

Understanding the Variables Related to Gastronomy of Chhattisgarh Using Factor Analysis and Cronbach's Alpha Statistic

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Abstracts

The present paper deals with various aspects of the gastronomy of Chhattisgarh. To understand different components, 37 questions on 5-point Likert scale were asked to the persons residing in Chhattisgarh state. A total 650 responses were received, out of which 521 provided an impressive response. The data was entered into the software, and initially, Factor Analysis (with principal component extraction and varimax rotation) was performed to check the validity of the developed instrument. All 37 items (questions) were found to load perfectly onto 10 components. Cronbach's Alpha is a statistic used to assess the internal consistency and reliability of a set of scale or test items. The results obtained indicate good internal consistency and reliability for each variable group.

Keywords: Gastronomy, Likert, Factor Analysis, Cronbach's Alpha, Chhattisgarh, Food.

1. INTRODUCTION

The gastronomy of Chhattisgarh is deeply rooted in its agricultural heritage, particularly its status as the "Rice Bowl of India." Rice serves as the staple food, forming the basis of numerous traditional dishes and ethnic fermented foods and beverages. The culinary practices reflect a rich cultural tapestry, with a focus on local ingredients and traditional preparation methods. This overview will explore the key components of Chhattisgarh's gastronomy, including staple ingredients, traditional dishes, and the role of ethnic foods in local culture.

Staple Ingredients

Rice: Central to all meals, rice is a primary source of carbohydrates and energy (Palta & Aggarwal, 2016, Tulaeva et al., 2021)

Other Grains: Wheat, barley, and lentils are also utilized in various dishes, enhancing nutritional diversity (Tiware et al., 2020).

Traditional Dishes

Fermented Foods: Notable dishes include boree basi, bara, and aeersa, primarily made from rice or rice flour (Tiware et al., 2020).

Beverages: Handia (cooked rice), salfi (trunk sap), and mahua (mahua flowers) are significant in tribal celebrations (Tiware et al., 2020).

Cultural Significance

Festivals and Ceremonies: Ethnic foods play a vital role in tribal festivals, marriages, and funerals,

highlighting their cultural importance (Tiwari et al., 2020).

Economic Impact: Self Help Groups (SHGs) in Raipur promote traditional cuisine, enhancing local economies and preserving culinary heritage (Joshi et al., 2020).

While Chhattisgarh's gastronomy is celebrated for its rich flavors and cultural significance, there is a growing concern about the nutritional deficiencies associated with a rice-heavy diet. Efforts to incorporate functional ingredients, such as soy, aim to address these issues and promote balanced nutrition (Palta & Aggarwal, 2016).

2. COLLECTION OF DATA

To address the objectives of this study on Chhattisgarh's gastronomic landscape, a combination of secondary and primary data collection methods was employed. This mixed-methods approach ensured a comprehensive understanding of the historical, cultural, and socio-economic dimensions of Chhattisgarh's culinary heritage.

2.1 Sources of Secondary Data

Secondary data was collected through an extensive review of existing literature, which included scholarly articles (published research papers, thesis/ dissertations, etc.), websites, books, government reports, magazines, historical texts, culinary guides, and regional food studies. These sources provided valuable insights into the historical influences, evolution, and regional variations of Chhattisgarh's gastronomy. Additionally, tourism documents, government reports, and marketing materials were analyzed to understand the current state of culinary tourism and branding efforts in Chhattisgarh.

2.2 Primary Data Collection:

The primary data collection was collected through a respondent survey carried out using a structured questionnaire designed to capture the perceptions, preferences, and socio-economic impacts related to Chhattisgarh's culinary heritage. The questionnaire (research instrument) included both closed-ended questions and rating scales based on a 5-point Likert scale. This scale allowed for quantifiable measures of respondents' attitudes and opinions.

