Determinants of Ready-to-eat Products Purchase Intentions: An Empirical Study among the Italian Consumers

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Additional index words. consumer, consumption variables, new needs

Abstract. The considerable diffusion of ready-to-eat products has focused attention on the reasons for their increasingly prominent success in the market. Although their prices are much higher than the prices of simple raw materials, their consumption has increased rapidly and with no end in sight, a situation that has challenged the conclusions of the classical literature on the importance of price and/or income in consumer decisions. In fact, more recent literature has broadened the classical vision by introducing potential additional variables that could influence consumer choice of certain foods. These variables, however, are not always easy and clear to identify because they reflect the cultural characteristics of a society. For this reason, the French scholar Malassis has introduced the concept of a model of food consumption, which, in fact, stems from a concept of food consumption as driven by factors that are not the same for all the societies that might be studied. Among these variables, regarding the consumption of ready-to-eat products, a factor that certainly acts as a driving force in an increasingly frenetic and dynamic society is the time saving that they are able to provide. Thus, it was considered essential to analyze this in a concrete way, through the variance analysis of a sample of 77 subjects resident in the city of Palermo, noting their characteristics in terms of age, education level, and number of nuclear family members. The results obtained indicate that subjects who consumed ready-to-eat products at a higher frequency belonged to a higher age group, had a higher level of education, and belonged to a family that was not particularly numerous. With these results, it can be stated that the consumption of ready-to-eat products is influenced by people's need to optimize their available time, considered as a real, scarce resource.

The sociocultural modernization that the Italian society has undergone since the 1970s and 1980s has resulted in the growth of a felt need to adapt to a new consumption model, one which is no longer influenced by traditional variables but rather by new factors that induce society to consume food products that are practical and convenient. An increasingly modern society requires a more substantial amount of “convenience” in the products it buys (Cafarelli et al. 2017; Calabrò and Vieri, 2017; Caracciolo et al., 2015; Ghimire et al., 2016; Giampietri et al., 2018; Mancini et al., 2015; Padilla, 1992; Signorelli, 2005). In Italy, these include the so-called “Gamma” (product ranges), which are categorized into I, II, III, IV, and V. The gamma number indicates the level of processing the raw materials undergo: for example, a gamma

IV (ready-to-eat) product is more processed than a gamma I (fresh and unprocessed) product (Lunati, 1994). However, a major role is being played by the ready-to-eat products that the Italian Association of Food Products Industries defines as “*fresh fruits and vegetables ready for consumption (...) having undergone a mild transformation process divided into the following phases: selection, sorting, cleaning and cutting, washing, drying, packaging in bags or sealed trays, with possible use of modified atmosphere packaging*”. Therefore, these are products that provide a variety of conveniences.

Their rise to prominence began in the United States around the 1960s, and they debuted in the European market in the 1970s, first in France and later in the UK, Germany, Switzerland, and Italy (Daltri and Della Casa, 2005). Italy leads the main European countries in the per capita consumption of ready-to-eat salads: 1.6 kg in 2013 (just under 3% of total vegetable sales), compared with 1.4 kg in the UK, and 0.5 kg in Germany, which are thus promising developing markets (Nomisma Study, 2014).

We believe that the factors that have contributed to the success of ready-to-eat products, both past and present, can be

attributed to their inherent practicality, responding to the main trends in food consumption—packaged foods, ready to be used, which are suitable for a new family model characterized by women working outside the home—in particular, the time savings that they provide. Indeed, the scholarly literature has repeatedly confirmed that the consumption of food products cannot depend solely on the price or income, but also on other variables, especially changing social conditions, specifically the rise of dual-career families, and the health and safety guarantees provided by a controlled production process, and protective packaging (Daltri and Della Casa, 2005; Menghini and Marinelli, 2011).

