Exploratory Factor Analysis and Confirmatory Factor Analysis on Consumer Perception about Celebrity Endorsement and Buying Behavior through Advertisement Media- India Context Data Set

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Abstract - **This research article provides data on rural consumer's perception about celebrity endorsement and buying behavior through celebrity advertising media. Using structured questionnaire as a survey instrument, 584 responses were collected from rural India population. Exploratory factor analysis was conducted to determine the underlying relationship of the items that represent major variability thus represent a factor whereas confirmatory factor analysis was conducted for factor structure of perception of celebrity endorsement and celebrity advertising media based on the set of measured observed variable. Additionally, correlation analysis was performed to study the relationship between observed variables of each factor.**

Keywords: Advertising Media, Celebrity Endorsement Perception, Confirmatory Factor Analysis, Exploratory Factor Analysis.

Specifications Table

Subject Area	Business Management, Marketing
More Specific Subject Area	Rural Marketing Communications, Celebrity Endorsements, Advertising Media
Type of Data	Tables, Figures
How data was acquired	Survey questionnaire analysis
Data format	Raw, Analyzed, Tables, Figures
Experimental Factors	Rural Millennials were approached with a request to respond towards the questionnaire on perception of celebrity endorsements and buying behavior through advertising media
Experimental features	A trained 8-member group of Post Graduate students from a reputed institution (Sree Vidyanikethan Institute of Management) were involved in data collection process
Data Source Location	Select rural areas in Southern Part of India
Data Accessibility	Data can be accessed with this article

Value of the Data

- This specific dataset on rural consumers perception about celebrity endorsement and their buying behavior through advertising media provides a basic understanding about how rural consumers perceive value and quality of a brand that is endorsed by famous celebrities in India.
- Data is preciously useful for marketing practitioners, business managers, government officials in order to make effective decisions while selecting a celebrity for endorsement either for commercial benefit or for a social cause.
- Rural consumers' perception about celebrity endorsement and advertising media which has substantial effect on buying behavior of rural consumers could be a greater research scope for research aspirants from both in academia and business.

1. Data

Demographic details of respondent were shown in table 1. Majority of respondents were male (68%) whose age is in between 22 to 26 years (29%). Study represents highest number of under graduates (167/584) who are form rural area form southern part of India (table 1).

Table 1: Demographic Profile of the Respondents

Demographic Variable	Category		Number of Respondents (N)	Percentage (%)
Gender	Male		397	68
	Female		187	32
		Total	584	100
Age	18-22 Years		116	20
	22-26 Years		167	29
	26-30 Years		108	18
	30-35 Years		94	16
	35-39 Years		47	8
	Above 39 Years		52	9
		Total	584	100
Education	School Education		153	26
	Intermediate		149	25
	Under Graduate		167	29
	Post Graduate		115	20
		Total	584	100
Area	Rural		348	60
	Semi-Rural		236	40
		Total	584	100

Exploratory Factor Analysis was conducted to determine the underlying relationship of the items that represent major variability thus represent a factor. Study measure two constructs such as perception of celebrity endorsement (6 items) and celebrity advertising media (12 items). These 18 items extracted two components with principal component analysis method of extraction using varimax rotation method. Total variance explained by these two components was 64. 737 (see table 2) which is acceptable [1]. Another confirmation for factor extraction is eigen value which produced total amount of variance by each factor (factor 1: 7.813 & factor 2: 3.840) which is considered to be a fit value [2][3].

Table 2: Exploratory factor analysis statistics

Sl. No	Factor Loadings		Total Variance	Eigen Values	Factor Description
	Component-1	Component -2			
1		.798			
2		.811			
3		.772	43.355	7.813	Perception about Celebrity Endorsement
4		.833			
5		.802			
6		.780			
7	.803				
8	.805				
9	.828				
10	.757				
11	.824				
12	.830		21.382	3.840	Buying Behavior through Celebrity Advertising Media
13	.796				
14	.795				
15	.833				
16	.771				
17	.839				
18	.784				

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization

KMO Measure of Sampling Adequacy (0.946>0.70) [2] and Bartlett's Test of Sphericity (p=0.000 < 0.01) [2] confirmed the sample adequacy and suitability of exploratory factor analysis on the data.