3. RESEARCH INSTRUMENT DEVELOPMENT:

The questionnaire (Research Instrument) plays a crucial role in a research study by systematically collecting data from respondents, which enables the researcher to gather insights and draw conclusions about the study's topic. It helps in obtaining both quantitative and qualitative information efficiently. Additionally, a well-designed questionnaire ensures consistency in responses, enhancing the reliability and validity of the research findings.

Due to the lack of existing research on the gastronomy of Chhattisgarh, no relevant questionnaire was available. Therefore, the researcher developed a new questionnaire specifically for this study. This self-developed questionnaire underwent pilot testing to establish its reliability and validity. The questionnaire was divided into three sections. The first section aimed to collect demographic information from the respondents. The second section focused on gathering information about the culinary aspects of the gastronomic landscape of Chhattisgarh. The third section collected data on the branding and promotional aspects of Chhattisgarh's gastronomic landscape.

The questionnaire was prepared in both English and Hindi to accommodate the diverse linguistic backgrounds of the respondents. Easy Layman English was used to ensure that the questions were easily

understandable. A comprehensive list of culinary dishes from Chhattisgarh was included with the questionnaire to aid respondents in making informed choices.

The questionnaire was created using Google Forms and initially distributed among 150 respondents via Email and WhatsApp groups for pilot testing. Additionally, feedback on the statements and questions in the questionnaire was solicited from academic and field experts. Based on their suggestions, necessary revisions were made to the questionnaire.

Finally, the completed questionnaires, available in both Hindi and English languages and prepared using Google Forms, were distributed to approximately 650 prospective respondents via Email and WhatsApp groups. These respondents were citizens of Chhattisgarh from various districts, communities and cultural backgrounds, ensuring a representative sample. The sample locations included major districts of Chhattisgarh, providing geographical diversity in the responses. Out of the 650 individuals contacted, 521 responded, resulting in an impressive response rate of 80.15%. Responses were found to be complete in all manners and considered for further analysis.

4. RELIABILITY & VALIDITY ANALYSIS:

Since the questionnaire was self-developed by the researcher, it is essential to assess its reliability and validity to ensure its authenticity and relevance to the research objectives. Reliability ensures that the measurement instrument consistently reflects the construct of interest, providing dependable results across time and various situations, whereas, Validity ensures that the instrument accurately measures the intended construct, making the results meaningful and interpretable. To achieve this, Cronbach's Alpha and Factor Analysis were applied to the data collected from approximately 150 respondents during the pilot testing phase.

The questionnaire included statements phrased in simple English and Hindi Language to facilitate easy understanding for the respondents. Responses were collected using a 5-point Likert rating scale, with response anchors on the scale being flexible to suit the individual questions.

It is acceptable to use a 5-point Likert rating scale with different response anchors for different questions in a questionnaire, provided that the anchors are appropriate for the specific constructs being measured. This flexibility allows researchers to tailor the response options to fit the context of each question, thereby enhancing the clarity and relevance of the responses (Likert, R., 1932; Krosnick, J. A., & Presser, S., 2010; DeVellis, R. F., 2016).

The questionnaire consists of 13 questions focused on the culinary aspects of Chhattisgarh's gastronomy and 22 questions aimed at gathering opinions on the branding and promotion aspects of Chhattisgarh's gastronomy. Table 3.1 presents the questions included in the questionnaire along with their ratings and response anchors.

Table 3.1: Measurement Instrument						
S#	Statement	Rating Scale & Response Anchors				
		1	2	3	4	5
1	How familiar are you with Chhattisgarhi Traditional dishes? (Please check with the list provided)	Not at	Slightly	moder	Signifi	Compl
2	To what extent do you believe the festivals and traditions of Chhattisgarh are reflected in its traditional dishes?	Not at all	Slightly	moderately	Significantly	Completely

