offers rural women microfinance services. The program's goal is to give women access to credit and support services so they can become financially independent.
- 9. Mahila Shakti Kendra (MSK):**This programme, which was started in 2017, aims to empower rural women by giving them the skills and encouragement they need

to take part in the development process. The initiative gives women the chance to develop their skills and supports the formation of networks and clubs for women.

10. Jan Shikshan Sansthan (JSS): The scheme was formerly known as Shramik Vidyapeeth. This scheme has been transferred to Ministry of skill development and entrepreneurship from Ministry of human resource development in 2018. It is indeed a good initiative which offer opportunity to rural women for skill development and vocational training. The scheme aims to increase rural women's employment and assist them to become self-reliant.

Role of Self- Help Group in the development of rural women:

Self Help Group (SHG) is a community-based organisation that works to empower women by giving them the knowledge, tools, and assistance they need to better their lives. SHGs are essential for empowering women in rural areas where they confront many obstacles and bringing about positive change in their lives. SHGs give women a forum where they can come together to exchange experiences, talk about concerns, and offer support to one another. Women can create a support system by banding together, which aids them in overcoming obstacles and pursuing their objectives. Additionally, the group offers women a private, secure setting in which to talk about delicate topics that they would not feel comfortable bringing up in public.

In order to empower women and better their lives, SHGs also give them access to training and education. Women can improve their livelihoods by receiving training in new professions including business development, entrepreneurship, and financial management. Education is also given on significant topics like gender equality, cleanliness, and health, which can assist women in making educated decisions and enhance their general wellbeing. Offering microfinance services is a crucial component of SHGs. Women can obtain credit through microfinance to launch new businesses or grow current ones. They are able to generate income as a result, which they can use to better their lives and take care of their families. By providing women authority over their own finances and empowering them to make decisions about their life and the lives of their families, microfinance also contributes to the empowerment of women. SHGs provide women a voice in the community as well. Women can fight for their rights and the rights of other women in the community by banding together. Women can advocate for change and oppose harmful cultural behaviours and ideas by doing so.

Limitations of the study :

Government and different non-government organizations are undertaking various programmes and interventions to empower women and also to develop rural areas . But there are significant differences between men and women in terms of enrolment in educational institutional institutions, resource allocation within the household, health care etc. these automatically stand in the way of women empowerment, especially for rural women. Social proscriptions, superstitions, unhealthy tradition and culture obstruct in women empowerment. In patriarchal system of Indian Society, the working women of the family not even free to spend their money or income independently.

Conclusion:

It is crucial of society's total expansion and advancement through rural development and women's empowerment in real sense . Rural women's engagement is very essential in agricultural sector and for the growth of rural economy. At the same time it is also true that they confront several obstacles including poverty, lack of resources , illiteracy, limited job opportunities ,gender discrimination, social taboos etc. The government seems to be taking several measures for the empowerment of the rural women by introducing several schemes and provides various financial help, yet the condition of the women in present time needs a special attention and several new initiatives must be taken.

References:

1. Narang Ashok (2006), "Indian Rural Problems", Murari Lal and Sons, New Delhi.
2. Kumar A. "Rural industrialization in India: a strategy for rural development" Mittal Publications, Delhi, 1989.
3. censusindia.gov.in
4. tradingeconomics.com
5. Tomar N. and Singh S. (2018), "How sensitive is the Indian Government Towards Women Empowerment in India" International Journal of Management, IT and Engineering, 08 (07), pp 66-83.
6. Ministry of Women and Child Development (2011) 12th Five Year Plan Report of the Working Group on Women's Agency and Empowerment, Government of India, pg.1-11

A COMPARATIVE STUDY OF RISK AND RETURN OF SELECT EQUITY FUNDS OF ADITYA BIRLA SUN LIFE (ABSL)

Dipak Jain*
Richika Kedia**

Abstract

The financial sector in India is witnessing a rapid expansion with the growth of diversified financial services. The financial services sector in India is primarily dominated by the banking sector and non-banking finance companies where commercial banks play a very important role.

One of the fastest growing industries across the globe is the industry which is managed by Asset Managers. Company investor's accounts to approximately 46.26% of sum of AUM (Assets under Management) in India. The Association of Mutual Funds in India (AMFI) is targeting nearly fivefold growth in assets under management (AUM) to Rs 95 lakh crore (US\$ 1.47 trillion) and a more than three times growth in investor accounts to 130 million by 2025. It has been seen that in terms of the strong growth of existing financial services sector many new finance companies have entered into the industry. The idea of mutual fund is that it is an asset management vertical of a company where we have multiple investors who has a common financial objective and the investment is directed towards different financial securities by the asset managers. MF has a key role in the patterns of investment in today's era. Now a day's all are interested to have investment in any forms. Most of the people like to have investment with less risk. In this research the researchers have selected Flexi cap fund and Frontline Equity fund with special reference to ABSL capital mutual fund. The researchers have analyzed the risk and return of the selected equity fund and also compared the performance of selected Equity Funds with other AMC's funds. Standard deviation, variance and beta are the analytical tools used to measure risk. For performance analysis, SR and TR are used.

