

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Bachelor thesis

**Consumers and consumers` behaviour – Case Study of Fast
Food**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

BACHELOR THESIS ASSIGNMENT

Elvira Sharafutdinova

Economics and Management

Thesis title

Consumers and consumers` behaviour – Case Study of Fast Food

Objectives of thesis

The aim of the bachelor thesis is to determine the main factors influencing food consumers and to evaluate consumers' behavior in case of fast food. The aim will be fulfilled based on the partial aims. Then, several hypotheses will be defined and verified. Based on the results of an empirical analysis the final conclusions will be introduced.

Methodology

The bachelor thesis will cover both theoretical and empirical part. Theoretical part will contain the theoretical background of the selected topic as well as the methodological framework. Scientific literature will be used to prepare the literature overview. The empirical analysis will be based mainly on the time series analysis. Other suitable methods will be employed as well. Based on the empirical analysis the results will be presented and some recommendations will be suggested. To fulfill the aim of the thesis the selected methods and indicators of time series analysis will be employed as following:

- regression analysis (trend function)
- index analysis (base index, chain index)

Development of the food consumers and consumers' behavior will be analyzed in the period 2000 - 2015.

The proposed extent of the thesis

30-40 pages

Keywords

Consumers, consumers' behavior, time series, trend function, index analysis.

Recommended information sources:

HARRELL, F E. Regression modeling strategies: with applications to linear models, logistic regression, and survival analysis. New York: Springer, 2002. ISBN 0-387-95232-2.

CHATFIELD, C. The analysis of time series: an introduction. Boca Raton, FL: Chapman & Hall/CRC, 2004. ISBN 1584883170.

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WISENBLIT, J. -- SCHIFFMAN, L G. -- KANUK, L L. Consumer behavior. Boston: Pearson Prentice Hall, 2010. ISBN 978-0-13-700670-0.

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Declaration

I declare that I worked on bachelor thesis, which is titled as “Consumers and Consumers` Behaviour” – Case Study of Fast Food, by myself. All the source, that I have mentioned, have been used for making this paper. I declare, as an author of the thesis, that it does not break any copyrights of any third party.

In Prague 14.03.2017

Elvira Sharafutdinova

Acknowledgment

I would like to thank my parents for giving me a chance to study abroad, to my relatives, friends for being around and supporting me. Also, I am thankful to Ing. Lenka Rumankova, Ph.D. for supervising me during my work on that diploma thesis.

Spotřebitelé a chování spotřebitele – případová studie Fast Food

Abstrakt

Tato diplomová práce se zabývá zkoumáním spotřebitelé a jeho chování. Výzkum se snaží posvítit na klíčové hypotetické části spotřebitele a jeho rozhodovacího procesu aby poodkryl vztah mezi těmito dvěma body. Podle výzkumu mají strategie propagace jeden z nejdůležitějších vlivů na spotřebitele. Navíc, každá společnost by měla věnovat větší pozornost jejich značce a ceně, aby získala věrnost zákazníků.

Tato práce, ve své statistické části, také odhaluje dvě obrovské společnosti s rychlým občerstvením, kterými jsou McDonald`s a Burger King, aby bylo možné prošetření vztahu jejich zákazníků. Matematická analýza vychází z dotazníkového šetření, kterým je výzkum podpořen.

Klíčová slova: Spotřebitele, chování spotřebitele, časové řady, trendové funkce, indexní analýza.

Consumers and consumers` behavior – Case Study of Fast Food

Summary

This diploma thesis investigates consumers and consumers` behavior. The research sheds light on the key hypothetical parts of consumers and the decision-making process in order to see the relationship of these two points. According to the research, promotional strategies are one of the fundamental to influence the customers. Moreover, every company should pay more attention to their brand and price in order to achieve customer loyalty.

Also, this paper explores the statistical part of two giant fast-food companies such as McDonald`s and Burger King in order to investigate the relationship of their customers. The mathematical analyze is based on a questionnaire supporting the research.

Keywords: Consumers, consumer`s behavior, time series, trend function, index analysis.

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1. Introduction

Throughout our research we have examined the issues of “consumers and consumer’s behavior”. The thesis consists of 5 chapters, which have helped to investigate the topic under discussion.

To determine the needs, wants and demands of consumers, has always been the main objective of marketers. That is why the behavior of consumers should be explored by marketers by virtue of communication in order to achieve the goals. Therefore, they have to investigate where, how, when and why customers make a purchase. Not understanding this, can lead to the impossibility of determining the motivational factors. In other words, the desire of the target group must be formulated and determined by decisions, according to the given information.

The main goal of the bachelor thesis is to define the term “consumer”, trying to understand how customers make a choice and what influences their choice. Their decision and decision-making process can be defined as “customer behavior”. Customer behavior includes psychological, biological, economic factors. If we analyze it from the economic perspective, it will become clear that it has a huge influence on the market.

By opinion of the scientists, human needs are based on the level of the income, status, society influences. It never ends, it increases while the recourses for their gratification will not be finished. When a consumer spends a time doing nothing instead of working, that means he or she has less income and will be able to afford less consumption in the future.

There are numerous fast food companies in the world and all of them are very popular. People give preference to them, which helps to develop demand and supply year by year. The consumers always have a choice and the companies have to do their best and make a good promotional campaign in order to the choice was made to their side. Two giant fast food companies, Macdonald and Burger King, have been chosen to be analyzed in this bachelor thesis.

McDonald`s is ranked as one of the famous fast food brand, which works mainly by franchising program. As well as its competitor, Burger King, the main target group is young generation. The difference between companies is the number of branches around the world and the promotional campaign. Burger King tries to make the menu more affordable and cheaper, while McDonald`s focuses on opening new branches.

Even if Burger King was based later than McDonald`s and went through several issues, but despite of that fact, it becomes more stable year by year. Moreover, now they are one of the major rivals in the world history.

In the concluding part of our thesis, the results of the survey and the statistics have been discussed determining the major differences and similarities of two brands, with an attempt to understand which the purchase behavior of the customers.

2. Aim of the thesis.

The main goal of this chapter is to determine the major problems of the thesis.

2.1. Problem statement:

This part of the thesis presupposes the description of faced issues and methods that are used to solve them. The consumers and their behavior affect the company's situation in the trade. The main problem is to determine the way, which would perfectly satisfy customer's utilities. Those problems have to be fixed as soon as possible in order to avoid of losing the clients with damaging outcomes to company.

In this bachelor thesis McDonald's and Burger King are used to investigate the problems. As it is mentioned in Chapter 2, those two giant fast-food companies' revenues and CSIs started insignificantly decrease and it is not obvious how much they are going to be next years. This can be concerned by that the main target group of them are teenagers and adults till 30 years. Also, the main problem influencing the consumer's behavior is promotional campaigns. This thesis tries to explain what has an influence on their decisions. The methods that are followed to solve the problem are empirical and statistical researches.

2.2. Research questions:

What are the following CSI (Customer Satisfaction Index) results of the companies?

Do the revenue statements influence on purchase decision of customers?

Does the promotional situation of the companies satisfy customers nowadays?

2.3. Methods of research:

The paper consists of 5 chapters, which helps to investigate this topic. Several websites, papers, magazines, statistical methods are used in bachelor thesis for the study of this topic.

Evaluation, explanation and analyzing of aims, methods were used in the first part of paper. Also, interpreting the companies, which were chosen, explaining their strong and weak sides.

Collected dates about prices and advertisement were interpreted in the second part as well as statistical and empirical part, where were mathematical researches, time series analyses, categorical date analysis, statistical researches. Also, SAS application for deriving statistical results has been used. Time series analyse was used to forecast the consumer satisfaction index for the 2017 year. The relationship of variables was interpreted by categorical data analysis. Final step of the practical part is statistical research, which helps to understand what influence on consumers. The final part is the conclusion of all data, which were collected, analyzed and generalized.

3. Theoretical framework.

There are people, who live in different parts of our huge world. They distinguish from each other with nationality, the color of the skin, eyes, traditions, conscious and of course, they have different utilities. For example, a person, who lives in an abandoned part of Africa will not be interested in Nike or Adidas sports shoes, but people, who live in Europe or America would like to have it. The "consumers and consumer behavior" theme has a significant meaning in the world of economy and marketing. The companies pay attention to it as well, because it is too hard to "stay on your feet" in the world, where there is a lot of competition.

