

DEVELOPMENT OF LEISURE TRAVEL MODEL USING ALOGIT IN HYDERABAD CITY

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Abstract : With rapid urbanization and increase in population the demand for transportation facilities is ever increasing. In this paper an attempt is made to carryout analysis of destination choice behavior for leisure travel of the people of Hyderabad city. In this connection suitable destination choice model is developed using ALogit software. The mode choice model helps to understand the current trend of choosing the destinations for the leisure travel and the need for any improvement at the destinations so that the travelers visiting a particular location can be increased.

IndexTerms - Destination choice, Leisure travel, ALogit software, travel analysis.

I.Introduction:

India is a country which witnesses a lot of diversity pertaining to its ecology, mythology, history, its geographical diversity in terms of mountains, planes and plateaus and also the medicinal diversity teaching us the Science of Life (Ayurveda). India showcases a variety of tourism options which includes Ecological Tourism, Pilgrimage Tourism, Historical Tourism, Adventure Tourism, Medical Tourism and an upcoming Ayurveda Tourism. So Tourism in India could be broadly classified on as, Leisure tourism, Business tourism, Ecological tourism, Pilgrimage tourism, Historical tourism, Medical tourism, Adventure tourism, Sports tourism and Wildlife tourism.

Leisure travel: Leisure travel is travel in which the primary motivation is to take a vacation from everyday life. Leisure travel is often characterized by staying in nice hotels or resorts, relaxing on beaches or in a room, or going on guided tours and experiencing local tourist attractions. Most meals are eaten out when traveling for pleasure, and often more expensive modes of transportation, such as taxis, are used to get around. In some cases, leisure travel might be used to refer to any trip that lasts more than a week, regardless of the primary focus.

Concept of destination choice: Tourist destination is a mix of tourism products, experiences and other intangible items promoted to the consumer. At a general level, this concept of destination can be developed to represent geographically defined entities such as group of countries, country, and regions in a country, a resort or a wide range of experiences created tourism marketers. There are a range of six components which comprise a destination (i.e. from an industry supply perspective or from consumer's viewpoint) the destination is often referred to as an amalgam of six A's. – Available packages; Accessibility; Attractions; Amenities; Activities; Ancillary services (services necessary to support the transmission of electric power from seller to purchaser given the obligations of control areas and transmitting utilities within those control areas to maintain reliable operations of the interconnected transmission system).

Factors affecting destination choice: The various factors affecting are, Total travel time and Travel cost. In total travel time the important factors are, in vehicle time, access time, egress time and waiting time. In travel cost, the socio economic factors considered are, income, vehicle ownership, family size, age and gender and group size.

The researchers who are associated in such studies are, Shruti Dave, Dr. Yogesh Shah, Cristina Jonsson Dwayne Devonish, Mai Ngoc Khuong and Pham Dac Luan, R. Pinky Pawaskar and Mridula Goel, Limalakool, N. Dijst and Schwanen, Mohammad Bagher Koopaei

II. Study area: Study area selected is the central zone of Hyderabad under HMDA, which is sprawling from Kapra to Patancheruvu (East - West) and Jawahar Nagar to Shamshabad (North - South). Available modes in the study area are 2 wheelers, 4 wheelers, private/institutional buses, auto/ para transit, RTC buses and MMTS.

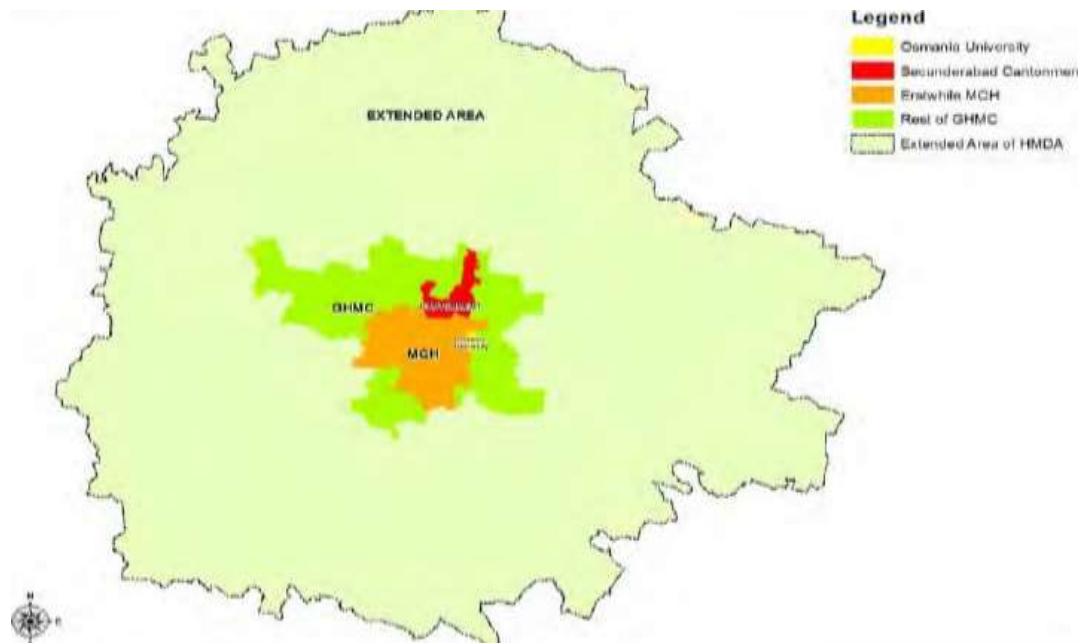


Fig.1 Subareas in Hyderabad Metropolitan Authority

3. Model Development - Destination Choice & Leisure Travel Analysis: The analysis and model development steps is presented in Fig.2 and Fig.3.