Key Terms: equity, risk, performance, Sharpe ratio (SR), Treynor ratio (TR), Aditya Birla Sunlife (ABSL)

*Assistant Professor, North Eastern Regional Institute of Management, Guwahati

E-mail: jain39574@gmail.com

**Assistant Professor, Royal School of Commerce, Assam Royal Global University, Betkuchi, Guwahati

E-mail: kediarichika@gmail.com

I. INTRODUCTION :

Layout of Indian financial services industry

One of the fastest growing industries in India is Asset Management industry. By the end of November 2017, AUM saw a rise of 40% making a record of Rs 23 Lakhs Crore. 46.26% of AUM is accounted by corporate investors. Further, 28.01% and 22.96% pertains to individuals with high net worth and retail investors, respectively.

Another sector of Financial Services industry in India is Insurance, where the growth has been at a rapid pace. It was seen that there was a huge leap in the premium of life insurance organizations, during April to November 2017, resulting around 19% growth in the initial year to reach US\$ 18.44 billion.

Government Aid towards financial services industry

Right from 2018, both equity and commodity segments have been given permission by SEBI to be operated. Further, inclusion of payments has been allowed by the various bank regulators to facilitate for transfer of funds. The direction of the Govt. of India as well as RBI is working to help easy funding to various MSME's. The Govt. has also come up with credit guarantee schemes for the MSME's. Moreover, for small scale industries Govt. has also initiated Micro Units Development and Refinance Agency (MUDRA).

Company Profile

Aditya Birla Sun Life Limited is an Asset Management Company, where two global ventures namely Aditya Birla Group and the Sun Life Financial Inc. have come up jointly under a common platform with an objective to cater the investment needs of the various interested investors around the globe.. The Aditya Birla Group has an experience about the Indian market and Sun Life's has global experience. The Co-Sponsorship in the mutual fund by Aditya Birla Sun life is done by both the companies since both the companies come with a good reputation, experience, more than 150 network branches, distribution channels etc

An overview of Mutual Funds

A Mutual Fund is a medium which connects different number of investors who have similar financial investment objectives; where the money collected through the public is invested by the asset managers to different types of securities as per their financial goal. The different types of portfolio of securities ranges from debentures, bonds and also shares.

The monetary benefit received from these investments and the increase in the value of the capital through the investment schemes is distributed to various investors depending upon the proportion of the units owned by them. Mutual funds investments fit to a common individual whose aim is to gain by taking relatively lower risk.

Net asset value also known as NAV is the per unit value of the mutual fund. The Net Asset value is found out by dividing the total value of investment by the number of shares issued.

Mutual fund scheme categorization and SEBI regulation

With a view to bring-in standardization in classification of mutual funds and to ensure the schemes are clearly distinct from one another, in 2017 SEBI issued a notice to categorize Mutual Fund Schemes. The main objective was to bring clarity in the features of similar schemes issued by different mutual fund houses where the investor can objectively evaluate the schemes chosen for investment. Accordingly, there are five broad categories of mutual fund schemes. Within each category, there are many sub-categories.

- A. Equity related Schemes
- B. Debt related Schemes
- C. Hybrid related Schemes
- D. Solution Oriented Schemes
- E. Other related Schemes.

Calculation of mutual fund return

There are many ways to calculate mutual funds returns or mutual fund return rate. These methods apply to both lump sum and SIP investments. Which method you use depends on what you are trying to calculate and why.

Annual return

As the name implies, this is the return calculated over a period of 1 year and expressed as a time-weighted annual percentage. In simplest terms, annual return is the gain or loss of your initial mutual fund investment over a one year period.

This number allows you to analyze the MF's performance over any given year you hold the investment. It is used more frequently among investors because it is relatively simple to calculate.

$\text{Annual return} = (\text{Ending NAV} - \text{Beginning NAV}) / \text{Beginning NAV}$
--

Measurement of mutual Fund Risk

There are different ways to calculate the associated risk with Mutual Fund scheme:

Mean:

Mean is defined as the average which is utilized to find out the central tendency of a given dataset related to a problem. It can be computed by summing up all the data present in a given sample space and then dividing the sum with the total number of observations.

The formula for calculating mean is as follows:

$$\text{Mean } (\bar{X}) = \frac{\sum X}{n}$$

Standard Deviation:

Another important statistical technique is standard deviation which exhibits the variation present with respect to the arithmetic mean. It is used to find out the fluctuations of the returns of mutual funds by the investors.

Higher volatility implies greater standard deviation and greater risk.

The formulas for calculating Standard Deviation are as follows:

$$\text{Standard Deviation} = \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$$

Beta (β):

Beta is another statistical method used to measure the systematic risk of a security.

