

# Consumer Behaviour Criterion: A Fuzzy Approach

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## Abstract:

Consumer behaviour is significant to the marketers because it gives them to understand the buying nature of consumer at the marketplace. Consumer behaviour is defined as the analysis of actions that consumer shows while purchasing, using, estimating and setting up of goods and services for their satisfaction. Purchasing decisions are based on marketing strategies. In this paper, we analyze consumer behaviour by using Fuzzy AHP approach.

**Keywords:** Consumer, Purchasing, Analysis, Strategies etc.

## 1. Introduction

Since as a consumer we are all peculiar. So, our consumption behaviour & pattern and purchasing process are affected by this peculiarity. The study of consumer behaviour gives a reason to marketers a that why consumer behaves differently in purchasing goods and services and responds in terms of either buying goods or not. Consumer behaviour is significant to the marketers because it gives them to understand the buying nature of consumer at the marketplace. People are driven by environmental changes that affect their buying decisions as well as their behaviour. These changes occur due to an agent called *stimuli*. An individual goes continuously with the process of making his decision.

Consumer behaviour is not only concerned with what consumers purchase, but also with why they purchase it, when, where, and how they purchase it, and also how they utilize it and arrange it. Consumer behaviour is defined as the analysis of actions that consumer shows while purchasing, using, estimating and setting up of goods and services for their satisfaction. Purchasing decisions are based on marketing strategies. While

searching information on goods and services consumers get all the appropriate data.

## 2. Factors influencing Consumer Behaviour

**2.1) Culture:** Basically, culture is an external factor that influences the wants and behaviour of consumer. Every society has its own culture that they have to follow. Since culture varies from country to country and person to person so the marketers are very careful while studying about cultures of different countries or regions. There are some set of practices and actions, morals, custom and beliefs among a group of people in the society. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.2) Subculture:** There are many groups that have beliefs and behaviours that are distinct from the main groups within a society. For example, a group of ten workers from Uttar Pradesh will work in a different manner than a group of ten workers from Delhi. It can because of the way they think, the workers who find their task monotonous will behave in a different way than those who find their task interesting. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.3) Social class:** It means people who are fashionable and wealthy, some people thought of as living together in a well-structured community with shared values, traditions and laws. Social classes depend on low to high i.e. based on money, power, esteem and prestige. Consumer behaviour greatly affected by societal forces. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.4) Reference group:** They include individuals and groups having shared values and beliefs influence consumer's behaviours and attitudes. They are like role models and inspiration. Reference group highly influence people if the product is visible. Groups having shared beliefs and values influence their buying decisions. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.5) Family:** The member of the family plays an important role as an influencer while making purchasing decisions. Therefore marketers try to collect information on roles of each member of the family and they also try to find their influence on other members of the family. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.6) Position and Roles:** Based on family, groups, and organisation each person has different roles and position in the specified field. For example, if a person is working in a company as a finance manager, that person will keep each fine detail regarding income, etc. The person has a different role at his/her home. Now that person is playing two roles one is as a manager and the other is either mother or father then the role and status/position will affect the buying decision of consumers. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.7) Occupation:** Occupation is a personal factor that affects one's buying behaviour or action. Designation and nature of work may affect person's decisions and behaviour on purchasing. A CEO of an organisation, it is compulsory for him wearing a business suit so that he can look elegant and smart. You see that a low-level person never buys business suits for himself. A person who is working in a manufacturing factory as a

worker can't afford expensive products or services. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.8) Economic situation:** An individual having high income will surely buy expensive and branded products. But an individual with low or average income will never purchase costly products. People with average and low income spend money only on necessary things for their survival. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.9) Lifestyles:** Lifestyle is a route that a person follows throughout his life while living in the society. We can say lifestyle is an opening for passage. A person's lifestyle depends on his/her living style, stance, awareness, and social relations. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.10) Personality:** Every person has his/her own characteristics which directly reflect in buying decision. For example, a music lover will spend his/her time on musical instruments, concerts, etc. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.11) Motivation:** The buying nature of an individual influenced by motivation. There are some needs such as psychological needs, biological needs, social needs, etc. needed by every person. Motivation act as a driven force that stimulates people to do something. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.12) Perception:** An individual's perceptions matters while making buying decision. Perception is selecting, organising and interpreting information in a manner to extract a meaningful experience of surrounding. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.13) Beliefs and Attitude:** Consumers have some specific beliefs and attitude towards various products. When an individual is having positive attitude then it means he is interested in buying products and it results liking or disliking products. Beliefs may be positive or negative. Some people say coffee is good for health and it relieves fatigue. While others say that too much

consumption of coffee is dangerous for health. Beliefs are not precise and it change according to situation. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.14) Trends:** People follow some trends in purchasing. Young consumer groups change consumer shopping trends. Nowadays people follow social media in building connections and it is changing consumer tastes and preferences. Young consumers affected by pictures and advertisements of products/services/brands that are also posted by consumers on blogs and stories shared on websites and also recommendations, etc. (Cant, Strydom, Jooste & Du Plessis, 2009)

