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A Study On Consumer Preference & Consumption Of Spices Among Indians' Daily Diet.

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ABSTRACT

Spices had played a major role in the lifestyle of Indian people from a century. Spices played numerous roles through history, as a colouring food, flavours, preservatives, food addictive and medicine. Indian spices interplay between taste and quality perception. An emphasis on how spices enhance individual culinary experience and cultural backgrounds are impact of social media on spices intake. This study is to identify the most widely consumed spices in Indian household and analysis consumer awareness and preference for spices.

KEYWORDS

Consumer preference, Consumption of spices, Quality, Taste, Social Media and Buying Behaviour

INTRODUCTION

Indian spices are an integral part of Indian cuisines and culture with rich history dating back thousands of years. India is known as the land of spices and for good reason. The country produces a wide variety of spices ranging from the commonly used cooking coral and turmeric to the more exotic cordon saffron and fenugreek. These spices are not only used for cooking but also for medicinal purposes, religious ceremonies and even as currency in ancient time. Spices are more than just flavor enhances for our food. These aromatic treasures derived from various plant parts like seeds, fruit, root, and bark, have a rich history that transcends the culinary world.

The use of Indian spices has spread far beyond India, with their popularity reaching all corners out the globe. The global Indians spices market is a significant contributor to the world's market of Indian spices, accounting for a substantial portion of the total market size. The market includes both row spices and spices blends, which are used in variety of applications such as food processing, seasoning, and preservation. One of the key drivers of the global Indians spices market is the increasing demand for Indian cuisines across the world. As more people become exposed to the unique flavors and aromas of Indian food, a demand for Indians spices continues to grow.

The primary functions of a spice is to add depth and complexity to our dishes from the fiery heat of chilies to the warm embrace of cinnamon, spices offer a vast array of taste sensation transforming simple males into culinary journeys. Spices have played a significant role in medicine, religious practices, and even social status throughout history. Certain spices were prized for their medicinal properties, while others had symbolic meaning in religious ceremony. Additionally, the rarity and expense of some spices made them a marker of wealth and social standing.

LITERATURE REVIEW

Nybe, E.V., Mini Raj, N & Peter, K.V. (2007) examined the spice as of now and the available scattered learning on all aspects of spices botany, crop improvement, chemistry, production technology, pest and disease, harvesting, processing, products and uses. The book is composed into six sections. Introduction, seed spices, tree spices, herbal spices, major spices and other spices. Major tree and seed spices have been studied in detail the herbal and other spices in which data accessible is sparse.

Madan (2008) conducted a study on Changing Scenario of Turmeric Production and Marketing. This paper examines the possible changes in turmeric production and marketing in India during the last two decades and ascertains the prospects in the light of free trade and spice trade under the WTO regime. Published times series data on production, export and prices were analyses using seasonal, trend and Fourier analysis.

Roy and Hare (2009) studies on topic Bio-organic Inputs for Production of Organic Turmeric Grown as Intercrop in Arecanut Plantation conducted to find out suitable bio-organic inputs exhibited maximum values in most of the growth and yield parameters as to inorganic inputs.

Dr. K.T. Achaya's 1998 review on Indian spices is titled "Indian Spices: A Historical Review." It provides a comprehensive overview of the history of Indian spices, their cultivation, trade, and usage. The review delves into the origins of various spices and how they were used in ancient India, as well as hoe they were introduced to other parts of the world. The paper also discusses the impact of spices trade on the economy and culture of India. Overall, the review is a valuable resource for those interested in the history and cultural significance of Indian spices.

Prasad and Aggarwal article in 2011 is titled "Turmeric, the Golden Spice: From Traditional Medicine to Modern Medicine." It is a literature review that discusses the medicinal properties of turmeric, a commonly used Indian spices, and its potential therapeutic applications in various diseases such as cancer, Alzheimer's disease, diabetes, and cardiovascular diseases. The authors also discuss the molecular mechanisms underlying the pharmacological effects of turmeric and its active compound, curcumin.

Buvaneshwari et al (2013) in their study entitled "Fast moving consumer goods marketing with special reference to sakthi masala. They find that, the majority of the respondents identify the products through the brand name and quality of the product.