3	How often do you prepare Chhattisgarhi Traditional Dishes at home?	Nev er	Rar ely	Of ten	Ver y	Al wa
4	How often do you dine out?	N e	R a	O f	V e	A l
5	How often do you consume traditional Chhattisgarhi recipes while dining out?	Nev er	Rar ely	Occ asio	Of ten	Al wa
6	Do you find traditional Chhattisgarhi dishes in the restaurant and hotel menus where you dine out?	Not at	Slig htly	mo der	Sig nifi	Co mpl
7	How familiar are you with the historical influences on Chhattisgarh's gastronomy?	Not fam	So me	Mo der	Ver y	Ext rem
8	To what extent do you believe historical events have influenced the culinary traditions of Chhattisgarh?	Not At	Slig htly	Mo der	Sig nifi	Co mpl
9	Which traditional Chhattisgarhi recipe(s) is/are your favourite? (See the List Provided)	-	-	-	-	-
10	How important do you think it is to preserve traditional cooking techniques in Chhattisgarh?	Not Im	So me	Mo der	Ver y	Ext rem
11	Are you familiar with indigenous ingredients used in Chhattisgarhi cuisine?	Yes	No	Ma y be		
12	If yes, name some of the indigenous ingredients used in Chhattisgarhi cuisine.	-	-	-	-	-
13	How willing would you be to try dishes made with indigenous Chhattisgarhi ingredients?	Not will	Slig htly	Mo der	Ver y	Ext rem
14	How proud are you of Chhattisgarh's gastronomic heritage?	Not pro	Slig htly	Mo der	Ver y	Ext rem
15	How do you rate the overall quality of Chhattisgarhi cuisine?	Poo r	Fai r	Go od	Ver y	Exc elle
16	Do you believe Chhattisgarh's gastronomic heritage is adequately represented in the media?	Yes	No	Ma t be		
17	How important is it for Chhattisgarh to promote its culinary heritage?	Not imp	Slig htly	Mo der	Ver y	Ext rem
18	Do you think promoting Chhattisgarh's culinary heritage can boost tourism in the state?	Yes	No	Ma y		
19	How likely are you to visit any place in Chhattisgarh specifically for its culinary experiences?	Ver y	Unl ikel	Ne utr	Lik ely	Ver y
20	Do you believe promoting culinary tourism can empower local communities in Chhattisgarh?	Yes	No	Ma y		
21	How important do you think it is to involve local communities in promoting Chhattisgarh's culinary heritage?	Not import	Slightl y	Mod erately	Very import	Extre mely
22	How would you rate the current visibility of Chhattisgarh's gastronomic identity?	Ver y	Lo w	Mo der	Hig h	Ver y
23	How effective do you think social media can be in promoting Chhattisgarh's culinary heritage?	Not effe	Slig htly	Mo der	Ver y	Ext rem

24	Would you be interested in participating in culinary events or festivals in Chhattisgarh?	Not inte	Slig htly	Mo der	Ver y	Ext rem
25	How likely are you to recommend Chhattisgarh as a culinary destination to friends or family?	Ver y	Unl ikel	Ne utr	Lik ely	Ver y
26	Do you think collaborating with renowned chefs or culinary experts could enhance Chhattisgarh's culinary reputation?	Yes	No	May Be		
27	How important is it for Chhattisgarh to have a distinct culinary identity compared to other states?	Not imp	Slig htly	Mo der	Ver y	Ext rem
28	Would you like to see Chhattisgarh's culinary heritage represented in international food events or exhibitions?	Yes	No	May Be		
29	How would you rate the potential economic benefits of promoting Chhattisgarh's gastronomic heritage?	Ver y	Lo w	Mo der	Hig h	Ver y
30	How do you perceive the authenticity of Chhattisgarhi cuisine compared to other regional cuisines in India?	Less authen	Simila rly	More authen		
31	How likely are you to support initiatives that aim to promote Chhattisgarh's culinary heritage?	Ver y	Unl ikel	Ne utr	Lik ely	Ver y
32	Do you believe there is enough infrastructure in Chhattisgarh to support culinary tourism?	Yes	No	Not Sur		
33	Are you aware of any government initiatives aimed at promoting Chhattisgarh's culinary heritage?	Yes	No	Not Sur		
34	How satisfied are you with the efforts made by the government to promote Chhattisgarh's culinary heritage?	Very dissati	Dissati sfied	Neutra l	Satisfi ed	Very satisfie
35	Would you like to see more restaurants or eateries in Chhattisgarh showcasing traditional Chhattisgarhi cuisine?	Yes	No	Not Sure		
36	How likely are you to purchase Chhattisgarhi food products or ingredients to support local producers?	Ver y	Unl ikel	Ne utr	Lik ely	Ver y
37	How do you think Chhattisgarh's culinary heritage can contribute to the overall cultural identity of the state?	Negati vely	Minim ally	Modera tely	Signifi cantly	Extre mely

