St. Petersburg University
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Master in Management Program

FOOD CHOICE MOTIVES & PREFERENCES: A STUDY OF THE ST. PETERSBURG FOOD MARKET

Master's Thesis by the 2nd year student
Concentration — general track (non-CEMS)
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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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АННОТАЦИЯ

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Название магистерской диссертации	Food choice motives & preferences: A study of the St. Petersburg food market
Факультет	Высшая школа менеджмента
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Год	2016
Научный руководитель	Йоханна Пия Мария Фрёзен
Описание цели, задач и основных результатов	Целью данной магистерской диссертации является анализ поведения российских потребителей в отношении продуктов питания. Поведение потребителей исследуется с позиции мотивов к совершению покупок, а также предпочтений, влияющих на выбор продовольственных товаров. Данные о предпочтениях по 12 продуктовым категориям и 36 факторам, влияющим на покупку продуктов питания, были собраны путем опроса потребителей в г. Санкт-Петербург в марте 2016 года. С помощью кластерного анализа по предпочтениям респондентов было выделено четыре сегмента потребителей. Последние также различаются в порядке важности мотивов и социально-демографическим факторам потребителей. Помимо кластеров в работе обсуждается изменение мотивов к покупке продуктов питания среди российского населения. Результаты исследования позволяют лучше понимать различия в предпочтениях российских потребителей и их мотивах к покупке и могут быть использованы при разработке и производстве новых продуктов питания, а также при планировании маркетинговых активностей.
Ключевые слова	выбор потребителя, мотивы и предпочтения, рынок продуктов питания

ABSTRACT

Master Student's Name	Metelev Vladislav
Master Thesis Title	Food choice motives & preferences: A study of the St. Petersburg food market
Faculty	Graduate School of Management
Main field of study	Management
Year	2016
Academic Advisor's Name	Johanna Pia Maria Frösén, Assistant Professor
Description of the goal, tasks and main results	The objective of the thesis is to analyze the current situation within clusters of food consumers by examining both consumer food choice motives and their preferences. The food choice questionnaire (FCQ), which has been proved to be a valid and reliable tool for measuring the factors regarding the food choice, has been applied together with an assessment of consumer preferences towards 12 food categories. The questionnaire was completed in March 2016 by 226 individuals in Saint-Petersburg, Russia. Four clusters have been established, and profiled on the perceived importance of food choice motives as well as socio-demographic. The change in the factor structure affecting food behavior of Russian individual consumers' is also discussed. The findings suggest that differences in food preferences and food choice motives of Russian consumers may need to be taken into account in food product development and planning of food marketing activities.
Keywords	food choice, food motives, food preferences, Russian food market

TABLE OF CONTENTS

INTRODUCTION

Background

Food choice is a complex process which affects everything from the food production aspects to the consumer dietary intakes as it determines which food products consumers buy and eat (Furst et al., 1996). In its foundation the food choice is influenced by food-related expectations and attitudes (Shepherd, 1989), both sensory and non-sensory factors (Steptoe and Pollard, 1995), and lifestyles (Brunsø et al., 2004). These factors have been accompanied by increasingly large number of studies that have succeeded to understand similarities and differences in consumer food motives and perceptions on a cross-cultural level (Prescott et al., 2002; Pieniak et al., 2013; Markovina et al., 2015). However, too little attention has been paid to the understanding of the relationship between specific food choice motives and consumer food preferences.

We examine not only the ways in which individual differences (such as a liking for particular foods) influence food choice motives, but the context and culture to be important components of the current study. Whereas the transition that has happened in Russia since 1990s and the two subsequent crises have been discussed and provided with the substantial empirical evidence (Staudigel and Schröck, 2015; Honkanen and Frewer, 2009), the novelty of this study is in considering the influence of Russian food embargo (2014) on food consumers.

The recent restrictions on import of food products have triggered the price inflation and spot shortages in the short-term and have left the question of ability of Russian agricultural firms to fill a production gap unanswered (Wegren, 2014a). In the absence of certain food products the customer demand and satisfaction is, however, a less obvious issue which have already affected consumer habits (Girard, 2015) and, which this paper attempts to show, consumer preferences as well.

Research field & topic

The research field lies within the knowledge of consumer behavior, and central to the entire discipline of consumer behavior is the concept of motives underlying positive or negative behavior towards different categories of products. In the history of food consumer research, health and environmental issues have been thought of as key factors involved in food choice (Lau et al., 1986; Grunert and Juhl, 1995; Amato and Partridge,

2013). Only lately the food choice questionnaire has been established by Steptoe and Pollard (1995) through consideration of existing literature and discussion with nutritionists and health psychologists to empirically confirm other factors such as price, sensory appeal, natural content, convenience, familiarity, and mood to affect the food choice behavior. It has become one of the most widely used methods to study motives regarding the food choice behavior (Markovina et al., 2015).

However, the motives underlying the food choice are also closely related to consumer food preferences. We believe that both motives underlying the individual consumer food choice and preferences to various food categories are at the heart of our understanding of food choice behavior in Russia. Therefore, from a consumer behavior perspective the study will examine consumer motives linking consumer food preferences with their food choice motives.

Relevance

The advantage of knowing the factors and preferences affecting the food choice behavior is that it may help in improving retailers' understanding of the recent food consumption patterns on Russian food market. Second, understanding of both various food choice motives and consumer food preferences is crucial when implementing various marketing and promotional activities. Third, cross-cultural variations and especially differences between European and Russian consumers' food choice behavior should be counted by Russian companies as they are essential for the product development and product innovation.

Research gap

In this paper we have covered an extensive view on food consumption behavior and issues related to food choice motives and preferences. Few of the researchers have undertaken the research to investigate both the food choice motives and preferences, and despite the dramatically changing economic conditions in Russia 'little comprehensive research has been conducted on changing consumer preferences and behavior' (Staudigel and Schröck, 2015, p.133)

Our study, therefore, goes one step further by identifying consumer segments and characterizing them not only by socio-demographic factors but also in relation to the food choice motives. The cluster analysis will be, therefore, used to explore Russian consumers' food preferences and later compared by the relative factor structure of different motives underlying consumer food choice. Thus, the present paper aims to fill

this gap by segmenting food consumers according to their preferences and elaborating on the variations among the established segments.

Problem statement and RQs

The research is dedicated to the question of what is the link between food preferences and factors involved in food choice in Russia. The main subquestions which can be addressed in the paper are:

- ❖ Are there any significant differences in socio-demographic factors within consumer segments which are based on food preferences?
- ❖ How the relative importance structure of food choice motives in Russia has changed?
- ❖ What is the difference in food choice motives among the distinct consumer segments which are based on their preferences to various food categories?

Aim and objectives of the study

The main purpose of the study is to analyze the current situation on food choice within clusters of food consumers by, on the one hand, concentrating on consumer motives and perceptions, and, on the other hand, providing the link to their preferences. The research is conducted with the purpose of formulating and solving conceptual issues of empirical research:

- To analyze the current state of Russian food market and to determine consumer food motives and preferences within the framework of food choice behavior;
- To define food consumer segments in Russia and understand the motives and preferences that determine food choice on a Russian food market;
- To get insights on changes of their motives over the past decade by discussing the previous research and elaborating on change of food consumption patterns connected to the Russian food embargo (2014)
- To provide an application of the results and develop recommendations aimed at effective design of food production companies' and grocery stores' marketing strategies.

Organization of the paper

The paper proceeds as follows. Chapter 1 reviews the literature on food consumption in general, and food preferences and motives of food choice in particular. The outline of the research on Russian food market, segmentation and FCQ methodology are also covered in this part. Chapter 2 provides methodological framework of the

research, the materials and actual procedures of collecting the data. The descriptive statistics on the data is given here as well. The cluster and ANOVA analyses are conducted and the findings are presented in Chapter 3. The last chapter discusses the results and draws conclusions as well as explains the theoretical contribution and gives the practical recommendations for the food industry.

CHAPTER 1.FOOD CONSUMPTION: BACKGROUND & LITERATURE REVIEW

The aim of this chapter is to evaluate and validate the literature on food consumption behavior and to provide reasons for the chosen methodology. In order to understand the theoretical background of previous studies the literature review concerns issues related to the following questions, in the order from general to more specific topics.

First, we consider two main behavior theories – theory of planned behavior (TPB) and theory of reasoned action (TRA) – which have been recently applied in studies on consumer behavior in food products choice. The second part reviews the literature on food consumption behavior and considers the various ways of segmenting food consumers. The third part gives a brief overview of the extant knowledge on food choice & food preferences. Finally, we cover the latest findings on food demand and food consumption situation for Russian food market.

1.1. Consumer behavior theory and factors affecting consumer choice

The Theories of Planned Behavior and Reasoned Action

Both the attitudes and consumer behavior have been given much credit in 90s to establish the casual relationship between them and lately to predict certain behavior based on different attitudes (Armitage & Conner, 2001). In this research field more integrated models of behavior have been developed to include not just attitudes but also other behavioral determinants such as social norms or intentions (Olson & Zanna, 1993). The most widely researched models are the Theory of Planned Behaviour (Ajzen, 2005) and the Theory of Reasoned Action (Ajzen & Fishbein, 1980).

Theory of Planned Behavior (TPB) measures particular beliefs – behavioral, normative, and control – through which attitudes, subjective norms (i.e. social pressure to carry out a particular behavior) and perceived behavioral control influence behavior intention and, finally, the behavior which follows or not follows that intention. Perceived behavioral control may have an impact on both intention and behavior (Ajzen, 2005). The theoretical model of TPB is schematically represented by Fig. 1.