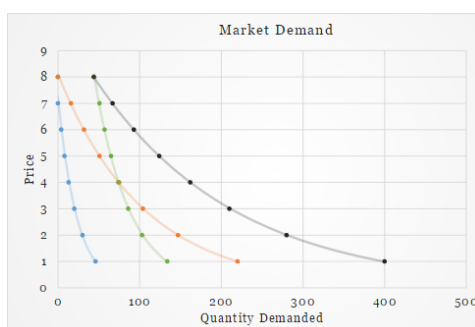
Consumer- is a person, who makes a purchase, which is based on his or her utilities, wishes, and money. It is the most important element of every industry of economy. All the world trade is based on consumers. P.Kotler ("Marketing management")*{1}

According to Merriam-Webster dictionary, consumer is one, who utilizes economic goods. It is an organism requiring complex organic compounds for food, which it obtains by preying on other organisms or by eating particles of organic matter. While, according to Oxford dictionary consumer is a person who purchases goods and services for a personal use.

Customers can be categorized in multiple criteria. First, potential customers, those are people, who do not use the services of that company, but they could do. Second, visitors, people, who have been visiting the services of the company, but they did not buy anything. Third, buyers, these are people, who made a one-time purchase. Fourth, clients - people, who make a purchase regularly. The last ones are adherents - people, who have not only bought, but they have also given an advertisement to the company, or have engaged new customers. P.Kotler ("Marketing management")

Everything that is associated with the choice, purchase can be defined as "customer behavior". This term is based on the theory of demand, which leads to satisfaction of our needs. As we know the population grows day by day and it makes significant impact on consumer demand. Because of the population, the demand for certain products would have grown up even if every customer`s demand for things stayed unconverted. So far, market demand is used for illustrating consumer behavior, which consists of buyer demand and consumers. (Microeconomics by Petr Prochazka)*

Figure 1 Market demand

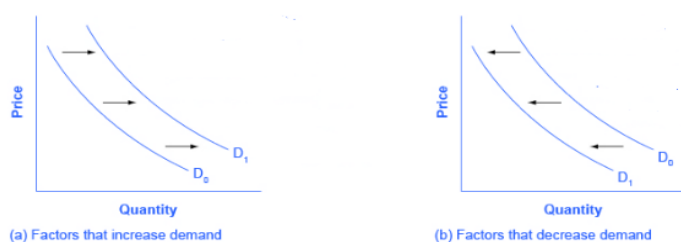


Source: Irfanullah Jan (xplained.com)

The green, red, blue lines are the quantity demands of individuals. The purple line is the market demand, which is the sum of those three lines. At any given price, the difference in the slope of buyers shows us that elasticity of demand and can be distinguished because of the difference of quantities that are demanded; even if one individual has an insignificant effect on equilibrium in a large market. Therefore, market demand and market supply curves are useful for determining the equilibrium between price and quantity. (Infanullah Jan (xplained.com))*1.

When customers change their taste, they want to buy certain products, regardless to the price. So the demand curve shifts to the right, while when the goods are not desirable anymore at any given price, the curve shifts to the left. (Microeconomics by Petr Prochazka)*{2}

Figure 2 Supply and Demand curve



Graph 2; Source: Khan Academy *2

The development and formation of the customer demand is an objective process. The State influences on it, as well, by its socio-economic policy: high and secondary educations are obligatory, as well as, health insurance, rationally nutrition, quality control.

Overall it is not so easy to understand consumer behavior. It often happens that buyers want to make an exact purchase but then they change their mind in the shop with an abundance of goods. The shape of an indifference curve – if the two products suit consumer`s tastes equally – shows us that consumer`s readiness to exchange one good for the other. (Microeconomics by Petr Prochazka)

The lifestyle of the customer is an initial point of the decision-making process. It isolated into seven stages. The first stage is identifying the decision that implies that you have to make an answer. This initial step is critical in light of the fact that it will clear up after making the choices. The second one is gathering relevant data. This progression includes both interior and outer "work". Some data is interior: you'll look for it through a procedure of self-evaluation. Other data is outside: you'll see it on the web, in books, from other individuals, and from different sources. The third step is identifying the alternatives. As you gather data, you will presumably recognize a few conceivable ways of activity, or choices. You can, likewise, utilize your creative ability and extra data to develop new choices. In this progression, you will list all conceivable and alluring options. The accompanying level is weighing the evidence. Assess everything that was recognized in the initial step or settled using every

*1 <http://xplained.com/659803/market-demand>

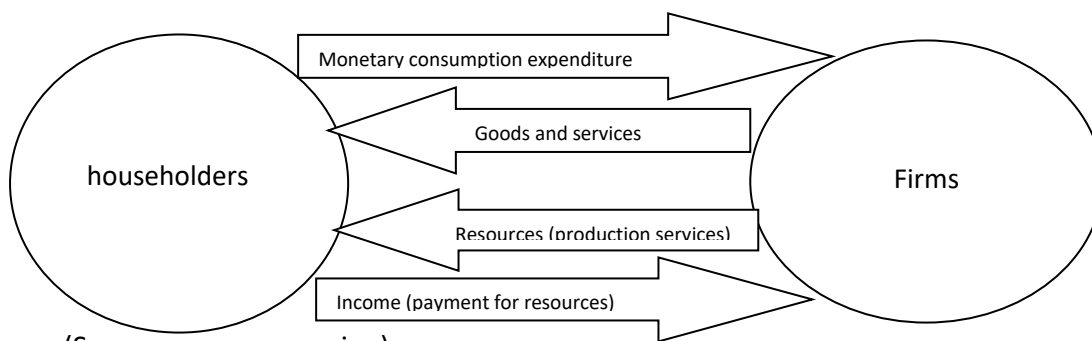
*2 <https://www.khanacademy.org/economics-finance-domain/microeconomics/supply-demand-equilibrium/demand-curve-tutorial/a/what-factors-change-demand>

option. At long last, the choices are put in desired arrangement. The fifth step is choosing among alternatives. At that point the customer picked the product, he or she prepared to pick the choices (or blend of options) that appear to be the best one for him or her. The penultimate level is to take an action. That progression executes the option that has been picked. The last one is to review your decision and its consequences. This progression includes the assessment of all the past ones and if a shopper is not fulfilled, he or she needs to rehash every one of the means and assemble more data or investigate extra options. (Source: "Umass Dartmouth")*3

The awareness of the customer can make a big impact on the company in the marketing research, which can help effectively function in the market. Consumer behavior and their decision-making process are influenced by the economy, marketing and multiple factors such as; personal, that includes age, occupation, economic situation (income level), lifestyle etc.; Cultural, which includes cultures, subcultures and belonging to a social class; Social factors defined as all the small groups (family, social position and status). A social role refers to a specific type of activity of the individual in relation to others; Psychological factors, such as motivation, nurture, assimilation, beliefs, and attitudes have a major influence on consumers; Climatic and national factors include national specifics of consumer demand, traditions of consumers, national life conditions.

P.Rani ("Factors influencing consumer behavior")*4

There are two economic factors which are involved in the production, exchange, and consumption of economic goods from the economic perspective. The main subjects of market relations are households and firms.



(Source: own processing)

With all the conventions of the circuit scheme, it reflects the main idea - there is constant interaction between supply and demand in the developed market economy: demand creates supply, and the supply-demand develops. P.Prochazka ("Microeconomics")

Consumer term has been discussed by philosophers, sciences, economics more than once. Almost every science has its "father" who has formulated multiple basic theories and has based

*3 <http://www.umassd.edu/fycm/decisionmaking/process/>

*4 <https://www.ijcrar.com/vol-2-9/Pinki%20Rani.pdf>

the foundation for developing this study for many years. For instance, Newton is for physics as well as Euclid is for geometry. One of the “fathers” in the economy is Adam Smith, who has lived within 1723 and 1790 years. He was born in Kirkcaldy near to Edinburgh and based his book with the long name “An Inquiry into the Nature and Causes of the Wealth of Nations”^{3}, which made him famous as “economics founder” around the world. The following words, that convey the meaning of the idea, have been included in many books about the economy:

“...but man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favor...Give me that which I want, and you shall have this which you want...and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of. It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages. Nobody but a beggar chooses to depend chiefly upon the benevolence of his fellow-citizens”.

