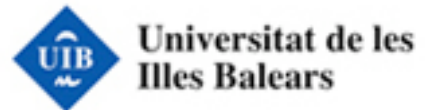


Master in Management, Organization and Business Economics (MMOBE)



Master Thesis

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Variety Cycles in Food Purchasing: The association with variety seeking and their impact on choice models.

Abstract

Choosing among food products is a day-to-day situation that we face. Consumers need to select among their preferred product attributed within a variety of alternatives that is offered by different brand. The process seems simple but a lot of variables are involved in making the decision. Our scope in this research is to present variety seeking behavior of consumers and explaining that behavior through variables that can influence consumer varied behavior, using real data set that records 211 consumer-purchasing pattern in purchasing from a variety of frozen pizza category.

1 Introduction

In the last two decades, “variety seeking” has received a lot of attention among researchers, and considerable share in consumer behavior literature. Our scope in this study will be focused in food purchasing. Most of us get involved frequently, if not regularly, in doing decisions regarding food purchases by doing grocery shopping, or going to a supermarket to fulfill our daily need of food for ourselves or for our beloved ones. However, food choice is a seemingly simple, but in fact very complicated behavior that is influenced by many interacting factors (E.P. Koster 2007) although consumers only use a small amount of the information available to make a decision (e.g., Foxall, 1983; Lockshin & Hall, 2003).

Before starting getting deep in explaining and reviewing more in our topic, let's define variety seeking according to the most common definition defined by

researchers. Variety seeking in purchase behavior is defined as the tendency of individuals to seek diversity in their choices of services or goods (Barbara E Kahn 1995). Van Trijp (1995) proposed the following definition of the term variety seeking behavior: "the biased behavioral response by some decision making unit to a specific item relative to previous responses within the same behavioral category, or to a set of items consumed simultaneously, due to the utility inherent in variation per se, independent of the instrumental or functional value of the alternatives or items, and is a function of psychological processes" (van Trijp, 1995, page 9). After variety seeking is defined we ask ourselves why do we seek variety? The answer for this question is captured by these factors, biology (e.g. energy balance), physiology (e.g. gastro, intestinal mechanisms) and motivation and decision psychology (e.g. search for stimulation) each attack the "why" question in their own right and provide answers that they see as the central one, although admittedly it is slightly modulated by influences from the other factors. The same holds for biology (e.g. genetic factors, gender), sociology (e.g. culture, tradition, social status) and social, developmental and differential psychology (e.g. group formation, age and learning, personality traits like neophobia) (E.P. Koster 2007). One example to help us understand why we seek variety in food, from a biological point of view, is that we need to supply our bodies with a varied nutritional balance from different elements (protein, carbohydrates, fibers, minerals etc). For example, (Goukens et al., 2007).cited an study by Ali Faraji Rad , Mehrad Moeini-Jazani, Luk Warlop thatshowed that women seek more variety in rewards when closer to ovulation and it is due hormonal fluctuations during the ovulatory cycle. It was tested using samples of women fertile (vs. non-fertile) women, moreover when desires are activated (e.g., hunger), more items from a choice set (e.g., different kinds of sandwiches) become attractive, and therefore people tend to choose a greater variety of items

Variety seeking is not limited to food purchasing. We can see it when a consumer chooses different restaurants over a sequence of dining occasions (Barbara E Kahn 1995), in addition when choosing among services, consumer might prefer a bundle of different services offered by different companies (eg. Fitness club) even if the consumer will not use all of them.

McAlister and Pessemier (1982) classified varied behavior as being either derived or direct. Derived variety-seeking behavior was the result of some other motivation, not directly related to a desire for variety. This type of variety seeking occurred because of multiple needs, multiple users or multiple situations ,for example when different family members have combination of different preferences that makes it desirable to vary the product choice. Direct variety-seeking behavior was defined as resulting from intrapersonal motives: variety-seeking that occurred because of the desire for change and/or novelty or because of satiation with product attributes. In recent years, another motivation for variety seeking behavior has been proposed, preference uncertainty or taste misprediction (Kahneman and Snell, 1990; Simonson, 1990), which named as variety due to future preference uncertainty.

In this paper we are going to review the exciting literature about consumer variety seeking behavior, in addition to empirical work to show the explanatory power of variables that might influence that behavior. The paper is divided into 6 sections: introduction, literature review, data set description, objectives and empirical work followed by results and conclusions that contains some future opportunities to enhance this work.

2 Literature Review

According to (McAlister and Pessemie) and (Kahneman and Snell) there are

2.1 Three motivating factors that derives variety-seeking behavior.

1. Satiation/Stimulation
2. External situation
3. Future preference uncertainty

Satiation/Stimulation

Coombs and Avrunin (1977) cite physiological evidence, which indicates that a single peak-preference function generally characterizes individuals' reactions to attributes of a stimulus. Once a consumer has reached an optimal level of an attribute, he or she feels satiated and may choose to consume a different attribute on the next occasion (Barbara E Kahn 1995). The same mechanism can be applied in food purchasing behavior, as we can observe that from time to time we feel in need to change what are we eating, even if it was ones favorite (Flavor, meal, brand), thus consumer fluctuated along the attribute level of an item, researchers propose that variety-seeking is motivated because consumers experience satiation on attributes provided by specific brands and are therefore less likely to choose that same brand after it has recently been chosen (Jeuland, 1978; McAlister, 1979, 1982). This satiation with a specific brand could also be occurring because consumers may not find a single option that satisfies all of the attributes of an ideal point (Huber and Reibstein, 1978) or because consumers seek a balance of attributes to maximize utility (Farquhar and Rao, 1976).