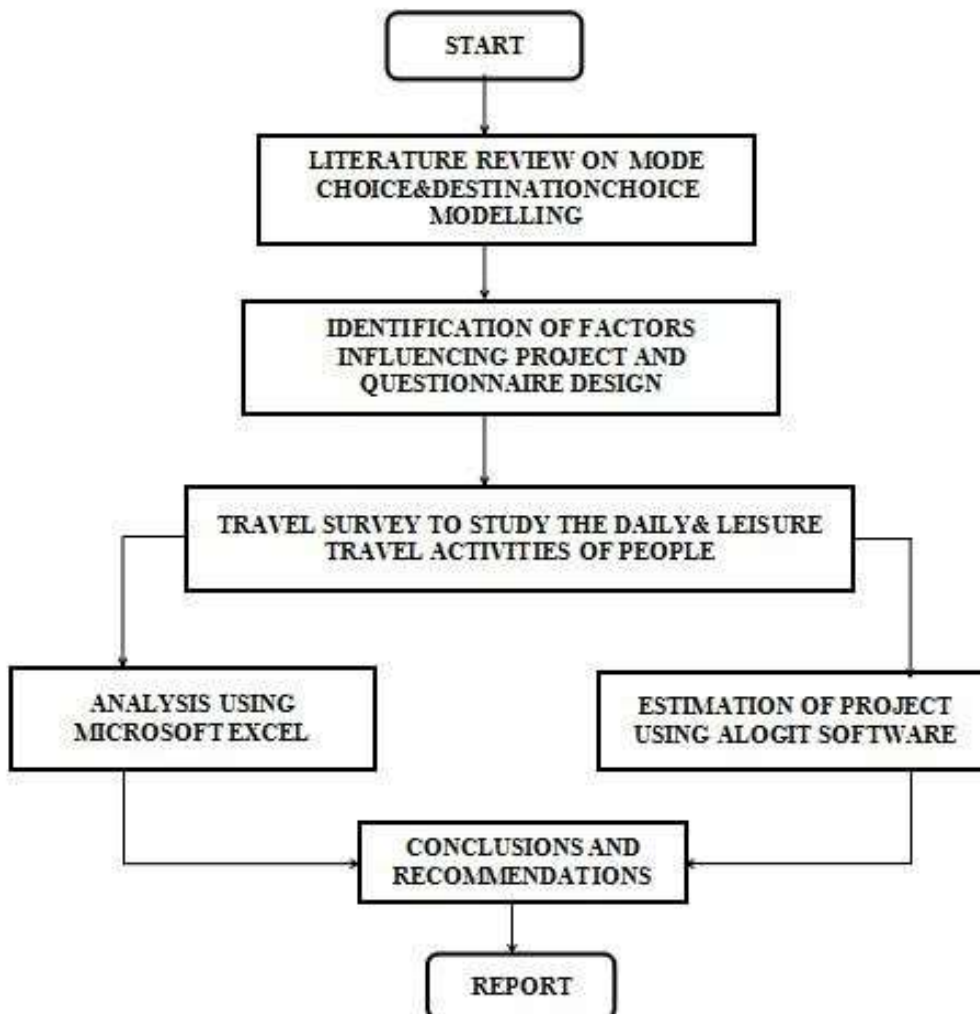


Fig. 2 Flow chart of work methodology

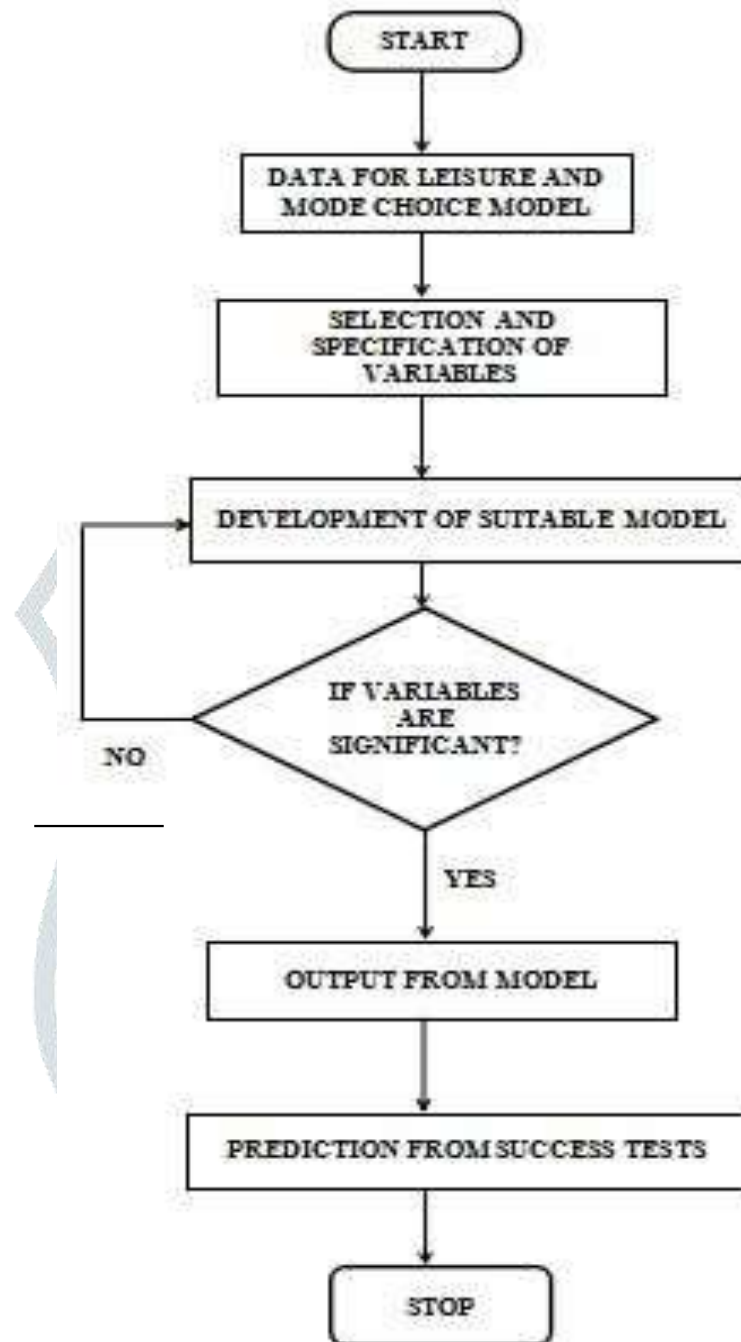


Fig.3 : Flowchart of Model development

Destination choice for Leisure Travel

Sample characteristics

Sample characteristics include common characteristics like travel time, travel cost, type of mode preferred, comfort and convenience, household income, household size, trip frequency per year, overall experience, persons accompanying, stay, vehicle ownership etc. The samples are collected from the travelers of Hyderabad through survey.

Personal Characteristics

These characteristics include the personal characteristics of the travelers who are traveling from one destination to other destination. The personal characteristics are like age, gender, vehicle ownership, household income, household size, name, reason for leisure trip, sponsor for the trip etc.

Age

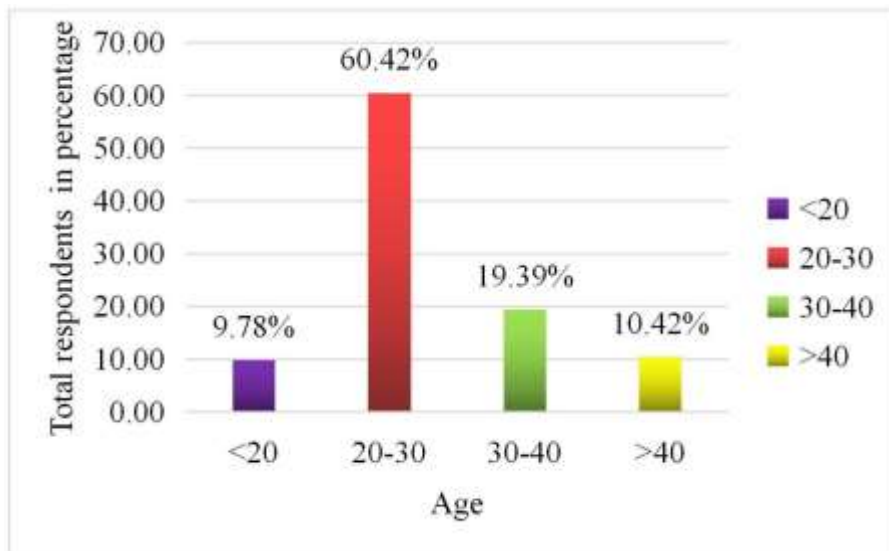


Fig. 4 Age Vs Total respondents

From the fig 4 we can infer that respondents of the age group 20-30 yrs. mostly prefer leisure travel when compared to other age groups.