Poonam Begal (2015) carried out her study on "consumer buying behaviour towards spices with special reference to Everest masala in Bengaluru city", the aim of the study is to identify the consumer buying behaviour and the level of satisfaction towards spices. She finds that, the satisfaction level is very high among people with regard to Everest masala and quality followed by size, availability, brand name, packaging, promotion, price and reference group are influencing factors for buying behaviour towards spices and finally majority of the respondents are satisfied of spice.

Hewlings and Kalman's 2017 review on Indian spices focuses on the health benefits of commonly used spices in Indian cuisine. The review covers a range of spices, including turmeric, ginger, cumin, coriander, and cinnamon. One of the key findings of the review is that many of these spices have anti-inflammatory properties that may help to reduce the risk of chronic diseases such as heart disease, diabetes, and cancer. For example, turmeric contains a compound called curcumin that has been shown to have anti-inflammatory and antioxidant effects.

Objective of the study

1. To understand the effect of taste of spices on Indian consumer.
2. To understand the effect of quality of spices on Indian consumer.
3. To find the effect of social media on usage of spices on Indian kitchen.

Hypothesis

1. H0: There is no significant difference in the taste of spices between different brand or types.

H1: There is a significant difference in the taste of spices between brands or types, with some tasting better or worse than others.

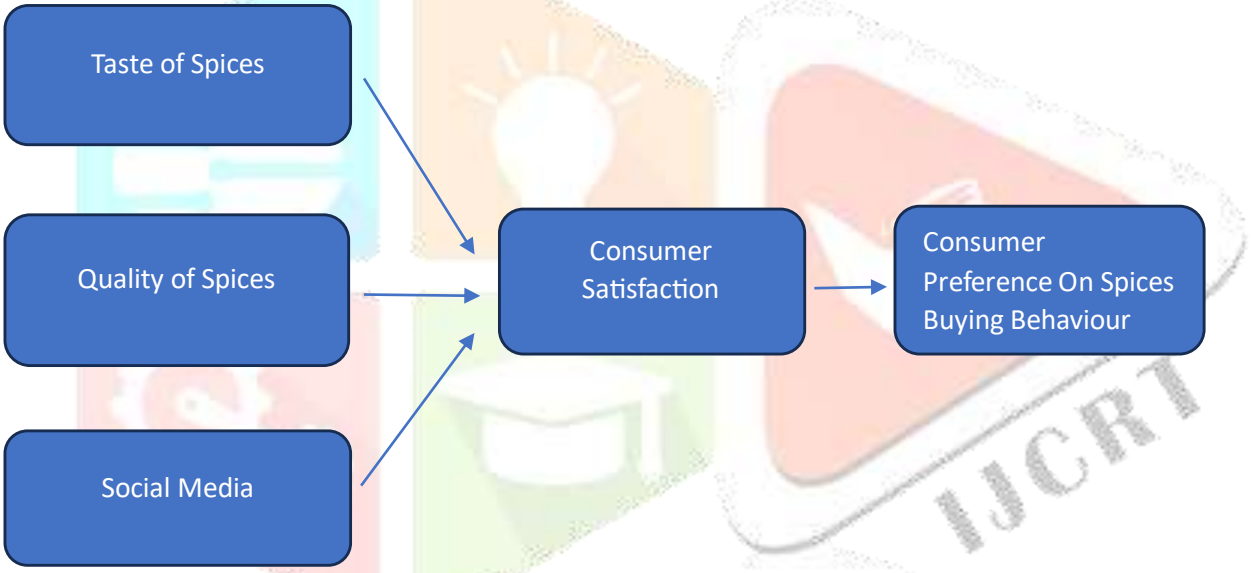
2. H0: There is no significant difference in the quality of spices between different brand or types.

H1: There is a significant difference in the quality of spices between brands or types, with some being of higher quality than others.

3. H0: The sentiment towards spices on social media is predominantly negative.

H1: The sentiment towards spices on social media is predominantly positive.

CONCEPTUAL FRAMEWORK



Research Methodology

The research design for this study will be primarily, utilizing a case study approach. A case study design allows for an in-depth examination of the importance of consumer preference and consumption of spices among Indians' daily diet. It provides an opportunity to gather detailed insights into the market research approach, processes, and outcomes related to consumer preferences and consumption of spices among Indians' daily diet. The case study design will involves collecting data from multiple sources, including google forms, documentation and observation within the population.