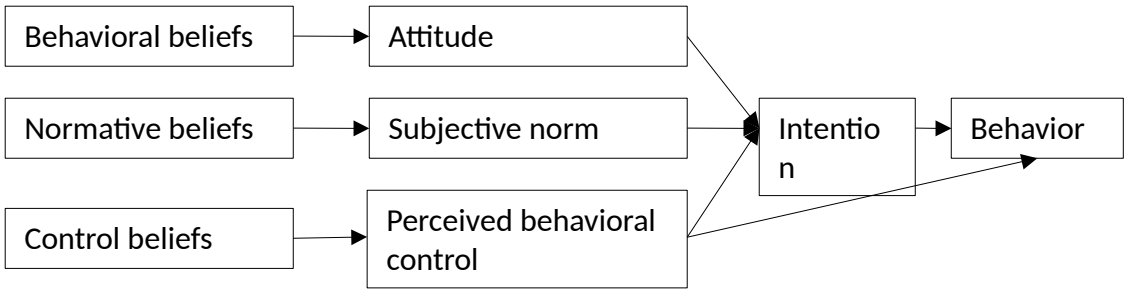

Figure 1. The Theory of Planned Bahavior. Source: Ajzen, 1991.

It should be, however, noted that the relative importance of the three above mentioned aspects on the prediction of intention is expected to vary across different behaviors and situations as well as that there is not so much applicability for all of them (Ajzen, 1991). Thus, the Theory of Reasoned Action (TRA) which has also been established upon the social psychology literature does not consider perceived behavioral control at all: in its essence an intention to perform a behavior depends more on the attitude towards performing the behavior and less on subjective norms. Nevertheless, this theory considers not only economic but also non-economic factors which are valuable while investigating the food choices (Ajzen and Timko 1986).

Until last decade there has been little comprehensive analysis to test the theoretical models of consumer behavior and the Theory of Reasoned Action (TRA) in particular. As TRA has both predictive and explanatory power for understanding food choice behavior it has been further developed for the needs of examining the food choices (Petrovici et al., 2004). The authors provided an application of TRA in a transitional economy (Romania) and tested this theoretical framework to better understand the food choice behavior. The results of their study showed that TRA in the original form (mainly including attitudes towards performing behavior) could only partly explain food consumption and that three aspects – attitudes, habits and preferences – were relevant for food consumer and affected consumer intention to buy food products (see Fig. 2). Thus, subjective norm such as, for example, purchasing of a specific food has been shown not to be an essential determinant for both intention and willingness to consume food products whereas habit and preferences have a real impact on those.

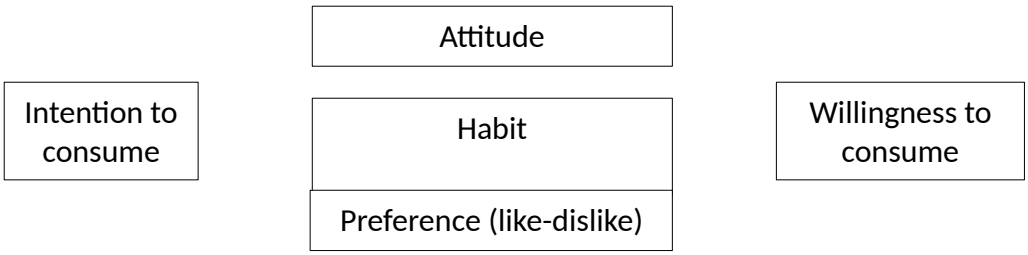

Figure 2. The Modified Theory of Reasoned Action. Source: Petrovici et al., 2004.

In this study we, however, do not refer to the full theoretical framework of modified TRA, thus investigating only explanatory variables and leaving the examination of their probable influence on intention or willingness to consume different food products to be not the scope of our research. Furthermore, as habits have already been examined in Russia by Honkanen (2010), within those three variables we concentrate on other two – attitudes, or factors affecting the food choice, and food preferences.

1.2. The literature on food behavior and segmentation

Food behavior and food choice

In 1980s and 1990s mainly health (Lau et al., 1986; Amato and Partridge, 1989) and environmental issues (Grunert and Juhl, 1995) have been considered as important factors affecting the consumer food choice. The focus on health and environment as the only variables was a narrow-minded approach which put other issues in the shade, whereas only starting with the work of Steptoe and Pollard (1995) other motives rather than these two have got an attention of the researchers.

Later, Lappalainen et al. (1998) have confirmed this narrow view by examining attitudes towards food choice and food consumption to assess 14 potential influences within a large-scale study in 15 European countries. Whereas the quality of freshness of food was almost equally important to all the countries and the presentation and packaging, on the contrary, was not, large variations were found between countries in terms of convenience, price, taste, health and natural content.

Food choice is also closely related to the quality perception. Thus, Brunsø et al. (2002) provided insights into how consumers perceive both expected and experience food quality and connected the latter to natural content, health, taste and appearance, and convenience. They also found that factors involved in food choice and quality perception appeared to be different between various consumer segments. For the thesis this implies

that investigation of consumer food choice motives is not enough until the differences among consumer segments are taken into account.

Segmentation

Segmentation is a technique of grouping consumers and customers into homogenous segments based on some variables or characteristics (Wedel and Kamakura, 2012). The segmentation methods provide marketers with the instruments to develop strategies and define targeting messages for the particular consumer target markets. Along with its application in designing public campaigns for the health awareness (Moorman and Matulich, 1993) consumer segmentation is also relevant for managers and especially marketers when implementing various marketing and promotional activities as well as for the product development and product innovation.

A variety of methods are designed to segment consumers. Each has its advantages and limitations. The bases for segmentation have been divided by relation to the product into *general* or independent of products, services and particular situations, and *product-specific* (Frank, Massy and Wind, 1972). Additionally, within the aspect of being measured directly or not they can be either *observable* or *unobservable*.

Traditionally, food consumers have been widely segmented into groups by general and observable variables such as cultural, geographic, demographic and socio-economic characteristics (Wedel and Kamakura, 2012). Unobservable general variables such as psychographics, personal values and lifestyle have been used as the basis of segmentation since 1980s (Anderson and Golden,1984) and only recently have become increasingly important in food industry (Dagevos and van Gaasbeek, 2001). Previously applied in segmentation literature AIOs-items questionnaire (activities, interests and opinions) was replaced with the developing of a new food-related lifestyle instrument (Brunsø and Grunert, 1995). The latter included consumption situations, motives of purchasing products, different ways of shopping, quality orientation, and cooking methods and was used as a model for segmenting food consumers according to their lifestyles in Europe and UK (Brunsø et al., 2004; Buckley et al., 2005).

The previous researchers in both European and Asian countries (Brunsø et al., 2002; Askegaard & Brunsø, 1999) have also identified common food consumer segments based on the food-related lifestyle, i.e. considering ways of shopping food, ways of preparing meals, eating situations and different purchasing patterns. The *uninvolved* food consumer has low involvement into food, shopping and cooking as well as weak motives regarding

food choice in general. The *careless* food consumer is spontaneous in buying new and especially convenience products. The *conservative* food consumer follows traditional meal patterns and values both taste and health aspects of food products. The *rational* food consumer considers price, expected quality and a lot of other product information when shopping, and planning the meals beforehand. The *adventurous* food consumer is slightly more quality- ant taste-oriented, and mainly interested in the cooking and not the product purchasing aspects.

Nevertheless, the segments are not so common as a particular country may have other segments rather than these basic four: for example, in France there are *pragmatic* consumers with an ambivalent interest in health and natural content, on the one hand, and convenience products, on the other hand, whereas, in Denmark, an *eco-moderate* segment with the only interest in organic production exists (Brunsø et al., 2002). That is why it is highly important not to generalize the behavior across different countries and carefully address to the common behavior theories when developing food products and marketing activities in particular countries.

The common segments mentioned above also differ by socio-economic and demographic characteristics. For instance, uninvolved consumers are in general young, part- or full-time working and single. Careless consumers remind the previous ones but have higher level of education and incomes. Conservativism is a feature of older generations, especially those living in rural areas. Rational behavior is common for people who take responsibility of family food consumption (more women than men). Adventurous consumers have the highest educational level as well as income and live in big cities.

However, economic variables are becoming a less suitable basis for consumer segmentation (Dagevos and van Gaasbeek, 2001) and with a constantly increasing complexity of food consumption it is much more difficult to establish homogenous segments based only on socio-demographic or cultural characteristics. For instance, Slater and Flora (1991) showed that consumers from the same socio-demographic groups have different behavior and attitudes in terms of health. Another recent example is the research of Verbeke and Lopez (2005) on food consumption differences between Belgians and Hispanics in which they have found that urbanism, age and connected with these variables neophobia negatively correlates with food consumption and attitudes. Hence, consumer segmentation seems to be much more complicated today than it was before.

Furthermore, literature on observable product-specific segmentation has divided food customers into frequent and non-frequent product users as well as by the frequency of purchasing certain categories and types of food products (Nöthlings, 2004).Unobservable product-related segmentation has been used by many researchers in their studies on food behavior only lately. Food preferences and food mapping (Delarue and Loescher, 2004), source credibility of product information (Pieniak et al., 2007), product related risk perceptions (McCarthy and Henson, 2005), communications patterns (Snyder, 2007) and quality evaluation of food (Verbeke, Vermeir, and Brunsø, 2007) have been considered to constitute homogeneous groups. Some researchers have also used cluster analysis as a segmentation technique to split the data on food consumers according to their food choice motives (Ares and Gambaro, 2007; Honkanen and Frewer, 2009) which basically means dividing the sample into clusters on the level of involvement into the food choice process as is.

