

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Trade and Finance



Master's Thesis

**Analysis of Consumer Behaviour while Purchasing Food
during a Crisis**

Bc. Adéla Hejnová

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Bc. Adéla Hejnová

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Objectives of thesis

The objective of the diploma thesis is to examine how the period of the Covid 19 pandemic, and the subsequent energy crisis associated with the war in Ukraine between 2020-2022 affected consumer behaviour while purchasing food in the Czech Republic.

Secondary objectives:

- To define theoretical background;
- To execute and evaluate survey;
- To test and subsequently confirm or refute predetermined hypotheses;
- To formulate conclusion;
- To formulate recommendation.

Methodology

The methodology of the work assumes the compilation of literary research (theoretical starting points) with the help of summarization, analysis, synthesis, and compilation of primarily secondary sources that are related to the issue.

The methodology of the actual work then assumes the implementation of a questionnaire survey, subsequent data analysis, the formulation and testing of suitable hypotheses to verify statistically significant relationships and the formulation of recommendations for sellers based on the findings. The use of statistical software is assumed.

The proposed extent of the thesis

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Keywords

food, behaviour, crisis, survey, hypothesis, consumer, analysis

Recommended information sources

HENDL, Jan. Přehled statistických metod. Prague: Portál, 2015. ISBN 978-80-262-0981-2

KHAN, Martin. Consumer Behaviour and Advertising Management. UK: New Age International Ltd, 2006. ISBN 978-8-12-242552-9.

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VYSEKALOVÁ, Jitka et al. Chování zákazníka. 1st ed. Prague: Grada, 2011. ISBN 978-80-247-3528-3.

ZAMAZALOVÁ, Marcela. Marketing obchodní firmy. Prague: Grada, 2009. ISBN 978-80-247-2049-4.

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The Diploma Thesis Supervisor

Ing. Petra Šánová, Ph.D.

Supervising department

Department of Trade and Finance

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prof. Ing. Luboš Šmutka, Ph.D.

Head of department

Electronic approval: 29. 11. 2022

doc. Ing. Tomáš Šubrt, Ph.D.

Dean

Prague on 29. 11. 2022

Declaration

I declare that I have worked on my master's thesis titled "Analysis of Consumer Behaviour while Purchasing Food during a Crisis" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on November 30

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Analysis of Consumer Behaviour while Purchasing Food during a Crisis

Abstract

The main aim of the diploma thesis is to examine the impact of the current crisis on the behaviour of Czech consumers when purchasing food. Two regions of the Czech Republic are chosen, specifically the Prague Region and the Ústí nad Labem Region, where the differences between their residents are subsequently determined. The thesis is divided into three parts. In the first part, the differences among consumer, customer and buyer are explained. Furthermore, general knowledge about purchasing behaviour, food and basic concepts of microeconomics are included. The main world economic crises throughout history are also described. The second part of the thesis deals with the evaluation of the survey results in which a total of 546 respondents participated. Five hypotheses are established that are subsequently rejected or accepted using the McNemar-Bowker test and the Pearson's Chi-square test of Independence. The last part of the thesis contains a summary of the results. Whether and possibly how the COVID-19 pandemic and the energy crisis affect the behaviour of the Czech consumer when purchasing food. Based on the findings, recommendations are also proposed for manufacturers, institutions, and marketers.

Keywords: food, behaviour, crisis, survey, hypothesis, consumer, analysis

Analýza spotřebitelského chování při nákupu potravin během krize

Abstrakt

Hlavním cílem této diplomové práce je zkoumat dopad současné krize na chování českých spotřebitelů při nákupu potravin. Byly zvoleny dva kraje České republiky, a to konkrétně Praha a Ústecký kraj, kde se následně zjišťují rozdíly mezi jejich obyvateli. Práce je rozdělena do tří částí. V první části závěrečné práce jsou vysvětleny rozdíly mezi spotřebitelem, zákazníkem a kupujícím. Dále jsou shrnuty obecné poznatky o nákupním chování, potravinách a základních konceptech mikroekonomie. Jsou zde také popsány hlavní světové ekonomické krize v průběhu historie. Druhá část této práce se zabývá vyhodnocením výsledků dotazníkového šetření, kterého se zúčastnilo celkem 546 respondentů. Bylo vytvořeno pět hypotéz, které následně byly vyvráceny či potvrzeny za použití McNemar-Bowkerova testu a Pearsonova chí-kvadrát testu nezávislosti. Poslední část této práce obsahuje shrnutí zjištěných výsledků, zda-li a popřípadě jak pandemie COVID-19 a energetická krize ovlivnila chování českého spotřebitele při nákupu potravin. V návaznosti na zjištěné poznatky je rovněž navrženo doporučení pro výrobce, dané instituce a marketéry.

Klíčová slova: potraviny, chování, krize, dotazník, hypotéza, spotřebitel, analýza

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1 Introduction

Food is the main agricultural product and an essential substance that serves as a nutrient for every human. Very important nutrients such as carbohydrates, proteins, fats, minerals and, last but not least, vitamins are delivered to the human body through food. In the human body, nutrients are taken up by cells that use them to produce energy, help maintain vital functions and support growth. For the proper functioning of the human organism, it is necessary that the intake of these important substances is in balance, in other words, each individual should be careful about what and in what proportion of food he or she consumes. In terms of handling, food is very demanding on safety and quality standards during its production, transportation, and storage in the developed countries of the world.

The current food market is very diverse. Many manufacturers and brands operate on it, offering different food and processed products of different quality, price, different tastes, but also colours and packaging. Competition between manufacturers and traders is high, there are a large number of substitutes on the market. Great emphasis is placed on the constant development of new alternatives and customer service.

Food is constantly researched and often comes up with new findings. New trends are also emerging, which are the subject of various discussions and opinions. With the new and younger generation, there is more and more interest in a healthy lifestyle and thus the trend of less processed, fresh food and organic food is developing. As a reaction to health problems, the trend of gluten-free food and without unnecessary preservatives has spread.

Every person and at the same time a consumer is unique. Consumer behaviour demands and requirements generally change throughout life due to various significant and non-significant influences such as experiences, influence of family, employment, culture, sudden events, the desire for change, but also the economic situation of the state.

The crisis is a current topic that has affected and continues to affect the entire world. This is the COVID-19 pandemic, which began at the end of 2019 in the city of Wuhan in China and subsequently spread throughout the world. It came to the Czech Republic in March 2020. The impact of this disease is huge and has affected all countries of the world. In February 2022, after the Russian invasion of Ukraine, inflationary pressure and prices rose rapidly due to concerns about restrictions on the supply of gas and some imported raw materials and commodities. There is a food threat in certain part of the world as well.

The diploma thesis examines this negative influence in the area of food purchases in retail. Consumer behaviour has been very chaotic since the beginning of 2020, and society is massively affected by mass phenomena, which include, for example, high prices and concerns about the unavailability of certain products.

2 Objectives and Methodology

2.1 Objectives

The objective of the diploma thesis is to examine how the period of the COVID-19 pandemic, and the subsequent energy crisis associated with the war in Ukraine between 2020-2022 affected consumer behaviour while purchasing food in the Czech Republic and compare differences depending on selected factors (region, gender, age). Secondary objectives:

- To define theoretical background
- To execute and evaluate survey
- To test and subsequently accept or reject predetermined hypotheses
- To formulate conclusion
- To formulate recommendation

2.2 Methodology

The diploma thesis is divided into three parts, literature review, practical part, result and discussion.

The theoretical part is focused on the terminology of secondary data obtained from the scientific literature in printed as well as electronic version, legislation and internet resources related to the topic. The differences between consumer, customer, buyer are explained and the terms of consumer purchasing behaviour, food, basic concepts of microeconomics are defined there. The last part describes selected crisis of the world economy during history. A list of used resources may be found at the bottom of the thesis.

In the practical part, quantitative research is applied by means of a survey, the aim of which is to obtain the necessary data for evaluation and subsequent comparison. In detail, the descriptive type of research using the ad hoc method is chosen as it is a one-off investigation carried out in order to obtain data for this diploma thesis. When comparing, the respondents are divided on the basis of the region of the Czech Republic in which they

live. The region, gender and age are included in the testing of hypotheses. The research is focused on the change in food purchasing behaviour of the residents of the Ústí nad Labem Region and Prague Region.

The questions in the survey are structured into two time periods, namely the current crisis period and the pre-crisis period, i.e. before 2020. The current crisis is dated from March 2020, when the first positive COVID-19 cases appeared in the Czech Republic, followed by the invasion of Russian troops into Ukraine in February 2022, causing an energy crisis.

Completing of the standardized survey was anonymous and voluntary for all respondents. Subsequently, all data were used only for the scientific purposes of this thesis. The survey was created on the website vyplnto.cz. It is a survey portal where the survey itself was available for completing by respondents from the general public. Furthermore, it was distributed both through a shared link via the author's personal profile on Facebook in several public groups and through chain selection. The chain selection was done through the distribution of survey with the help of the author's personal contacts who circulated the survey further. There was also a hard copy version mainly used by the older generation of respondents whose results were then transcribed into electronic form. The data collection took place from 5 July to 15 October 2022. A total of 546 respondents took part in the survey including 122 men and 175 women from Prague region and 100 men and 149 women from the Ústí nad Labem region.

The initial part of the survey includes a short introduction of the author and the purpose of the survey. This is followed by instructions for completing, the questions themselves and a thank you note. The survey consists of 36 closed-ended questions and the respondents were only allowed to choose one of them. All questions in the survey are set as mandatory, so it is not possible to skip any of them. Choosing one level from the Likert scale is as a response option:

- Yes
- Rather yes
- Rather no
- No

The first question identified the region from which the respondent come from. Questions 2-31 are about purchasing and the consumer's attitude towards it. The rest of questions 32-38 investigate the consumer's background. After the completing of the survey, the output data is transferred to Microsoft Excel where tables and charts were

created for better clarity. Subsequently, a description of the results of each question is created together with comparison. Based on the survey, hypotheses are established and after testing, they are either accepted or rejected. Testing is also conducted in MS Excel using the Real Statistics extension. Due to multiple variables (place of residence, age, gender), individual hypotheses contain only one of them. The following hypotheses are established:

- 1) Change in consumer behaviour regarding contactless payments does not depend on the place of residence.
- 2) The change in thinking about food production methods is not related to gender.
- 3) The change in consumer behaviour related to stockpile food purchasing does not depend on gender.
- 4) The change in the way of purchasing food in relation to online purchasing does not depend on age.
- 5) Change in the importance of price does not depend on place of residence.

First, contingency tables are created in MS Excel, in which it is clearly visible whether the respondents changed their answers/behaviour if we compare the current period of the crisis with the period before the defined crisis, i.e. before the year 2020. Two tests are used to test the hypotheses, i.e. McNemar-Bowker Test, which compares the behaviour between these two periods, in other words, whether there is a change during the crisis but does not reveal which changes are then significant. Its conditions include the sum of $n_{ij}+n_{ji}$ values for individual pairs of levels must be at least 1. Furthermore, Pearson's Chi-square Test of Independence is used, which tests whether the existence of a change in behaviour is related to either the place of residence, age or gender of the respondents depending on the established hypothesis. These tests do not follow each other. A new variable is created in order to calculate the Pearson's Chi square Test of Independence. The variable expresses the change in behaviour itself, so that its connection/disconnection with the given quantities (residence, age, gender) can then be determined using the test. The new variable is displayed in the created tables based on the survey responses. Answers where there is a change from "Yes" to "Rather yes", from "No" to "Rather no" and vice versa are not considered to be significant, i.e. it is determined that there is no change in behaviour. If there is a swap from "yes" or "rather yes" to "rather no" or "no", it is considered to be as negative change. If there is a swap from "no" or "rather no" to "yes" or "rather yes", the

change is considered to be as positive in consumer behaviour which is seen in the table No. 1. Basic conditions for using the test include: at most 20 % of the expected frequencies are less than 5 and none are less than 1. If this is not the case, logically similar levels are merged if possible. Furthermore, the answer of one respondent must be included in one level for each variable. Before the testing, a significance level α of 5 % is chosen for both tests. Tests using the p value accept or reject the null hypothesis. If the p-value is less than the significance level ($\alpha = 0.05$), H_0 is rejected and H_a is accepted. If the p-value is greater than the significance level ($\alpha = 0.05$), H_a is rejected and H_0 is accepted. The null hypothesis (H_0) expresses no, zero dependence between the tested data. The alternative hypothesis (H_a) assumes the opposite. To accept or reject the hypotheses, it is also possible to use the test criterion B for the McNemar-Bowker test and the test criterion χ^2 for the Pearson's Chi square Test with the critical table value χ^2 . If the value of B or χ^2 is greater than the critical table value χ^2 , H_0 is rejected. If the value of χ^2 is less than the critical table value of χ^2 , H_a is rejected. If the null hypothesis is rejected and the alternative hypothesis is accepted, there is dependence. The strength of dependence is measured using Cramer's V value of the Chi-square Test. This coefficient takes values between 0 – 1. If its value is less than 0.1, it is a negligible dependence, a value in the range of 0.1 – 0.3 means a weak dependence, a value in the range of 0.3 – 0.7 means a medium dependence and a value greater than 0.7 represents a strong dependence. For better clarity and precision, tables with percentage distribution of frequencies and adjusted residuals are created, whose threshold value for significance is the absolute value of 1.96 for the 5 % level (Hendl, 2015).

Based on the results of the survey, recommendations for marketers, entrepreneurs and institutions are formulated at the end of the diploma thesis.

Table 1 New variable

| New variable | Current crisis | | | | |
|---------------|----------------|-----------|------------|-----------|-----------|
| | Change | Yes | Rather yes | Rather no | No |
| Before crisis | Yes | No change | No change | Negative | Negative |
| | Rather yes | No change | No change | Negative | Negative |
| | Rather no | Positive | Positive | No change | No change |
| | No | Positive | Positive | No change | No change |

Source: own work

McNemar-Bowker Test formula including calculation of degrees of freedom

$$B = \sum_{i < j} \frac{(n_{ij} - n_{ji})^2}{n_{ij} + n_{ji}} \sim \chi^2 \left(\frac{k(k-1)}{2} \right)$$

n_{ij} – the number of respondents belonging to the i-th category of the observed quantity before the crisis and the j-th category at present

n_{ji} – the number of respondents belonging to the j-th category of the observed quantity before the crisis and the i-th category at present

k – Number of levels

Chi-Square Test of Independence formula including calculation of degrees of freedom

$$\chi^2 = \sum_{i=1}^k \frac{(n_{ei} - n_{oi})^2}{n_{oi}} \sim \chi^2_{(m-1)(n-1)}$$

n_{ei} – Observed frequencies

n_{oi} – Expected frequencies

m – Number of rows

n – Number of columns

3 Literature Review

This part of the diploma thesis defines the theoretical background related to the topic consumer purchasing behaviour, food, consumer market and market conditions.

3.1 Consumer, Customer, Buyer

It is necessary to distinguish several concepts, namely consumer, customer, and buyer at the beginning of this section. Most individuals can hold these roles at once. Marketing researchers and experts increasingly try to explore these roles and their links to economics, marketing, sociology, and psychology (Boučková et al., 2003). In addition to the above, comparative biology, neurophysiology, as well as information theory and disciplines are used (Bártová, Bárta, Koudelka, 2007).

In general, consumers, customers and buyers are the base on which all types of business stand. This is essential for businesses looking to turn shoppers into buyers and maintain good relationships with them in order to keep the business going. It is also important that businesses pay attention to equal importance to both. *“They should take care of what is demanded of the product by the consumer as well as they should advertise the product so well that it will grab the attention millions of customers instantly because the buying decision is taken by the two together or by keeping in view of the other”* (Surbhi, 2017).

There is a need to constantly conduct research, identify trends and adapt to the market, because every buyer differs in their wishes, behaviour, resources, decisions, etc. Companies try to obtain, analyse and subsequently evaluate data, information about the market, customers and competitors. Based on the results, which are most often got by questionnaires, companies adjust the range of products and services and try to thus satisfy the needs of as many consumers as possible. In the questionnaires, companies examine who, what, where, in what quantity and why the consumer buys. It is clear that businesses do not reach all buyers with just one product. As a result, a large heterogeneous market is divided into smaller homogeneous segments, which are intended for consumers with similar purchasing characteristics (Koudelka, 2006; Hes et al., 2017; Kotler, Keller 2012).

Every capable consumer or customer should consider their consumption and make the decisions and purchase accordingly (Vysekalová et al., 2011). They should maximize the benefits at prices within their financial means (Lipovská, 2017). There are also individuals who must make decisions for others (Švarcová, 2016).

3.1.1 Consumer

Act No. 89/2012 of 3 February 2012 defines consumer in paragraph 419 of the new Civil Code of the Czech Republic as follows: “A *consumer is any individual who, outside his trade, business or profession, enters into a contract or has other dealings with an entrepreneur.*”

Another definition of consumer is stated in the Czech Collection of Laws as “A *consumer means a natural person who is not acting in the course of its business or in the course of individual performance of its profession*” (Act No. 634/1992 Coll., on Consumer Protection, Section 2).

Consumer is defined as the ultimate user of the product or service. Consumer not necessarily pays the price of the product or service. The goods may be gifted or purchased by another person. If the consumer also purchases the product or service, it is for the purpose of own consumption or use. Consumer is any kind of user, apart from the buyer who makes the purchase, consumes the products or service by taking permission of the buyer. It includes the individual that avails the offerings for any consideration. The example of consumer can be a family, a group of people or an individual such as baby for whom the mother as a customer buys baby food (Bačuvčík, 2016; Surbhi, 2017).

The consumer is one of the social roles that each individual acquires by birth. Although a new-born cannot be a customer or a participant in purchasing processes, he or she is involved in consumption of the products and services from the very beginning. This role gradually evolves and goes through various dynamic phases. This process lasts a lifetime, in all its phases (Boučková et al., 2003). Human needs, wishes, desires, values, interests, habits, customs, bad habits, life attitudes change during life, so the personality itself changes. Each consumer has their own different personality. It is a combination of individual traits, characteristics, temperament, needs, interests, abilities, and skills, all this depending on upbringing, the influence of family and culture which affect the behaviour, specifically in purchasing behaviour in this case (Bárta, Bártová, 2009; Vysekalová et al., 2011).

3.1.2 Customer

Customer is a narrower term compared to consumer. It is an individual or a business entity that is also called a client, buyer, or purchaser. The customer is the one that orders, buys, pays, and can use the products and services from a seller. The client can

purchase the goods for the purpose of the personal use or on behalf of another person, resale or to add value to it (Bačuvčík, 2016; Surbhi, 2017). According to professional definitions, “customer is the recipient of a good, service, product or an idea obtained from a seller, vendor, or supplier via a financial transaction or exchange for money or some other valuable consideration” (Kendall, 2007; Reizenstein, 2004).

They are divided into two main categories:

- **“Trade Customers:** *The customers who purchase goods in order to add value and resell them. These include Manufacturers, Wholesalers, Distributors, Retailers etc.*
- **Final Customer:** *They are the customers who purchase it either for their own use or to hand over it to the final user”* (Surbhi, 2017). These customers include personal consumers, commercial or non-profit organizations, local, state, national authorities, institutions such as hospitals, schools, prisons, and others (Schiffman, Kanuk, 2014).

In terms of marketing, Kotler and Keller (2012) defines: “A profitable customer is a person, household, or company that over time yields a revenue stream exceeding by an acceptable amount the company’s cost stream for attracting, selling, and serving.”

Further Kotler and Keller (2012) explains: a customer is a person, household, or company, which determines what types of product or services they want, when, where, and the way they want to purchase them.

Nenadál (2004) defines a customer as any person or entity that submits the results of their own activities.

3.1.3 Buyer

“A buyer is a person who is buying something or intends to buy it. ” As well as “a buyer is a person who works for a large store or chain deciding what goods will be bought from manufactures to be sold in the store” (Collins English Dictionary, c2022).

The definition of consumer and customer implies that buyer can be customer as well as consumer under stated conditions (Surbhi, 2017).

3.2 Consumer Purchasing Behaviour

The concept of consumer purchasing behaviour can be interpreted in several ways. It is a kind of behaviour typical of final consumers when purchasing goods and services or

as human behaviour when using and purchasing tangible or intangible consumer products and services (Mulačová, Mulač, 2013; Bačuvčík, 2017).

Schiffman and Kanuk (2004) define this term as “*the behavior that consumers display in searching for, purchasing, using, evaluating, and disposing of products, services, and ideas that they expect will satisfy their needs*” Koudelka (2006). completes the definition of storage of consumer products. Generally speaking, why and what products the consumers buy, how often, how they use the products, how they evaluate them after the purchase and whether they are willing to re-purchase them (Mulačová, Mulač, 2013; Schiffman, Kanuk, 2004). Consumer purchasing behaviour is based on decision making. Every individual who spends their own resources, such as their time, money, and effort, focuses on items that are related to their consumption (Schiffman, Kanuk, 2004).

Consumer purchasing behaviour is defined in another way by Bačuvčík (2017) who claims that “*consumer behaviour is one of the levels of human behaviour. It includes both the reasons that lead consumers to use certain goods and the ways in which they do so, including the environmental influences that accompany this process.*”

Consumer behaviour is a process that consists first of realizing one's needs, planning, purchasing decisions, the actual purchase, consumption and ends with disposal of goods and services (Koudelka, 2006). While purchasing process, consumers take into consideration from which seller or source to purchase or whether to even purchase the product or service (Costa, Bamossy, 2012).

There are certain internal and external factors such as own perception, self-concept, age, family cycle, culture, social class, attitudes, beliefs, values, motivation, personality, health, lifestyle, learning, ability to adapt and others that influence consumer behaviour (Costa, Bamossy, 2012). Each individual is based on their so-called consumer nature, which is partly given genetically and often acquired during the life in the society in which they grow up and the environment in which they live. Consumer behaviour cannot be torn from its links to other aspects of human behaviour (Koudelka, 2006). According to research, consumers who live in the upper social class can afford to buy goods and services in larger quantities and at shorter intervals. Furthermore, those social classes tend to purchase in specialty stores and have a better relationship to online shopping than people coming from the lower social classes. In poorer social classes, consumers purchase less often, look for discounts and sometimes can only meet their barest needs (Cole, 2014; Costa, Bamossy, 2012).

It is relatively difficult to estimate how individual consumers will behave. Each of them reacts to individual stimuli differently. The reasons for the purchase may vary according to necessity, relaxation, opportunity etc (Zamazalová, 2009).

3.2.1 Models of Consumer Behaviour

The literature presents 4 traditional models also called approaches to clarify different consumer behaviour. They are Psychological, Learning, Sociological, and Economic. In addition, there are developed many contemporary models such as Pavlovian Model; Input, Process Output Model—Gandhi; Philip Kotler; Howarth Sheth Model; Engel-Blackwell-Kollat Model; Model of Family Decision-making; Nicosia Model; A Model of Industrial Buying Behaviour; Black Box Model, Hawkins Stern Model; Webster and Wind Model (Needle, 2021; Khan, 2006). These models describe in more detail the links between the individual components that appear in consumer behaviour (Koudelka, 2010). They also contain various factors that relate to approaches (Mulačová, Mulač, 2013).

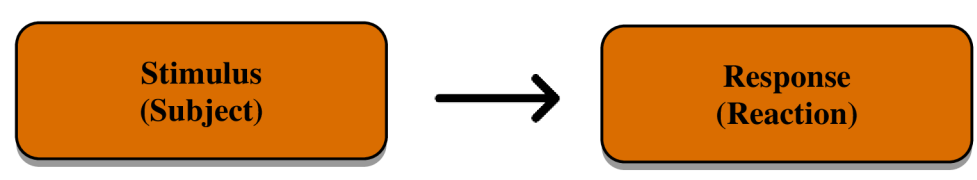
“A model is an attempt to diagram the elements and relationships among elements, in this case buyer behavior forces and variables” (Holloway, Hancock, 1973). Models of consumer behaviour are an important marketing tool that helps the trader tailor communication tools to appeal the customer. *“A consumer behaviour model is a theoretical framework for explaining why and how customers make purchasing decision. The goal of consumer behaviour model is to outline a predictable map of customer decisions up until conversion, thus helping your steer every stage of buyer’s journey”* (Needle, 2021). All these models are characterized by the fact that they intersect with each other, so it is not appropriate to use only one model. Marketers should especially draw on the knowledge of all these models. Subsequently, it depends on the purpose for which the model is used or for whom the analysis of consumer behaviour is done.

a) Psychological model

This basic model explains consumer behaviour as a consequence of mental processes (Boučková et al., 2011). It can be said that every manifestation of consumer behaviour is based on the essence of the consumer's psyche (Koudelka, 1997). Vysekalová et al. (2011) defines the approach: *“Consumer behaviour is influenced by psychological processes, which manifest our mental qualities, the individual composition of which*

creates the character of our personality. It is about recognizing the psychological peculiarities of an individual, his or her (their) characteristics in terms of psychological characteristics or personality traits.” This approach is often explained and based on the “Stimulus-Response” model seen in the figure 1. Product features, form of communication, advertising, etc. are examples of stimuli. Retailers strive to find answers to how people respond to selected stimuli (Koudelka, 2010). The advantage of this model is that the desires of the customer may be unaware, they do not always know why it appeals to them, they just know it is right to have it. The model is relevant for companies that sell an image that accompanies their products or services. Customers want to fit in a certain group in society and prove that they can have the product or service just like everyone else. The model emphasizes that every consumer has deep-rooted motives that are conscious and unconscious and that drive them to make a purchase. The motives are for example personal longings, hidden fears, suppressed desires. The problem with this approach to consumer behaviour is the reluctance of retailers to find out what leads the customer to buy (Needle, 2021). This kind of approach is based only on the observation of buyers (Mulačová, Mulač, 2013). Psychological factors, on which this model is based, have an important role in consumer behaviour (Zamazalová et al., 2010). They are described in more detail in a subchapter called Psychological Factors.

Figure 1 Stimulus-Response Model



Source: own work based on Koudelka, 2010

b) Learning Model

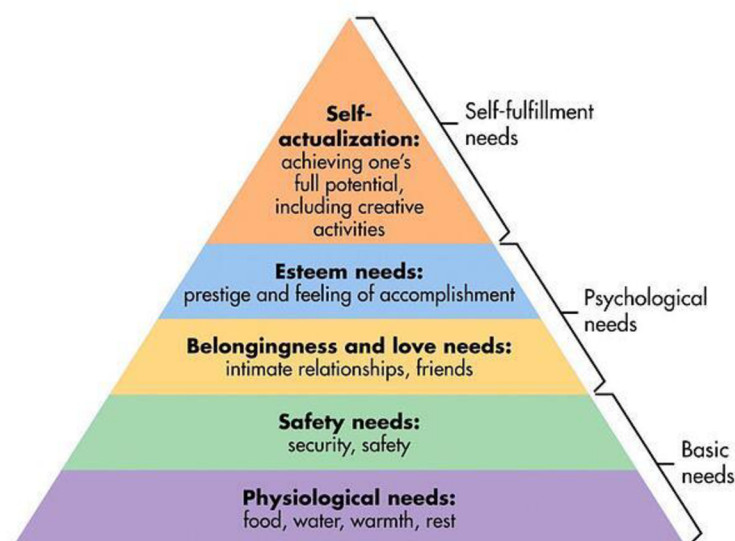
This model can be considered, among other things, a model derived from learning theory, as it is assumed that consumer behaviour is learned from other stimuli. Learning model is based on Abraham Maslow’s Hierarchy of Needs seen in the figure 2. An individual’s behaviour depends on their needs. According to the bottom row of the pyramid, each individual needs to satisfy the basic needs first and then continues in ascending order to those that are secondary. Ascending rows describe learned needs or secondary desires that allow consumers to achieve self-fulfilment. First hungry customers

need to fulfil their need for food before the learned need to wear trendy clothes (Maslow, 2021).

The purchasing process and behaviour is driven by motivational forces. Motivation begins with a need. Motivation is the driving force and also the mental phenomenon that encourages people to take action. On the other hand, the need arises when one is deprived of something. A tension is created in the individual's mind that leads them to goal-oriented behaviour that satisfies their need. Once the need is met, a new need arises. It is the continuous process (Maslow, 2021).

This model is more designed for multi-purpose companies such as large supermarkets selling products that meet all levels of customer needs. It is advantageous for these companies to direct buyers, when they come into the store, to products that meet their innate and basic needs in the food section. As soon as they feel comfortable, they move on to satisfy the desires and learned needs that bring them joy, such as sweets, clothes or cosmetics (Khan, 2006; Needle, 2021).

Figure 2 Maslow's Hierarchy of Needs



Source: Needle, 2021

c) Sociological Model

The sociological model examines consumer behaviour influenced by the social situations, circumstances, and social classes in which consumers belong to (Koudelka, 1997). The consumers are part of society and are members of many groups there through which their purchasing behaviour is influenced. The basic groups are family, friends, and

close co-workers as well as less defined groups according to age generations or hobbies (Needle, 2021). Individuals purchase items according to their lifestyle and what is appropriate or typical of the groups in which they are part of (Khan, 2006). This model is also based on the assumption that consumer behaviour is dependent on a desire to gain recognition or social position and whether they are influenced by other members or whether they influence the surroundings. Individuals are under pressure coming from groups and at the same time from the society as a whole around them. People are able to adapt and adhere to social norms, even if they are not stated anywhere. New fashion trends are a typical example. Sometimes people follow them automatically to stay in the herd (Koudelka, 2010).

This model can be used in companies, especially those that make specific products and services for specific groups. Brands selling exercise equipment can be one example (Needle, 2021).

d) Economic Model

This traditional model claims that consumers try to meet their needs, maximize their profits, and spend as few resources (such as money) as possible (Needle, 2021). The economic model is also called rational because of examining a person as a rational individual, who behaves when buying, so that it is economically advantageous for him or her and who takes into account the relationship between income, prices, facilities, budgetary conditions, restrictions, marginal benefits, etc. (Boučková et al., 2011). It is assumed that the consumers have enough information about possible purchasing options. Emotional, social, or psychological aspects in the buyers' mind are rather suppressed. (Koudelka, 2010). Rational factors also help gather information for consumers and make arguments about whether or not to buy a given product or service (Zamazalová et al., 2010).

According to a more detailed theory, this model is based on:

- *“Price effect: Lesser the price of the product, more will be the quantity purchased.*
- *Substitution effect: Lesser the price of the substitute product, lesser will be the utility of the original product bought.*
- *Income effect: When more income is earned, or more money is available, more will be the quantity purchased” (Khan, 2006).*

The model is the simplest of the traditional models, however, the most limited one. Businesses predict sales based on the income of their customers and the price of their products. If companies offer the product with the lowest price, they can be assumed to have a constant level of profit. However, the buyers may have other reasons for purchasing the product in addition to price and personal resources. An example of economic model can be the purchase of medicines that are one of the basic needs. If price of the drugs exceeds the buyers' resources or personal income, it does not affect their purchasing decisions. Even so, they would have to find a way to buy it and satisfy their needs (Needle, 2021).