Household Income

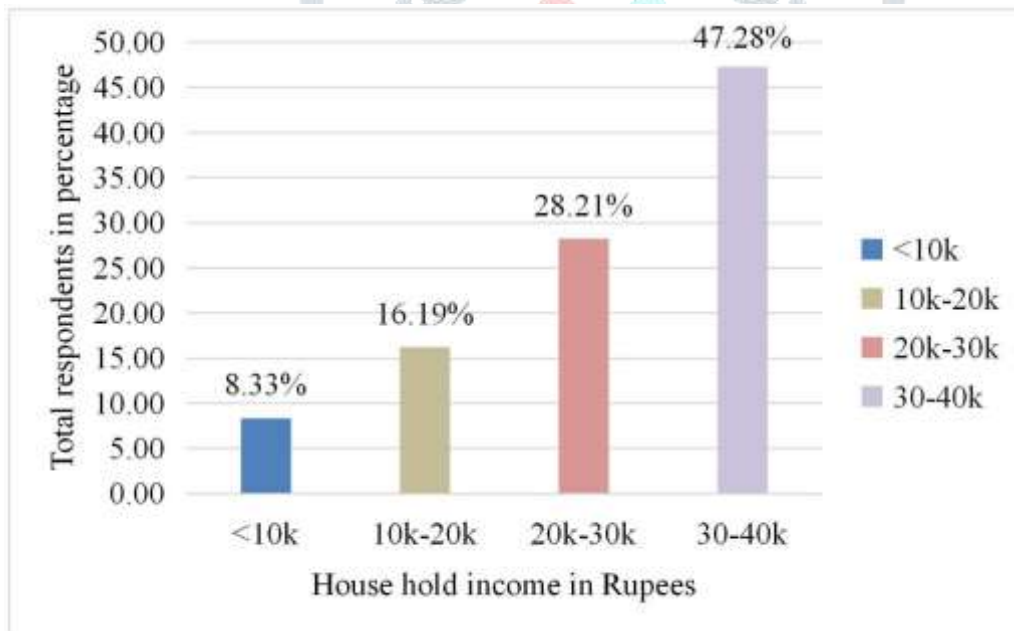


Fig.5 Household Income Vs Total respondents

From the fig. 5 it is clear that people with high monthly income (30000-₹40000) mostly prefer leisure travel when compared to others.

Household Size

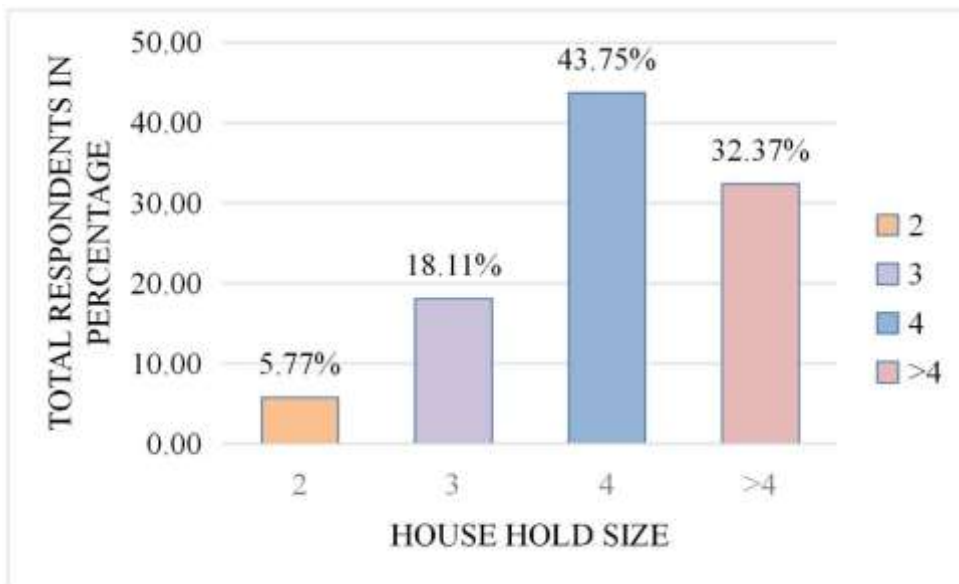


Fig .6 Household size Vs Total respondents

From the fig 6 we can infer that family with four members travel more followed by family with more than four members, with three members, with two members respectively.

Gender

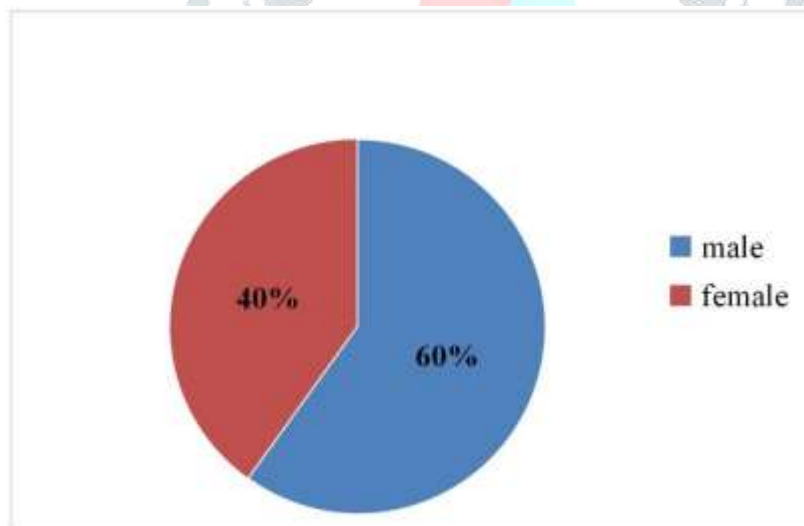


Fig.7 Gender Vs Total respondents

From the fig.7 it is clear that male travelers are more than 50% in the city of Hyderabad where the survey is conducted.

Trip Frequency

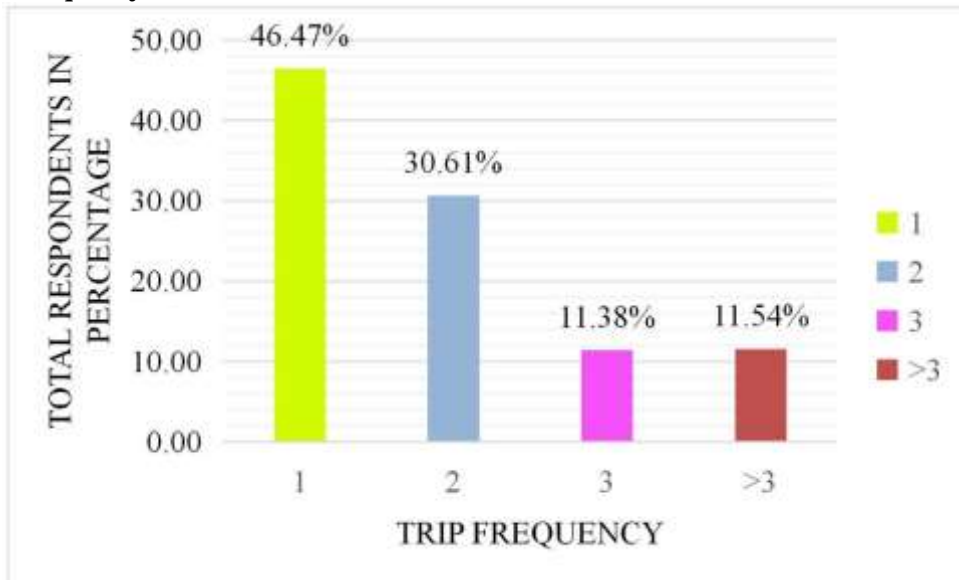


Fig. 8 Trip frequency Vs Total respondents

From the fig 8 we can say that majority of the travelers prefer tour only once a year (46.47%), few travelers prefer twice a year (30.61%).