1.3. Extant knowledge on food consumption and food choice

Food consumption

The variations among consumers in relation to the various food consumption factors have been considered in the literature. Investigating the dietary intakes of consumers, Pollard, Steptoe, and Wardle (1998) have found that consumers with ‘high in red meat’ or ‘vegetarian’ diets have higher scores on factor importance rather than with a ‘standard’ one. For the purpose of this study, it may indicate that motives regarding food choices, in fact, are related to the dietary intake and actual food consumption behavior.

Another factor that has been investigated by Prescott et al. (2002) to explain cross-cultural differences regarding consumer food choice is a food neophobia which shows the extent to which food consumers are willing to try new and/or unusual foods. This concept which refers to both consumer behavior and an individual personality style had been proved to have a main effect of country and also age in ratings: variations within countries as well as within young and older generations (the latter with higher ratings) were significantly different. However, the most interesting result for this study was a low correlation between ‘Familiarity’ factor and neophobia ($r=0.05$), which implies that low scores on this factor do not explain the attitude towards unfamiliar foods as it may seems logical at first. Therefore, low scores of the food choice motives should be interpreted as having lower importance of the existing factor but not as that the reverse meaning of a

factor is true. For example, one could interpret low scores of price as low price sensitivity or high tolerance to price changes which would be incorrect. These findings will help better understanding of food choice motives in the Discussion part of the paper.

The previous research has shown that men are less concerned about food in general rather than women (Steptoe and Pollard, 1995; Miloševic et al., 2012). The age also had an effect in terms of food involvement for young individuals such as students and adults with the former being more indifferent into the food choice (Pollard, Steptoe, and Wardle, 1998; Lindeman and Väänänen, 2000; Fotopoulos et al., 2009). This implies that socio-demographic variables could affect results and, therefore, should be taken into account in the empirical part of this study.

Ares and Gambaro (2007) examined in Uruguay the perceived healthiness and willingness to try functional food products, that is, foods and food components that provide a health benefit beyond basic nutrition. They provided the evidence of variation among consumers in demographic factors with clusters established on the base of the food choice motives. They confirmed the previous findings that men and younger population are more indifferent into food, and found that the number of household members negatively affects the motivation for food choice.

The similar cluster analysis was made by Honkanen and Frewer (2009) in which they investigated healthy food choices and health attitudes of Russian consumers along with the factors involved in food choice. Along with getting the same results for age and gender, they demonstrated that less involved consumers usually showed more probability of having children or lower education.

Furthermore, Mardon et al (2015) have recently made a cluster analysis based only on health-related motives such as ‘Health’, ‘Natural content’, and ‘Weight control’. They have got similar results in terms of age, gender and children as the previous studies but did not succeed in finding any significant differences for education, occupation, income settlement type (urban or rural), declared state of health or body mass (BMI) index.

Finally, it has been shown that organic food production consumption emphasizes the importance of environmental protection and animal welfare factors, and environmental and ethical motives in particular are related to choice of organic food (Magnusson et al., 2001; Chen, 2007). In European countries the import rate of such products (especially for fruits and vegetables) is very high as the share of local production is far below than the consumption demands for organic products (Kearney, 2010). However, in case of Russian market substantial differences are still present in the

perception of organic products as believed to be good for environment but lacking the quality and trust in food production process and certification system (Bruschi et al, 2015).

The Food Choice Questionnaire

Factors affecting the food choice behavior had been studied to develop the food choice questionnaire (FCQ) by Steptoe and Pollard in 1995 and initially applied in the United Kingdom. The questionnaire consisted of 36 questions which were designed to assess the food choice motives with an original multidimensional scale of 9 factors: *natural content*, *price*, *weight control* (fat and calories content), *health*, *mood* (emotions, rather positive or negative), *convenience*, *sensory appeal*, *ethical concern* (political or environmental), and *familiarity* to the customer. This questionnaire has been widely used to successfully assess the relative structure of motives perceived as important to food choice behavior since then (Markovina et al., 2015).

Sensory appeal, health, price and convenience were found to be the most crucial to respondents in UK, whereas mood, weight control, and natural content were in the middle, and familiarity and ethical concern were the least important (Steptoe and Pollard, 1995). However, the authors have also suggested that different food choice motives may be of greater importance depending on the chosen culture or country. This was confirmed by the following researches in Uruguay (Ares and Gambaro, 2007), Russia (Honkanen and Frewer, 2009), Greece (Fotopoulos et al., 2009), and US (Pula et al., 2014) as well as by the cross-cultural studies in Asia and New Zealand (Prescott et al., 2002), Central Europe (Januszewska et al., 2011), Balkan countries (Miloševic et al., 2012), and, finally within a pan-European study (Markovina et al., 2015).

Sensory motives have been chosen as the most influential factors affecting food choice in almost all European countries including Norway, Germany, UK, Russia, Belgium, Romania, Hungary, Balkan countries, and also in New Zealand. The price motive has been the second or third most important factor for them, whereas health and natural content were ranked high as well. The natural content was essential for Poland with its unique food consumption demand and food market, and both health and natural content are seemed as the crucial factors in Asian countries (Japan, Taiwan, and Malaysia) and Uruguay. In some Western and South European countries such as Spain, Greece, Ireland, Portugal where the economies had experienced challenges price dominated as the main motive for food choice, and sensory appeal had the secondary importance followed

by natural content and health factors. In Greece and Russia, however, mood factor had more value than health after the latest downturns in economic situation.

Convenience factor sometimes had a greater importance than natural content or health in countries where the situation on health or organic production had already largely contributed to the healthy food consumption (Norway, Spain, Netherlands, Hungary), but in all other countries usually held on the 5th or in few cases on the 6th position. Weight control, ethical concern, and familiarity were the least important factors in almost all countries so far. The exceptions for higher rankings of weight control were found in Belgium, Portugal, Slovenia, Romania, Hungary, New Zealand, and also in Asian countries (Taiwan, Malaysia). The familiarity mattered unexpectedly high in Russia, and ethical concern was found essential in Japan.

The country- and culture-specific differences could affect the food behavior, and, therefore, the food product development industry. Nevertheless, although it is essential to understand the variations in motives driving the food choice across different continents, countries and cultures, this paper shows that the food choice motives can change over time and be a part of a structural change in food consumption and related food choice behavior of individual consumers.

1.4. Food consumption in Russia

As in many developing economies, the Russian food system has faced with considerable changes and developments during 90s and 00s which are characterized by a substantial decline in home agricultural production (Liefert, 2009) as well as discussed above increasing dependence from food imports.

Income inequality in transitional economies such as Central and Eastern European countries has already been found to be a factor driving the emergence of a new high-income consumer segment with average for a European consumer behavior. This behavior includes major purchases made in supermarkets, higher awareness of food products quality as well as other non-economic variables affecting the food choice such as health and natural content (Petrovici et al., 2004). Thus, we consider Russian transitional economy and the current Russian context on food market to be of particular interest for examining the peculiarities of Russian consumers' food behavior and food choice with non-economic factors to be more important than economic ones.

Honkanen and Voldnes (2006) in their qualitative analysis have discovered various meal patterns among Russian consumers as well as have explored existing consumer motivations for food choice. The latter include price, taste, weight control, natural content and familiarity of food products. The health was reported as an important motive even though the interview participants were not so aware of what are the differences between healthy and unhealthy products.

The segmentation of food demand usually takes one dimension such as, for example, income, budget share or region. However, in 2009 the FCQ have been applied to investigate healthy food choices and health attitudes in Russia (Honkanen and Frewer, 2009). Based on the factors involved in food choice the authors have made cluster analysis with resulting three clusters of low, middle and high motivation to purchase food in general.

To reflect the complexity and diversity of food consumer behavior, the segmentation of consumers can also be made considering differences in geography, urbanization levels, city infrastructure and other variables such as household composition and its assets (Staudigel and Schröck, 2015). In doing so, by the analysis of the Russian food demand the authors have found 5 clusters of consumers:

The *urban non-growers* which represent a large amount of urban residents have an average total budget and high shares of food expenditures. They do not favor home production and, therefore, purchase the largest amounts of potatoes and vegetables. The second cluster, *aspiring hedonists*, is young, male-dominated, has the largest number of working family members and high incomes per family, and spends a lot on beverages, alcohol and tobacco. The third cluster, *rural home-producers*, has low incomes, the lowest degree of urbanization, and massive home production and home-meal cooking. The *restricted majority* cluster which accounts for more than half of the sample can afford only the least expensive and essential foods with lesser consumption of animal proteins (fish, red meat) and purchasing more breads. They have low to medium education, low incomes, low food budget and the lowest amount of assets (cars, freezers, refrigerators). The *quality elite*, on the opposite, consists of high-income Russian consumers, mainly those with high level of education and from big cities. They can afford the above average consumption of milk and dairy products, meat and fruits. The above mentioned segments will be compared to the clusters identified in this study, and several limitations it terms of rural and high-income consumers will also be discussed.

As to food consumption patterns or food habits, the frequency of food intake have been examined by Honkanen (2010) in order to determine different food products consumption groups with one leading food category: either frequent or non-frequent fish consumers, red meat consumers, invariant consumers, and a food indifferent group. The segments were than compared with health and risks associated with eating fish. The impact of different factors on unhealthy eating habits has also been studied lately (Staudigel, 2011). The empirical results from the 10-years longitudinal data indicate that it's not the general food prices that are essential determinants of obesity in Russia, and strong price reactions mean the prevalence of different product categories such as poultry (chicken meat), milk, and fats (butter) in the dietary intake of Russian consumers. Thus, this study confirms that the importance of what consumers prefer and, therefore, eat affects the food choices they make. Therefore, along with the food frequency consumption the individual consumer preferences for food categories may reflect the food choices they make. The latter will be further considered in discussing the methods of the study.

