# Confirmatory Factor Analysis of Iso Ahola's Motivational Theory An application of Structural Equation Modeling

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Tourism signifies and includes i) movement of people ii) journey to a destination which is not their residence iii) activities they engage in, while on the move iv) engage in temporary/ short-term activities. Hence tourist connotes embodiment of product itself, who are mobile by the very nature of its characteristics, and engage in activities to satisfy some needs which mental process successfully created in the mind. (Prebensen, 2007)

Motivation is "... the operation of inferred intrapersonal processes that direct, activate and maintain behaviour" (Geen, Beatty & Arkin, 1984). Thus, motivation is "some kind of internal drive, which pushes someone to do things in order to achieve something". (Harmer, 2001, P. 51). Tourist motivation can be defined "as the global integrating network of biological and cultural forces which gives value and direction to travel choices, behavior and experience". (Pearce, Morrison & Rutledge, 1998).

"Recreation travel is defined as a generic term or as a general rubric, which includes different forms of travel, such as vacation and weekend travel. More formally, it is defined as an activity performed in the process of traveling to, from and at a given destination during a period of time subjectively designated as unobligated, free or leisure, the main goal of which is perceived and set to be recreation". (Iso Ahola, 1983 P. 47)

Tourism motivation research has its long history. A good number of earliest works on record has been done by Plog (1974), Dan (1977), Crompton (1979), Iso Ahola (1980, 1982). Tourist undertakes traveling for leisure purposes such as to relax (Beard & Ragheb, 1983; Crompton 1979; Gitelson & Kerstetter, 1990) to learn (Beard & Ragheb, 1983; Cha, McGleary and Uysal, 1995; Kleiven, 1998), to be social (Beard & Ragheb, 1983; Crandall, 1980), religious commitment (Smith 1992) etc.

Literature review suggests that following the line of theorization as developed by Crompton (1979), considerable progress has been made to use push and pull factors as a bed rock to understand tourist's behaviour. (Baloglu, & Uysal 1996; Klenosky, 2002; Kim, Lee, & Klenosky, 2003). Several studies examined the tourist motive as a force field analysis of push and pull factor. Push factors are those which drive a tourist to travel and pull factors are those which attract a tourist to travel to a destination (Uysal and Jurowski, 1994). Crompton's classic study, quite pioneering work, found seven socio-psychological (push) and two cultural (Pull) motives for embarking upon recreational tour. Snepenger et al (2006) following the line of criticism of Dan (1981) argued that classifying and deriving push and pull items through factor analytic process is atheoretical as it may show statistical survival for occasion; Snepenger et al (2006) observed that:

"when push and pull items are incorporated into the same study, the investigation may provide a short-run empirical fit to the circumstances but offer little long-run theoretical contribution for understanding general tourism motivations. Consequently, these kinds of studies stand on their statistical results and contribute little to understanding general tourism motivations." (Snepenger et al, 2006, P. 141).

However, development of Iso Ahola's motivational construct is quite restrained. Present study will attempt to fill up this gap and will create a platform for future derivative works such market segmentation, mapping of tourist activity etc. Iso Ahola's Motivational Theory suggests that travel motivation is triggered by seeking (intrinsic rewards) and escaping (from routine/familiar environments) elements. Iso Ahola's theory is a multi-motive approach, often attributed as Optimal Arousal Theory. Iso Ahola theorized that tourist attempts to avoid exposure of over-stimulation (mental or physical exhaustion) or boredom (too little stimulation) and seeking intrinsic awards and escaping everyday problems, tension, stress and routines. In Iso Ahola's (1983) term, "recreational travel is a process of continuous interplay of two forces: to avoid one's daily environment and to seek novelty and other psychological rewards". Both these elements also have personal and interpersonal components. All these factors works as a push factor for a tourist for engaging leisure and other recreational activities.