In different situations, consumers may be satisfied with their current choices, but may be looking to try something new or different for the fun of it, or for the thrill of it (eg Berlyne, 1963, 1970). Or even curiosity, this what is called stimulation. These situations might occur due to change in external environment, but the choice for variety is ultimately an internal drive (Barbara E Kahn 1995).

The frequency or intensity of consumption and the mode of consumption can also affect how quickly a consumer feels satiated (Park et al, 1990) and thus affect a consumer's internal need for variety seeking. The more frequently and intensely a consumer engages in the consumption, the more quickly he or she will feel satiated (Barbara E Kahn 1995). In addition if consumers have an inherent drive for variety either because they have satiated with the currently consumed product or because they are looking for stimulation, then they will be less likely to choose the same item on two consecutive choice occasions. The simplest measure of this type of variety seeking would be to consider the degree

of alternation or patterning of brands within a choice set even if the brands are familiar (Venkatesan, 1973; Faison, 1977).

One easy way to measure variety seeking was proposed (Barbara E Kahn 1995), by counting number of switches where a subject (consumer) changed from one item on one choice occasion to a different item on the next choice occasion; a higher number of switches would indicate more variety-seeking behavior.

External situations

Variety seeking behavior may also be present in reaction to changes in the external environment, these changes might appear at many levels at the household level, variety-seeking behavior may also occur because of the attempt to satisfy different users within the household (Laurent, 1978; McAlister and Pessemier, 1982; Lattin, 1987). In addition, one more example that captures the effect of external environment is at retail level (price promotions): consumers may frequently choose something different from what they normally choose in the presence of a promotional discount (Blattberg and Neslin, 1990). Some experimental work has shown that consumers may use price promotions to decide when to add variety to their purchase history (Kahn and Louie, 1990).

A laboratory experiment was done to show the effect of promotion on variety seeking behavior of consumers, as promotion resemble external environment variable, subjects who were experimentally motivated to seek variety used the presence of promotions to determine when they would choose something different from their normal selections. The subjects sought variety in their brand choices when there was promotional activity and were loyal to their old favorites when the promotions were retracted. This result suggests that if promotions are patterned successfully, they can perhaps be used to provide structured variety seeking for consumers (Barbara E Kahn 1995).

Another attribute of external environment is the retailing environment, Laboratory experiments (Menon and Kahn, 1995) have shown in their

experiment that within the retail environment if the retailer made frequent changes over time, the retailer exhibit less variety in the product choices than if the retail environment was static over time. These changes in the environment include changing locations of items within a store or changing the layout specifically, changes that would not increase positive affect. Menon and Kahn (1995) also showed that if a consumer was given sufficient variety in one product class, he or she exhibited less variety-seeking than usual in another product class than if the first product class had offered no opportunity for variety (Barbara E Kahn 1995).

A creative experiment was done by (Mitchell et al, 1995) showed that emitting odors and smell affect the variety seeking behavior of the consumer specially when these smells and odors matches with the item (eg. Chocolate smell when passing by chocolate shelves)

Preference uncertainty

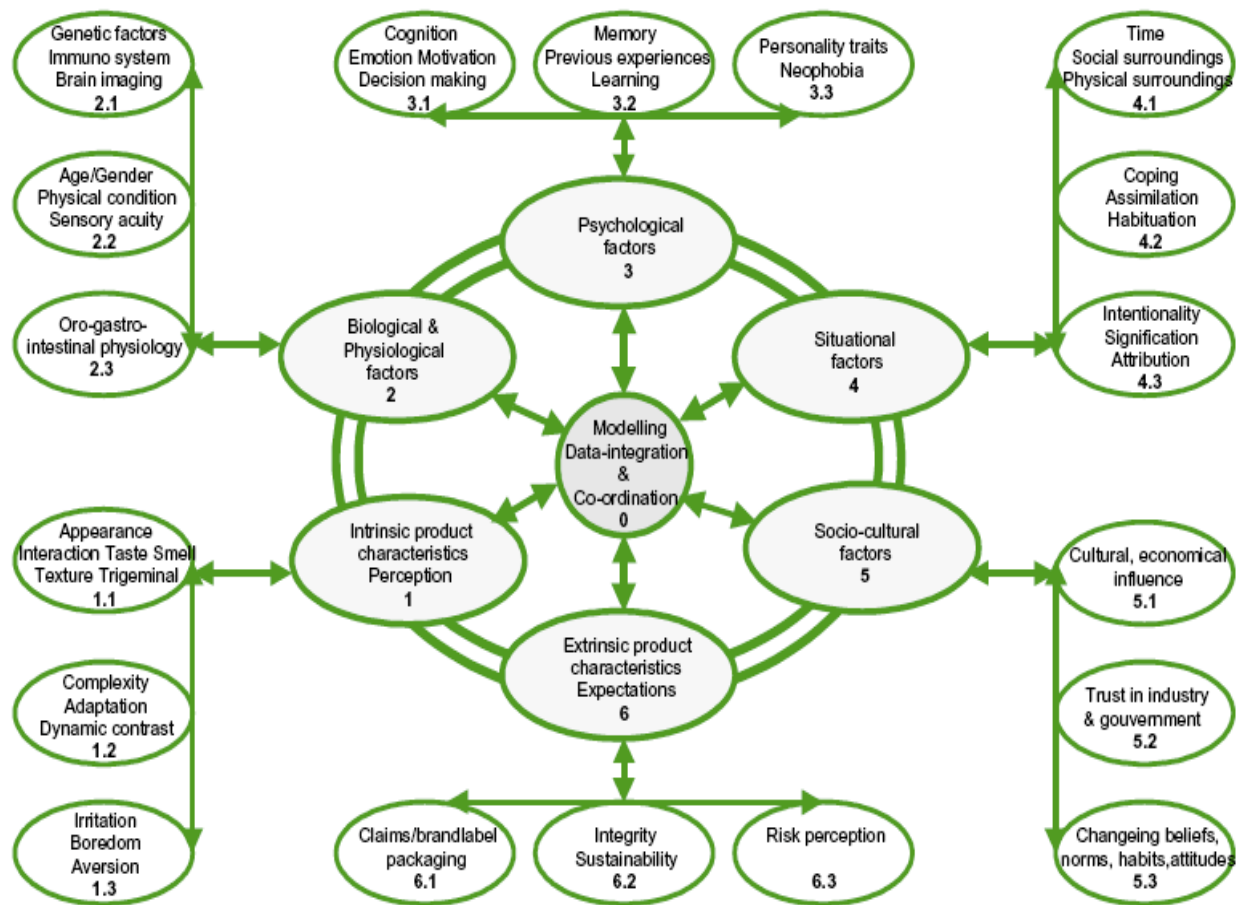
Another motive for choosing variety is derived by future uncertainty, the third motivation for choosing variety in purchases that has been suggested in the literature. That is, consumers want a portfolio of options as a hedge against the uncertainty of future tastes (Pessemier, 1978). In these circumstances, variety in a choice set is sought not because of the utility for diversity, but because of the uncertainty about what future preferences will be (Kahneman and Snell, 1990; Simonson, 1990; Walsh, 1993). Many researchers like Kreps (1979) suggested reasons and explanation for this motive for variety, example would be that consumer seeks variety due to the lack of certainty on future taste or future mood, this gives a reason for a consumer to choose a variety to satisfy future. As a result of this uncertainty, it is sensible for consumers to preserve as many options as possible for the future (March, 1978). Variety caused by future preference can be tested by analyzing the behavior of consumers, between choices done simultaneously for future sequential consumption, and sequential choice this was tested by Simonson (1990) he tested this using subjects that