3.2.2 Factors Influencing Consumer Purchasing Behaviour

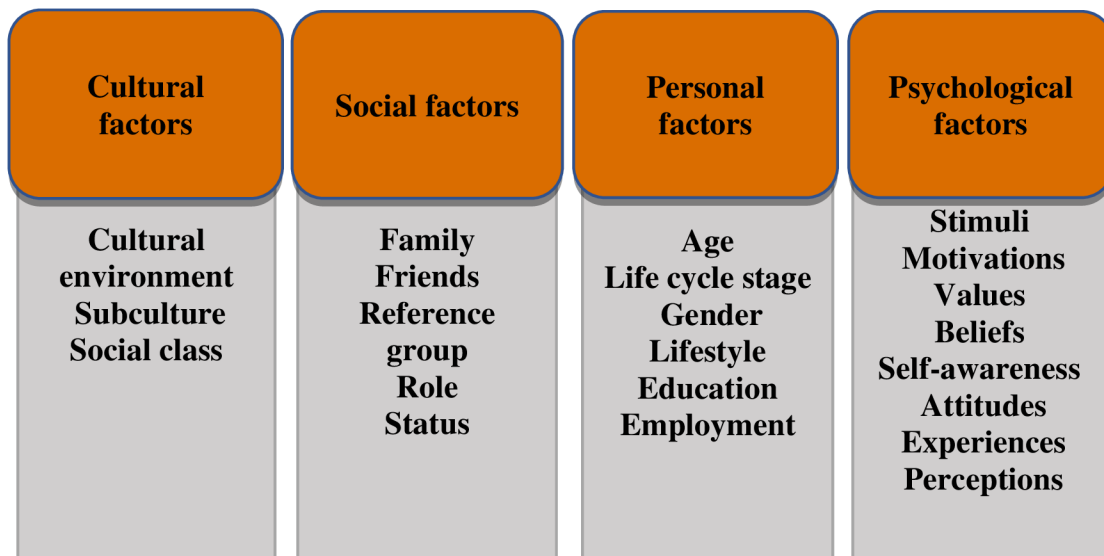
Factors influencing consumer behaviour and factors influencing an individual's personality are intertwined. Every consumer is influenced and then it depends on the circumstances what factors prevail in the person. They are divided into 4 main groups seen in the figure 3:

- a) Cultural factors** (cultural environment, subculture, social class),
- b) Social factors** (family, friends, reference group, role, status),
- c) Personal factors** (age, life cycle stage, gender, lifestyle, education, employment),
- d) Psychological factors** (stimuli, motivations, values, beliefs, self-awareness, attitudes, experiences, perceptions).

Marketers are often unable to control these factors. However, they need to be taken into account (Khan, 2006; Koudelka, 1997; Kotler, Wong et al., 2007).

There are also other factors to which the consumer is exposed during the purchase such as marketing mix, business tricks, economic, situational, and political factors (Vysekalová et al., 2011; Zamazalová, 2009).

Figure 3 Influencing Factors



Source: own work based on Kotler, Keller 2012

a) Cultural Factors

Cultural factors are referred to as factors with the broadest and deepest influence on the resulting consumer behaviour, which include culture itself, subculture, and the influence of social class (Kotler, Wong et al., 2007). Every culture is specific. It is a set of values, customs, traditions, norms and behaviour that ensure its image and differentiation from other cultures. Achievements, material security or freedom can be seen under values. Among the features of culture are also its adaptability to the environment and dynamism (Khan, 2006). The consumers acquire culture from family, school, media, religion, or some institution. Culture is passed down from generation to generation and is gradually changed and developed by consumers throughout their lives, meaning that culture is shared and learned, not an innate trait (Bártová, Bárta, Koudelka, 2007). Consumers in the same culture have similar needs and purchasing behaviour (Khan, 2006). In the case of food, the popularity of certain foods and drinks can be cited as an example (Zamazalová et al., 2010).

Culture can also be divided into intangible and tangible components. Intangible factors have a wider influence on people. They include norms, habits, values, but also the family and other institutions from which the consumers adopt culture (Boučková et al. 2011). They are linked to purchasing behaviour, the consumers' approach to the goods and other components of the marketing mix. With regards of purchasing behaviour, one can also encounter the breakdown of consumption habits Koudelka (2010). divides them into

food, purchasing and media habits. Food habits are linked to the traditional cuisine of a particular country, they also relate to the final use of the product, when, for example, consumers prefer local products to imported ones. Purchasing habits indicate whether buyers use credit, payment cards or negotiate on price. The last group consists of media habits, which include following the media. Other intangible components are language, traditions, symbols, non-verbal communication, body image, myths and rituals. Rituals can be considered holiday celebrations (Zamazalová et al., 2010). Communication in culture is very important and is often associated with marketing Koudelka (2010). gives an example of the creation of slogans, when in certain cases it is necessary for the company to create a completely new one, not just to translate it from a foreign language. There might be misunderstanding or misinterpretation depending on different cultures. The last aspect is the symbols, their colours, shapes, meanings, etc. This is a tool used to highlight the features of the products (Zamazalová et al., 2010).

The second already mentioned group of components of culture are tangible factors, the so-called cultural artifacts, which represent the entire assortment of goods in stores, as well as the equipment of the stores itself, such as stands and shelves (Koudelka, 2010).

A subculture is a subset of a culture, and there can be many within every culture. These are groups of people who share the same values based on common life experiences and situations (Bártová, Bárta, Koudelka, 2007). Subcultures can be distinguished into national, i.e. behaviour typical of a specific nation and ethnic roles, religious subcultures, which are governed by how much individuals are inclined to believe, racial subcultures and geographic subcultures depending on the lifestyle of the location of the region. Furthermore, they can also relate to occupations or age. In terms of consumer behaviour, it is important to remember that each subculture of people behaves differently when purchasing, for example in comparison to seniors and teenagers (Khan, 2006).

Social class is the smallest and relatively permanent subset of culture and orderly division of society (Khan, 2006). These are social groups of people who have the same attitudes, values, interests and ways of behaving. The individual classes differ from each other, both in terms of the number of categories and in their influence on purchasing behaviour when choosing products and services. Furthermore, in the manner of speech, clothing and entertainment preferences. Members of one class tend to behave similarly but differently than members of another class. The middle class is mostly represented in developed countries. Poor people predominate in less developed countries. The least

numerous class then represents upper class and the poorest inhabitants. This is where the concept of social stratification is introduced. There are four basic types of stratification systems:

- **class:** according to position on the labour market, typical of modern society
- **estate:** according to heredity, in some situations they can also be acquired in other ways (e.g. purchase of a noble title, award for bravery, etc.)
- **caste:** according to heredity. An unchanging system, anchored by religion
- **slavery:** unfree individuals controlled by their slave owner (Grusky, 2001).

A stronger relationship of culture with the social class system is found in non-democratic countries or in countries with a caste system. Common aspects can be found between different cultures. For example, upper classes from different cultures are characterized by having more in common than lower classes of the same culture. Lower classes are generally more culturally based. However, from the point of view the younger generation, there is less emphasis on cultural environment, which is associated with globalization (Khan, 2006). Furthermore, differences can be found in the use of media. For example, the lower class prefers television while the upper class prefers magazines and books (Kotler, Keller, 2012).

b) Social Factors

Social factors are another group of factors influencing consumers (Boučková, 2003). These factors are primarily focused on groups that influence individuals. A social group is a group of people who share common goals, social norms, and roles. This group is further divided into primary, secondary and reference. Consumers often become part of multiple groups in which they have different roles (Kotler, Wong et al. 2007). Groups fulfil several functions, they are an advisory body reducing the risk of making a bad decision, or they fulfil the function of fun and spending time together (Schiffman, Kanuk 2004).

The primary group represents family, friends, co-workers, shopping or interest groups (Zamazalová et al., 2010). Members of this group tend to have close relationships and frequent contact. It is an informal grouping with voluntary membership. However, the family usually has the greatest influence on consumer purchasing behaviour (Kotler, Keller, 2012). Families are characterized by two phases. The first of these includes parents and their children, when there is a more fundamental transfer of values and norms. The

second phase occurs when the children become an adult and transfers certain elements of purchasing behaviour to their newly created household. Here a certain change in behaviour can occur (Boučková et al., 2011). When making a purchase decision, family members can have different influences on the choice of product and brands. Consumer behaviour changes according to the so-called family life cycle. These are primarily changes associated with age, economic activity, the presence, and age of children (Khan, 2006). Workgroups are another primary group. The work environment, that the consumers share, co-create with other colleagues and spend a lot of time in, provides an opportunity to influence and change behaviour. Purchasing groups are the last primary social group. This is a group of members who purchase together, such as family members or flatmates.

Secondary groups are characterized only by occasional meetings or by a larger number of members. The relations between members are not so close. This is a more formal form of social groups (Boučková et al., 2011). Religious groups, professional associations trade unions, fan groups are examples (Kotler, Wong et al., 2007).

Reference groups form the last social group. They serve the consumers to compare behaviour and influence their attitudes, actions and opinions. The level of group action depends on the situation (Karlíček, 2013; Zamazalová et al., 2010). “*Reference groups can influence purchasing behaviour in several ways, namely:*

- *informational influence,*
- *symbolic effect,*
- *word-of-mouth influence,*
- *opinion leadership,*
- *media involvement of reference groups”* (Zamazalová et al., 2010).

Consumers often turn to this group for information, advice, and inspiration before making a purchase. Some of them are willing to pay more for a personal referral than for the advertisement itself. A so-called opinion leader role appears in reference groups. It is a member who has more status due to better knowledge, skills than others. He or she tend to be socially active and at the same time the first person to be interested in advertising messages. This member subsequently spreads information about, for example, the manufacturer, brand, or product among other members of the group. It may happen that opinion leader also creates various rumours with the intention of defamation (Khan, 2006). Creating a referral relationship with a celebrity through the media tends to be a popular way for consumers. It is a kind of guarantee about the quality of the goods (Kwon, 2018).

In addition, the message may include experts in the given field, selected people from the public who have been helped by the product to solve a problem (Zamazalová et al., 2010). These reference groups are divided in more detail in terms of relationship into aspirational or dissociative. As for the aspirational group, consumers have a positive attitude towards it, adapting their behaviour to fit into it (Kotler, Wong et al. 2007). Conversely, dissociative groups are associated with a negative bond. Consumers reject their values and do not want to be members (Kotler, Keller, 2012).

The concept of social aggregates is used for social factors that are defined only in space, such as crowds of people. A negative experience with a crowd can influence a consumers' post-purchase behaviour and create a negative relationship with the store (Zamazalová et al., 2010).

c) Personal Factors

Personal factors include demographic, physiographic and socioeconomic elements. Physiognomy also fits into personal factors (Koudelka, 2010). In more detail, personal factors mention mainly consumers' age, stage of life, lifestyle, education, type of job or level of income. Property base and amenities also have an effect on purchasing behaviour (Boučková, 2003). Consumers' tastes and attitudes gradually change throughout their lives, which is reflected, for example, in the content of a consumers' purchasing basket. A young person has a different purchasing behaviour from an elderly person. Consumers are also influenced by the life cycle of the family, already mentioned in the previous subchapter of social factors. Furthermore, the influence of lifestyle on purchasing behaviour is unquestionable. As a result, people move away from certain goods and look for others, it leads to the constant evolution of products and services. Life events such as moving, leaving a job or getting married are a source of new demands and changes in consumer behaviour. Getting new products in the range is also related to age (Kotler, Keller, 2012). Consumers buy more or less of a certain type of good depending on their job, an example is an officer versus a construction worker. Officers usually buy more elegant clothes or less caloric food (Kotler, Wong et al., 2007). Time is another important personal factor in purchasing habits. While seniors usually have more time to purchase during a day, workers can be limited by working hours. Some people buy online because they are too busy or use their free time in a different way. The purchased products and services also depend on consumers' knowledge and interest in education or looking for proper information about

them. The amount of income is the last aspect that does not always depend on the work done. The economic situation of the household depends not only on total income, but also on macroeconomic conditions. More expensive products and brands are less sought after in times of economic crisis (Boučková, 2003).

d) Psychological Factors

The consumers' psyche plays an important role during purchasing. In particular, four more dominant aspects are examined for marketing purposes, namely perception, learning, attitudes and motivation (Koudelka, 2010).

Perception is the process by which people select, interpret and sort stimuli acting on them from their surroundings. This is approximately 1500 stimuli per day (Kotler, Keller, 2012). Perception contains both conscious and unconscious components, whether a person perceives them depends on external and internal factors. External factors include, for example colour, size, newness or change of the product. Mood, desire for the product are classified as internal factors (Zamazalová et al., 2010). Stimuli together can create some kind of patterns, and therefore the perception of multiple stimuli at once rather than separately prevails (Vysekalová et al., 2011). If a person perceives stimuli, their categorization, interpretation, and assignment of their meaning follow. Everyone understands a certain situation differently, which can cause different consumer behaviour. There are three processes involved in perception, namely, selective attention, bias, and memorization (Jakubíková, 2012). Selective attention is used to select information that is important or significant in some way. The rest of the acting stimuli are crowded out that means the main task of marketing is to create an advertisement that attracts the buyers' attention. Selective bias means that people adapt the acting subject to their own image and often perceive it differently. At the same time, consumers tend to remember only data that confirms the correctness of their attitudes (Vysekalová et al., 2011). In the process of perception, people use individual memories, such as sensory memory, which is characterized by a high capacity, but at the same time it keeps the stimuli only for a very short time. Furthermore, there is short-term memory, where the stimuli enter through attention and the information is retained longer. If the information is useful for the purchasers, they store it in long-term memory, related to the last stage of perception (Zamazalová et al., 2010). Perception is also connected with learning, an integral part of

life, when people constantly learn new things, often by chance or trial-and-error (Koudelka, 2010).

Gained experience and acquired knowledge result in changes in consumer behaviour (Kotler, Wong et al., 2007). Learning determines the buyers' approach to products (Světlík, 2018). If the product meets the expectations, it is very likely that the buyers will buy it in the future. The consumers have a certain association with the brand (Kotler, Keller, 2012). In the case the stimuli acting on the buyers are similar, they so-called generalize their reactions which means the properties of a products or service are attributed to other ones without differentiation. Discrimination is called the opposite of generalization when the buyers perceive acting stimuli differently regarding products and reactions to the choice of products tend to be different as well (Gardner, 2018; Better Help, 2022). Learning has several forms of conditioning. One of them is called classical conditioning, which is associated with the repetition of acting stimuli. At the same time, positive relations with the brand or store should be created. Operant conditioning is a type of learning in which spontaneous behaviour is changed based on consequences. It is characterized by rewarding or possible punishment when the customers for example decide not to buy the given item. This type of conditioning draws buyers back to the store. Discounts are a typical example. Operant conditioning is primarily based on marketing (Zamazalová et al., 2010). Basic types of learning are complemented by social and cognitive learning. Social learning is based on adopting and observing human behaviour from the environment. On the contrary, cognitive learning is based on one's own judgements, experiences and is used in purchasing decisions, which are associated with greater risk in certain cases (Khan, 2006; Koudelka, 2010).

Psychology is also concerned with attitudes that arise from learning processes. Once a buyer has formed a certain attitude towards a certain stimulus, the behaviour becomes relatively permanent. In other words, attitudes represent favourable or unfavourable relations to certain objects in the case of consumer behaviour such as stores, people, goods or brands (Vysekalová et al., 2011). The formation of attitudes is based on multiple resources and situations, such as information channels, experiences or membership in different groups. The attitude is divided into 3 components: cognitive, emotional and conative. The cognitive component is based on the information that a person acquires about the thing and the rational reasoning. The emotional component is associated with the emotional relationship to the product. The conative component is associated with

behaviour towards the thing and action. In the case of purchasing, it is, for example, purchase intentions that do not always result in the purchase of goods (Boučková et al., 2011; Zamazalová et al., 2010). Even if the buyers want to buy the product, they may be deterred by, for example, the price. The degree of representation of individual parts of the attitude depends on the circumstances. A person holds several attitudes in life, which are also reflected in consumer behaviour. Created attitudes make it easier for buyers to buy because they do not have to keep thinking about products they already know. In this case, consumers often act according to buying habits (Vysekalová et al., 2011).

In psychological factors, it is necessary to mention motivation as a part of the psyche. Motivation is a tool used to satisfy needs when a person requests a change from the current state (Vysekalová et al., 2011). Motive is the driving force that leads to motivation and thus to the satisfaction of needs. Motivation is a process because new needs constantly emerge, that people tend to satisfy. Needs are divided into biological and psychosocial. Biological needs are innate and express the necessary needs for life, unlike psychosocial needs, which are learned and depend on the influence of the environment. Needs are feelings of fulfilment, not objects that the customer acquires. The motive then turns into a wish. While a want refers to a choice of goods, a need refers to an inner state (Koudelka, 2010).

Buyers also distinguish them from each other by personality. Personality may be defined in several ways. Říčan (2010) defines it as “*the individual understood as integration to self-realization in interaction with his environment.*” Chamorro-Premuzic (2012) determines the personality as a whole of human behaviour in different situations. Personality develops throughout life. Personality traits help retailers determine purchasing behaviour and tailor products to their customers. People often prefer brands with which they identify and express their personality. In many cases, people actually idealize themselves (Říčan, 2010).

3.2.3 Situational Influences

There is another group of indispensable influences called situational which act on the buyer during purchasing decision making, especially in the 4th stage of the purchase process (Koudelka, 2010). Situational factors do not stem from buyer predispositions, however they fundamentally influence their consumer behaviour. They appear especially in unexpected situations. Conversely, their effect is less pronounced in customers who are

more loyal to a product or brand. At the same time, their impact on repeat purchases of preferred products is reduced (Bártová, Bárta, Koudelka, 2007).

Most of the situational factors can be divided into the following groups:

- *“Physical circumstances,*
- *Social circumstances,*
- *Temporal circumstances,*
- *Type of task,*
- *Previous conditions,*
- *Other unexpected environmental changes.”* (Koudelka, 2010).

The group of physical circumstances includes the repositioning of a particular range of goods that stores undertake from time to time. Permanent customers cannot find the products they come to buy. Physical transformations such as the location of branches or changes in the business environment are also included in this group. Situational factors in this group are weather, season and temperature. The buyers often choose when to go shopping according to the given outdoor conditions, in the same way they adapt their food purchases according to the seasons. In other words, some types of food or in various quantities are bought mainly in the cold winter on the contrary some of them in the summer season when the weather reaches high temperatures. In addition to the changes, customer purchases can also be affected by natural events (Pride, 2017).

Furthermore, situational influences include social circumstances. Consumers are exposed to various interactions in their environment during the day. These interactions may subsequently be reflected in purchasing behaviour. One example is overhearing a conversation between other people, for example on public transport, about a certain product, service, or a good deal, which makes the consumer in question at least start thinking about buying. This may then lead the consumer to start looking for the product or service, visit a particular shop and, if necessary, purchase the product or service. The impact of these interactions is usually minor and shows that consumer behaviour is also influenced by people who are not part of consumers' own social groups (Koudelka, 2010; Pride, 2017).

Time is another situational factor influencing consumers when buying. Purchasing behaviour depends on the amount of time the buyer allocates for the purchase. In time pressure, purchasing is less deliberate and there is also less tendency to want given information about the goods or services. The buyers are aware of their time loss especially

when standing in queues at checkouts or self-service facilities. Furthermore, time influence also appears in the context of seasonality. During the year, retailers prepare for important days and holidays such as Easter, Christmas, Valentine's Day, Halloween, etc., which direct buyers to purchase well in advance (Pride, 2017).

Another aspect that has an influence on consumer behaviour is the type of task, the purpose of the purchase and the role the customer plays in the purchase. There is a difference between a purchase when the consumers acquire products or services for themselves and when they acquire products or services for others. There are often differences in behaviour when choosing presents (Bačuvčík, 2016).

Consumer behaviour also depends on their financial situation, mood, or physical condition. If people lose their job, their purchase can be severely limited due to financial resources. The same goes for the consumers' moods, which are closely related to emotions, both positive, for example, a big discount on goods, and negative, for example, waiting in a long queue (Koudelka, 2010).

Other unexpected influences concern with environmental changes, for example, changes in the business network or the temporary closure of a store. In addition, there are factors of the business environment, which are related to the product range, business atmosphere, personnel and merchandising (Koudelka, 2010). Marketing deals with business influences and these influences can be influenced relatively easily compared to others. An important part of the influences is the atmosphere of the stores, which is divided into external and internal elements. The external elements include everything that influences the buyers before they make a purchase. For example, store buildings or parking spots. The goal of sales architecture is to attract the attention of the surrounding environment at a greater distance. The internal elements include the movement of customers and the intensity of visits inside of the stores, which depends on the time periods when for example common working hours, the first sales days or special days such as Black Friday, New Year's Eve, public holidays, when stores may be closed (Mulačová, Mulač, 2013). Marketers also try to create an atmosphere with a sound background, lighting of specific goods or matching colours that attract the customer and are typical of stores or specific brands (Koudelka, 2010). Store staff is the last mentioned business influence and very important one, where the main element is a nice behaviour to customers. The staff qualifications and experience when they are able to provide an advice

or direct customers to the desired product, also lead to their satisfaction and make a good impression (Světlik, 2018).

3.2.4 Commercial Tricks

Commercial tricks are sales promotion tools and business practices that influence buyers during the buying process. These tricks are linked to the merchandising principles. The principles are about creating an ideal route, placing shelves with goods so that buyers pass through the whole store even through less needed zones, it is important that the basic goods are distributed across the stores. The effort of retail chains is to indirectly force customers to buy more goods that they did not initially come for or would not normally buy. The spatial distribution of goods also changes frequently (Hardyn, 2020). However, the trend of today's busy times is to avoid long circuits through the stores so that buyers are not discouraged from purchasing (Mulačová, Mulač, 2013). One of the basic tricks is related to pricing. There are various methods in marketing, an example is the so-called Baťa prices, i.e. prices ending with the number 9 or, more modernly, with ninety (Asamoah, Chovancová, 2011). Retail chains often offer products "from" a certain price level as well. Another trick is to display more expensive and cheaper variants of the product in vertical succession. The customer can then compare price and quality. Higher priced goods are usually located higher up, at eye level. Regarding another way of placement, sweets sections are located near the cash registers, where customers pass by or even stand in queue. Small goods such as chewing gum, lollipops and other snacks are usually placed right next to the cash registers. On the contrary, upon entering, there are promotional offers and stands with promotional flyers (Skrblík, 2021). Also, fresh goods are often placed at the entrance, which try to influence the consumer's sensory perception, for example, aromas, enticing images and music. Fresh baked goods, flowers or fruit with vegetables can be a typical example (Hardyn, 2020). Customers can also encounter tastings offers available well in stores that belong to popular promotional tools. The time of purchase depends on discounted goods, when so-called pent-up demand occurs. Therefore, customers often postpone purchasing products until they appear on sale or at a discount. The colour of the packaging is very important traditional trick, which influences the choice of goods. Colours intend symbolism that the brain processes and create an impression. For example, the red colour quickly attracts attention, is pressing, raises the pulse and calls for action, that is why the goods on sale are marked in red in stores (Urban, 2018). Loyalty

programs are a frequent trick, thanks to which the customers receive points/gifts or a bigger discount for the next purchase. Further, the stores set aside shelves with special/seasonal offers namely before Christmas, Halloween, Valentine's Day, Easter or with new products on the market (Skrblík, 2021). Claims that influence buyers tend to be about "limited edition", "limited supply", running out of stock, or an offer valid until stocks are exhausted (Urban, 2018). Point of Sale/Point of Purchase (POS/POP) materials are also represented among the tricks, which include promotional stands, shelf talker or signs with descriptions of events or discounts. They are placed across the stores and bring messages for customers (Tarver, 2021). Indirect tricks are usually caused by mirrors in stores, which optically expand the offer or improve the goods with appropriately chosen light. Another common trick is moving goods with a shorter shelf life forward, marking them as FIFO in warehouses. Traditionally, offering larger packages, using signs indicating the country of origin and organic food are considered favourites as well (Skrblík, 2021). The main legal regulation that regulates food labelling in general is Regulation No 1169/2011 of the European Parliament and the Council of 25 October 2011 on the provision of food information to consumers, which, among other things, regulates the basic requirements and the way food is labelled (eAGRI, 2022). Act No. 180/2016 Coll., entered into force in the Czech Republic in 2016, amending Act No. 110/1997 Coll., on foodstuffs and tobacco products amendments and additions to related act (Zákony pro lidi.cz, 2016). Currently, the European Union is planning a new labelling of foods and their division into healthy and unhealthy through a five-colour scale (Ruprich, 2022).

3.2.5 Marketing

From a business point of view, it is important to create such an environment that customers want to return to (Boučková, 2003). Businesses face a very competitive market nowadays and this is one of the reasons why a lot of attention is paid to the consumers and brands. Knowing people's needs, wishes and ideas is a key element in gaining competitive advantages. Consumer purchasing behaviour constantly changes due to the wide range of products, services and the international environment (Hes et al., 2017).

Marketing mix is “*a set of marketing tools that work together to engage customers, satisfy customer needs, and build customer relationships*” (Kotler, Keller, 2012). These tools include product, pricing, distribution, and communication policies that allow marketers to tailor offerings to customers demand and preferences (Kotler, Keller, 2012).

As well as the marketing mix is tactical tool to establish and develop a strong position of firms in target markets in a competitive environment (Karlíček, 2013). Everything the business can do to engage customers and provide value to them is included in the marketing mix. In order for customers to buy, it is necessary to offer them the right product at the right price, in an accessible way, and also to inform them that the product exists (Kotler, Keller, 2012).

The four basic categories into which the main marketing mix techniques are divided are:

- Product
- Price
- Place
- Promotion

a) Product

Product refers to the combination of goods and services that firms offer to their target market. They are designed to satisfy customer needs and wants. The firms should identify what makes their offering different from other competitors. It is also important to determine if other product or service can be offered in conjunction with it (Švarcová, 2016).

b) Price

Price is the amount of money customers must pay to obtain the product. In sales, actions occur that adjust prices to the current competitive and economic situation and adjust them to the buyer's perception of the value of the product (Švarcová, 2016).

c) Place

It refers to where the product or service is sold. Place includes sellers' activities that make the product or service available to target consumers. Basic products or services are sold in many stores while premium products are available only in select stores. Another factor to take into account is whether to sell a product online, in a physical store, or both (Kotler, Armstrong, 2003).

d) Promotion

Promotion is the term used to describe efforts that convey the benefits of the product, corporate information, and influence target buyers to purchase it. Advertising, sales promotion, personal selling, cash rebates, low financing rates, public relations, etc. are examples of activities within promotion. Determining the most effective means of

communication and making choices regarding communication frequency are both important. Social media sites such as Facebook, Twitter, YouTube, Instagram, and others engage consumers with the brand and other brand fans. Details from the other three Ps are frequently used as well (Kotler, Armstrong, 2003).

Some critics says that the 4Ps concept is focused more on seller's view of the market instead of the buyer's view. There is also less popular concept based on the 4Ps called the 4As and 4Cs which are more customer-centered framework (Kotler, Armstrong, 2003).

The 4A represents:

- **Acceptability**
- **Affordability**
- **Accessibility**
- **Awareness**

Acceptability refers to how much the product meets or exceeds customer expectations, **affordability** refers to how much customers are willing and able to pay for the product, **accessibility** refers to how much customers can easily obtain the product, and **awareness** refers to how much customers are made aware of the product's features, convinced to try it, and reminded to repurchase (Sheth, Sisodia, 2012). The traditional 4Ps and the 4As are closely related. Product affects acceptability, price is linked to affordability, place is linked accessibility, and promotion turns to awareness (Dodd, 2015).

The 4C represents:

- **Customer value**
- **Cost to the customer**
- **Convenience**
- **Communication**

Instead of focusing on the product itself, the **customer value** focuses on filling a void in the customers' life. **Customer cost** are all the costs of purchasing a product including travel to the stores, postage, etc., and thus replaces the price, which is only a small part of the total cost to the customer. **Convenience** refers to where the product is best sold in relation to the customers' habits and removing any obstacles the customer may have in purchasing the product. **Communication** requires interaction between the buyers and the sellers in order to identify their needs, specify the nature of the product or service, and suggest improvements (Ghayth, 2020).

The traditional 4Ps and the 4Cs are closely related as well. Customer value corresponds to product, communication is linked to promotion, convenience corresponds to place and cost replaces price in 4Ps (Kotler, Armstrong, 2003).

3.2.6 Consumer Decision Making Process

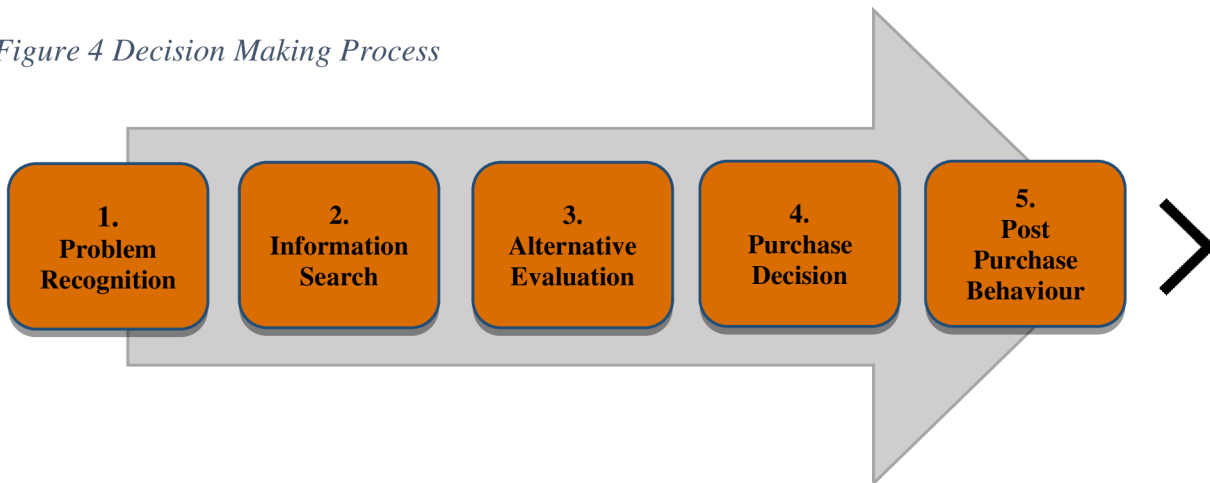
The decision-making process expresses how people arrive at a purchasing decision in a given situation. During the process, buyers decide when, how, why and what will satisfy their needs and wants. The decision-making process is an integral part of consumer purchasing behaviour. All factors acting on the consumer are a consequence of what the process will be at the given moment and how long it will take (Koudelka, 2010; Zamazalová et al., 2010). The purchasing process depends, for example, on the product or service being bought, the level of buyers' engagement or conditioning factors. The purchase process is composed of five stages as seen in the figure 4. These stages may actually overlap, or their order may be swapped (Bártová, Bárta, Koudelka, 2007; Kotler, Wong et al., 2007).

The purchasing process also has several types depending on the complexity of the decision. There is the **automatic or habitual decision**, which is linked to the purchase of an already known or common product. It is the easiest and shortest decision because the buyers do not need to search for information and evaluation of the product or service, and it is associated with little risk. It includes food, popular products, tried and tested brands. There is also a type of **impulsive decision making** which is a spontaneous, action, immediate purchase. A decision on the spot based on stimuli is typical. It is often an occasional purchase. Buyers only need to know additional information, which they evaluate then. Further, there is an **extensive purchase** type when the buyers consider a purchase but are not yet fully decided about. They come with the goal of obtaining additional information that give them reasons to convince or dissuade them from making a purchase. **Limited decision-making** is based on the trust of the consumers' environment. They come to make a purchase based on the advice and experience of those close to them. As the risk increases, the process becomes more complicated and longer. **Extended decision making** is the last type. This process is typical for expensive goods or unknown goods that people rarely buy. It is associated with risk and a high price. In this case, the customers go through all the stages. This is about, for example, the acquisition of real estate (Jakubíková, 2012; Kotler, Wong et al., 2007; Vysekalová, 2004).

Stages of Decision Making Process:

1. Stage of Problem Recognition
2. Stage of Information Search
3. Stage of Alternative Evaluation
4. Stage of Purchase Decision
5. Stage of Post Purchase Behaviour (Boučková, 2003)

Figure 4 Decision Making Process



Source: own work based on Kotler, Armstrong, 2003

1. Stage of Problem Recognition

Recognizing the problem and becoming aware of specific needs and wants is the first stage of the decision-making process. Reasons may include interests, habits, ideas, norms and values. For example, consumers may feel the need to raise their expectation level. Individuals are exposed to many stimuli during the day, as already mentioned. For example, the smell of bakeries as an external stimulus may have an effect, which makes the customer buy baked goods. This stage of the decision-making process is closely related to the consumers' motives (Bártová, Bárta, Koudelka, 2007). For example, news on the market can be a motive for buying (Koudelka, 2010). In the context of consumer behaviour, they try to solve some problems by their decision making as well. The consumers are aware of the difference between the actual state and the expected state at the time of finding a lack. Problems can be related to the lack of stock, inferior product quality, malfunctioning or change in a individuals' perception caused by, for example, the birth of a child (Koudelka, 2010).