Iso Ahola (1983) further states that

"Psychological benefits of recreational travel manage from the interplay of two forces: avoidance of routine and stressful environments and seeking recreation places for certain psychological rewards. In this optimizing process, people shut themselves off from others at one time and open themselves up for interpersonal contact at another time to arrive at a desired level and type of social interaction. This is not to say that people always achieve such optimum or balance. The dialectical process often fails and produces more interaction and stress than desired. But the reviewed psychological evidence suggests that recreational travel has considerable potential in helping the individual meet the need for optimal arousal and desired level of social interaction. (P. 55)

Deficiency in the mental system which may have originated due to over-stimulation or under-stimulation, may engage in activity to reduce the dissonance and attempted to reach a level of optimal level. This works as a driver to the tourist's behaviour.

**Objective of the study:** Though Isho-Ahola and his colleague have carried out theorization work in 1982, psychometric instrument was not available until recently (2006) to measure the robustness of the construct. Snepenger et al (2006) developed psychometric scale to measure the integrity of the theory. In the said article, Snepenger et al (2006) urged to revalidate the study in different countries to have a cross-cultural validity of the construct. They urged that

"The findings from this article, however, need to be interpreted cautiously because only tentative conclusions can be drawn from any single study. Much work remains, be it extension or replication, on tourism motives in general and Iso- Ahola's motivational theory in particular." (P.148)

The objective of the present study is to carry out a confirmatory factor analysis of Isho Ahola's motivational theoretical construct. Rather than creating multiple psychometric scales, the present study, following the footstep of Snepenger et al (2006), extend the said work to the Indian Context.

**Methods**: Design/Methodology/Approach: In terms of methodology, a wide range of methods have been followed: qualitative interview (Crompton, 1979; Pearce and Caltabiano, 1983; Klenosky, 2002; Yuan and McDonald, 1990); Canonical correlation (Uysal and Jurowsky 1994); correlation (Oh et al 1995; Baloglu and Uysal, 1996; structural equation (Snepenger D et al, 2006), exploratory factor analytic method (Card and Kestel, 1988; Dunn Ross, Iso Ahola, 1991; Sirakaya, Uysal, and Yoshioka, 2003).

The author used scale, as developed by Snepenger et al (2006) for operationalization of Iso-Ahola's motivational construct. The author carried out factor analysis (Hair et al, 1998), followed by application of structural equation to check the confirmatory analysis. (Hu, & Bentler, 1999; Hoyle, & Panter, 1995).

**Factor Analysis:** It is one of the effective data reduction techniques, often considered for exploratory data analysis. This is often used to identify the underlying factors, which explain relatively large number of variables in an integrated manner. Variables commonly share an underlying concept. "In summarizing the data, factor analysis derives underlying dimensions that, when interpreted and understood, describe the data in a much smaller number of concepts than the original individual variables." (Hair et al, 1998)

Structure Equation Modeling: Structural equation modeling has been widely accepted method for data analysis in most of the leading journals. Dedicated reviews are available on the application of structural equation in communication research (Holbert & Stephenson, 2002), psychology (Hershberger, 2003), marketing (Baumgartner & Homburg, 1996), Management Information System (Chin & Todd, 1995, Gefan et al, 2000), logistics (Graver & Mentzer, 1999), operational research (Shah & Goldstein, 2006), organizational research (Medsker et al, 1994), strategic management (Shook et al, 2004), tourism studies (Golob, 2003), recreational tourism (Reisinger & Turner, 1999) etc.

Application in Tourism: SEM is being used in tourism studies, especially in western journals such as, in predicting souvenir purchase behaviour (Kim & Littrell 1999), effect of tourism services on Traveler's quality of life experience (Neal, Uysal & Sirgy, 2007).





Structural equation modeling is a multi-equation modeling technique which "estimates a series of separate, but interdependent, multiple regression equation simultaneously by specifying the structural model used by the statistical program". (Hair et al 1998). This method is an assembly and synthesis of factor analysis, path analysis and simultaneous equation modeling. "In structural equation modeling, a model fit is said to fit the observed data to the extent that the model-implied covariance matrix is equivalent to the empirical covariance matrix." Schermelleh-Engel & Moosbrugger, 2003). Swell Wright is often cited as prime contributor on path analysis work while Thurstone's factor analysis work and econometrician's simultaneous equation-modeling work generated a unique platform which Joreskog (1973) bridged through structural equation modeling work.