Also, Adam Smith wrote: *“individual producer wants to satisfy just his or her utilities, but, thanks to the actions of market’s system it acts as an “Invisible hand”, which directs to the satisfaction of the needs of society”.* Take a note that this mechanism ensures the achievement of goals, which neither of the householders consciously tends to. The lack of the focal point of the system and the exact expression of Adam Smith were the reason that this mechanism was called as “Invisible hand”. A.Smith “The Wealth of nation”^{3}

“The richer the country, the lower part of the personal income of its citizens goes to mandatory spending.” German researcher-statistic E.Engel (1821-1896) has based the relation between the population income and the consumption structure.

According to “Engel’s low” the higher the level of family income, the lower the proportion of its expenditure on food products. Accordingly, the demand for industrial and consumer goods and a further increase in the level of income significantly increases the cost of high-quality goods and services. Thus, the structure of consumption expenditure varies in direct proportion to income.

A. Maslow suggested that all the human needs are congenital and organized in a hierarchical system of priorities in his work "Motivation and personality" ^{4} in 1954. Maslow thought all the priorities of the first type have to be fully satisfied before the other would be acting.

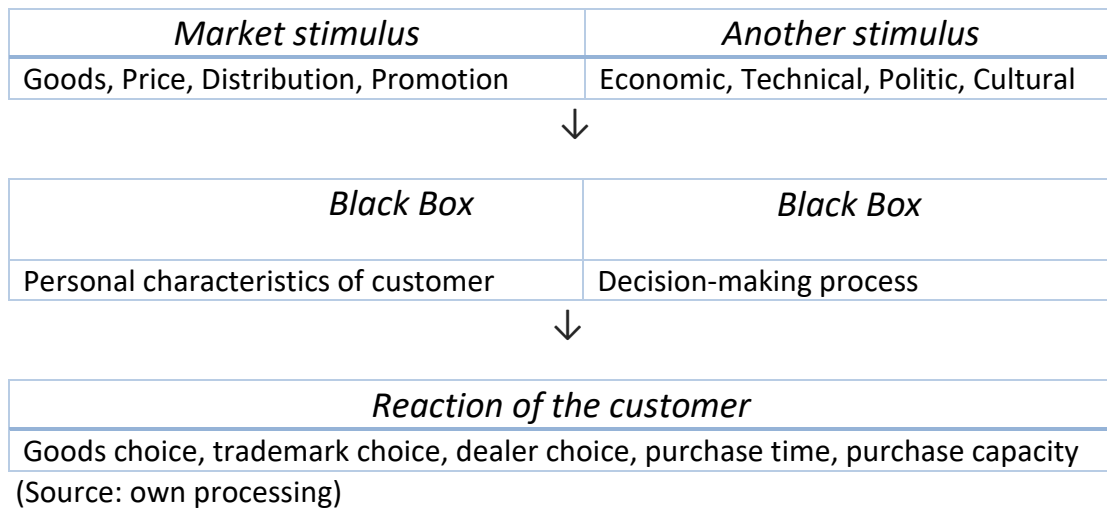
The first need is physiological, that are requirements for human survival. If we do not meet those requirements, the body will not be able to function properly and will ultimately fail. The second step is a safety that encourages us to protect ourselves. After the first and the second needs were fulfilled, the third level is love and belonging. This one helps us to feel a sense of acceptance among the society. The fourth step is esteem. Every human being wants to feel respect, which includes the desire of acceptances among the people. After all the steps were done, the last level is self-actualization and it was described as "What a man can be, he must be" in A.Maslow’s book “Motivation and Personality” in 1954.

P.Kotler wrote in his book "Principles of marketing"*{5}: "*People utilities are infinity, but resources for their satisfaction are limited*"

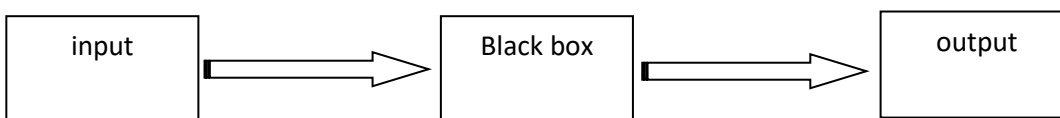
Utilities have their own requests, but they are not specific enough. Customers start getting tired of their purchases and searching something sufficiently different instead of it, in order to distinguish them from others. Searching can have a big change in prices or income level.

"Customer behavior model" by Kotler is the most famous model. It lets us know from the scientific notations, how people act in various situations.

Below is a model created by Kotler



The "Black box" is the conscious of the customer. Purchase decision depends on the feature of the purchase. This model reflects the relationship between driving factors of marketing and consumer response. Going through the "black box" consumer conscious, driving factors and other stimulus induce several purchase reactions. The goal is to understand through the research data, what happened to customer conscious in the "black box". It makes inputs into outputs.



(Source: own processing)

(Universitas Narotama e-book)*5

There are multiple methods in the economy and simply life, which can also satisfy people`s needs.

*5[http://ebooks.narotama.ac.id/files/Principles%20of%20Marketing%20\(14th%20Edition;%20Philip%20Kotler\)/Chapter%205%20Consumer%20Markets%20and%20Consumer%20Buyer%20Behavior.pdf](http://ebooks.narotama.ac.id/files/Principles%20of%20Marketing%20(14th%20Edition;%20Philip%20Kotler)/Chapter%205%20Consumer%20Markets%20and%20Consumer%20Buyer%20Behavior.pdf)

Interchange is an act of obtaining the desired object with an offer of something in return.

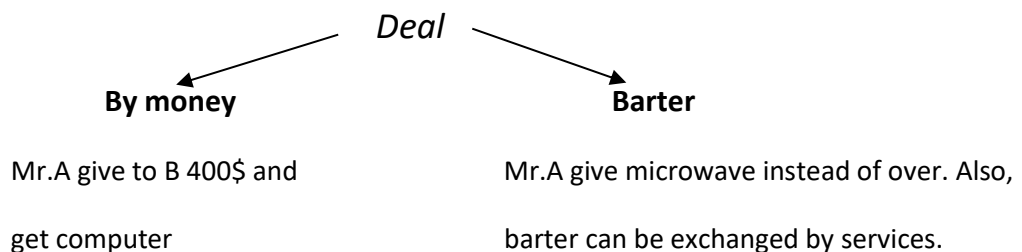
P.Kotler ("Principles of marketing")

Interchange is derived by five conditions: There have to be two sides. Each side has to have what could satisfy another side. Each side has to communicate and deliver goods on time. The commission of the act has to be accepted or rejected free of violence. All actions have to be expedient and desirable.

Deal is a commercial interchange of values between two sides.

P.Kotler ("Principles of marketing")

Explaining in simple terms deal is an action when A gives to B object Y and gets from him X instead of it.



*(Source: own processing)

The world changes, therefore, enterprises need specific technologies, methods, and approaches to work with customers. There are a lot of competitors, new consumer segments are increasing, business is getting complicated, the flow of advertisement information is going up. So, successful companies engaged in branding, cultivate loyal customers, increasing the number of loyal customers. P.Kotler ("Principles of marketing")

The change in taste and the decision making is also influenced by advertisement and everything that we are surrounded by. Therefore, we are convinced by marketers that their goods and services are the best around. (Microeconomics by Petr Prochazka).

Advertisement:

The advertisement is a means of communication with the users of a product or service. Advertisements are messages paid for by those who send them and are intended to inform or influence people who receive them.

(The Economics Time newspaper)*6

*6 <http://economictimes.indiatimes.com/definition/advertising>

The advertisement is able to influence on consumer choice by providing proper or misleading information, which influences on their preferences. There are seven functions of advertisement. The first one creates awareness about the products and brands; The second step creates brand image; The third level is to give an information about the product and brand; The fourth one is urging people; The following step is to create incentives to commit actions; sixth provides reminders; And the last step reinforces previous purchase experience.

The importance of advertising for the study of consumer behavior is that it demonstrates the way in which sellers try to change consumer tastes and preferences in their favor.

In our time, "advertising" - is printed, verbal or graphic informing the person, goods and services or social movement, openly emanating from the advertiser and paid for them in order to increase sales, expand customer base, getting the public vote or approval.



(Source: own processing)

Commercial advertising:

Commercial advertising is the promotion of products, services and other commodity and non-commodity offerings with the ultimate extraction of profit.