were asked to choose items from different categories (eg. Candy bars, potato snacks) and subjects choices were compared, when they chose for immediate consumption and for future consumption. From this point we can start thinking about variety cycles and their mechanism. Another reason why consumers may seek variety in choices is to protect anticipated over-saturation with favorite choices (Kahn, Ratner and Kahneman, research in progress). Example for this would be if a person have a special song that he/she listen to they might listen to it less frequent in order to maintain its specialty to them, or a consumer may Purposely choose a different restaurant from his or her favorite, not because he or she is tired of the favorite, but because of the fear that eating at the restaurant too often might make it less special and desirable (Barbara E Kahn 1995).

By summing up the motives, consumers may seek variety because of an internal need for variety due to satiation of particular attributes or because of a desire for additional stimulation. Consumers may also seek variety because of changes in the external environment. These changes may be directly manipulated by the retailer through changes in the marketing mix such as price or place, or may just be naturally occurring. The third reason why consumers seek variety is as a hedge against uncertainty in future tastes. A varied portfolio of options increases the likelihood that the consumer will be able to choose his or her most preferred option in the future (Barbara E Kahn 1995).

2.2 Complexity of food choice behavior

Over the last ten years, the number of publications on this topic has grown very rapidly, but there is a lack of research on the interaction between the different factors that influence food choice behavior. Some years ago this problem was recognized by Jos Mojet in a proposal for the development of a European network for sensory and food consumer research. (Mojet, 2001, personal communication) She made the overview of the many factors and disciplines involved in food choice behavior Fig 1 (E.P. Koster. 2007).



Copy right J. Mojet ATO 18-11-2001

Fig. 1. Essential factors that influence eating and drinking behaviour and food choice.

Mojet recommended that when carrying out multidisciplinary research that is directed at establishing and modeling the interaction in different combinations of factors that influence food choice, while using and integrating these new methods in at least two of the areas mentioned in the inner circle of Fig. 1.

Moreover E.P. Koster pointed out on the importance that food, drinking and behavior should be studied by psychology, as its important human behavior and certainly the most frequent one. In addition E.P. Koster showed number of fallacies.

The fallacy of Uniformity: The idea that the behavior of people differs in degree, but not in essence.

- The fallacy of Consistency: The implicit idea that people do not change.
- The fallacy of Conscious Choice: The idea that human choice behavior is rational and guided by conscious motives.
- The Perceptual fallacy: The idea that what can be perceived will also be remembered and that what is not perceived cannot be remembered.
- The Situational fallacy: The idea that eating and drinking situations can be defined and characterized by objective criteria.

In addition learning and memory have a great impact food habit formation. In this table presented by E.P. Koster showed the manners of learning involved in the formations of habits.

Table 1

Different forms of learning involved in food habit formation and indication of the extent to which the resulting habits are resistant (+) to change or not (–)

– Imprinting and conditioning (pre- and peri-natal) ^a	(+++)
– Praise, reward and punishment (early childhood; parents or others) ^a	(++)
– Imitation (childhood and puberty; parents, peers, idols)	(±)
– “Sensory” learning (lifelong; complexity, boredom, exposure) ^a	(++)
– Cognitive learning (adulthood; advice, labelling, risk perception)	(–, +)

(±) = more or less. (–, +) = in some cases, not in other cases.

^a Largely implicit and unconscious habit formation.

2.3 Attribute level varied behavior

Consumers are more likely to be satiated by particular attributes of a service or good if they relate to the primary aspect being consumed, rather than the secondary aspect being consumed. For instance, if bread is thought of as the primary product, consumers are more likely to be satiated on specific attributes and to seek variety among different types of breads. On the other hand, if bread is thought of as the outside of a sandwich (secondary aspect), the attributes of the filling in the sandwich (the primary product) are more likely to cause satiation (Lattin, 1987).