**2.15) Experience:** It is like a useful tool while purchasing products/services. Experience comes through perception, involvement in something and satisfaction. (Cant, Strydom, Jooste & Du Plessis, 2009)

### 3. Literature Review

#### Consumer Behaviour

Every person has unique personality and there are some similarities in consumer behaviour are called behavioural patterns. Consumer behaviour has a significant impact in the business world. Originally, consumer tries to find out the product whenever there is a need and after that purchase the product that assures the satisfaction to a greater extent. Various factors such as availability of product, recommendations from relatives/retailers/friends, experience, brands, price and many more supports the decision from need encouragement to purchase decision. In fact the consumer behaviour is a part of human behaviour that deals with the opportunities and conduct done by people while choosing and utilizing the product which leads to need fulfilment.

There are some queries in the marketing field such as who buys the product, how they buy, where do they buy and such more. The marketer has to pay attention in measuring the behaviour in all aspects such as given above. The above queries only help

in defining the most influential factor. ("An empirical and fuzzy logic approach to product quality and purchase intention of customers in two wheelers", 2016)

Marketers have to grab the chances to understand the needs of consumer because it will directly impact the profitability of a company. (Bozdağ, Kahraman & Ruan, 2003)

Consumer behaviour is the decision maker of the consumer at the market place. Target markets and marketing mixes are defined by consumer behaviour (L. Sandhusen, 2008).

Consumer behaviour relies on facts and beliefs and hence it is complex. Consumer behaviour has components like goods, services, actions, experiences, ideas and people. (Fasanghari & Raudsari, 2008).

#### Analytical Hierarchy Process

The **analytical hierarchy process** is a programming technique relating to problem solving and decision making. The purpose of AHP is to break complex project into a series of smaller but more manageable modules. It depends on the study of figures, calculations and the human mind. AHP is a conventional approach to quantify the weights of mentioned factors. Through pair-wise comparison factors' relative magnitudes are estimated with the help of each expert's opinions. (Chang, 1996)

#### Fuzzy sets and Fuzzy Logic

Decision makers faced complications and ambiguity whenever they used traditional **analytical hierarchy process** because it involves crisp judgements but **fuzzy AHP** gives confident judgements and results. There are numbers of approaches in fuzzy logic that may use for managing fuzzy comparison matrices. (Chang, 1996)

#### Fuzzy AHP

Traditional approach of AHP has some shortcomings. Largely AHP method is used in crisp decision applications. It deals with an unstable scale of judgement. Moreover, human beings always make subjective assessment on

qualitative traits and that's why it is indefinite. Conventional AHP is not sufficient to target the expectation of the decision maker (Chen, Lin & Huang, 2006). And Fuzzy AHP helps in overcoming the incompetence of traditional AHP in managing linguistic variables. This method is used when decision makers have conflicts in decision criteria. AHP is one of MCDM technique that helps decision makers to choose best option among alternatives. AHP was originally developed by Prof. Thomas L. Saaty. While fuzzy logic come up with an idea that deals with vagueness in data and knowledge. Decision makers can use Fuzzy AHP when they are in uncertainty situation. (Chang, 1996)

#### 4. Experimentation

Once the hierarchy is developed pair wise comparison is done by each expert, here is the main factors weight from first expert. The computer program shown in Appendix-3 was used.

##### 4.1) Main Factors Weight by First Expert

Main factors	R	P	S
Cultural Factors	0.4473	0.2470	0.2291
Social Factors	0.5527	0.2808	0.2474
Personal Factors	0.0000	0.1777	0.1795
Psychological Factors	0.0000	0.1058	0.1220
Experience	0.0000	0.1132	0.1270

**Table 4.1 Main factors weight by first expert**

Repeating the same procedure for all experts' judgment following equation (1) the global weights of main factors was developed.

$$W_i = \frac{a_i}{\sum_{i=1}^n a_i} \dots \dots \dots (1)$$

#### 4.2 Sub factors weight

Sub factors	R	P	S
Culture	.3880	.2894	.2752
Sub-culture	.0002	.2282	.2299
Social class	.2189	.2966	.2886
Reference groups	.1894	.1858	.2064
Family	.7133	.4867	.4458
Roles and status	.1174	.2755	.2940
Occupation	.1693	.2377	.2602
Economic situation	.5000	.4336	.3999
Lifestyle	.0000	.2569	.2766
Personality	.5000	.3096	.3235
Motivation	.4354	.3544	.3291
Perception	.3737	.3272	.3131
Beliefs and attitudes	.0731	.1589	.1755
Trends	.1178	.1595	.1823
Experience	.3370	.4621	.4368

**Table 4.2 Sub factors weight**

Now multiply the sub factors weights and corresponding main factors weight to find the global weight of sub factors.