**Importance:** Structural equation provides "1. Estimation of multiple and interrelated dependence relationship and 2. the ability to represent unobserved concepts in these relationship and account for measurement error in the estimation process." (Hair et al 1998). "With this technique, multiple relationships are tested concurrently; variables can be treated as dependent and independent variables simultaneously. Therefore, researchers are allowed to test the full scope of their hypothesized relationships within one statistical approach rather than being forced to use multiple approaches consecutively..."(Henley, Shook and Peterson, 2006)

No agreement is seen among SEM experts of what constitutes a perfect fit. Hu and Bentler (1995) observed that "Despite the availability of various measures of model fit, applied researchers often have difficulty determining the adequacy of a structural equation model because different aspects of the results point of conflicting conclusions about the extent to which the model actually matches the observed data."

### However some of the most widely used indices are:

Likelihood –Ratio Chi-Square Statistics: This is widely used in SEM journals. Low chi-square value signifies that actual and predicted matrices are not statistically different. However this is very much sensitive to sample size. It is important that researcher must complement this chi-square measure with other goodness-of-fit measures.

**Goodness of Fit Index: (GFI):** It is one of leading indices often used to substantiate the overall fit. (Baumgartner & Homburg 1996; Holbert & Stephenson 2002) It is a nonstatistical measure ranging in value from 0 (poor fit) to 1.0 (perfect fit). Though there is no agreement for threshold limit for accepting a model, it 0.90 and above is considered to be fit with the data.

**Root Mean Square Error of Approximation: (RMSEA):** It is one of leading indices often cited for substantiating model fit. (Holbert & Stephenson 2002). It is the discrepancy per degree of freedom. It is sensitive to sample size. Values less than 0.05 is a good fit, values ranging from .06 to 0.08 mediocre fit, below 0.08 is a poor fit.

**Adjusted Goodness of Fit Index (AGFI):** It is one of the extensions of GFI. Recommended level of value is often a value greater than or equal to 0.90.

**Normed Fit Index (NFI):** It is another popular measure, often used to substantiate fit. It's value range from 0 (no fit) to 1.0 (perfect fit). It is derived out of difference of Chi square value of the null model and Chi Square proposed devided by Chi-square null value. Though there is no absolute value which signifies fit; however, NFI value above 0.90 or greater signifies fit.

**Relative Fit Index (RFI):** It is another lesser known and used index. Value varies ranging from 0 to 1. Higher value signifies fitness of the model.

**Parsimonious Normed Fit Index (PNFI):** PNFI is the parsimony normed fit index, equal to the PRATIO times NFI. PRATIO is the parsimony ratio, which is the ratio of the degrees of freedom in the model to degrees of freedom in the independence (null) model.

Software: The author has used Amos 16.0 (Arbuckle, 2007) software for the present research work. It has friendly graphical workbench to plot variables and conceptual factors on one canvass. The author has used raw data for imputation.



The author consulted a few meta-analytic studies (i.e. Holbert & Stephenson 2002; Baumgartner & Homburg 1996; Reisinger & Turner 1999; Shah & Goldstein 2006) on the application of structural equation in various fields for guidance.

While reviewing 93 articles on Operation Management, published between 1984 & 2003, Shah & Goldstein (2006) highlighted few concerns: i) smaller sample size ii) Manifest variable: Latent Variable ratio less than three iii) 2.6% of Confirmatory Factor Analysis has single indicator iii) 28.9% of Confirmatory Factor Analysis has correlated error, many cases not argued for the same iv) Data Screening: 44.1% did not report imputation of data v) 48% of the article did not report estimation method.