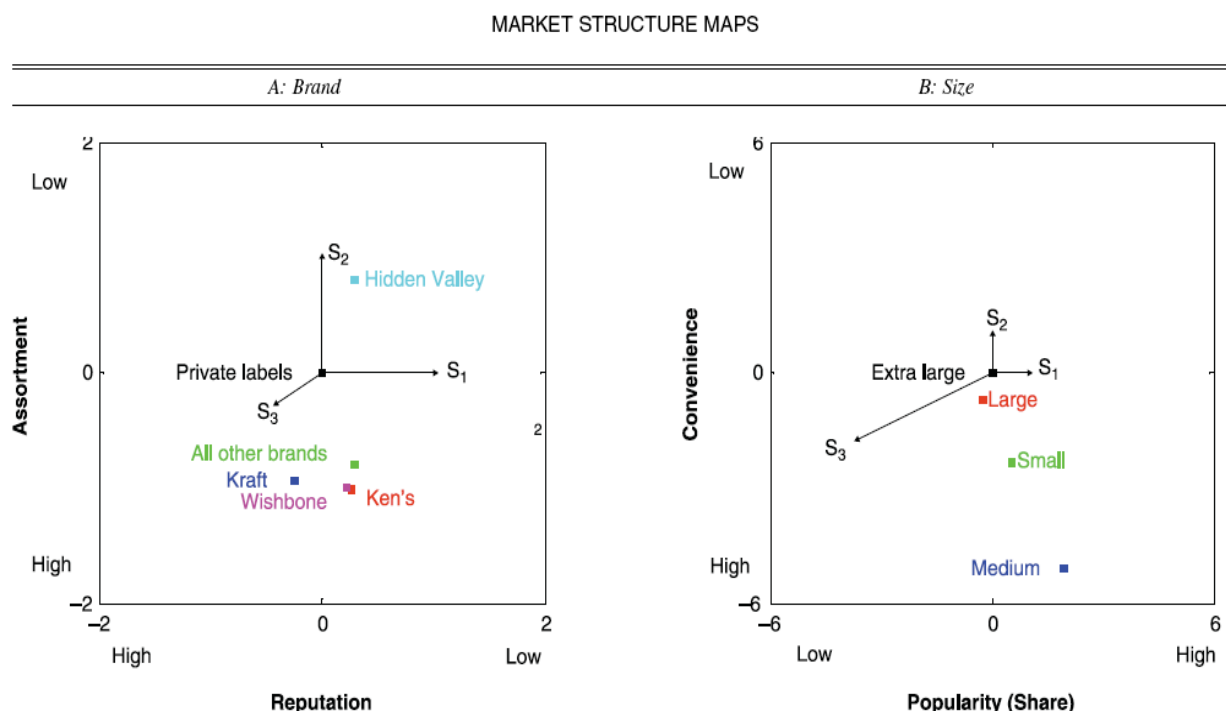
Lancastrian economics assumes that consumers do not have preferences for a product (e.g., car) per se but rather preferences for the attributes (e.g., mileage, color, leather seats) a product possesses (Inman, J.J.; Park, J. and Sinha, A. (2008), this shows the importance of the attribute level in the varied behavior. Moreover consumers may exhibit reinforcing behavior (i.e., high repeating) on some attributes and derived varied behavior (i.e., high switching) on other attributes (Inman, J.J.; Park, J. and Sinha, A. 2008).

Lancaster's theory of consumer choice this theory postulates that consumption decisions are determined by the utility that is derived from the attributes of a good, rather than from the good by itself.

Some consumers may be more likely to repeat their choice of a certain attribute level (eg. Size, flavor, state), other consumers would experience a varied behavior in their choices among attributes. This switching among attributes is derived by the motives that were revised before (Satiation/Stimulation, External situation, Future preference uncertainty).

Understanding the attribute level maps can help brand managers understand the competition between levels of the attribute. For example, a product-market structure can be used to identify possible line extension opportunities (Inman, J.J.; Park, J. and Sinha, A. 2008).

Figure shows an example of mapping based on attributes



2.4 Variety cycles in food choices

We know that in certain product categories consumers follow varied consumption behavior, whereby they alter their purchases among the variety that they perceive in the supply (Kahn, 1998). Households can have variety objectives that can be met in a single shopping trip, but it is more likely that they will be satisfied over a series of trips. In this situation, each basket of a shopping trip would include both the quantity needs and the variety needs (Carmen Berne, Jose M. Mugica 2010)

Carmen Berne, Jose M. Mugica carried out a study to explore and to provide a proof about the existence of variety cycles in purchases. They explained that there are types of shopping trips, to complete the demanded quantity (STquant) and the shopping trips to complete the demanded variety (STvar) of the household. Moreover they mentioned the two types of household:

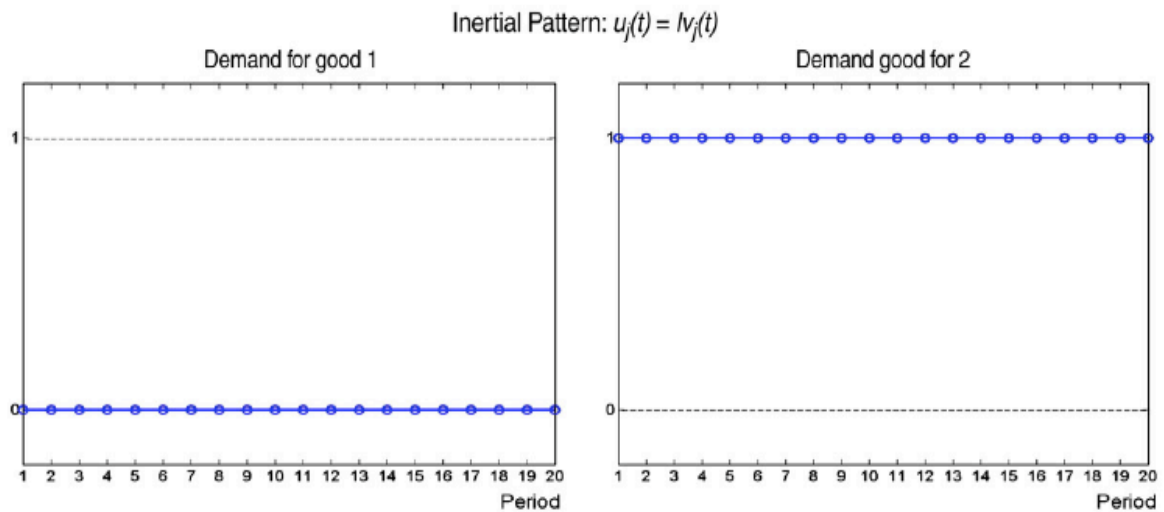
- This can be considered as segmentation based on variety cycles, as the next figure demonstrates.