Mode of Transport

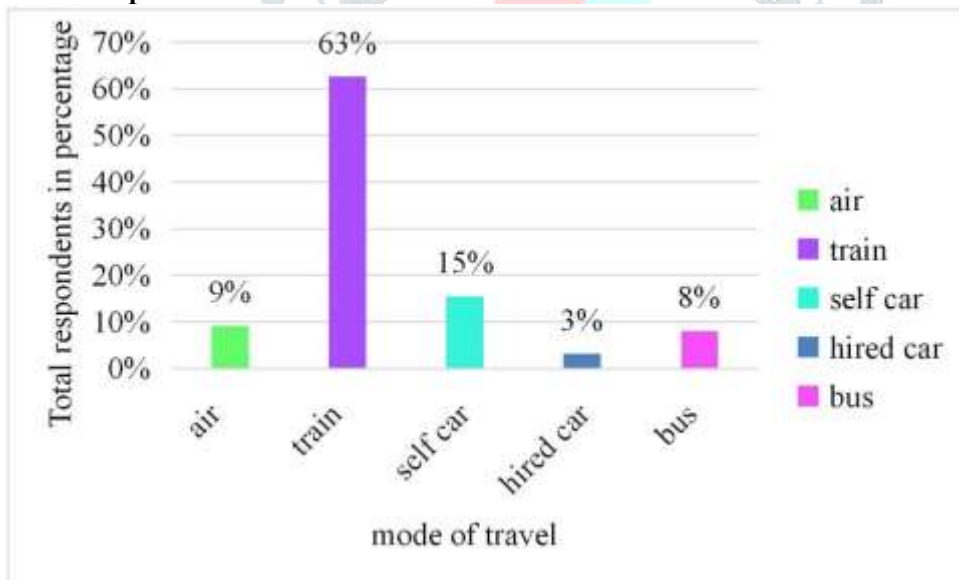


Fig. 9 Mode of Travel Vs Total respondents

From fig 9 we can infer that majority of the travelers prefer the leisure travel to any place by train as it is the cheapest mode of transport available for traveling to even far off places.

Reason for Leisure Trip

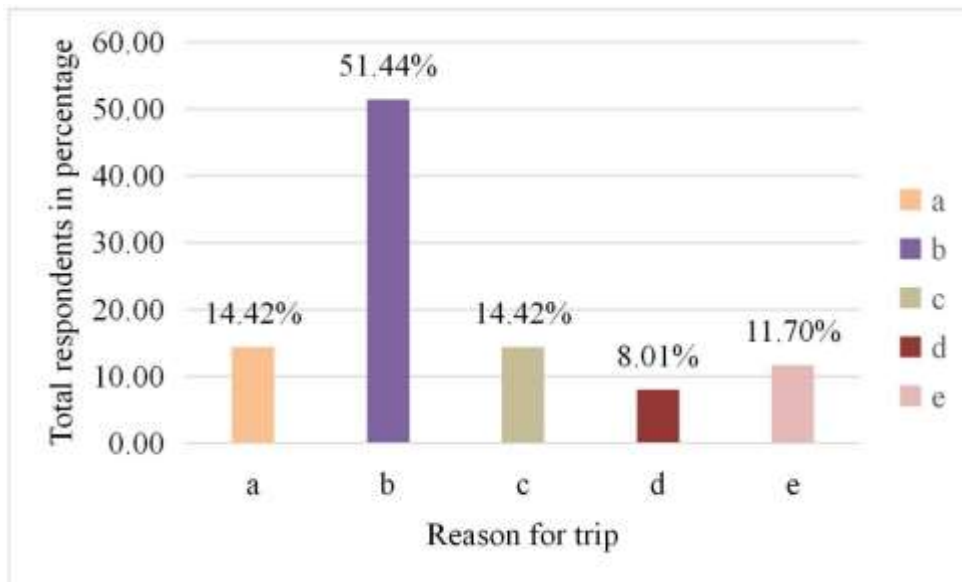


Fig. 10 Reason for Leisure Trip Vs Total respondents

From the fig 10 it is clear that most of the travelers prefer leisure trip for the purpose of rest and relaxation.

Information About Location

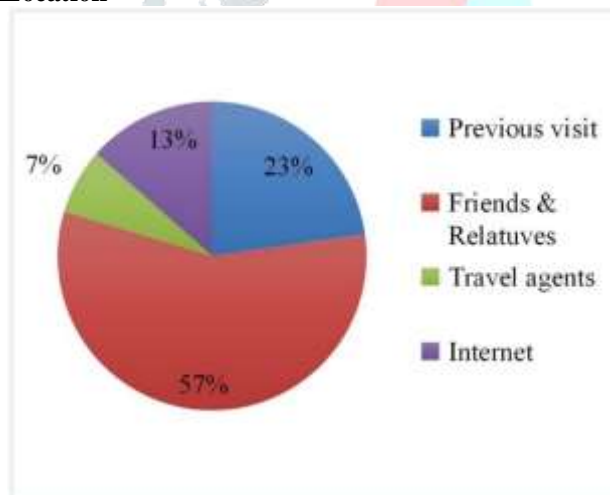


Fig. 11 Distribution of Information about Location

From the fig 11 we can say that more than 50% of the travelers get the information about a particular location through friends and relatives.

Way of Travel

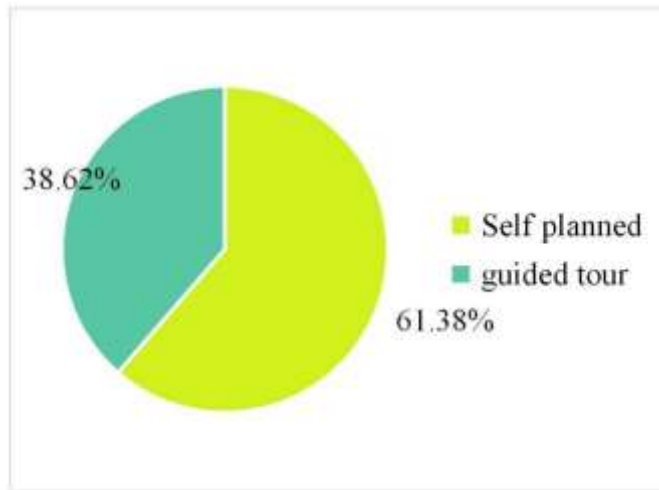


Fig. 12 Way of Travel Vs Total respondents

From the fig 12 it is clear that more than half of the travelers prefer self-planned tour when compared to guided tour.