Beta is also known as the beta coefficient, is a measure of the volatility, or systematic risk, of a security. It is calculated by doing regression analysis where Beta shows the possibility of return of investment to the fluctuations in the prices of the mutual funds.

Beta value of 1.0 exhibit that price of investment shall soar in the manner of lock-step as per the market situation. Adding to that, beta value of more than 1.0 shows that the price of investment shall be more fluctuating in the market.

The formulas for calculating Beta in this project report are as follows:

$$\text{Beta } (\beta) = \frac{\text{covariance}}{\text{Variance}}$$

Sharpe's Ratio:

Sharpe ratio was devised by William F. Sharpe, Nobel laureate, whose contribution is immense such that it helps investors to understand the amount of risk which is associated with the return of investment. This ratio indicates the mean value of the return received from an investment keeping in view, the risk free rate which is linked with the volatility risk.

The formula for computing Sharpe's Ratio is as follows

$$\text{Sharpe's Ratio} = \frac{R_i - R_f}{S.D.}$$

R_i = mean, R_f = risk return, S.D. = Standard Deviation.

Treynor's Ratio:

Another performance evaluation metric is the Treynor ratio which is used to find how much extra return is generated by a portfolio by taking extra amount of risk. If higher the ratio, the more chances of the investment to be fruitful. The computation of the mentioned ratio is based on past data and does not justify whether the future performance of investment shall be fruitful or not.

The formula for calculating Treynor's Ratio is shown below as follows:

$$\text{Treynor's ratio} = \frac{R_i - R_f}{\beta}$$

R_i = mean, R_f = risk return, β = Beta of the portfolio.

DETAILS ABOUT THE SELECT ABSL EQUITY FUNDS**1. ABSL Flexi cap fund**

Flexi-cap funds are those funds which invest in organizations all around the market capitalization spectrum, that is, small cap, mid cap and large cap, respectively. These funds invest in the stocks of all the large-cap, mid-cap, and small-cap companies.

For the equity mutual fund to be classified as a flexi-cap fund it needs to comply with only one regulatory guideline i.e. at least 65% of its assets need to be maintained in equities. Further, for the category unlike new multi-cap funds there is no restriction with respect to allocation to any market cap.

2. About ABSL Frontline Equity fund

ABSL Frontline equity is a large cap mutual fund scheme from Aditya Birla Sun Life. The fund came into inception since 19 years 4 months and was launched in the year 2002. It has assets worth value of Rs 21,542 crores under its AUM.

ABSL Frontline Equity Fund showed a growth rate of 33.76% in the previous year. From the time of its inception, it has given around average annual returns of 20.10%.

II. REVIEW OF LITERATURE:

Miller, T.W., and Nicholas, G. (1980) conducted a research to examine the risk-return relationships in the presence of non-stationary in order to obtain more precise estimates of alpha and beta. For this purpose this study applied partition regression and a partition selection rule for estimating the traditional CAPM in case of non-stationary. Study applied these procedures to price appreciation data for the market and 28 mutual funds for the period of 1973-1974. The results indicated a good deal of non-consistency in the risk-return relationships. The results showed some weak positive relationships and some weak negative relationships between betas and the rate of return for the market. On the other hand results showed some weak positive relationships and some weak negative relationships between betas and alphas.

Cumby, R. E. and D. Glen, J. (1990) to compare the performance of internationally diversified mutual funds with international equity index and Morgan Stanley Index for the United States. In this study a sample of fifteen U.S.-based internationally diversified mutual funds between 1982 and 1988 was used. The performance was then compared with the help of Jensen (1968) measure and Positive Period Weighting Measure. The results concluded that the performance of funds individually or as a whole was not higher than the performance of international equity index. The authors also examined the performance of the funds relative to the Morgan Stanley index for the United States and found some evidence that the funds outperform the U.S. index on ships of either type were found.

Dietze, Oliver and Macro (2009) conducted a research to evaluate the risk-adjusted performance of European investment grade corporate bond mutual funds. Sample of 19 investment-grade corporate bond funds was used for the period of 5 years (July 2000 - June 2005). Funds were evaluated on the basis of single-index model and several multi-index and asset-class-factor models. Both maturity-based indices and rating based indices were used to account for the risk and return characteristics of investment grade corporate bond funds. The results indicated that the corporate bond funds, on average, underperformed the benchmark portfolios and there was not a single fund exhibiting a significant positive performance. Results also indicated that the risk-adjusted performance of larger and older funds, and funds charging lower fees was higher.

P Prajapati, K. and K Patel, M. (2012), tried to evaluate the performance of mutual fund schemes by conducting a Comparative

Study where they evaluated Performance of Indian Companies. In this research paper the performance of Indian mutual funds were done through risk and return analysis, Sharpe's ratio as well as Treynor ratio.