Descriptives

	Occupation	Taste1	Taste2	Taste3	Quality1	Quality2	Quality3	Quality4	Quality5	SM1	SM2	CS1	CS2	PreferenceCB1	PreferenceCB2
N	Service (Employee)	87	87	87	87	87	87	87	87	87	87	87	87	87	87
	Homemaker	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Student	71	71	71	71	71	71	71	71	71	71	71	71	71	71
	Business or self employed	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Missing	Service (Employee)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Homemaker	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Business or self employed	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean	Service (Employee)	2.30	2.33	2.46	2.52	3.03	2.86	3.28	3.44	3.17	3.08	2.82	2.77	2.92	2.74
	Homemaker	2.40	2.63	2.83	2.77	2.77	2.23	2.70	3.20	3.13	3.23	2.93	2.70	2.53	2.57
	Student	2.62	2.58	2.49	2.85	2.94	2.72	3.00	3.56	3.21	2.86	2.68	2.93	2.85	2.86
	Business or self employed	2.27	2.33	2.80	2.93	2.93	2.80	3.07	3.07	2.93	3.00	2.60	2.67	3.07	3.00
Std. error mean	Service (Employee)	0.102	0.122	0.120	0.105	0.127	0.124	0.144	0.132	0.132	0.130	0.125	0.127	0.129	0.114
	Homemaker	0.170	0.217	0.240	0.266	0.218	0.171	0.215	0.242	0.243	0.218	0.230	0.240	0.213	0.248
	Student	0.140	0.137	0.133	0.154	0.147	0.146	0.136	0.152	0.146	0.136	0.131	0.126	0.134	0.116
	Business or self employed	0.316	0.252	0.296	0.330	0.228	0.223	0.345	0.345	0.267	0.365	0.335	0.319	0.358	0.365
Median	Service (Employee)	2	2	2	3	3	3	3	4	3	3	3	3	3	3
	Homemaker	2.50	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00
	Student	3	3	2	3	3	3	3	4	3	3	2	3	3	3
	Business or self employed	2	2	3	3	3	3	3	2	3	2	2	2	3	3
Standard deviation	Service (Employee)	0.954	1.14	1.12	0.975	1.19	1.15	1.34	1.23	1.23	1.21	1.17	1.19	1.20	1.06
	Homemaker	0.932	1.19	1.32	1.45	1.19	0.935	1.18	1.32	1.33	1.19	1.26	1.32	1.17	1.36
	Student	1.18	1.15	1.12	1.29	1.24	1.23	1.15	1.28	1.23	1.15	1.11	1.06	1.13	0.975
	Business or self employed	1.22	0.976	1.15	1.28	0.884	0.862	1.33	1.33	1.03	1.41	1.30	1.23	1.39	1.41
Minimum	Service (Employee)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Homemaker	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Student	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Business or self employed	1	1	1	1	1	1	1	2	1	1	1	1	1	1
Maximum	Service (Employee)	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Homemaker	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Student	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Business or self employed	5	4	4	5	4	4	5	5	5	5	4	5	5	5
Shapiro-Wilk W	Service (Employee)	0.875	0.878	0.897	0.898	0.910	0.900	0.888	0.897	0.908	0.902	0.914	0.906	0.896	0.910
	Homemaker	0.874	0.895	0.903	0.880	0.906	0.846	0.862	0.900	0.899	0.890	0.901	0.848	0.903	0.866
	Student	0.902	0.900	0.900	0.904	0.897	0.903	0.917	0.874	0.899	0.904	0.888	0.886	0.915	0.900
	Business or self employed	0.877	0.891	0.840	0.929	0.868	0.882	0.904	0.725	0.932	0.811	0.798	0.881	0.843	0.902
Shapiro-Wilk p	Service (Employee)	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001
	Homemaker	0.002	0.006	0.010	0.003	0.012	< .001	0.001	0.008	0.008	0.005	0.009	< .001	0.010	0.001
	Student	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001
	Business or self employed	0.043	0.070	0.013	0.266	0.031	0.050	0.110	< .001	0.293	0.005	0.003	0.050	0.014	0.103