Furthermore, Staudigel and Schröck (2015) have provided a complete analysis of food demand elasticities over the period of Russian economic transition. The consumption of products in the high-value range (meat, sugar and confectionery, alcohol) in comparison to the low-value foods (potato, bread & bakery) is growing in importance. These trends in consumption patterns have been founded across nearly all the countries experiencing economic transition (Fabiosa et al., 2011) and now when they are coming to Russia they also affect the change in food consumer segments allocation.

CHAPTER 2.METHODS & DATA DESCRIPTION

2.1. The context of Russian food embargo

The state of the Russian food market has been recently a subject of discussion as a change has happened on August 7, 2014, when the Russian government reached a decision to impose an agricultural food ban as a counter-measure to sanctions imposed by Western countries because of the previous political conflict with Ukraine earlier in 2014. Thus, the Russian food embargo made impossible for countries from the European Union (EU), Norway, US, Canada, and Australia to export a substantial number of agricultural and food products to Russia. The latter include a variety of meats and poultry, fish and seafood, milk and dairy products, fruits and vegetables, nuts and dried fruits.

Initially, the embargo was stated to last for 12 months, and to be reconsidered after one year if the sanctions against Russia would be cancelled. However, after the period had come to an end, it was prolonged for at least one more year as the agreement had not been achieved and the improvements in relationships between Russia and the Western countries had not been made. By so far the Western economies have not reconsidered their intentions to let go of economic sanctions which, in fact, are political means by nature.

By December 2014, Russian Federation entered an economic crisis. The result of the Western sanctions led to a decrease in both foreign credit and FDI and a leakage of capital out of the country. Export earnings, which mainly come from energy exports, have dropped in value due to the large fall in the world price of oil in late 2014, and have caused a heavy depreciation of the currency rates to U.S. dollar and euro. That increased prices on imported food products and generated severe price inflation. Hence, by the beginning of 2015, the current economy had experienced both high inflation and a recession (Liefert, 2015).

In the short term Russian consumers will have to pay more for food and may experience spot shortages of food products as the economy cannot essentially increase domestic production to meet the demand (Girard, 2015; Wegren, 2014b). However, the Russian citizens do not entirely link the price inflation with agricultural food ban and the shortages of food products even though food expenditures represent a large portion of household budgets in Russia and make up about 37 percent of Russia's 'consumer basket' (Wegren, 2014a) and, therefore, the changes in price of food products have a significant

effect on perceived decrease in living standards of life. Thus, on the question ‘What is the main reason for the increase in prices, the decline in living standards, and the deterioration of the economic situation of the country?’ of the representative opinion poll by Levada Center (14 November 2014, N = 1600) only 15% of the respondents chose Russian counter-sanctions (food ban), whereas thrice more people voted for falling oil prices.

The above mentioned conditions have created significant challenges for the Russian agricultural and food economy in both short and medium terms. The trade volume has been estimated to be affected by approximately US$ 8.3 bln due to embargo which account for 35.8% of all the imported food products compared to the previous year figures (Food and Agriculture Organization, 2014). Moreover, four product groups – milk and dairy products, fruits, pork, and fish – constitute to nearly US$ 1.5 bln each.

The economy would have to fill a gap in terms of food production, distribution, and, more importantly, consumption. And, by all means, significant changes would have an enormous effect on food consumption for Russian consumers, companies and countries with no more possibilities to export food products, third countries with emerging opportunities to do so, and a global food market in general (Petrick, 2015).

Hence, because of the high level of Russia’s dependency on imported agricultural products and food, the embargo has both positive and negative implications. On the one hand, which the Russian government is strongly arguing, it promotes domestic agricultural production and gives an opportunity for local producers to fill the food market and the existing gap for food demand. On the other hand, the embargo has already driven up the food prices in the short term, and has made consumers to be the ones who will also pay more for their food in the middle run as the dependence could not be decreased very soon (Erokhin, 2014).

Finally, consumers that are restrained by actual shortages and exposed to an unpredictable food supply might have different factors affecting the food choice behavior (Steptoe and Pollard, 1995). Moreover, short-run economic shifts such as agricultural food ban even might change food consumption or diets (Stillman and Thomas, 2008). Hence, we suggest in times of Russian food embargo when the shortage of certain products may increase the prices in a short-run, the investigation of food consumer segments may result, compared to the previous literature, in different findings due to the possible shift in food consumption.

2.2. Research design

Food preferences

To date various methods have been developed and introduced to measure the differences in food consumption. In this study we suggest that the diversity in food preferences of consumers may make it possible to segment the market into consumer groups on the basis of their food preferences.

Ideally we would ask consumers to answer how often and how much of certain food products they buy. As some researchers have found the frequency of food consumption is a useful measure to provide information on consumers' dietary intake and may be an indicator of the relative intake of foods (Horwath, 1990). The literature has established that the food frequency questionnaire (FFQ) which has been widely applied in large-scale studies on healthy and unhealthy patterns (Burley et al., 2000) may be an approximation of a food frequency diary (Willet et al., 1987).

These studies usually concentrate on three key elements – the extensive list of food items, the integration of food portion sizes and the use of summation questions in order to adjust absolute consumption into comparable scales. Limitations of FFQ size usually prevent including all food items that are further used to examine the intake of target nutrients, therefore, the question of which food items to include and how to assess the adequacy of the selected ones is frequently questionable.

However, we argue that such long lists of food items can contribute to marketing knowledge as the consumption of different food items is hardly an indicator of consumer behavior in terms of food choice. Second, less 'precise' methods to differentiate individuals by broad food categories may give far more applicable insights into the understanding of the key differences in consumer preferences, especially for the product development and innovation and when implementing various marketing and promotional activities. Third, as most researchers agree in views that the measured levels of dietary intakes are rather approximate than accurate assessments (Nöthlings, 2004), it is less likely that taking that approach we could achieve any practical results for the marketing purposes. Furthermore, the use of such a large food item list cannot protect against external reliability of found factors but, on the contrary, does the opposite and increases the probability of multicollinearity between them.

It was decided that the best method to adopt for this research was to ask consumers about their preferences to various food categories such as meat, fish, vegetables and so

on, and not the dietary intake of particular food products that they consume. If we would have chosen the second approach it would be unlikely to get the results that do not have biases. First, an understanding of what is a portion may vary from one consumer to another. Second, the situation is complicated even more if we would consider that the portions also significantly vary in different food categories in terms of their visual appearance. Finally, different authors have measured frequency of food consumption in a variety of ways, e.g. omitting portion size information, specifying portion size or allowing respondents to decide on their own individual portion sizes (Nöthlings, 2004), and even within an existed questionnaire some researchers have chosen not to include the portion sizes at all (Honkanen, 2010).

The purpose of an adaptation is to explore the differences in food choice motives within the consumer segments which are based on food preferences of various food categories. Whereas this is not a semi-approach that was chosen by Honkanen (2010) to estimate food frequencies without taking into account portion sizes, it is neither an investigation of dietary intakes and motives underlying healthy food consumption (e.g. Pollard, Steptoe, and Wardle, 1998) as groups of consumers which differ in their food preferences will be examined in relation to the structure of their food choice motives.

Food choice motives

Markovina et al. (2015), which have recently made a validation of the Food Choice Questionnaire (FCQ) across 9 European countries with a web-based sample of 9381 respondents, show that the indicators of their research validity and reliability are satisfactory, and the FCQ can be an appropriate tool for investigating the food choice motives across different European countries. Considering local population specifics as well as language problems, in many cases country-specific adjustments and translations of questionnaires were also applied.

We also apply the original questionnaire in this work even though in previous studies that have used the FCQ several researchers, however, did not apply an original version of the questionnaire and for the purpose of their study modified it to the aims of their research. As for the modifications made, Ares and Gambaro (2007), for example, with respondents from Uruguay used a 22-item version which was composed of both the original questionnaire and the questions got during the preliminary interviews. Fotopoulos et al. (2009) made a research with full 36-item questionnaire but excluded the ethical concern with ad-hoc tests due to low loadings results of the factor analysis.

Pieniak et al. (2009) explored 6 European countries with a 24-item questionnaire excluding the 'mood' factor and leaving only 3 questions per factor. However, a recommendation of Markovina et al. (2015) based on the results of their validity study is to use an original 36-item version of the questionnaire for all the future food motives research in European populations. And although Russia is not similar to any EU country in terms of its history and food market development, the original FCQ will be applied in this work for the purpose of comparison the results with the latest findings.

Furthermore, the work of Lindeman and Väänänen (2000) in which they split the 'ethical concern' factor from the Food Choice Questionnaire (Steptoe and Pollard, 1995) into three independent dimensions – ecological welfare, political values and religion – was applied in the study of Honkanen and Frewer (2009). The application of such an approach in this paper seems to be inconclusive as both political and religion factors in the latter study resulted in the lowest mean values and the highest standard deviation. Thus, the results can be misleading because respondents choose between extreme values of the scale (either highly important or not important at all) and, therefore, would not be helpful in the questionnaires applied with Russian population studies.

2.3. The procedures of collecting data

Whereas originally developed in English, the FCQ was translated from English to Russian and then back-translated to check if the language, phrasing and understanding of particular questions was appropriate. Several adjustments were made during such a process to ensure that the meanings were not lost in the translation. The data were collected in February and March of 2016 in Saint Petersburg, Russia, by the author of the study. During the procedure of collecting the data several districts of Saint Petersburg were covered in order to exclude biases related to the geographical and/or income unevenness of the respondents.