Trip Sponsor

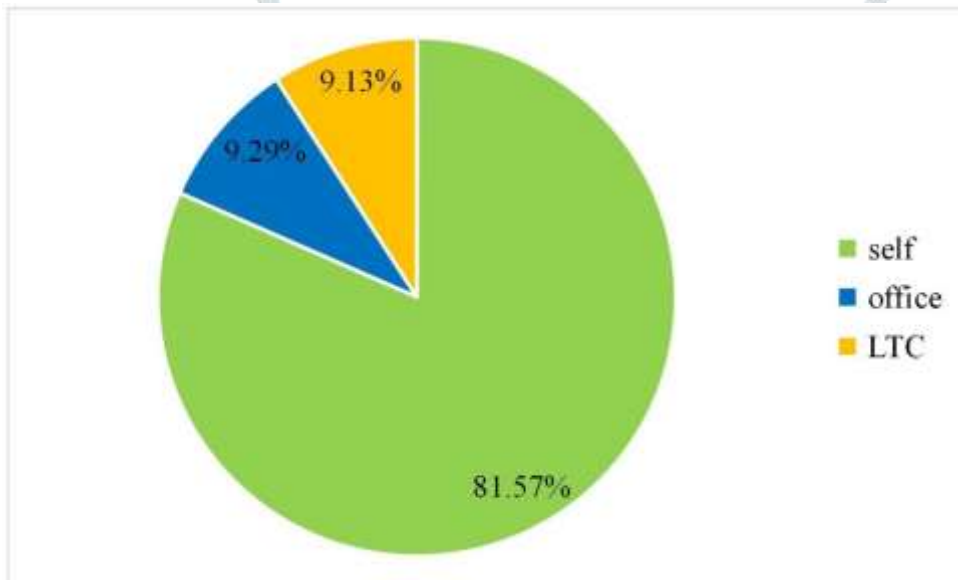


Fig. 13 Trip Sponsor Vs Total respondents

From fig 13 it is clear that majority of the tours are self-sponsored (81.57%).

Accompanying Persons

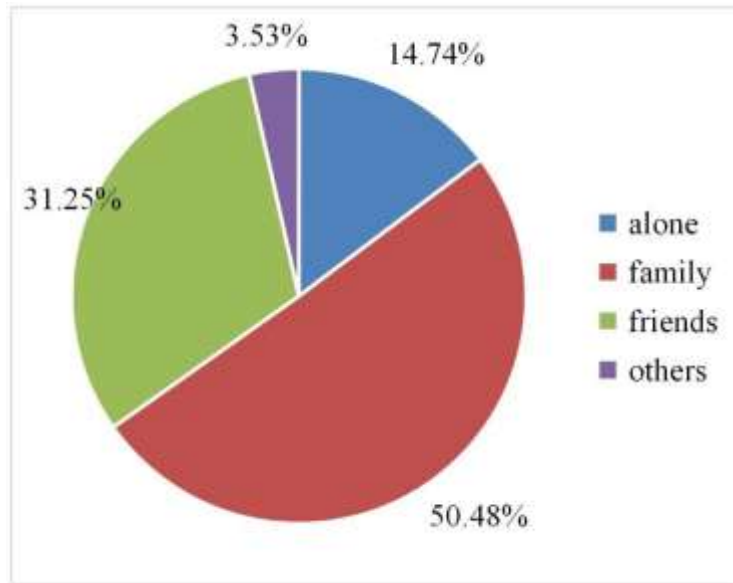


Fig. 14 Chart showing the distribution of Accompanying Persons

From fig 14 it is clear that half of the travelers prefer their leisure trip with family members, then followed by friends. Very few travelers prefer other family or friends.

Season

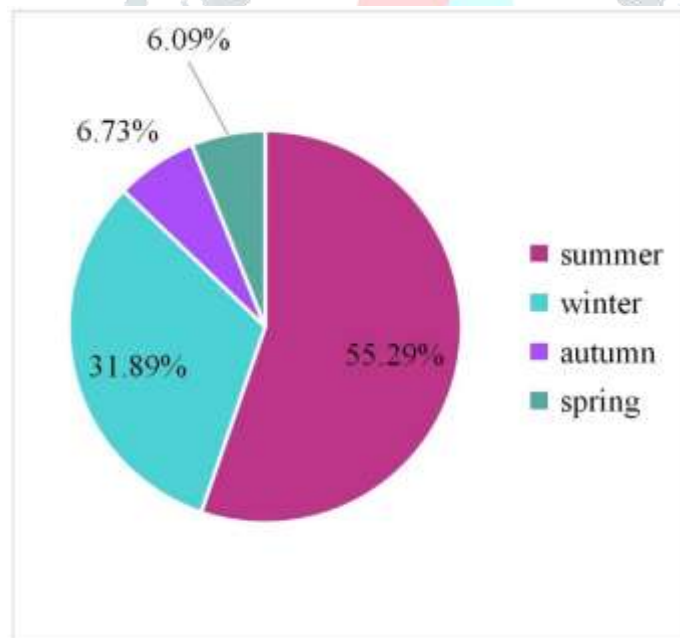


Fig. 15 Season Vs Total respondents

From the fig 15 we can say that majority of the travelers prefer tour in summer season (55.29%), followed by winter (31.89%) as their second preference.

Stay

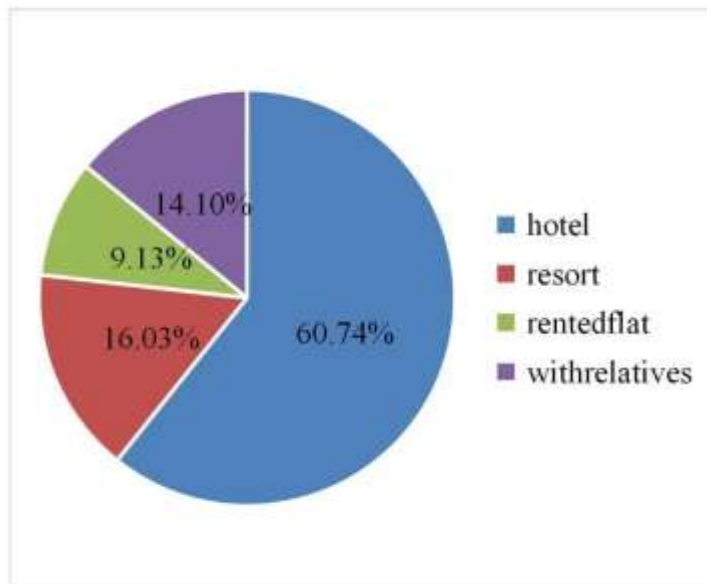


Fig. 16 Stay Vs Total respondents

From fig 16 it is clear that more than 50% of the travelers prefer to stay in hotel rather than in resort, rented flat or with relatives.