C. Berne Jose M. Mugica 2010

C. Berne Jose M. Mugica 2010

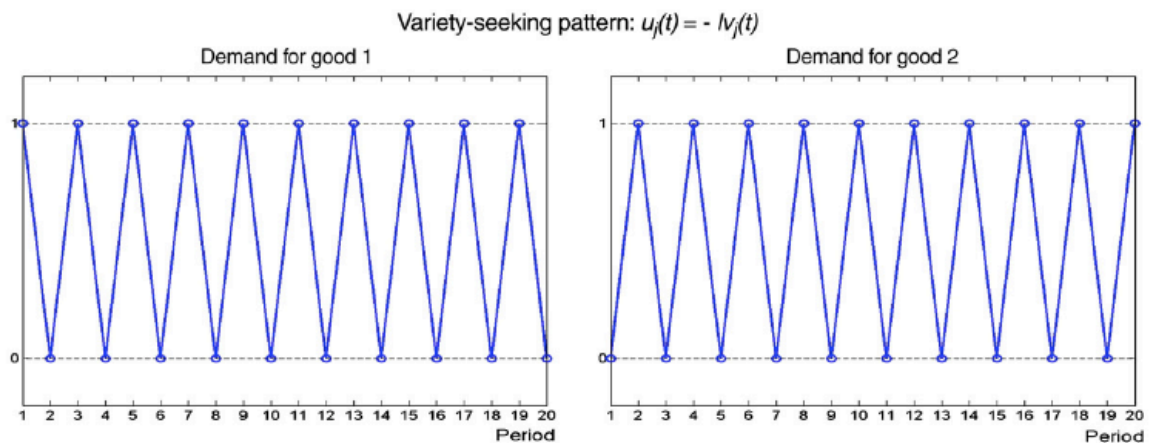
2.5 Consumption patterns

Jimenez-Martin, S. Ladrón de Guevara, A. 2007 introduced a study that show three consumption pattern of consumer: inertial, variety seeking, and hybrid, (the hybrid pattern is a mix of variety seeking and inertial), moreover they constructed a model and plotted these patterns.



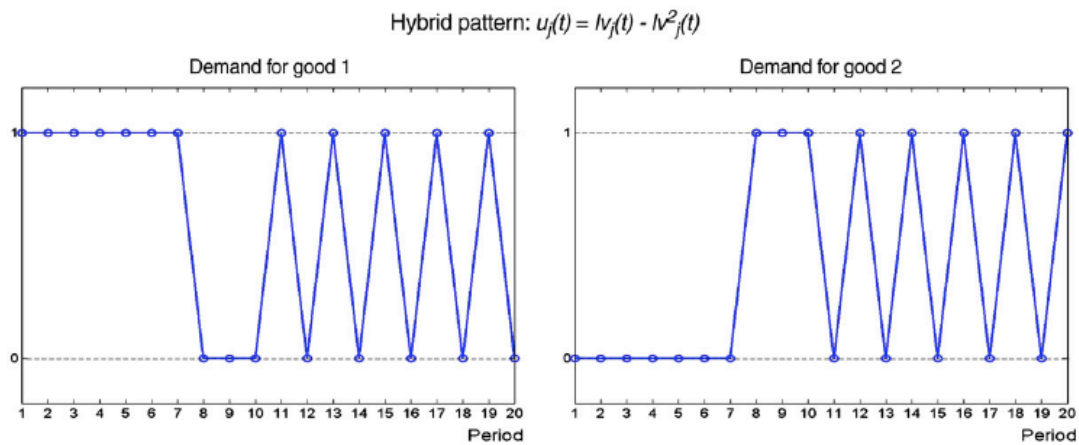
S. Jimenez-Martin, A. Ladrón-de-Guevara 2007

Figure shows inertial pattern



S. Jimenez-Martin, A. Ladrón-de-Guevara 2007

Figure shows variety-seeking pattern



S. Jimenez-Martin, A. Ladrón-de-Guevara 2007

Figure shows hybrid pattern

In their paper the importance of attribute level choice models was highlighted, the results from this choice model lend strong support to the importance of modeling consumer preferences in the attribute space (Jimenez-Martin, S. Ladrón de Guevara, A. 2007). In addition they showed the managerial role and how using promotion and other marketing techniques they can influence consumer choice. In terms of marketing actions for an existing brand, a manager interested in a particular segment can emphasize promotional variables that are more effective to that segment. Joint actions with retailers would be particularly effective with the support of supermarket information systems that monitor households' purchase histories (Jimenez-Martin, S. Ladrón de Guevara, A. 2007).

An increasing availability in the sophistication of the data from retailers allows for more complex and complete models, and analysis that produce better forecasts. Retailers can benefit from the capability of the model to predict the segment-specific consumer responses to retail control variables, such as price cuts, feature ads, and displays at their stores. This allows retailers to design specific direct marketing programs, such as promotions to more price sensitive households. Retailers can also evaluate the impact of alternative strategies for their private label brands to increase share and create loyalty to their stores (Jimenez-Martin, S. Ladrón de Guevara, A. 2007).