In each of the districts (Admiralteysky, Frunzensky, Kalininsky, Moskovsky, Nevsky, Tsentralny, Vasileostrovsky, and Vyborgsky) 30 questionnaires were given on week-ends (Saturday or Sundays) to the individuals on the street. Whereas the latter were selected randomly we also tried to avoid giving questionnaires to young people such as students of less than 25 years old as they could result in sufficient biases of final results.

Thus, roughly 240 individuals from the street were asked to fill the questionnaire to ensure at least 200 usable questionnaires. The survey resulted in 226 questionnaires without any missing values. Thus, even after quick checking of the questionnaires in

terms of socio-demographic variables the missing questions were still found in 14 of them (5.8% of the total sample).

In web-based surveys the samples have varied from 400 to 1000 filled questionnaires per country (Pieniak et al., 2013; Pula et al., 2014; Markovina et al., 2015), whereas in face-to-face interviews or on screen computer applications the previous researchers have used the samples of mainly 200 to 450 respondents per country (see, for example, Ares and Gambaro, 2007; Januszewska et al., 2011; Miloševic et al., 2012). As the 8-item factor structure was confirmed even with the sample of even 167 respondents (Eertmans et al., 2006) we do not suppose any difficulties connected to the sample size.

Finally, we should state here one important limitation. As only urban food consumers have taken part in the study we suppose two things to happen. First, as the previous research has not reported any differences in food choice motives concerning the city population (Honkanen and Frewer, 2009) the current sample could be representative not only for Saint Petersburg but also for other big and average cities in Russia. Second, we limit these generalizations only to urban consumers which in fact have higher education and incomes. Therefore, not having any rural consumers in the study can better represent the urban population as the difference between urban and rural consumers is not emphasized and both education and incomes may not have such an effect on difference between clusters.

2.4. Methods

Each participant received a questionnaire containing all the questions about food choice motives, food preferences as well as demographic and socio-economic factors. Other necessary instructions were explained verbally to the respondents. The questionnaire consisted of closed questions only with the measurements used that are not different from the existed validated scales. The questionnaire is shown in Appendix 1 (in Russian).

Controlled variables. In general questions section the participants marked their age, gender, education, current occupation, level of income, and having children. Whereas the explanatory power of such variables has been declining in developed countries recently (Dagevos, 2005), we, however, consider them as gender, age, income and education have had an influence on food choice behavior in the past (Steptoe and Pollard, 1995; Ares and Gambaro, 2007)

Food choice motives. Factors involved in food choice consisted of 36 questions which are related to 9 factors. Each question was preceded by ‘‘It is important to me that the food I eat on a typical day…’ and measured an importance on a 7-point likert scale ranging from 1 (‘Not at all important’) to 7 (‘Very important’). A full list of items can be seen in Appendix 2, the items description is provided in the original paper by Steptoe et al. (1995).

Food preferences. For measuring the food preferences, the respondents were asked to rate their level of agreement for preferences of each food category on the same 7-point scale ranging from 1 (‘Completely disagree’) and 7 (‘Completely agree’). The food categories included Bread & bakery, Confectionery, Fruits and vegetables, Meat, Poultry, Sausages, Fish and seafood, Eggs, Dairy products, Cheeses, Alcoholic beverages, and Soft drinks. These items present all the categories from the Russia’s ‘consumer basket’ except fats and other minor products such as salt, spices, and tea (Staudigel and Schröck, 2015).

2.5. Cluster analysis

In this study we segment individual consumers based on their preferences towards 12 food categories by K-means clustering method and use ANOVA and Duncan post hoc tests for testing other variables afterwards. Data analysis was performed with an SPSS software package (version 21.0).

Clustering is a segmentation method of subdividing number of cases into homogenous groups which are called segments (segmentation is discussed in details in Chapter 1), which is a better tool for segmentation compared to any other grouping techniques because of accuracy and precision of identified segments (Wedel and Kamakura, 2012).

As for the K-means or any other clustering method, the procedure of clustering should be based on the number of cases and types of variables used in the analysis to form clusters. SPSS has three different algorithms that are used to cluster data: hierarchical, k-means, and two-step cluster analysis. Hierarchical clustering is usually used with a small data set to easily find solutions with increasing numbers of clusters. Two-step cluster analysis is preferred in a large scale studies with more than a thousand cases or in case both continuous and categorical variables are used to, first, assign cases to “preclusters”, and second, to cluster them using the hierarchical clustering procedure. On the other side, K-means cluster analysis, which will be used in this study, is applied

with a moderately sized data set to cluster the data by a chosen number of clusters (Ketchen and Shook, 1996).

K-means clustering uses an iterative procedure after which the cluster means are estimated and each case is assigned to the cluster for which the distance to the cluster mean is the smallest. Thus, the action in the algorithm centers on finding the k-means: the process starts with an initial set of means and classifies cases based on their distances to the centers. In a final solution the means of the clusters are calculated the last time and the cases are assigned to their permanent clusters (Hair et al., 2006).

A researcher can have more than one solution for a range of cluster numbers if he runs the analysis for each different number of clusters and can even have as many clusters as he does cases. However, that can't be an appropriate solution, so the number of clusters in this study is chosen to represent more than 2 and less than 12 (the number of factors used in the analysis) clusters. In fact, the optimal number of clusters is determined by looking how similar clusters are and how equally they divide the data set when an additional cluster is created (Milligan and Cooper, 1985).

Final clusters are characterized in terms of socio-demographic variables (age, gender, education, occupation, income, and having children or not) as well as factors affecting the food choice (*Price*, *Natural content*, *Health*, *Sensory appeal*, *Convenience*, *Mood*, *Familiarity*, *Weight control*, and *Ethical concern*). ANOVA F-tests with Duncan post hoc multiple comparison tests were used to identify significant differences between clusters. The Duncan post hoc multiple comparison tests were used as unequal variances within clusters were not found and test results gave more clarity on differences between found clusters.

2.6. Descriptive statistics

The characteristics of the sample and food preferences are summarized in Table 1. The distribution by gender is slightly in favor of female respondents. The education is dominant by high and middle levels, whereas only 13.3% have low education. By occupation the largest group is full-time working respondents (61.5); 77% of the total sample has either full-time or part-time jobs. The age groups were defined by ten years increment to evenly represent the sample and the clusters that would be established later.

Table 1. Sample characteristics in the study, as percentage of the sample (N=226)

Gender		**Education**		**Children (<18 years)**	
male	46,0	low	13,3	yes	36,7
female	54,0	middle	35,4	no	63,3
		high	51,3		
Income, rubles		**Occupation**		**Age**	
<10,000	11,1	full-time	61,5	<25	15,9
10,001-20,000	26,1	part-time	15,5	26-35	19,9
20,001-30,000	31,9	unemployed	4,4	36-45	29,2
30,001-40,000	22,6	retired	12,0	46-55	16,8
40,001-50,000	7,5	student	6,6	56-65	8,9
>50,000	0,9			>65	9,3

The mean age in the study is slightly higher than average in Russia: 40.6 years for men, and 43.0 years for women which give 41.9 years in total (see Table 2). The share of male and female distribution in the sample is close to the average Russian figures of 46.3% for men and 53.7% for women (Federal State Statistics Service, 2016).

Table 2. Mean age of Russian population in 2015, years. Source: Federal State Statistics Service

Total population			Urban population			Rural population		
all	males	females	all	males	females	all	males	females
39,5	36,8	41,9	39,5	36,7	41,9	39,4	36,9	41,7

CHAPTER 3.RESULTS & FINDINGS

With the intent to cover the issues discussed in the previous chapters we hope to answer the following questions within the further empirical research. First, clustering of consumers is made based on their food preferences. It is then checked for any significant differences within socio-demographic factors. Second, a cross-cultural and time comparison of food choice factor structure is made in order to investigate the changes in relative importance of food choice motives *due to Food embargo*. Third, the research points out the distinction in food choice motives among different consumer segments based on their preferences to various food categories. All of the above can lead to the answer of what is the association of food preferences with factors involved in food choice in Russia.

3.1. Food preferences analysis

The scores for most product categories resulted into high consumer preferences: poultry, meat, fruits & vegetables, and dairy products categories were most likely to be preferred by respondents (with means of 6.0, 5.9, 5.9, and 5.8 out of 7 respectively), followed by fish (M=5.6) and lesser consumption of cheeses and eggs product categories (M=5.4 and 5.3). Bread products and drinks were chosen to the above average extent (M=4.8 and 4.7 respectively). Finally, salami and sweets were consumed with lower than average preference (M=3.6 and 3.9), and alcohol products were chosen to be the least important showing, however, not the biggest variation in results (M=2.6, S.D. = 1.7). Means and standard deviations for preferences of these categories within the sample are presented in Table 3.

Table 3. Mean scores for the food preferences, 7-item likert scale.

	mean	S.D.
Poultry	6.0	1.4
Fruits & vegetables	5.9	1.4
Meat	5.9	1.6
Dairy products	5.8	1.6
Fish	5.6	1.7
Cheeses	5.4	1.8
Eggs	5.3	1.7
Bread	4.8	2.0
Drinks	4.7	2.1

Sweets	3.9	2.0
Salami	3.6	2.0
Alcohol	2.6	1.7

3.2. Cluster analysis based on food preferences

K-means cluster analysis was conducted to segment the sample based on consumer food preferences. As the items fit a likert scaled from 1 to 7, they contributed equally to the distance or similarity between cases and, therefore, did not have to be standardized. The number of clusters was determined by the criteria of obtaining an even distribution of respondents in each cluster and at the same time to maximize the differences between means. One-way ANOVA was made to ensure the significantly different means between the resulting 4 clusters, consisting of 19.5%, 23.9%, 22.6%, and 34.1%, respectively. With p-value less than 0.001 all the clusters were significantly different. The highest difference within clusters was found for Cheeses, Eggs, and Salami food categories [F-statistics = 70.9, 50.1, 50.3 respectively].