Holbert & Stephenson (2002) also highlighted a few glaring lapses such as inadequate sample size (more than one fourth articles had less than 150 sample size), in accuracy in reporting degree of freedom (10% of the models had reportedly inaccurate degree of freedom).

Baumgartner & Homburg (1996) also observed poorly specified model, over fitting, outliers, bad starting values, insufficiently operationalized construct, small sample size.

Sample and Procedure: Sample consists of students (average age 22 yrs, 89% male) studying for Hotel Management Degree. 95% of the students have undertaken domestic tour other than their home journey from their Institute. 2% of the students have undertaken International Tour during last one-year period of time

Anderson and Gerbing (1988) recommend that sample size should be at least 150. Chou & Bentler (1995) recommends that sample size of 200 is relatively small but practically reasonable. Tanaka (1987) provides guidelines on sample size as a ratio of sample size to parameter estimation 4: 1. Hoyle and Kenny (1999), even found that 50 sample was ok when high reliability has been seen. In this present research, sample size is 208. Questionnaire has been distributed at the beginning of the class – participation was totally voluntary and without any remuneration or reward. Besides capturing few demographic characteristics, Questionnaire had total 22 items. 12 items for measuring Isho- Ahola Construct and other part contain simple 10 more question for other projects. It took almost 3 minutes to fill it up.

**Measure:** Snepenger et al (2006) developed scale items after a wide range of literature review as operationalized by Fondess (1994); Uysal, Gahan, and Martin (1993); Dunn Ross and Iso-Ahola (1991); Loker and Perdue (1992); Sirakaya, Uysal, and Yoshioka (2003); and Pennington-Gray and Kersetter (2001). They informed that they also gave due consideration to other papers of Iso Ahola while developing the scale items. It has been measured using a 10 point response format ranging from 1 = low motivation fulfillment to 10 = high motivation fulfillment. The items were pre-tested among student sample.

### Scale items:

Table 1. The scale items, as reported in the said article.

Personal Escape							
PE 1: To get away from my normal environment							
PE2: To have a change in pace from my everyday life							
PE3: To overcome a bad mood							
Interpersonal Escape							
IE1:To avoid people who annoy me							
IE2:To get away from a stressful social environment							
IE3:To avoid interactions with others							
Personal Seeking							
PS1:To tell others about my experiences							
PS2: To feel good about myself							
PS3:To experience new things by myself							
Interpersonal Seeking							
IS1: To be with people of similar interests							
IS2:To bring friends/family closer							
IS3: To meet new people							





Snepenger et al (2006) has used four items scale for operationalisation of each segment - this could be seen from the graphical representation of the models. However, scale, reported in the article, has three items each. It is believed to be a serious lapse by the authors. Lead author for this article could not be traced at the college, last posted. Otherwise, four items scale for each factor could have been deployed. Competent authorities in the field (Boomsma, 2000) believe that reporting of data should be comprehensive enough for replication and helping reader forming independent judgment. (McDonald & HO, 2002). Less number of items per factor enhances the requirement of sample size (Boomsma, 1985).

Estimation Method: A number of estimation methods such as Maximum likelihood (ML), Unweighted least square, Scale free least squares, Asymptotically distribution free (ADF), Generalized least square (GLS) are available. Each estimation methods have its advantage and disadvantages. For example, Maximum likelihood assumes univariate and multivariate normality and input data matrix is positive definite but provides quire robust result under moderate violation (Bollen, 1989) Maximum likelihood estimation method has been deployed. ADF has few distributional assumptions however requires very large sample size, in the region of 5000 for accurate results. Multivariate normality is essential for Maximum Likelihood Estimation. (Curran, West, & Finch, 1996) Monte Carlo simulation study suggests that small sample does not affect the estimation process if the data set is normal.

