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Developing and Refining Research Instrument For 'EVALUATING' Purchase Intentions of Organic Foods: Factor Analysis Approach

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ABSTRACT

Organic foods are a growing concept in India. Indians have come forward in accepting organic products. But the adaptation process is taking a little longer. In order to explore consumer behaviour related to purchase intentions of organic foods in India, research covering several segments and target markets with different cities across India is to undertaken. In order to develop a proper scale (research instrument) factor analysis can be an effective data refining tool.

Despite the popularity of factor analysis, both the complexity and usability of this analytical procedure has created considerable ambiguity about appropriate research practices. This paper is a sincere effort so as to use factor analysis effectively to guide future researchers develop proper scales and research instrument to explore the world of organic products.

KEYWORDS : Adaptability, factor analysis, Organic food, willingness to pay

Introduction:

Organic foods are a growing concept in India. Indians have come forward in accepting organic products. But the adaptation process is taking a little longer. In order to explore consumer behaviour related to purchase intentions of organic foods in India, research covering several segments and target markets with different cities of India is to undertaken. In order to develop a proper scale (research instrument) factor analysis can be an effective data refining tool.

Despite the popularity of factor analysis, both the complexity and usability of this analytical procedure has created considerable ambiguity about appropriate research practices. This paper is a sincere effort so as to use factor analysis effectively to guide future researchers develop proper scales and research instrument to explore the world of organic products.

Methodology:

A sample size of 400 was selected and twin cities of Ahmedababd-Gandhinagar were considered by the researcher. 156 male and 168 female respondents returned the questionnaire. Hence, the total sample considered for carrying out factor analysis was 324. Pre-testing of the questionnaire was made during the pilot study. The scale was piloted amongst a sample of twenty (20) respondents from Gandhingar city.

Literature Review:

The term organic has many different meanings and interpretations and is often associated and sometimes confused with terms such as "green", "ecological", "environmental", "natural", and "sustainable". "organic" has been used to describe diverse products ranging from fruits and vegetables to dairy and animal produces, as well as cereals, pulses and grains.Buying organic products is a complex modern food system and its perceived risk lies because certified organic products are controlled and bear information about their production. When people intensify their consumption of organic, philanthropic motives like supporting organic farming or protecting the environment become more important. Income level and the presence of children influence the motives and buying decisions. Some studies have identified that lack of organic food availability in store is considered as one of the barriers to consumer purchase. However, the choice to purchase organic products was found in research done earlier. Research also has done that consumer choose to purchase organic food products which includes food safety, human health, environmental impact etc. products attributes like taste, freshness, availability, packaging etc. factors does affect consumers perception.

Sangkumchalinga P. and Wen-Chi Hung (2012) conducted a study on consumers' perception and attitudes of organic food products in northern Thailand. The study indicated that the main reasons for purchasing organic food products are of expectation of a healthier and environmental friendly means of production. The motive to purchase organic food products are health and environmental benefits, plus support for local or small farmers. In addition, an important factor that was revealed as a barrier to the development of organic food is consumer information. Increased organic food awareness and organic labeling and their trust in organic food as well as increasing the availability and range of organic food products, may be the most effective way of increasing their market share. Christopher Gan (2008) conducted a study on consumers' purchasing behaviour towards green products in New Zealand. The research findings reveal that consumers who are environmentally conscious are more likely to purchase green products. While this study reveals that traditional product attributes such as price, quality and brand are still the most important ones that consumers considered when making purchasing decision. W.M.C.B Wanninayake and Pradip Randiwela (2008) conducted a study on consumer attractiveness towards green products of FMCG sector. The study revealed that the green products have substantial awareness among Sri Lankan customers and they are willing to pay something more on green products. The majority of customers considered that package is most important element of such products.