All the food categories were used in the analysis and tested for correlations. Since the highest paired correlation between the product categories in the sample was 0.405 (dairy products and cheeses), we consider all the correlations to be acceptable, and do not expect any problems with biases in explaining the food categories impact on cluster formation. The results of the cluster analysis are presented in Tables 4 and 5.

In Table 4, you can see that cluster 1 has an average preference for *bread*, higher-than-average for *drinks*, and below-than-average values for almost all the other categories except *dairy products*, *cheeses*, and *alcohol*. Cluster 2 does not like *bread*, *eggs*, *dairy products*, and *cheeses* and to a lesser extent – *meat*, *salami*, and *drinks*, and has an average choice for other product categories. Cluster 3 has the bellow-than-average preference for *bread*, *sweets*, *salami*, *alcohol*, and *drinks*, and the highest for *fruits & vegetables*, *meat*, *poultry*, *fish*, *eggs*, *dairy products*, and *cheeses*. Finally, cluster 4 likes *meat*, *poultry*, *eggs*, and *cheeses* and highly prefers *bread*, *sweets*, *salami*, *alcohol* and *drinks*.

Table 4. Final cluster centers calculated as a difference to mean sample values.

	Cluster 1 (n = 44)	Cluster 2 (n = 54)	Cluster 3 (n = 51)	Cluster 4 (n = 77)
Bread	0.1	-1.1	-0.8	1.1
Sweets	-0.8	-0.3	-0.7	1.3

Fruits & vegetables	-1.2	0.0	0.7	0.2
Meat	-1.0	-0.6	0.5	0.6
Poultry	-1.5	0.0	0.6	0.5
Salami	-1.1	-0.6	-1.1	1.7
Fish	-1.2	-0.4	1.0	0.2
Eggs	-1.0	-1.4	1.2	0.8
Dairy products	0.2	-1.5	0.7	0.3
Cheeses	0.4	-2.3	0.9	0.7
Alcohol	-0.2	-0.2	-0.8	0.8
Drinks	0.8	-0.6	-1.3	0.9

The F-statistics and significance levels in Table 5 should not be interpreted in the usual way because the clusters have been selected to maximize the differences between them. Thus said, the differences for each of the variables which constitute the clusters are significant and all the variables contribute to the separation of the clusters (the observed significance levels for each of variable < 0.001).

Table 5. Description of clusters: differences in mean values for consumer food perceptions.

	Cluster 1 (n = 44)	Cluster 2 (n = 54)	Cluster 3 (n = 51)	Cluster 4 (n = 77)	F-statistics	p-value
Bread	4.93	3.70	4.00	5.91	19.52	0.000
Sweets	3.09	3.57	3.18	5.18	19.17	0.000
Fruits & vegetables	4.73	5.89	6.57	6.13	17.05	0.000
Meat	4.93	5.31	6.37	6.51	14.90	0.000
Poultry	4.50	6.00	6.59	6.52	34.74	0.000
Salami	2.55	2.98	2.45	5.27	50.30	0.000
Fish	4.39	5.19	6.57	5.81	18.27	0.000
Eggs	4.34	3.87	6.45	6.12	50.09	0.000
Dairy products	5.98	4.31	6.49	6.13	28.22	0.000
Cheeses	5.75	3.13	6.25	6.08	70.87	0.000
Alcohol	2.43	2.39	1.82	3.39	10.17	0.000
Drinks	5.55	4.13	3.41	5.57	17.48	0.000

In order to profile the segments, demographic and socio-economic variables were used. Age group was determined using criteria of up to 25 years of age, over (and including) 45 years of age, and for respondents in between. The differences in education, occupation, and budget were not significantly different within the sample. Other variables are presented in Table 6. The difference by gender was not significant for all the clusters,

however, in cluster 3 the largest share of women has been found and in clusters 2 and 4 there were slightly more men than in average. Within the age of less than 25 years, the difference was not significant in overall but in multi-comparisons tests Cluster 1 had a higher share of young people. Cluster 2 and Cluster 4 have dominated by people of 25-45 years, with 41% and 49% having children, respectively. Nearly the half of Cluster 3 is older than 45 years; Cluster 1 has the least amount of children.

Table 6. Description of clusters: differences in demographic factors.

	Cluster 1 (n = 44)	Cluster 2 (n = 54)	Cluster 3 (n = 51)	Cluster 4 (n = 77)	F-statistics	p-value
female	55%	50%	69%	47%	2.147	0.095
children	16%	41%	31%	49%	5.07	0.002
age:						
<25	20%	15%	14%	16%	0.30	0.825
25-45	39%	54%	37%	60%	2.98	0.032
>45	41%	31%	49%	25%	3.06	0.029

3.3. Food choice motives analysis

For each factor, a score based on the average of all items that contribute to that factor was generated. Table 7 contains the mean values of 9 factors underlying food choice motives. Thus, “Natural content” appears to be the most important factor (M = 5.8), followed by “Sensory appeal”, “Price” and “Health. Such factors as “Mood”, “Convenience”, and “Familiarity” were not so important. Finally, for the “Weight control”, and “Ethical concern” factors consumers were the most indifferent.

Table 7. Mean values for the food choice motives, 7-item likert scale.

	Mean	S.D.
Natural content	5.8	1.4
Sensory appeal	5.7	1.0
Price	5.5	1.3
Health	5.4	1.0
Convenience	5.0	1.5
Mood	5.0	1.4
Familiarity	4.7	1.3
Weight control	4.4	1.6
Ethical concern	4.3	1.9

3.4. Cluster differences within food choice motives

The clusters were also profiled with Food choice motives. Mean values for food choice factors along with significant difference in between is shown in Table 8.

Table 8. Description of clusters: differences in Food Choice Motives.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Sample	F	Sig.
Natural content	5,97a	5,68a	6,03a	5,57a	5,78	1,47	0,222
Sensory appeal	5,89c	5,45a	5,76c	5,82c	5,73	2,09	0,102
Price	5,15a	5,39b	5,90c	5,52b	5,50	2,80	0,041
Health	5,53c	5,08a	5,68c	5,50c	5,45	3,32	0,021
Convenience	5,33c	4,55a	5,09c	5,07c	5,00	2,94	0,034
Mood	4,63a	4,60a	5,23c	5,23c	4,96	3,29	0,022
Familiarity	4,32a	4,31a	4,67a	5,10c	4,66	5,28	0,002
Weight control	4,28a	4,32a	5,05c	4,21a	4,44	3,41	0,018
Ethical concern	4,39c	3,67a	4,92c	4,31c	4,31	4,17	0,007

a-c indicate significantly different means. ANOVA with Duncan post hoc multiple comparison test was used.

The overall differences were found for Price, Health, Mood, Convenience, Familiarity, Weight control, and Ethical concern, whereas natural content and sensory appeal were not so different within all four clusters (p = 0,222 and 0,102 respectively). The Duncan post hoc tests were used to assess significantly different means in paired cluster tests. Thus, Sensory appeal, Health, Mood, and Ethical concern were significantly less important for Cluster 2. Convenience was less relevant for both Cluster 1 and Cluster 2 than for the others. Price was less important for Cluster 1 and more important for Cluster 3. Cluster 4 was higher in Familiarity, whereas Cluster 3 – in Weight Control. The order of factor importance by mean scores is presented in Table 9.

Table 9. Description of clusters: the relative structure of Food Choice Motives.

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Sample
Natural content	1	1	1	2	1
Sensory appeal	2	2	3	1	2
Price	5	3	2	3	3
Health	3	4	4	4	4
Convenience	4	6	6	7	5
Mood	6	5	5	5	6
Familiarity	8	8	9	6	7
Weight control	9	7	7	9	8
Ethical concern	7	9	8	8	9

CHAPTER 4. DISCUSSION

4.1. Summary and discussion of results and findings

Food preferences discussion

That the scores for all product categories except alcohol, salami and sweets have been relatively high may imply that these categories are widely consumed with not a big overall difference. However, the results for preferences to alcohol are surprisingly low and seem to be understated as lowered scores do not reflect the high level of alcohol consumption in Russia.

Low preference of cheeses can be explained by recent shortages of cheese produce due to Embargo: import of dairy products was composed of cheeses by more than 80% before the food embargo because of the foreign cheese production superior quality (Girard, 2015). The relatively low preference for eggs is, however, surprising as the eggs is a cheap source of protein on par with poultry which is the mostly preferred food category in the study.

The results, however, show that preferences for consumption of healthy products such as fish not so low and, on the contrary, less healthy choices like sweets and salami are preferred less than the study of Honkanen and Frewer (2009) has found in terms of food frequency of purchasing. This confirms our argumentation for biases that are caused by not using portion sizes and undermines the position that food frequency questionnaire (Nöthlings, 2004) is a right tool to use when portions are not taken into account. Therefore, frequency of food consumption cannot be an appropriate indicator of food consumption for the products that are purchased frequently but in relatively small quantities.

In overall, preferences towards food categories are close to the real average food consumption figures of 1995-2010 (Staudigel and Schröck, 2015) with all the main products from poultry to eggs consumed the most, and products such as sweets, salami and alcohol consumed the least.

