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A REVIEW OF PUBLIC TRANSPORTATION SYSTEM IN AHMEDABAD WITH A FOCUS ON MANAGING URBAN TRAFFIC CONGESTION FROM PERSPECTIVE OF BEHAVIORAL ASPECT OF COMMUTERS

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ABSTRACT

With rising increase and development in the economy, urban traffic congestion has become a prominent problem with huge side effects like increased journey time, aggravated environment pollution, increased traffic and road accidents. The researcher aims to analyze reasons for the gap in the perception and expectations of commuters for public transport and thereafter suggest corrective actions to reduce gaps between commuters' expectation and their current experience. A sample size of 130 commuters was undertaken for the study wherein data was collected using a structured questionnaire and was analyzed using SPSS. Factor analysis and regression was run on the data and the findings of the research highlighted four prominent factors namely reliability, core service, tangibles and information which contributed to satisfaction level of commuters. The paper ends with a discussion on the implications of this study for policy makers in the domain of public transportation.

KEYWORDS

urban traffic congestion, commuters, public transport service, commuters' expectations, commuters' satisfaction, policy making in public transport.

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INTRODUCTION

Traffic Congestion

One of the major problems faced by any developing country today is the increase in urban population and automobile ownership which has in turn led to issues of traffic congestion in cities. Traffic congestion may be referred to the way the movement of vehicles is delayed by one another because of limited road capacity (Rahane & Saharkar, 2014). Alternatively, congestion is also caused when the demand for traffic nears or surpasses the capacity of the road network (Raheem et al., 2015). Traffic congestion means there are more vehicles trying to use a given road facility than it can handle. In major cities, this occurs mostly during certain times of the day usually called as peak periods or rush hours. (Kumarage, 2004)

Factors leading to congestion in developing countries may primarily be micro level factors like many people wanting to commute at the same time or large number of vehicles on road occupying limited space. Certain sporadic events like accidents and vehicle breakdowns, political rallies, mass gatherings and protests, etc. may also add to the micro level factors causing congestion on road. These micro level factors combined with macro level factors like rise in private vehicle ownership, employment and income levels, regional economic aspects, etc. explains the increase in traffic congestion. (Rao and Rao, 2012)

Importance of public transportation

For a developing country like India, its urban population plays a very important role in the growth. The UN estimates that by 2030, 40% of the Indian population will be residing in urban areas and 58% will do so by 2050. However, currently though only 30% of the total population live in urban areas, but they contribute to about 63% of India's Gross Domestic Product. With the urban population expected to rise dramatically in the years to come, it becomes imperative to have an efficient public transport system in order to avoid issues like severe traffic congestion, rise in road accidents and level of pollution, as well as a huge growth in the ownership of private vehicles.

The existing studies indicate that despite public transport facilities being operational in many urban cities, the commuters are largely dependent on private modes of transport, thus rendering public transport partially ineffective. Clearly, the public transport system is not able to keep pace with the auto boom which has resulted in commuters ditching public transport and are hopping on to their private vehicles.

Public transportation in Ahmedabad

The situation of traffic congestion in Ahmedabad is not very different from other metro and mega cities of India. Ahmedabad also belongs to the category of cities having its own fully developed public transport system namely AMTS (Ahmedabad Municipal Transport Service) and BRTS (Bus Rapid Transit System) and an upcoming metro rail which is expected to be fully functional by 2023. According to a study published in the Ahmedabad Mirror, the much-touted public transport in Ahmedabad should have led to an increase in the number of people opting for it. However, the reverse has happened wherein compared to 15% people using public transport in 2013, the percentage has gone down to 11% in 2019. The studies have also identified issues leading to the decrease in usage like first and last-mile connectivity and lack of integration between AMTS and BRTS on the bus routes. According to experts, integration of AMTS and BRTS in terms of routing, information sharing, and ticketing is a must for public transport to succeed in Ahmedabad (Dave, 2019). Thus, despite the efforts made by the local civic bodies, the usage of public transport is declining which can be interpreted as a failure of the transport system.

LITERATURE REVIEW

Factors leading to traffic congestion

Traffic Congestion is an unavoidable result of many factors like population increase, poor infrastructure, alternate routes and bottlenecks, as well as lack of efficient public transport (Thakur and Singh, 2016). However, the factors leading to traffic congestion differ based on the country. In India specifically, the major reasons for the traffic congestion are poor road conditions which can be attributed to road constructions, poor traffic sense among the citizens, inappropriate bus location and parking by the citizens. The remarkable increase in the number of vehicles on the roads as a result of rapid urbanization has also led to a rise in traffic volume, thus causing roads to be congested in every city in India. Whereas, in contrast to the factors in India, the major reason for traffic congestion in China is inefficient public transport service (Zhang 2011). Moreover, the increasing number mega cities in China also bring forth the disconnect between land use and transport leading to the generation of high motorized travel demand, ultimately leading to congestion on roads as well as public transport systems (Li, 2016 and Zheng et al. 2014). As stated in the report on study of road traffic congestion in Hong Kong (2014), the excessive number of vehicles on the roads is one of the primary reasons why traffic congestion arises. Yuan (1997) cited the major reason for traffic congestion in Singapore as small land space and large population during peak

hours of space. Besides this he also suggested that main reasons for the traffic congestion in Melbourne are increased road usage during morning and afternoon, underpricing of public transport, less alternatives for public transport. Thus, the factors for the traffic congestion can be divided into micro-level factors, which include the high number of people on the roads at the same time, and the overflow of vehicles on the limited road space; and macro-level factors, which include land use patterns, car ownership trends, and geographical economic development (Tilak and Reddy, 2016).