Commercial advertising - is an economic phenomenon, which has a significant impact on market participants and economic agents. It creates demand and stimulate sales, and thereby It promotes the growth of the turnover of goods and services., manufacturing, consumer behavior.

Types of commercial advertisement: Commodity (Goods and Services) and non-commodity (Organization, Person, Idea, Brand)

Classification of the commercial advertisement: to inform, to urge, to remind.

Social advertisement:

The social advertisement is an advertisement that is aimed at changing models of social behavior and to pay attention to socially relevant events and problems.

Social advertising uses the same tools as the commercial one. They differ only in the goals. The strategic goal of any social advertising is to change the behavioral models of society in relation to the object of advertising.

Political advertisement:

The political advertisement is advertising, which is aimed at changing the political behavior of the society or part of it in terms of political choice.

Political advertisement leads to getting income that is why it is not commercial. Communication, Information, and Ideology are the main functions of it.

Counter-advertisement:

Counter-advertisement is an advertisement that rejects incorrect or false information in Mass media. There are several reasons for the creations of counter-advertisement - low quality of communication, incorrectly built prices (too high or too low), poor service etc.

Anti-advertisement:

Anti-advertisement is an advertisement that leads to attracting customers to the low-quality products of the market.

There are two types of marketing communication – ATL (All traditional advertisement, Mass media, Outdoor, Indoor) and BTL (All the other advertisement).

Mass media divided into: TV- videoadvertisement, ticker, radio, printed-magazines and Internet advertisement.

Outdoor is a text, graphics, or other visual information advertising that is placed on the special permanent or temporary structures, which are located in the open countryside, the external surfaces of buildings, above the roadway of streets and roads, or on their own.

Indoor is a text, graphics, or other visual information advertising that is placed on the special permanent or temporary structures, which are located inside of the building.

William Wells (Advertising: Principles and Practice)*{6}

Prices

An integral part of the decision-making process of rational behavior is reference prices- prices that consumer uses as a basis for the judgment about any other prices.

Prices divided into two groups:

External – using with an advertisement in order to indicate to consumers that product has a good price.

Internal – stored in the memory of consumer and then they extract it in order to evaluate the price in the market.

Brand

A brand is a product, service, or concept that can be easily distinguished from others. So, it can be communicated and marketed. The word "relationship", which is based on experiences, is the core term that determines the relation with the consumers. Those relationships include the sum between consumer`s experience and brand. *"Because the concept of a brand is the totality of a consumer's experiences with the brand, the consumer "owns" the brand because he owns his experiences with that brand. The brand experience incorporates all consumer contact with the brand from advertising and promotions to after-sale customer service. Your customers will evaluate your brand and regulate their behavior based on these interactions."*: according to the Advertising Educational Foundation*7.

Keller wrote that *brand awareness is the consumer's ability to define the brand under different conditions. Recognition of the brand can be achieved by providing awareness. Awareness refers to the effect of the brand created in the minds of consumers.*

4. McDonald`s vs Burger king.

Like PepsiCo vs the Coca-Cola Company or Ford Motor Company vs General Motors Company, the battle between McDonald's Corporation and Burger King have been ranked as one of the most iconic battles in American history.

4.1. Introduction to the companies

McDonald`s was based as Bar-B-Q restaurant by brothers Richard and Maurice McDonald in 1940 in California. Its motto says "Think Global – Act Local". It is the huge American fast food making company with over 36000 locations in 119 countries and serving approximately 68 million consumers per day, working by either franchising, an affiliate or the corporation itself systems. McDonald`s major targets are adults, teenagers, children.

The general vision of McDonald as a dynamic burger organization conveying a contemporary client encounter is, currently, about getting the brand to where they should be today and doing what it takes to give the clients what they expect. To understand this dedication, they are concentrating on the clients and what is important to most of them – hot and new sustenance, quick and agreeable administration, and a contemporary eatery involvement with the estimation of McDonald's. The foundation of our System is our effective and persevering Brand. We're utilizing our focused qualities: famous menu, things that clients adore, a remarkable establishment display that enables neighborhood business visionaries, size and SCALE that makes operational ventures proficient and worldwide all around expanded geographic impression.

Burger King was founded in 1953 as Insta-Burger King in Florida. It ran into financial problems in 1954 that is why David Edgerton and James McLamore purchased the company and renamed it

*7 <http://smallbusiness.chron.com/effect-brand-consumer-behavior-61767.html>

"Burger King". The company reported more than 15243 outlets in 100 countries on September 30 in 2016. As well as in McDonald's, children, adults, and teenagers are the main target consumers of Burger King. After a long time falling, the company decided to change their marketing strategy, in order to attract new customers and to be different from their competitors. Burger King has focused much on their marketing among consumers of 18 to 34 years old.

McDonald's and Burger King are thought to be "The King" of fast food administrations. To accomplish this abnormal state, those two organizations made a decent attempt for a long time to substantiate themselves in the aggressive condition. Both organizations offer low-value items, rebates, vegan items. Ceaselessly improving or changing their product lines as per the taste of their clients. *8

4.2. The importance in the world of trade.

In each McDonald's around the globe, laborers perform comparable undertakings with comparable, dispatched fixings put away in comparative coolers and arranged by comparative worldwide convention. This matters to business analysts, in the light of the fact that McDonald's offers a worldwide one type to its logical counterpart examination of wages and costs. Nations get rich since they turn out to be especially gifted in specific ventures that they can offer in return for cash.

So why are Indian, Chinese, or Latin American specialists loosing up to 10 times less than in U.S or in Western Europe? It isn't so much that Chinese and Chileans are less gifted at warming burgers. Or maybe it has an inseparable tie to the economy outside of McDonald's kitchens. McDonald's stress on neighborhood administration for better responsiveness to the outer condition. Besides, local people would bring more acknowledgment of the both organizations in the neighborhood advertised by clients and organizations increasing the simple access to administration with the nearby government. This raises the advancement of life, and better client responsiveness.

Having neighborhood administration additionally empowers franchise to address workers' issues all the more viably mulling over of nearby culture. Through the establishment model, McDonald's and Burger King can decrease the cost of setting up new organizations in the various districts. Nations like India, where 80% of the population, don't eat hamburgers and some religions do not permit eating pork, consequently, McDonald's and Burger King have needed to redo their item offerings to the meet the needs of the local customers and in a way evaded any political clashes. Additionally, a various scope of gatherings has raised issues, such as, the people for the Ethical Treatment of Animals (PETA) over the welfare of creatures, legislative and social organizations over medical problems and consistency with healthful naming laws, and unions and exchange assembles over work relations and laws. These circumstances have addressed the

*8 https://www.zonebourse.com/MCDONALDS-CORPORATION-4833/pdf/71649/McDonald's%20Corporation_Rapport-annuel.pdf ; http://corporate.mcdonalds.com/mcd/our_company/mcdonalds-history.html ; <https://www.allbusiness.com/burger-king-learns-lesson-about-customer-loyalty-13921028-1.html>;

ideas of living creatures' common sense entitlement, corporate duty and morals, and in addition the social equity.

4.3. Strong and weak sides (SWOT analysis).

The SWOT investigation incorporates strengths, weaknesses, opportunities and threats most significant to the firm. As a fast food eatery business, Burger King needs to utilize its points of interest to contending with mammoths like McDonald's.

Each industry that faces difficulties should know their strong and weak sides. Burger King's **strengths** depend on the organization's business capacities. Burger King's principle qualities are as per the following: solid brand picture, high market infiltration, direct separation of items. Burger King is one of the most grounded brands in the business. This condition makes it less demanding for the organization to open new eateries and present new items. Regardless of strengths, there are, also, **weaknesses**, which are connected to its plan of action and general vital methodologies. Burger King's principle shortcomings are: effortlessly imitable business, restricted item blend. Despite the fact that Burger King has direct separation, one of its weaknesses is that its plan of action and items are effortlessly imitated. For instance, different firms could offer comparable barbecued burgers. In spite of weaknesses, there are **opportunities** for Burger King that present choices for business development and improvement. Burger King's chances are as per the following: expansion item blend enlarging, showcase advancement, benefit quality change. Burger King has the chance to augment its item blend by adding new product offerings to pull in more clients. Likewise, the organization could set up new organizations or auxiliaries as a feature of market advancement to acquire incomes while diminishing the impacts of market dangers. Anyways, every opportunity can be significantly bet, that is why there is no exception that the **threats** are in this case. Burger King stresses economic situations. The outer vital variables that point of confinement or lessen business execution appear here. The accompanying is the primary danger against Burger King: forceful rivalry, impersonation, sound ways of life pattern. Burger King faces the risk of forceful rivalry, considering different firms like McDonald's. The organization's plan of action is additionally imitable, prompting to the danger of impersonation by new contestants.