III. STATEMENT OF THE PROBLEM:

In this research the researcher has conducted a study to understand and analyze the risk and return and to compare the performance of selected Equity Funds of ABSL AMC with other AMC's funds.

IV. OBJECTIVES OF THE STUDY:

1. To analyze the return of select equity funds of ABSL for the last five years (2021-2017)
2. To calculate the risk of select equity funds of ABSL for the last five years(2021-2017)
3. To analyze and interpret the risk and performance of the selected equity fund
4. To compare the returns of select ABSL equity funds with their peer funds of other AMCs for the present year i.e.2020- 2021.

V. SCOPE OF THE STUDY:

This project study shall cover only equity related funds and shall be focused only on selective five equity schemes of ABSL mutual fund namely:

- i. ABSL Flexi cap fund
- ii. ABSL Frontline Equity fund

VI. RESEARCH METHODOLOGY:

Research methodology for the proposed research is-

- **Type of Research:-Analytical Research:** This research is Analytical in nature as it involves critical thinking skills and evaluation of facts and information.
- **Sources of Data:-**

In this study, secondary data are collected from:

Organizational document (Factsheet)

EMPOWER (ABSL monthly publication).

Websites of ABSL: mutualfund.adityabirlacapital.com.

Scheme's NAV collection from AMFI Websites: www.amfiindia.com.

Benchmark returns collection: www.asiaindex.co.in,
www.bseindia.com.

Peer funds returns collection: www.moneycontrol.com.

- **Tools of Data Collection:**

The analytical tools used are standard deviation, variance and beta for risk. For performance analysis, Sharpe Ratio and Treynor Ratio are used.

- **Period of the study:**

The reference period of the study shall be the last five year i.e. from 2017 to 2021.

- **Plan of Analysis:**

The required annual returns of the schemes data was collected from the company's website and then arranged as per their funds. Then the risks of the schemes were calculated using Standard Deviation, Variance, and Beta. With the value of beta and standard deviation performance of the schemes was calculated using Sharpe Ratio and Treynor Ratio. The return of ABSL funds with peer funds of others AMC's returns were compared using bar graph.

VII. DATA ANALYSIS AND INTERPRETATION

Annualized Return of ABSL Flexi cap fund

Year	Annualized return
2016-2017	33.51%
2017-2018	-4.09%
2018-2019	8.53%
2019-2020	16.07%
2020-2021	29.69%

(Source: <http://mutualfund.adityabirlacapital.com>)

INTERPRETATION:

The annualized return of ABSL Flexi Cap Fund can be analyzed that in the year 2017 the annualized return was 33.51%. In 2018 the return drastically decreased to -4.09%, but it increased in the next year 2019 to 8.53%. In the year 2020 the return increases to 16.07% and further an increase of 29.69% is seen in the year 2021. From the chart the highest return was seen at 2016-2017 with 33.51% and the lowest reading at -4.09% in the year 2017-2018.

The main reason for negative return of equity fund in the year 2018 was because of SEBI's re-categorization and rationalization directive.

Calculation of Standard Deviation of ABSL Flexi cap fund

Year	Fund return % (X)	$X - \bar{X}$	$(X - \bar{X})^2$
2016-2017	33.51	16.77	281.23
2017-2018	-4.09	-20.83	433.88
2018-2019	8.53	-8.21	67.40
2019-2020	16.07	-0.67	0.44
2020-2021	29.69	12.95	167.70
Total	83.71		950.65

$$\text{Mean } (\bar{X}) = \frac{\sum X}{n}$$

$$= 83.71 \div 5$$

$$= 16.74$$

$$\text{Standard Deviation} = \sqrt{\frac{\sum(X-\bar{X})^2}{n-1}}$$

$$= \sqrt{\frac{950.65}{5-1}}$$

$$= 15.41$$

Calculation of Beta, Treynor ratio and Sharpe's Ratio of ABSL Flexi cap fund:

Year	Fund return (X _i)	Market return (Y _i)	$(X_i - \bar{X})$	$(Y_i - \bar{Y})$	$(X_i - \bar{X}) \times (Y_i - \bar{Y})$	$(Y_i - \bar{Y})^2$
2016-2017	33.51	38.37	16	19.37	309.92	375.19
2017-2018	-4.09	-3.11	-21.9	-22.11	466.29	488.85
2018-2019	8.53	8.09	-8.47	-10.91	92.40	119.02
2019-2020	16.07	18.81	-0.93	-0.19	0.17	0.03
2020-2021	29.69	32.37	12.69	13.37	169.66	178.75
Total	83.71	94.53			1038.44	1167.84
Mean	17	19				

$$\text{Beta} = \frac{\text{Covariance}}{\text{Variance}}$$

- x_i = x's value from the set of data
- x_m = mean value of x_i
- y_i = it indicates the value of y pertaining to x_i
- y_m = mean value of y_i
- n = total points of data