Other Destination

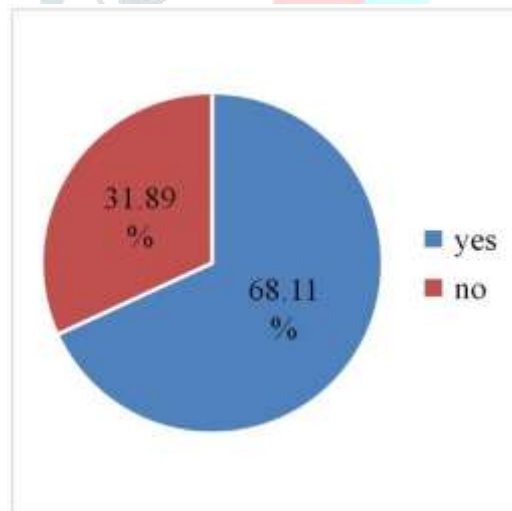


Fig. 17 Pie Chart showing visit to Other Destination

From fig 17 we can infer that majority of the travelers prefer to visit other places nearby their main destination.

Destination Choice Modeling and Analysis

Table 1 Coding for different travel characteristics used in the analysis and destination choice model development

S.No	Travel Characteristics	Coding
1	Age	<20 yrs is coded as 1; Age group 20-30 yrs is coded as 2; Age group 30-40 yrs is coded as 3 ; >40 yrs is coded as 4 .
2	Household income	Income <10k is coded as 1 ; Income 10k-20k is coded as 2 ; Income 20k-30k is coded as 3 ; Income 30k-40k is coded as 4 ;
3	Household size	For 2 members is coded as 1; For 3 members is coded as 2; For 4 members is coded as 3; >4 members is coded as 4 .
4	Gender	Male is coded as 1 ; Female is coded as 2 ;
5	Trip frequency per year	Only 1 time in a year is coded as 1; 2 times in a year is coded as 2; 3 times in a year is coded as 3; >3 times in a year is coded as 4.
6	Mode of transport	Air is coded as 1; Train is coded as 2; Self-car is coded as 3; Hired car is coded as 4 ; Bus is coded as 5.
7	Reason for leisure trip	Utilizing the vacation of children is coded as 1; Rest and relaxation is coded as 2; Visiting relatives and friends is coded as 3; Business reasons/attending meeting is coded as 4; To know about the culture is coded as 5.
8	Information about location	Previous visit is coded as 1 ; Friends and relatives is coded as 2 ; Travel agents is coded as 3 ; Internet is coded as 4.
9	Way of travel	Self-planned is coded as 1 ; Guided tour is coded as 2 .
10	Trip sponsor	Self is coded as 1 ; Office is coded as 2 ; LTC is coded as 3 .
11	Accompanying persons	Alone is coded as 1 ; With family is coded as 2 ; With friends is coded as 3 ; Others is coded as 4 .
12	Season preferred for trip	Summer is coded as 1 ; Winter is coded as 2 ; Autumn is coded as 3 ; Spring is coded as 4 .
13	Stay	At hotel is coded as 1; At resort is coded as 2; At rented flat is coded as 3 ; With relatives is coded as 4.

Multinomial logit model

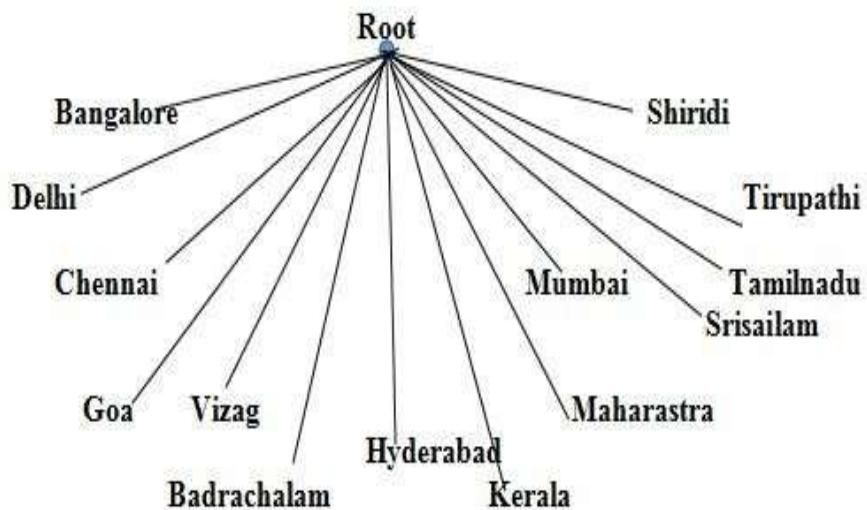


Fig. 18 Multinomial logit model for Destination Choice

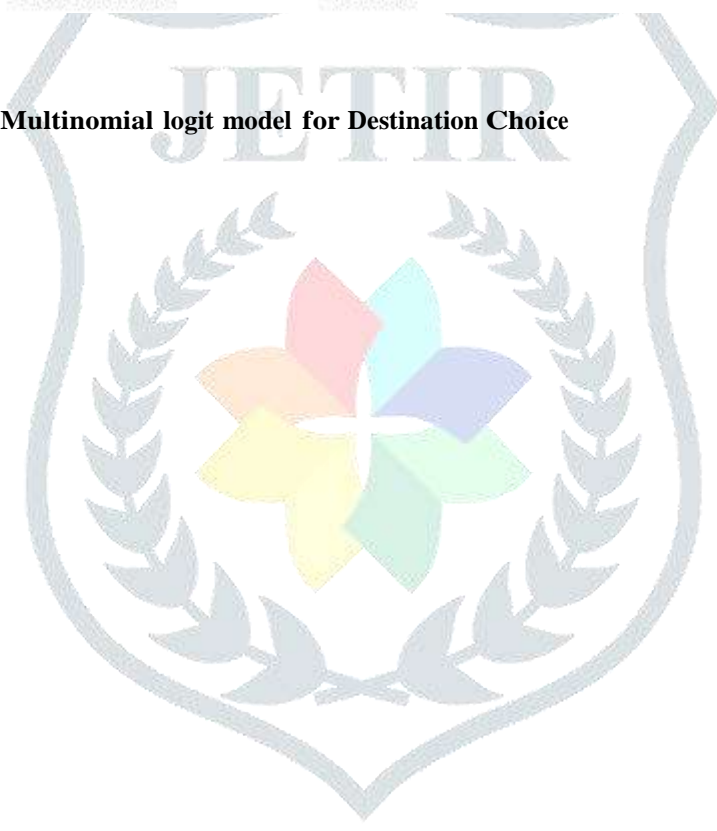


Table 2 Statistics for best fit multinomial logit model

Variables	Coefficient Estimates	Relevance Of Variables
Generic Variables		
Travel time	0.8962(0.2)	Generic
Travel cost	-0.3194(-4.1)	Generic
Specific Variables		
Age	0.9914(1.2)	Bangalore
Way of travel	-0.1602(-1.0)	Delhi
Reason for leisure trip	-0.2785(-2.5)	Chennai
Age	0.6499(0.8)	Goa
Season	0.1622(1.6)	Vizag
Household income	-0.2894(-3.0)	Badrachalam
Reason for leisure trip	0.9904(1.5)	Hyderabad
Accompanying persons on trip	-0.3178(0.0)	Kerala
Way of travel	-0.3904(-2.1)	Maharastra
Household income	-0.1862(-2.3)	Mumbai
Trip frequency per year	0.3875(3.1)	Srisailam
Season	-0.2735(0.0)	Tamilnadu
Household size	0.1903(3.3)	Tirupathi
Reason for leisure trip	-0.9786(-1.1)	Shiridi
Structural parameters		
L(0)	-1216.6054	
L(c)	-1169.7642	
L(θ)	-1165.8324	
ρ^2 with respect to zero	0.417	
ρ^2 with respect to constant	0.0034	