The **strengths** of McDonald's that it stands out amongst the most unmistakable brands on the planet. Most people in the United States, and a significant part of the world, perceive the organization's "Golden Arches". The organization gives consistency in its sustenance, with the goal that you can get a similar taste whether you're eating a Big Mac in New York or Moscow. In fact, despite its strengths the **weaknesses** of McDonald's are quite similar to Burger King's. It has constantly kept up the discernment that its nourishment is undesirable, stacked with fat, carbs, salt, and sugar. All things considered, these discernments are on point, as most things on its standard menu are moderately unfortunate. The chain has been broadly scrutinized for advancing unfortunate dietary patterns, driving a hefty portion of its clients to put on pounds. That is why McDonald should update its menu, this would be the great **opportunity** to attract new consumers. New CEO Steve Easterbrook has significant arrangements to turn the organization around. Some portion of the arrangement is to offer premium items at some of its

areas. McDonald's is dependably vigilant to grow its piece of the overall industry. While the business sectors in North America and Europe are genuinely immersed, there are openings in more immature countries. This ought to take into account a more streamlined, lower cost, and more steady association. But numerous customers, both in the U.S. what's more, abroad, are attempting to eat a more advantageous eating routine those are the **threats** for such organization. The ascent in prominence of natural items, new foods are grown from the ground, and products with every single regular fixing is to some degree a sympathy toward McDonald's. While the organization has exceptionally strict quality controls for its nourishment, clients aren't precisely setting off to McDonald's for unfenced chicken and natural vegetables. The organization is additionally confronting worries that more youthful, more wellbeing cognizant purchasers will hurt outcomes over the long haul unless a move in methodology is made.

Regarding the restaurants, as it was mentioned above, they both always have been competitors to each other. The only way to stay among the competitors is to produce healthier food, to use fewer preservatives, adding vegetarian products, in order to let the healthy lifestyle people, consume their food, to make the food more available. In our time, marketers always suggest collaborating with the ventures. In fact, the only way to survive is to bound those two giant fast food companies and create a new, fresh campaign. Also, from the marketer's point of view, it would be better to make promotions related to different holidays. For instance, the specific package of the burgers for Christmas, or human billboards related to New Year etc.

5. Design of the thesis

The benefits turnover and consumer satisfactions are the most important entities of the business's existence. All the financial issues that have been faced within 2000-2016 years will be analyzed in this chapter.

5.1. Cost and advertisement

Burger King and McDonald's both walked into the new year by offering consumers new, cheaper ways to buy a lot of food.

Though their new offerings call "menu dollar", this is a perceptible change in the last years, when the two giant fast-food companies tried hard to increase the margins, withdrawing ultra-cheap offerings.

Those two companies have good promotion strategies. Both have mobile applications. After every purchase in restaurants, consumers get a brochure with discounts. Both have websites on the internet, in order to attract more young generation.

Burger King has its one advantages that make it better among the competitors. First, unlimited drinks; second, sauces for free, while McDonald's does not have those opportunities; third, five to four strategy, where you can buy five products for four dollars.

Here are some famous costs of product's compares for the 2016 year presented below. *9

LIST OF FOODS	MCD\$	BK\$
BIG MAC/BIG KING	3.99	3.89
BIG MAC MEAL/BIG KING MEAL	5.99	6.39
CHEESBURGER	2.00	1.69
FRENCH FRIES (SMALL)	1.39	1.79
(MEDIUM)	1.79	2.19
(BIG)	1.89	2.39
CHICKEN NAGGETS 4PC	1.99	1.19
ORANGE JUICE	1.59	1.69
COFFEE	1.00	1.00
HAMBURGER	2.49	1.00

Figure 3 List of food's cost

Source: own processing *10

As an advertisement, McD and BK take every opportunity to attract new customers. McD gives balloons to children in the morning, while BK gives a crown to their consumers in order to feel yourself like a "queen or king".

5.2. Revenue for the 2000-2016 years

For more than 60 years, McDonald's has been the pioneer that set the standard by which every single distinctive foundation worked. In any case, there are clear signs those parts may switch; a revived Burger King is obliging McDonald's to change as per it, not an alternate way.

McDonald's and Burger King began in the establishment sustenance business in 1955 and 1953, individually. McDonald's has dependably been the bigger organization; however, each firm has undeniably impacted the other through the span of their six-decade-in addition to contention.

When McDonald's menu is as muddled as continually, making record drive-through hold up times, as indicated by Citi Research Burger King is repackaging or rebranding old things to bail shoppers out and made new restoration methodology.

One a player in the recovery technique is an immediate test of McDonald's items. In 2014, Burger King presented the Big King sandwich, two patties, three buns and an "uncommon sauce," as a not inconspicuous replication of the fruitful Big Mac from McDonald's. At the point when McDonald's brought back the McRib sandwich, Burger King reacted by disclosing a \$1 BK BBQ Rib as a less expensive other option to their clients.

Next came another armada of espresso items from Burger King to challenge the McCafe menu. McDonald's made waves years prior by joining forces with Starbucks to make another morning espresso choice, so Burger King focused on and obtained Tim Hortons, Inc., the main Canadian

*9 <http://www.fastfoodmenuprices.com/mcdonalds-prices/> ; <http://www.fastfoodmenuprices.com/burger-king-prices/>

*10 <http://www.investopedia.com/stock-analysis/010616/burger-king-and-mcdonalds-enter-price-war-mcd-qsr.aspx>

espresso, and doughnut outlet. Stock costs for both organizations took off after the \$11 billion arrangement, incorporating \$3 billion in financing from Warren Buffett.*11

There are graphs demonstrated bellow in order to expound the revenues for the last 16 years. In this case, chain index analysis is used to explain the percentages change among profits.

Chain index is based on the estimation of any given period identified with the estimation of its instantly going before the period; this is unmistakable from the fixed base file, where the estimation of each period in a period arrangement is straightforwardly identified with a similar estimation of one fixed base period. The calculations are generated by the special formulas.

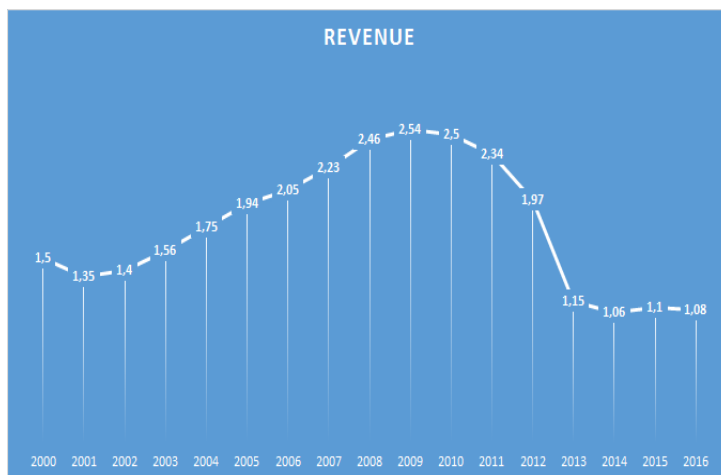
In chain base, the linked relatives equal to:

(price in the current year/price in the preceding year)*100, and

Chain index is equal to:

(linked relative in the current year* linked relative in the preceding year)/100

Figure 4 BK revenue 2000-2016 b\$ *12



Source: own production

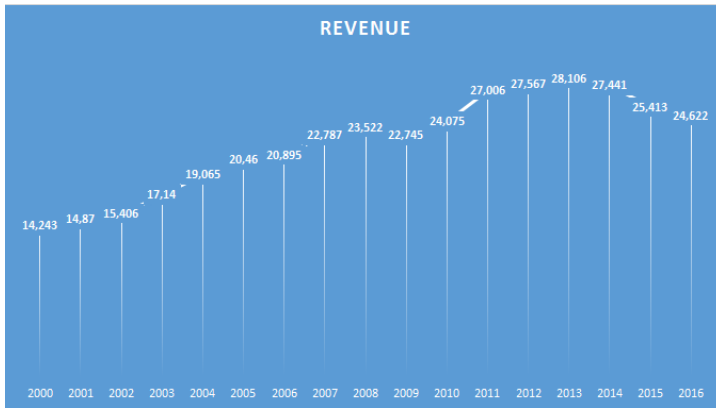
We can see from the graph above and from the chain index, which is below, that Burger King did not enter the 21 century with staggering results, but the benefit was increasing year by year. The company had their boom period just in nine years after significant changes to their promotional campaigns. The picture below shows that the revenue for 2009 distinguishes for more than 69 percent.