To provide empirical confirmation for this idea, we decided to conduct a variance analysis of the frequency of consumption of ready-to-eat products in a sample taken from the inhabitants of Palermo, based on their characteristics in terms of age, education level, and number of nuclear family members. The choice of the geographical area of the city of Palermo was justified on the basis of two motivations. First, there was the possibility of realizing a more precise and targeted study compared with that which would have been achieved using only official national sources. On the other hand, the urban conurbation of Palermo possesses the profile of a metropolitan city with consumption habits and styles that are perfectly consonant with the type of consumption connected to ready-to-eat products. The results obtained from the data processing confirm what was previously stated because those who belonged to an older age group, had a high educational level, or belonged to a relatively small family were those found to consume these products more frequently.

Economics Literature

The traditional consumption model explains consumer choices by exalting the roles of price and income. Even in the context of food spending, the same variables are indeed of a certain importance, presenting a negative price elasticity and an income elasticity less than one. However, consumer food choices cannot be explained exclusively through such variables without taking into account consumer preferences, even though income continues to play a certain role, if only indirectly, as many factors that determine the structure of consumer preferences are related to it (e.g., availability of suitable equipment for food storage and preparation, or level of information), factors that in turn have a high impact on the formation of price perception and quality–price ratio (Cosmina et al., 2012; Hoke et al. 2017; Nayga and Capps, 1992; Sciarappa et al., 2016; Tokoyama and Egaitzu, 1994).

In fact, the literature has been able to enrich the “traditional” analysis of food demand and thus render the determining role of new variables more explicit. A considerable contribution has been made possible through the development of the model of

Received for publication 2 Jan. 2018. Accepted for publication 4 Mar. 2018.

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food consumption [modèle de consommation alimentaire (MCA)] elaborated in France by Padilla and Malassis (1996). In general, a model of food consumption refers to the way in which individuals organize themselves into small groups, called socioeconomic consumption units (Unités Socio-Economiques de Consommation), to consume food products; it also refers to food practices and to the nature and the quantity of food consumed. According to Malassis, MCAs “are a reflection of the social and economic formation, of its level of development and capacity for production, of the social structure and its inequalities, of the ideologies that animate it”.

This means that there is no single and dominant model of consumption for all social formations as it changes according to the society under study because of the presence of different social forces that lead to the formation of a predominant MCA, which differs from another formed in another social context.

MCAs are determined by the action of the following variables:

- The ability to supply food*, which depends on the ability to produce, exchange, and store food products;
- the power of consumption*, which depends on the relations of production and the capacity of different social categories to access food. It is precisely the power of consumption that determines actual demand;
- the objective conditions of consumption*, which are linked to the level of development reached and are determined by the distribution and geographical location of the active population, by the material conditions of production, and by the way the labor force is used;
- the sociocultural models* linked, ultimately, to food-related behaviors.

The function of these variables, on the one hand, is to interpret the dominant model; on the other hand, it is to distinguish the social differences related to food consumption patterns in a given society at a given time.

Food-related behavior is, therefore, the result of a set of motivations and personal and sociocultural factors; food preferences and habits change together with socioeconomic transformations; new food needs emerge that quickly become fundamental. The main implication intrinsic to the MCA is precisely that of expanding the explanatory factors inherent in the socioeconomic and cultural sphere (Berni and Begalli, 1996).

Among the variables that make up the socioeconomic sphere, the growing diffusion of dual-career families is of great importance. This recent change has as its main effects the diminution of the responsibility of women with respect to feeding the family and the alteration of the role that meals play within family life. In light of what has emerged, it is clear that the new consumption trends are primarily determined by the search for higher levels of time-saving convenience.

The most evident aspect of the tendency to seek high levels of time saving is, in fact, the orientation toward products that allow for the simplification of preparation activities. On the one hand, there is a shift toward simpler foods, which by their very nature require less time to prepare and cook; on the other hand, there is the need to purchase not individual ingredients but ready-made meal elements, in whole or in part, by effectively outsourcing a series of activities ranging from cleaning to precooking or cooking.

Food consumption is, thus, the expression of a demand that shows not only nutritional needs dictated by physiological requirements, but also expresses the social needs that determine the food behavior of individuals (Bacarella, 2002).