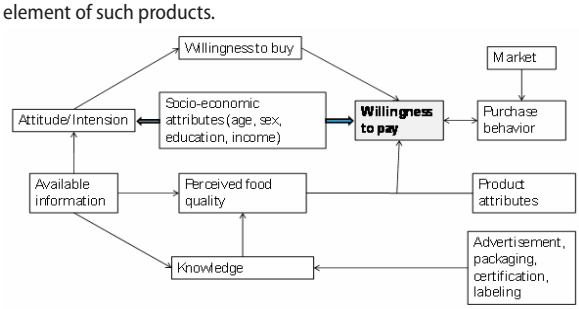


Figure 1 Framework reflecting consumer behavior towards food products (adopted from Millock (2002) and Bonti-Ankomah and Yiridoe (2006)

The theoretical framework as mentioned in Figure 1 has been referred from Kamal P. Aryal et.al published in The Journal of Agriculture and Environment Vol:10, Jun.2009. Consumer behaviour towards food products includes the willingness to pay a price premium. Consumers decide whether to buy a product or not based on three main aspects: Knowledge, Attitude and Intention. Knowledge about products

The theoretical framework has been referred from Kamal P. Aryal et al (2009) which emphasizes on consumer behaviour towards food products. This includes the willingness to pay a price premium. Consumers decide whether to buy a product or not based on three main aspects: Knowledge, Attitude and Intention. Knowledge about products and their benefits influences their willingness to pay for the products. Knowledge of people is affected by type and quality of information made available to consumers. Advertisement, quality packaging, labeling and certification play pivotal role in knowledge enrichment. Once

a consumer is ready to buy, the next step is to see how much he or she is willing to pay for the product. Purchase behavior reflects the real WTP (Willingness to Pay) and the consumer gains positive or negative experiences which will reversely affect consumers' WTP in future. Knowledge and awareness have respectively direct and indirect effects on attitudes toward consumer to choose the products, and the willingness to pay a price premium, so they are important factors determining the demand. Thus, awareness and knowledge about organically produced foods are critical in the consumer willingness to pay more for the product.

FACTOR ANAYSIS FOR REFINING THE INSTRUMENT USED FOR DATA COLLECTION:

Factor analysis is a multi-faceted technique. It enables us to express one set of variables in terms of a smaller set of factor variables, and is an approach commonly used for exploratory purposes as well as for tests of hypotheses. Factor analysis has been employed in this study in a similar context, that is, simply as an exploratory vehicle to determine what types of stable opinions about organic food exists.

The interpretations that follow make use of these observations. The factor loadings have been examined in conjunction with the original correlation matrix, because correlations between particular pairs of variables loading on a factor are not necessary and cannot be assumed.

Background about Variables and Subjects for factor analysis:

As minimum 6 variables and 30 subjects are required to carrying out factor analysis.

In general over 300 cases are probably adequate to carry out factor analysis. The researcher had collected opinions of 324 respondents making it eligible for factor analysis. Moreover, the coefficient option produces the R matrix and significant level option produced a matrix indicating significance value of each correlation in the R matrix. The determinant of R matrix was greater than 0.0001.

Rotation:

For the study undertaken, researcher had selected maximum number of iteration as 25. This indicates that analysis stops after 25 iteration of the procedure to generate successive approximation to the best possible factor solution. The eigenvalue value selected by researcher was 1. Eigenvalue is the sum of the squared loading of the variable on a factor. Higher the Eigenvalue higher the proportion of variance explained by factor.

Option:

The default threshold value in SPSS is 0.1 but as the researcher wanted to suppress to low loading in the output. The value could be selected between 0.2 and 0.5. Here, it was decided to select threshold value of 0.5

Outcome:

The factorability of 33 items was examined. The respondents were asked to indicate their degree of agreement with the statements as mentioned in Table 1 using a five point likert scale (1=strongly disagree to 5=strongly agree). Several well-recognised criteria for the factorability of a correlation were used. The Kaiser-Meyer-Olkin measure of sampling adequacy was .744, above the recommended value of .6, and Bartlett's test of sphericity was significant ($p < .05$). As the above mentioned study's KMO value is closer to 1, factor analysis can be said to be giving reliable factors. The value between 0.7 and 0.8 is considered to be good and 0.8 and 0.9 is considered to be excellent. As Bartlett's test is less than 0.001 this means that there is some relationship between variables.