2. Stage of Information Search

In the second stage, the consumers search for relevant information about products and services needed to make a decision. First of all, people begin to start from an inner search, when they try to use their experience and knowledge. If the information is insufficient, they try to get the information through external search from the community. It starts with the observation of the thing itself and then there is a deliberate search. Inner and external information searches are often under way simultaneously for the consumers (Koudelka, 2010). The information sources to which the consumers have recourse can be divided into three groups according to (Zamazalová et al., 2010). The first one is the so-called reference environment sources. This is the most trusted information obtained from close people. The second group of information includes information from neutral sources such as independent institutions with a certain status, experts' opinions, research or test results. The consumers perceive the least confidential information communicated using marketing tools such as advertising which is the last group of information sources. Each individual has a different approach to decision-making and needs different sources and amounts of information (Bártová, Bárta, Koudelka, 2007). However, the time spent searching for information also depends on the nature of the product. The most information is needed when deciding to buy valuable and long-term products, for example real estate, electronics. Conversely, consumers spend the least amount of time searching for information on short-term goods such as food (Boučková, 2003).

3. Stage of Alternative Evaluation

The third stage of the decision-making process is the alternative evaluation. Once the consumers have a sufficient amount of information, they begin to evaluate and determine the best options based on predetermined criteria about the product or service. The consumers also tend to be influenced by their attitudes. The evaluation is most often based on product characteristics such as technical, functional, weight, size, sound and smell. The consumers focus on price, brand, logo, colour as well as the risk associated with the purchase (Koudelka, 2010). The parameters according to which the consumers buy are vary over time and for each type of product. While for some products consumers mainly expect to satisfy a need, for some, certain benefits are also expected. Each buyer has a different decision-making process and different methods are established in the context of choosing a product or service. The first of them is the so-called compensatory method. It assigns different weights to each criterion, where each weight may have a different importance. It is mainly used for a smaller number of criterions. Subsequently, all

criteria form a single unit. The second method is the non-compensatory method. Consumers focus only on a specific feature/criterion not on the whole (Zamazalová et al., 2010).

4. Stage of Purchase Decision

The penultimate stage, the purchase decision, is essentially the purchase itself. It starts with entering the store or opening the e-shop and ends with leaving the store or closing the website. There are also situations where the buyers eventually withdraw from the purchase of the product or service. Before purchase, the buyers are still exposed to factors that may cause a change in the final decision. These include, for example, situational factors or their attitudes, which evince most prominently in this stage (Koudelka, 2010).

5. Stage of Post Purchase Behaviour

The final stage of the purchase process is called post-purchase behaviour. It is the stage when there is a comparison between expectations and the actual state, whether needs and wants have been satisfied or not (Boučková, 2003). Whether consumers' expectations are fulfilled also depends on factors related to communication and service. The outcome of the purchase decision process influences future decision making. If the buyers are satisfied, it is possible that they will make a purchase repeatedly and will spread information about the product or service to the community. If the buyers are equally satisfied the next time, they begin to build loyalty to the given product, brand or store (Koudelka, 2010). The consequences of satisfaction can be further manifested in the form of the generalization already mentioned in the chapter of psychological factors when the buyers have a positive opinion on other products of the same producer or brand. In the case of dissatisfaction, the opposite effect can occur. The buyers prefer to try competing products next time and they can also evaluate other products or services of the same producer, brand negatively. The spread of negative reviews can also be expected (Zamazalová et al., 2010). Especially for large purchases, the customer may experience satisfaction, together with a feeling of dissatisfaction. Post-purchase decision making, and expectations change during life. The purchase represents a certain compromise (Kotler, Wong et al., 2007).

3.2.7 Gender Differences in Consumer Purchase Decision Making

Every healthy adult needs to go grocery shopping from time to time. People often do not like to go shopping, mainly because of the crowds and queues, the loss of their free

time, the burden of purchasing or the already mentioned merchandising, when the buyers have to go through the sections of the store from which they do not need any goods. Women and men have some buying characteristics that are the same and some that are different. The differences between women and men in the case of purchasing are not about cleverness or logic. Human decision-making is governed by biological processes in the brain, which include mind and emotion (Horký, 2009). *“Emotions are evolutionarily tested and fine-tuned system, also called the energy system, based on the action of endocrine, neurohumoral and lymphatic structures, including the circulatory and immune systems, which serve to communicate organ and movement structures with each other. Mind, sometimes also called the mental system, is the result of the action of neuronal networks processing information of the central nervous system”* (Horký, 2009). Every person uses both emotions and mind at the same time when making decisions. The difference is only to what extent the simultaneous activation depends on the environment and the situation (Kotler, Keller, 2012). The first difference between the genders is the time spent purchasing, both in-store and online. Women spend by purchasing and comparing products more time. This is due to the fact that they use much more neural networks associated with mind. Women need to be sure, they think more, recalculate and look for the option that is the best and most advantageous for them and their surroundings. That means they need to rationally evaluate and verify. All this takes time. Women often go through the whole store, stand in front of the shelf for a long time or even return before choosing a product. Conversely, men want to purchase quickly, efficiently, and ignore products they have no intention of buying. Men rely mainly on their emotions during purchasing and do not want to think too much (Jesenský, 2015). Both genders cannot understand each other why this is so, however the origin can be traced back to past times when men went hunting and women took care of the household. While on the hunt, a man had to act quickly, without much thinking, women had to plan and calculate with time during taking care of things like fire, preparing meals, ways of storing supplies, etc. (Horký, 2009). Women often buy in larger quantities more than men. Women also like to go shopping with more people and want to have a pleasant shopping experience (Dennis et al., 2018). Another difference is when women get a sample, they feel more often to obligate the seller than men and are willing to buy the product (Kotler, Keller, 2012). Furthermore, women perceive smells and aromas more sensitively (Jesenský, 2015). Women usually complain less about buying than men. Men accept buying as something they cannot avoid (Kotler, Keller, 2012). As

consumers, women need changes, they like changing or trying new things more often than men. Men prefer more detailed product information when making a purchase. They pay attention to the capabilities of the supplier as well. Men do not like changing proven products or services that serve their purpose and work well. They do not want to invest energy in further searching and also recalculating prices. It follows that men can be expected to be loyal to brands and products (Jesenský, 2015). Women are more sociable, which the business environment supports, while men are often looking for the possibility of self-realization. Furthermore, women perceive a greater amount of information from the environment. Men are able to only focus on part of the information that can help them achieve their goal. One of the findings is that women touch the goods more often without prompting. Men must be encouraged to touch the goods (Kotler, Keller, 2012). Another finding is that men purchase less at discounts and are less inspired by advertising. There is also a difference between women and men when it comes to online purchasing. For example, women are more likely to scroll through categories, while men are more likely to use the search engine. Furthermore, women are more likely to read customer comments, use support and ask for assistance when buying. Women are also less likely to use newer technologies and less accepting of new ways. On the contrary, men spend more time on websites than women, perceive the design of the website more positively and look for the benefits that the purchase brings (Janouch, 2014).

Today's women are more educated, have more decision-making options, financial resources, better mobility than women in the past. The female gender has a greater influence on the entire business chain from production to storage to disposal. Women as consumers often significantly influence the decisions of men as consumers. Joint decision-making between men and women occurs especially when buying more expensive things (Kotler, Keller, 2012; Koudelka, 2010).

3.2.8 Consumer Typology

Typology deals with understanding human needs. There are many categories in the literature to distinguish customers from each other. Each person has a different character, different needs, wishes, however, they can be assigned to certain types (Nový, Petzold, 2006). Some categories are rather more general, some of them focus on special markets (Bačuvčík, 2017). It is necessary to adapt to each type of customer for sales success, and above all to satisfy customer needs (Breschi, 2022). The approach to the consumer has

changed significantly over the last decade, the number of stores has increased, the sales area has expanded, the emphasis has begun to be placed on sales techniques. The change was mainly influenced by the increase in the standard of living, the movement of the population to the cities, the decrease in natural consumption, and the increase of population mobility. Today's customers take more initiative in deciding what and how they buy. Thanks to the Internet connection, they search for information and evaluation of product offers (Hes et al., 2017).

Peelers Paris company which deals with trends in sales, segments customers into four type categories. These categories are built on individual characteristics, general attitudes and purchasing attitudes.

- **Organic customers:** individuals who are focused on nature, ecology, believing that technology serves nature.
- **Visionary customers:** individuals who always try new things and do not like to be stereotyped.
- **Hedonistic customers:** individuals who want to be satisfied and want to capture experiences with all the senses. They do not care much about how to achieve it.
- **Imaginative customers:** individuals who want a product or service with a story, they look for a deeper meaning (Bačuvčík, 2017; Vysekalová et al., 2011).

Gretz a Drozdeck (1992) divide customers into four types based on primary personality traits:

- **Sociable type:** individuals who like to submit and leave responsibilities to others. They have a problem with decision-making and need enough time to think, hear the opinion of others. This type is very cooperative, communicative and accommodating. They care about building good relationships and want others to like them in society.
- **Bureaucratic type:** individuals who are indecisive and conservative. They just need time to think as the sociable type. They need an ever-new sense of security and support.
- **Dictator type:** very authoritative individuals often hostile and cold-tempered. They can be frightening and aggressive. They usually refer to traditions and authorities. Dictators should be dealt with using assertive warmth.

- **Executive type:** individuals who are independent, matter-of-fact, polite, communicative and friendly. They respect the opinions and feelings of others. They form their own opinion about things that is linked an interest in information and what they can gain by their decision. They want to achieve their goals and have no problem with issue solving.

Nový and Petzold (2006) divide customers into six personality types:

- **Wandering consumer:** individuals who have a problem with deciding whether to buy a product, service or not. They do not communicate much, but they can show their helplessness. They need confident and convincing leadership.
- **Know-all customers:** individuals who feel that they know everything. They need others to listen to them and feel important. They tend to butt in and use derogatory gestures.
- **Angry customers:** individuals who have poor self-control and tends to be choleric and moody. They often speak strongly and loudly.
- **Closed customers:** individuals who are not self-confident. They need to be praised, reassured in their opinions and asked questions. They often speak very little, slowly and monotonously. They do not usually look their counterpart in the eye during the conversation.
- **Detractor customers:** individuals who like discussing, commenting and are pessimistic. They need strong and factual arguments to be convinced.

Division according to the approach to innovative products and services:

- **Innovators:** they like trying new trends well ahead of others in the market. They are willing to accept the risk of purchasing untested products or services. These people are usually young cosmopolitan and well educated. They are associated with less brand loyalty.
- **Early adopters:** these individuals follow innovators. They like communicating with innovators, they just need a little information about new things. Again, these are younger people with above-average education, maintaining social contacts.
- **The late majority customers:** these people often purchase products or services at the moment of need and when there is already enough verified information about the products. They buy in a standard commercial form. This is the largest group of customers with average education and income.

- **Latecomers or people resistant to new things:** these customers are not interested in buying new products if they do not need them necessarily. This is a group of people with low education and a poor economic situation (Schiffman, Kanuk 2004).

Division into 4 groups according to orientation in retail:

- **Economic customers:** the type of individuals who feel responsible for the purchase, they are sensitive to the price, quality and assortment in the store.
- **Personifying customers:** individuals for whom personal contact with staff or salespeople is important. They are usually a regular customer of the store.
- **Ethical customers:** customers who prefer fair prices, quality assortment, familiar staff. They are focused on the morality of stores. They are often more oriented towards smaller stores.
- **Apathetic customers:** individuals who are conservative, unsociable. They do not like buying and news. It is hard to get them interested in anything (Kotler, Wong et al., 2007).

Division according to the psychological point of view:

- **Habitual consumers:** individuals who buy according to their learned habits. They are loyal to the same brands, products, and services.
- **Consumers preferring rational arguments:** they buy according to what seems to be the most appropriate and rational to them in the given situation
- **Impulse customers:** individuals reacting to momentary stimuli such as design, packaging, smell, taste, and others.
- **Price customers:** individuals whose decisions depend on product and service prices.
- **Emotional consumers:** individuals who respond to the symbolic properties of products. They emphasize their feelings and need understanding.
- **New customers:** they are unstable in the psychological dimension. They need most likely involve seeking guidance about the products. If their first customer experience is a good one, there is a great opportunity to turn them into loyal customers (Mikeš, 2007).

3.2.9 Purchasing Roles

Every individual in life belongs to several groups, for example family, organization, interest groups. The position within each group is defined using roles. A role means the activities of an individual that are expected of him/her. The individuals have a different role at home, at work, in interest organizations or in their surroundings. In addition, these roles change during life in accordance with age, lifestyle development, experience, circumstances, etc. Each of the individual's roles intervenes in the purchasing process and is reflected in the consumer purchasing behaviour. The family has the greatest influence on consumer behaviour when purchasing food. Traditionally, women play a major role in purchasing food almost all over the world. Each role creates status. Status means position in society. Status influences consumption in the same way that consumers often choose products based on status (Kotler, Keller, 2012; Vysekalová et al., 2011).

Consumers play a very important role in the market nowadays. They are the subject of research, where the main goal is to find out how to satisfy the new needs. It must be taken into account that each consumer reacts individually. In common decision-making, the roles of men and women change. It is also good to know when it is a common decision and when it is an individual decision (Jakubíková, 2012).

Světlík (2018) defines 5 basic consumer's roles:

- **Initiator:** the person who first realizes the need and proposes the purchase of a certain product or service.
- **Influencer:** the person whose advice and opinions influence the purchase decision.
- **Decider:** the person who determines the final decision whether to buy, what to buy, how to buy and where to buy a given product or service.
- **Buyer:** the person who makes the purchase of product or service.
- **User:** the end person who uses the given product or service.

3.3 Food

“Food means any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans. Food includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment.” Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002

laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

Food is divided according to origin into:

- **Animal:** which includes meat, meat products, eggs, milk, milk products, fats and oils of animal origin and all products made from them.
- **Plant:** which includes grains, legumes, herbs, fruits, vegetables, mushrooms, spices, fats and oils of vegetable origin and all products made from them.
- **Sweeteners, flavourings, snacks, drinks, confectionery**

Food is the basic source of human nutrition. It contains essential nutrients, such as carbohydrates, fats, proteins, vitamins or minerals (Rokyta, 2005). As a result of globalization and industrial production, the food market has an abundance of choice, which at the same time leads to disorientation and fear. The composition of food, the amount taken, quality, eating habits and the associated lifestyle affect a person's health. Throughout life, nutritional requirements change with age, work and non-work activities and are different for healthy individuals and different for ill individuals (Griffith, 2005). Contemporary society struggles with a number of civilizational diseases. It is therefore necessary to limit the impact of these negative effects through prevention, access to healthy and affordable food, clear food labelling and informing consumers about the health risks associated with unhealthy eating habits and the beneficial effects of positive changes in nutrition. Lack of information and sometimes deliberate misinformation often appear in the case of the application of biotechnological procedures in the food and pharmaceutical industry and in the field of the use of genetically modified organisms. Another problem is the lack of information about the activities and methods of state and EU institutions whose job is to ensure the safety and quality of food (Valenta, Hladík et al., 2011). Knowledge, education and information about health is an important factor, however nutritional habits also depend on socio-cultural, psychological or economic factors, that influence decision making (Griffith, 2005). Consumers obtain information about food from many resources. Food packaging, which contains information on composition and nutritional value, is an essential resource. Effective education in the field of nutrition is important from childhood, its result can be the formation of lifelong healthy eating habits (Valenta, Hladík et al., 2011).

3.3.1 Organic Food

Organic food is the starting product of organic agriculture, which is a way of farming based on natural substances, processes and sustainable development (Urban, Šarapatka, 2003). It is labelled with the organic mark, which is bound by legislatively established standards (European Parliament, 2021). Their compliance is controlled by states and European authorities. These controls also apply to food imported from countries outside the EU (eAGRI, 2022). Unlike conventional agriculture, organic agriculture has to avoid the use of synthetic fertilizers, sprays, growth regulators, hormones, preventive drugs, preservatives and other chemicals as much as possible. Genetic manipulation (GMO) is prohibited. On the contrary, the emphasis is placed on environmental protection, diverse sowing practices such as crop rotation and companion planting, use of fertilizers of organic origin such as compost, manure and bone meal and ecologically stabilizing elements in the landscape (e.g. permanent grasslands, draws, balks, valley floodplains). Further, an ethical approach to farmed animals with conditions that correspond as closely as possible to their natural needs (Braniš, 1999; Liebhardt, 2003; Urban, Šarapatka, 2003).

3.3.2 Food Safety

Food safety means the hygienic and health safety of food, which is checked within the entire food chain. *“The production of safe food includes the process from growing crops, raising livestock, production and distribution to final consumption”* (Valenta, Hladík et al., 2011). Safe food is that meet the chemical, physical and microbiological requirements for health safety according to the established regulations. In other words, it must not contain pathogens, toxic or other similar substances, nor can they be contaminated with foreign substances, rotten or decomposing. Food must not harm the consumer’s health if it is prepared and consumed according to the instructions for use, both in the short and long term (CAFIA, 2016). *“The starting point for safe and high-quality food is the targeted monitoring of undesirable substances not only in the final products, but also in the raw materials used for their production, regardless of whether it is food or feed. In this respect, it is also important to control environmental components that could affect the raw material and therefore the final product”* (Valenta, Hladík et al., 2011). Harmful food leads to a weakening of the health of the population, a decrease in the quality of life and performance, and an increase in the financial and social costs associated with the treatment of diseases (Valenta, Hladík et al., 2011). Even if the food is determined to

be harmless to health, in some cases it can still be dangerous for a certain group of people. Due to its composition, it can cause health problems such as allergic reactions (Babička, 2012). Communication with consumers is important for a proper understanding of food and health safety (Griffith, 2005). This topic is easily misused in a competitive environment at the same time food is a topic in media that often spreads incorrect information (Dupal, 2021). Food safety linked to its availability is currently a problem of third world countries. On the contrary, most countries in Europe have the opposite problem. This is an overabundance of food with an almost unlimited choice of food at an affordable price which causes obesity and many other health problems (Valenta, Hladík et al., 2011).

3.3.3 Food Quality

Food quality is a concept that falls under food safety and can be defined as the sum of the properties and characteristics of a product that are related to the consumers eating habits, enjoyment, traditions and preferences (Babička, 2012). According to the act no 110/1997 Coll., on Food and Tobacco Products and on amendments to Certain Related Acts, as amended, *“Food quality is a set of characteristics of individual types, groups and subgroups of food and tobacco products, the limits of which are set herein, the implementing legislation or directly applicable EU regulation.”* It is affected throughout the whole food chain. Food quality includes many aspects such as hygienic, functional, nutritional, physical, legal, technological, economic, sensory and informational. Furthermore, it concerns the chemical composition of the product, its useful value, packaging method, labelling, expiry date and others. The concept of internal quality, which evaluates food as part of a larger whole, is also introduced. It cannot be measured by scientific methods. These aspects are important for the sale of products and their competitiveness in the market (Valenta, Hladík et al., 2011). Food quality is also linked to organic food, certification of regional products or other specific properties. The quality of food also depends on the way it is processed, and the substances added during production, for example additives, enzymes, microorganisms as well as GMOs and ionizing radiation. Finally, food production and its quality affect the environment from agricultural production to final product (Valenta, Hladík et al., 2011). *“It includes the following components: resource use, soil function, water quality, eutrophication, acidification, emissions and*

global warming, animal protection and breeding, toxicity, species and habitat diversity, landscape design, and ethical issues such as child labour” (Valenta, Hladík et al., 2011).

To describe some aspects of quality in more detail:

- Nutritional values include desirable and undesirable components in food. Nutrients such as proteins, carbohydrates and fats, vitamins and minerals, antioxidants, dry matter and fibre are classified as desirable components. On the other hand, undesirable components are residues of pesticides and drugs, nitrates and heavy metals, mycotoxins, pathogenic organisms.
- Functional aspects relate to the preparation or further processing of products such as cooking, frying, baking properties, ease and time of preparation, durability of the product. They also determine whether the product is suitable for commercial, household or industrial use. Currently, it is also necessary to look for scientific knowledge about nutrition and adapt food based on the needs and dietary restrictions of individuals such as children, people with allergies, people suffering from celiac disease, diabetes, etc.
- Colour, shape, smell, taste, aroma and consistency are among the sensory aspects.
- Legal aspects of quality are about prescribed standards that food must meet. The standards are stated in legislative regulations at the national and European level (Valenta, Hladík et al., 2011).

3.4 Microeconomics

Microeconomics is one of the branches of economic theory that describes the behaviour of individual economic entities such as individuals, households and firms and examines their decision-making. It also deals with individual forms of demand and supply, analyses market mechanisms that set relative prices between products and services and allocate limited resources among alternative needs. As well as it focuses on the effects of economic measures (e.g. changes in taxation). Microeconomics shows the conditions under which free markets lead to proper distribution and also analyses market failures. The counterweight of microeconomics is macroeconomics, which deals with the economy as a whole, measures inflation, unemployment, foreign trade, basic indicators and relationships in the reproduction of social production (Finance v praxi, 2017 - 2022; Hladký, Faltová Leitmanová, 1997; Krugman, Wells, 2013).

3.4.1 Market

A market in economics is a place where activities and their outcomes are exchanged between individual economic entities through the exchange of products and services. Products and services for exchange are also called goods (Mankiw, 1999). A market is a system where supply meets demand, and a price is created. The business is realized through the interaction of two parties, the seller, and the buyer. Exchanges take place physically or virtually using goods/services or all forms of currency (banknotes/coins, cryptocurrencies, securities, loans, deposits, etc.) (Krugman, Wells, 2013).

Market entities:

- **Households**
- **Companies**
- **State, or government**
- **International trade**

Markets can be divided according to:

- **Area**
- **Subject of purchase and sale**
- **Quantity and type of products/services**

In terms of division according to the territory, there are **local, regional, national** and **international markets**, which gradually developed with the development of specialization, division of labour and political interests throughout history. Currently, every country in the world is part of international trade.

In terms of division according to the subject of purchase and sale, the market is further divided into:

- **Market of products and services,**
- **Market of production factors (labour, land, and capital market)**
- **Financial market**

In terms of division according to quantity and type of products/services, the market is further divided into:

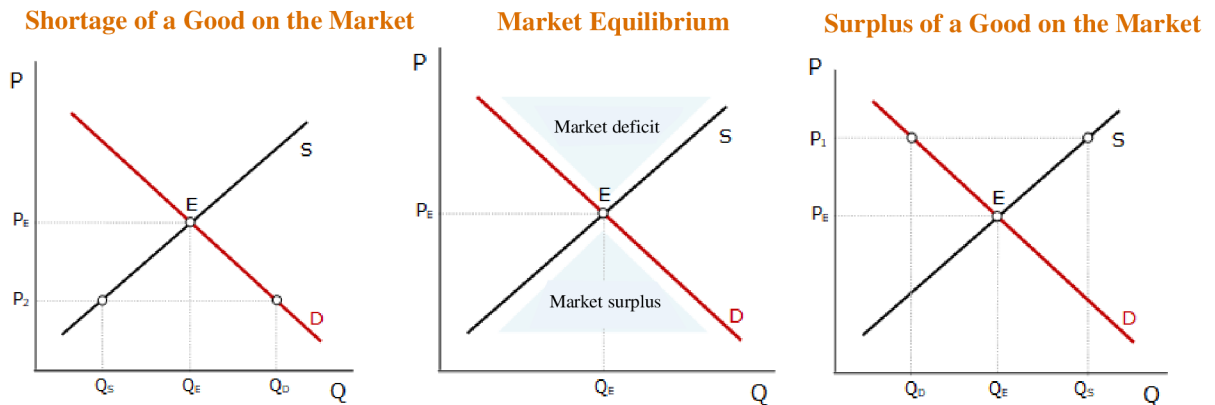
- **Partial:** only one type of goods is exchanged (cars, pastries, etc.)
- **Aggregate:** the market of all goods, i.e., a summary of all partial markets (Hladký, Faltová Leitmanová, 1997).

3.4.2 Market Equilibrium and Mechanism

Market equilibrium occurs when the demand price equals the supply price and the quantity of a good or service demanded equals the quantity supplied. Market equilibrium means that the market forces of demand and supply are equal. In other words, the price at which the consumers want to purchase and the price at which the producers want to sell are the same (Hladký, Faltová Leitmanová, 1997). Likewise, the quantity demanded by the consumer is the same as the quantity supplied by the producer. In practice, this is an exceptional case. Imbalances are more often found in the economy and are described as excess demand or excess supply. *“If the market price of a good is P_1 , the price is higher than its equilibrium level PE , there is a surplus in the market. At a given price, producers supply a quantity of the good Q_S , while consumers demand only a quantity of the good Q_D ”* (Finance v praxi, 2017 - 2022). If producers want to sell excess products or services, they must lower prices. As the market price of products/services decreases, their supply decreases and at the same time their demand increases (Finance v praxi, 2017 - 2022). *“If the market price of the good or service is P_2 , the price is below the equilibrium level PE . Goods and services become a commodity in short supply. At a given market price, consumers demand quantity Q_D of the good or service, while producers supply only quantity Q_S ”* (Finance v praxi, 2017 - 2022). A commodity in short supply becomes a scarce good, so consumers are willing to pay a higher price. As prices rise, so do producers' profits. Therefore, they are motivated to produce more products. Conversely, as prices rise, consumers demand less (Lipovská, 2017). The market situations are pictured in the figure 5.

A market mechanism is a process in which supply formation, demand formation and price formation interact with each other. The market mechanism is not just a price process. It is the internal order of the market. As a form of economic mechanism, it must perform both of two basic functions: directing resources to needs and exerting pressure on producers to act efficiently. For market entities, market prices are the basic information on which their decisions and actions in the next period depend (Krugman, Wells, 2013).

Figure 5 Market Situations



Source: Finance v praxi, 2017 - 2022

3.4.3 Supply

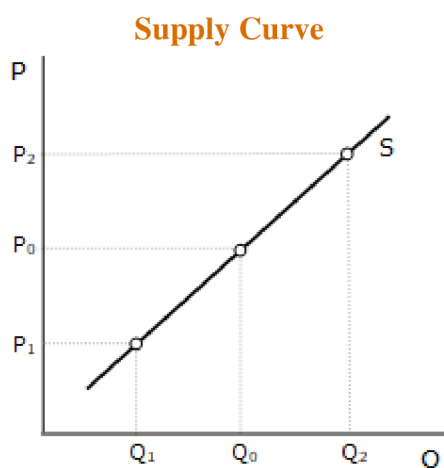
Supply is the quantity of a particular product or service that a supplier is willing to offer to consumers at a particular price level over a particular period of time (Mankiw, 1999). Supply, as well as demand, is primarily determined by price and quantity, where the quantity of a product offered increases with a higher price. The supply curve is upward sloping as it is seen in the figure 6. Other factors influencing supply include demand, return on capital, changing market conditions such as tariffs, quantitative restrictions and natural phenomena. Technological progress, which reduces costs in the long term and increases the pace of production, is also an unavoidable factor. An important factor is the change in the prices of production substitutes, that allow products to be produced using the same steps and machines (Hladký, Faltová Leitmanová, 1997). If the price of a production substitute increases from the currently produced product, its supply increases with a higher price and the product is exchanged for the given substitute. On the contrary, if the price of the substitute decreases, the supply of the currently produced product increases. As with demand, production complements play a role in supply. If the price of milk increases, its supply increases. The complement of milk is beef. When the supply of milk increases, the supply of the complement, i.e. meat, also increases because sellers have more of it (Mankiw, 1999; Veseth, 1981). The price of production material is a factor influencing the supply as well. If the price of the material from which the product is made increases, the product is produced in less quantity at the same cost. Hence, its supply decreases. Therefore, it is necessary to increase its price in order to maintain the same profit (Krugman, Wells, 2013). Market competition, in economic terms perfect or imperfect

competition, is another factor. The more manufacturers there are in the market, the more products and the higher supply is available (Hladký, Faltová Leitmanová, 1997).

Types of supply:

- **Aggregate:** the sum of all goods and services supplied on all markets within an economy at a given price in a given period.
- **Individual:** the supply of a certain quantity of goods and services by one producer at a certain price in a given period.
- **Market:** supply of a single product or service that is produced and delivered to the market by various producers within an economy at a given price in a given period (Hladký, Faltová Leitmanová, 1997).

Figure 6 Supply Curve



Source: Finance v praxi, 2017 - 2022

3.4.4 Demand

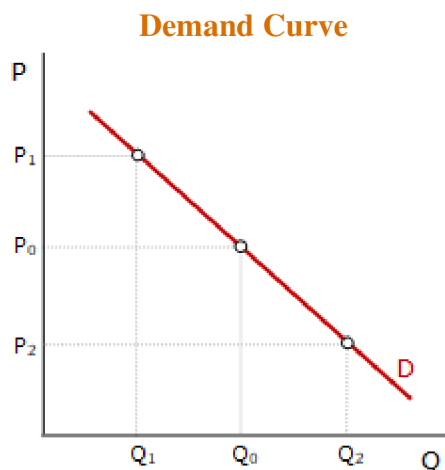
Demand refers to the amount of some good or service consumers are willing and able to purchase at each price. Demand is the relationship between the consumer and a certain good, during which the necessity of the need increases or decreases (Hladký, Faltová Leitmanová, 1997). Price is the most important factor influencing demand, if the price goes down, the need and want for the product or service goes up. On the contrary, when the price increases, the demand for the subject decreases. The demand curve is downward sloping as it is seen in the figure 7. Supply as well as income, preferences, quality, demographic data, market trends, product availability, limited products, discounts belong to among the other factors influencing the demand for the given goods.

Furthermore, the weather, if the forecast is that it rains, the consumers will go to buy an umbrella, even if they would not buy it under normal circumstances. If the pandemic breaks out again, the government will introduce measures to wear protective equipment, its demand and purchase will increase (Krugman, Wells, 2013; Lipovská, 2017). Goods can be differentiated into normal goods, inferior goods or essential goods. A normal good is a product for which, if the consumer's income rises, its demand, the need for the given product, rises. These are, for example, clothes that the consumer can afford. On the contrary, the demand for inferior goods decreases with higher income. These goods are often replaced by better quality ones. Necessary goods are, for example, medicines, where demand does not change regardless of increased income (Mankiw, 1999). Furthermore, there are two terms substitute and complement. Substitutes are two products where, due to the increase in the price of the first product, the demand for the second product with a different price will increase. But it does not just mean the same product. It may be a similar product with the same features. If a certain type of commodity becomes more expensive, it results in an increase in the price of products made from it (Veseth, 1981). Complements are products connected to each other and complementing each other. If one becomes more expensive, the demand for both decreases. (Lipovská, 2017).

Types of demand:

- **Aggregate:** the total demand for final goods and services at a given price at a given time period.
- **Individual:** the demand of an individual buyer at a given price at a given time period.
- **Market:** the demand for one product or service at a given price at a given time period (Hladký, Faltová Leitmanová, 1997).

Figure 7 Demand Curve



Source: Finance v praxi, 2017 - 2022

3.5 Unusual Market Conditions

The economic crisis is the biggest negative cause of changes in market conditions. This means lower performance of the country, associated with high inflation and unemployment, which is also reflected in poor social conditions. Economic decline, i.e., GDP decline, is divided according to the duration in the macroeconomics into a crisis that lasts longer than a year and a recession, when the economic decline is shorter than one year, but longer than two consecutive quarters. The world economy has experienced several major economic crisis and recessions throughout history (Lipovská, 2017).