L(0): Likelihood value with zero coefficients

L(c): Likelihood value with constant coefficients

L(θ): Likelihood value at convergence ρ^2 : Rho-squared statistics

Results & discussions for Multinomial logit model:

1. In this model the sensitivities associated with the age for the destinations Bangalore and Goa are positive which indicate that irrespective of their age travelers visiting these places in increasing day by day.
2. The sensitivities associated with the way of travel for the destinations Delhi and Mumbai are negative which implies that travelers visiting these places are shifting from self-based tour to guided tour.
3. The sensitivities associated with reason for leisure trip for the destinations Chennai and Shiridi are negative which indicate that the main purpose of the travelers for visiting these destinations is not full filled and that for Hyderabad is positive indicating that their purpose of leisure travel (mostly rest and relaxation) is full filled.
4. The sensitivities associated with the season for Vizag is positive which implies that most of the travelers visit this place during summer season.
5. The sensitivities associated with household income for Badrachalam and Mumbai are negative which implies that travelers are shifting to visit other destinations as their income increases.
6. The sensitivity associated with trip frequency for Srisailam is positive indicating that the travelers visit this place more frequently and are increasing.
7. The sensitivity associated with the household size is positive for tirupathi which indicates that travelers with more members in their family prefer to visit this place.
8. The rho-squared value for this model is in between 0 and 1 indicating that it is best fit.

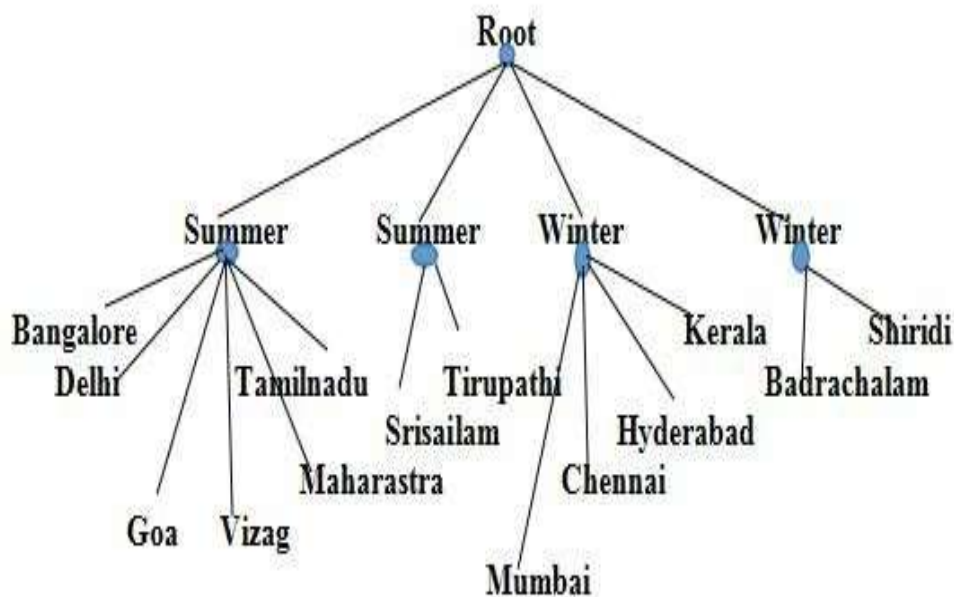
Nested logit model with three level nest based on season of the year**Fig. 19 Nested logit model with three level nest based on season**

Table 3 Statistics for best fit three level nested logit model based on season

Variables	Coefficient Estimates	Relevance Of Variables
Generic Variables		
Travel time	-0.5538(-0.1)	Generic
Travel cost	-0.3456(-3.9)	Generic
Specific Variables		
Age	0.1558(1.4)	Bangalore(summer)
Way of travel	-0.7507(-0.4)	Delhi(summer)
Reason for leisure trip	-0.2317(-1.8)	Chennai(winter)
Age	0.1215(1.1)	Goa(summer)
Season	0.229(1.7)	Vizag(summer)
Household income	-0.2510(-2.3)	Badrachalam(winter)
Reason for leisure trip	0.9067(1.2)	Hyderabad(winter)
Accompanying persons on trip	-0.5193(0.0)	Kerala(winter)
Way of travel	-0.4161(-2.1)	Maharastra(summer)
Household income	-0.1963(-2.2)	Mumbai(winter)
Trip frequency per year	0.4308(3.0)	Srisailam(summer)
Season	-0.1358(-0.1)	Tamilnadu(summer)
Household size	0.1881(3.0)	Tirupathi(summer)
Reason for leisure trip	-0.1056(-1.1)	Shiridi(winter)
Structural parameters		
L(0)	-1216.6054	
L(c)	-1169.7642	
L(θ)	-1165.5509	
ρ^2 with respect to zero	0.420	
ρ^2 with respect to constant	0.0036	
logsum	0.8193(3.8)	

Results & discussions for Nested logit model with three level nest based on season of the year

- 1.The sensitivity associated with summer season is positive for the places Bangalore, Goa, Vizag, Srisailam, Tirupathi indicating direct relationship between the destination and the season for the trip i.e the number of travelers visiting these places increases in summer season.
- 2.The sensitivity associated with winter season is negative for the destinations Chennai, Badrachaalm , Mumbai, Shiridi indicating the indirect relationship between the destination and season for the trip i.e the travelers prefer very less to visit these places in winter season.
- 3.The logsum value obtained for this model is 0.8193 with a positive sensitivity and is lying between 0 and 1 indicating that this model is fitting well with respect to summer and winter season for travel.
- 4.For the destinations Delhi, Maharashtra and Tamilnadu the sensitivity values obtained are negative indicating that travelers prefer to choose other destinations in summer season.
- 5.The sensitivities obtained for Hyderabad and Kerala are positive for winter season implying that these destinations are good to visit in winter season.