**Data Analysis:** The author used SPSS 16.0 for factor analysis purpose. Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity provides guidance on the suitability of the data for factor analysis. Kaiser-Meyer-Olkin Measure of Sampling Adequacy value is 0.677, which signifies that underlying common variance is significant. Below 0.50 signifies that the factor analysis will not be suitable for analysis. Bartlett's Test of Sphericity signifies whether variables in questions constitute an identity matrix. Identity matrix connotes that variables in questions are unrelated. The significance level provides the result of the test. Less than 0.05 signifies that probably the relationships among variables are significant. Higher than 0.10 states that data will not suitable for factor analysis.

Table 2: KMO and Bartlett's Test

	Kaiser-Meyer-Olkin		M	Measure of		Sampling	.677
ļ	Adequacy. Bartlett's	of	Approx				
I	Bartlett's Test Sphericity		01	• •	. Cm-c	square	416.764
I	Spiretterey	df				55	
ı	i			Sig.			.000

Factor analysis with varimax rotation produced four factors as conceived by Iso Ahola, and operationalized by Snepenger et al (2006).

Four factors explained 63% of the variance. The factor structure and item loading is presented below:

**Table 3. Result of Factor Analysis** 

Items	Interpersonal	Personal	Interpersonal	Personal	Reliability	Variance		
items	Escape	Seeking	Seeking	Escape	Alpha	Explained		
PE1				0.82	0.66	24%		
PE2				0.79	0.00			
IE1	0.86					18%		
IE2	0.54				0.60			
IE3	0.70							
PS1		0.68						
PS2		0.71			0.64	11%		
PS3		0.79						
IS2			0.82		0.58	10%		
IS3			0.75		0.38			
Extraction Method: Principal Component Analysis.								
Rotation Method: Varimax with Kaiser Normalization.								
Rotation converged in 6 iterations.								

Snepenger et al 2006 did not report factor analysis result. However they reported only high reliability for four elements of the theory ranging from 0.61 to 0.84.



In the present analysis, factor structure did not adhere to the clear results, as achieved by Snepenger et al (2006). For example, scale item number three (i.e. "To overcome a bad mood") loaded on second factor more than on the first factor. This item has been conceived to represent personal escape behaviour; however this factor more robustly aligned with interpersonal escape. Similarly, one item from interpersonal seeking "To be with people of similar interests" aligned with Interpersonal Seeking and Personal Seeking Factor. It failed to clearly represent the underlying factor "Interpersonal Seeking" The author eliminated these two items as the intention of present article was to present an objective assessment on the validity of the Iso-Ahola's motivation theory. This might have produced biased result. Reliability alpha value for each construct was 0.60, 0.66, 0.58, 0.64 for Interpersonal escape, Personal Escape, Interpersonal Seeking & Personal Seeking respectively. In comparison of Snepenger et al (2006), it is relatively low. Low reliability could be attributed due to small sample size and less number of representative items per factor.

Discussion: Snepenger et al (2006) reported <u>correlated error</u>, for which no reason has been provided. Structural equation modeling requires valid reason to have correlated error. No argument has been presented for the same. Correlated error produce better fit results, however robust logic is required to correlate the error terms. The author believes that motivation items originate from the same background and has reason to influence and share the variance. Hence correlated error is justified.

Confirmatory - Exploratory Debate: How fair it is to call an argument based on model evaluation termed as confirmatory. Several views are available for scrutiny.

Baumgartner & Homburg (1996) observed that "If hypothesized models are truly specified a priori and no data-based model modifications are introduced, SEM is indeed used in a confirmatory manner. However, in practice respecification of either the measurement model or the latent variable model or both are quire common and SEM is then used in a more exploratory fashion." (P. 159)

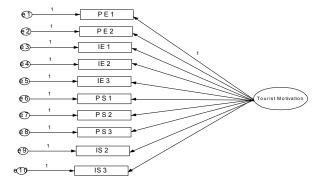
Depending upon researcher's framework of reference on exploratory confirmatory framework, Jöreskog and Sörbom (1996) described three situations (a) a strictly confirmative situation, (b) testing alternative or competing models, and (c) a model generating situation.