Descriptives Table 1

The descriptive statistics for multiple variables are shown in the table. The variables divide into three groups and are measured on various scales:

• **Occupation:** The participant's occupation (such as service worker, housewife, student, business owner, or independent contractor) is described by this category variable.
• **Tastes:** Taste 1, Taste 2, and Taste 3 are probably Likert scale variables that gauge a participant's preferences for various taste. The likely range of the scale is 1 (dislike) to 5 (like).
• **Qualities:** These variables, which are probably Likert scale items, gauge how each participant feels about various attributes (Quality1, Quality2, Quality3, Quality4, Quality5). The scale probably means "strongly disagree," and five means "strongly agree."

• **SM** and **CS** are not described in the table header but could be additional Likert-type scales used participant responses.
• **Preference CB** are not described in the table header but could be additional Likert-type scales used participant responses.

The following descriptive statistics are displayed in the table for every variable and occupational group:

• **N:** The total number of members in every occupational category.
• **Missing:** The quantity of missing values in each occupational category for every variable.
• **Mean:** The mean of each variable for every set of occupations.
The standard error of the mean for every variable in every occupational group is known as the "standard error mean."
• **Median:** Each occupation group's median value for each variable.
• **Standard deviation:** Each variable's standard deviation within each occupational category.
• **Minimum:** The lowest value for every variable in every set of occupations.
• **Maximum:** The highest possible value for every variable in every group of occupations.
• **Shapiro-Wilk W:** A normalcy test statistic. The data is more plausible when the values are nearer 1.
• **Shapiro-Wilk p:** The p-value for the Shapiro-Wilk normality test. Values less than 0.05 indicate that the data is statistically unlikely to be normally distributed.

Descriptives

	Age	Taste1	Taste2	Taste3	Quality1	Quality2	Quality3	Quality4	Quality5	SM1	SM2	CS1	CS2	PreferenceCB1	PreferenceCB2
N	18 to 25 years	96	96	96	96	96	96	96	96	96	96	96	96	96	96
	26 to 35 years	69	69	69	69	69	69	69	69	69	69	69	69	69	69
	36 to 45 years	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	46 years or more	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Missing	18 to 25 years	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	26 to 35 years	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	36 to 45 years	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	46 years or more	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean	18 to 25 years	2.52	2.46	2.52	2.83	3.05	2.64	2.99	3.39	3.25	2.86	2.79	2.83	2.90	2.75
	26 to 35 years	2.30	2.48	2.58	2.36	2.87	2.81	3.20	3.68	3.17	3.16	2.81	2.68	2.68	2.80
	36 to 45 years	2.50	2.42	2.33	3.00	2.83	2.79	3.13	3.33	2.92	3.17	2.67	2.67	2.88	2.71
	46 years or more	2.21	2.50	3.00	2.93	2.93	2.64	3.00	2.50	2.93	3.14	2.57	3.50	3.29	2.93
Std. error mean	18 to 25 years	0.115	0.119	0.117	0.125	0.127	0.120	0.119	0.138	0.127	0.118	0.112	0.116	0.118	0.111
	26 to 35 years	0.126	0.132	0.139	0.129	0.134	0.134	0.167	0.135	0.143	0.147	0.149	0.142	0.147	0.147
	36 to 45 years	0.181	0.240	0.206	0.248	0.253	0.233	0.250	0.231	0.255	0.260	0.274	0.253	0.258	0.165
	46 years or more	0.239	0.327	0.378	0.339	0.286	0.308	0.363	0.344	0.339	0.345	0.272	0.251	0.286	0.322
Median	18 to 25 years	2.00	2.50	2.50	3.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00
	26 to 35 years	2	2	2	2	3	3	3	4	3	3	3	2	2	3
	36 to 45 years	2.00	2.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.50	3.00	3.00	3.00
	46 years or more	2.00	2.00	3.00	3.00	3.00	3.00	3.50	2.00	2.50	3.00	3.00	3.50	3.00	3.00
Standard deviation	18 to 25 years	1.12	1.17	1.14	1.23	1.24	1.18	1.17	1.35	1.25	1.16	1.09	1.14	1.16	1.09
	26 to 35 years	1.05	1.09	1.16	1.07	1.11	1.12	1.39	1.12	1.19	1.22	1.24	1.18	1.22	1.22
	36 to 45 years	0.885	1.18	1.01	1.22	1.24	1.14	1.23	1.13	1.25	1.27	1.34	1.24	1.26	0.806
	46 years or more	0.893	1.22	1.41	1.27	1.07	1.15	1.36	1.29	1.27	1.29	1.02	0.941	1.07	1.21
Minimum	18 to 25 years	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	26 to 35 years	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	36 to 45 years	1	1	1	1	1	1	1	2	1	1	1	1	1	1
	46 years or more	1	1	1	1	1	1	1	1	1	1	1	2	2	1
Maximum	18 to 25 years	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	26 to 35 years	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	36 to 45 years	5	4	4	5	5	5	5	5	5	5	5	5	5	4
	46 years or more	4	5	5	5	5	5	5	5	5	5	4	5	5	5
Shapiro-Wilk W	18 to 25 years	0.902	0.889	0.900	0.911	0.903	0.899	0.915	0.883	0.896	0.912	0.889	0.900	0.912	0.910
	26 to 35 years	0.883	0.891	0.902	0.884	0.914	0.905	0.870	0.874	0.914	0.910	0.899	0.888	0.876	0.912
	36 to 45 years	0.852	0.848	0.878	0.907	0.910	0.902	0.877	0.857	0.911	0.901	0.890	0.913	0.907	0.863
	46 years or more	0.889	0.909	0.903	0.927	0.937	0.880	0.858	0.859	0.881	0.923	0.844	0.901	0.882	0.888
Shapiro-Wilk p	18 to 25 years	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001
	26 to 35 years	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001
	36 to 45 years	0.002	0.002	0.007	0.031	0.035	0.023	0.007	0.003	0.038	0.023	0.014	0.042	0.031	0.004
	46 years or more	0.079	0.152	0.127	0.275	0.381	0.058	0.029	0.029	0.059	0.243	0.018	0.115	0.062	0.075