3.5.1 The Panic of 1873

The first global crisis occurred on May 9, 1873. It was the crash of the Vienna Stock Exchange. France had to pay huge war reparations after the victory of the German-French war in 1871 and thus more and more money was circulating in the German economy. The Habsburgs benefited from it as well. A large number of new joint-stock companies began to be established both in Germany and in Austria-Hungary. Shares of American railway companies were also routinely traded on the stock exchange. French reparations were paid in 1872 and the inflow of money was exhausted. While there was a slowdown on the German stock market, Austrian investors did not slow down. The world-wide and grandly conceived exhibition in Vienna began on May 1, 1873, which economically failed, also contributed to the downfall. The visit of Vienna was also discouraged by the cholera epidemic. The collapse of the entire market occurred on the so-called Black Friday, May 9, 1873. Mainly industrial and railway companies were affected.

Many investors who lost all their assets committed suicide. The crisis subsided around the year 1879 (Novotný, 2009; Peníze.cz, 2014).

3.5.2 The Great Depression

It began after the collapse of stocks and securities on the New York Stock Exchange (Wall Street) on Thursday, October 24, 1929. It lasted until 1932 and it was the biggest economic crisis of the 20th century. The situation was not completely settled in the world after the First World War. Supply exceeded demand, prices of all raw materials fell. Sometimes it is also called a crisis of overproduction. In order to maintain production, companies therefore received loans from banks, which were then poorly repaid. Excessive optimism was another cause of this crisis. Investors who borrowed from banks for their investments entered the stock market, which led to the overvaluation of companies and the growth of stocks above their real value. For example, stocks of the famous Dow Jones company tripled. The economy slowed down and credits, interest rates began to rise not only in the US but also in Europe. The crisis affected all sectors, it started as a financial one, but also got in industry, agriculture and international trade, where currency devaluation took place. The decline in production was reflected in the growth of unemployment as well. The crisis also weakened democracy and strengthened authoritarian regimes (Němec, Kohut, 1997 – 2022; Pravec, 2022).

3.5.3 The Great Recession

The economic crisis, which was caused by a sequence of several events, generated a huge market slump between 2007 and 2015. The initial cause was the mortgage crisis of the United States, which gradually grew into a global financial crisis. Several investment banks went bankrupt, including Bear Stearns, Lehman Brothers in the United States. Stocks in the world's stock markets fell rapidly in response to the collapse of Lehman Brothers, and at that moment the event began to affect the whole world. The crisis escalated and reached Europe in the last quarter of 2008. Iceland was hit and declared state bankruptcy the first. Domestic demand fell in affected economies, leading to lower imports. This affected all countries that were involved in international trade. High oil prices also played a big role in the first half of 2008, which led to a decline in real GDP and raised consumer prices (ČT24, 2018; Krugman, 2008; Ostatek, 2010).

3.5.4 The COVID-19 Pandemic

COVID-19 is an infectious disease caused by the respiratory syndrome of the SARS-CoV-2 coronavirus, which has resulted in a global pandemic. It started spreading from the Chinese city of Wuhan in December 2019. This disease can result in damage to the respiratory system and, in the worst case, death. The most vulnerable group of inhabitants are the elderly, people with respiratory or heart problems or people with diabetes. The virus spreads mainly through airborne transmission when people are in close proximity. It can also spread through a contaminated surface. Fever, cough, fatigue, loss of taste or smell are the most common symptoms. Wearing protective respiratory equipment such as masks and respirators, as well as testing and monitoring the contacts of infected people, declaring lockdowns and travel restrictions are among the preventive measures introduced in individual countries (World Health Organization, 2020).

The COVID-19 pandemic still has significant impacts on the environment, technology, politics, national economy and social environment. A coronavirus recession is a period when the global economy declines as a result of the COVID-19 pandemic (Mofijur et al., 2021). Sectors such as education, culture, sports, retail, air transport, catering and accommodation were closed due to the declaring of states of emergency and measures to limit the spread of the infection in Europe in the spring of 2020. At the same time, borders were closed for passenger and freight transport. A number of other areas of the economy are linked to these sectors, for example, closed shops do not provide services and industrial orders of manufacturing companies decline. Lower energy consumption is related to a decrease in economic activity (Ambriško, Gec, Michálek, Šolc, 2020). For example, the automotive industry was fundamentally affected in the Czech Republic (Danelová, 2021). The problem also arose in construction and agriculture due to restrictions on the movement of foreigners. Many employees were laid off, eliminated or significantly restricted in their work activities due to childcare, quarantine measures due to infection or contact with an infected person. In terms of foreign trade, imports and exports were also limited. Outages in the production of intermediate products or individual parts from various sectors caused problems and thus production chains were disrupted. The panic over the lack of basic household needs and corporate investment brought other negative impacts. Consumers tended to stock up on food, medicine and basic drugstore items. Many countries ran up deficits in their balance of payments to support their economies and their inhabitants. In terms of inflation, energy prices increased, which

resulted in higher prices for raw materials and subsequent increase in the price of goods and transport. National banks raised interest rates to curb inflation, but the currency also weakened (Ambriško, Gec, Michálek, Šolc, 2020; Deloitte, 2020; OECD, 2020). For example, the Czech Republic provided compensation to employers and the self-employed, increased and extended nursing allowances/sick leave, waived social and health contributions of the self-employed, granted the right to refund tax losses, increased spending on healthcare and security forces. Further it was introduced a moratorium on deferment of loan repayments or guarantees for business loans (Vláda, 2021). Disinformation was spread through among population (Ministry of the Interior of the Czech Republic, c2022). There were also cases of xenophobia and discrimination against the Chinese (Ma, Mclaughlin, 2020). Reductions in emissions of pollutants and greenhouse gases were among the more positive impacts (Krawieczová, Zákopčánová, 2021).

3.5.5 Russian Invasion of Ukraine

The Russian invasion of Ukraine is an armed conflict that began with a Russian attack on Ukrainian territory in the early morning hours of February 24, 2022. Russian President Vladimir Putin called the attack a special military operation aimed at protecting Russia itself from NATO expansion and the Russian-speaking population living in eastern Ukraine, who are allegedly oppressed by the Ukrainian government. Numerous medico-legal, bioethical and social issues are related to this war. Russia focuses on the destruction of strategic targets such as air defence facilities, transport and military infrastructure including airports, but also on the civilian population against whom it commits war crimes. At the same time, the Russian military is grappling with logistical problems, morale and a hard-fought tactical Ukrainian army. Russia demands the neutrality of Ukraine, the recognition of the independence of the separatist republics of Donetsk and Luhansk in the east of Ukraine, the non-deployment of certain offensive weapons in the country and the provision of rights for Russian national minorities (Valka.cz, 2022). Almost the whole world condemned the invasion of Ukraine. The UN General Assembly adopted a resolution calling for an immediate end to the fighting and the withdrawal of Russian troops from Ukraine at its extraordinary session on March 2, 2022. 141 member states voted for the resolution, five states such as Belarus, the DPRK, Eritrea, Russia and Syria were against, 35 states namely China and India abstained from voting. The International Court of Justice in The Hague ordered Russia to immediately stop military operations in

Ukraine on March 16, 2022. 13 of the 15 judges of the International Court of Justice spoke in favour of the decision. Judges from Russia and China only dissented. Russia's membership of the UN Human Rights Council was suspended by the UN General Assembly on April 7, 2022, and the Czech Republic replaced it at the helm after a two-year term. Russia subsequently left the 47-member council (ČT24, 2022; OSN, 2022; UN, 2022).

The war, which has become the largest combat operation in Europe since the end of the Second World War, has caused an unprecedented and very serious political, economic and security situation affecting essentially the entire world. The invasion has led to anti-war protests in several countries around the world, has increased censorship in the Russian media and the spread of disinformation, the imposition of extensive international sanctions against Russia and Belarus, and restrictions on Russian participation in a number of sporting and other international events (DW, 2022; Danelová, 2021; Kajjo, 2022). A number of private multinational companies have limited their activities or contracts with the Russian side (Krýžová, 2022). Last but not least, a cyber war has broken out between Russia and other states (Fišer, 2022). The European Union approved 8 sanctions packages until October 2022. The sanctions packages include asset freezes and entry bans for Russian politicians and other officials. Trade with separatist republics in eastern Ukraine was also restricted. The EU has partially disconnected Russia from the SWIFT system at selected Russian banks. Furthermore, the EU established a schedule for gradually limiting the import of Russian crude oil (Oenergetice.cz, 2022). Russia was suspended from membership in the Council of Europe. The Russian invasion of Ukraine followed the consequences of the ongoing COVID-19 pandemic, which will prolong the recovery of the economy. Rising inflation, disruption of supply chains and the resulting slowdown in global trade are among the main consequences of the war (IMF, c2022). Since Russia is the main supplier of energy to Europe, the invasion, related sanctions, and fears of supply disruptions lead to a sharp increase in energy prices, mainly oil, electricity, and gas. This introduces the term energy crisis (Council of the EU, 2022; European Commission, 2022). Food and other commodities are also more expensive, especially those that are exported in large quantities by Ukraine and Russia. These are cereals, sunflower, corn, aluminium, nickel which is reflected in the prices of products made from them. All this is followed by further increases in the price of other foods, e.g. meat, commodities and services provided. The price increase also applies to fertilizers and feed (NPR, 2022; OECD, 2022; Patria.cz,

2022). Movements in inflation lead to a decline in household disposable income and, ultimately, demand and consumption. The current times cause worry and high uncertainty, which push consumers to save money “for worse times”. A decline in growth or stagnation of the economy associated with a drop in GDP and a deepening of the state budget deficit in some countries may be a possible risk. Instability is felt in financial markets, asset returns are reduced, and volatility is increased. Volatility and uncertainty also influence the investment decisions of companies, whose financial situation, despite generally high cash reserves, may deteriorate due to rising production costs. However, assets such as the US dollar, Swiss franc or gold are expected to strengthen, they are considered relatively safe. On the contrary, European currencies can be negatively affected by the fear of taking risks in emerging markets (Kurzy.cz, 2022). The energy crisis has also called into question the ability of some countries to meet their decarbonisation commitments (The Climate Action Tracker, 2022). Some European countries, including the Czech Republic, are facing a shortage of employees due to the ban on Ukrainian mobilization of men (ČT24, 2022). These are mainly industrial companies, whose lack of employees hinders further growth. The last consequence of the war is a wave of migration, mainly of women and children, to the territory of Europe (Fallon, 2022).

4 Practical Part

The actual part of the thesis is based on a quantitative survey and its results, specializing in identifying changes in consumer behaviour when purchasing food during the crisis based on two Czech regions namely the Prague Region and Ústí nad Labem Region.

4.1 Introduction of Chosen Regions

4.1.1 The Prague Region

Prague is the capital and one of the 14 regions of the Czech Republic. It is the largest Czech city with a population of 1 258 569 million and an area of 496 square kilometres. Prague is also the 14th largest city in the European Union. Its location is in the centre of Bohemia, and it is surrounded by Central Bohemia region. Prague is divided into 57 municipal parts and 22 administrative districts. The Vltava River, the longest Czech river (433 km) flows through the city. The official name of the city has been "Capital City of Prague" since 1920. Territorially, the city is administered by the Prague City Council,

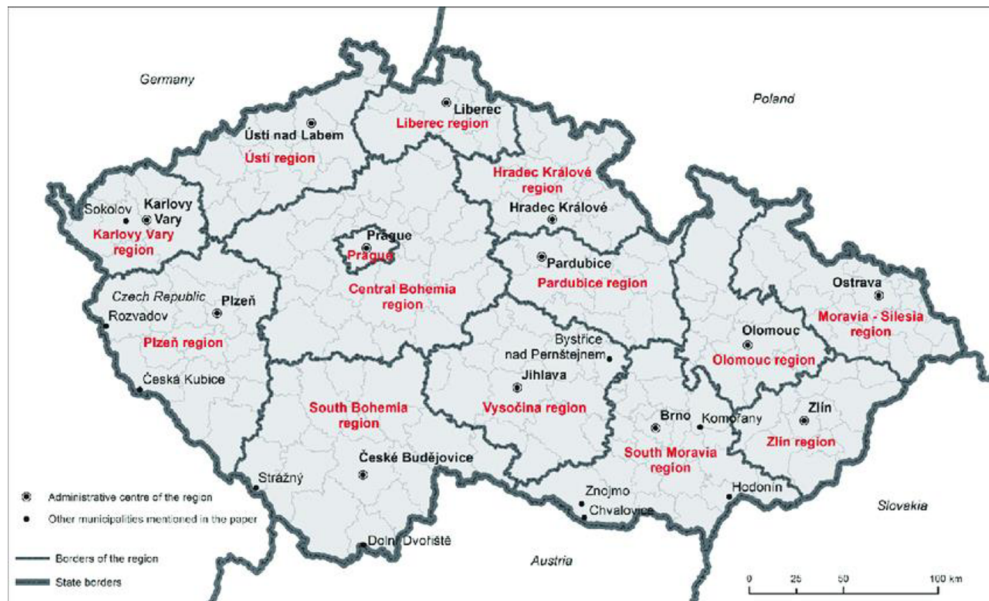
which serves as both a municipal and regional authority. It is the seat of most state institutions, churches and many companies, organizations including foreign ones. It is also the seat of the President, the Parliament, the Government, one of the two High Courts and other central state bodies. Prague is the most economically developed region with a high standard of living in the Czech Republic, excelling above both Czech and European standards. (Praha.eu, c2022; Wikipedia, 2001-) According to Eurostat statistics, Prague is the third richest region in the EU. Prague's GDP per capita is 205% of the EU-wide average (GDP per capita of the Czech Republic reaches 94%). Prague is also the historical centre of the country and is on the UNESCO World Heritage List. (Eurostat, c2022) For example, the Prague Castle complex is the largest of its kind in the world. (Wikipedia, 2001-)

4.1.2 The Ústí nad Labem Region

The Ústí nad Labem Region is the 6th largest region of the Czech Republic according to the number of inhabitants 799 000. Its area is 5 338 square kilometres. The Ústí nad Labem Region is located in the north-western part of the Czech Republic and borders 4 regions (Liberec Region, Central Bohemia Region, Pilsen Region and Karlovy Vary Region). The northern border of the region is also the state border with the Federal State of Saxony in the Federal Republic of Germany. It is divided into 7 districts including in total 354 municipalities. One of the longest rivers in Europe called Elbe (1094 km, in CR 370 km) flows through the region. The capital of the region and the largest municipality in the territory is called Ústí nad Labem with 93 117 inhabitants. It is territorially administered by the Regional Office of the Ústí Region. The Ústí nad Labem Region is one of the regions with the highest concentration of industry, mainly energy - lignite mining, chemical, construction and food industry, which especially in the past had a great impact on the environment. The gradual restructuring of industry and services has led to high unemployment. It is also one of the regions with the lowest educational attainment. Agricultural production went through a period of significant decline in the 1990s, but it is still the largest hop-growing region. The territory of the region includes the National Park Czech Switzerland, the protected landscape areas of the Central Bohemian Highlands, the Elbe Sandstone Mountains, part of the Kokořínsko and Lusatian Mountains Mountains. The highest point is Klínovec (1 244 m) and is located in the Ore Mountains. The lowest point of the country is the level of the Elbe River (115 m. a.s.l.) in Hřensko in the west of

the region. The region has an important transport location with the link to the European Union. The international road route E 55 connecting the north and south of Europe, which near Lovosice town where it turns into the highway D8. Waterway along the Elbe River enables shipping to the North Sea. This region is also known with the spa in Teplice (Dlouhý, 2021; Hlaváček, 2016; Statutární město Ústí nad Labem, c2022).

Figure 8 An overview map of the Czech Republic



Source: Fiedor, 2017

4.2 Own Investigation

4.2.1 Identification of Respondents

The survey was completed by 546 respondents. Out of the total number, 324 women (59.34 %) and 222 men (40.66 %) participated. According to the regional distribution, the survey was completed by 297 (54.40 %) respondents from the Prague Region of which 175 women (54.01 %) and 122 men (54.95 %). From the Ústí and Labem Region, 249 (45.60 %) respondents out of the total number completed the survey, 149 women (45.99 %) and 100 men (45.05 %) according to the table No 2.

Table 2 Place of residence according to respondents

| Place of residence/Respondents | Men | % | Women | % | Total | % |
|--------------------------------|------------|---------------|------------|---------------|------------|---------------|
| Prague Region | 122 | 54.95 | 175 | 54.01 | 297 | 54.40 |
| Ústí nad Labem Region | 100 | 45.05 | 149 | 45.99 | 249 | 45.60 |
| Total | 222 | 100.00 | 324 | 100.00 | 546 | 100.00 |

Source: own work

The most represented age category was 26-35 years, which was made up of 147 respondents (26.92 %). On the contrary, the least represented category was the one of people aged 18-25 years, which included 62 respondents (11.36 %). The age category 36-45 years was represented by 99 respondents (18.13 %), the one 46-55 years was represented by 79 respondents (14.47 %) and the one 56-66 years included 66 respondents (12.01 %). 66+ years age category was filled by 93 respondents (17.03 %) according to Table No. 3

Table 3 Division of respondents according to age

| Ústí nad Labem Region | | | | Prague Region | | | | Calculation | |
|-----------------------|-----|-------|-------|---------------|-----|-------|-------|-------------|--------|
| Age category | Men | Women | Total | Age category | Men | Women | Total | Total | % |
| 18-25 | 10 | 21 | 31 | 18-25 | 10 | 21 | 31 | 62 | 11.36 |
| 26-35 | 16 | 34 | 50 | 26-35 | 33 | 64 | 97 | 147 | 26.92 |
| 36-45 | 19 | 20 | 39 | 36-45 | 27 | 33 | 60 | 99 | 18.13 |
| 46-55 | 20 | 24 | 44 | 46-55 | 18 | 17 | 35 | 79 | 14.47 |
| 56-65 | 15 | 23 | 38 | 56-65 | 14 | 14 | 28 | 66 | 12.09 |
| 66+ | 20 | 27 | 47 | 66+ | 20 | 26 | 46 | 93 | 17.03 |
| Total | 100 | 149 | 249 | Total | 122 | 175 | 297 | 546 | 100.00 |

Source: own work

According to table No. 4 the highest level of education achieved, most respondents 214 (39.19 %) completed university education, 203 (37.18 %) respondents achieved secondary education and 113 (20.69 %) finished vocational school. The least number of respondents 16 (18.13 %) achieved primary education. It was also confirmed that in the Ústí nad Labem Region as the least educated region, primary education was achieved by 12 respondents out of 16 from the sample.

Table 4 Respondents according to their highest completed education level

| Ústí nad Labem Region | | | | Prague Region | | | | Calculation | |
|-----------------------------|-----|-------|-------|-----------------------------|-----|-------|-------|-------------|--------|
| Highest completed education | Men | Women | Total | Highest completed education | Men | Women | Total | Total | % |
| Primary school | 7 | 5 | 12 | Primary school | 2 | 2 | 4 | 16 | 2.93 |
| Vocational school | 19 | 51 | 70 | Vocational school | 24 | 19 | 43 | 113 | 20.69 |
| Highschool | 45 | 60 | 105 | Highschool | 31 | 67 | 98 | 203 | 37.18 |
| University | 29 | 33 | 62 | University | 65 | 87 | 152 | 214 | 39.19 |
| Total | 100 | 149 | 249 | Total | 122 | 175 | 297 | 546 | 100.00 |

Source: own work

Respondents increased their full-time jobs (2.49 %) in both regions during the crisis. On the contrary, self-employment people decreased (-5.83 %), which the crisis period imposed in both regions. Maternity and parental leave increased (0.18 %, 3.3 %), and the group of pensioners (3.11 %) as well as it is seen in the table No. 5.

Table 5 The main source of income in accordance with a period of time

| Main source of income | Ústí nad Labem Region | | | | Prague Region | | | | Total | | | | |
|--|-----------------------|------------|------------|------------|---------------|------------|------------|------------|------------|------------|------------|------------|--------------|
| | Before | | After | | Before | | After | | Before | % | After | % | % difference |
| | Men | Women | Men | Women | Men | Women | Men | Women | All | All | All | All | All |
| Full time | 64 | 87 | 67 | 81 | 52 | 84 | 57 | 95 | 287 | 52.46 | 300 | 54.95 | 2.49 |
| Part time | 1 | 9 | 1 | 5 | 7 | 13 | 3 | 9 | 30 | 5.49 | 18 | 3.30 | -2.19 |
| Self-employed | 13 | 4 | 11 | 3 | 34 | 12 | 28 | 11 | 63 | 11.54 | 53 | 5.71 | -5.83 |
| Unemployed without state contributions | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 7 | 1.28 | 5 | 0.92 | -0.36 |
| Unemployed/ student (no income) | 9 | 8 | 5 | 5 | 5 | 18 | 5 | 3 | 40 | 7.33 | 18 | 3.30 | -4.03 |
| Pensioner (old-age, disabled, orphan, widow) | 10 | 25 | 14 | 30 | 21 | 25 | 25 | 29 | 81 | 14.84 | 98 | 17.95 | 3.11 |
| Maternity leave | 0 | 8 | 0 | 4 | 0 | 2 | 0 | 7 | 10 | 1.83 | 11 | 2.01 | 0.18 |
| Parental leave | 0 | 4 | 0 | 18 | 0 | 9 | 0 | 13 | 13 | 2.38 | 31 | 5.68 | 3.3 |
| Other | 1 | 2 | 1 | 2 | 2 | 10 | 3 | 6 | 15 | 2.75 | 12 | 2.20 | -0.55 |
| Total | 100 | 149 | 100 | 149 | 122 | 175 | 122 | 175 | 546 | 100 | 546 | 100 | |

Source: own work

Respondents evaluated their economic situation in four categories seen in the table No. 6. Almost the same number of respondents indicated their situation as good (223 respondents – 40.84 %) and average (221 respondents – 40.48 %). 53 (9.71 %) respondents described their economic situation as bad, and 49 (8.97 %) respondents described their situation as excellent.

Table 6 Economic situation of households

| Economic situation of a household | Ústí nad Labem Region | | | Economic situation of a household | Prague Region | | | Calculation | |
|-----------------------------------|-----------------------|------------|------------|-----------------------------------|---------------|------------|------------|-------------|---------------|
| | Men | Women | Total | | Men | Women | Total | Total | % |
| Excellent | 10 | 5 | 15 | Excellent | 21 | 13 | 34 | 49 | 8.97 |
| Good | 36 | 54 | 90 | Good | 52 | 81 | 133 | 223 | 40.84 |
| Average | 40 | 75 | 115 | Average | 40 | 66 | 106 | 221 | 40.48 |
| Bad | 14 | 15 | 29 | Bad | 9 | 15 | 24 | 53 | 9.71 |
| Total | 100 | 149 | 249 | Total | 122 | 175 | 297 | 546 | 100.00 |

Source: own work

One of the questions concerned how many members of the household the respondents live with, including children under 18 years of age. Most respondents 185 (33.88 %) said that they live in a two-member household without children. The second group was represented by single households with 95 respondents (17.40 %). The third

largest group was four-person households with two children, as reported by 58 (10.62 %) respondents according to table No. 7.

Table 7 Households according to amount of members

| Ústí nad Labem Region | | | | | Prague Region | | | | | Calculation | |
|-----------------------|--|-----|-------|-------|-----------------------|--|-----|-------|-------|-------------|--------|
| Members in households | Including children under 18 years of age | Men | Women | Total | Members in households | Including children under 18 years of age | Men | Women | Total | Total | % |
| 1 | 0 | 18 | 22 | 40 | 1 | 0 | 24 | 31 | 55 | 95 | 17.40 |
| 2 | 0 | 30 | 44 | 74 | 2 | 0 | 45 | 66 | 111 | 185 | 33.88 |
| 2 | 1 | 2 | 9 | 11 | 2 | 1 | 1 | 10 | 11 | 22 | 4.03 |
| 3 | 0 | 10 | 18 | 28 | 3 | 0 | 10 | 12 | 22 | 50 | 9.16 |
| 3 | 1 | 9 | 20 | 29 | 3 | 1 | 20 | 9 | 29 | 58 | 10.62 |
| 3 | 2 | x | 5 | 5 | 3 | 2 | x | 5 | 5 | 10 | 1.83 |
| 4 | 0 | 2 | 7 | 9 | 4 | 0 | 4 | 6 | 10 | 19 | 3.48 |
| 4 | 1 | 1 | 5 | 6 | 4 | 1 | 5 | 5 | 10 | 16 | 2.93 |
| 4 | 2 | 17 | 13 | 30 | 4 | 2 | 10 | 25 | 35 | 65 | 11.90 |
| 5 | 0 | x | 3 | 3 | 4 | 3 | x | 1 | 1 | 4 | 0.73 |
| 5 | 0 | x | x | 0 | 5 | 0 | 1 | 1 | 2 | 2 | 0.37 |
| 5 | 2 | 5 | 1 | 6 | 5 | 2 | x | 1 | 1 | 7 | 1.28 |
| 5 | 3 | 5 | 1 | 6 | 5 | 3 | 1 | 2 | 3 | 9 | 1.65 |
| 6 | 2 | x | 1 | 1 | 6 | 2 | x | x | 0 | 1 | 0.18 |
| 6 | 3 | x | x | 0 | 6 | 3 | x | 1 | 1 | 1 | 0.18 |
| 7 | 5 | 1 | x | 1 | 7 | 5 | 1 | x | 1 | 2 | 0.37 |
| Total | | 100 | 149 | 249 | Total | | 122 | 175 | 297 | 546 | 100.00 |

Source: own work

The representation of respondents according to the size of their residence concerned only the inhabitants of the Ústí nad Labem Region. Prague as a region is not divided into individual municipalities and its population is over 30,000, namely 1.3 million. Four categories were defined in the survey. The first category includes municipality up to 1,000 inhabitants which was filled out by 85 (34.14 %) respondents, of which 52 were women and 33 were men in a. Another category concerns the size of the municipality from 1,001 to 6,000 inhabitants, where 59 (23.69 %) respondents filled out the survey, of which 40 were women and 19 were men. In the 6,000-30,000 category, there are 85 (34.14 %) of which 47 are women and 38 are men. The last category is over 30,001 inhabitants, where 20 (8.03 %) respondents are represented, 10 women and 10 men according to table No. 8

Table 8 Place of residence according to size

| Ústí nad Labem Region | | | | |
|-------------------------|-----|-------|-------|--------|
| Size of residence place | Men | Women | Total | % |
| do 1 000 | 33 | 52 | 85 | 34.14 |
| 1 001 – 6 000 | 19 | 40 | 59 | 23.69 |
| 6001 – 30 000 | 38 | 47 | 85 | 34.14 |
| 30 001 – více | 10 | 10 | 20 | 8.03 |
| Total | 100 | 149 | 249 | 100.00 |

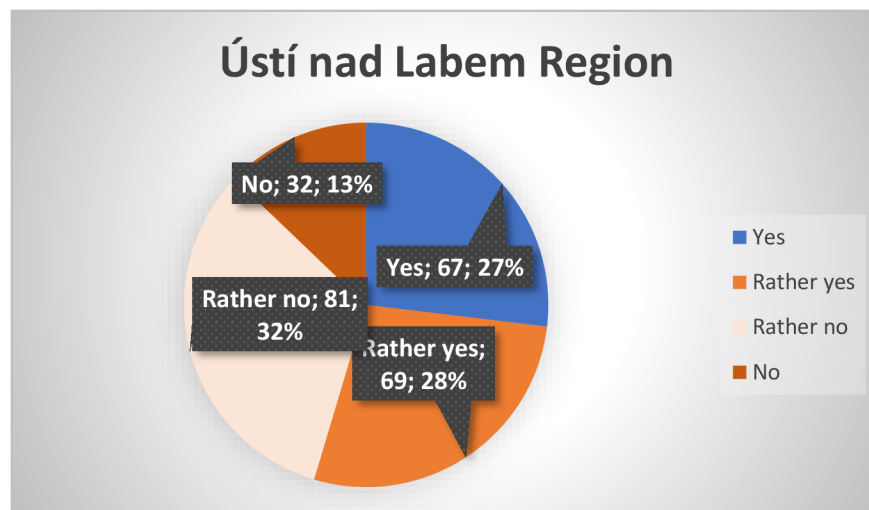
Source: own work

4.2.2 Survey Results

Question No. 1: **You are purchasing food less often during the current crisis than before the crisis 2020** (consider larger purchases)

The most frequent answer to this question is that residents of the Ústí nad Labem Region buy food rather less often which is seen in the figure No. 9. This answer is given by 32 % (81) of respondents. It is followed by the answers Rather yes 28 % (69) and Yes 27 % (67), from which it can be concluded that consumers are purchasing food less often in the Ústí nad Labem Region during the current crisis. The answer “No” is indicated by 13 % (32) of respondents from the total amount of 249.

Figure 9 Less often purchases based on crisis in the Ústí nad Labem Region

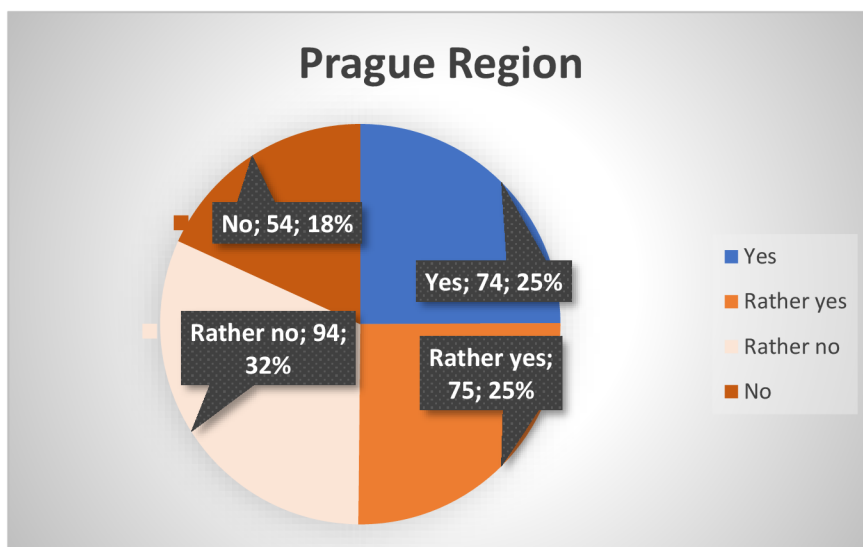


Source: own work

The % results are similar in the Prague Region. The most frequent answer is again "Rather no", indicated by 32 % (94) of respondents. Furthermore, "Rather yes" with 25 % (75) of respondents and "Yes" also with 25 % (74) of respondents. The least frequent answer is "No", which is filled in by 18 % (54) of Prague residents. It can be stated that just a half of respondents are purchasing food less often during the current crisis which is seen in the figure No. 10.

However, the % difference is not almost noticeable between these regions.

Figure 10 Less often purchases based on crisis in the Prague Region

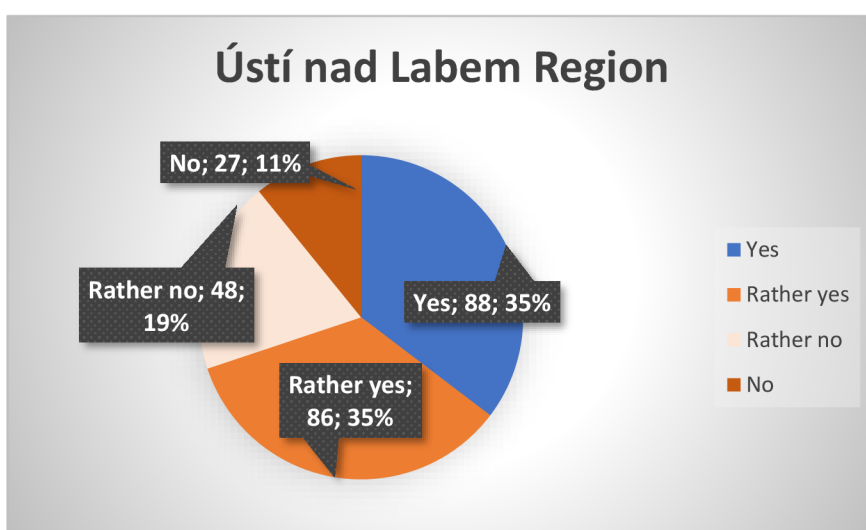


Source: own work

Question No. 2: You are purchasing less food / only the most necessary food during the current crisis than before the crisis 2020

Residents are purchasing less food in times of the crisis in the Ústí nad Labem Region. The answers "Yes" (88) and "Rather yes" (86) are given by 35 % of respondents. 19 % (48) residents of the Ústí nad Labem Region say that their food purchases rather are not changed. The least frequent answer was "no", which is given by 11 % (27) of respondents. It can be stated that most respondents of the Ústí nad Labem Region are purchasing less food in times of the crisis. It is seen in the figure No. 11.