$$\begin{aligned} \text{Cov}(x, y) &= \frac{\sum [(x_i - x_m) * (y_i - y_m)]}{(n - 1)} \\ &= \frac{1038.44}{5-1} \\ &= \frac{1038.44}{4} \\ &= 259.61 \end{aligned}$$

$$\text{Variance } \sigma^2 = \sum (Y_i - \mu)^2 / N$$

- X_i = i^{th} point from set of data
- μ = mean of population
- N = total data points

$$\begin{aligned} \sigma^2 &= \sum (Y_i - \mu)^2 / N \\ &= \frac{1167.84}{5} \\ &= 232.36 \end{aligned}$$

$$\begin{aligned} \text{Beta} &= \frac{\text{Covariance}}{\text{Variance}} \\ &= \frac{259.61}{232.36} \\ &= 1.11 \end{aligned}$$

Treynor ratio:

$$T = \frac{R_i - R_f}{\beta_i}$$

- R_i = portfolio return, I
- R_f = risk free rate
- β_i = beta (volatility) of the portfolio.

$$T = \frac{17\% - 6.85\%}{1.11}$$

$$= \frac{0.17 - 0.068}{1.11}$$

$$= 0.09$$

Sharpe's Ratio:

- R_i = portfolio return of I
- R_f = risk free rate
- S.D = Standard Deviation of the portfolio.

$$\text{Sharpe's Ratio} = \frac{R_i - R_f}{S.D}$$

$$= \frac{0.17 - 0.068}{0.15}$$

$$= 0.68$$

Result of risk and performance ratio of ABSL Flexi cap fund

Fund Name	Mean	Standard Deviation	Beta	Treynor Ratio	Sharpe's Ratio
ABSL Flexi cap fund	16.74	15.41	1.11	0.09	0.68

INTERPRETATION:

The value for the last five years of mean is 16.74 and for standard deviation is 15.41. The beta value is 1.11 whereas the treynor ratio is 0.09 and sharpe's ratio is 0.68. we can say that the ABSL flexi cap fund's standard deviation volatility is less since the fluctuation from its mean is 1.33.

A beta of 1.0 shows that the price of the investment will move uniformly in lock-step with the market. But here the value of beta is 1.1 which is a bit higher than the market beta so if the market price fluctuates then the fund's

price will have a minimal swing in its price as compared to its overall market change. It tends to move along with the market index.

Higher the shape ratio better is the return. If a Sharpe ratio has a value greater than 1.0 it is considered as a good one.

But since this fund is having a shape ratio of 0.68 which is less than 1.0, is considered to be sub-optimal.

Higher the treynor's ratio better is the return. So, for this ABSL flexi cap fund the ratio is 0.09 which is considered to be moderate as compared to other equity fund's treynor's ratio.

Judging from its treynor's ratio and sharpe ratio, It can be said that ABSL flexi cap fund performance in the last five years was moderate and less volatile in terms of risk since the beta is only 1.1.

COMPARISION WITH PEER's FUNDS

Fund Name	Returns (2020-2021)
ABSL Flexi cap fund	29.69%
UTI Flexi Cap Fund	30.38%
SBI Flexi Cap Fund	28.38%
Axis Flexi Cap Fund	25.38%
Kotak Flexi cap Fund	22.66%

INTERPRETATION:

The return for the year 2020-2021 for the ABSL Flexi cap fund is 29.69%, UTI Flexi Cap Fund is 30.38%, SBI Flexi Cap Fund is 28.38%, Axis Flexi Cap Fund is 25.38% and Kotak Flexi cap Fund is 22.66%. It can be said that ABSL flexi cap fund return for the year 2021 is better as compared to returns of SBI flexi cap fund, Axis flexi cap fund and kotak flexi cap fund. But performing less than UTI flexi cap fund.

Annualized Return of ABSL Frontline Equity fund

Year	Annualized return
2016-2017	30.58 %
2017-2018	-2.91 %
2018-2019	7.64 %
2019-2020	14.22 %
2020-2021	28.57 %

INTERPRETATION:

The annualized return of ABSL Frontline Equity fund in the year 2017 was 30.58%. But in the year 2018 it was decreased to -2.91%. In the year 2019 it was increased to 7.64%, further increasing to 14.22% in the year 2020 and in the year 2021 it gives a return of 28.57%. The highest return was seen at 2016-2017 with 30.58% and the lowest reading at -2.91% in the year 2017-2018.