Descriptives Table 2

The table shows The descriptive statistic for multiple variables. The variables are major on different scales and can be categorized into three groups:

Age: This categorical variable describes the participants age group.
Taste: These are likely likert scale variables that measure the participants preference for different taste. The scale likely ranges from 1 (dislike) to 5(like).
Qualities: These variables, which are probably Likert scale items, measure the way each participant feels about various attributes (Quality1, Quality2, Quality3, Quality4, Quality5). The probable range of the scale is 1 (strongly disagree) to 5 (strongly agree).
SM and CS: The table header does not **specify SM or CS,** however they might be extra Likert-type scales to measure participant responses.
Preference CB: Although **preference CB** are not explained in the table title, these might be extra Likert-type scales utilized for measuring participant responses.

The following descriptive statistics are display in the table for each variable and age group:

- **N:** The total number of participants in each age group.
- **Missing:** The number of missing values in each age group for each variable.
- **Mean:** The average value for each age group for each variable.

• **Std. error mean:** The standard error of the mean for each variable in each age group is known as the "standard error mean."
• **Median:** Each variable's median value for each age group.
• **Standard deviation:** The standard deviation for each variable in each age group is known as the standard deviation.
• **Minimum:** Minimum value for each variable in each age group.
• **Maximum:** The maximum value for each variable in each age group.
• **Shapiro-Wilk W:** A normality test statistic. Values closer to 1 indicate that the data is more likely normally distributed.
• **Shapiro-Wilk p:** The Shapiro-Wilk normality test's p-value. The data is statistically unlikely to be normally distributed when the values is less than 0.05.

Factor Loadings

Factor	Indicator	Estimate	SE	Z	p	Stand. Estimate
Factor 1	Taste1	0.486	0.142	3.423	< .001	0.461
	Taste2	0.872	0.239	3.652	< .001	0.767
	Taste3	0.479	0.140	3.423	< .001	0.416
Factor 2	Quality2	0.537	0.211	2.547	0.011	0.470
	Quality1	0.213	0.122	1.743	0.081	0.178
	Quality4	0.169	0.157	1.079	0.281	0.134
Factor 3	SM1	0.237	0.191	1.244	0.214	0.200
	SM2	-0.295	0.228	-1.291	0.197	-0.254
Factor 4	CS2	0.202	0.179	1.126	0.260	0.168
	CS1	0.297	0.247	1.201	0.230	0.252
Factor 5	PreferenceCB1	0.155	0.425	0.365	0.715	0.127
	PreferenceCB2	-0.112	0.310	-0.361	0.718	-0.101