Materials and Methods

Ready-to-eat products are almost always tied to the need to respond to changes in consumer lifestyles which are now oriented toward achieving a fundamental and indispensable optimization of time, even at the expense of their own frugality; not by chance, in fact, the price of a ready-to-eat product is, on average, approximately five to six times higher than the simple, unprocessed product. In these circumstances, it is useful to study and analyze the distinctive characteristics of consumers who use these products to better understand the motivations that drive consumers to buy them. To this end, we sampled 77 subjects who were consumers of ready-to-eat products and resided in the metropolitan area of Palermo in 2015, examining both their personal and professional characteristics (age group, education level, and family size) to verify whether they were of enough statistical significance to influence the frequency of consumption. The detection of “consumption frequency” was, however, expressed in qualitative terms: every now and then, once a month, every 15 d, and weekly. To make it a quantitative variable, we considered *the number of times these subjects consumed the aforementioned products during a period of two months*. For example, if an individual consumed ready-to-eat products once a month, it meant that in 2 months he/she would consume twice as much; if, on the other hand, an individual consumed these products weekly, it meant that in 2 months he/she would consume them eight times, and so forth.

The statistical model most suited to this type of data is the one-way analysis of variance (ANOVA). In general, the one-way variance analysis technique can be seen as the Student’s *t* test generalized to *k* populations to verify the null hypothesis of equality of the averages of two populations. In this case, what is considered is the following linear model: $X_{ij} = \mu + \alpha_i + \varepsilon_{ij}$, thus testing the following system of hypotheses:

$$H_0: \alpha_i = 0 \text{ for every } i$$

$$H_1: \alpha_i \neq 0 \text{ for at least some } i$$

X_{ij} represents the frequency of consumption by a given subject “*j*,” extracted from

the sample (with “*j*” = 1, 2 ..., 77), who has certain characteristics “*i*,” that is, in terms of age group, education level, and family size. Instead, α_i represents every single option, or more simply, the *level* of the factor under consideration; for example, it could represent a level of the age group “between 25 and 35” if we are analyzing the factor “age group,” or “university” if we are considering the “education level” factor, and so forth.

Testing the previous system thus corresponds to testing the equality of the averages of the *k* populations. In other words, if we consider *age group* as a factor, we will create five populations, that is, those *under 25*; those *between the ages of 25 and 35*; those *between 35 and 40*; those *between 45 and 50*; and finally those *between 50 and 55*. The objective is, thus, to compare the averages of these five populations in a statistically significant way. The same reasoning applies to considering, independently of each other, the other factors under consideration: education level and family size.

The qualitative variables therefore serve to differentiate the observations related to the variable *X*, that is, to the variable *frequency of consumption*, when we have different treatments corresponding to the different factor levels taken into consideration, thus making multiple comparisons. The ANOVA was preceded by the calculation of Bartlett’s test to verify the homogeneity of the variances.

The hypotheses underlying the model are the classical ones: independent, homoscedastic observations coming from a normally distributed population. However, to determine which of the *k* averages determine a possibly significant result for each individual factor, it is necessary to use Tukey’s test, and not to conduct single *t* tests by comparing the averages two-by-two because, if several *t* tests are performed for medium-sized pairs, the probability of having at least one that gives a significant result increases.

Moreover, the frequency of consumption represents a discrete quantitative variable; consequently, it would have been more appropriate and desirable to use the median as a statistical indicator and not the average, but since its use does not substantially compromise the meaning of the relative results, it is preferred to use the average especially to be able to use the ANOVA model.

Results and Discussion

After collecting the data, it was analyzed and processed according to the method described above. First of all, it is important to describe the sample from which our data were extracted. The reference population was made up of adults who were regular food purchasers residing in the metropolitan area of Palermo. The sample size was 77 individuals who were interviewed in Dec. 2015 (Table 1).

In terms of the sample’s distribution by age group, 31% of them were under 25 years old, 29% were between 25 and 35 years old,

and 23% were between 35 and 40 years old (Fig. 1).

In addition, 60% held a high school diploma, 31% had a university degree, and the remaining 9% had only completed middle school (Fig. 2).

Regarding family size, 41% of the sample were part of a family of four, 22% were a family of one, 21% were from a family of

three, whereas the remaining 16% of families had five members (Fig. 3).