The change in food choice motives

Motives regarding food choice can be split into 3 subsets by factor importance – most important (*Natural content*, *Sensory appeal*, *Price*, and *Health*), less important (*Mood*, *Convenience*, and *Familiarity*), and the least important (*Weight control*, and

Ethical concern). As the thirst three factors can represent the most important motives affecting the food choice, we could compare them with other country profiles already established in the literature for better understanding of the current situation on a Russian food market.

Natural content and, to lesser extent, *Sensory appeal* can be found to be the most relevant for such countries as Poland, and to Greece if we consider price to be important in this country due to recent economic challenges (Markovina et al., 2015). For other Western countries *Price* and *Sensory appeal* are those who affect the food choice the most implying that the same food product characteristics can have a different effect in Russia if designed with the respect of the above mentioned factors. Therefore, the changes in the structure of motives may indicate the uniqueness of food market development and fewer 'western' consumption patterns for Russian food consumers.

The change of these factors over time is discussed below. Thus, compared to the prior literature (Honkanen and Frewer, 2009), the major difference is that *Natural content* has become more important than *Sensory appeal*. The findings of the current study are consistent with those of Staudigel and Schröck (2015) who found that Russian consumers nowadays more and more value local origin and naturalness in their purchasing decisions.

Second, *Convenience*, *Mood* and *Familiarity* have become surprisingly less important. A possible explanation for *Convenience* might be that hypermarkets are replacing the small-sized traditional retail stores as more than half of an ordinary Russian family budget is spend on food (Staudigel and Schröck, 2015) and the former have lower prices. The observed decrease in *Mood* factor importance could be attributed to ....

The result for *Familiarity* may be explained by a global trend that urban citizens are eating out more and more than at home. And for Russia it is especially important as familiar foods are usually preferred by older generations and imparted by the younger generations with the influence of the former. This has a historical cause in food supply shortages and very low assortment during the Soviet times and now is not longer an issue (Honkanen and Voldnes, 2006).

However, Prescott et al. (2002) have demonstrated that while a relatively high factor score clearly shows its importance, a lower score is somewhat less easy to interpret, therefore, the implications of rating a factor as less important are not necessarily obvious. It is not at all certain whether the lower scores do not have a big effect on the actual decision-making process of food consumers as it may, on the other side, mean that these items are taken for granted rather than being unimportant for them.

Finally, the increase in *Weight control* factor may represent the growth of concerns about weight as the health situation of Russian consumers is alarming and a substantial share of unhealthy choices in Russians dietary intake has been found before (Honkanen, 2010).

Consumer segments

The results of cluster analysis have shown that Russian urban food consumers can be segmented on the criteria of their preference to broad food categories. The four segments are described below with clearly discriminated profile and named accordingly. The found segments differ not only based on food preferences but also in terms of both socio-demographic factors and food choice motives. More specifically (see Table 5, Table 6, and Table 8):

Cluster 1 (19.5%) represents the larger share of young people as well as consumers more than 45 years, but lacks people of 25-45 years old. The cluster has the least amount of children and there is also no significant difference in gender distribution. The percentage of having children is the lowest (16%). This segment has an average preference for bread, dairy products, cheeses, and alcohol, higher-than-average for drinks, and below-than-average values for almost all the other categories. Price has the lower importance and in overall all the factors have lower scores compared with other three clusters. Cluster 1 can be called as “Food indifferent”.

Cluster 2 (23.9%) is slightly dominated by men and has significantly large share of moderate age consumers, and also has a high share of children (41%). This segment does not like bread, eggs, dairy products, and cheeses and to a lesser extent – meat, salami, and drinks, and has an average choice for other product categories. Consumers from this segment represent the average food choice motivation in main four factors and have below average scores for mood, convenience, familiarity, as well as are surprisingly low on ethical concern. Cluster 2 can be named as “Restricted consumers”.

Cluster 3 (22.6%), dominated by women (69%) and people of older age (49%). The concentration of children is average (31%). It has the bellow-than-average preference for bread, sweets, salami, alcohol, and drinks, and the highest for fruits & vegetables, meat, poultry, fish, eggs, dairy products, and cheeses. Natural content is the most important factor in this cluster and health is an above average concern. Weight control and ethical concern are higher in importance compared to other segments. Furthermore, sensory

appeal is less important than price for such consumers, and familiarity is the least important food choice motive. Thus, cluster 3 can be referred as "*Healthy eaters*".

Cluster 4 (34.1%) is slightly dominated by men has the largest share of people 25-45 years old as well as has the largest share of children (49%). This cluster likes meat, poultry, eggs, and cheeses but at the same time highly prefers bread, sweets, salami, alcohol and drinks. Their dominant motive in food choice is sensory appeal, whereas convenience and familiarity are more important than on average, and weight control is the least important factor so far. We name this cluster as "*Hedonists*".

Comparing the identified clusters within the previous findings on a study of Russian food demand we can point our similarities for the segments 1, 2 and 4 which remind 'urban non-growers', 'the restricted majority' and 'aspiring hedonists' clusters (Staudigel and Schröck, 2015). *Healthy eaters* segment is similar to 'quality elite' cluster in the above average consumption of milk and dairy products, meat and fruits; however, we could not find any difference in higher levels of income or education that characterize such a cluster. This fact is, however, a direct result of sampling only urban individual consumers and the latter is also the reason why there is no 'urban non-growers' cluster in this study.

4.2. Theoretical contribution

The contribution to the theory is threefold. First, an application of the food choice questionnaire has revealed the changes in motives affecting the food choice since the previous study on a Russian food market has been done in 2009. And although there is no direct evidence that Russian food embargo has led to such a structural change in food choice behavior of Russian consumers, the fact that food choice motives can also differ in time period of less than a decade has not been shown in the literature before.

Second, we have found four distinct individual consumer segments on the Russian food market using criteria of their preference towards general food categories and have also profiled them by both their socio-demographic characteristics and food choice motives. The differences in age, gender and having children are found between the clusters.

Finally, a major contribution of this paper is the combination of food choice motives and food preferences aimed at better understanding of the identified food consumer segments. Little or almost no difference has been established in such food

choice motives as *Natural content* and *Sensory appeal* for Russian consumer, other motives have varied in importance in all four clusters.

4.3. Managerial implications

What are the potential practical implications of the findings? Combining knowledge of the appropriate foods features in product development with an understanding of the motives that consumers value the most may be a powerful tool for the food products development. More precisely, market segmentation is important for product development and promotion at different stages such as production, product targeting, positioning and, finally, various marketing methods to support the product.

Production. The distinct preferences of found consumer segments suggest that different kinds of food products could be developed in order to attend the needs and preferences of each of these groups. This implies that in production stage the benefit of market segmentation can be in prioritizing new product development efforts or developing the existing products. Thus, production companies can easily follow changing customer needs and create new products that capture the growing importance of natural content, i.e. contain natural ingredients, and do not have additives or artificial ingredients. Furthermore, such companies can change the emphasis in customer needs and switch for products that are low in calories or fat as health features such as nutrients, fiber, protein, vitamins and minerals may have lost their attractiveness in food market.

Targeting. Motives for food choice or, in other words, factors which customers value in food market could also become critical for success in some cases. This is especially true for small businesses that have limited resources to invest in developing and promoting solutions and, therefore, need to concentrate on features which are particularly valued by a targeted group of customers. For instance, targeting any of the clusters founded in this study is a good marketing strategy as focusing on a single segment allows for an effective allocation of marketing resources.

Thus, the results suggest that food products might be designed for specific groups, rather than being aimed for the whole food market. However, targeting different segments can also be made in terms of non-food segments which have similar patterns: e.g. healthy eaters may be found to be related to various health activities whereas hedonic consumers usually enjoy entertainment.

Positioning. The strategy of a company and its positioning serves as the framework for ongoing product development and promotional messaging. Therefore, when

positioning a product and developing a strategy for offering a more effective solution to chosen customer segments, companies need to choose specific product features. That those features are natural content related or emphasizing ethical concern may result in great difference on sales leaving other things equal. Hence, it's better to emphasize the natural content of a brand over the organic attributes (which, in fact, may both appeal to a health-conscious segment), and stress these benefits in your promotional communication. Similarly, the results of this study suggest, for example, that promoting foods based on natural content may become a better strategy than emphasizing sensory characteristics of products.

Promotional and supporting activities. The aim of such activities is to define a value proposition that captures the customer's imagination. Therefore, by providing information which accurately targets expectations of a specific segment, food companies may facilitate successful marketing of products. For example, developing of customized marketing campaigns can be an effective tool for showing advertisements only to targeted customers.

The information provided by the FCQ and food preferences may also be valuable for retailers, both in their attempts to understand determinants of product acceptance, and in stimulating sales of the specific product groups. Using information that has been shown to impact consumer expectations and preferences may thus become a means for the introduction of new products and brands in a retail store or, for example, to assess Russian consumers' acceptance of organic foods. Finally, another important practical implication is a maximization of cross- and up-selling opportunities for small retailers based on the preferences in four clusters.

4.4. Limitations and future research

First, as we do not apply the full theoretical framework of modified TRA in Russian context, there is much more that can be done in terms of predicting an intention and/or a willingness to consume food products based on food choice motives or food preferences. Thus, more practical studies for consumer attitudes, preferences or habits can be done by researchers to better understand their relative importance for selecting particular products and brands.

Second, sampling of only urban consumers has an effect on generalization of findings. Thus, as we stated earlier in Chapter 2 the survey should not be considered as representative for the whole Russian population but only for the urban food consumers.

Compared to rural population, urban consumers are not restrained by actual shortages or seasonal variations and, therefore, different factors might be perceived as relevant to food behavior. Nevertheless, within urban populations, the results of the study provide an opportunity to assess both a broad range of factors that affect the food choice and preferences of Russian food consumers.