At times, as the population of a country increases, the demand for road travel also grows which is not complemented by the construction of new roads thus giving rise to congestion (Raheem et al., 2015). Some of the other contributors to traffic congestion are ineffective management of public transport (Harriet et al., 2013) and narrow as well as poorly constructed roads (Jain et al., 2012). Also, incidents such as roadworks, prompt the occurrence of bottlenecks and accidents, which in turn cause traffic congestion to take place (Schwietering & Feldges, 2016). Few researchers also explored possible ways to identify and measure metrics for urban arterial congestion hoping that awareness for the level of congestion might help in managing it better. Amudapuram Mohan Rao, Kalaga Ramachandra Rao (2012) carried out a systematic review based on measurement metrics such as speed, travel time/delay and volume and level of service. The review covered distinct aspects like definition; measurement criteria, strengths and weakness followed by different countries/organizations.

Adverse effects of traffic congestion

Other than causing inconvenience, congestion has also been found to reduce productivity of the city as mobility is restricted due to congestion, causing excessive travel delays, particularly, during peak hours and negatively affecting productivity (Takyi Harriet, Kofi Poku, Anin Kwabena Emmanuel, 2013). Therefore, expanding transport infrastructure as well as improvement in the traffic management and control system should be given attention to improve the transportation system. This would enhance worker productivity and ultimately increase GDP. M. Absar Alam and Faisal Ahmed (2013) studied the traffic scenario in select Asian cities and the policy measures undertaken by their respective governments. They revisited the relevant policies in India and assessed the gaps that deter the desired impact of such policies on reducing traffic congestion. Thereby suggesting policy measures to overcome these gaps and the way ahead. Dorina Pojani and Dominic Stead (2015) critically reviewed the potential role and impact of nine commonly considered options for sustainable urban transport in cities in developing countries: (1) road infrastructure; (2) rail-based public transport; (3) road-based public transport; (4) support for non-motorized travel modes; (5) technological solutions; (6) awareness-raising campaigns; (7) pricing mechanisms; (8) vehicle access restrictions; and (9) control of land-uses.

Various side effects of traffic congestion like waste of time, delayed movement, accidents, inability to forecast travel time, increased fuel consumption, road rage and environmental pollution have been identified (S. B. Raheem, W. A. Olawoore, D. P. Olagunju, E. M. Adeokun, 2015). Several strategies like road widening, providing contra-flow lanes, infrastructural changes, increasing the occupancy factor of vehicles and creating awareness among travelers have also been suggested for preventing the traffic congestion (Soham Sarda, Janhavi Chavare, Rohit Bhosale, 2018). Makino et. al (2018) proposed methods for the utilization and introduction of ITS (Intelligent Transport Systems) technologies to solve urban traffic issues in various countries, based on the lessons learned from the deployment of an ITS in Japan. A broad overview of the causes of urban transportation problems has been given which included the role of the public sector in urban surface transportation as well as the importance of policymaking (Terry Moore and Julia Pulidindi, 2018).

Importance of public transport

It is imperative that traffic congestion in urban areas be managed and reduced as the congestion leads to various negative consequences which hugely disrupts the working of an economy. The importance of public transportation cannot be undermined as one of the steps being taken to curb congestion. The quality of public transport can be determined from five major factors namely reliability, comfort, service, safety and affordability (Sahney, Pagano & Paaswell, 2004). These factors have been popularly referred to as RECSA, which is a modification of RATER (given by Parasuraman et. al in 1988). Certain internal and external factors which form the service quality, affects the commuters' perception towards public transport system (Middleton, 1998). Factors like service quality standards (Middleton, 1998) and customer complaints handling system (Kotler & Kavin, 2008) consist of the internal factors, where as availability of alternative services (like own vehicles, autorickshaws) (Evans & Shaw, 2001; Michel, 1999), convenience and comfort (Regis, 1996) and social status as well as profession (Sanchez, 1999) form the external factors.

Therefore, it is very essential to identify the parameters of public transport which are favored by the commuters. Through this study, the researcher aims at identifying the importance given to various public transport parameters by the commuters and in turn how satisfied are they with the current state of public transport in Ahmedabad city. A study on past articles and research papers suggest that various studies have been undertaken for development of public transport systems in India and across the world. However, the factors contributing to the preference of public transport system by citizens have not been paid due importance, which has led to people not using public transport systems as they were expected to. A gap exists between expectations of citizens from a public transport system and delivery of the same by government, thereby leading to inefficient usage of public transport and increasing the congestion caused due to private vehicles on road.

OBJECTIVES

1. To identify important factors related to usage of public transport services by commuters
2. To explore underlying dimensions based on the set of such factors
3. To study effect of these dimensions on commuter's satisfaction towards public transport services

RESEARCH DESIGN, SAMPLE AND DATA

The research design is divided into two parts, the first part being exploratory in nature and the second part being descriptive. In the exploratory study the variables affecting the usage of public transport were found from the existing literature by review of the same. These variables have been taken into consideration while designing the questionnaire. 150 commuters were contacted for the study, out of which 130 questionnaires were considered valid for further analysis. For data collection, Ahmedabad city was divided into five geographical zones and data was collected from each zone thereby providing an apt representation of population. The commuters were contacted at respective bus terminals which were used by them for their daily commute.

ANALYSIS AND DISCUSSION

Sample profile has been shown in the Table I. From the total 130 respondents, 62% are from the age group 15 to 35. Majority of the respondents (80 %) are using the public transport for going to their workplace or school/college. Further, 58% of them are daily commuters 19% of them are using public transport on special occasions only. 70% of the respondents have acquired higher education and 80% of the Commuters are having family income of less than 5 lacs per year. The commuters have given almost equal preference towards the two major public transport services available in Ahmedabad (i.e. AMTS & BRTS).