Varied behavior can be observed not just in purchasing good, but also in

choosing the store were the purchasing needs are completed, households do not normally complete their purchases in just one store but rather in the same set of stores. In other words, the definition of variety seeking has to be expanded. An individual may be stimulated not only by variety at the product category level, but also by variety within the context of shopping stores. Moreover they added saying that The composition of the store set for each household will change over time or not depending, presumably, on the factors that explain consumer variety-seeking behavior (N.Martinez S.Burt, C Berne 2010). Studying these elements would give to retailing managers the chance of enhancing their position in the market.

An interesting study was held by N.Martinez S.Burt, C Berne, to explain structural variety seeking. Five hypotheses were tested.

H1: The higher the shopping frequency at the stores in the store set, the greater the variety-seeking behavior.

H2: The greater the overall satisfaction with the stores in the store set, the smaller the variety-seeking behavior will be.

H3: The greater the work commitment, the smaller the variety-seeking behavior will be.

H4: The bigger the household, the smaller the variety seeking behavior will be.

H5: When the buyer is retired, the greater the variety seeking behavior will be.

Hypotheses 2,3,5 were accepted but on the other hand hypothesis 1,4 were rejected.

2.6 Variety seeking utilitarian and hedonic

Hedonic product is the type of products we buy derived by the motivation of pleasure and pain etc. on the other hand Utilitarian goods, which are purchased

for their practical uses and are based on the consumer's needs (Werthenbroch, K., Khan, U., Dhar, R. 2004).

A study was carried out by van trijip 1996 to test the hypothesis that consumers will seek less variety for a sensory attribute (flavor/odor) of a utilitarian product in contrast with the variety sought for a similar sensory attribute of a hedonic product. The results of this experiment indicate that consumers tend to seek more variety for hedonic attributes of a product primarily perceived as hedonic compared to a product perceived as utilitarian.

3 Data set

The data set used in the empirical work is a panel data. The data was obtained from purchase history of 211 Customers (including simultaneous purchases) from the category of frozen pizza (Hedonic product), in the time span of a year in 1999 from Enaco (supermarket) for each purchase occasion we know the day and the volume purchased in addition to the type of pizza and its price, all the purchases was carried out from the same selling terminal this puts all the customers in the same purchasing conditions within the store.

The data contains 5 different frozen pizza brands (Cocinera, Buitoni, Findus, Pescanova, Frudesa) in addition to 6 different flavors offered by the brands (4cheese, jamón, margarita, tuna, Romana and others) not all the brand offer the same flavors, for example the brand Buitoni only offers 3 flavors (4cheese, jamon and margarita). This gives us a total of 20 alternatives that can be chosen by a customer.

Data contains 1466 choices made by 211 customers within the year 1999, in addition our data contains 6 important variables:

Client: client number

Date: date of the purchase

Price: price of the item

Brand: brand purchased

Flavor: flavor purchased

Quantity: quantity purchased

3.1 Data descriptive

Alternative	Brand	Flavor	Avg price	percentage	number of times selected
1	Buitoni	4 chees	2.240 €	11.870%	174
2	Buitoni	Jamon	2.250 €	9.620%	141
6	Buitoni	Margarita	2.240 €	7.300%	107
3	Findus	Jamon	2.310 €	8.590%	126
13	Findus	Tuna	1.790 €	4.300%	63
15	Findus	Margarita	1.400 €	2.930%	43
16	Findus	Romana	1.790 €	3.000%	44
20	Findus	4 chees	2.780 €	1.770%	26
14	Cocinera	Tuna	1.870 €	3.890%	57
17	Cocinera	Romana	1.740 €	1.360%	20
18	Cocinera	4 chees	2.300 €	2.320%	34
19	Cocinera	Margarita	1.450 €	1.640%	24
4	Pescanova	Margarita	1.240 €	5.390%	79
7	Pescanova	Tuna	1.380 €	7.030%	103
9	Pescanova	Romana	1.360 €	5.180%	76
11	Pescanova	Other	1.450 €	5.160%	61
5	Frudesa	Tuna	1.570 €	6.340%	93
8	Frudesa	Romana	1.500 €	4.090%	60
10	Frudesa	Jamon	1.410 €	4.770%	70
12	Frudesa	Margarita	1.470 €	4.430%	65

Table 1

Table 1 shows the 20 alternatives in the data with the average price of each item and a count of the number of times being chosen, in addition to the percentage of choice.

Main characteristics of customers

average quantity purchased	8.260
choice alternatives	20
Mean interpurchase time	38 days
avg number of trips	4.960
avg money spent	12.730

Table 2

The highest number of choices done by a customer in the year period was 37 choices.

3.2 Variables construction

In order to work with the data, we aggregated each customer choices into one line and we came up with the final variables in order to construct our analysis: 1

Average purchase time of each customer, 2 total quantity purchased of each customer, 3 total money spent of each customer, 4 total number of trips and 5 finally a variable that captures the variety chosen, which constructed by counting how many times each consumer switched between alternatives of brand and flavors of frozen pizza category. Minimum number of alternation between alternatives observed to be 0 and maximum of 9 alternations.

Rate of variety	Frequency	percent%
0	12	5.690
1	37	17.540
2	74	35.070
3	31	14.690
4	26	12.320
5	12	5.690
6	8	3.790
7	5	2.370
8	5	2.370
9	1	0.470
total	211	100%

Table3

4 Objectives and empirical work

Our objective in this research is to review some literature that focuses on variety seeking behavior in food choice, highlighting the causes that lead to this behavior. In addition to experimenting which variables have more influence in explaining variety, and comparing the results with other research papers for consistency.