To reflect the complexity and diversity of food consumer behavior, the segmentation of consumers on a Russian market, however, can also be made considering differences in geography, urbanization levels, city infrastructure and other variables such as household composition and its assets. What is now needed is a cross-national study that will include all these factors to investigate the association of food choice motives with food preferences and real food consumption behavior in Russia.

Third, even though we have found the evidence that food choice motives can differ in time within the chosen market, there is no direct evidence that Russian food embargo is the main factor affecting the change in food choice behavior of Russian consumers. Therefore, a research on Russian food demand can fill this gap by analyzing the differences in food consumption before and after Russian food embargo and comparing them with the latest work in this field made by Staudigel and Schröck (2015). This would be of great help in explaining cause-and-effect relationships related to Embargo (2014), therefore, establishing a greater degree of accuracy on this matter than the suggestions we have made in this study.

Fourth, the results of this study suggest that products aimed for the Russian food market might be adapted in terms of natural content for all the consumers with no regards to specific segments. Therefore, the measurement of food ‘naturalness’ can be further investigated as knowledge and perception of additives and artificial ingredients may have a great variance within Russian consumers. Thus, either through product testing and preference mapping or through examining the general understanding of the above mentioned variables the research may add some expertise that can be used by Russian food production companies.

Finally, cluster analysis which was used in this study for segmentation of consumers may have some drawbacks that should be mentioned here. First, the method is exploratory which implies that its application for business problems should be discussed and further investigated. For future research it would be interesting to compare experiences of individuals within a concrete business case or a problematic situation. Second, it is highly dependable on the researcher’s interpretation of which solution of

clusters should be chosen. Last, it is unlikely that one solution of unique clusters will be found as cluster membership is based on a distance of a single observation from the final cluster centers and can, therefore, lie close to the certain cluster boundaries. Nevertheless, as discussed in segmentation part of the Chapter 1, cluster analysis is an appropriate and accepted method in marketing segmentation.

CONCLUSION

The dissertation has investigated the food choice behavior in Russia considering it as a complex process which affects a variety of aspects from food production to dietary intake and determines which food products consumers buy and eat. The study was set out to analyze the current situation on food choice within clusters of food consumers. By doing so we concentrated on consumer motives and preferences to broad food categories as both motives underlying the individual consumer food choice and preferences to various food categories appeared to be helpful in understanding of food choice behavior in Russia.

Chapter 1 reviewed the food consumption literature giving specific attention into the outline of the research on Russian food market, segmentation and the food choice questionnaire (FCQ). The literature review has been done to formulate conceptual issues of empirical research by analyzing the current state of Russian food market and defining consumer food motives and preferences within the framework of food choice behavior

The food choice questionnaire which has become one of the most widely used methods to study food choice was discussed in Chapter 2 and further applied to investigate the factors affecting the food choice. For the second part, preferences to different food categories from the Russian 'consumer basket' have been assessed on the same scale.

The changes of food choice motives over the past decade have been discussed with regards to the previous research: Natural content has become more important than Sensory appeal, Mood, Convenience and Familiarity have lost in importance and Weight control has gained some points. By doing so we've also found that change of food consumption patterns can be a topic for further research as it may be affected by the recent structural market changes due to Russian food embargo (2014).

Furthermore, the cluster analysis was used to explore Russian consumers' food preferences and fill the research gap by segmenting food consumers according to their preferences and elaborating on the variations among the identified segments. Four consumer segments which can be generalized to Russian urban population were defined: *food indifferent* (19.5%), *restricted consumers* (23.9%), *healthy eaters* (22.6%), and *hedonists* (34.1%). Significant differences in age, gender and having children within

consumer segments were found, whereas such variables as education, occupation and income had no affect on variation between the segments. The difference in the importance of food choice motives was also found to be substantial thus providing a better capture of the established clusters.

Finally, we provided an application of the results and developed recommendations aimed at effective design of food production companies' and marketing strategies. The latter may be of great help: a) to better understand the recent food consumption patterns on Russian food market for retailers, b) to effectively implement the various marketing and promotional activities for companies dealing with food products, and c) to improve product development and product innovation processes for food producers.

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APPENDIX 1.QUESTIONNAIRE USED IN THE STUDY (IN RUSSIAN)

Оцените высказывание по шкале от 1 до 7, где 1 – совершенно не важно, 7 – очень важно

Для меня важно, чтобы еда, которую я ем, …

		1	2	3	4	5	6	7
1	легко готовилась	○	○	○	○	○	○	○
2	не содержала пищевых добавок (красители, консерванты, усилители вкуса и т.д.)	○	○	○	○	○	○	○
3	была низкокалорийной	○	○	○	○	○	○	○
4	имела хороший вкус	○	○	○	○	○	○	○
5	была натуральной	○	○	○	○	○	○	○
6	была недорогой	○	○	○	○	○	○	○
7	содержала низкий процент жиров	○	○	○	○	○	○	○
8	была знакомой и привычной для меня	○	○	○	○	○	○	○
9	была богата клетчаткой	○	○	○	○	○	○	○
10	была сытной и питательной	○	○	○	○	○	○	○
11	была доступна в большинстве магазинов и супермаркетов	○	○	○	○	○	○	○
12	имела хорошее соотношение цены и качества	○	○	○	○	○	○	○
13	повышала мое настроение	○	○	○	○	○	○	○
14	имела приятный запах	○	○	○	○	○	○	○
15	может быть приготовлена очень просто	○	○	○	○	○	○	○
16	помогала мне справиться со стрессом и усталостью	○	○	○	○	○	○	○
17	позволяла держать себя в форме	○	○	○	○	○	○	○
18	имела приятную текстуру и консистенцию	○	○	○	○	○	○	○
19	была в упаковке, которая не загрязняет окружающую среду	○	○	○	○	○	○	○
20	была произведена в странах, политика которых не противоречит моим убеждениям	○	○	○	○	○	○	○
21	была похожа на ту, что я ел в детстве	○	○	○	○	○	○	○
22	содержала большое количество витаминов и минералов	○	○	○	○	○	○	○
23	не содержала искусственных добавок	○	○	○	○	○	○	○
24	помогала мне оставаться в тонусе на протяжении всего дня	○	○	○	○	○	○	○
25	имела хороший внешний вид или упаковку	○	○	○	○	○	○	○
26	помогала мне отвлечься от повседневных дел	○	○	○	○	○	○	○
27	была богата белками	○	○	○	○	○	○	○
28	не занимала много времени при приготовлении	○	○	○	○	○	○	○

29	была полезна для здоровья	○	○	○	○	○	○
30	включала свежие фрукты, овощи, орехи и молочные продукты	○	○	○	○	○	○
31	позволяла мне хорошо себя чувствовать	○	○	○	○	○	○
32	имела четкое указание страны изготовления на упаковке	○	○	○	○	○	○
33	соответствовала моему ежедневному рациону	○	○	○	○	○	○
34	помогала мне преодолевать жизненные трудности	○	○	○	○	○	○
35	была доступна в магазине возле моего дома или места работы	○	○	○	○	○	○
36	была дешевой	○	○	○	○	○	○

В своем рационе я предпочитаю следующие категории продуктов:

		123	4	5	6	7
1	Хлебобулочные изделия	○	○	○	○	○
2	Кондитерские изделия	○	○	○	○	○
3	Фрукты и овощи	○	○	○	○	○
4	Мясо	○	○	○	○	○
5	Птица	○	○	○	○	○
6	Колбасные изделия	○	○	○	○	○
7	Рыба и морепродукты	○	○	○	○	○
8	Яйца	○	○	○	○	○
9	Молочные продукты	○	○	○	○	○
10	Сыр	○	○	○	○	○
11	Алкогольные напитки	○	○	○	○	○
12	Безалкогольные напитки	○	○	○	○	○

Пол	○ Женский ○ Мужской
Образование	○ Среднее общее ○ Среднее специальное ○ Неоконченное высшее ○ Высшее
Вид деятельности	○ Полная занятость ○ Частичная занятость

	○ Фрилансер ○ Временно безработный ○ Пенсионер ○ Студент ○ Домохозяйка
Доход	○ до 10 000 руб. ○ от 10 000 до 20 000 руб. ○ от 20 000 до 30 000 руб. ○ от 30 000 до 40 000 руб. ○ от 40 000 до 50 000 руб. ○ свыше 50 000 руб.
Наличие детей в семье (меньше 18 лет)	○ Да ○ Нет
Возраст	___

APPENDIX 2. FCQ ITEMS GROUPED BY 9 FACTORS

Convenience	Is easy to prepare
	Is easily available in shops and supermarkets
	Can be cooked very simply
	Takes no time to prepare
	Can be bought in shops close to where I live or work
Ethical concern	Is packaged in an environmentally friendly way
	Comes from countries I approve of politically
	Has the country of origin clearly marked
Familiarity	Is familiar to me
	Is like the food I ate when I was a child
	Is what I usually eat
Health	Is high in fibre and roughage
	Is nutritious
	Contains a lot of vitamins and minerals
	Is high in protein
	Keeps me healthy
	Is good for my skin/teeth/hair/nails etc.
Mood	Cheers me up
	Helps me to cope with stress
	Keeps me awake/alert
	Helps me to relax
	Makes me feel good
	Helps me to cope with life
Natural content	Contains no additives
	Contains natural ingredients
	Contains no artificial ingredients
Price	Is not expensive
	Is good value for money
	Is cheap
Sensory appeal	Tastes good
	Smells nice
	Has a pleasant texture
	Looksnice
Weight control	Is low in calories
	Is low in fat
	Helps me control my weight