The present author followed the foot steps of the Snepenger et al 2006. Snepernger et al (2006) carried out few evaluation of the model and suggested for further replication and extension work. Though the present author carried out several evaluation of the model, which is definitely intended to evaluated and confirm the work of Snepenger et al with the help of Indian sample. Hence, the title words confirmatory factor analysis is justified.

**Model Evaluation:** The author followed the footprint of Snepenger et al 2006 for model evaluation process. The author evaluates the integrity of the model through structural equation. Traditional regression has limitations and structural equation is comparatively better framework for model evaluation.

Authors such as, Boomsma (2000), Hoyle and Panter (1995) suggested that diagrams of hypothesized and final models should be presented in the article. The author follows the guidelines and present diagrammatic presentation for independent judgment and evaluation.

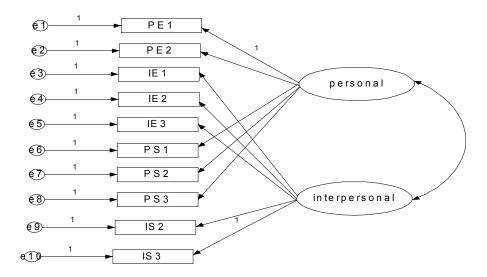
Various models were evaluated:



M odel A

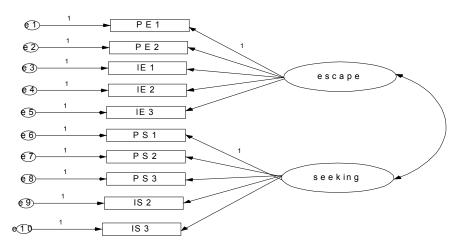
Model A signifies all items forms one factor i.e. Tourist's motivation. However, Chi-Square is 211.618 with a degree of freedom 35. GFI score is 0.832, AGFI, 0.736, RMSEA is 0.156. All fit indexes suggest that it is not a good fit.





ModelB

Model B signifies six interpersonal items and six personal items forms two distinct factors. Chi-Square is 191.090 with a degree of freedom 34. GFI score is 0.845, AGFI, 0.749, RMSEA is 0.149. All fit indexes suggest that it is not a good fit.

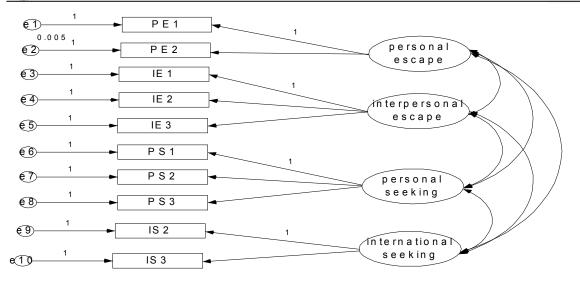


Model C

Model C signifies six seeking items and six personal seeking items constitutes two distinct factors. Chi-Square is 146.404 with a degree of freedom 34. GFI score is 0.876, AGFI, 0.749, RMSEA is 0.126. All fit indexes suggest that it is not a good fit.

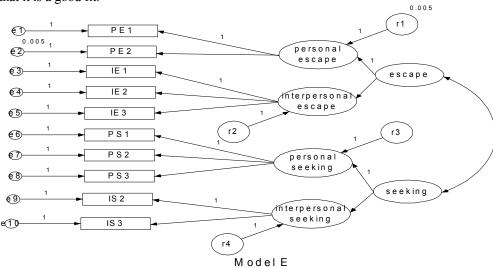






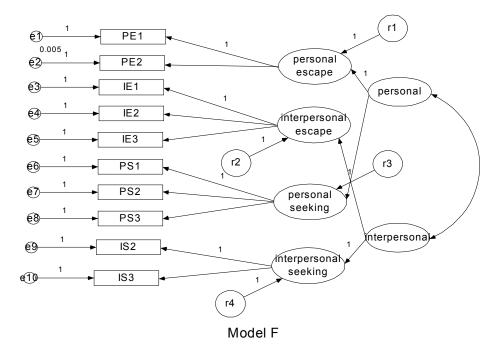
#### ModelD

Model D signifies those four factors each constitutes personal seeking, interpersonal seeking, personal escape and interpersonal escape. This is in line with the theorization of Iso Ahola. Chi-Square is 57.724 with a degree of freedom 30. GFI score is 0.946, AGFI, 0.901, RMSEA is 0.0.067. All fit indexes suggest that it is a good fit.