TABLE I: SAMPLE PROFILE & USAGE BEHAVIOR

		Frequency	Percent
	15-25	49	37.7
	25-35	41	31.5
Age group	35-45	19	14.6
	45-55	13	10.0
	55-65	5	3.8
	>65	3	2.3
Marital Status	Married	64	49.2
	Single	66	50.8
	Student	36	27.7
	Housewife	16	12.3
Occupation	Self Employed	5	3.8
	Service	68	52.3
	Retired	5	3.8
	< 2Lac	17	13.1
Family Yearly Income	2Lac - 5 lac	86	66.2
	5 lac - 10 lac	23	17.7
	> 10 lac	4	3.1
Educational Qualification	Undergraduate	17	13.1
	Graduate	67	51.5
	Postgraduate	29	22.3
	Professional	3	2.3
	Others	14	10.8
	< 1year	11	8.5
Years of Usage	1-2 years	41	31.5
	2-3 years	35	26.9
	3-4 years	18	13.8
	4-5 years	14	10.8
	>5 years	11	8.5
	Daily	75	57.7
	Once a week	25	19.2
Frequency of Usage	once a month	5	3.8
	Only on special occasions	25	19.2
	Car	13	10.0
	Two-wheeler	47	36.2
Mode of Travel	Rickshaw/Taxi	37	28.5
	Public Bus	32	24.6
	Walk/Bicycle	1	.8
Preferred Public Transport	AMTS	59	45.4
	BRTS	71	54.6
	Total	130	100.0

EXPLORATORY FACTOR ANALYSIS

To explore the underlying dimensions from the 16 factors affecting commuter's behavior towards public transportation services, exploratory factor analysis (EFA) was performed using SPSS software. EFA is widely used data reduction technique to identify factors from a set of correlated variables. In this study, 16 variables were identified from the literature review which commuters consider as important while using public transportation services like AMTS or BRTS. These variables were factor rotated using varimax rotation technique. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (.760) and Bartlett's Test of Sphericity ($Chi-Square = 458.160$, $df = 105$, $Sig.$

$= .000$) provided evidence for suitability of the data to perform EFA. From initial 16 variables, based on low communality value, one variable (safety during travel) was dropped from further analysis and a final factor structure of 15 variables was identified as shown in the Table II.

TABLE II: RESULTS OF FACTOR ANALYSIS

Factors	Factor Loadings	Communalities
<i>Core Service</i>		
Fare collection system	0.807	0.706
Staff attitude	0.742	0.622
Route coverage	0.622	0.416
Accessibility	0.603	0.705
Safety	0.587	0.479
Convenience	0.492	0.465
<i>Reliability</i>		
Frequency	0.711	0.523
Comfort	0.632	0.469
Travel time reliability	0.607	0.394
Travel fare	0.523	0.451
Waiting time	0.508	0.624
Punctuality	0.42	0.478
<i>Tangibles</i>		
Physical condition of bus	0.774	0.665
condition of bus stop	0.73	0.633
<i>Information</i>		
Scheduling information	0.863	0.746

Kaiser-Meyer-Olkin Measure of Sampling Adequacy=.760

Bartlett's Test of Sphericity: Chi-Square = 458.160, df = 105, Sig. = .000

Rotation Method: Varimax with Kaiser Normalization

As shown in table II, EFA resulted into a 4-factor structure which were named as *Core Service*, *Reliability*, *Tangibles*, and *Information* respectively. All the 15 variables loaded adequately on their respective dimensions as demonstrated by factor loadings (minimum factor loadings of .42 for punctuality). For a sample size of 130, minimum acceptable factor loading is 0.4 (Hair et al, 2007).

The dimension of "Core Service" covers the core benefits like ticket distribution and fair collection system, safety, convenience, easy access of the service, adequate coverage of different routes in the city, and behavior of the staff. For any public transport service, it is of prime importance to fulfil these aspects as they are considered as the central elements of the overall service. The second dimension of "Reliability" covers frequency of buses, punctuality of their arrival at the bus stop, reliability in terms of timings, minimum waiting time and economical fares. The third dimension of "Tangibles" covers the tangible elements of the public transport service like physical condition of the bus and the bus stops. Poorly maintained and uncleaned buses as well as bus stops may prevent commuters from adopting public transport services as their regular mode of transportation within city. Providing adequate and detailed information about scheduling of buses made up the last dimension of "Information".

Further, to verify how the four dimensions identified through factor analysis, affects the overall satisfaction of the commuters towards public transport services, regression analysis was performed with overall satisfaction as dependent variable and the factor scores from factor analysis as independent variables. The results of the regression analysis are presented in Table III.

MODEL SUMMARY

R2 = 0.399 F = 22.41 Sig. = 0.000

TABLE III: REGRESSION ANALYSIS

Regression Coefficients		
	β	Sig.
<i>Core Service</i>	0.504	0.000
<i>Reliability</i>	0.305	0.000
<i>Tangibles</i>	0.243	0.001
<i>Scheduling Information</i>	-0.107	0.120

Dependent Variable: Overall Satisfaction

As shown in the Table, the model is fit ($F = 22.41$, Sig. = .000) and it explains 40% of variance of the dependent variable (as $R^2 = .399$). Out of four factors, Core Service ($\beta = .504$, $p = .000$), Reliability ($\beta = .305$, $p = .000$) and Tangibles ($\beta = .243$, $p = .000$) were found to have significant effect on overall satisfaction. Thus, the factors identified through factor analysis are found to be important predictors of commuter's satisfaction towards public transportation services.