Figure 11 Purchases of less food based on crisis in the Ústí nad Labem Region

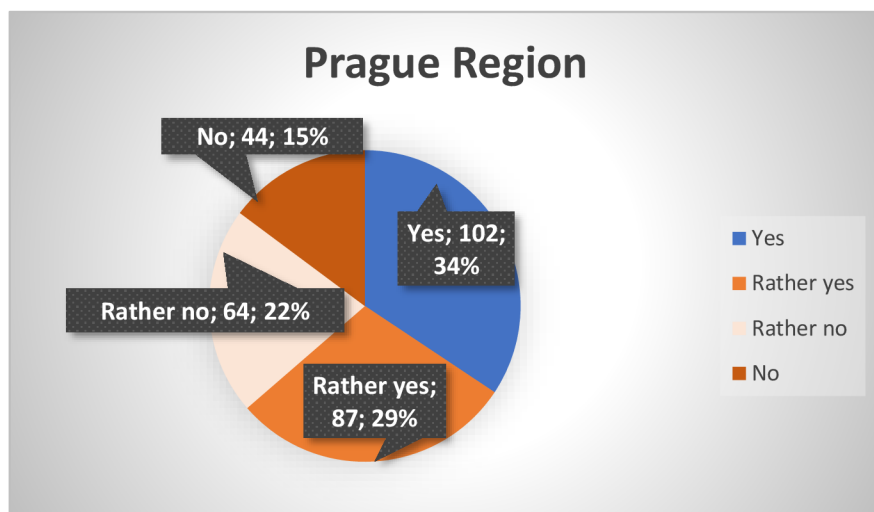


Source: own work

Residents of the Prague Region answer similarly. 34 % (102) respondents are purchasing less food or necessary food nowadays and 29 % (87) of them tend to buy less. On the other hand, 22 % (64) say that they rather do not buy less food. The status is not changing for 15 % (44) respondents.

It can be said that residents of both regions are purchasing less food during the current crisis. However, residents of the Ústí nad Labem Region are purchasing less food (70 %) compared to residents of the Prague Region (63 %) (Merged “Yes” and “Rather yes”). It is seen in the figure No. 12.

Figure 12 Purchases of less food based on crisis in the Prague Region

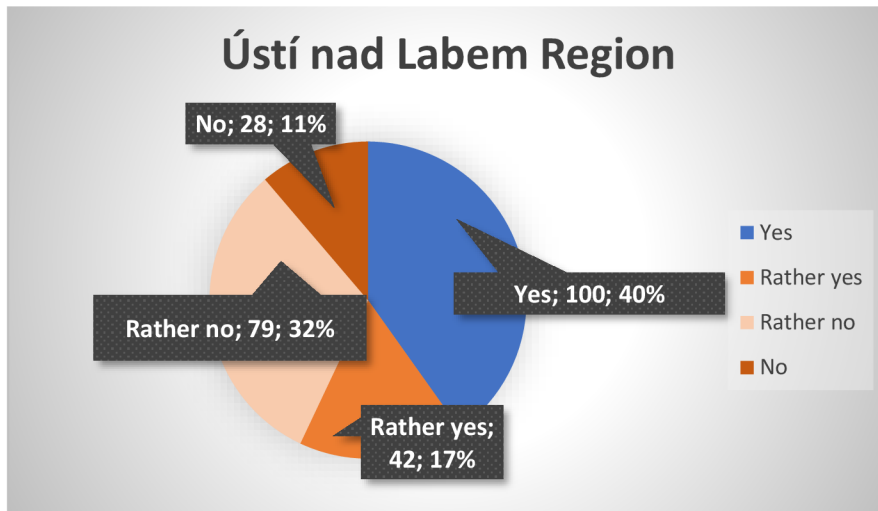


Source: own work

Question No. 3: Your time to purchase food has shortened in the store since the beginning of the current crisis (consider larger purchases)

7 % over half of the respondents who answer “Yes” (40%, 100) and “Rather Yes” (17 %, 42) begin to spend less time purchasing for food. The time to purchase food is not shortened in the store for 43 % of respondents who mark the answers "Rather no" (32 %, 79) and "No" (11 %, 28) from the beginning of the current crisis. It is visualized in the figure No. 13.

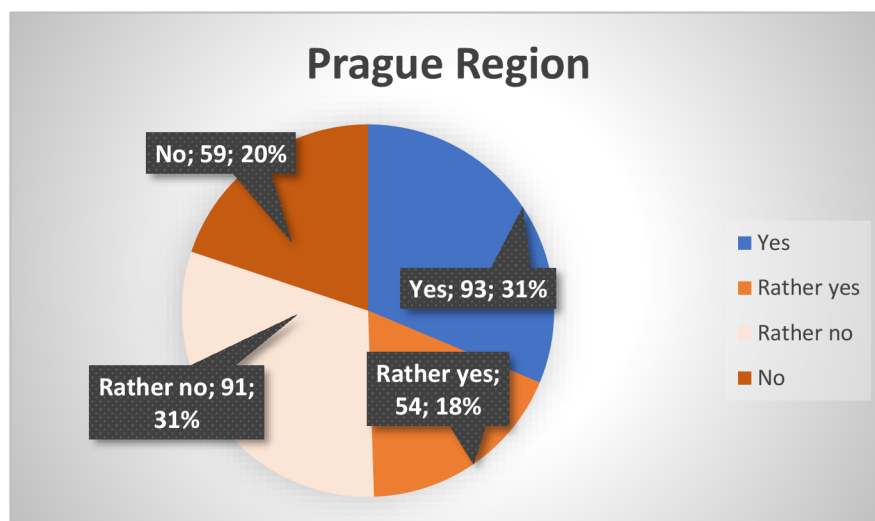
Figure 13 Shorter time spent in stores based on crisis in the Ústí nad Labem Region



Source: own work

There is a difference between the regions. In the Prague Region. About 1 % over half of the respondents indicate that their time spent purchasing for food in the store is not rather decreased or is not decreased at all. Specifically, 31 % (91) of Prague residents marked the answer "No" and 20 % (59) respondents mark the answer "Rather no". On the contrary, 49 % incline to shorten the time it takes to buy food in times of the crisis. 31 % (93) of the residents say "Yes" and 28 % (54) of them say "Rather yes". It is visualized in the figure No. 14.

Figure 14 Shorter time spent in stores based on crisis in the Prague Region

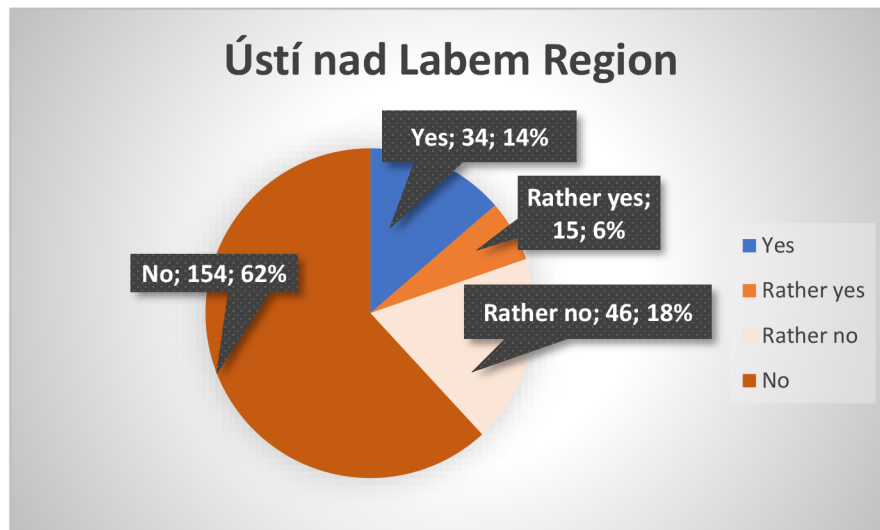


Source: own work

Question No. 4: **You are purchasing food with fewer household members** (consider larger purchases)

A change in the number of family members when buying food together during the crisis is not proved in both regions. In the case of the Ústí nad Labem Region, 62 % (154) respondents state that they are not purchasing food with fewer household members. This is followed by the answer “Rather no” with 18 % (46) responses. 14 % (34) of respondents currently are purchasing with fewer household members. "Rather yes" is stated by only 6 % (15) of respondents from the Ústí nad Labem Region. It is visualized in the figure No. 15.

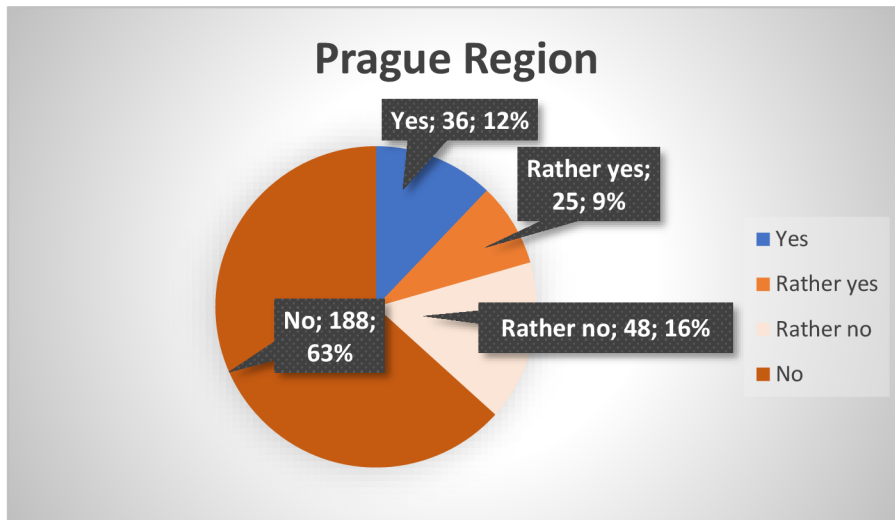
Figure 15 Fewer household members while purchasing food based on crisis in the Ústí nad Labem Region



Source: own work

Similar results are found in the Prague Region. More than half of the respondents (63 %, 188) are not purchasing in a smaller number of household members during the current crisis. Furthermore, 16 % (48) of them tend not to purchase food with a smaller number of household members in the current crisis. On the contrary, 12 % (36) decrease the number of members during grocery purchasing and mark the answer "Yes". The answer "Rather yes" is chosen by only 9 % (25) of respondents from the Prague Region. There is no noticeable difference between the regions. It is seen in the figure No. 16.

Figure 16 Fewer household members while purchasing food based on crisis in the Prague Region

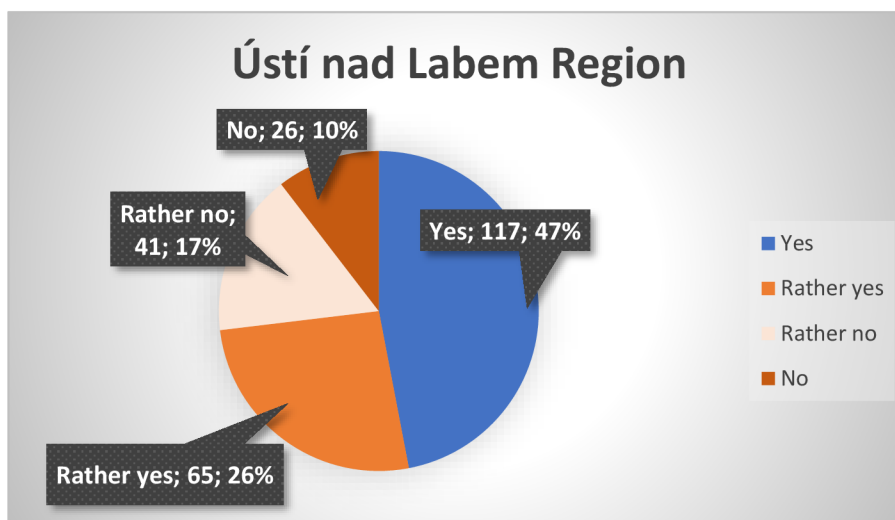


Source: own work

Question No. 5: You see the crisis as a reason / opportunity to change when purchasing food

This question is more general. The crisis becomes a reason for which 47 % (117) respondents of the Ústí nad Labem Region see a reason to change. Rather, the crisis has become a reason to change when purchasing food for 26 % (65) residents. The answer “Rather no” was given by 17 % (41) of residents. 10 % (26) respondents disagree that the crisis should be a reason or opportunity to change. It is visualized in the figure No. 17.

Figure 17 Crisis as a reason in the Ústí nad Labem Region

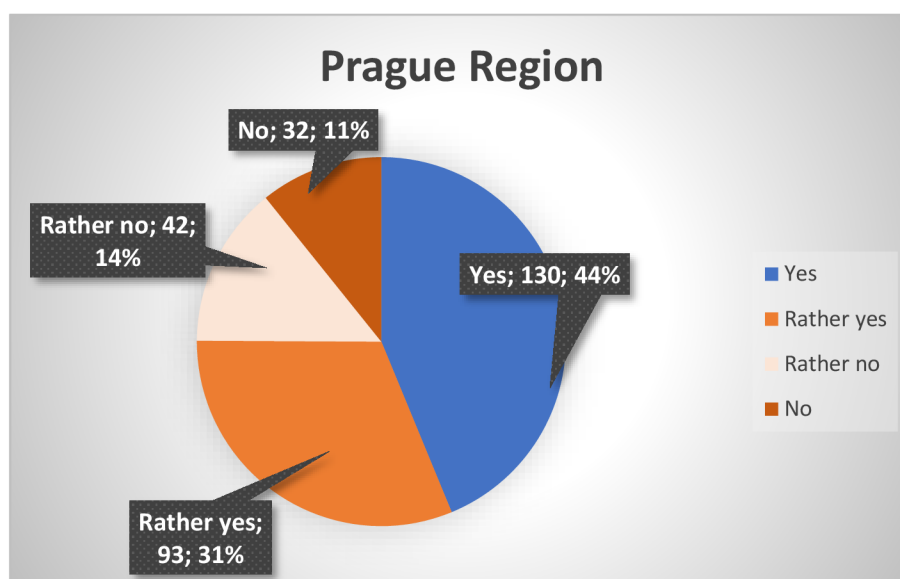


Source: own work

44 % (130) of respondents see the crisis as a reason or opportunity to change their behaviour when buying food. The second most common answer was "Rather yes", which is given by 31% (93) of residents of the Prague Region. 14 % (42) residents do not rather see the crisis as a sufficient reason. 11 % (32) of people do not consider the current crisis as a reason or opportunity to change.

There is no noticeable difference between the regions. It is visualized in the figure No. 18.

Figure 18 Crisis as a reason in the Prague Region

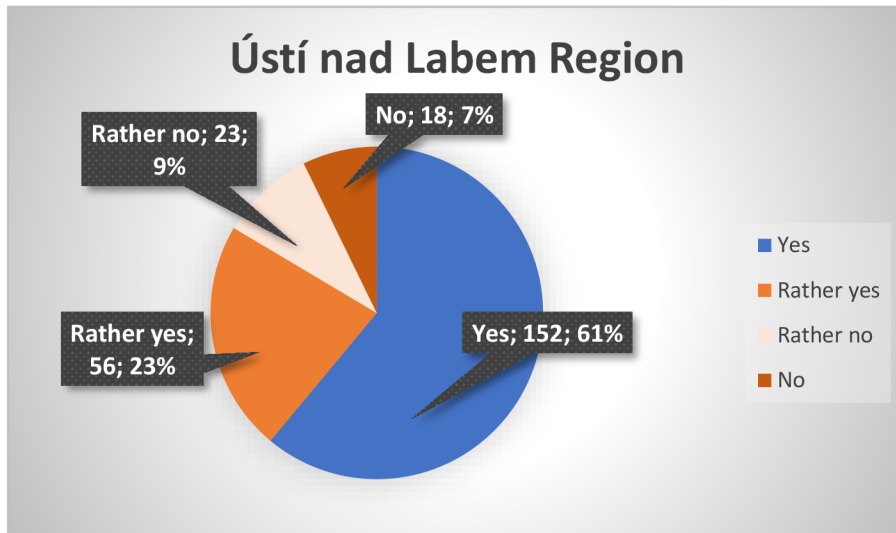


Source: own work

Question No. 6: Price is more important to you during the current crisis than before the crisis 2020

61 % of respondents (152) out of 249 say that the price becomes more important in times of the crisis, which is also supported by the answer "Rather yes", which is indicated by 23 % (56) of respondents from the Ústí nad Labem Region. The price is not rather more important for 9 % (23) of respondents nowadays. The remaining 7 % (18) of respondents indicate that price is not more important to them than it was before the 2020 crisis. As it is seen in the figure No. 19.

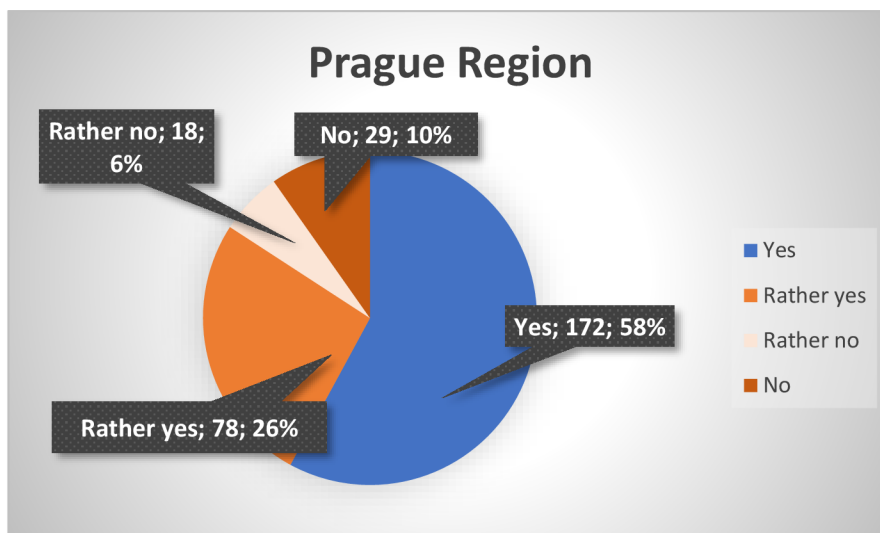
Figure 19 Importance of price in crisis in the Ústí nad Labem Region



Source: own work

The Prague Region also reaches similar results. 58 % (172) of respondents out 297 say that price becomes more important to them during the crisis. The price is rather more important for 26 % (78) of respondents at the present time. On the contrary, 6 % (18) of residents indicate that the price is rather unimportant to them compared to the time before the crisis 2020. Currently, 10 % (29) of respondents is not paying attention to the price. There is no noticeable difference between the regions. As it is seen in the figure No. 20.

Figure 20 Importance of price in crisis in the Prague Region



Source: own work

Question No. 7: You are making a grocery list before purchase during the current crisis / You were making a grocery list before purchase before the crisis 2020

According to the division of regions, the inhabitants of the Ústí nad Labem Region most often answer "Yes" that they are making the grocery list in the time of the crisis. Out of the total number of 249 respondents, 9.64 % (24) more respondents started writing the list during the crisis. The number of respondents increases by 2.01 % (5) for the answer "Rather yes". The answer "Rather no" is indicated by 4.02 % (10) fewer respondents who do not consider the list to be important during the crisis. According to the answer "No", it can be said that the number of respondents who are not writing the list during the crisis decreases by 7.63 % (19).

According to the Prague Region, the results are similar. Out of the total number of 297 respondents, 12.46 % (37) more respondents started making the grocery list during the crisis than before the year 2020. The answer "Rather yes" is answered by 1.68 % (5) more respondents compared those two periods. The answer "Rather no" is answered by 6.73 % (20) fewer respondents. According to the answer "No", it can be said that the number of respondents who are not writing the list decreases by 7.41 % (22) nowadays.

It can be said that more people are making the grocery list in times of the crisis, regardless of the region in which they live. It is seen in the table No. 9.

The table 9 Difference in making grocery list based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.7 | Before | % | During | % | % difference | Q.7 | Before | % | During | % | % difference |
| Yes | 79 | 31.73 | 103 | 41.37 | 9.64 | Yes | 71 | 23.91 | 108 | 36.36 | 12.46 |
| Rather yes | 36 | 14.46 | 41 | 16.47 | 2.01 | Rather yes | 65 | 21.89 | 70 | 23.57 | 1.68 |
| Rather no | 42 | 16.87 | 32 | 12.85 | -4.02 | Rather no | 64 | 21.55 | 44 | 14.81 | -6.73 |
| No | 92 | 36.95 | 73 | 29.32 | -7.63 | No | 97 | 32.66 | 75 | 25.25 | -7.41 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 8: You are searching discount events and food at a discounted price before purchase during the current crisis / You were searching for discount events and food at a discounted price before purchase before the crisis 2020

The most significant change occurs with the answer "Yes", when 17.27 % (43) more residents of the Ústí nad Labem Region out of 249 started searching discounts in the current crisis. For the answer "Rather no", residents who used discounts only occasionally before the crisis (40), their number decreases to half (20) during the crisis. The number of

respondents who are not almost searching for discounts nowadays decreases by 8.03 % (20) from the total amount of 249.

The results of the Prague Region are similar again. The difference between the current and previous period for the answer "Yes" with focusing on discounts is 16.84 % (50) more residents out of a total of 297. Almost half as many respondents (by 43) answered "Rather no" before the crisis than "Rather no" during the crisis. The number of respondents who are not searching for discounts decreases by 14.48 % (43) from the total of 297 nowadays.

It can be stated that there is no significant difference between the regions. Residents of both regions focus more on food that is discounted and try to save their finances in times of the current crisis. It is visualized in the table No. 10.

Table 10 Searching discount events and food at a discounted price based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.8 | Before | % | During | % | % difference | Q.8 | Before | % | During | % | % difference |
| Yes | 79 | 37.73 | 122 | 48.00 | 17.27 | Yes | 72 | 24.24 | 122 | 41.08 | 16.84 |
| Rather yes | 85 | 34.14 | 76 | 30.52 | -3.61 | Rather yes | 69 | 23.23 | 92 | 30.98 | 7.74 |
| Rather no | 40 | 16.06 | 20 | 8.03 | -8.03 | Rather no | 88 | 29.63 | 45 | 15.15 | -14.48 |
| No | 45 | 18.07 | 31 | 12.45 | -5.62 | No | 68 | 22.90 | 38 | 12.79 | -10.10 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 9: You are using loyalty programs, advantageous packaging when purchasing food during the current crisis / You were using loyalty programs, advantageous packaging when purchasing food before the crisis 2020

Another finding to be expected in times of the crisis is confirmed for both regions. Before the crisis, fewer people used these offers mainly in the Prague Region. According to the table No. 9, 14.46 % (36) more residents out of 249 respondents of the Ústí nad Labem Region started using loyalty programs and advantageous packaging in times of the crisis. Before the crisis, 53.01 % (132) of respondents used these offers, compared to 64.66 % (161) nowadays (merged "Rather yes" and "Yes"). Similarly, there is an increase of 21.89 % (65) out of a total of 297 for the residents of the Prague Region. Before the crisis, only 46.13 % (137) used the programmes compared to 68.01 % (202) of respondents nowadays (merged "Rather yes" and "Yes") as seen in the table No. 11.

Table 11 Using loyalty programs, advantageous packaging based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.9 | Before | % | During | % | % difference | Q.9 | Before | % | During | % | % difference |
| Yes | 52 | 20.88 | 88 | 35.34 | 14.46 | Yes | 34 | 11.45 | 99 | 33.33 | 21.89 |
| Rather yes | 80 | 32.13 | 73 | 29.32 | -2.81 | Rather yes | 103 | 34.68 | 103 | 34.68 | 0.00 |
| Rather no | 53 | 21.29 | 43 | 17.27 | -4.02 | Rather no | 97 | 32.66 | 56 | 18.86 | -13.80 |
| No | 64 | 25.70 | 45 | 18.07 | -7.63 | No | 63 | 21.21 | 39 | 13.13 | -8.08 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 10: You are comparing offers from different sellers and purchasing from multiple sources during the current crisis / You were comparing offers from different sellers and purchasing from multiple sources before the crisis 2020

The answer to this question shows an increase for both regions. A more evident increase for the answer "Yes" is shown for the Ústí nad Labem region which is 15.66 % (39) more respondents out of 249. More than half of respondents (53.42 %, 133) compare the offers from sellers in times of the crisis (merged Yes and Rather Yes). 8.42 % (25) more of Prague residents respond "Yes" and 7.07 % (21) more respond "Rather yes" during the current crisis. However, one can conclude that there is the difference between the regions. Despite the increase in both regions, in Prague more residents are not using these possibilities nowadays. Specifically, 62.29 % (185) compared to the Ústí nad Labem Region, where 46.58 % (116) is not using it (merged No and Rather no) according to table no. 12.

Table 12 Comparing offers from different sellers and purchasing from multiple sources during based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.10 | Before | % | During | % | % difference | Q.10 | Before | % | During | % | % difference |
| Yes | 46 | 18.47 | 85 | 34.14 | 15.66 | Yes | 20 | 6.73 | 45 | 15.15 | 8.42 |
| Rather yes | 51 | 20.48 | 48 | 19.28 | -1.20 | Rather yes | 46 | 15.49 | 67 | 22.56 | 7.07 |
| Rather no | 62 | 24.90 | 40 | 16.06 | -8.84 | Rather no | 90 | 30.30 | 81 | 27.27 | -3.03 |
| No | 90 | 36.14 | 76 | 30.52 | -5.62 | No | 141 | 47.47 | 104 | 35.02 | -12.46 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 11: **You are taking other people's recommendations into the account when purchasing food during the current crisis** (family, friends, acquaintances, influencers/ strangers) / **You were taking other people's recommendations into the account when purchasing food before the crisis 2020** (family, friends, acquaintances, influencers/ strangers)

According to table No. 13, it is shown a small increase in both regions. In case of the Ústí nad Labem Region, 4.82% (12) more respondents out of 249 are taking other people's recommendations into the account when purchasing food during the current crisis. In the case of the Prague Region, 2.36 % (7) more respondents out of 297 are taking other people's recommendations into the account when purchasing food during the current crisis. However, respondents buy and continue buying more at their own discretion. In times of the crisis, 65.87 % (164) of people from the Ústí nad Labem region and 80.47 % (239) of people from Prague do not require any recommendations (merged "Rather no" and "No") according to table No. 13.

Table 13 Taking other people's recommendations into the account based on the crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.11 | Before | % | During | % | % difference | Q.11 | Before | % | During | % | % difference |
| Yes | 24 | 9.64 | 36 | 14.46 | 4.82 | Yes | 6 | 2.02 | 13 | 4.38 | 2.36 |
| Rather yes | 46 | 18.47 | 49 | 19.68 | 1.20 | Rather yes | 40 | 13.47 | 45 | 15.15 | 1.68 |
| Rather no | 59 | 23.69 | 60 | 24.10 | 0.40 | Rather no | 90 | 30.30 | 95 | 31.99 | 1.68 |
| No | 120 | 48.19 | 104 | 41.77 | -6.43 | No | 161 | 54.21 | 144 | 48.48 | -5.72 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 12: **You are purchasing more stockpile food during the current crisis / You were purchasing more stockpile food before the crisis 2020**

Regarding this question, there is evidence of a change in the time of crisis for both regions. Residents of the regions begin to buy food to stock up. In the Ústí nad Labem Region, 24.50 % (61) more respondents and 31.65 % (94) more respondents in the Prague Region are purchasing more stockpile food during the current crisis. Before the crisis, more than half of the respondents in both regions had no need to buy food for stock. Specifically, 58.23 % (145) of respondents in the Ústí nad Labem Region and 74.07 % (220) of respondents in the Prague Region (merged "Rather no" and "No"). As it is seen in the table No. 14.

Table 14 Purchasing more stockpile food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.12 | Before | % | During | % | % difference | Q.12 | Before | % | During | % | % difference |
| Yes | 36 | 14.46 | 97 | 38.96 | 24.50 | Yes | 11 | 3.70 | 77 | 25.93 | 22.22 |
| Rather yes | 68 | 27.31 | 54 | 21.69 | -5.62 | Rather yes | 66 | 22.22 | 94 | 31.65 | 9.43 |
| Rather no | 89 | 35.74 | 66 | 26.51 | -9.24 | Rather no | 139 | 46.80 | 77 | 25.93 | -20.88 |
| No | 56 | 22.49 | 32 | 12.85 | -9.64 | No | 81 | 27.27 | 49 | 16.50 | -10.77 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 13: **You are purchasing food in the section with the soon-to-expire date during the current crisis** (durable, frozen, instant...) / **You were purchasing food in the section with the soon-to-expire date before the crisis 2020** (durable, frozen, instant...)

Most people were not buying as well as are not buying food in the section with the soon-to-expire date. For both regions, an increase is indicated for the "Yes" and "Rather yes" responses, 7.63 % (29) more respondents out of 249 in the Ústí nad Labem Region and 12.12 % (36) more respondents out of 297 in the Prague Region. The biggest increase can be seen in the response "Rather no", 11.65 % (29) in the Ústí nad Labem Region and 11.78 % (35) in the Prague Region. It can be stated that residents want food with a longer expiration date, which may be related to the previous question and their stockpile purchases. Data is found in the table No. 15.

Table 15 Purchasing food in the section with the soon-to-expire date based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.13 | Before | % | During | % | % difference | Q.13 | Before | % | During | % | % difference |
| Yes | 10 | 4.02 | 19 | 7.63 | 3.61 | Yes | 15 | 5.05 | 26 | 8.75 | 3.70 |
| Rather yes | 16 | 6.43 | 26 | 10.44 | 4.02 | Rather yes | 20 | 6.73 | 45 | 15.15 | 8.42 |
| Rather no | 50 | 20.08 | 79 | 31.73 | 11.65 | Rather no | 77 | 25.93 | 112 | 37.71 | 11.78 |
| No | 173 | 69.48 | 125 | 50.20 | -19.28 | No | 185 | 62.29 | 114 | 38.38 | -23.91 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 14: **You are paying for food purchases with a payment card during the current crisis** / **You were paying for food purchases with a payment card before the crisis 2020**

Payment by card according to the survey was widely used before the crisis. In times of the crisis, its popularity increased. An increase was indicated in both regions without much difference between them. 12.85 % (32) more respondents out of 249 in the Ústí nad Labem Region started paying for grocery purchases by card in times of the crisis, a total of

61.85 % (154) of residents. In case of the Prague Region, 14.48 % (43) more respondents and overall 70.71 % (210) of Prague responders are using card payment during the current crisis as seen in the table No. 16.

Table 16 Payment for food purchases by payment card based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.14 | Before | % | During | % | % difference | Q.14 | Before | % | During | % | % difference |
| Yes | 122 | 49.00 | 154 | 61.85 | 12.85 | Yes | 167 | 56.23 | 210 | 70.71 | 14.48 |
| Rather yes | 47 | 18.88 | 42 | 16.87 | -2.01 | Rather yes | 54 | 18.18 | 41 | 13.80 | -4.38 |
| Rather no | 23 | 9.24 | 9 | 3.61 | -5.62 | Rather no | 33 | 11.11 | 15 | 5.05 | -6.06 |
| No | 57 | 22.89 | 44 | 17.67 | -5.22 | No | 43 | 14.48 | 31 | 10.44 | -4.04 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 15: You are using self-service cash registers, devices when purchasing food during the current crisis / You were using self-service cash registers, devices when purchasing food before the crisis 2020

As a result, using self-service cash registers and devices is not very preferred way of food purchase in the Ústí nad Labem Region. Most residents 53.41 % (133) are not using it during the crisis even though there is a small increase comparing these two periods, 6.43 % (16) more respondents have started with. There is difference between the regions. The Prague Region reaches a bigger increase, 19.87 % (59) more respondents out of 297 started using self-service cash registers and devices when purchasing food during the current crisis seen in the table No. 17. It can also be noted that fewer people in Prague were not using these devices before the crisis, at 37.37 % (111) compared to the Ústí nad Labem Region 63.05 % (157).