Calculation of Standard Deviation of ABSL Frontline Equity fund

Year	Fund return % (X)	X - X̄	(X - X̄) ²
2016-2017	30.58	14.96	223.80
2017-2018	-2.91	-18.53	343.36
2018-2019	7.64	-7.98	63.68
2019-2020	14.22	-1.4	1.96
2020-2021	28.57	12.95	167.70
Total	78.1		800.5

$$\begin{aligned}\text{Mean } (\bar{X}) &= \frac{\sum X}{n} \\ &= \frac{78.1}{5} \\ &= 15.62\end{aligned}$$

$$\begin{aligned}\text{Standard Deviation} &= \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}} \\ &= \sqrt{\frac{800.5}{5-1}} \\ &= 14.1\end{aligned}$$

Calculation of Beta of ABSL Frontline Equity fund

Year	Fund return (X _i)	Market return (Y _i)	(X _i - X̄)	(Y _i - Ȳ)	(X _i - X̄) × (Y _i - Ȳ)	(Y _i - Ȳ) ²
2016-2017	30.58	28.65	14.96	12	179.52	144
2017-2018	-2.91	3.15	-18.53	-13.5	250.15	182.25
2018-2019	7.64	12.02	-7.98	-4.63	36.94	21.43
2019-2020	14.22	14.17	-1.4	-2.48	3.47	6.15
2020-2021	28.57	25.3	12.95	8.65	112.01	74.82
Total	78.1	83.29			582.09	428.65
Mean	15.62	16.65				

$$\text{Beta} = \frac{\text{Covariance}}{\text{Variance}}$$

- x_i = x 's value from the set of data
- x_m = mean value of x_i
- y_i = it indicates the value of y pertaining to x_i
- y_m = mean value of y_i
- n = total points of data

$$\begin{aligned} \text{Cov}(x,y) &= \frac{\sum [(x_i - x_m) * (y_i - y_m)]}{(n - 1)} \\ &= \frac{582.09}{5-1} \\ &= \frac{582.09}{4} \\ &= 145.52 \end{aligned}$$

$$\text{Variance } \sigma^2 = \sum (Y_i - \mu)^2 / N$$

- X_i = i^{th} point from set of data
- μ = mean of population
- N = total data points

$$\sigma^2 = \sum (Y_i - \mu)^2 / N$$

$$\begin{aligned} &= \frac{428.65}{5} \\ &= 85.73 \end{aligned}$$

$$\begin{aligned} \text{Beta} &= \frac{\text{Covariance}}{\text{Variance}} \\ &= \frac{145.52}{85.73} \\ &= 1.69 \end{aligned}$$

$$\text{Treynor ratio} = \frac{R_i - R_f}{\beta_i}$$

- R_i = portfolio return, I
- R_f = risk free rate
- β_i = beta (volatility) of the portfolio.

$$\begin{aligned} T &= \frac{15.62\% - 6.85\%}{1.69} \\ &= \frac{0.15 - 0.068}{1.69} \end{aligned}$$

$$= 0.048$$

$$\text{Sharpe's Ratio} = \frac{R_i - R_f}{S.D}$$

- R_i = portfolio return of I
- R_f = risk free rate
- S.D = Standard Deviation of the portfolio.

$$\begin{aligned} \text{Sharpe's Ratio} &= \frac{R_i - R_f}{S.D} \\ &= \frac{0.15 - 0.068}{0.14} \\ &= 0.5 \end{aligned}$$

Result of risk and performance ratio of ABSL Frontline Equity fund

Fund Name	Mean	Standard Deviation	Beta	Treynor Ratio	Sharpe's Ratio
ABSL Frontline Equity fund	15.62	14.14	1.69	0.048	0.5

INTERPRETATION:

The value for the last five years of mean is 15.62 and for standard deviation is 14.14. The beta value is 1.69 whereas the treynor ratio is 0.04 and sharpe's ratio is 0.5. ABSL frontline equity fund's standard deviation volatility is less since the fluctuation from its mean is 1.48.

A beta of 1.0 shows that the price of the investment will move uniformly in lock-step with the market. But here the value of beta is 1.6 which is higher than the market beta so it means the fund is 1.6 times volatile than the overall market.

Higher the shape ratio better is the return. If a Sharpe ratio has a value greater than 1.0 it is considered as a good one.

But since this fund is having a shape ratio of 0.5 which is less than 1.0, is considered to be sub- optimal.

Treynor's ratio is a performance metric for determining how much excess return was generated for each unit of risk taken. Higher the treynor's ratio better is the return. So, for this ABSL frontline equity fund the ratio is 0.04 which is considered to be moderate as compared to other equity fund's treynor's ratio.

Judging from its treynor's ratio and sharpe ratio, It can be said that ABSL frontline fund performance in the last five years was moderate but more volatile in terms of risk since the beta is only 1.6.

COMPARISION WITH PEER's FUNDS

Fund Name	Returns (2020-2021)
ABSL Frontline Equity fund	28.57%
Canara RobecoBluechip Equity Fund	26.61%
Kotak Bluechip Fund	27.89%
Franklin India Bluechip Fund	30.77%
SBI Bluechip Fund	25.24%

INTERPRETATION:

For the year 2020-2021 the return of ABSL Frontline Equity fund is 28.57%, Canara RobecoBluechip Equity Fund is 26.61%, Kotak Bluechip Fund is 27.89%, Franklin India Bluechip Fund is 30.77% and SBI Bluechip Fund is 25.24%. ABSL frontline equity fund return for the year 2021 is better as compared to returns of Canara Robecobluechip equity fund, Kotak bluechip fund, SBI bluechip fund. But performing less as compared to Franklin India bluechip fund.