Before proceeding with the variance analysis, we calculated the averages for the individual factors, obtaining interesting results (Table 2).

In general, it can be observed that the average consumption frequency of ready-to-eat products was higher for those aged

between 25 and 35 and lower for those under 25. University graduates, and therefore those with a higher level of education, were those who consumed these products with greater regularity. Moreover, those belonging to single unit families showed a greater frequency in consuming such products than those belonging to more numerous families. Before scrutinizing the variance analysis, we carried out Bartlett's test to verify the homoscedasticity of the errors, which is considered verified when the *P* value, associated with Bartlett's K-squared for the individual factors, is as close as possible to one 1. For all three factors (age group, educational level, and family size), it is easy to see that their respective *P* values, although not arriving precisely at a value of 1, are very close to it. In fact, for the "age group" factor, the *P* value was equal to 0.9707, whereas for the "education level" it was equal to 0.7912, and for the "family size" factor the *P* value was equal to 0.7519 (Table 3). From these results, it can therefore be concluded that the homogeneity of the variance seems clearly verified.

Once the homogeneity of the variances had been ascertained, it was possible to proceed with the variance analysis for each of the three factors. Regarding the variance analysis performed for the "age class" factor (Table 4), from the value of the *F*-test (equal to 2.5741) we can see how, at a significance level α of 5%, the null hypothesis of equality of the respective averages should be rejected. At this point, it was necessary to establish which of the respective averages produced this significant result by means of Tukey's test that suggested that it was determined by the difference in the average of the frequency of consumption of ready-to-eat products among those falling in the 25–35 age group and under 25, which was significant and amounted to 2.4962. In general, we can state that the average consumption of ready-to-eat products was higher for those in the 25–35 years class compared with those under 25 years.

Subsequently, the variance analysis for the "education level" factor was conducted (Table 5). Observing the value of the *F*-test, equal to 6.2716, it was possible to refute, as mentioned previously, at a significance level of 5%, the null hypothesis of the equality of the means of the respective populations. Tukey's test revealed that it was the population of high school and university graduates that produced such a highly significant result. In fact, on average, the difference in the frequency of consumption of ready-to-eat products between these two groups, equal to 2.3876812, was highly significant given that the value of *p* adj was very low (*p* adj = 0.0029110**). On average, the consumption frequency of ready-to-eat products was higher for those holding a university degree than those with a lower educational level.

Finally, the variance analysis of the "family size" factor was carried out. Having ascertained a *Pr*(>*F*) equal to 0.004512, it

Table 1. Sample specifications.

Characteristics	Description
Population	Regular food buyers, adults, residents in the city of Palermo: 1,300,000 individuals
Place of interviews	Palermo
Sample size	77
Interview period	Dec. 2015

Fig. 1. Sample distribution by age group.

Fig. 2. Sample distribution by education level.

Fig. 3. Sample distribution by family size.

was possible to reject the null hypothesis of the equality of the population means (Table 6). Considering the results of Tukey's test, this significant result was caused by the single component and three to five component groups. In particular, the difference in average of the frequency of consumption of ready-to-eat products of the former with respect to the latter was significant given that the p adj was less than 5%. Thus, those living in smaller households more frequently consumed ready-to-eat products.

These findings are a source for reflection as they lead to an extremely important conclusion. The choice of ready-to-eat food products is no longer only dictated by income or price (also because their prices are higher

than the simple basic ingredients) but is mainly linked to the time savings that they provide. Observing the characteristics of the subjects making up the sample and, in particular, examining the motivations that drove them to purchase the products, the graph in Fig. 4 shows that as many as 41% of subjects selected them because of a lack of time for cooking, 25% because they have a useful level of practicality, and 15.7% because they can be consumed away from home.

All this gives greater consensus and consistency to what has been outlined and affirmed by the more recent literature according to which the consumption of food products depends on factors that stem from the characteristics of a society, which "are a

reflection of the economic and social structure, of its level of development and capacity for production, of the social structure and its inequalities, and of the ideologies that animate it." Food consumption is therefore the expression of a demand that relates not only to nutritional needs dictated by physiological needs, but also to social needs that determine the individual's food behavior (Bacarella, 2002) (Fig. 4).