Table 17 Using self-service cash registers, devices when purchasing food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.15 | Before | % | During | % | % difference | Q.15 | Before | % | During | % | % difference |
| Yes | 41 | 16.47 | 57 | 22.89 | 6.43 | Yes | 76 | 25.59 | 135 | 45.45 | 19.87 |
| Rather yes | 17 | 6.83 | 21 | 8.43 | 1.61 | Rather yes | 44 | 14.81 | 47 | 15.82 | 1.01 |
| Rather no | 34 | 13.65 | 38 | 15.26 | 1.61 | Rather no | 66 | 22.22 | 38 | 12.79 | -9.43 |
| No | 157 | 63.05 | 133 | 53.41 | -9.64 | No | 111 | 37.37 | 77 | 25.93 | -11.45 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 16: **You are purchasing food online during the current crisis** (home delivery, pickup point) / **You were purchasing food online before the crisis 2020** (home delivery, pickup point)

A less expected result occurs with this question regarding online shopping. In both regions, it turned out that their residents were not and still is not using this method very much. 72.29 % (180) of the inhabitants of the Ústí nad Labem Region is not buying online during the crisis. An increase is recorded, 5.22 % (13) more respondents out of 249 started purchasing food online during the crisis. In the case of the Prague Region, less than half of the respondents, 49.83 % (148) is not buying food online during the crisis. An increase is recorded as well, 5.72 % (17) more respondents out of 297 who started purchasing food online as table No. 18 shows.

Table 18 Purchasing food online based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.16 | Before | % | During | % | % difference | Q.16 | Before | % | During | % | % difference |
| Yes | 11 | 4.42 | 24 | 9.64 | 5.22 | Yes | 18 | 6.06 | 35 | 11.78 | 5.72 |
| Rather yes | 12 | 4.82 | 15 | 6.02 | 1.20 | Rather yes | 37 | 12.46 | 35 | 11.78 | -0.67 |
| Rather no | 27 | 10.84 | 30 | 12.05 | 1.20 | Rather no | 69 | 23.23 | 79 | 26.60 | 3.37 |
| No | 199 | 79.92 | 180 | 72.29 | -7.63 | No | 173 | 58.25 | 148 | 49.83 | -8.42 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 17: **You are controlling the quality and content of food during the current crisis** (chemical additives, fat, sugar, antioxidants, fiber...) / **You were controlling the quality and content of food before the crisis 2020** (chemical additives, fat, sugar, antioxidants, fiber...)

The question has no significant results in the regions. In the Ústí nad Labem Region, roughly half of respondents (52.21 %, 130) control the quality of food during the crisis compared to 42.97 % (107) before the crisis (merged Yes and Rather Yes). This is an increase of 9.24 % (23) more respondents out of 249 that started checking the quality of the food they are currently buying. The Prague region has similar results. During the crisis, 64.31% (181) respondents control the quality of food comparing 59.26% (176) respondents before the crisis (merged Yes and Rather Yes). This is an increase of 5.05 % (15) more respondents out of 297 that started to deal with the quality of food they are buying nowadays as table No. 19 shows. However, it can still be stated that the residents of Prague were and are concerned with the quality of food more compared to the residents of the Ústí nad Labem Region.

Table 19 Controlling the quality and content of food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.17 | Before | % | During | % | % difference | Q.17 | Before | % | During | % | % difference |
| Yes | 56 | 22.49 | 61 | 24.50 | 2.01 | Yes | 85 | 28.62 | 93 | 31.31 | 2.69 |
| Rather yes | 51 | 20.48 | 69 | 27.71 | 7.23 | Rather yes | 91 | 30.64 | 98 | 33.00 | 2.36 |
| Rather no | 81 | 32.53 | 61 | 24.50 | -8.03 | Rather no | 86 | 28.96 | 82 | 27.61 | -1.35 |
| No | 61 | 24.50 | 58 | 23.29 | -1.20 | No | 35 | 11.78 | 24 | 8.08 | -3.70 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 18: You are paying extra for certified food, organic food the current crisis / You were paying extra for certified food, organic food before the crisis 2020

Residents of both regions are not paying extra for certified food or organic food. In the Ústí nad Labem Region, the majority of respondents are not paying (87.55 %, 218) and were not paying (86.35 %, 215) for certified food both merged “Rather no” and “No”. It can be concluded that the situation before the crisis and during the crisis remained almost unchanged for all kinds of responses. In case of the Prague Region, most respondents are not purchasing (68.01 %, 237) and are not buying (79.80 %, 202) for certified food as well both merged “Rather no” and “No”. It can be said that in Prague, even 11.79 % (35 fewer respondents) are interested in certified food and organic food in crisis than before the crisis 2020 (merged "Rather yes" and "Yes") as it is found in the table No. 20.

Table 20 Paying extra for certified food and organic food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.18 | Before | % | During | % | % difference | Q.18 | Before | % | During | % | % difference |
| Yes | 11 | 4.42 | 10 | 4.02 | -0.40 | Yes | 40 | 13.47 | 18 | 6.06 | -7.41 |
| Rather yes | 23 | 9.24 | 21 | 8.43 | -0.80 | Rather yes | 55 | 18.52 | 42 | 14.14 | -4.38 |
| Rather no | 41 | 16.47 | 45 | 18.07 | 1.61 | Rather no | 73 | 24.58 | 98 | 33.00 | 8.42 |
| No | 174 | 69.88 | 173 | 69.48 | -0.40 | No | 129 | 43.43 | 139 | 46.80 | 3.37 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 19: You are growing, producing some homemade food during the current crisis / You were growing, producing some homemade food before the crisis 2020

A difference between the regions is indicated for this question. In the Ústí nad Labem Region, roughly one half of respondents 52.21 % (130, merged Rather no and No) answered that they were not growing home food before the crisis, and the other half 48.79 % (119, merged Rather yes and Yes) had the opposite answer. During the crisis, there is a smaller increase. 6.82 % (17) more respondents out of 249 that are growing, producing

some homemade food during the current crisis (merged “Rather yes” and “Yes”). Comparing the Prague Region, the majority of respondents were not growing or producing homemade food before the crisis (81.48 %, 242) as well as they are not doing it during the crisis (78.45 %, 233, merged “Rather no” and “No”). Only 3.70 % (11) more respondents out of 297 are growing, producing some homemade food during the current crisis according to table No. 21.

Table 21 Growing and producing some homemade food based crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.19 | Before | % | During | % | % difference | Q.19 | Before | % | During | % | % difference |
| Yes | 91 | 36.55 | 100 | 40.16 | 3.61 | Yes | 31 | 10.44 | 42 | 14.14 | 3.70 |
| Rather yes | 28 | 11.24 | 36 | 14.46 | 3.21 | Rather yes | 24 | 8.08 | 22 | 7.41 | -0.67 |
| Rather no | 36 | 14.46 | 26 | 10.44 | -4.02 | Rather no | 38 | 12.79 | 34 | 11.45 | -1.35 |
| No | 94 | 37.75 | 87 | 34.94 | -2.81 | No | 204 | 68.69 | 199 | 67.00 | -1.68 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 20: You are thinking about the way food is produced, i.e. animal welfare and environment-friendly when purchasing food (useable bags, food without packaging...) during the current crisis / You were thinking about the way food is produced, i.e. animal welfare and environment-friendly when purchasing food (useable bags, food without packaging...) before the crisis 2020

It is clear from the table No. 22 that more people were not thinking and still are not thinking about the way food is produced. In the Ústí nad Labem Region, 60.74 % (151) of residents report negative responses "No" and "Rather no". However, there is a change. 7.63 % (19) more respondents out of 249 started thinking about the way food is produced in the current crisis. In the Prague Region, people were not thinking and still are not thinking about the way food is produced as well. 56.03 % (167) of respondents do not care about the way food is produced nowadays (merged "Rather no" and "No"). It can be concluded that some Prague residents also started thinking more about it thanks to the crisis. This is 7.73 % (23) more residents out of 297 nowadays than before the crisis.

Table 22 Thinking about the way food is produced based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.20 | Before | % | During | % | % difference | Q.20 | Before | % | During | % | % difference |
| Yes | 40 | 16.06 | 49 | 19.68 | 3.61 | Yes | 46 | 15.49 | 60 | 20.20 | 4.71 |
| Rather yes | 39 | 15.66 | 49 | 19.68 | 4.02 | Rather yes | 61 | 20.54 | 70 | 23.57 | 3.03 |
| Rather no | 82 | 32.93 | 70 | 28.11 | -4.82 | Rather no | 111 | 37.37 | 107 | 36.03 | -1.35 |
| No | 88 | 35.34 | 81 | 32.53 | -2.81 | No | 79 | 26.60 | 60 | 20.20 | -6.40 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 21: You are dealing with hygiene at the point of purchase during the current crisis / You were dealing with hygiene at the point of purchase before the crisis 2020

This question primarily evokes the limitations of spreading the COVID-19 infection. The current crisis increases the requirements for hygiene at the point of purchase in both regions. 65.06 % (162) respondents from the Ústí nad Labem Region were not dealing with hygiene at the point of purchase before the crisis compared to 41.77 % (104) during the crisis (merged “Rather no” and “No”). In the Ústí nad Region, 23.30 % (58) more respondents out of a total of 249 are dealing with hygiene at the point of purchase nowadays. In the Prague Region, 30.30 % (90) more respondents out of a total of 297 are dealing with hygiene at the point of purchase during the current crisis. 67.68 % (201) of Prague respondents were not dealing with hygiene at the point of purchase before the crisis, compared to 37.38 % (111) nowadays (merged "Rather no" and "No") as seen in the table No. 23. It can be stated that residents of the Prague Region are focused on hygiene more than residents of the Ústí nad Labem Region.

Table 23 Dealing with hygiene at the point of purchase based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.21 | Before | % | During | % | % difference | Q.21 | Before | % | During | % | % difference |
| Yes | 51 | 20.48 | 80 | 32.13 | 11.65 | Yes | 39 | 13.13 | 77 | 25.93 | 12.79 |
| Rather yes | 36 | 14.46 | 65 | 26.10 | 11.65 | Rather yes | 57 | 19.19 | 109 | 36.70 | 17.51 |
| Rather no | 61 | 24.50 | 57 | 22.89 | -1.61 | Rather no | 92 | 30.98 | 71 | 23.91 | -7.07 |
| No | 101 | 40.56 | 47 | 18.88 | -21.69 | No | 109 | 36.70 | 40 | 13.47 | -23.23 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 22: You consider the distance to the point of purchase and the opening hours to be important during the current crisis / You considered the distance to the point of purchase and the opening hours to be important before the crisis 2020

The distance to the point of purchase and the opening hours become more important during the current crisis in both regions. In the Ústí nad Labem Region, just 36.14 % (90) of respondents stated that it was important before the crisis (merged "Rather no" and "No"). The crisis has impact and 24.09 % (60) more respondents out of 249 claim that the distance to the point of purchase and the opening hours become to be important so it is total of 60.24 % (150) of respondents nowadays. In the Prague Region, one half (47.81

%, 142) respondents considered the distance to the point of purchase and the opening hours to be important before the current crisis compared to nowadays amount of 78.11 % (232, merged “Rather yes” and “Yes”). 30.31 % (90) more respondents out of 297 stated that the distance to the point of purchase and the opening hours become important nowadays. Data is shown in the table No. 24.

Table 24 Importance of the distance to the point of purchase and the opening hours based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.22 | Before | % | During | % | % difference | Q.22 | Before | % | During | % | % difference |
| Yes | 46 | 18.47 | 85 | 34.14 | 15.66 | Yes | 61 | 20.54 | 135 | 45.45 | 24.92 |
| Rather yes | 44 | 17.67 | 65 | 26.10 | 8.43 | Rather yes | 81 | 27.27 | 97 | 32.66 | 5.39 |
| Rather no | 70 | 28.11 | 52 | 20.88 | -7.23 | Rather no | 68 | 22.90 | 29 | 9.76 | -13.13 |
| No | 89 | 35.74 | 47 | 18.88 | -16.87 | No | 87 | 29.29 | 36 | 12.12 | -17.17 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 23: You prefer food of the Czech origin during the current crisis / You preferred food of the Czech origin before the crisis 2020

It can be stated that the respondents of both regions prefer food of Czech origin. In both regions, there was also no significant change regarding the period before the crisis and the period during the crisis. In the Ústí nad Labem Region, 70.28 % (175) of respondents preferred food of Czech origin before the 2020 crisis as well as in the current crisis (merged “Rather yes” and “Yes”). In the Prague Region, 71.38 % (212) of respondents preferred food of Czech origin before the 2020 crisis. Currently, 72.72 % (216) of respondents prefer food made in the Czech Republic (merged “Rather yes” and “Yes”) as put in the table No. 25.

Table 25 Preference of Czech origin food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.23 | Before | % | During | % | % difference | Q.23 | Before | % | During | % | % difference |
| Yes | 79 | 31.73 | 75 | 30.12 | -1.61 | Yes | 97 | 32.66 | 99 | 33.33 | 0.67 |
| Rather yes | 96 | 38.55 | 100 | 40.16 | 1.61 | Rather yes | 115 | 38.72 | 117 | 39.39 | 0.67 |
| Rather no | 41 | 16.47 | 42 | 16.87 | 0.40 | Rather no | 56 | 18.86 | 57 | 19.19 | 0.34 |
| No | 33 | 13.25 | 32 | 12.85 | -0.40 | No | 29 | 9.76 | 24 | 8.08 | -1.68 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 24: You consider country of food origin to be important during the current crisis / You considered country of food origin to be important before the crisis 2020

The country of origin of food is important nowadays as well as and was important for the residents of both regions in the period before the crisis 2020. In the Ústí nad Labem Region, 4.41 % (11) more respondents out of 249 consider country of food origin to be important during the current crisis. It is more than half, concretely 54.62 % (136) respondents before the crisis and 59.03 % (147) respondents who consider it to be important during the current crisis (merged “Rather yes” and “Yes”). In the Prague region, only 1.34 % (4) more respondents out of 297 change their opinion and started considering the country of food origin to be important during the current crisis. Before the crisis it was 62.62 % respondents (186) and the number is 63.98 % (190) respondents nowadays (merged “Rather yes” and “Yes”). There is a small difference between the regions, it can be said that people in Prague care a little more about the country of origin of food even though the higher increase occurs in the Ústí nad Labem Region. It is seen in the table No. 26.

Table 26 Importance of country of food origin based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.24 | Before | % | During | % | % difference | Q.24 | Before | % | During | % | % difference |
| Yes | 79 | 31.73 | 88 | 35.34 | 3.61 | Yes | 102 | 34.34 | 107 | 36.03 | 1.68 |
| Rather yes | 57 | 22.89 | 59 | 23.69 | 0.80 | Rather yes | 84 | 28.28 | 83 | 27.95 | -0.34 |
| Rather no | 55 | 22.09 | 47 | 18.88 | -3.21 | Rather no | 74 | 24.92 | 72 | 24.24 | -0.67 |
| No | 58 | 23.29 | 55 | 22.09 | -1.20 | No | 37 | 12.46 | 35 | 11.78 | -0.67 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 25: You consider brand and food producer to be important during the current crisis / You considered brand and food producer to be important before the crisis 2020

Brand and food producer is not an important parameter in both regions. In the Ústí nad Labem, 74.70% (186) of respondents answer that the food brand and producer was not, or rather was not, important before the crisis (merged "Rather no" and "No"). In times of the crisis, 5.22 % more respondents out of 249 begin to consider brand and food producer to be important during the current crisis. Nowadays, it is not important just for 69.48 % (173) of respondents (merged "Rather no" and "No"). In the Prague Region, 63.97 % (190)

of respondents respond with "Rather no" and "No" before the crisis. 3.37 % (10) more respondents out of 297 start considering brand and food producer to be important during the current crisis. So, the number is 62.63 % (186) of respondents who do not consider it to be important nowadays. Data is found in the table No. 27.

Table 27 Importance of brand and food producer based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.25 | Before | % | During | % | % difference | Q.25 | Before | % | During | % | % difference |
| Yes | 13 | 5.22 | 18 | 7.23 | 2.01 | Yes | 32 | 10.77 | 42 | 14.14 | 3.37 |
| Rather yes | 50 | 20.08 | 58 | 23.29 | 3.21 | Rather yes | 75 | 25.25 | 69 | 23.23 | -2.02 |
| Rather no | 88 | 35.34 | 81 | 32.53 | -2.81 | Rather no | 117 | 39.39 | 116 | 39.06 | -0.34 |
| No | 98 | 39.36 | 92 | 36.95 | -2.41 | No | 73 | 24.58 | 70 | 23.57 | -1.01 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 26: You consider the appearance of packaging and food to be important during the current crisis / You considered packaging and the appearance of food to be important before the crisis 2020

Regarding this question, the opinions of the respondents in both regions are almost split in half and there is almost no change between the observed period of time, comparing the current period of the crisis and the period before the crisis of 2020. In the Ústí nad Labem Region 48.99 % (122) consider the appearance of packaging and food to be important during the current crisis, similar to 52.99 % (127) before the crisis (merged "Rather yes" and "Yes"). In the case of the Prague Region, 49.83 % (148) respondents consider the appearance of packaging and food to be important during the current crisis, similar to 46.48 % respondents (138) before the crisis (merged "Rather yes" and "Yes") as shown in the table No. 28. It can be stated that there is little difference between regions. In the Prague Region, residents consider the appearance of packaging and food to be important during the crisis a little more than before the crisis. In the Ústí nad Labem Region, the state is opposite.

Table 28 Importance of appearance of packaging and food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.26 | Before | % | During | % | % difference | Q.26 | Before | % | During | % | % difference |
| Yes | 44 | 17.67 | 40 | 16.06 | -1.61 | Yes | 38 | 12.79 | 43 | 14.48 | 1.68 |
| Rather yes | 83 | 33.33 | 82 | 32.93 | -0.40 | Rather yes | 100 | 33.67 | 105 | 35.35 | 1.68 |
| Rather no | 65 | 26.10 | 70 | 28.11 | 2.01 | Rather no | 91 | 30.64 | 86 | 29.96 | -1.68 |
| No | 57 | 22.89 | 57 | 22.89 | 0.00 | No | 68 | 22.90 | 63 | 21.21 | -1.68 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 27: You decide easily, quickly which foods to purchase or not during the current crisis / You decided easily, quickly which foods to purchase or not before the crisis 2020

As it turned out, respondents were not having and is not having a problem with making quick decisions when buying food from both regions. In the Ústí nad Labem Region, 79.92 % (199) respondents decide easily, quickly which foods to purchase or not during the current crisis (merged "Rather yes" and "Yes"). There was a slight change, 1.20 % (3) fewer respondents out of 249 is not having a problem with decision making. In the Prague Region, most respondents, namely 64.75 % (122) can decide easily, quickly which foods to purchase or not during the current crisis. However, in this case the change is bigger compared to the Ústí nad Labem Region. 10.78 % (32) fewer respondents from the total of 297 is not having a problem with decision making nowadays. It is seen in the table No. 29.

Table 29 Making a quick and easy decision while purchasing food based on crisis

| Ústí nad Labem Region | | | | | | Prague Region | | | | | |
|-----------------------|--------|--------|--------|--------|--------------|---------------|--------|--------|--------|--------|--------------|
| Q.27 | Before | % | During | % | % difference | Q.27 | Before | % | During | % | % difference |
| Yes | 132 | 53.01 | 130 | 52.21 | -0.80 | Yes | 143 | 48.15 | 115 | 38.72 | -9.43 |
| Rather yes | 70 | 28.11 | 69 | 27.71 | -0.40 | Rather yes | 111 | 37.37 | 107 | 36.03 | -1.35 |
| Rather no | 29 | 11.65 | 30 | 12.05 | 0.40 | Rather no | 28 | 9.43 | 55 | 18.52 | 9.09 |
| No | 18 | 7.23 | 20 | 8.03 | 0.80 | No | 15 | 5.05 | 20 | 6.73 | 1.68 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 28: You are purchasing food the most often during the current crisis / You were purchasing food the most often before the crisis 2020

The residents of the Ústí nad Labem Region were purchasing and are purchasing most often in supermarkets / hypermarkets. This response is given by 91.57 % (228) of residents before the crisis and 83.94 % (209) of residents during the crisis. 7.63 % (19) fewer responders out of 249 swap supermarkets/hypermarkets during the crisis. The likely reason is online grocery purchasing which starts to be practiced by 6.02 % more respondents (15) out of the total number during the current crisis. According to the Prague Region, 87.54 % (260) of residents were purchasing before the crisis and are still purchasing (84.85 %, 252) in supermarkets/ hypermarkets, however the number is decrease by 2.69 % (8) responders out of 297 during the crisis as well as in the convenience stores

(8). In contrast, 4.38 % (13) of more respondents started buying more food online as table No. 30 shows.

Table 30 Place to purchase the most often based on crisis

| Q.28 | Ústí nad Labem Region | | | | | Prague Region | | | | | |
|------------------------------|-----------------------|---------------|------------|------------|--------------|------------------------------|------------|---------------|------------|---------------|-------|
| | Before | % | During | % | % difference | Before | % | During | % | % difference | |
| Supermarkets / Hypermarkets | 228 | 91.57 | 209 | 83.94 | -7.63 | Supermarkets / Hypermarkets | 260 | 87.54 | 252 | 84.85 | -2.69 |
| Online | 3 | 1.20 | 18 | 7.23 | 6.02 | Online | 14 | 4.71 | 27 | 9.09 | 4.38 |
| Convenience stores | 14 | 5.62 | 17 | 6.83 | 1.20 | Convenience stores | 22 | 7.41 | 14 | 4.71 | -2.69 |
| Farm markets | 1 | 0.40 | 1 | 0.40 | 0.00 | Farm markets | 1 | 0.34 | 1 | 0.34 | 0.67 |
| Farms / Points of production | 1 | 0.40 | 1 | 0.40 | 0.00 | Farms / Points of production | 0 | 0.00 | 2 | 0.67 | 0.34 |
| Specialized stores | 1 | 0.40 | 2 | 0.80 | 0.40 | Specialized stores | 0 | 0.00 | 1 | 0.34 | 0.00 |
| Drugstores | 1 | 0.40 | 1 | 0.40 | 0.00 | Drugstores | 0 | 0.00 | 0 | 0.00 | 0.00 |
| Total | 249 | 100.00 | 249 | 100 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

Question No. 29: **You like food purchasing the most during the current crisis / You liked food purchasing the most before the crisis 2020**

Supermarkets / hypermarkets were and are the most favourite place to purchase food and it is followed by convenience stores for both regions. A more significant change in popularity occurs in online shopping. In the case of the Ústí nad Labem Region, 4.02 % (10) more respondents out of a total number of 249, in the case of the Prague Region, 5.05 % (15) more respondents out of a total number of 297 mark this answer. In other cases, the respondents of both regions hardly changed their preference for the place where the food is popped. About 6 % (16) of the residents of Ústí nad Labem Region like to purchase at farm markets and 4.02 % (10) in specialized stores during the crisis. About 13 % (40) of Prague residents like to purchase in specialized stores and 8.08 % (24) at farm markets nowadays. It is seen in the table No. 31.

Table 31 The most favourite place to purchase based on crisis

| Q.29 | Ústí nad Labem Region | | | | | Prague Region | | | | | |
|------------------------------|-----------------------|---------------|------------|---------------|--------------|------------------------------|------------|---------------|------------|---------------|-------|
| | Before | % | During | % | % difference | Before | % | During | % | % difference | |
| Supermarkets / Hypermarkets | 157 | 63.05 | 155 | 62.25 | -0.80 | Supermarkets / Hypermarkets | 133 | 44.78 | 116 | 39.06 | -5.72 |
| Online | 13 | 5.22 | 23 | 9.24 | 4.02 | Online | 25 | 8.42 | 40 | 13.47 | 5.05 |
| Convenience stores | 45 | 18.07 | 40 | 16.06 | -2.01 | Convenience stores | 67 | 22.56 | 71 | 23.91 | 1.34 |
| Farm markets | 19 | 7.63 | 16 | 6.43 | -1.20 | Farm markets | 24 | 8.08 | 24 | 8.08 | 0.00 |
| Farms / Points of production | 5 | 2.01 | 5 | 2.01 | 0.00 | Farms / Points of production | 6 | 2.02 | 6 | 2.02 | 0.00 |
| Specialized stores | 10 | 4.02 | 10 | 4.02 | 0.00 | Specialized stores | 42 | 14.14 | 40 | 13.47 | -0.67 |
| Drugstores | 0 | 0.00 | 0 | 0.00 | 0.00 | Drugstores | 0 | 0.00 | 0 | 0.00 | 0.00 |
| Total | 249 | 100.00 | 249 | 100.00 | | Total | 297 | 100.00 | 297 | 100.00 | |

Source: own work

4.2.3 Analysis of Quantitative Traits

Hypothesis 1

Hypothesis No. 1 was established with assumptions based primarily on the coronavirus pandemic, which significantly accelerated the adaptation of certain technologies and the use of new services. Several aspects play a role here. Due to the risk of virus transmission and better protection of the health of both buyers and sellers, it was recommended to pay contactless by card or mobile phone. The virus can remain on banknotes and coins for several days. In the Czech Republic, some merchants started accepting only non-cash payments, some ones granted exemptions to seniors and people with a ZTP card temporarily during the lockdown. Examples are the online stores Košík.cz and Rohlík.cz, which, among other things, tried to minimize the courier's time spent at customers. Cash could thus become more of a reserve in case of the impossibility of paying by card in some places (Košík.cz, 2015-2022; Rohlík.cz, 2022). After the moderation of the coronavirus pandemic and the onset of the energy crisis, the prices of products and services, including food, rose significantly. One aspect of paying with a card is that the buyer cannot physically see the money, which can lead to faster spending.

This hypothesis, with a change in behaviour based on residence, assumes a different approach to payment between residents of the capital city of Prague, as the most underdeveloped and richest part of the Czech Republic, and the Ústí nad Labem Region, which has the lowest level of education and the highest unemployment rate of all regions (CSO, 2017).

Hypothesis No. 1

Change in consumer behaviour regarding contactless payments does not depend on the place of residence.

McNemar-Bowker Test

Prague Region

According to the pivot table No. 32, those levels where no change is in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of Prague region 226 respondents did not change their behaviour, so the total number of respondents is reduced to 71.

29 people answered, "Rather yes" before the crisis and "Yes" at present, and only 2 people had the opposite answer change. Basically, for all possible pairs describing a change, a greater number of respondents changed towards paying by card than the opposite change.

Table 32 Changes due to crisis for hypothesis 1 – Prague Region

| Prague Region | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|-----------|-----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 163 | 2 | 1 | 1 | 167 |
| | Rather yes | 29 | 23 | 1 | 1 | 54 |
| | Rather no | 10 | 12 | 11 | 0 | 33 |
| | No | 8 | 4 | 2 | 29 | 43 |
| Total | 210 | 41 | 15 | 31 | 297 | |

Source: own work

Hypothesis

- H_0 : There is no change in paying by card among the Prague residents due to the crisis
- H_a : There is a change in paying by card among the Prague residents due to the crisis

Calculation of the Test Criterion

Table 33 Calculation of the Test Criterion for hypothesis 1 – Prague Region

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 29 | 2 | 23.516 |
| Rather no versus yes | 10 | 1 | 7.364 |
| No versus yes | 8 | 1 | 5.444 |
| Rather no versus rather yes | 12 | 1 | 9.308 |
| No versus rather yes | 4 | 1 | 1.800 |
| No versus rather no | 2 | 0 | 2.000 |
| Total | | | 49.432 |

Source: own work

Testing

The test shows that the p value of $6.109 \cdot 10^{-9}$ is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. It can be also compared the test criterion B of 49.4319 which is greater than the critical value χ^2 of 12.592 at the significance level of 5

%. Therefore, the result is the same, the null hypothesis H_0 is rejected. There is a change in paying by card for residents of the Prague region.

Table 34 Testing of hypothesis 1 by McNemar-Bowker Test – Prague Region

| McNemar-Bowker Test | |
|---|-------------|
| Testing criterion B | 49.432 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 6.10985E-09 |

Source: own work

McNemar-Bowker Test

Ústí nad Labem Region

According to the pivot table No. 35, those levels where no change is in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of Ústí and Labem region 201 respondents did not change their behaviour, so the total number of respondents is reduced to 48.

For example, 18 people answered "Rather yes" before the crisis and "Yes" at present. No person had the opposite change in response. Basically, for all possible pairs describing a change, a greater number of respondents changed towards paying by card than the opposite change.

Table 35 Changes due to crisis for hypothesis 1 – Ústí nad Labem Region

| Ústí nad Labem Region | | Current crisis | | | | |
|-----------------------------------|------------------------------|-----------------------|-------------------|------------------|-----------|--------------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 119 | 0 | 1 | 2 | 122 |
| | Rather yes | 18 | 29 | 0 | 0 | 47 |
| | Rather no | 10 | 7 | 6 | 0 | 23 |
| | No | 2 | 5 | 3 | 47 | 57 |
| | Total | 149 | 41 | 10 | 49 | 249 |

Source: own work

Hypothesis

- H_0 : There is no change in paying by card among the Ústí nad Labem region residents due to the crisis
- H_a : There is a change in paying by card among the Ústí nad Labem region residents due to the crisis

Calculation of the Test Criterion

Table 36 Calculation of the Test Criterion for hypothesis 1 – Ústí nad Labem Region

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|------------------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 18 | 0 | 18.000 |
| Rather no versus yes | 10 | 1 | 7.364 |
| No versus yes | 2 | 2 | 0.000 |
| Rather no versus rather yes | 7 | 0 | 7.000 |
| No versus rather yes | 5 | 0 | 5.000 |
| No versus rather no | 3 | 0 | 3.000 |
| Total | | | 40.364 |

Source: own work

Testing

The test shows that the p value of $3.864 \cdot 10^{-7}$ is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. If the test criterion B of 40.364, is compared, which is greater than the critical value χ^2 of 12.592 at the 5 % significance level, the result is the same and the null hypothesis H_0 is rejected. There is a change in card payment for residents of the Ústí nad Labem region.

Table 37 Testing of hypothesis 1 by McNemar-Bowker Test – Ústí nad Labem Region

| McNemar-Bowker Test | |
|---|-------------|
| Testing criterion B | 40.364 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 3.86377E-07 |

Source: own work

It is proven in both regions that respondents choose to pay by card more than before the crisis. It can be assumed that the change in consumer behaviour does not depend on the region in which the respondent lives. However, the result is found by the following Chi-Square Test of Independence.

Chi-Square Test of Independence

Hypothesis

- H_0 : There is no statistically significant relationship between the place of residence and the change in card payment before and during the crisis
- H_a : There is no statistically significant relationship between the place of residence and the change in card payment before and during the crisis

A new variable is created to express the change in the respondents' behaviour. Subsequently, it is determined using the χ^2 test for this variable whether there is an association between this change of behaviour and the respondent's place of residence (region).

The new variable indicates the change as follows:

- negative, i.e. they pay less with the card
- positive, i.e. they pay more with the card
- none, i.e. their answer either does not change at all, or only slightly from “Rather yes” to “Yes” or from “Rather no” to “No” and vice versa

Table 38 Observed frequencies for hypothesis 1

| Observed frequencies n_{ij} | | | | |
|--|----------|-----------|----------|-------|
| Place of residence \ Change of behaviour | Negative | No change | Positive | Total |
| Prague Region | 4 | 259 | 34 | 297 |
| Ústí nad Labem Region | 3 | 222 | 24 | 249 |
| Total | 7 | 481 | 58 | 546 |

Source: own work

According to the percentage distribution of frequencies in the table No. 39, it can be seen that a negative change occurs in only 1 % of respondents from both regions, no

change occurs in 87-89 % of respondents from both regions, and a positive change occurs in 11-10 % of respondents from both regions. It is clear that both regions have similar results and card payments do not depend on the place of residence.