Model E signifies that second order factor analysis: three personal seeking and interpersonal seeking constitutes second order seeking factor and correspondingly, three personal escapes and three interpersonal escapes constitutes escape factors. Chi-Square is 57.964 with a degree of freedom 32. GFI score is 0.0.946, AGFI, 0.908, RMSEA is 0.063. All fit indexes suggest that it is relatively a good fit.





Model F signifies that second order factor analysis: three personal seeking and personal escape constitutes second order Personal factor and correspondingly, three interpersonal escapes and three interpersonal seeking constitutes interpersonal factor. Chi-Square is 61.016 with a degree of freedom 31. GFI score is 0.945, AGFI, 0.902, RMSEA is 0.068. All fit indexes suggest that it is relatively a good fit.

Table 4								
Competing Models	Chi-square	df	GFI	AGFI	NFI	RFI	PNFI	RMSEA
Model A	211.618	35	0.832	0.736	0.391	0.217	0.304	0.156
Model B	191.090	34	0.845	0.749	0.450	0.273	0.340	0.149
Model C	146.404	34	0.876	0.799	0.579	0.443	0.437	0.126
Model D	57.724	30	0.946	0.901	0.834	0.751	0.556	0.067
Model E	57.964	32	0.946	0.908	0.833	0.766	0.593	0.063
Model F	61.016	31	0.945	0.902	0.824	0.745	0.568	0.068

# Models were evaluated on the basis of fit statistics:

Table 6 provides six competing models. It is visible that Model A and Model B fits badly and are the most weakest. Model A has a Chi square value of 87.295 with a 35 degree of freedom whereas Model B has a chi-square value of 64.754 with 35 degree of freedom. Model provides better fit. Chi-square value goes down to 57.724. GFI Score reaches to 0.946 and RMSEA scores goes within the accepted level i.e. 0.067. This substantiates the argument provided by Isho Ahola (1983). Model E & Model F values stay close to Model D. However, Model D explains the concept as propounded by Isho Ahola. Model D explains more and in line with the theory. Hence, Model D will be accepted.

**Findings and Implications:** Present study almost finds similar result as it has been reported by Snepenger et al (2006). Model D, which construed Iso Ahola's articulation of motivational theory in tourism context survives the confirmatory assessment. Similarly Model E and Model F represent almost similar patterns. Iso Ahola construct survives replication with different sample in Indian context. Earlier study by Snepenger et al (2006) conducted in US environment. Cultural validity of the scale is supported for Indian context too. Iso Ahola's model may be used for marketing and tourism studies. For example, Biswas (2008) attempted to explore the relationship between tourist's individual personality traits and tourist specific motivational





tendency. Service structure and process could be attuned with the need of the tourist's motivation. Specific deficient need fulfillment will enable more profound satisfaction. For example, tourist, characterized by Interpersonal Seeker ('want to meet new people'), may be interested to have more employee intensive services while staying in hotels. On the contrary, tourists, characterized by Interpersonal Escapist ('want to avoid interactions with others'), may be interested to have less employee intensive services while staying in Hotels. Hence, understanding tourist motivation and providing experience in tune with the tourist motivation will enable hoteliers and tour operators to achieve tourist's satisfaction and achieve positive post purchase behaviour.

Research Limitations: Sample in the present research is limited to college students. Though it is not uncommon to use student sample in Tourism studies (Snepenger et al, 2006, Fodness (1994), future studies could be carried out with the help of tourist. Students also undertook domestic and international travel during last one year period of time. Hence, student behavioural orientation approximates actual visiting tourists.

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