IMPLICATION AND CONCLUSION

The findings of this study have significant implications for the policy makers in the public sector. Since the policies of public transport are designed for the residents, therefore it would certainly help to know the factors which they consider important for using a public transport as well as their satisfaction towards those factors with respect to existing public transport systems. A huge investment is made by any state government towards its public transport systems and it is only fulfilling that the systems are efficiently used by the citizens, thereby reducing the use of private vehicles on roads ultimately leading to decreased congestion. The study has identified four factors namely core service, reliability, tangibles and information, which are extremely essential for commuters to regularly use public transport. Thus, the local authorities or civic bodies can focus on the above-mentioned factors to increase the usage of public transport among commuters and get the non-commuters to start using the transport systems.

LIMITATIONS OF THE STUDY

The study has certain limitations. Firstly, since the sampling is done based on convenience sampling, therefore concrete conclusions cannot be drawn as the data might not be representative of the entire population. Secondly, the study focused only on the individual commuters thereby ignoring the viewpoint of other stakeholders like government as well as other civic bodies related to public transportation. Lastly, viewpoint of non-commuters has not been considered in this research.

DIRECTIONS FOR FUTURE RESEARCH

Since India is a developing country, therefore the public transport systems are still evolving. Hence, the study can be replicated in other cities and states where various public transport systems run by their respective authorities can be studied and the results can be generalized across the country. Secondly, since the current research considers only commuters as the sampling unit, therefore an extensive study can be conducted on the non-commuters and factors can be identified which may persuade them to take up public transport for their commute. Moreover, research can be carried out with larger sample size to develop a

conceptual framework wherein impact of traffic congestion on society and economy can be computed. More detailed analysis of the factors causing urban congestion can be analyzed. Various solutions leading to the mitigation of urban congestion in Ahmedabad can be another area of research highlighting the importance of alternative mode of transportation.

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PERFORMANCE OF MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE SCHEME**Dr. P. ILANCHEZHIAN****GUEST LECTURER****DEPARTMENT OF COMMERCE****MADURAI KAMARAJ UNIVERSITY CONSTITUENT COLLEGE****VEDASANDUR****ABSTRACT**

The performance of NREGS on Rural Development depends upon the awareness and participation of the respondents about the works carried out and the funds allocated to the programme in the areas selected for the analysis of the study. In the fourth chapter an attempt has been made to analyse the Social Upliftment and Economic Development of Impact of NREGS in Tamil Nadu for rural development on the basis of the responses of the respondents about their awareness and participation. In this chapter an attempt has been made to the works carried out and amount spent in Panchayat Union Councils of Tamil Nadu are analysed.

KEYWORDS

Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Jawahar Rojgar Yojana (JRY), Rural Landless Employment Guarantee Programme (RLEGP)

JEL CODE

E42, J21, J65.

INTRODUCTION

The Panchayati Raj is a system of government in which gram panchayats are the basic units of administration. It has 3 levels, village, block and district. The term 'panchayati raj' is relatively new, having originated during the British administration. 'Raj' literally means governance or government. Mahatma Gandhi advocated Panchayati Raj, a decentralized form of Government where each village is responsible for its own affairs, as the foundation of India's political system. This term for such a vision was "Gram Swaraj" (Village Self-Governance). In the history of Panchayati Raj in India, on 24 April 1993, the Constitutional (73rd Amendment) Act, 1992 came into force to provide constitutional status to the Panchayati Raj institutions. This Act was extended to panchayats in the tribal areas of eight states, namely Andhra Pradesh, Gujarat, Himachal Pradesh, Maharashtra, Madhya Pradesh, Orissa and Rajasthan from 24 December 1996. Now Panchayati Raj system exists in all the states except Nagaland, Meghalaya, and Mizoram and also in all the UTs except Delhi.

The NREGS have come after almost 56 years of experience of other rural employment programmers, which include both Centrally Sponsored Schemes and those launched by State Govt. These comprise the National Rural Employment Programme (NREP) 1980-89; Rural Landless Employment Guarantee Programme (RLEGP) 1983-89; Jawahar Rojgar Yojana (JRY) 1989-1990; Employment Assurance Scheme (EAS) 1993-99; Jawahar Gram Samridhi Yojana (JGSY) 1999-2002; Sampoorna Grameen Rojgar Yojana (SGRY) from 2001; National Food for Work Programme (NFFWP) from 2004 were national rural employment schemes. Among these, the SGRY and NFFWP have been merged with NREGA in 2005. In strong social safety net for the vulnerable groups by providing a fall-back employment source, when other employment alternatives are scarce or inadequate. The growth engine for sustainable development of an agricultural economy. Through the process of providing employment on works that address causes of chronic poverty such as drought, deforestation and soil erosion, the Act seeks to strengthen the natural resource base of rural livelihood and create durable assets in rural areas. Effectively implemented, NREGA has the potential to transform the geography of poverty. Empowerment of rural poor through the processes of a rights-based Law. New ways of doing business, as a model of governance reform anchored on the principles of transparency and grass root democracy.

OBJECTIVE OF THE STUDY

To study the performance of MGNREGS.

METHODOLOGY

This is an empirical study based on survey method of interview schedule. The data is used to collect both primary and secondary source.