The tests for reliability and validity were conducted using IBM SPSS Statistics (Version 27) software on a sample of data collected from 150 respondents during pilot testing. The data was entered into the software, and initially, Factor Analysis (with principal component extraction and varimax rotation) was performed to check the validity of the developed instrument. All 35 items (questions) were found to load perfectly onto 10 components. Table 3.2 presents the matrix showing how each item loads onto different components (factors). High loadings (typically above 0.4) indicate a strong relationship between the item and the corresponding factor. The total variance explained by all 10 components was found to be 78.43%, which is excellent.

Table 3.2: Factor Analysis

Variables grouping	Items in the Scale	Rotated Components Matrix									
		Components									
		1	2	3	4	5	6	7	8	9	10
Familiarity & Practices	C11	0.942									
	C12	0.980									
	C13	0.641									
	C14	0.831									
	C15	0.980									
	C16	0.770									
Influence & Representation	C21		0.446								
	C22		0.549								
	C23		0.613								
Importance & Perception	C31			0.599							
	C32			0.456							
	C33			0.471							
	C34			0.517							
Visibility	B11				0.724						
	B12				0.788						
	B13				0.508						
	B14				0.586						
Promotion	B21					0.501					

	B22					0.823					
	B23					0.640					
Tourism Impact	B31						0.618				
	B32						0.409				
	B33						0.764				
	B34						0.636				
E&CB	B41							0.484			
	B42							0.534			
	B43							0.464			
Govt. & Infrastructure	B51								0.590		
	B52								0.684		
	B53								0.460		
Culinary Offering & Authenticity	B61									0.534	
	B62									0.687	
Collaboration and Global Representation	B71										0.547
	B72										0.620
	B73										0.488

Cronbach's Alpha is a statistic used to assess the internal consistency reliability of a set of scale or test items. It measures how closely related the items are as a group and is considered a measure of scale reliability. Cronbach's Alpha values range from 0 to 1, with higher values indicating greater internal consistency among the items. Generally, a Cronbach's Alpha of 0.70 or above is considered acceptable for social science research (DeVellis, R. F., 2016).

All the Cronbach's Alpha values are found to be ranging between 0.986 to 0.734, which is above 0.7. This indicates good internal consistency and reliability for each variable group. The highest reliability is seen in the "Familiarity & Practices" group (0.986), suggesting very high consistency among its items.

The instrument demonstrates good reliability, as indicated by high Cronbach's Alpha values across all variable groups. The validity is supported by the Rotated Component Matrix, where most items show high loadings on their respective components. Thus, the reliability and validity of the instrument have been established

5. CONCLUSION

To understand the validity and reliability of various variables related to the gastronomy of Chhattisgarh. A Questionnaire of 37 questions were prepared. All 37 items (questions) were found to load perfectly onto 10 components. Cronbach's Alpha is a statistic used to assess the internal consistency reliability of a set of scale or test items. The results obtained indicates good internal consistency and reliability for each variable group. All the Cronbach's Alpha values are found to be ranging between 0.986 to 0.734, which is above 0.7. This indicates good internal consistency and reliability for each variable group. The highest reliability is seen in the "Familiarity & Practices" group (0.986), suggesting very high consistency among its items.

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