Confirmatory factor analysis was performed to test the factor structure of perception of celebrity endorsement and celebrity advertising media based on the set of measured observed variable [4]. Confirmatory factor analysis fit indices were shown in table 3 and CFA model structure illustrations were shown in supplementary material (CFA model and Fit indices).All the six items that measure rural consumer's perception of celebrity endorsement since these factor loading s were found with above 0.70 factor

loadings and even all these observed items have statistically significant relationship with underlying latent construct (perception of celebrity endorsement) [6], likewise 12 observed variables also significantly measure the underlying construct which is named as celebrity advertising media [6].

2. Experimental Design, Materials and Methods

Target respondents for this study were from rural area from southern part of India. There are five states in south India i.e., Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, and Telangana. Out of these five states, Andhra Pradesh state has highest population [7]. Furthermore, rural areas from Chittoor District which is one of the highest population districts in Andhra Pradesh were the sample area of the present study [7]. This district rural population is 2942678 [7]. Structured questionnaire was the survey instrument and quantitative type of research is the type of research. Stratified sampling method was applied for approaching the sample. Measured items of perception about celebrity endorsement and celebrity advertising media (questionnaire) were presented in the supplementary material documents. Respondent's demographic profile (table 1), correlation (table 4 & 5), exploratory factor analysis (table 2) was conducted using SPSS 21.0 software whereas confirmatory factory analysis factor loadings and fit measures (supplementary data sheet) was conducted using AMOS 21.0 version software. Confirmatory Factor Analysis is the appropriate method for construct validation by taking into account the relationship between latent factors and observed variables, so that it potentially reduces measurement errors and thus increases statistical accuracy [8].

Table 3: Goodness of Fit Values

	CMIN/DF	GFI	AGFI	CFI	RMSEA	RMR	90% CI for *RMSEA* (Lower; Upper)
Perception	$\chi^2(38.331)/9=4.259$	0.980	0.900	0.983	0.075	0.016	0.051:100
Celebrity Advertising Media	$\chi^2(261.669)/54=4.846$	0.931	0.900	0.960	0.081	0.033	0.072: 0.091

Note. Good fit thresholds: *RMSEA* ≤ 0.08; CMIN/DF ≤ 5.0; *GFI* ≥ 0.90; *AGFI* ≥ 0.90; *CFI* ≥ 0.90 [5]; three of any these criteria were satisfied.

Table 4: Correlation between Items that Measure Celebrity Advertising Media

	CAM1	CAM2	CAM3	CAM4	CAM5	CAM6	CAM7	CAM8	CAM9	CAM10	CAM11	CAM12
CAM1	1											
CAM2	0.665	1										
CAM3	0.702	0.686	1									
CAM4	0.542	0.552	0.597	1								
CAM5	0.619	0.629	0.616	0.614	1							
CAM6	0.652	0.600	0.676	0.590	0.652	1						
CAM7	0.548	0.603	0.558	0.631	0.644	0.648	1					
CAM8	0.605	0.636	0.611	0.528	0.698	0.656	0.570	1				
CAM9	0.655	0.571	0.640	0.590	0.650	0.693	0.631	0.672	1			
CAM10	0.599	0.605	0.640	0.542	0.593	0.595	0.614	0.493	0.585	1		
CAM11	0.636	0.638	0.650	0.588	0.655	0.660	0.638	0.648	0.709	0.6407	1	
CAM12	0.555	0.601	0.630	0.574	0.600	0.592	0.612	0.566	0.649	0.56052	0.63903	1

Note: CAM: Celebrity Advertising Media

Table 5: Correlation between Items that Perception about Celebrity Endorsement

	PS1	*PS2*	*PS3*	*PS4*	*PS5*	*PS6*
PS1	1					
PS2	0.613	1				
PS3	0.557	0.494	1			

PS4	0.587	0.630	0.563	1	
PS5	0.522	0.589	0.602	0.599	1
PS6	0.552	0.547	0.515	0.600	0.538	1

Note: PS: Perception on Celebrity Endorsement.

Ethics Statement

Ethical reflection in the research process was confirmed since all the respondents have given willful consent for data collection. Also, respondents were assured for confidentiality and anonymity of their details.

Declaration of competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have or could be perceived to have influenced the work reported in this article.

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