4.1 Measurement model

The regression that is used in this empirical work to explain variety is ordered probit model. Like many models for qualitative dependent variables, this model has its origins in bio-statistics (Aitchison and Silvey 1957) but was brought into the social sciences by two political scientists (McKelvey and Zavoina 1975), it is used due to the nature of the dependent variable (Variety) that captures the variety seeking behavior of the consumer in our data set by counting the how many times consumer switches between alternatives in the frozen pizza

category. As mentioned in the in the data description section that this variable (variety) takes values from 0 to 9, these numbers means nothing in terms of value rather they are just an order to show lowest to highest alternation between alternatives of different types of pizza.

The ordered probit model uses the following form:

$$y_i^* = x_i \beta + \varepsilon_i$$

Where y^* is the unobserved dependent variable (variety) that have the values from 0 to 9. β is the vector of estimated regression coefficients that we wish to estimate and x is the vector of explanatory variables, ε is the error term.

Further suppose that while we cannot observe y^* , we instead can only observe the categories of response:

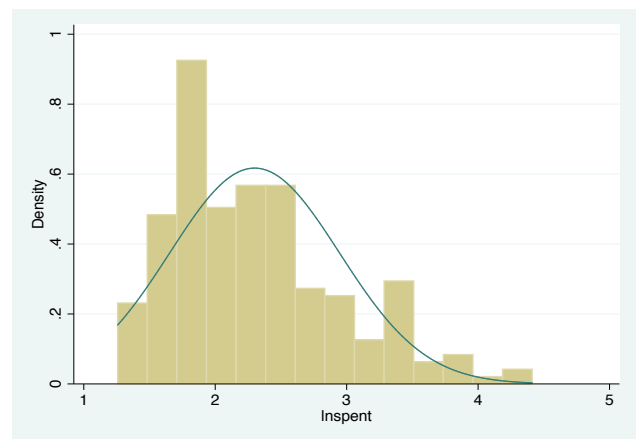
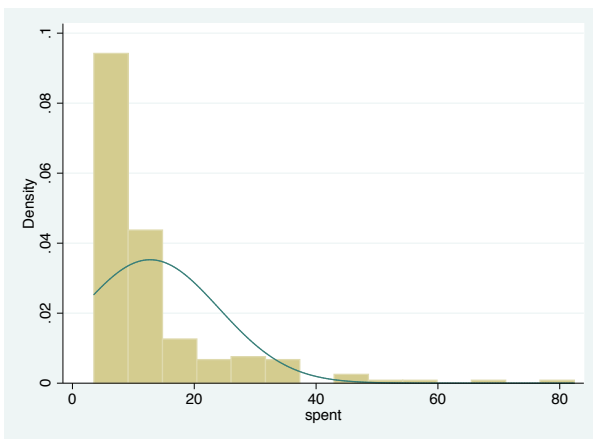
$$y = \begin{cases} 0 & \text{if } y^* \leq 0, \\ 1 & \text{if } 0 < y^* \leq \mu_1, \\ 2 & \text{if } \mu_1 < y^* \leq \mu_2 \\ \vdots & \\ N & \text{if } \mu_{N-1} < y^*. \end{cases}$$

Then the ordered probit technique will use the observations on y , which are a form of censored data on y^* , to fit the parameter vector β (Greene, William H., *Econometric Analysis* (fifth edition)). With this model we try to measure and explain the variables (Average interpurchase time, number of trips, money spent, quantity purchased) that have high power in explaining variety seeking in our category (frozen pizza).

Variety = f (average interpurchase time, number of trips, amount of money spent, quantity purchased)

5 Modeling results

Ordered probit model was estimated (table 4). The model provided successful significant results in explaining variety, we consider significance at 5% level (<0.05) at 95% confidence level. The natural logarithm was calculated for variable money spent in order to assist for normality as we can see in both graphs.



variables	! cofficients	P score
Ln(money spent)	0.868	0.000
Quantity purchased	0.059	0.006
Purchasing trips	-0.102	0.013
Avg interpurchase	0.002	0.229
Observation	211	
Log likelihood	-365.465	

Table 4

The variable money spent which captures the total amount of money spent by a consumer, it showed significance at 1% moreover there is a positive relation between the amount of money spent and the variety behavior of a consumer with $\beta = 0.868$, suggesting that a consumer who spends more money in there purchase are more likely to alternate between attributes in the same category (frozen pizza). The variable money spent can capture the

budget of the household meaning that if a consumer spend more money in buying pizza, then it is more likely that they dedicate larger amount for this category than others consumers. This observation comes consistent with results from (C. Berne, Jose M. Mugica 2010), in their research they hypothesized that “The household’s budget allocated to food purchases has a positive effect on the demand for variety” and this comes to be consistent with our findings.

Quantity purchased by the consumer has a positive impact on the variety seeking behavior with a coefficient $\beta = 0.059$ and a significance of $0.006 < 0.05$, this explains that a higher alternation would be more likely to be observed in consumers buying large quantities. Moreover consumer buying large quantities can mean that they are in larger size household and it is consistent with the results from (C. Berne, Jose M. Mugica 2010) accepting the hypothesis that “The size of a household has a positive effect on the demand for variety” in addition it agrees with the rejection of the hypothesis in (N.Martinez S.Burt, C Berne 2010) that states that “The bigger the household, the smaller the variety seeking behavior will be”.

The more frequent the consumer does his/her shopping trips the less variety alternation observed this is captured by the variable purchasing trips with $\beta = -0.101$ and significance of $0.013 < 0.05$, this agrees with (N.Martinez S.Burt, C Berne 2010) in rejecting the hypothesis that The “higher the shopping frequency at the stores in the store set, the greater the variety-seeking behavior”.