Confirmatory Factor Analysis

• **Factor:** A category of underlying characteristics that explain the relationships between indicator variables.
• **Indicator:** Taste1, Taste2, and Taste3 are examples of variables that are used to measure a taste element.
• **Estimate:** The degree to which the indicator and the factor are related (e.g.,.486 for Taste1).
• **Standard Error:** Margin of error around the estimate is known as Standard Error.
• **p-value:** The observing an estimate is extreme by chance, and there is no relationship between the indicator and the factor. A smaller p-value suggests a less likely chance result in this.
• **Standardized Estimate:** Standardized estimate adjusted to a common scale for easy comparison between indicators.

Factor Estimate

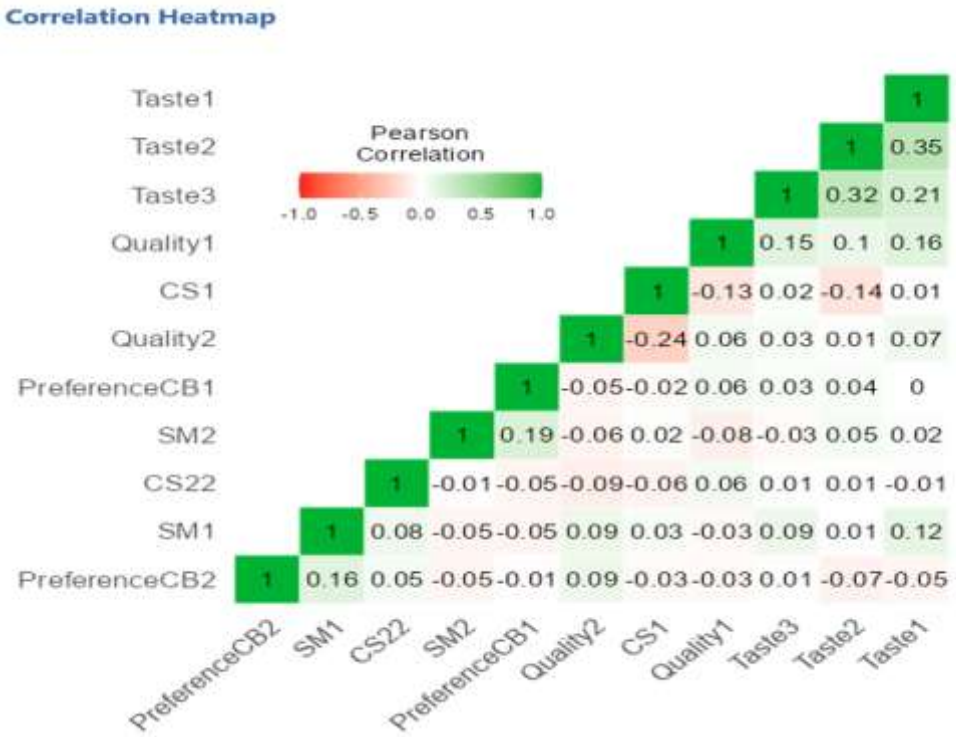
Factor Covariances

		Estimate	SE	Z	p	Stand. Estimate
Factor 1	Factor 1	1.00000 *				
	Factor 2	0.10147	0.245	0.4139	0.679	0.10147
	Factor 3	0.00771	0.341	0.0226	0.982	0.00771
	Factor 4	-0.32720	0.409	-0.7998	0.424	-0.32720
	Factor 5	0.51214	1.468	0.3490	0.727	0.51214
Factor 2	Factor 2	1.00000 *				
	Factor 3	0.62054	0.623	0.9955	0.319	0.62054
	Factor 4	-2.28414	1.956	-1.1680	0.243	-2.28414
	Factor 5	-0.90960	2.583	-0.3522	0.725	-0.90960
Factor 3	Factor 3	1.00000 *				
	Factor 4	-0.25430	0.799	-0.3184	0.750	-0.25430
	Factor 5	-4.27511	11.831	-0.3614	0.718	-4.27511
Factor 4	Factor 4	1.00000 *				
	Factor 5	-0.30063	1.694	-0.1774	0.859	-0.30063
Factor 5	Factor 5	1.00000 *				