MGNREGS SOCIAL DEVELOPMENT PERFORMANCE

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) was conceptualized and enacted as an Act in the Parliament in September 2005 to give a statutory backing to the scheme. The objective of the Act is to enhance the livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. The primary objective of the Scheme is to augment the wage employment and the auxiliary objective is to strengthen natural resource management through works that address causes of chronic poverty like drought, deforestation, soil erosion, and the like etc., and thus encourage sustainable development. Mahatma Gandhi NREGA, a flagship employment generation programme of the Government has been instrumental in creating employment opportunities and placing additional income in the hands of the poor and the disadvantaged sections of society who volunteer to do unskilled work with an entitlement of 100 days of wage employment to each registered rural household every financial year. MGNREGA is the first ever law, internationally, that guarantees wage employment at an unprecedented scale. Unique features of the Act include; time bound employment guarantee and wage payment within 15 days; unemployment allowance will be paid by the state government (as per the Act) in case employment is not provided within 15 days; and emphasis on labour intensive works prohibiting the use of contractors, and machinery. The Act also mandates 1/3 per cent participation for women. The primary objective of the Act is to meet the demand for wage employment in rural areas. The works permitted under the Act address causes of chronic poverty like drought, deforestation and soil erosion, so that employment generation is sustainable. The vision and mission of this act is sustainable and inclusive growth of rural India for eradication of poverty by increasing livelihood opportunities, providing social safety net and developing infrastructure for growth. This is expected to improve quality of life in rural India and to correct the developmental imbalances, aiming in the process, to reach out to the most disadvantaged sections of the society.

At the national level, with the average wage paid under the MGNREGA increasing from Rs.65 in FY 2006-07 to Rs.115 in FY 2011-12, the bargaining power of agricultural labour has increased. Improved economic outcomes, especially in watershed activities, and reduction in distress migration are its other achievements. During 2013-14, a total of 2.90 crore households have been provided employment with the share of SCs, STs and Women at 23 per cent, 15 per cent and 56 per cent respectively up to September, 2013. The person day's employment for women is well above the stipulation of 1/3 as per the Act. A provision of Rs. 33,000 crore equal to the previous year's budgetary provision has been kept for 2013-14. The expenditure incurred by the States/UTs is Rs. 15,018.99 crores which accounts for 50 per cent of available funds up to September, 2013.

AGE AND PLACE OF PAYMENT OF WAGE

Below the table reveals the age and place of payment wage:

TABLE 1: AGE AND PLACE OF PAYMENT OF WAGE

Age		Place of Payment of wage				Total
		Working Place	Bank	Panchayat Office	If any other place	
18-40	Count	50	74	116	21	261
	Expected Count	39.5	80.5	111.5	29.5	261.0
	% of Total	7.1%	10.6%	16.6%	3.0%	37.3%
41-60	Count	37	99	113	40	289
	Expected Count	43.8	89.2	123.4	32.6	289.0
	% of Total	5.3%	14.1%	16.1%	5.7%	41.3%
Above 60	Count	19	43	70	18	150
	Expected Count	22.7	46.3	64.1	16.9	150.0
	% of Total	2.7%	6.1%	10.0%	2.6%	21.4%
Total	Count	106	216	299	79	700
	Expected Count	106.0	216.0	299.0	79.0	700.0
	% of Total	15.1%	30.9%	42.7%	11.3%	100.0%

It is inferred from the above table, that 261 respondents age is 18-40, 289 respondents age is 41-60 and 150 respondents age is above 60 age.

The 106 respondents received their wages in their working place, 216 respondents received their wages in bank, 299 respondents received their wages in panchayat office and 79 respondents received their wages in other place.

H0: Age does not influence the Place of payment of wage.

H1: Age influence the Place of payment of wage.

Degree of freedom = 6

Calculated value = 12.058

Table value 5% level = 12.6

The calculated value is less than the table value, the null hypothesis is accepted, hence it is concluded that there is relationship between age and place of payment of wage.

AGE AND MONTHLY INCOME

The below table reveals the age and place of payment wage:

TABLE 2: AGE AND MONTHLY INCOME

Age		Monthly Income				Total
		Below Rs.3000	Rs.3000-4000	Rs.4000-5000	Above 5000	
18-40	Count	163	58	19	21	261
	Expected Count	151.4	51.1	32.8	25.7	261.0
	% of Total	23.3%	8.3%	2.7%	3.0%	37.3%
41-60	Count	146	65	43	35	289
	Expected Count	167.6	56.6	36.3	28.5	289.0
	% of Total	20.9%	9.3%	6.1%	5.0%	41.3%
Above 60	Count	97	14	26	13	150
	Expected Count	87.0	29.4	18.9	14.8	150.0
	% of Total	13.9%	2.0%	3.7%	1.9%	21.4%
Total	Count	406	137	88	69	700
	Expected Count	406.0	137.0	88.0	69.0	700.0
	% of Total	58.0%	19.6%	12.6%	9.9%	100.0%

It is inferred from above table that 261 respondents are at the age of 18-40, 289 respondents are at the age of 41-60 and 150 respondents are at the age of above 60.

The 406 respondent's monthly income is below Rs.3000, 137 respondents are Rs.3000-4000, 88 respondent's income is Rs.4000-5000 and 69 respondent's income is above Rs.5000.

H0: Age does not influence the Monthly Income

H1: Age influence the Monthly Income

Degree of freedom = 6

Calculated value = 27.376

Table value 5% level = 12.6

The calculated value is more than the table value the hypothesis is rejected, hence it is concluded that there is difference in monthly income.

CONCLUSION

The NREGS sustainable social and economic development in employment in their workers own near villages without migration cares the basic needs of the people which completely resolves the owing to their illiteracy and end with this programme has created an innate desire to work, grow and develop with inclination for continues and never ending improvement will yield a life of endless accomplishments and satisfaction. So that Poverty Alleviation Programmes could be properly implemented and real Rural Development could be realized in the life style.