We can see from the graph above and from the chain index, which is below, that Burger King did not enter the 21 century with staggering results, but the benefit was increasing year by year. The

*11 <http://www.investopedia.com/articles/markets/111015/mcdonalds-vs-burger-king-comparing-business-models.asp>

*12 <https://www.statista.com/statistics/266462/burger-king-revenue/>

Figure 5 McD revenue 2000-2016 b\$ *13



Source: own production

company had their boom period just in nine years after significant changes to their promotional campaigns. The picture below shows that the revenue for 2009 distinguishes for more than 69 percent.

The McDonald's results are better rather than its competitor's. It walked into the new millennium with better outcome than Burger King. As we can see the benefits were growing up year by year till 2013, when the revenue was for 97 percent more than in the beginning, than the income was insignificantly going down.

The reason for both company's revenues decrease is about new entrances, strong competition, and healthy lifestyle people.

Figure 6 Chain index McD

year	revenue	link relatives	chain index
2000	14,243	100	100
2001	14,87	104,4021625	104,4021625
2002	15,406	103,604573	108,1654146
2003	17,14	111,2553551	120,339816
2004	19,065	111,2310385	133,8552271
2005	20,46	107,3170732	143,649512
2006	20,895	102,1260997	146,7036439
2007	22,787	109,0547978	159,9873622
2008	23,522	103,2255233	165,1477919
2009	22,745	96,69670946	159,6924805
2010	24,075	105,847439	169,0304009
2011	27,006	112,1744548	189,6089307
2012	27,567	102,0773162	193,5477076
2013	28,106	101,9552363	197,3320227
2014	27,441	97,63395716	192,6630626
2015	25,413	92,60959878	178,4244892
2016	24,622	96,88741982	172,8708839

Source: own processing

Figure 7 Chain index BK

year	revenue	link relatives	chain index
2000	1,5	100	100
2001	1,35	90	90
2002	1,4	103,7037037	93,33333333
2003	0,56	40	37,33333333
2004	1,75	312,5	116,6666667
2005	1,94	110,8571429	129,3333333
2006	2,05	105,6701031	136,6666667
2007	2,23	108,7804878	148,6666667
2008	2,46	110,3139013	164
2009	2,54	103,2520325	169,3333333
2010	2,5	98,42519685	166,6666667
2011	2,34	93,6	156
2012	1,97	84,18803419	131,3333333
2013	1,15	58,37563452	76,6666667
2014	1,06	92,17391304	70,6666667
2015	1,1	103,7735849	73,3333333
2016	1,08	98,18181818	72

Source: own processing

*13 <http://corporate.mcdonalds.com/mcd/investors/financial-information/annual-report.html>
<https://ddd.uab.cat/pub/infanu/46852/iaMCDONALDSa2005ieng.pdf>

5.3. Consumer satisfaction index.

Customer satisfaction index (the CSI) is presumably the most famous of all non-money related key performance indicators (KPIs). In most business associations it is normally seen as the biggest non-monetary marker of money related execution, later on, the premise of which is the conviction that the more fulfilled clients, the more probable they will stay faithful to the organization, as it will prompt to budgetary achievement. In addition, customary studies have demonstrated that the contribution of new clients is much more costly than holding existing ones. Along these lines, guarantee consumer loyalty is more invaluable from a money related perspective. Since the list is from 0 to 100, each organization gets the record an incentive in this range. *14

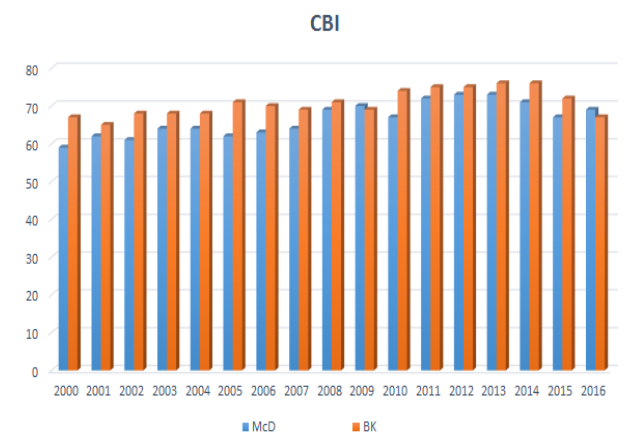
The table below shows the satisfactions of the customers for the past 16 years. They are quite similar to each other. All the analyses of the CSI's time series analysis and future forecasting are explored in the fourth chapter.

Figure 8 American Satisfaction index *15

McD	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	59	62	61	64	64	62	63	64	69	70	67	72	73	73	71	67	69
BK	67	65	68	68	68	71	70	69	71	69	74	75	75	76	76	72	67

Source: own processing

Figure 9 American Satisfaction index



Source: own processing

*14 <http://chiefengineer.ru/organizaciya-proizvodstva/pokazateli-effektivnosti/indeks-udovletvorennosti-potrebiteley/>

*15 <https://www.statista.com/statistics/216696/mcdonalds--customer-satisfaction-in-the-us/>

5.4. Consumption from the microeconomics prospective.

When a market is competitive, a firm, as a business organization that usually produces goods and services, should pay more attention to economy of their venture. The microeconomics is a branch of economics that studies prices production and consumption.

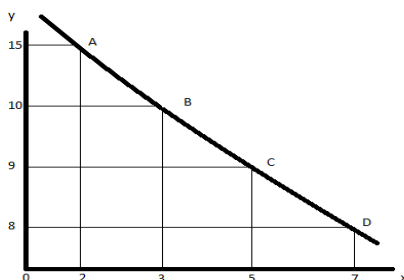
5.4.1. The marginal rate of substitution.

As It was already mentioned in the first chapter, consumer`s preferences allow customers to choose a different product. Their desires can be illustrated graphically, which is called indifference curve. It helps us to understand when the consumer is equally satisfied at the same level of utilities. When a consumer is at the point A he has all Y but does not have X. That is why he rejects one Y in order to have one X. So, the $MRS=1$.

(Microeconomics by Petr Prochazka)

Suppose we have 10\$ of income and we want to make a decision between a Cheeseburger in McDonald and a Hamburger in Burger King. The price for Cheeseburger is 2\$ and Hamburger costs

Figure 10 Marginal rate of substitution



Source: own processing

1\$ per one. So, if we buy 5 Cheeseburgers we will not have any Hamburger. Therefore, our MRS of Cheeseburger towards Hamburger is equal to two and the consumer is ready to reduce the consumption to one unit and increase the Hamburger to two in order not to change the consumption`s satisfaction.

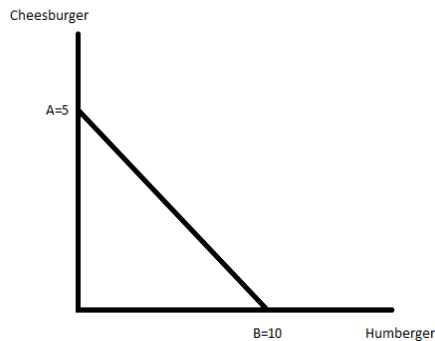
5.4.2. The budget line as a limiting factor.

Most customers would like to grow the quantity and the quality of the goods. People, however, consume less than they desire because the income limits their spending.

Suppose the consumer has an income 10\$ and he spends it on food. The price of Cheeseburger from McDonald is 2\$ and the price of Hamburger from Burger King is 1\$. The slope of the budget line is illustrated bellow. The graph illustrates the consumption`s choice that customer can afford.