VIII. FINDINGS:

1. The annualized return of ABSL Flexi Cap Fund can be analyzed that in the year 2017 the annualized return was 33.51%. In 2018 the return drastically decreased to -4.09%, but it increased in the next year 2019 to 8.53%. In the year 2020 the return increases to 16.07% and further an increase of 29.69% is seen in the year 2021. The main reason for negative return of equity fund in the year 2018 was because of SEBI's re-categorization and rationalization directive. The value for the last five years of mean is 16.74 and for standard deviation are 15.41. The beta value is 1.11 whereas the treynor ratio is 0.09 and Sharpe's ratio is 0.68.
2. ABSL flexi cap fund return for the year 2021 is better as compared to returns of SBI flexi cap fund, Axis flexi cap fund and kotak flexi cap fund, but performing less as compared to UTI flexi cap fund.
3. The annualized return of ABSL Frontline Equity fund in the year 2017 was 30.58%. But in the year 2018 it was decreased to -2.91%. In the year 2019 it was increased to 7.64%, further increasing to 14.22% in the year 2020 and in the year 2021 it gives a return of 28.57%. SEBI reclassification rules for Mutual Fund, large caps are mandated to invest at least 80% of the AUM in top 100 stocks. This has given very little leeway for a fund to invest in midcaps or small caps to generate alpha. And generating alpha from just the top 100 stocks is not easy. This is the reason why ABSL Frontline equity fund was struggling to beat its index. Add relatively high expenses might have contributed to its underperformance in a big way. The value for the last five years of mean is 15.62 and for standard deviation is 14.14. The beta value is 1.69 whereas the treynor ratio is 0.04 and sharpe's ratio is 0.5.
4. It can be said that ABSL frontline equity fund return for the year 2021 is better as compared to returns of Canara Robecobluechip equity fund,

Kotak bluechip fund, SBI bluechip fund. But performing less as compared to Franklin India bluechip fund.

5. ABSL Frontline Equity fund have the highest beta reading of 1.6.

IX. CONCLUSION:-

Mutual fund industry has become one of the most favored investment options worldwide. It plays a vital role in the economic expansion of a country. Mutual funds directly depend on capital market performance; when the market performance is good, it will give good returns. Aditya Birla Capital Limited (ABCL) fulfills all the financial services such as life insurance, asset management, private equity, corporate lending, structured finance, project finance, general insurance broking, wealth management, equity, currency and commodity broking, online personal finance management, housing finance, pension fund management and health insurance business. The study shows that the Aditya Birla Group's ABSL flexi cap fund performance in the last five years was moderate and less volatile in terms of risk since the beta is only 1.1 considering its treynor's ratio and Sharpe ratio. The ABSL flexi cap fund return for the year 2021 is better as compared to majority of the other peer's funds. Also, ABSL frontline fund performance in the last five years was moderate but more volatile in terms of risk since the beta is only 1.6 considering its treynor's ratio and Sharpe ratio. The ABSL frontline equity fund return for the year 2021 is better as compared to majority of the peer's fund. Mutual Fund is a secure speculation tool and an investor need to analyze both risk and returns and compared with its benchmark's return and with their peer's performance. Various tools should be used to do the analysis and investment decision should not be based on a single analysis. Also an investor needs to consider its objective and risk appetite before taking an investment decision.

X. REFERENCE

- Ranganatham, M., Madhumathi, R.(2006): 'Security Analysis and Portfolio Management (second edition)', Pearson Publication
- P Prajapati, K. and K Patel, M. (July 2012), "A Comparative Study on Performance Evaluation of Mutual Fund Schemes Of Indian Companies", - Journal of Arts, Science & Commerce ,Vol-III, Issue3(3), July 2012.
- Cumby, R. E. and D. Glen, J (1990), Evaluating the Performance of International Mutual Funds. The Journal of Finance, Vol. 45, No. 2 (Jun., 1990), pp. 497-521
- Dietze, Oliver, and Macro , The performance of Investment Grade Corporate Bond Funds: Evidence from the European Market, The European Journal of Finance, 15(2), pp.191-209, 2009.
- Miller, T.W., and Nicholas, G(1980), Nonstationarity and Evaluation of Mutual Fund Performance, The Journal of Financial and Quantitative Analysis, 15, 3, 639 -654.
- EMPOWER, Monthly Factsheet of ABSL, November 2021.
- www.mutualfund.adityabirlacapital.com,
- www.amfiindia.com,
- www.asiaindex.co.in,
- www.moneycontrol.com
- <https://economictimes.indiatimes.com/mf>.