#### 4.3 Global weights of sub factors

Sub factors	R	P	S
Culture	.1405	.0704	.0622
Sub-culture	.0002	.0555	.0520
Social class	.0792	.0722	.0653
Reference groups	.0656	.0452	.0467
Family	.0410	.1010	.0863
Roles and status	.0397	.0572	.05659
Occupation	.0572	.0493	.0504
Economic situation	.0415	.0766	.0720
Lifestyle	.0000	.0454	.0498
Personality	.0115	.0547	.0582

Motivation	.0478	.0555	.0532
Perception	.0410	.0512	.0282
Beliefs and attitudes	.0008	.0249	.0293
Trends	.0204	.0250	.0520
Experience	.0123	.0492	.0293

**Table 4.3 Global weights of sub factors**

Feedbacks from the experts are taken for three customers regarding each sub factors with the help of fuzzy linguistic scale and then weights are generated as given below.

#### 4.4 Weights of Consumers

S.No.	Sub factors	C1			C2			C3		
		R	P	S	R	P	S	R	P	S
1	Culture	.362	.354	.349	.199	.246	.266	.439	.400	.385
2	Sub-culture	.271	.297	.306	.490	.427	.401	.239	.276	.293
3	Social class	.403	.380	.370	.242	.246	.288	.356	.347	.342
4	Reference groups	.713	.474	.444	.117	.441	.264	.169	.281	.293
5	Family	.355	.340	.343	.529	.330	.412	.117	.219	.245
6	Roles and status	.339	.340	.343	.331	.430	.329	.331	.330	.389
7	Occupation	.426	.356	.355	.574	.306	.400	.000	.214	.244
8	Economic situation	.580	.387	.356	.210	.367	.317	.210	.321	.317
9	Lifestyle	.713	.496	.449	.000	.243	.246	.210	.345	.302
10	Personality	.415	.386	.371	.386	.259	.359	.198	.259	.270
11	Motivation	.625	.477	.434	.117	.244	.267	.259	.304	.299
12	Perception	.655	.439	.455	.123	.246	.275	.223	.281	.320
13	Beliefs and attitudes	.423	.390	.445	.198	.274	.263	.321	.276	.258
14	Trends	.300	.289	.408	.280	.479	.265	.256	.232	.316
15	Experience	.556	.453	.402	.155	.333	.292	.289	.333	.299

**Table 4.4 Weights of Customers**

#### 4.5 Global Weights of Customers

Next the global weights of customer are computed as explained.

S.No.	Sub factors	C1			C2			C3		
		R	P	S	R	P	S	R	P	S
1	Culture	.051	.025	.024	.028	.017	.017	.028	.062	.024
2	Sub-culture	.002	.016	.009	.002	.024	.021	.015	.002	.015
3	Social class	.032	.027	.021	.019	.020	.019	.020	.028	.022
4	Reference groups	.049	.021	.030	.008	.011	.012	.022	.012	.014
5	Family	.023	.034	.020	.127	.045	.036	.019	.028	.021
6	Roles and status	.031	.019	.018	.013	.019	.019	.011	.013	.019
7	Occupation	.024	.018	.026	.033	.021	.020	.023	.000	.012
8	Economic situation	.025	.030	.021	.009	.023	.023	.013	.009	.023
9	Lifestyle	.037	.023	.029	.000	.010	.012	.014	.000	.015
10	Personality	.033	.021	.010	.010	.020	.021	.016	.008	.016

11	Motivation	.011	.026	.011	.006	.013	.014	.016	.012	.016
12	Perception	.007	.022	.008	.005	.013	.014	.009	.009	.016
13	Beliefs and attitudes	.014	.010	.022	.002	.006	.007	.006	.003	.010
14	Trends	.003	.007	.015	.004	.007	.008	.015	.003	.008
15	Experience	.001	.022	.012	.002	.012	.014	.007	.006	.016

**Table 4.5 Global weights of Customers**

### 5. Result and discussion

The results are computed as below:

	Customer 1			Customer 2			Customer 3		
Sum of weights	0.404	0.385	0.372	0.307	0.316	0.318	0.219	0.294	0.305
De-fuzzified weight	0.387			0.315			0.279		

**Table 5 De-fuzzified weight**

Since Customer 1 got higher number of point. Hence Customer 1 is best option.

### 6. Conclusion

In this case, fuzzy AHP approach is used to choose the appropriate alternative from all the given multiple attributes and to analyse the behaviour and decision-making pattern. Present scenario of the market and practical knowledge of experts decide the parameters on which the decisions are based and made. Bulky factors showed complications which affect decision-making process. Each factor influencing customers' buying behaviour has been analysed, discussed and applied. The fuzzy AHP model is discussed and hence it is validated that it is bare to use. Taking lesser time and having smaller mathematical expenses when it comes to comparison with the old decision-making systems. This approach does not have difficult arithmetic jobs and details hence used in general to solve multi-criteria decision-making problems. The ability of fuzzy AHP is to capture the uncertain data and inexpensive knowledge. It deals with reasoning capability of human. This model detects the uncertainties in thinking pattern of people so as to solve the problems.

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