The slope measures the extent of the consumer's trade of one good for the other. The line includes the relative price of the two goods equally. The Hamburger costs two times as much as the Cheeseburger, so the possibility of buying Cheeseburger is two units of Hamburger, that means the trade-off the market that offers to consumers is two units of McDonald food for one unit of Burger King. (Microeconomics by Petr Prochazka).

Figure 11 Budget line



Source: own processing

6. Review of statistical and empirical data.

The main objective of this chapter is the step by step explanation of the consumers and consumer's behavior by analyzing it from statistical and empirical perspectives.

6.1. Time series analysis of consumer behavior

Time series analysis is the process that helps us to understand how the variables change over time. It can be based on time viewpoint, periodicity, types of variable, unit of measure. Time series works by obtaining a list of variables in chronological order and approval of based hypothesis. Also, it can forecast the future values, which can help the company to predict future consequences in their venture.

There are two pictures are demonstrated bellow within 200-2016 years, which show the customer behavior of fast food companies, in order to predict the 2017 CSI by using time series analysis.

The first step that we should do is to put the variable in order, then find the y'' . The Second step is to find I^2 , which is an index of determination. It helps us to see whether the sample is significant or not and it shows how well-observed outcomes are replicated by the model. The model is significant when the I^2 is more than 60%. α is can be either 0.6 or 0.7. In this cases, 0.7 was chosen as α

$$I_{yx} = \sqrt{1 - \frac{\sum (y_i - y_i'')^2}{\sum (y_i - \bar{y})^2}}$$

When we find all the entities of this analysis, the final part will be to predict the 2017 year for McDonald's and Burger King's CSI. The formula for forecasting is below.

$$y'_{t+1} = y''_t + (1 - \alpha) \cdot (y_t - y''_t)$$

The table shows all the steps of time series analysis for McD. The last four entities are given in order to find the I_{yx} .

Figure 12 Time series analysis McD

	A	B	C	D	E	F	G	H	I
1		date	t	yi	yi''	yi-y''	(yi-y'') ²	yi-y aver	(yi-y aver) ²
2		2000	16	59	61,241177	-2,24118	5,022874	-7,47059	55,8096886
3		2001	15	62	61,7723531	0,227647	0,051823	-4,47059	19,9861592
4		2002	14	61	61,2317059	-0,23171	0,053688	-5,47059	29,9273356
5		2003	13	64	63,1695118	0,830488	0,689711	-2,47059	6,10380623
6		2004	12	64	63,7508535	0,249147	0,062074	-2,47059	6,10380623
7		2005	11	62	62,5252561	-0,52526	0,275894	-4,47059	19,9861592
8		2006	10	63	62,8575768	0,142423	0,020284	-3,47059	12,0449827
9		2007	9	64	63,657274	0,342726	0,117461	-2,47059	6,10380623
10		2008	8	69	67,3971822	1,602818	2,569025	2,529412	6,39792388
11		2009	7	70	69,2191547	0,780845	0,609719	3,529412	12,4567474
12		2010	6	67	67,6657464	-0,66575	0,443218	0,529412	0,28027682
13		2011	5	72	70,6997239	1,300276	1,690718	5,529412	30,5743945
14		2012	4	73	72,3099172	0,690083	0,476214	6,529412	42,633218
15		2013	3	73	72,7929752	0,207025	0,042859	6,529412	42,633218
16		2014	2	71	71,5378926	-0,53789	0,289328	4,529412	20,5155709
17		2015	1	67	68,3613678	-1,36137	1,853322	0,529412	0,28027682
18		2016	0	69	68,8084103	0,19159	0,036707	2,529412	6,39792388
19			y average=	66,47059			14,30492		318,235294

Source: own processing

$$I_{yx} = \sqrt{1 - \frac{14.30492}{318.235294}}$$

$I_{yx} = 0.977266202219 =$ it is almost 98%. The model is significant. The next step as it was mentioned is to forecast the future value by using the formula.

$$y_{2017} = 68,808 + (1 - 0,7) \cdot (69 - 68,808)$$

$$y_{2017} = 68,8658872 = 69$$

This means that the future CSI value of McD is 69, which is similar to the year 2016.

This table demonstrates the time series analysis for Burger King. The forecast is done by using the same steps.

$$I_{yx} = \sqrt{1 - \frac{11.81058}{193.8824}}$$

Figure 13 Time series analysis BK

	A	B	C	D	E	F	G	H	I
1		date	t	yi	yi ⁿ	yi-y ⁿ	(yi-y ⁿ) ²	yi-y aver	(yi-y aver) ²
2		2000	16	67	68,09411	-1,09411	1,197077	-3,64706	13,30104
3		2001	15	65	65,9282354	-0,92824	0,861621	-5,64706	31,88927
4		2002	14	68	67,3784706	0,621529	0,386299	-2,64706	7,00692
5		2003	13	68	67,8135412	0,186459	0,034767	-2,64706	7,00692
6		2004	12	68	67,9440624	0,055938	0,003129	-2,64706	7,00692
7		2005	11	71	70,0832187	0,916781	0,840488	0,352941	0,124567
8		2006	10	70	70,0249656	-0,02497	0,000623	-0,64706	0,418685
9		2007	9	69	69,3074897	-0,30749	0,09455	-1,64706	2,712803
10		2008	8	71	70,4922469	0,507753	0,257813	0,352941	0,124567
11		2009	7	69	69,4476741	-0,44767	0,200412	-1,64706	2,712803
12		2010	6	74	72,6343022	1,365698	1,86513	3,352941	11,24221
13		2011	5	75	74,2902607	0,709739	0,50373	4,352941	18,9481
14		2012	4	75	74,7870782	0,212922	0,045336	4,352941	18,9481
15		2013	3	76	76,0361235	-0,03612	0,001305	5,352941	28,65398
16		2014	2	76	76,410837	-0,41084	0,168787	5,352941	28,65398
17		2015	1	72	73,3232511	-1,32325	1,750993	1,352941	1,83045
18		2016	0	67	68,8969753	-1,89698	3,598515	-3,64706	13,30104
19			yi average=	70,64706		sum=	11,81058	sum=	193,8824

Source: own processing

$I_{yx} = 0.969063362 =$ it is almost 97%. The model is significant as well.

$$y_{2017} = 68,896 + (1 - 0,7) \cdot (67 - 68,896)$$

$$y_{2017} = 68,3278827 = 68$$

The prediction shows that CSI of 2016 and 2017 distinguish for 1 unit. The CSI of Burger King will, even if not significantly but grow, which is satisfactory for business.

6.2. Statistical research.

In this part of the fourth chapter, is analyzed the multiple regression analysis. MRA is divided into linear and nonlinear. The main objective is to find the correlation of independent variable and two or more explanatory.

$$y' = a + b_1 x_1 + b_2 x_2 + \dots + b_k x_k$$

The formula, which is given above, demonstrates the equation, where

a is constant, b is the coefficient of regression.

Parameters estimate a, b are done by using Ordinary Least Square (OLS) method, or by calculation in SAS Enterprise Guide.

The main objectives of MRA are paired correlation coefficients, which defines the multicollinearity of the model, where each variable should be similar to each other, by means of to be able to find the coefficient of determination (R^2), which determines the significance of the model. Another goal is to estimate the t-test, which determine the relationship between variables. Also, the hypothesis has to be set, in order to accept or reject them.

According to conditions and explanations above were done the statistical research by SAS. The Figure 14 shows the CSI, income statement, GDP in U.S for 2000-2015 years for McDonalds*16. CSI is independent variable and income, GDP are explanatory. So, eventually, we should find whether those explanatory variables have an influence on customer satisfaction or they are not.

Figure 14 Multiple Regression for McD

	csi	income	gdp
1	59	57.79	10.284
2	62	56.531	10.621
3	61	55.871	10.977
4	64	55.823	11.51
5	64	55.629	12.274
6	62	56.224	13.093
7	63	56.663	13.855
8	64	57.423	14.477
9	69	55.376	14.718
10	70	54.988	14.418
11	67	53.568	14.964
12	72	52.751	15.517
13	73	52.666	16.155
14	73	52.85	16.691
15	71	53.718	17.393
16	67	56.516	18.036

Source: own processing

The Figure 17 demonstrates the MRA. We can find the parameters of estimation from the last table. a is 143.09458, b_1 is -1.61322 and b_2 is 0.88096. The real formula looks like this:

$$y' = 143.094 - 1.61322 x_1 + 0.88096 x_2$$

R^2 is equal to 0.8946 = 89.46 %, it is more than 60 %, so, that means the model is significant.