Guidelines to the Authors

- i. Contributors may send articles, application oriented research papers, fields studies reports etc. in the areas like industry, commerce, management, business study etc. However the areas stated above do not necessarily restrict the scope of the journal.
- ii. Short communication like book review and summary of Ph.D. thesis may also be sent for publication.
- iii. The length of the paper (excluding tables, graphs, charts, references etc.) should not exceed 5000 words. For book review and summary of Ph.D. thesis number of words should not exceed 1500 and 3000 respectively.
- iv. Two copies of manuscripts typed in double space with font size 12 in Times New Roman on A4 size bond paper should be submitted. Hard copy of manuscript must be accompanied by manuscript in CD format either in MSWord or in Page Maker. Articles may also be sent through e-mail as an attachment. In that case manuscripts in CD format will not be necessary.
- v. First page of paper should consist of the title of the paper, name(s) of the author(s) with relevant details and the abstract within 150 words. The text of the paper should start from the second page with the title on the top.
- vi. A brief bio-data note of the contributor/author indicating name, institutional affiliation(if any), all relevant academic details, complete postal address, contact no. and e-mail ID should be enclosed separately.
- vii. In captions for tables and columns headings in tables, the first letter of the word should be capitalized and all other words should be in lower case except proper nouns. Footnotes in the text should be numbered consecutively in plain Arabic superscripts. All the footnotes, if any, should be typed under the heading 'Footnotes' at the end of the paper immediately after conclusion. Reference format should be as follows :
 - a) **Books** : Surname of the author; name of the author; year of publication; edition no.; title of the book; name of the publisher; place of publication; name of the country; page number.
 - b) **Edited Books** : Surname of the author; name of the author; year of publication; title of the article; name of the editor with the word "ed." in bracket; name of the book ; edition no.; name of the publisher; place of publication; page number.
 - c) **Journals** : Surname of the author; name of the author; year of publication; title of the article; name of the journal; Place of Publication; name of the country; volume no.
 - d) **Unpublished works** : Surname of the author; name of the author; year of work; title of the work with the word "unpublished" in bracket; purpose of the work (e.g.-Ph.D. thesis); for whom the work is done (e.g.- submitted to Dibrugarh University); page number.

- e) **Government publications** : Name of the Government; name of ministry; name of the department; year of publication; name of the document; name of the publisher; place of publication; page number.
- f) **Internet** : Address of the website; date and time of browsing.
- viii. Submission of research paper to the journal must contain introduction, review of literature, objectives, scope, methodology, rationale, findings, suggestions and conclusion.
- ix. Paper/Article etc. already sent for publication to other publisher or contributions already published elsewhere will not be considered for review and publication in this journal.
- x. The journal will not accommodate any contribution with more than 3 authors.
- xi. Publication of contribution will be subjected to the recommendation of external reviewers.
- xii. After acceptance of a paper by the reviewer, the contributors will have to pay a sum of rupees 1000/- per head for publication of the article. Contributors/ Authors whose contribution gets published in the journal will get two copy of the journal as complimentary copy.
- xiii. Once a paper is accepted for publication the copyright of the same will be owned by the publisher.
- xiv. The receipt of any paper/article/writings etc. will be acknowledged through email. After receiving the review report the contributors will be communicated again as soon as possible.
- xv. If any paper/article/writing is suggested for revision, the information will be sent to the contributor immediately.
- xvi. All the communication will be made with the first author only in case there are more than one author.
- xvii. Contributors/authors must follow strict academic ethics. The editor, editorial board or the publisher will not be responsible for any views expressed by the authors or any lapse on the part of the contributors/authors.



Utkarsh

Vol. IX
2022-2023

A PEER REVIEWED RESEARCH JOURNAL IN COMMERCE AND ALLIED SUBJECTS OF
D.H.S.K. COMMERCE COLLEGE, DIBRUGARH

DECLARATION

1. Name of the Journal : Utkarsh
2. Language : English
3. Periodicity of Publication : Yearly
4. Time of Publication : 2022-2023
5. Publisher's Name : Principal, D.H.S.K. Commerce College, Dibrugarh
(a) Nationality : Indian
(b) Address : D.H.S.K. Commerce College, Dibrugarh
Dibrugarh - 786001, Assam, India
6. Name of the Printer : M/s Creative Design
(a) Nationality : Indian
(b) Address : Barbari Railway Colony, Dibrugarh, Assam
7. Editor Name : Bidisha Mahanta
(a) Nationality : Indian
(b) Address : D.H.S.K. Commerce College, Dibrugarh
Dibrugarh - 786001, Assam, India
8. Owner of the Publications : D.H.S.K. Commerce College, Dibrugarh, Assam

The above declaration is true to the best of my knowledge.

Editor

ISSN: 2347-8381



9 772347 838004 09