Principle components analysis was used because the primary purpose was to identify and compute composite scores for the factors underlying items related to purchase of organic foods. The initial eigen values showed that the first factor explained 15.66% of the variance, the second factor 11.63% of the variance, and a third factor 5.59% of the variance. Fourth to Twenty seventh factors had eigen values of just over one.

During several steps, some items from a total of 33 were eliminated because they did not contribute to a simple factor structure and failed to meet a minimum criteria of having a primary factor loading

A principle-components factor analysis of the remaining items, using varimax rotations was conducted, yielding the following results

Here factor 1 explains 15.658% of total variance whereas variances reduce subsequently. Finally 10 factors were extracted wherever eigenvalue greater than

1. After extraction Rotation Sum of squared loadings was reduced in all 10 variables. From the overall analyses of 33 factors, it can be stated that if the ten factors mentioned in Table 2 are refined, it could further help in developing a research scale (instrument) for future research related to organic foods consumption in India.

Sr. No. (1)	Factor that can be considered to develop scale for future research in Consumer Behaviour related to Organic foods (2)	Factors originally used and further refined to Column no.2 (Table 2) (3)
1	Positive perceptions about nutrition aspects of Organic food	Regular consumption leads to good health, increases immunity, environmental friendly,safe,trustworthy and high in quality
2	Perceived importance of organic food for good health and longevity of life	Good for health, safe for children, continued use, leads to good health,
3	Fear of acceptance and adaptability of organic food	Will buy only if 100% sure, credibility doubtful, not sure about benefits, quality as good as non-organic, costly
4	Ease and Convenience of buying organic food	Information brochures influence buying decision, proximity and convenience, proper labeling, proper marketing can improve usage,
5	Ignorance of organic food	just fad, not so relevant for all customers
6	Effect of advertising and promotional measures	Proper information and marketing efforts can influence buying decisions of consumers
7	Trial	Try organic food first and then decide for future purchase, buying organics products every time not possible
8	Doubts and Apprise about organic food	Doubts prevails related to purchase, May not be successful in India
9	A lifestyle product	Related to affluent lifestyle, may travel even longer distance to buy organic food
10	Grading and Standardisation	Awareness regarding certification exists

Table 2: Factors to considered for developing Research Instrument for Future Research

Table 1: Rotated Component Matrix

Rotated Component Matrix[a]										
	Component									
	1	2	3	4	5	6	7	8	9	10
Organic food is good for health		.662								
Organic foods are safe for my children so I want to buy them		.665								
Consumption of organic food on regular basis leads to good health	.548	.587								
Organic food will increase my immunity and help me fight diseases	.582									
Organic products are environment friendly	.740									
Organic products are safe to consume	.759									
I don't mind travelling distance to avail organic food									.631	
Organic food is associated with affluent lifestyle									.825	
Organic food is associated with status										
I may buy organic food because of advertisements						.743				
Information of organic food can influence my purchase intention				.532		.504				
Organic food labelling and information brochure gives me a feeling of trust				.706						
I buy organic food because it is available in shopping malls				.729						
I buy organic food because the outlet is located close to my house				.591						
Signages and Indicators of organic food counters in shopping mall influence my purchase decision										
I have purchased organic food in past and will continue buying it in future		.653								
After 3 years of no use of fertilisers and chemicals organic food can be produced										
In farming of organic food fertilisers and chemicals are not used										
Certificate is required for production of organic food										.790
I trust organic food	.715									
Organic food is high in quality	.668									
Marketing efforts can increase consumption of organic food in India				.508						
Organic food will not be able to get success in India								.680		
I have doubts in buying organic food								.783		
I just want to try organic food once and then decide whether to buy or not							.721			
Buying all food products which are organic in nature is not possible							.753			
I will buy organic foods only if I am 100% sure that it is organic			.505							
I don't trust the credentials of the organic foods			.628							
Not sure about the benefits			.513							
They are just a fad					.816					
It is not relevant to me					.739					
Quality is just as good as non-organic			.740							
Organic food are costly hence I avoid buying everything which is organic			.730							
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.										
a. Rotation converged in 16 iterations.										

Source: Field Survey and SPSS outputAnalysis and Interpretation:

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