Table 39 % distribution of observed frequencies for hypothesis 1

| % distribution of observed frequencies n_{ij} | | | | |
|---|-----------------|------------------|-----------------|--------------|
| Place of residence\Change of behaviour | Negative | No change | Positive | Total |
| Prague Region | 1 % | 87 % | 11 % | 100 % |
| Ústí nad Labem Region | 1 % | 89 % | 10 % | 100 % |

Source: own work

2 cells (33.3 %) have an expected frequency of less than 5, therefore the basic condition of the test is broken. However, the levels cannot be meaningfully merged and the test is calculated anyway. It is seen in the table No. 40.

Table 40 Expected frequencies for hypothesis 1

| Expected frequencies o_{ij} | | | | |
|---|-----------------|------------------|-----------------|--------------|
| Place of residence\Change of behaviour | Negative | No change | Positive | Total |
| Prague Region | 3.80769 | 261.64286 | 31.54945 | 297 |
| Ústí nad Labem Region | 3.19231 | 219.35714 | 26.45055 | 249 |
| Total | 7 | 481 | 58 | 546 |

Source: own work

The test shows that the p value of 0.7799 is greater than the significance level $\alpha=0.05$, so the null hypothesis H_0 is not rejected. It follows that no association between the change in card payment due to the crisis and the respondent's place of residence is proven. If the test criterion χ^2 of 0.497 is compared, which is less than the critical value χ^2 of 5.991 at the 5 % significance level, the result is the same and the null hypothesis H_0 is not rejected. There is no need to test the strength of dependence.

Table 41 Testing of hypothesis 1 by Pearson's Chi-Square Test

| Pearson's Chi-Square Test | |
|-----------------------------------|-------------|
| Testing criterion | 0.497 |
| Degrees of freedom | 2 |
| Critical value $\chi^2_{0,95}(2)$ | 5.991 |
| p value | 0.779887416 |

Source: own work

The result corresponds to the previous findings of the McNemar-Bowker test. In both regions there is the same change regarding more frequent card payments regardless of place of residence.

If the Fisher Factorial Test is used instead of the Chi-square Test of Independence, where the condition for expected frequencies is not necessary, the p value would be 0.8227. The conclusion would therefore be the same and basically the "break" of the size of the expected frequency in 2 cells has almost no effect on the resulting p-value.

No residual has an absolute value greater than 1.96, which corresponds to the previous finding about the independence of quantities according to table No. 42.

Table 42 Adjusted residuals for hypothesis 1

| Adjusted residuals | | | |
|--|--------------|--------------|--------------|
| Place of residence\Change of behaviour | Negative | No change | Positive |
| Prague Region | 0.146882367 | -0.701222770 | 0.683361850 |
| Ústí nad Labem Region | -0.146882367 | 0.701222770 | -0.683361850 |

Source: own work

Hypothesis 2

Human thinking and gender thinking might be different in certain occasions. A period of crisis tends to be a darker period that sometimes makes people think more about certain things. Fortunately, today's age pays attention to health, healthy food, a clean environment, and animal welfare. The EU itself has several initiatives such as Farm to Fork or the European Green Deal.

This hypothesis assumes that the crisis will make people of the opposite gender think alike, and one gender will not value the way food is produced less.

Hypothesis No. 2

The change in thinking about food production methods does not depend on gender.

McNemar-Bowker Test

Men

According to the pivot table No. 43, those levels where no change happen in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of men, 173 of them did not change their behaviour, so the total number of respondents is reduced to 49.

For example, 11 men answered "No" before the crisis and currently "Yes". Basically, there is a change in more respondents towards thinking about food production for all possible pairs describing some change than the opposite change.

Table 43 Changes due to crisis for hypothesis 2 – Men

| Men | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|-----------|----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 20 | 0 | 0 | 0 | 20 |
| | Rather yes | 1 | 20 | 4 | 0 | 25 |
| | Rather no | 6 | 13 | 64 | 3 | 86 |
| | No | 11 | 2 | 9 | 69 | 91 |
| | Total | 38 | 32 | 64 | 66 | 222 |

Source: own work

Hypothesis

- H_0 : There is no change for men thinking about food production methods due to the crisis
- H_a : There is a change for men thinking about food production methods due to the crisis

Calculation of the Test Criterion

Table 44 Calculation of the Test Criterion for hypothesis 2 – Men

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 1 | 0 | 1.000 |
| Rather no versus yes | 6 | 0 | 6.000 |
| No versus yes | 11 | 0 | 11.000 |
| Rather no versus rather yes | 13 | 4 | 4.765 |
| No versus rather yes | 2 | 0 | 2.000 |
| No versus rather no | 9 | 3 | 3.000 |
| Total | | | 27.765 |

Source: own work

Testing

According to the test, the p value 0.000104036 is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. According to the test criterion B of 27.765, which is greater than the critical value χ^2 of 12.592 at the significance level of 5 %, the null hypothesis H_0 is also rejected. Thus, there is a change in men's thinking about food production in the crisis.

Table 45 Testing of hypothesis 2 by McNemar-Bowker Test – Men

| McNemar-Bowker Test | |
|-----------------------------------|-------------|
| Testing criterion B | 27.765 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 0.000104036 |

Source: own work

McNemar-Bowker Test

Women

According to the pivot table No. 46, those levels where is no change in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of women, 271 of them did not change their opinion, the total number of respondents is reduced to 53.

According to table No. it can be commented that, for example, 16 women were not thinking about the method of food production so much before the crisis ("Rather no"), and nowadays, they began thinking about it more according to the answer "Rather yes". It can be said that there is rather a positive change towards greater thinking for the majority of possible pairs describing some change.

Table 46 Changes due to crisis for hypothesis 2 – Women

| Women | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|------------------|----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 58 | 7 | Source: own work | | 66 |
| | Rather yes | 9 | 61 | 5 | 0 | 75 |
| | Rather no | 2 | 16 | 86 | 3 | 107 |
| | No | 2 | 0 | 8 | 66 | 76 |
| | Total | 71 | 84 | 100 | 69 | 324 |

Source: own work

Hypothesis

- H_0 : There is no change for women thinking about food production methods due to the crisis
- H_a : There is a change for women thinking about food production methods due to the crisis

Calculation of the Test Criterion

The result of the test may not be completely valid because there are no changes in one pair. The minimum values of the sum $n_{ij}+n_{ji}$ are not met.

Table 47 Calculation of the Test Criterion for hypothesis 2 – Women

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 9 | 7 | 0.250 |
| Rather no versus yes | 2 | 1 | 0.333 |
| No versus yes | 2 | 0 | 2.000 |
| Rather no versus rather yes | 16 | 5 | 5.762 |
| No versus rather yes | 0 | 0 | x |
| No versus rather no | 8 | 3 | 2.273 |
| Total | | | 10.618 |

Source: own work

Testing

In the case of the McNemar-Bowker Test for the calculation of women, the p value of 0.059503 is greater than the significance level $\alpha=0.05$, so the null hypothesis H_0 is not rejected. The test criterion B of 10.618 is less than the critical value χ^2 of 11.070 at the 5 % significance level and the result is the same. The null hypothesis H_0 is not rejected. Therefore, there is no change in women's thinking about how food is produced. The result may not be completely valid due to failure to meet the conditions for calculating the test.

Table 48 Testing of hypothesis 2 by McNemar-Bowker Test – Women

| McNemar-Bowker Test | |
|---|----------|
| Testing criterion B | 10.618 |
| Degrees of freedom | 5 |
| Critical value $\chi^2_{0,95}(5)$ | 11.070 |
| p value | 0.059503 |

Source: own work

There might be a difference in gender. There is probably no change of opinion among women, but the result may not be completely valid. It can be concluded that the change in consumer behaviour depend on the gender of the respondent. The result is found by the following Chi-Square Test of Independence.

Chi-Square Test of Independence

Hypothesis

- H_0 : There is no statistically significant relationship between gender and behavioral change in thinking about food production before and during the crisis
- H_a : There is a statistically significant relationship between gender and behavioral change in thinking about food production before and during the crisis

A new variable is created to express the change in the respondents' behaviour. Subsequently, it is determined using the χ^2 test for this variable whether there is an association between this change in behaviour and gender.

The new variable indicates the change as follows:

- negative, i.e. they think less about the way food is produced than before the crisis
- positive, i.e. they think more about the way food is produced than before the crisis
- none, i.e. their answer either does not change at all, or only slightly from “Rather yes” to “Yes” or from “Rather no” to “No” and vice versa

Table 49 Observed frequencies for hypothesis 2

| Observed frequencies n_{ij} | | | | |
|---|-----------------|------------------|-----------------|--------------|
| Gender\Change of behaviour | Negative | No change | Positive | Total |
| Men | 4 | 186 | 32 | 222 |
| Women | 6 | 298 | 20 | 324 |
| Total | 10 | 484 | 52 | 546 |

Source: own work

According to the percentage distribution of frequencies in the table No. 50, it can be seen that the negative change occurs only in less than 2 % of men and women. There is no change for the majority of respondents, namely 83.8 % of men and 92 % of women. A positive change occurs in 14.4 % of men and only 6.2 % of women. So men started thinking about the way food is produced more than women.

Table 50 % distribution of observed frequencies for hypothesis 2

| % distribution of observed frequencies n_{ij} | | | | |
|---|-----------------|------------------|-----------------|--------------|
| Gender\Change of behaviour | Negative | No change | Positive | Total |
| Men | 1.8 % | 83.8 % | 14.4 % | 100.0 % |
| Women | 1.9 % | 92.0 % | 6.2 % | 100.0 % |

Source: own work

Table 51 Expected frequencies for hypothesis 2

| Expected frequencies o_{ij} | | | | |
|-------------------------------|----------|-----------|----------|-------|
| Gender\Change of behaviour | Negative | No change | Positive | Total |
| Men | 4.06593 | 196.791 | 21.1429 | 222 |
| Women | 5.93407 | 287.209 | 30.8571 | 324 |
| Total | 10 | 484 | 52 | 546 |

Source: own work

Testing

The test shows that the p value of 0.006 is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. It follows that the dependence between the change of opinion due to the crisis and the gender of the respondents is proven. According to Cramer's coefficient of 0.138, it is a weak dependence. If the test criterion χ^2 of 10.394 is compared, which is greater than the critical value χ^2 of 5.991 at the 5 % significance level, the result is the same and the null hypothesis H_0 is rejected. It can be said that the change in consumer behaviour related to thinking about the way in which food is produced depends on the gender of consumers.

Table 52 Testing of hypothesis 2 by Pearson's Chi-Square Test

| Pearson's Chi-Square Test | |
|-----------------------------------|--------|
| Testing criterion χ^2 | 10.394 |
| Degrees of freedom | 2 |
| Critical value $\chi^2_{0,95}(2)$ | 5.991 |
| p value | 0.006 |
| Cramer's V | 0.138 |

Source: own work

The values of the adjusted residuals, which become significant from 1.96 at the 5 % significance level, also correspond to this. These values can be found in the "none" and "positive" categories according to table No. 53.

Table 53 Adjusted residuals for hypothesis 2

| Adjusted residuals | | | |
|----------------------------|-----------|-----------|-----------|
| Gender\Change of behaviour | Negative | No change | Positive |
| Men | -0.042842 | -2.963409 | 3.222481 |
| Women | 0.042842 | 2.963409 | -3.222481 |

Source: own work

Hypothesis 3

This hypothesis is based on several assumptions that are related to the change in conditions that occurred during the crisis period. The COVID-19 pandemic brought with it not only the threat of infection, fear, but also subsequently quarantine restriction for preventive reasons. With this restriction, food could be pre-stocked in case people were stuck in their homes or ran into supply problems in stores. Stockpile food may also be related to a change in purchasing less often, buying non-perishable food and losing a job. During the pandemic, some merchants tried to prevent extreme purchases by restricting the weight limit for the entire purchase, this mainly concerned e-shops. As well as the number of items of a certain type of food per purchase was restricted by some merchants (Košík.cz, 2015-2022). Since the end of the pandemic with the onset of the energy crisis, high inflation, the prices of all food have begun to rise rapidly in the Czech Republic. Under this condition, it can be assumed that consumers will stock up in advance due to fears of further price increases and financial shortages. Having enough food in the home can also bring a greater sense of security or safety.

Changing behaviour based on gender follows chapter 3.2.7 *Gender Differences in Consumer Purchase Decision Making* in the theoretical part. Men's and women's mindsets are often different, and this hypothesis tries to find out whether there are stockpile food purchases due to the crisis and whether women and men think differently in this aspect.

Hypothesis No. 3

The change in consumer behaviour related to stockpile food purchasing does not depend on gender.

McNemar-Bowker Test

Men

According to the pivot table No. 54, those levels where no change happen in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of men, 80 of them did not change their behaviour, the total number of respondents is reduced to 142.

33 men answered "Rather yes" before the crisis and "Yes" at present, and only 1 man had the opposite change in answer. Basically, more respondents changed towards stockpile food purchases for all possible pairs describing some change than the opposite change.

Table 54 Changes due to crisis for hypothesis 3 – Men

| Men | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|-----------|-----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 9 | 1 | 2 | 1 | 13 |
| | Rather yes | 33 | 13 | 5 | 1 | 52 |
| | Rather no | 34 | 36 | 28 | 4 | 102 |
| | No | 4 | 9 | 12 | 30 | 55 |
| Total | 80 | 59 | 47 | 36 | 222 | |

Source: own work

Hypothesis

- H_0 : There is no change for men in stockpile food purchasing due to the crisis
- H_a : There is a change for men in stockpile food purchasing due to the crisis

Calculation of the Test Criterion

Table 55 Calculation of the Test Criterion for hypothesis 3 – Men

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 33 | 1 | 30.118 |
| Rather no versus yes | 34 | 2 | 28.444 |
| No versus yes | 4 | 1 | 1.800 |
| Rather no versus rather yes | 36 | 5 | 23.439 |
| No versus rather yes | 9 | 1 | 6.400 |
| No versus rather no | 12 | 4 | 4.000 |
| Total | | | 94.201 |

Source: own work

Testing

According to the test, the p value $4.055 \cdot 10^{-18}$ is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. According to the test criterion B of 94.201, which is greater than the critical value χ^2 of 12.592 at the significance level of 5 %, the null hypothesis H_0 is rejected as well. So, there is a change for men in buying stockpile food.

Table 56 Testing of hypothesis 3 by McNemar-Bowker Test – Men

| McNemar-Bowker Test | |
|---|-------------|
| Testing criterion B | 94.201 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 4.05458E-18 |

Source: own work

McNemar-Bowker Test

Women

According to the pivot table No. 57, those levels where is no change in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of women, 161 of them did not change their behaviour, the total number of respondents is reduced to 163.

38 women answered "Rather yes" before the crisis and "Yes" at present, and only 2 women had the opposite change of answer. Basically, more respondents changed towards stockpile food purchases for all possible pairs describing some change than the opposite change.

Table 57 Changes due to crisis for hypothesis 3 – Women

| Women | | Current crisis | | | | |
|-----------------------------------|------------------------------|-----------------------|-------------------|------------------|-----------|--------------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 28 | 2 | 1 | 3 | 34 |
| | Rather yes | 38 | 34 | 10 | 0 | 82 |
| | Rather no | 25 | 42 | 58 | 1 | 126 |
| | No | 3 | 11 | 27 | 41 | 82 |
| | Total | 94 | 89 | 96 | 45 | 324 |

Source: own work

Hypothesis

- H_0 : There is no change for women in stockpile food purchasing due to the crisis
- H_a : There is a change for women in stockpile food purchasing due to the crisis

Calculation of the Test Criterion

Table 58 Calculation of the Test Criterion for hypothesis 3 – Women

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|------------------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 38 | 2 | 32.400 |
| Rather no versus yes | 25 | 1 | 22.154 |
| No versus yes | 3 | 3 | 0.000 |
| Rather no versus rather yes | 42 | 10 | 19.692 |
| No versus rather yes | 11 | 0 | 11.000 |
| No versus rather no | 27 | 1 | 24.143 |
| Total | | | 109.389 |

Source: own work

Testing

In the case of the McNemar-Bowker Test, the p value of $2.737 \cdot 10^{-21}$ is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected for the calculation of women. The test criterion B of 109.389 is greater than the critical χ^2 value of 12.592 at the 5 % significance level and the result is the same. The null hypothesis H_0 is rejected. So, there is a change for women in buying stockpile food.

Table 59 Testing of hypothesis 3 by McNemar-Bowker Test – Women

| McNemar-Bowker Test | |
|---|-------------|
| Testing criterion B | 109.389 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 2.73661E-21 |

Source: own work

Thus, a change is proven in both genders. Respondents started buying more stockpile food during the crisis than before the crisis. It can be concluded that the change in consumer behaviour does not depend on the gender of the respondent. The result is found by the following Chi-Square Test of Independence.

Chi-Square Test of Independence

Hypothesis

- H_0 : There is no statistically significant relationship between gender and change in stockpile food purchasing behaviour before and during the crisis
- H_a : There is statistically significant relationship between gender and change in stockpile food purchasing behaviour before and during the crisis

A new variable is created to express the change in the respondents' behaviour. Subsequently, it is determined using the χ^2 test for this variable whether there is an association between this change in behaviour and gender.

The new variable indicates the change as follows:

- negative, i.e. they purchase less stockpile food than before the crisis
- positive, i.e. they purchase more stockpile food than before the crisis
- none, i.e. their answer either does not change at all, or only slightly from “Rather yes” to “Yes” or from “Rather no” to “No” and vice versa

Table 60 Observed frequencies for hypothesis 3

| Observed frequencies n_{ij} | | | | |
|-------------------------------|----------|-----------|----------|-------|
| Gender\Change of behaviour | Negative | No change | Positive | Total |
| Men | 9 | 130 | 83 | 222 |
| Women | 14 | 229 | 81 | 324 |
| Total | 23 | 359 | 164 | 546 |

Source: own work

According to the percentage distribution of frequencies in table No. 61, it can be seen that a negative change occurs in approximately 4 % of both men and women, but no change occurs in 58.6 % of men and 70.7 % of women, while a positive change occurs in 37.4 % of men and 25 % of women. Apparently, men started purchasing stockpile food more than women.

Table 61 % distribution of observed frequencies for hypothesis 3

| % distribution of observed frequencies n_{ij} | | | | |
|---|----------|-----------|----------|---------|
| Gender\Change of behaviour | Negative | No change | Positive | Total |
| Men | 4.1 % | 58.6 % | 37.4 % | 100.0 % |
| Women | 4.3 % | 70.7 % | 25.0 % | 100.0 % |

Source: own work

Table 62 Expected frequencies for hypothesis 3

| Expected frequencies o_{ij} | | | | |
|-------------------------------|----------|-----------|----------|-------|
| Gender\Change of behaviour | Negative | No change | Positive | Total |
| Men | 9.35164 | 145.96703 | 66.68131 | 222 |
| Women | 13.64835 | 213.03296 | 97.31868 | 324 |
| Total | 23 | 359 | 164 | 546 |

Source: own work

Testing

The test shows that the p value of 0.0078 is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. It follows that an association between the change in buying stockpile food and the gender of the respondent is proven due to the crisis. According to Cramer's coefficient of 0.133, it is a weak dependence. If the test criterion χ^2 of 9.696 is compared, which is greater than the critical value χ^2 of 5.991 at the 5 % significance level, the result is the same and the null hypothesis H_0 is rejected.

Table 63 Testing of hypothesis 3 by Pearson's Chi-Square Test

| Pearson's Chi-Square Test | |
|-----------------------------------|-------------|
| Testing criterion χ^2 | 9.696 |
| Degrees of freedom | 2 |
| Critical value $\chi^2_{0,95}(2)$ | 5.991 |
| p value | 0.007845595 |
| Cramer's V | 0.133257345 |

Source: own work

The values of the adjusted residuals also correspond to this. These values can be found in the "none" and "positive" categories according to table No. 64.

Table 64 Adjusted residuals for hypothesis 3

| Adjusted residuals | | | |
|-----------------------------------|-----------------|------------------|-----------------|
| Gender\Change of behaviour | Negative | No change | Positive |
| Men | -0.153 | -2.932 | 3.101 |
| Women | 0.153 | 2.932 | -3.101 |

Source: own work

Hypothesis 4

Human thinking changes with age and many aspects play a role here. Behind the increase in popularity of online shopping is the general tendency to surf on the Internet in recent years. It is a more convenient, easier and time-saving purchase. Thanks to the crisis, online e-shops in the field of food and other goods have experienced a significant expansion in the last two years. Many stores have expanded into e-commerce and significantly improved their services. The pandemic has brought restrictions on the movement of consumers and fear of contagion. Nowadays, the industry is affected by the current price pressure caused by inflation and energy costs.

This hypothesis assumes that, despite the increased popularity of online shopping in recent years, certain age categories have become more inclined to online purchasing during the crisis.

Hypothesis No. 4

The change in the way of purchasing food in relation to online purchasing does not depend on age.

McNemar-Bowker Test

Age category 18-25

According to the pivot table No. 65, just 18 respondents in the age 18-25 are included in the subsequent calculation due to their change of opinion.

Table 65 Changes due to crisis for hypothesis 4 – age 18-25

| Age 18-25 | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|-----------|----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 0 | 0 | 0 | 1 | 1 |
| | Rather yes | 0 | 1 | 3 | 0 | 4 |
| | Rather no | 1 | 2 | 9 | 0 | 12 |
| | No | 3 | 2 | 6 | 34 | 45 |
| | Total | 4 | 5 | 18 | 35 | 62 |

Source: own work

Hypothesis

- H_0 : There is no change in online purchasing among respondents in the age 18-25 due to the crisis
- H_a : There is change in online purchasing among respondents in the age 18-25 due to the crisis

Calculation of the Test Criterion

The result of the test may not be completely correct, because only a smaller number of individuals in this age category have changed their behaviour in online purchasing. The minimum values of the sum $n_{ij}+n_{ji}$ are not met.

Table 66 Calculation of the Test Criterion for hypothesis 4 – age 18-25

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|------------------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 0 | 0 | x |
| Rather no versus yes | 1 | 0 | 1.000 |
| No versus yes | 3 | 1 | 1.000 |
| Rather no versus rather yes | 2 | 3 | 0.200 |
| No versus rather yes | 2 | 0 | 2.000 |
| No versus rather no | 6 | 0 | 6.000 |
| Total | | | 10.200 |

Source: own work

The test shows that the p value of 0.06976 is greater than the significance level $\alpha=0.05$, so the null hypothesis H_0 is not rejected. The test criterion B of 10.200 is less than the critical value χ^2 of 11.070 at the 5 % significance level. Therefore, the result is the

same, the null hypothesis H_0 is not rejected as well. There is rather no change in online purchasing for respondents aged 18-25.

Table 67 Testing of hypothesis 4 by McNemar-Bowker Test – age 18-25

| McNemar-Bowker Test | |
|---|---------|
| Testing criterion χ^2 | 10.200 |
| Degrees of freedom | 5 |
| Critical value $\chi^2_{0,95}(5)$ | 11.070 |
| p value | 0.06976 |

Source: own work

McNemar-Bowker Test

Age category 26-35

According to the pivot table No. 68, just 55 respondents in the age 26-35 are included in the subsequent calculation due to their change of behaviour.

As well as for almost all possible pairs describing some change, a greater number of respondents change behaviour towards online purchasing than the opposite.

Table 68 Changes due to crisis for hypothesis 4 – age 26-35

| Age 26-35 | | Current crisis | | | | |
|-------------------|-----------------------------------|-----------------------|-------------------|------------------|-----------|--------------|
| | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Before crisis (until 2020) | Yes | 11 | 3 | 0 | 0 |
| Rather yes | | 4 | 8 | 7 | 2 | 21 |
| Rather no | | 4 | 7 | 16 | 4 | 31 |
| No | | 7 | 2 | 15 | 57 | 81 |
| Total | | | 26 | 20 | 38 | 63 |

Source: own work

Hypothesis

- H_0 : There is no change in online purchasing among respondents in the age 26-35 due to the crisis
- H_a : There is change in online purchasing among respondents in the age 26-35 due to the crisis

Calculation of the Test Criterion

Table 69 Calculation of the Test Criterion for hypothesis 4 – age 26-35

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 4 | 3 | 0.143 |
| Rather no versus yes | 4 | 0 | 4.000 |
| No versus yes | 7 | 0 | 7.000 |
| Rather no versus rather yes | 7 | 7 | 0.000 |
| No versus rather yes | 2 | 2 | 0.000 |
| No versus rather no | 15 | 4 | 6.368 |
| Total | | | 17.511 |

Source: own work

Testing

In this case, the p value of 0.0076 is less than the significance level $\alpha=0.05$, the null hypothesis H_0 is rejected. The test criterion B of 17.511 is greater than the critical χ^2 value of 12.592 at the 5 % significance level. The null hypothesis H^0 is rejected. So, there is a change in internet purchasing among respondents aged 26-35.

Table 70 Testing of hypothesis 4 by McNemar-Bowker Test – age 26-35

| McNemar-Bowker Test | |
|-----------------------------------|--------|
| Testing criterion B | 17.511 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 0.0076 |

Source: own work

McNemar-Bowker Test

Age category 36-45

According to the pivot table No. 71, 37 respondents in the age 36-45 are included in the subsequent calculation due to their change of answer.

Table 71 Changes due to crisis for hypothesis 4 – age 36-45

| Age 36-45 | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|-----------|----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 7 | 1 | 0 | 2 | 10 |
| | Rather yes | 1 | 6 | 9 | 2 | 18 |
| | Rather no | 1 | 9 | 10 | 1 | 21 |
| | No | 3 | 0 | 8 | 39 | 50 |
| | Total | 12 | 16 | 27 | 44 | 99 |

Source: own work

Hypothesis

- H_0 : There is no change in online purchasing among respondents in the age 36-45 due to the crisis
- H_a : There is change in online purchasing among respondents in the age 36-45 due to the crisis

Calculation of the Test Criterion

Table 72 Calculation of the Test Criterion for hypothesis 4 – age 36-45

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 1 | 1 | 0.000 |
| Rather no versus yes | 1 | 0 | 1.000 |
| No versus yes | 3 | 2 | 0.200 |
| Rather no versus rather yes | 9 | 9 | 0.000 |
| No versus rather yes | 0 | 2 | 2.000 |
| No versus rather no | 8 | 1 | 5.444 |
| Total | | | 8.644 |

Source: own work

Testing

The test shows that the p value of 0.1946 is greater than the significance level $\alpha=0.05$, the null hypothesis H_0 is not rejected. The test criterion B of 8.644 is less than the critical value χ^2 of 12.592 at the 5 % significance level. The null hypothesis H_0 is not rejected. Therefore, there is no change in internet purchasing among respondents aged 36-45.

Table 73 Testing of hypothesis 4 by McNemar-Bowker Test – age 36-45

| McNemar-Bowker Test | |
|---|--------|
| Testing criterion B | 8.644 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 0.1946 |

Source: own work

Age category 46-55

According to the pivot table No. 74, those levels where no change is in consumer behaviour before and during the crisis, are excluded from the subsequent calculation. In case of the age category 46-55, 59 respondents did not change their behaviour, so the total number of respondents is reduced to 20.

Table 74 Changes due to crisis for hypothesis 4 – age 46-55

| Age 46-55 | | Current crisis | | | | |
|-----------------------------------|------------------------------|-----------------------|-------------------|------------------|-----------|--------------|
| | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| Before crisis (until 2020) | Yes | 2 | 0 | 0 | 0 | 2 |
| | Rather yes | 2 | 1 | 1 | 1 | 5 |
| | Rather no | 5 | 2 | 10 | 1 | 18 |
| | No | 2 | 1 | 5 | 46 | 54 |
| | Total | 11 | 4 | 16 | 48 | 79 |

Source: own work

Hypothesis

- H_0 : There is no change in online purchasing among respondents in the age 46-55 due to the crisis
- H_a : There is change in online purchasing among respondents in the age 46-55 due to the crisis

Calculation of the Test Criterion

Table 75 Calculation of the Test Criterion for hypothesis 4 – age 46-55

| Possible pairs of levels | n _{ij} | n _{ji} | (n _{ij} -n _{ji}) ² /(n _{ij} +n _{ji}) |
|-----------------------------|-----------------|-----------------|---|
| Rather yes versus yes | 2 | 0 | 2.000 |
| Rather no versus yes | 5 | 0 | 5.000 |
| No versus yes | 2 | 0 | 2.000 |
| Rather no versus rather yes | 2 | 1 | 0.333 |
| No versus rather yes | 1 | 1 | 0.000 |
| No versus rather no | 5 | 1 | 2.667 |
| Total | | | 12.000 |

Source: own work

Testing

The test shows that the p value of 0.0620 is greater than the significance level $\alpha=0.05$, so the null hypothesis H_0 is not rejected. The test criterion B of 12.000 is slightly less than the critical value of χ^2 of 12.592 at the 5 % significance level. The null hypothesis H_0 is not rejected. There is probably no change in online purchasing for respondents aged 46-55.

Table 76 Testing of hypothesis 4 by McNemar-Bowker Test – age 45-55

| McNemar-Bowker Test | |
|-----------------------------------|--------|
| Testing criterion B | 12.000 |
| Degrees of freedom | 6 |
| Critical value $\chi^2_{0,95}(6)$ | 12.592 |
| p value | 0.0620 |

Source: own work

McNemar-Bowker Test

Age category 56-65

According to the pivot table No. 77, 10 respondents in the age 36-45 are included in the subsequent calculation due to their change of answer.

Table 77 Changes due to crisis for hypothesis 4 – age 56-65

| Age 56-65 | | Current crisis | | | | |
|----------------------------|-----------------------|----------------|------------|-----------|----|-------|
| Before crisis (until 2020) | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| | Yes | 1 | 0 | 0 | 1 | 2 |
| | Rather yes | 0 | 0 | 0 | 0 | 0 |
| | Rather no | 4 | 3 | 5 | 0 | 12 |
| | No | 0 | 0 | 2 | 50 | 52 |
| | Total | 5 | 3 | 7 | 51 | 66 |

Source: own work

Hypothesis

- H_0 : There is no change in online purchasing among respondents in the age 56-65 due to the crisis
- H_a : There is change in online purchasing among respondents in the age 56-65 due to the crisis

Calculation of the Test Criterion

The result of the test may not be completely correct, because only a small number of individuals in this age category have changed in online shopping. The minimum values of the sum $n_{ij}+n_{ji}$ are not met.

Table 78 Calculation of the Test Criterion for hypothesis 4 – age 56-65

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|-----------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 0 | 0 | x |
| Rather no versus yes | 4 | 0 | 4.000 |
| No versus yes | 0 | 1 | 1.000 |
| Rather no versus rather yes | 3 | 0 | 3.000 |
| No versus rather yes | 0 | 0 | x |
| No versus rather no | 2 | 0 | 2.000 |
| Total | | | 10.000 |

Source: own work

Testing

The test shows that the p value of 0.0404 is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. Test criterion B of 10.000 is greater than critical value χ^2 of 9.488 at the 5 % significance level. The null hypothesis H_0 is rejected. Respondents aged 56-65 experience a change in online purchasing.

Table 79 Testing of hypothesis 4 by McNemar-Bowker Test – age 56-65

| McNemar-Bowker Test | |
|---|--------|
| Testing criterion B | 10.000 |
| Degrees of freedom | 4 |
| Critical value $\chi^2_{0,95}(4)$ | 9.488 |
| p value | 0.0404 |

Source: own work

McNemar-Bowker Test

Age category 66+

According to the pivot table No. 80, just 5 respondents in the age 66+ are included in the subsequent calculation due to their change of opinion.