In this specific case, the choice of consumers to purchase ready-to-eat products reflects the need of a society, which is now very dynamic and requires that consumers pay attention to achieving optimal time management. The results obtained through the variance analysis reinforce this interpretation; in fact, more subjects in the age group 25–35 consumed these products with a higher frequency than those under 25, fundamentally because the latter continue to live within their original family unit. Moreover, the subjects who consumed these products more regularly were both those with a higher level of education—in particular university graduates, who typically have jobs with greater responsibility and thus require a considerable amount of time—and those making up a single-unit family who, in fact, do not enjoy even the relatively minimal forms of working together that generally characterize larger families.

Table 2. Average consumption frequency by individual factors and populations.

Avg consumption of ready-to-eat products by age group				
Under 25	Between 25 and 35	Between 35 and 40	Between 45 and 50	Between 50 and 55
3.958	6.455	4.889	3.875	4.6
Avg consumption of ready-to-eat products by education level				
Middle school	High school	University		
4	4.196	6.583		
Avg consumption of ready-to-eat products by family size				
1	3	4	5	
6.235	3.5	5.562	3.25	

Table 3. Bartlett's test for three factors.

	Bartlett's K-squared	Diff	P value
Age group	0.5285	4	0.9707
Education level	0.4684	2	0.7912
Family size	1.2044	3	0.7519

Table 4. Variance analysis for the "age group" factor.

Response: Consumption	Diff	Sum square	Mean square	F value	Pr (>F)
Age group	4	83.27	20.817	2.5741	0.04477*
Residuals	72	582.27	8.087		

Tukey multiple comparisons of means 95% family-wise confidence level

Age	Diff	Lower	Upper	p adj
Between 25 and 35-under 25	2.49621212	0.1475482	4.844876	0.0316535*

* $0.01 \leq \alpha \leq 0.05$.

Table 5. Variance analysis for the "Education Level" factor.

Response: Consumption	Diff	Sum square	Mean square	F value	Pr (>F)
Education level	2	96.46	48.23	6.2716	0.003047**
Residuals	74	569.07	7.69		

Tukey multiple comparisons of means 95% family-wise confidence level

Education level	Diff	Lower	Upper	p adj
UNI-HS	2.3876812	0.7175484	4.057814	0.0029110**

** $\alpha < 0.01$.

Table 6. Variance analysis for the "family size" factor.

Response: Consumption	Diff	Sum square	Mean square	F value	Pr (>F)
Family size	3	108.35	36.116	4.7318	0.004512**
Residuals	73	557.18	7.633		

Tukey multiple comparisons of means 95% family-wise confidence level

Family size	Diff	Lower	Upper	p adj
01–05	2.9852941	0.2465769	5.724011	0.0272346*
01–03	2.7352941	0.2052051	5.265383	0.0289846*

* $0.01 \leq \alpha \leq 0.05$.

** $\alpha < 0.01$.

Conclusions

Food behavior is, thus, the result of a set of personal and sociocultural factors, of preferences and eating habits that change in step with socioeconomic transformations. The evolution of a new way of life resulting from very hectic schedules, the increasing inclusion of women in the workforce, the scarcity of available free time, and the increasing reduction of meal breaks, and the development of a new family model with a strong trend toward single unit families, have had a strong influence on eating habits.

With this work we have tried to put a tentative emphasis on the "two-way" link that for years now has existed between socio-demographic changes and trends in food consumption. The latter, in fact, have not remained static but have been affected greatly by external conditioning from social and cultural changes. The diffusion and success of ready-to-eat products are, not by chance, the result of these changes. In effect, at present, society requires a level of temporal flexibility that cannot be ignored, especially in the workplace. From this, then, stems the importance of stable and optimized time management practices but without renouncing the quality of the food consumed.

In this context, ready-to-eat products are an example of innovation, in that they not only respond to the main trends in food consumption oriented toward packaged and ready to be used foods which are adapted to the new family model and to the presence of women in the workforce, but also provide fresh food which is ready to use and needs minimal preparation.

Fig. 4. Reasons for consuming ready-to-eat products.

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