Factor Intercepts

	Estimate	SE	Z	p	Stand. Estimate
Factor 1	1.00 *				
Factor 2	1.00 *				
Factor 3	1.00 *				
Factor 4	1.00 *				
Factor 5	1.00 *				

• **Factor:** In this table, Factor 1, Factor 2, and Factor 3 seem to be related to taste and quality based on the variable with high loading on factors.
• **Estimate (Est.):** This is the factor loading, which is a correlation coefficient between a variable and a factor; higher values (closer to 1) indicate a stronger relationship. stronger relationship.
• **Standard Error (SE):** This is the standard error of the estimated factor loading estimate; a larger standard error indicates a less accurate estimate.
• **Z:** The Z-score is the factor loading estimate. It is calculated by dividing the estimate by its standard error. A high Z-score indicates that the factor loading is statistically different from zero.
• **p:** This is the p-value associated with the Z-score. A low p-value (typically below 0.05) indicates the relationship between variable and factor is statistically significant.
•**Standardized Estimate (Std. Est.):** Standardization puts all factor loadings on a similar scale, which can be helpful comparing the importance of different variables for a factor.



It appeared to be a correlation matrix showing the Pearson correlation coefficient between various variables in the heatmap you submitted. In the heatmap, each variable is represented by a row and a column. The degree and direction of the correlation between the two variables that row and column represent are indicated by the color intensity in each cell. Whereas weaker correlations are colored lighter, stronger correlations are colored darker. Blue denotes a positive correlation, whereas red denotes a negative correlation.

Here are a few instances of **positive correlations** based on the heatmap:
• **SM1 and SM7 (light blue):** These two variables tend to rise or fall together since they have a positive association.
• **Taste1 and Taste2 (dark blue):** These two taste variables have a substantial positive connection, meaning that persons who prefer Taste1 also prefer Taste2.

Examples of **negative correlations** include the following:
• **Quality1 and PreferenceCB1 (red):** Quality1 and PreferenceCB1 seem to be negatively correlated, meaning that when Quality1 is high, PreferenceCB1 is typically low, and vice versa.
• **CS1 and SM17 (light red):** These two variables have a tendency to go in different directions, as seen by their lesser negative correlation compared to some of the positive correlations.

Model Fit

Test for Exact Fit

x^2	df	p
46.1	44	0.385

Fit Measures

				RMSEA 90% CI			
CFI	TLI	SRMR	RMSEA	Lower	Upper	AIC	BIC
0.972	0.957	0.0485	0.0153	0.00	0.0502	7656	7808

•**Chi-square (χ^2):** The test statistic, chi-square (χ^2), measures the discrepancy between the observed and expected frequencies. A higher discrepancy is indicated as a higher chi-square value. 46.1 is the chi-square statistic (χ^2).

• **Degrees of freedom (df):** The number of independent comparisons done throughout the test is indicated by this value. The number of categories in the data and the number of parameters the model estimates are used to calculate it. The degree of freedom (df) is 44.

• **p-value:** The probability of observing a chi-square statistic is extreme or more extreme, assuming the null hypothesis is true. A low p-value indicates the observed discrepancy is less likely to be due to chance and suggest that the model may not fit the data well. The p-value (p) is 0.385.

• **Comparative Fit Index, or CFI:** A CFI value closer to 1 indicates a better fit. Values above 0.90 are generally consideration acceptable, while value above 0.95 are considered very good.

• **Tucker-Lewis Index (TLI):** This fit index is comparable to the CFI. Additionally, it contrasts your model's fit with a baseline model. TLI levels above 0.90 are regarded as acceptable, but generally speaking, you prefer a value closer to 1.

• **SRMR (Standardized Root Mean Square Residual):** Standardized Root Mean Square Residual, or SRMR, is a fit statistic that quantifies the discrepancy between the model-predicted and observed data. A better fit is indicated by a lower SRMR. In general, values less than 0.08 are regarded as acceptable.