Finally the interpurchase time showed positive impact on consumer varied behavior $\beta = 0.001$ but it showed no significance $0.229 > 0.05$, this could be is due to multicollinearity, as this variable can be linearly predicted from other variables, even though the is little negative correlation with the variables but yet it explains them. For example when the average interpurchase time is large then a decrease in number of trips done, total money spent and quantity purchased for this reason this variable shows no explanatory power.

6 Conclusions

In this paper some literature was reviewed to answer the question why consumer seeks variety and it is observed to be due several reasons it can be due to biological, physiological or due to external effects, consumers may seek variety because of an internal need for variety due to satiation of particular attributes or because of a desire for additional stimulation. Consumers may also seek variety because of changes in the external environment. These changes may be directly manipulated by the retailer through changes in the marketing mix such as price or place, or may just be naturally occurring. Another reason why consumers seek variety is as a hedge against uncertainty in future tastes (Barbara E Kahn 1995). In addition regarding variety behaviour at attribute level, most models presented in the marketing literature consider brand as the fundamental decision variable. However, the choices among the existing items reveal preferences not only for a brand, but also for several other underlying attributes, like size, formulas, flavors, etc. (S Jimenez-Martin, Antonio Ladrón-de-Guevara 2007).

In the empirical part of this paper we showed the impact of some variables on the variety behavior of consumer, the variables we constructed capture general simple behaviour of consumer like total money spent, shopping frequency, quantity bought etc. using ordered probit model as our statistical tool we observed a positive strong relation between the amount of money a consumer spends and his variety behaviour within a category, concluding that consumer with higher budget dedication to a certain food category affects positively his variety behaviour. In addition, the quantity purchased affects the consumer alternation between different products assuming that bigger family size or large number of family members increases the variety behaviour. Last but not least, the results showed that the more shopping trips the consumer does in purchasing food from a certain category reduces his variety behaviour. While the average interpurchase time between trips has no significant impact on the consumer varied behavior due to multicollinearity problem.

This research can be a starting point for enhancing the understanding of its conclusions. One way for doing this enhancement is including more information about the consumer in data (eg. Age, household size, work concentration level), with this information we can take the analysis to a much more nearer scope in understanding the explanatory powers of these variables and their effect on consumer behavior. Attributes of the product can be considered, by knowing the taste and preference of each consumer we can understand the consumer pattern of alternation between their preferred attributes. This understanding can help retailers to target promotions and offers. Another potentially fruitful area of future research might be the relationship between variety seeking and advertising (Kahn, B.1995).

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Appendix

Regression using ordered probit

oprobit variety lnspent trips Cantidad Avginterpurch

Iteration 0: log likelihood = -393.6055
 Iteration 1: log likelihood = -365.56703
 Iteration 2: log likelihood = -365.46515
 Iteration 3: log likelihood = -365.46508
 Iteration 4: log likelihood = -365.46508

Ordered probit regression	Number of obs	=	211
	LR chi2(4)	=	56.28
	Prob > chi2	=	0.0000
Log likelihood = -365.46508	Pseudo R2	=	0.0715

variety	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lnspent	.8678595	.2454122	3.54	0.000	.3868604	1.348859
trips	-.1019263	.0411895	-2.47	0.013	-.1826563	-.0211963
Cantidad	.0592043	.0213307	2.78	0.006	.0173968	.1010117
Avginterpurch	.001834	.0015253	1.20	0.229	-.0011555	.0048236
/cut1	.3388442	.4477959			-.5388196	1.216508
/cut2	1.215037	.435417			.361635	2.068438
/cut3	2.262481	.4470574			1.386265	3.138698
/cut4	2.746436	.4586916			1.847417	3.645455
/cut5	3.292665	.4740666			2.363511	4.221818
/cut6	3.67035	.4866408			2.716552	4.624149
/cut7	4.047787	.5010146			3.065816	5.029757
/cut8	4.434105	.5226915			3.409649	5.458562
/cut9	5.31971	.6411891			4.063002	6.576417

Regression using ordered logit

```
Iteration 0: log likelihood = -393.6055
Iteration 1: log likelihood = -366.77745
Iteration 2: log likelihood = -365.82601
Iteration 3: log likelihood = -365.82409
Iteration 4: log likelihood = -365.82409
```

```
Ordered logistic regression          Number of obs   =      211
                                   LR chi2(4)         =      55.56
                                   Prob > chi2         =      0.0000
Log likelihood = -365.82409         Pseudo R2        =      0.0706
```

variety	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Inspent	1.369551	.4423069	3.10	0.002	.5026457	2.236457
trips	-.186014	.0764757	-2.43	0.015	-.3359037	-.0361243
Cantidad	.1297498	.0482602	2.69	0.007	.0351616	.2243379
Avginterpurch	.0028897	.0024541	1.18	0.239	-.0019201	.0076996
/cut1	.2657895	.7904897			-1.283542	1.815121
/cut2	1.90912	.7539831			.4313403	3.3869
/cut3	3.648122	.7851687			2.10922	5.187025
/cut4	4.461535	.8086503			2.876609	6.04646
/cut5	5.416692	.8373269			3.775562	7.057823
/cut6	6.106942	.8614439			4.418543	7.795341
/cut7	6.820589	.8905402			5.075162	8.566015
/cut8	7.580899	.9397677			5.738988	9.422809
/cut9	9.554671	1.320342			6.966848	12.14249

Correlation matrix

	Avgint~h	Cantidad	trips	variety	Inspent
Avginterpu~h	1.0000				
Cantidad	-0.2768	1.0000			
trips	-0.2949	0.8794	1.0000		
variety	-0.1026	0.4866	0.4073	1.0000	
Inspent	-0.3071	0.8427	0.8714	0.5036	1.0000