Nested logit model with three level nest based on age of the respondents

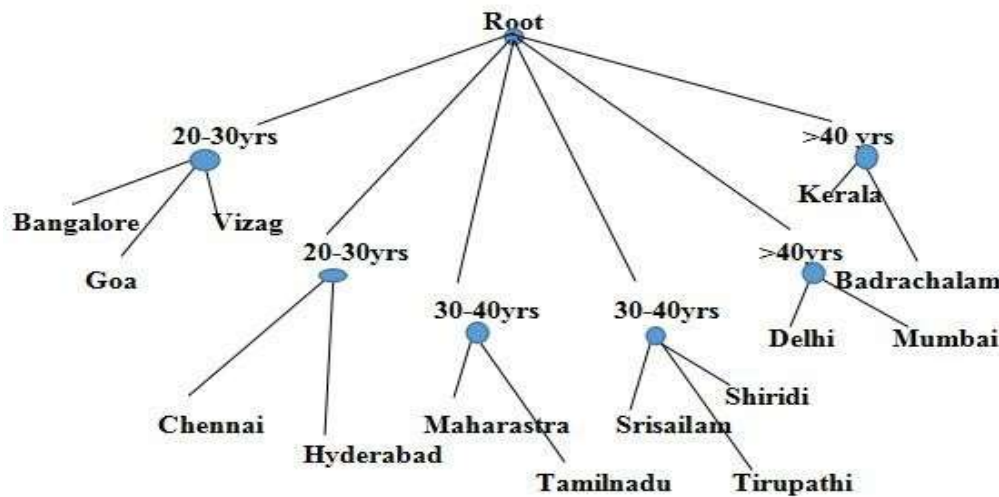


Fig. 20 Nested logit model with three level nest based on age



Table. 4 Statistics for best fit three level nested logit model based on age

Variables	Coefficient Estimates	Relevance Of Variables
Generic Variables		
Travel time	-0.4323(-0.4)	Generic
Travel cost	-0.7750(-4.0)	Generic
Specific Variables		
Age	0.1582(0.9)	Bangalore(20-30yrs)
Way of travel	-0.1302(-0.5)	Delhi(>40yrs)
Reason for leisure trip	-0.2558(-1.5)	Chennai(20-30yrs)
Age	0.2404(0.1)	Goa(20-30yrs)
Season	0.3722(0.2)	Vizag(20-30yrs)
Household income	-0.1260(-0.5)	Badrachalam(>40 yrs.)
Reason for leisure trip	0.2350(0.9)	Hyderabad(20-30yrs)
Accompanying persons on trip	0.2195(1.1)	Kerala(>40 yrs.)
Way of travel	-0.2923(-0.1)	Maharastra(30-40yrs)
Household income	-0.2234(-0.1)	Mumbai(>40yrs)
Trip frequency per year	0.8093(2.1)	Srisailam(30-40yrs)
Season	-1.034(-1.8)	Tamilnadu(30-40 yrs.)
Household size	0.4339(3.1)	Tirupathi(30-40 yrs.)
Reason for leisure trip	0.1285(0.9)	Shiridi(30-40yrs)
Structural parameters		
L(0)	-1216.6054	
L(c)	-1169.7642	
L(θ)	-1158.9709	
ρ^2 with respect to zero	0.474	
ρ^2 with respect to constant	0.0092	
logsum	0.1182(1.1)	

Results & discussions of Nested logit model with three level nest based on age of the respondents:

1. For the age group 20 -30 yrs. the sensitivity obtained is positive for the destinations Bangalore, Goa, Vizag, Hyderabad indicating direct relationship between these destinations and the age group i.e. the travelers of this age group mostly visit these places and constitute the major portion of travelers visiting these destinations.
2. For the destination Chennai the sensitivity obtained is negative indicating that the travelers visiting this place are decreasing as their age increases.
3. The sensitivity obtained for Srisailam , Tirupathi, Shiridi is positive indicating that the people travelling to these destinations mostly belong to the age group of 30-40yrs.
4. The sensitivity obtained is negative for the destinations Maharashtra and Tamilnadu indicating that age and destinations are

indirectly related.

5. The sensitivity obtained for the age group >40yrs is negative indicating that travelers of this age group travel very less to any destinations.
6. The logsum value obtained for this model is 0.1182 with positive sensitivity and lying between 0 and 1 indicating that this model is fitting well for the destinations with respect to the age groups.

CONCLUSIONS:

1. The people with higher income about 47% are travelling more than the people with lower income.
2. The more number of travelers are choosing around 63% train as their mode because it is cheapest transportation available now in most of the cases.
3. Male travelers around 60% more in number than female travelers i.e. 40% in Hyderabad where survey of our project was carried out.
4. Majority of the travelers around 46.4% prefer tour once in a year.
5. The travelers are choosing their trip for rest and relaxation purpose.
6. Travelers prefer self-planned tour around 61.30% guided tour around 38.6%.
7. Family size of 4 members i.e. 43.7% travel more than other families.
8. Travelers prefer self-planned than guided tour
9. Travelers visit more to Srisailem as the trip frequency increases per year.
10. Destinations Delhi and Maharashtra gives an indirect relation between the destination and ways of travel i.e., as the travelers visiting to these places increases and they shift from self-based to agent based travel.
11. Travelers visiting Vizag, Goa and Bangalore mostly belong to the age group of 20-30yrs and prefer these destinations in summer season.
12. The log sum value of the nested model comes out be less than 1 which indicates that nest is fitting well.

RECOMMENDATIONS

1. The facilities should be improved still more at destinations where the travelers visit less
2. The accommodation and food facilities should be improved.
3. The transport facility should be increased to the destinations where people visit more in a particular season.

REFERENCES:

- [1]. "Analyze Leisure Trips Behavior for Destination Choices", Shruti Dave Dr. Yogesh Shah IJSRD - International Journal for Scientific Research & Development| Vol. 4, Issue 03, 2016.
- [2]. "Does nationality, gender, and age affect travel motivation? A case of Visitors to the Caribbean island of Barbados ", Cristina Jonsson Dwayne Devonish Journal of Travel & Tourism Marketing, Vol. 25(3-4) 2008
- [3] "Factors Affecting Tourists' Satisfaction towards Nam Cat Tien National Park, Vietnam — A Mediation Analysis of Perceived Value", Mai Ngoc Khuong and Pham Dac Luan International Journal of Innovation, Management and Technology, Vol. 6, No. 4, August 2015
- [4] "Improving the Efficacy of Destination Marketing Strategies: A Structural Equation Model for Leisure Travel ", R. Pinky Pawaskar and Mridula Goel Indian Journal of Science and Technology, Vol 9(15), April 2016.
- [5] Limtalakool, N. Dijst and Schwanen, (2006). "The Influence of Socio- Economic Characteristics, land use and Travel time considerations on Mode Choice for Medium and Longer Distance Trips" Journal of transport geography, Vol. 14, 327-341.
- [6] Mohammad Bagher Koopaei (2013), "Study of Some Social Factors Affecting Attitude towards Natural Tourist Attractions in Dezful City", Iran International Journal of Economy, Management and Social Sciences," December 2013.
- [7] S.Ramesh Kumar, M.Kumar, C.S.V.Subrahmanya Kumar & Praveen (2018), "A Case Study on Mode Choice Analysis in Hyderabad City", International Journal of Emerging Technology and Advanced Engineering, Volume 2, Special Issue 5, 238-243.
- [8] S.Ramesh Kumar, M.Kumar, C.S.V.Subrahmanya Kumar & Praveen (2018), "Development of Mode Choice Model using Alogit - A Case Study", Journal of Emerging Technologies and Innovative Research, Volume 4, Issue 6, 25-33.