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A STUDY ON AGRO-BASED INDUSTRIES IN ANDAMAN & NICOBAR ISLANDS**Dr. J. SIDDIQUE****GUEST LECTURER****P.G. DEPARTMENT OF COMMERCE****JNRM GOVERNMENT COLLEGE****PORT BLIAR SOUTH ANDAMAN****ABSTRACT**

Economic development of any country depends greatly on the growth and development of its Agro-Based Industrial Units and such is also the case of Andaman and Nicobar Industrial growth, in majority of cases, is the most potent dynamic factor in the process of accelerated economic development. Industry plays an important role in development of backward areas and in removing disparity. Further, AGRO-BASED INDUSTRIAL Units offer ever-widening employment opportunities. Surprisingly, such important sectors of the economy of the A&N Islands have been given little attention by the authorities and the academicians. Government of India has been announcing a lot of subsidies, incentives to the industrial units particularly to the AGRO-BASED INDUSTRIAL Units. But the AGRO-BASED INDUSTRIAL Units could not increase their production due to many problems. So the problems of Agro-Based Industrial Units are, to be approached systematically to solve their problems and to recognize and treat them as equal among the other sectors. Andaman & Nicobar Island one of the Union Territory of India has been taken as a study area for the present work it is situated in Bay of Bengal surrounded by Burma, Thailand, Malaysia and Indonesia. The total no of Island in this territory is 572 including rocks and Islands it is really, very rich in resources only the few of the resources have been explored and plenty of resources are yet to be explored; the people of this territory have been facing acute shortage of goods and services since long. They depend greatly on the mainland of India and prices of these goods sometimes are double or triple that of the prices prevailing in the mainland. As far as the resources are concerned, forest and marine resources are available in abundance in this territory. No of tourist has been increasing every Year both A&N administration at the Govt of India have been announcing many no of incentives and subsidies but still no of industrial units, employment generation, investment made in agro based industries and the production of the agro based units have not been increased hence, a detailed research has been conducted at micro level to explore, trace out and elicit the problems confronted by the agro based units in this study.

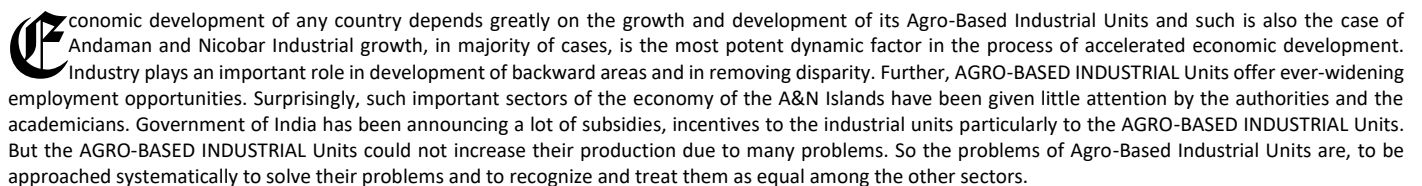
KEYWORDS

agro-based industries, industrial units, problems, developments.

JEL CODE

Q13

INTRODUCTION

Economic development of any country depends greatly on the growth and development of its Agro-Based Industrial Units and such is also the case of Andaman and Nicobar Industrial growth, in majority of cases, is the most potent dynamic factor in the process of accelerated economic development. Industry plays an important role in development of backward areas and in removing disparity. Further, AGRO-BASED INDUSTRIAL Units offer ever-widening employment opportunities. Surprisingly, such important sectors of the economy of the A&N Islands have been given little attention by the authorities and the academicians. Government of India has been announcing a lot of subsidies, incentives to the industrial units particularly to the AGRO-BASED INDUSTRIAL Units. But the AGRO-BASED INDUSTRIAL Units could not increase their production due to many problems. So the problems of Agro-Based Industrial Units are, to be approached systematically to solve their problems and to recognize and treat them as equal among the other sectors.

STUDY AREA

Andaman and Nicobar Islands, one of the Union Territories of India, has been taken as the study area for the present work. It is situated in the Bay of Bengal surrounded by Burma, Thailand, Malaysia and Indonesia. The total number of islands in this territory is 572 including rocks and islands. This study area consists of two groups namely Andaman Group and Nicobar Group. There are three districts namely 1). South Andaman District 2) North and Middle Andaman District and 3) Nicobar district, and eight sub-Division namely Port Blair, Ferrargunj, Rangat, Mayabunder, Diglipur, Nancowry, Car Nicobar and Campbell Bay.

OBJECTIVES OF THE STUDY

1. To trace of growth, present workings and classification of Agro-Based Industry in Andaman and Nicobar Islands.
2. To analyze the Structural factors of Agro-Based Industry in Andaman and Nicobar Islands.
3. To explore the problems faced by the Agro-Based Industrial Units in Andaman and Nicobar Islands.

AGRO-BASED INDUSTRY STATUS IN ANDAMAN & NICOBAR ISLANDS

A&N Islands is industrially very backward. The planning Commission, Government of India, has identified 300 districts as specified Backward Areas and classified them into A, B and C categories depending on the degree of backwardness. 'A' Category districts – 131 in all include 93 “No Industry Districts” (NIDs). The A&N Islands is one of such districts included under 'A' category of districts. The entire territory had been declared as a No Industry Area. Till 1978, there was no full-fledged Industries Department in A&N Islands.

The Directorate of Industries was established only in March 1978. During the same year, a District Industries Centre (DIC) was also set up at Port Blair. There is no District Industries Centre in the Nicobar District. An Advisory Board of Khadi and Village Industries has also been set up at Port Blair. The ranks of the AGRO-BASED INDUSTRIAL Units based in terms of the number of units are given in the table.