• **Root Mean Square Error of Approximation (RMSEA):** This statistic measures the difference between the observed data and the data predicted by the model, but it takes into account the model's degrees of freedom. Values below 0.08 are generally considered acceptable and value below 0.05 are considered good.

• **Lower and Upper:** The **90% confidence interval** for a specific metric. The confidence interval represents a range of plausible values for the population parameter based on the sample data.

• **AIC (Akaike Information Criterion):** This information criterion used to compare the fits of different statistical models. It balances the model's fit to the data with the model's complexity. Lower AIC values generally indicate a better model.

• **BIC (Bayesian Information Criterion):** This information criterion is also similar to AIC, but its penalizes model complexity more severely than AIC. This means BIC tends simpler models even if they fit the data slightly worse than more complex models.

Scale Reliability Statistics

	Mean	SD	Cronbach's α	McDonald's ω
scale	2.77	0.368	0.684	0.547

RELIABILITY ANALYSIS 1

The table of reliability statistic for Cronbach's Alpha and McDonald's Omega. These are statistical measures used to assess the internal consistency, or reliability, of a set of related questions or items on a psychological test or survey. In other words, they measure how well the different items in a scale measure the same underlying construct.

The table shows the following information:

Scale: This is the name of the scale or questionnaire being assessed.

Mean SD: This is the mean standard deviation of the items in the scale. A lower standard deviation indicates that the items are more similar to each other.
Cronbach's alpha: This is a reliability coefficient that ranges from 0 to 1. Expand more Higher values of Cronbach's alpha indicate greater reliability. Expand more A common rule of thumb is that a Cronbach's alpha of 0.7 or higher is considered acceptable for research.
McDonald's omega: This is another reliability coefficient that is similar to Cronbach's alpha but may be more accurate under certain conditions.

The values in the table for Cronbach's alpha (0.684) and McDonald's omega (o.547) are both below the 0.7 threshold, which suggests that the scale may not be very reliable.

Overall Result and Finding

Overall, spices are a thriving industry with a positive outlook.

Market Growth: The global spice market is expected to reach USD 25.2 billion by 2025, growing at a CAGR of 6.14%.

Increased Exports: The export of spices from India, a major spices producer of all-time reached the high of USD $ 4.0 billion in 2020-21, despite having the pandemic time.

Consumer Demand: Consumers increasing their interest in the health benefit and unique flavours that spices offer.

The spices industry faces challenges on both the International and National fronts. Here's a breakdown of the key issues.

Internationally:

Stricter Regulations: Importing countries are setting ever more strict safety standards, which can be difficult and expensive for exporters to meet.

Competition: New producers from another countries, particularly from Africa, are entering the market, putting the pressure on established players in the market.

Unpredictable Climate: Climate changes are causing the more extreme weather events, disrupting spice production.

Food Safety Concerns: Impurity or Adulteration of spices is an ongoing concern, damaging consumer trust.

Nationally (for many countries including India):

Small Farms: Fragmented land holdings and lack of mechanization make it difficult for small farmers to compete.

Storage and Processing: Insufficient facilities lead to spoilage and lower quality of spices.

Financing: Farmers of spices often have limited accessibility to credit and financial resources.

Infrastructure: Poor transportation networks make it difficult for farmers to get their spices from their farms to market.

Conclusion

In conclusion, Indian spices play a crucial role in the taste and aroma of Indian cuisine, and they also offer a health benefit that have been recognized for centuries. Indian spices hold a significant place in the daily diet of Indian. The huge variety of spies reflects on the many and various culinary traditions across different regions of India. Consumer demands are also increased for spices which are high-quality products in the market. Spice manufacturers and suppliers have to focus also on packaging, labelling and accessibility with the high-quality of the spices. Indian spices are used by Indian on a daily purpose while making the food. These spices into your diet can help improve your overall health and reduce the risk of chronic diseases. While raising awareness about the health benefit and having many qualities of spices can further stimulate consumption and encourage their inclusion in other cuisines as well. After doing the data analysis we get the result and finding about the spices market growth, exports of spices are also increased and the demand of consumer for spices are growing in the market. Spices are playing major role in international and national market as per consumer demand but also there are some key issues also available in market related to the spices manufacturing, quality and export and import are also part of it.

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