Table 80 Changes due to crisis for hypothesis 4 – 66+

| Age 66+ | | Current crisis | | | | |
|-----------------------------------|------------------------------|-----------------------|-------------------|------------------|-----------|--------------|
| | Number of respondents | Yes | Rather yes | Rather no | No | Total |
| Before crisis (until 2020) | Yes | 0 | 0 | 0 | 0 | 0 |
| | Rather yes | 1 | 0 | 0 | 0 | 1 |
| | Rather no | 0 | 1 | 1 | 0 | 2 |
| | No | 0 | 1 | 2 | 87 | 90 |
| | Total | 1 | 2 | 3 | 87 | 93 |

Source: own work

Hypothesis

- H_0 : There is no change in online purchasing among respondents in the age 66+ due to the crisis
- H_a : There is change in online purchasing among respondents in the age 66+ due to the crisis

Calculation of the Test Criterion

The test result may not be completely valid due to the low number of respondents in this age category who have changed their purchasing habits via the internet. The minimum values of the sum $n_{ij}+n_{ji}$ are not met.

Table 81 Calculation of the Test Criterion for hypothesis 4 – 66+

| Possible pairs of levels | n_{ij} | n_{ji} | $(n_{ij}-n_{ji})^2/(n_{ij}+n_{ji})$ |
|------------------------------------|----------|----------|-------------------------------------|
| Rather yes versus yes | 1 | 0 | 1.000 |
| Rather no versus yes | 0 | 0 | x |
| No versus yes | 0 | 0 | x |
| Rather no versus rather yes | 1 | 0 | 1.000 |
| No versus rather yes | 1 | 0 | 1.000 |
| No versus rather no | 2 | 0 | 2.000 |
| Total | | | 5.000 |

Source: own work

Testing

The test showed that the p value of 0.2873 is greater than the significance level $\alpha=0.05$, the null hypothesis H_0 is not rejected. The test criterion B of 5.000 is less than the critical value χ^2 of 9.488 at the 5 % significance level. The null hypothesis H_0 is not rejected. For respondents aged 66 and over, there probably is not change in online purchasing.

Table 82 Testing of hypothesis 4 by McNemar-Bowker Test – age 66+

| McNemar-Bowker Test | |
|---|--------|
| Testing criterion B | 5.000 |
| Degrees of freedom | 4 |
| Critical value $\chi^2_{0,95}(4)$ | 9.488 |
| p value | 0.2873 |

Source: own work

A change in online purchasing behaviour is proven only in the 26-35 and 56-65 age categories. For other age categories, it is not proven at all or due to the low number of respondents who experienced changes and the test result may not be valid.

Chi-Square Test of Independence

Hypothesis

- H_0 : There is no statistically significant relationship between the age and the change in online purchasing behaviour during the crisis
- H_a : There is a statistically significant relationship between the age and the change in online purchasing behaviour during the crisis

The newly created variable expresses the change in the respondents' behaviour:

- negative, i.e. they purchase less online than before the crisis
- positive, i.e. they purchase more online than before the crisis
- none, i.e. their answer either does not change at all, or only slightly from “Rather yes” to “Yes” or from “Rather no” to “No” and vice versa

Subsequently, it is determined using the χ^2 test for this variable whether there is an association between this change in behaviour and age.

Table 83 Observed frequencies for hypothesis 4

| Observed frequencies n_{ij} | | | | |
|-------------------------------|----------|-----------|----------|-------|
| Age\Change of behaviour | Negative | No change | Positive | Total |
| 18-25 | 4 | 50 | 8 | 62 |
| 26-35 | 9 | 118 | 20 | 147 |
| 36-45 | 13 | 73 | 13 | 99 |
| 46-55 | 2 | 67 | 10 | 79 |
| 56-65 | 1 | 58 | 7 | 66 |
| 66+ | 0 | 91 | 2 | 93 |
| Total | 29 | 457 | 60 | 546 |

Source: own work

According to the percentage distribution in table No. 84, it is observed that the variant without change is most often represented in all age categories, but it is "only" in 73.7 % in the 36-45 category while it is in almost 98 % in the 66+ category. In the 36-45 category, 13.1 % of respondents experience a negative change (i.e., they are purchasing online less than before the crisis), which is the largest representation of this negative change across all age categories. A positive change occurs in all individual age categories for 10-14 % of respondents, with the exception of the oldest respondents aged 66+, where it is only 2.2 %.

Table 84 % distribution of observed frequencies for hypothesis 4

| % distribution of observed frequencies n_{ij} | | | | |
|---|----------|-----------|----------|---------|
| Age\Change of behaviour | Negative | No change | Positive | Total |
| 18-25 | 6.5 % | 80.6 % | 12.9 % | 100.0 % |
| 26-35 | 6.1 % | 80.3 % | 13.6 % | 100.0 % |
| 36-45 | 13.1 % | 73.7 % | 13.1 % | 100.0 % |
| 46-55 | 2.5 % | 84.8 % | 12.7 % | 100.0 % |
| 56-65 | 1.5 % | 87.9 % | 10.6 % | 100.0 % |
| 66+ | 0.0 % | 97.8 % | 2.2 % | 100.0 % |

Source: own work

Table 85 Expected frequencies for hypothesis 4

| Expected frequencies o_{ij} | | | | |
|-------------------------------|----------|-----------|----------|-------|
| Age\Change of behaviour | Negative | No change | Positive | Total |
| 18-25 | 3.293 | 51.894 | 6.813 | 62 |
| 26-35 | 7.808 | 123.038 | 16.154 | 147 |
| 36-45 | 5.258 | 82.863 | 10.879 | 99 |
| 46-55 | 4.196 | 66.123 | 8.681 | 79 |
| 56-65 | 3.505 | 55.542 | 7.253 | 66 |
| 66+ | 4.940 | 77.841 | 10.220 | 93 |
| Total | 29 | 457 | 60 | 546 |

Source: own work

Testing

The test shows that the p value of 0.00043379 is less than the significance level $\alpha=0.05$, so the null hypothesis H_0 is rejected. It follows that there is a relationship between the change in online grocery purchasing behaviour due to the crisis and the age of the respondents. According to Cramer's coefficient of 0.171, it is a weak dependence. If the test criterion χ^2 31.791 is compared, which is greater than the critical value χ^2 of 18.307 at the 5 % significance level, the result is the same and the null hypothesis H_0 is rejected.

Table 86 Testing of hypothesis 4 by Pearson's Chi-Square Test

| Pearson's Chi-Square Test | |
|------------------------------------|------------|
| Testing criterion χ^2 | 31.791 |
| Degrees of freedom | 10 |
| Critical value $\chi^2_{0,95}(10)$ | 18.307 |
| p value | 0.00043379 |
| Cramer's V | 0.171 |

Source: own work

It is precisely for these 2 categories according to table No. 87 that significant values of adjusted residuals also arise. It can be said that these two age categories cause the dependence of the behavioural change in online shopping and age.

Table 87 Adjusted residuals for hypothesis 4

| Adjusted residuals | | | |
|-------------------------|----------|-----------|----------|
| Age\Change of behaviour | Negative | No change | Positive |
| 18-25 | 0.425 | -0.692 | 0.512 |
| 26-35 | 0.513 | -1.316 | 1.187 |
| 36-45 | 3.835 | -2.966 | 0.753 |
| 46-55 | -1.191 | 0.289 | 0.513 |
| 56-65 | -1.467 | 0.980 | -0,106 |
| 66+ | -2.508 | 4.056 | -2.992 |

Source: own work

Hypothesis 5

Finances are generally one of the most important influences when making a purchase. Many other aspects depend on price. Consumers depend on it. Price is one of the marketing tools.

In times of crisis, price tends to be particularly important, rising faster than consumer salaries. The coronavirus crisis has brought a big uncertainty, many people lost their jobs, producers had to cut back on production because of disease or quarantine restrictions, and individual links in production had outages. The closure of the hospitality and tourism sectors meant that many supplies were lost, and surpluses were created. With the onset of the energy crisis, prices rose rapidly due to fears of a lack of supply from two global giants such as Russia and Ukraine in commodities such as wheat, maize, vegetable oils and fertilisers. Similarly, energy and fuel prices have driven up the huge cost of production, forcing some companies to either cut back or stop production. The situation is particularly critical in the production of fertilisers on the European market on which production of food and its price depend on. Unless this uncertainty abates, the trend of increasing emphasis on price is likely to intensify.

Prague as the capital city has the best economic situation, with a GDP per capita higher than the rest of the country. It is also home to many domestic and multinational companies and many people commute to work there. Prague is characterised by a high proportion of people with a university degree compared to other regions. People have higher salaries and can invest more in their health and lifestyle. The opposite of Prague is Ústí nad Labem partly, which has a poor education and high unemployment rate. GDP per

capita is the lowest in the Czech Republic. However, one of the advantages is cheap housing. The region was a source of raw materials for the whole republic and was long neglected in the past. It has long been poor in tax budgeting and cannot develop as much (Dlouhý, 2021; Hlaváček, 2016).

Based on these findings, one might expect that the price of food as a basis for living is less important in a crisis for residents of Prague than for residents of the Ústí region, which is poorer.

In the last hypothesis, the McNemar-Bowker test is not used, since the question in the survey directly inquired about the given change, whether the price is more important for the respondents or not during the crisis. Therefore, there is no need to find out whether the change itself has occurred, but only the dependence on the place of residence of the respondents.

Hypothesis No. 5:

Change in the importance of price does not depend on place of residence.

Chi-Square Test of Independence

Hypothesis

- H_0 : There is no statistically significant relationship between the importance of the price during the current crisis compared to the time before it and the respondents' place of residence
- H_a : There is no statistically significant relationship between the importance of the price during the current crisis compared to the time before it and the respondents' place of residence

Table 88 Observed frequencies for hypothesis 5

| Observed frequencies n_{ij} | | | | | |
|---|------------|-------------------|------------------|-----------|--------------|
| Place of residence \ Price is more important | Yes | Rather yes | Rather no | No | Total |
| Prague Region | 172 | 78 | 18 | 29 | 297 |
| Ústí nad Labem Region | 152 | 56 | 23 | 18 | 249 |
| Total | 324 | 134 | 41 | 47 | 546 |

Source: own work

According to the percentage distribution in table No. 89 the answer “Yes” is most often represented in both regions (57.9 % in the Prague Region and 61 % in the Ústí nad Labem Region). It is followed by the option “Rather yes” (26.3 % vs 22.5 %)., The least likely to choose the answer is “No” (6.1 %) among respondents from Prague and the least respondents choose the answer “No” (7.2 %) from the Ústí nad Labem Region. However, these differences are not statistically significant.

Table 89 % distribution of observed frequencies for hypothesis 5

| % distribution of observed frequencies n_{ij} | | | | | |
|---|------------|-------------------|------------------|-----------|--------------|
| Place of residence\Price is more important | Yes | Rather yes | Rather no | No | Total |
| Prague Region | 57.9 % | 26.3 % | 6.1 % | 9.8 % | 100 % |
| Ústí nad Labem Region | 61.0 % | 22.5 % | 9.2 % | 7.2 % | 100 % |

Source: own work

Table 90 Expected frequencies for hypothesis 5

| Expected frequencies o_{ij} | | | | | |
|---|------------|-------------------|------------------|-----------|--------------|
| Place of residence\Price is more important | Yes | Rather yes | Rather no | No | Total |
| Prague Region | 176.24176 | 72.89011 | 22.30219 | 25.56593 | 297 |
| Ústí nad Labem Region | 147.75824 | 61.10989 | 18.69780 | 21.43407 | 249 |
| Total | 324 | 134 | 41 | 47 | 546 |

Source: own work

Testing

The test shows that the p value of 0.279 is greater than the significance level $\alpha=0.05$, so the null hypothesis H_0 is not rejected. It follows that there is no evidence of an association between the greater importance of the price at present compared to the time before the crisis and the respondent's place of residence. The price is more important for most respondents in times of crisis and does not depend on the region in which they live. If the test criterion χ^2 of 3.841 is compared, which is less than the critical value χ^2 of 7.815 at the 5 % significance level, the result is the same and the null hypothesis H_0 is not rejected.

Table 91 Testing of hypothesis 5 by Pearson's Chi-Square Test

| Pearson's Chi-Square Test | |
|-----------------------------------|-------------|
| Testing criterion χ^2 | 3.840634643 |
| Degrees of freedom | 3 |
| Critical value $\chi^2_{0,95}(3)$ | 7.815 |
| p value | 0.279195 |

Source: own work

No residual has an absolute value greater than 1.96, which corresponds to the previous finding about the independence of quantities according to table No. 92.

Table 92 Adjusted residuals for hypothesis 5

| Adjusted residuals | | | | |
|--|------------|--------------|------------|------------|
| Place of residence\Price is more important | Yes | Rather yes | Rather no | No |
| Prague Region | -0.7420073 | 1.020285253 | -1.4026946 | 1.0520128 |
| Ústí nad Labem Region | 0.7420073 | -1.020285253 | 1.4026946 | -1.0520128 |

Source: own work

5 Results and Discussion

The COVID-19 crisis which is followed by the current crisis also called the energy crisis since February 2022, has overall affected the consumer behaviour when purchasing food, as could be expected. The survey consisted of various questions that tried to cover different aspects of consumer behaviour in order to achieve a comprehensive result of a change. For most of the questions asked, the respondents expressed a change in their behaviour, which clearly shows the impact of the crisis on consumers during food purchasing. The main factor that was part of the comparison was the region in which the respondents live. As it follows the quantitative survey, the difference between the regions was not too significant. For some of the questions asked, there was a bigger change in consumer behaviour in the Prague Region, for some ones the bigger change occurred in the Ústí nad Labem Region. However, changes in consumer behaviour when purchasing food were seen a little more in the Prague Region compared to the Ústí nad Labem Region during the crisis.

In the case of purchasing organic food, more than half of the respondents were not purchasing organic food from both regions before the crisis. In the Ústí nad Labem Region, there was less interest in organic food before the crisis than in the Prague Region, which can be justified by the purchasing power and education of the population and the fact that respondents from the countryside have their own home-grown products. During the crisis, there is a minor change in region. In contrast, the lack of interest in organic food has increased in Prague even more nowadays, which may result from the effort to reduce the financial budget intended for food purchases, which was proven by a survey by the company Edenred (2022).

It is also about thinking how food is produced. Most of the respondents were not thinking about it before the crisis, just as they are not thinking about it during the crisis. However, their number has even decreased but almost without difference between the regions. This question is also linked to the hypothesis where the gender association was tested. The hypothesis proved the given association. Men has begun thinking about the way food is produced more than women in times of the crisis.

The country of food origin was proved to be important in both regions and has become a little more important in times of crisis for both regions as well. A higher increase occurred in the Ústí nad Labem Region. Furthermore, it has become clear that Czech food

is still important for the majority of respondents and the economically worse period has no effect on the residents.

Supermarkets / hypermarkets were and still are the most frequent place of purchase and the most favourite place in both regions. In both cases, there was a similarly smaller decline, as the same time an increase in online shopping is indicated. Supermarkets are still the most favourite place to purchase, certainly because of the discounts that small merchants usually cannot provide.

Online purchasing is a method that is believed to have potential in times of crisis. According to the survey, there was only a small increase in its practice in both regions. As a result, the majority of residents were not purchasing and are not purchasing online, regardless of the region. In case of this survey, the respondents sample seems to be unconvincing, as online purchasing has experienced a significant expansion during the crisis, as for example one of the research projects of the company Profi Credit (2021) states. An age-related hypothesis was also created for this question. The hypothesis proved the association between the change in online purchasing due to the crisis and the age of the respondents. This was a weak strength of dependence, which was demonstrated in the 36-45 age category, which is purchasing online less in the current crisis, and the 66+ category, which is purchasing online very little.

Price plays one of the most important roles when purchasing food, and in times of the crisis it has a significant impact on most respondents. After testing the hypothesis, it became clear that despite the choice of regions - the richest and one of the poorest in the Czech Republic, the price is important regardless of the place of residence. Buying food at discounts is also related to the price, which has become even more used by the majority of respondents during the crisis. A greater increase was demonstrated in Prague. However, it was and is used more in the Ústí nad Labem Region. The use of loyalty programs and advantageous packaging was important to more than half of the respondents even before the crisis. Interest in them increased in both regions during the crisis, but the difference was much more significant in Prague. Due to the crisis, residents of both regions have begun purchasing from multiple sources and compare offers from different sellers. However, there is a difference between the regions, despite an almost equal increase in the crisis, in Prague, less than half of the respondents follow sellers' offers compared to the Ústí nad Labem Region nowadays, where more than half of the respondents buy from multiple sources, according to the most favourable offer. For a more systematic purchase

and an overview of the price, slightly more than half of the respondents started making a grocery list in advance. This is a similar increase for both regions. It can be said that residents of the Prague region were and still are more focused on making the grocery list compared to the residents of Ústí nad Labem Region.

Prague residents are purchasing at their discretion and taking the recommendations of others into the account less than in Ústí nad Labem. However, the increase was similar in both regions, even if it is talked about less than half of the respondents who demand the recommendation.

Hygiene became a topic during the crisis, which most respondents were not dealing with before the crisis. During the crisis due to concerns, there was a relatively large increase in both regions. In the case of taking care of hygiene at the point of purchase, there was a greater increase in Prague.

About half of the respondents are dealing with the packaging and appearance of food from both regions regardless the period of time. The change during the crisis is hardly evident. However, the brand of food is not important even for half of the respondents. In the Ústí nad Labem Region, respondents began taking the brand a little more seriously during the crisis.

The majority of the respondents has no problem with a quick decision making in both regions, as the survey has shown. However, It can be said that the people of Prague have started thinking more about the need to buy the given food, and a problem has arisen with quick decision-making more than in the Ústí nad Labem Region during the current crisis.

The survey showed that, the respondents began buying less food and rather the most necessary food in both regions during the crisis. There was a slightly more significant increase in the Ústí nad Labem Region.

More than half of the residents of Ústí nad Labem are spending less time food purchasing in the store during the crisis. In case of Prague less than half of respondents are spending less time with food purchasing in the store. The frequency of purchasing showed that residents of Ústí nad Labem Region are buying less often compared to Prague during the crisis. This situation can be explained by the longer distance of stores from the rural areas. One half Prague residents are buying less often.

The quality of food was and still is a stronger topic for the residents of Prague. However, a more significant change occurred for the residents of the Ústí nad Labem Region.

In the case of the distance to the store and the opening hours, the residents of both regions started dealing with is a big increase in both regions in time of the crisis. It can be said that the inhabitants of Prague were and are dealing with this more. Fuel prices certainly play an important role here.

When asked whether the number of members with whom residents are purchasing with has decreased during the crisis, the answer was no for both regions.

In the case of a change in payment method, card payment became even more popular during the crisis than it was before. Even so, the majority of residents of both regions preferred and still prefer to pay by card. The associated tested hypothesis confirmed that residents are paying more by card in times of crisis, regardless of the region they live in.

One of the factors that was verified in the survey was stockpile food purchase in households in times of the crisis which is logical. In both regions, there is a relatively large change, and the majority of the residents are buying stockpile food nowadays compared to the period before the crisis, when it was less than half of residents in both regions. A greater increase occurred in Prague. Stockpile purchases of food, however, remain somewhat more favourite in the Ústí nad Labem Region, just as they were before the crisis. This phenomenon is probably related to the searching discounts. The created hypothesis tested the association with stockpile food purchasing and gender. The association was proven and, as with the previous hypothesis, men began buying stockpile food more than women in the crisis.

6 Recommendations

According to the survey, it was proven that the residents are more interested in the country of food origin they buy and subsequently consume in times of the crisis than before it. The great interest of the majority of respondents in Czech, local food remains during the crisis, however, price is still one of the biggest factors influencing consumers. The Czech Republic as a country should advocate for a better economic situation for local farmers, so that Czech food can compete with food imported from abroad and have the opportunity to be properly represented in local stores, where residents make purchases most often and most like to, as the survey proved. Particular steps include sufficient financial support, available consulting assistance, proper education and information about new trends and the current market situation provided to the farmers. Another possibility is the controversial enforcement of a legislative proposal on the mandatory share of Czech food in local stores. Foreign and similar products to Czech ones, which are transported from long distances, often appear in the local stores, despite the fact that the Czech Republic, as well as the entire EU, is struggling with rising energy, fuel and food prices nowadays. The possibility of having most Czech food in stores could also support food self-sufficiency, which was proven to be particularly important in the COVID-19 pandemic after the closure of national borders. The second important aspect is marketing promotion for even greater support of Czech food. In my opinion, the existing awarded labels such as KLASA, Česká potravina and Regionální potravina are the proper tool for gaining the attention of residents, however, I currently see an opportunity to actively remind these labels within the available and most followed promotional means. Local production and its sale are also more environmentally friendly in terms of sustainability as well as one of the common goals of the EU countries is also to achieve sustainable food production with the lowest possible carbon footprint (e-AGRI, 2022).

On the contrary, organic food is not very favourite among consumers according to the results of the survey. Anyway, organic farming is a growing trend and is an important aspect from the point of view of a healthy environment nowadays. The current situation is particularly critical with the availability and prices of chemical fertilizers in the market that are not used in organic farming. Their production and costs are largely dependent on natural gas. In the Czech Republic, the price of nitrogen fertilizers has risen by 400-500 % year-on-year since the beginning of the Russian invasion of Ukraine. Nitrogenous fertilizers are imported into Europe from third countries, their origin is not completely

known and are sold at significantly lower prices than European ones. However, there is still a threat of an increase in food prices (e-AGRI, 2022). My recommendation is to support a greater promotion of organic food in the context of the crisis and ensuring their acceptable prices

The survey showed that consumers have significantly started purchasing stockpile food during the crisis. The subsequent hypothesis proved that men are the main actors who are supplying the household with more food. The fact that consumer prices have risen by more than a fifth over the last year plays a big role. As the survey proved, residents do not care much about the food quality. Additional research by Edenred (2022) showed that people are trying to save money on food and are buying cheaper and less healthy food, among other things. Food is often much industrially processed with a high content of salt, fat and sugar. If people want to buy stockpile food, they should buy, for example, canned meat or fish, dried fruit and vegetables, that means food containing a high amount of calories, proteins and vitamins. The companies producing durable and at the same time healthy food could use the opportunity of the crisis to promote stockpile food in the context of healthy food security in times of crisis. In terms of promotion, the influence of colours on individual genders could be used. Men are more attracted to bold and dark colours, while women are more attracted to pastel colours. Blue is the winning colour for both genders, but for example, purple is the most favourite colour for women, while men usually don't like it (Urban, 2018). So, it would be good to create such food packaging with colour attributes that would attract attention to women, that are purchasing stockpile food less.

7 Conclusion

The objective of the diploma thesis was to examine how the period of the COVID-19 pandemic, and the subsequent energy crisis associated with the war in Ukraine between 2020-2022 affected consumer behaviour while purchasing food and then compare differences depending on the region where the respondents live either in the Prague Region or in the Ústí nad Labem Region. Other factors such as gender and age were included in the established hypotheses that were tested. The survey was used to find out the necessary data. Subsequently, the individual answers were evaluated and displayed either graphically or tabularly.

It can be stated on the basis of the survey that the current crisis, defined since 2020, has affected consumer behaviour when purchasing food in selected regions. In addition, the majority of respondents stated based on the selected question that the crisis gives an impulse to change approaches or behaviour.

The difference between the residents of the Prague Region and the Ústí nad Labem Region is not too significant. For some of the questions asked, a greater change occurred among residents in the Prague Region, for other questions there was a greater change in consumer behaviour in the Ústí nad Labem Region. However, changes in consumer behaviour when purchasing food were more pronounced in Prague during the crisis compared to the Ústí nad Labem region during the crisis. It can be assumed that the change is caused by the fact that consumer behaviour was already influenced by lower living standards in the Ústí nad Labem Region before the crisis, and thus the impact of the crisis has not affected them as much so far. On the contrary, the residents of Prague did not have as much need to limit themselves before the crisis, and the current crisis has forced them to do so.

In both regions, overall, there was greater interest and an increase in the questions related to price, such as searching for food at discounts, loyalty programs and advantageous food packaging, comparing offers from different sellers and purchasing from multiple sources. A significant change was also seen with attention to hygiene, buying stockpile food, making a grocery list and the distance to the point of purchase and its opening hours. On the other hand, the change was not noticed too much in controlling the quality and content of food, thinking about the way food is produced, taking other people's recommendations into the account, purchasing food online, and paying attention to the

country of food origin. Contrary, the interest in the area of organic food and being able to make a quick decision which foods to purchase decreased.

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9.3 List of abbreviations

DPRK – Democratic People's Republic of Korea

e.g. – *exempli gratia* = for example

et al – *et alii* = and others

etc. – *et cetera* = and so on

EU – European Union

GDP – Gross domestic product

GMOs – Genetically modified organisms

i.e. – *id est* = *that is*

MS – Microsoft

NATO – North Atlantic Treaty Organization

SWIFT – Society for Worldwide Interbank Financial Telecommunication

UN – United Nations

US – United States

10 Appendix

Dotazník / Survey

Šetření změny spotřebitelského chování při nákupu potravin během krize



Dobrý den,

jmenuji se Adéla Hejnová, jsem studentkou Provozně ekonomické fakulty ČZU v Praze. Tímto bych Vás ráda požádala o vyplnění **anonymního** dotazníku, který je součástí diplomové práce. Šetření se zaměřuje na změnu chování při nákupu potravin obyvatel **Ústeckého kraje a Prahy** během krize Covidu 19 a následné energetické krize, která je spojená s válkou na Ukrajině 2022. Veškeré získané údaje budou použity pouze k výzkumným účelům. Přibližná doba vyplnění dotazníku je 7 minut. Vyplňují pouze obyvatelé starší 18 let.

Pokyny pro dotazatele: vybírejte pouze jednu odpověď. Otázky se dělí na období před krizí a na současné období krize počínající březnem 2020 - počátek pandemie Covid 19 v ČR, na které navázal vpád ruských vojsk na Ukrajinu v únoru 2022.

Nebojte se délky dotazníku, u 80 % otázek je rozdíl pouze v přítomném a minulém čase, obsah zůstává stejný. Účelem je pouze zjistit, zdali se chování spotřebitelů za dané období změnilo.

Žijete v:

Ústecký kraj

Hlavní město Praha

Odpovězte na otázky dle následujících tvrzení

V SOUČASNÉ DOBĚ KRIZE

| |
|---|
| Chodíte nyní nakupovat potraviny méně často než před rokem 2020 (uvažujeme větší nákupy): |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Kupujete menší množství potravin / výhradně nejmnutnější potraviny: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Zkrátila se doba vašeho nákupu v obchodě (uvažujeme větší nákupy): |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Chodíte nakupovat potraviny v menším počtu členů domácnosti (uvažujeme větší nákupy): |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Považujete krizi jako důvod / příležitost ke změně při nákupu potravin: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Cena je nyní pro vás více důležitá než před krizemi: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |

V SOUČASNÉ DOBĚ KRIZE

PŘED KRIZEMI (před rokem 2020)

| | |
|---|---|
| Přemýšlíte nad způsobem produkce potravin, tedy slušné zacházení s hospodářskými zvířaty a šetrný přístup k přírodě při nákupu potravin (udržitelné sáčky, potraviny bez obalu...): | Přemýšlel/a jste nad způsobem produkce potravin, tedy slušné zacházení s hospodářskými zvířaty a šetrný přístup k přírodě při nákupu potravin (udržitelné sáčky, bez obalu...): |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Řešíte hygienu v místě nákupu: | Řešil/a jste hygienu v místě nákupu: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Považujete za důležitou vzdálenost prodejny a prodejní dobu: | Považoval/a jste za důležitou vzdálenost prodejny a prodejní dobu: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Preferujete potraviny českého původu: | Preferoval/a jste potraviny českého původu: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Považujete za důležitou zemi původu potravin: | Považoval/a jste za důležitou zemi původu potravin: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Považujete za důležitou značku nebo producenta potravin: | Považoval/a jste za důležitou značku nebo producenta potravin: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Považujete za důležitý obal či samotný vzhled potravin: | Považoval/a jste za důležitý obal či samotný vzhled potravin: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Rozhodujete se snadno / rychle, které potraviny koupit či nekoupit: | Rozhodoval/a jste se snadno / rychle, které potraviny koupit či nekoupit: |
| <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne | <input type="checkbox"/> Ano <input type="checkbox"/> Spíše ano <input type="checkbox"/> Spíše ne <input type="checkbox"/> Ne |
| Nakupujete nejčastěji potraviny: | Nakupoval/a jste nejčastěji potraviny: |
| <input type="checkbox"/> Supermarkety / hypermarkety <input type="checkbox"/> Na internetu <input type="checkbox"/> Malé večerky / samoobsluhy <input type="checkbox"/> Drogerie <input type="checkbox"/> Specializované ochody s výživou <input type="checkbox"/> Přimo v místě farmy / výroby <input type="checkbox"/> Farmářské trhy | <input type="checkbox"/> Supermarkety / hypermarkety <input type="checkbox"/> Na internetu <input type="checkbox"/> Malé večerky / samoobsluhy <input type="checkbox"/> Drogerie <input type="checkbox"/> Specializované ochody s výživou <input type="checkbox"/> Přimo v místě farmy / výroby <input type="checkbox"/> Farmářské trhy |
| Nakupujete nejraději potraviny: | Nakupoval/a jste nejraději potraviny: |
| <input type="checkbox"/> Supermarkety / hypermarkety <input type="checkbox"/> Na internetu <input type="checkbox"/> Malé večerky / samoobsluhy <input type="checkbox"/> Drogerie <input type="checkbox"/> Specializované ochody s výživou <input type="checkbox"/> Přimo v místě farmy / výroby <input type="checkbox"/> Farmářské trhy | <input type="checkbox"/> Supermarkety / hypermarkety <input type="checkbox"/> Na internetu <input type="checkbox"/> Malé večerky / samoobsluhy <input type="checkbox"/> Drogerie <input type="checkbox"/> Specializované ochody s výživou <input type="checkbox"/> Přimo v místě farmy / výroby <input type="checkbox"/> Farmářské trhy |

V SOUČASNÉ DOBĚ KRIZE

PŘED KRIZEMI (před rokem 2020)

Jakého jste pohlaví?

- Muž Žena Jiné

Do jaké věkové kategorie patříte?

- 18-25 26-35 36-45 46-55 56-65 66+

Jaké je vaše nejvyšší ukončené vzdělání?

- Základní Vyučení Středoškolské Vysokoškolské

Jaký byl váš hlavní zdroj příjmů před krizí (před rokem 2020)?

- Zaměstnanec na plný úvazek Zaměstnanec na částečný úvazek OSVČ
 Na mateřské dovolené Na rodičovské dovolené
 Nezaměstnaný (bez příjmů) / student (bez vlastních příjmů)
 Nezaměstnaný (s podporou) / trvale v domácnosti (s příspěvky)
 Důchodce (starobní, invalidní, vdovský/vdovecký, sirotčí) Jiné

Jaký je váš hlavní zdroj příjmů nyní v roce 2022?

- Zaměstnanec na plný úvazek Zaměstnanec na částečný úvazek OSVČ
 Na mateřské dovolené Na rodičovské dovolené
 Nezaměstnaný (bez příjmů) / student (bez vlastních příjmů)
 Nezaměstnaný (s podporou) / trvale v domácnosti (s příspěvky)
 Důchodce (starobní, invalidní, vdovský/vdovecký, sirotčí) Jiné

Jak byste definoval/a ekonomickou situaci vaší domácnosti?

- Výborná Dobrá Průměrná Špatná

V kolika členné domácnosti žijete? (Včetně Vás)

- 1 2 3 4 5 Jiné

• **Z toho dětí do 18 let?**

- 0 1 2 3 4 Jiné

Jaká je velikost vašeho bydliště podle počtu obyvatel?

- do 1 000 1 001 – 6 000 6 001 – 30 000 30 001 – více

Děkuji za Váš čas a ochotu se podílet na tomto šetření.