RANKING OF THE SMALL SCALE INDUSTRIAL UNITS IN A & N ISLANDS

TABLE 1

Sl. No	Type of Units	Grand Total	Rank
1.	Engineering Based	346	I
2.	Wood based	243	II
3.	Agro Based	137	III
4.	Food Based	136	IV
5.	Textile Based	120	V
6.	Mineral Based	89	VI
7.	Marine Based	65	VII
8.	Chemical Based	45	VIII
9.	Leather Based	9	IX
10.	Coir Based	3	X
11.	Others	570	XI
	Total	1763	

Source: Compiled from the data collected from DIC, Port Blair

Engineering Based Units (EBU) stands **FIRST**. Wood Based Units (WBU) stands **SECOND**, followed by Agro Based Units (ABU) ranks **THIRD**, Food Based Units (FBU) stands **FOURTH**, Textile Based Units (TBU) **FIFTH**, Mineral Based Units (MIBU) **SIXTH**, Marine Based Units (MBU) **SEVENTH**, Chemical Based Units (CHBU) **EIGHTH**, Leather Based Units (LBU) is in **NINTH** and the Coir Based Units stands (COBU) **TENTH** and the others are in cluster and hence it is not calculated for the rank.

PROBLEMS

Sale of manufactured goods by the AGRO-BASED INDUSTRIAL Units is something different from the Sale of the goods by the middlemen. Problems facing the AGRO-BASED INDUSTRIAL Units are the obstacles of the growth and development of the economy of any region. It will not allow the AGRO-BASED INDUSTRIAL Sector and the other sectors to grow. The problems will absorb all the investments. The problems will make every activity as unproductive and the AGRO-BASED INDUSTRIAL entrepreneurs as so tired. So it is decided to conduct a study at micro level to explore the problems in the Activities of the AGRO-BASED INDUSTRIAL Units facing the entrepreneurs in A & N Islands. The following tables give the result of the study.

TABLE 2: PROBLEMS FACING THE AGRO-BASED UNITS

Sl. No.	Problems	No. of Respondents Expressed as		
		YES	NO	Total
01	Financial Problems	173 (100.0)	00 (00.0)	173 (100.00)
02	Labour Problems	142 (82.1)	31 (17.9)	173 (100.0)
03	Marketing Problems	125 (72.3)	48 (27.7)	173 (100.0)
04	Other Problems	59 (34.1)	114 (65.9)	173 (100.0)
05	Production Problems	136 (78.6)	37 (21.4)	173 (100.0)
06	Transport Problems	119 (68.8)	54 (31.2)	173 (100.0)

Source: Primary Data

The table shows that the AGRO-BASED INDUSTRIAL Units face the Problems in the areas of the Finance, Marketing Related Activities, Transport, Communication, Labour and Production Problems. Of all the above-mentioned problems, the communication problems seem to be very less because only 81 representing 46.8 percent of the total respondents expressed that they face the communication problem. The reason for this is the AGRO-BASED INDUSTRIAL Units is located in a very interior place where they face really communication problem.

Their main problem is unable to contact the customer as well as market information. For this purpose, they have to come to the nearby place where such facilities are available. On the other hand, 92 units representing 53.2 percent have given a negative response.

All the 173 respondents have expressed that they face terrible financial problems.

125 respondents constituting 72.3 percent of the total respondents have expressed that they face intolerable Marketing Related Problems. Another set of 119 respondents recording 68.8 percent have told that they face Transport Problem. 142 sample units representing 82.1 percent of the total respondents have recorded that they face over expensive Labour problems.

59 respondents representing 34.1 percent of the total sample face the other problems like power problems, absence of postal services, non-availability of the Petrol, diesel and other lubricating oil, absence of hospital, non-availability of hire vehicle, filthy conditions of the roads, absence of hospital etc. These problems are discussed in detail below through different tables.

SUGGESTIONS

The following are the suggestions offered based on the research work conducted by the researcher on the basis of the Empirical Analysis on the Study on the Agro-Based Industry in A & N Islands.

- The problems of Agro-Based Industry in A&N Islands both at the promotional and operational stages have been discussed in the earlier paragraphs. No Industry in the world is problem free. Some problems of industry cannot be solved at any time. Some can be solved within a short period and others can be in course of time only. To overcome those problems identified the following suggestions are made.
- Industrial Estates are to be set up and developed in Campbell Bay, Diglipur and Mayabunder regions.
- A guidance cell may be created in the District Industries Centre, Port Blair, headed by a person not below the rank of Deputy Manager to advise entrepreneurs on all aspects of project formulation and implementation. Such guidance cell may engage camps to different regions like Rangat, Mayabunder, Diglipur, Car Nicobar, Nancowry, etc. It is also suggested that they may drive away the frustrations in the minds of the entrepreneurs due to inordinate delay.
- The A&N Administration may create a machinery to co-ordinate the activities of different agencies. The machinery may implement a time-bound program for process Agro-Based Industries the applications of the entrepreneurs. It is suggested that the District Industries Centre, Port Blair, which is a promotional agency in A&N Islands, may acts as the coordinating machinery. The Industrial Promotion Officer of the Nicobar District may be given powers in this regard by taking into consideration the geographical disadvantages of the distance between the Islands of the Nicobar District and Port Blair.

- The feasibility of an entrepreneur submitting his application as one package to a single Agency namely, District Industries Centre instead of submitting to various agencies may be examined. It is also suggested that the A&N Administration may consider the possibility of a single application that an entrepreneur has to submit instead of one for each agency.
- To minimize the difficulties in getting power connection, water connection, etc. It is suggested that the General Manager, District Industries Centre may be assigned authority to receive applications from the entrepreneurs and to get the water connection, power connection etc., sanctioned within 30 days. The present method is that a letter is written by the General Manager to the Superintendent, Electricity Department, Port Blair to get the speedy connection.
- The Banks, both commercial and co-operative, may speed up the sanction and disbursement of loans. The procedures in getting loan are to be simplified so that there may not be any delay in sanctioning the loans. It is also suggested that the applications and the guideline booklets or at least the guideline booklets may be in four languages – Hindi, Tamil, Bengali and English – so that the entrepreneur may not face any language difficulties.
- A committee, free from political influence headed by the General Manager and consisting of officials from Banks, Electricity Department, Andaman Public Works Department, Central Public Work Department, representatives from the various industries-particularly the AGRO-BASED INDUSTRIAL Units, Forest Supplies Department, may be formed. The Committee should meet once in a fortnight at the office of the District Industries Centre. The applicants may be invited to participate in the discuss Agro-Based Industries. All approvals, licenses and certificates may be issued in the meeting itself or within 15 days after taking a decision in the meeting with regard to reasonable cases. Such a co-ordination mechanism will provide answer to the promotional problems of the Industry in A&N Islands.
- Regarding the conversion of land for Industrial Purpose, the A&N Administration may identify, by completing all formalities like soil test, water test, approvals from the Government of India etc. well in advance, the particular places which are fit for Industrial purposes. This can be advertised or circulated to the promotional agencies. It is also suggested that the A&N Administration may clearly state the places that are reserved for particular purposes so that the entrepreneurs may not think about those places. The District Industries Centre may take speedy steps in this regard.
- The A&N Administration may immediately look into the Electricity problem. It may install new generators both in Port Blair and in the other Islands. Since the industrial units frequently experience the power shortage, it is suggested that the Industries particularly Agro-Based Units may be exempted from power cuts at least for the first 5 years from its inception. The existing industries concentrated in a particular place may be encouraged to install common generators and more subsidy may be granted for this purpose. The post of Manager (Economic and Investigation) in the DIC, Port Blair, may conduct a survey of the areas where there is concentration of units and may explore the possibility of installing common generators, The DIC and the Directorate of Industries may take a lead in this direction.
- Junglighat, Dairy Farm Junction is selected by the Researcher to install the common generators by the AGRO-BASED INDUSTRIAL units and the traders. The A&N Administration may think of giving subsidy and incentives for the same.
- The Bank Managers may have personal interviews with the borrowers and the required facts may be recorded and signed by the borrowers in order to speed up the procedure. The Branch Managers may be advised not to show an over bearing attitudes towards the borrowers. The Managers and the other officers of the banks may first try to understand the problems of the borrowers. It is further recommended that the managers may sanction the loan within 10 days from the date of receipt of the application. For this purpose, the Bank Manager may be delegated with the necessary sanctioning powers. A **Loan Syndicate** is suggested in the A & N Islands. The Lead Bank in Port Blair may start this work.
- It is recommended that all the departments, banks co-operative societies may be instructed/ordered to buy only the locally manufactured products for their routine work. The practice of compelling the departments to buy the goods and services produced locally may be followed in the A&N Islands to have an assured and steady market for the Industrial units in A&N Islands. In this regard it is further recommended that the price increase allowed to the AGRO-BASED INDUSTRIAL may be enhanced considering the increase in the cost of raw materials, labour transport and other inputs in the recent years.
- The A&N Administration may establish commercial estates just like industrial estates for the sale of products of the industrial units in the A&N Islands exclusively to the consumers directly. The Industry may explore new market in rural areas.

CONCLUSION

So the only hope today for the Socio-economic development of A & N Islands is the Agro-Based Industry (AGRO-BASED). The contribution of AGRO-BASED to job creation and economic development has been largely ignored or underestimated for many years in the A & N Islands. The Eco-tourism potential provides many opportunities for both the protection of the environment and the development of tourism based economic activities on this huge natural resource. For that, there should be a wide publicity and advertisement about A&N islands, a provision to show the visitors/tourists a glimpse of the socio cultural life of this Mini India (A & N Islands) and to make them feel that the A&N islands is the place for National Integration in the world. Popular lectures and shows should be arranged in these islands about the available resources to start the AGRO-BASED Units inviting them for the Venture.

Hence, the Agro-Based Industry is the basis for all the activities and transactions of not only the Business Sector but also the Service Sector, trade and commerce sector. This is more true in the Agro-Based Sector. Andaman and Nicobar Islands with its rich unexploited resources invite the entrepreneurs to start industrial ventures in this green paradise. The local government and the Govt. of India have been announcing a plenty of incentives and subsidies. In spite of these facilities, the production of the Agro-Based Industrial Units has not been satisfactory. Hence, it is strongly thought that the AGRO-BASED Units face many problems and as such it is decided to conduct a research at micro level and it has been conducted also. Results of the Analysis have proved that the AGRO-BASED Units have not been functioning effectively due to a lot of drawbacks and problems which are given above. The suitable measures to solve the problems are also given under the suggestions.

Thus, it can be said that once the impediments in the path of the development of the AGRO-BASED units in the A & N Islands are removed, an effective strategy can be formulated in the light of the suggestions given and the same can effectively be implemented through the Knowledgeable, Disciplined, Hardworking, Dedicated and God Fearing Real Human Asset, which shall contribute significantly to the overall development of the economy of Andaman & Nicobar Islands.

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