Before doing the t-test, which the parameters of estimation can be found from the third picture, we should find the multicollinearity of the variables and autocorrelation of the residuals. The Figure 15 demonstrates the correlation of coefficients. Suppose that income is x_1 and GDP is x_2 ; in fact, income and GDP is x_1x_2 , and GDP and Income is x_2x_1 .

So x_1x_2 is equal to -0.57983, which means that both variables are equal to the alike number as same as the x_2x_1 . According to that, the variables are in multicollinearity towards to each other.

*16 <https://www.statista.com/statistics/188105/annual-gdp-of-the-united-states-since-1990/>

<https://www.statista.com/statistics/200838/median-household-income-in-the-united-states/>

Figure 15 Multiple Regression for McD

2 Variables: income gdp						
Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
income	16	55.27419	1.67637	884.38700	52.66600	57.79000
gdp	16	14.06144	2.42436	224.98300	10.28400	18.03600

Pearson Correlation Coefficients, N = 16 Prob > r under H0: Rho=0		
	income	gdp
income	1.00000	-0.57983
gdp	-0.57983	1.00000

Source: own processing

The next step is to determine whether there is an autocorrelation or not. It is one of the premises of classical regression models about independency of different errors between each other. An autocorrelation can be found by the ratio of Durbin-Watson criteria (d) and coefficients of the first order autocorrelation's residuals (r1) if there is a big sample size or just by the Durbin-Watson criteria. The McD analysis will be done by the first one. So, in other word, there is a positive autocorrelation if $d=0$ and $r1=1$, or there is a negative autocorrelation if $r1= -1$ and $d=4$, or there is no autocorrelation if $r1=0$ and $d=2$.

Figure 16 Autocorrelation of McD

Linear Regression Results	
The REG Procedure	
Model: Linear_Regression_Model	
Dependent Variable: csi	
Durbin-Watson D	2.066
Number of Observations	16
1st Order Autocorrelation	-0.043

Source: own processing

It can be determined by the formula $d=2*(1- r1)$, So. In our case, $r1=-0,043$, which is close to 0 and $d=2.086$, which is close to 2, that means there is no autocorrelation. This is one of the confirmations of the high-quality model.

Figure 17 Multiple Regression for McD

Number of Observations Read	17
Number of Observations Used	16
Number of Observations with Missing Values	1

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	278.59770	139.29885	55.14	<.0001
Error	13	32.83980	2.52614		
Corrected Total	15	311.43750			

Root MSE	1.58938	R-Square	0.8946
Dependent Mean	66.31250	Adj R-Sq	0.8783
Coeff Var	2.39681		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Squared Partial Corr Type I	Squared Partial Corr Type II
Intercept	1	143.09458	18.46037	7.75	<.0001		
income	1	-1.61322	0.30047	-5.37	0.0001	0.74872	0.68920
gdp	1	0.88096	0.20776	4.24	0.0010	0.58037	0.58037

Source: own processing

When the correlation and autocorrelation are found, it is time to analysis the t-test. As it was mentioned, the hypothesis should be set. The parameters are taken from the Figure 17. So,

H_0 : There is no relationship between variables

H_1 : There is a significant relationship between variables.

$$t_1 = -5.37$$

$$t_2 = 4.24$$

$$p = 0.0001$$

$$p = 0.001$$

$$\alpha = 0.05$$

$$\alpha = 0.05$$

Again, alpha level is within 0 and 1 and it should be compared to p-value

$$p < \alpha = H_0 \text{ is rejected}$$

$$p < \alpha = H_0 \text{ is rejected}$$

In both cases, we rejected H_0 and accepted H_1 that means there is a relationship between variables. In fact, CSI is influenced by income and GDP.

The following research leads to Burger King`s MR analysis. All steps are done by same principles as before.

Here are CSI, Income statement, GDP are demonstrated below. The variables are collected within 2000-2015 years for Burger King.*17.

*17 <https://www.statista.com/statistics/188105/annual-gdp-of-the-united-states-since-1990/>

<https://www.statista.com/statistics/200838/median-household-income-in-the-united-states/>

Figure 18 Multiple Regression for BK

	CSI	income	GDP
1	67	57.79	10.284
2	65	56.53	10.621
3	68	55.871	10.977
4	68	55.823	11.51
5	68	55.629	12.274
6	71	56.224	13.093
7	70	56.663	13.855
8	69	57.423	14.477
9	71	55.376	14.718
10	69	54.988	14.418
11	74	53.568	14.964
12	75	52.751	15.517
13	75	52.666	16.155
14	76	52.85	16.691
15	76	53.718	17.393
16	72	56.516	18.036
17	.	.	.

Source: own processing

The parameters of estimation are given in the picture №2. a is 115.73329, b_1 is 0.80990 and b_2 is – 1.01759. The real formula looks like this:

$$y' = 115.733 + 0.8099 x_1 - 1.0175 x_2$$

R^2 is equal to 0.8886 = 89%, it is more than 60% that means the model is significant.

Figure 19 Multiple Regression for BK

Number of Observations Read		17	
Number of Observations Used		16	
Number of Observations with Missing Values		1	

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	159.73350	79.86675	51.87	<.0001
Error	13	20.01650	1.53973		
Corrected Total	15	179.75000			

Root MSE	1.24086	R-Square	0.8886
Dependent Mean	70.87500	Adj R-Sq	0.8715
Coeff Var	1.75077		

Parameter Estimates							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Squared Partial Corr Type I	Squared Partial Corr Type II
Intercept	1	115.73329	14.41213	8.03	<.0001		
GDP	1	0.80990	0.16220	4.99	0.0002	0.72745	0.65728
income	1	-1.01759	0.23458	-4.34	0.0008	0.59143	0.59143

Source: own processing

The next step is to determine whether there is an autocorrelation or not. It is one of the premises of classical regression models about independency of different errors between each other. It will be analyzed by the other type of research.

The algorithm for determining the autocorrelation of the residues of the Durbin-Watson criteria is as follows: H_0 : there is no autocorrelation of the residues.

H_1 and H_2 : there are positive or negative autocorrelation in the residues.

Further, according to special tables, critical values of the Durbin-Watson criterion are determined DL and DU for a given number of observations, the number of independent model variables m, and the significance level alpha. For these values, the numerical interval is divided into five segments. The acceptance or rejection of each of the hypotheses is carried out with probability as follows:

$0 < d < DL$ - there is a positive autocorrelation of the residuals, H_0 is rejected and H_1 is accepted.

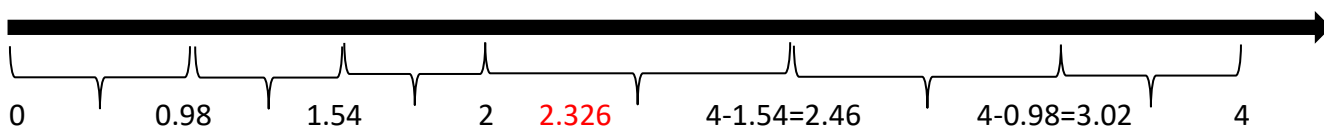
$DL < d < DU$ – zone of uncertainty.

$DU < d < 4 - DU$ – there is no autocorrelation, so, acceptance of H_0 .

$4 - DU < d < 4 - DL$ – zone of uncertainty.

$4 - DL < d < 4$ – there is a negative autocorrelation of the residuals, H_2 is accepted.

On our case $DL = 0.98$, $DU = 1.54$, and $d = 2.326$.



So, our variable is on “there is no correlation” area. Means that we accepted H_0 .

Figure 20 Autocorrelation BK

Linear Regression Results	
The REG Procedure	
Model: Linear_Regression_Model	
Dependent Variable: csi	
Durbin-Watson D	2.326
Number of Observations	16
1st Order Autocorrelation	-0.256

Source: own processing

As it was already mentioned, the multicollinearity of the variable have to be found. So, the Figure 21 shows, x_1x_2 is equal to -0.57979 , which means that both variables are equal to the alike number as same as the x_2x_1 . According to that, the variables are in multicollinearity towards to each other.

Figure 21 Multiple Regression for BK

2 Variables: income GDP						
Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
income	16	55.27413	1.67632	884.38600	52.66600	57.79000
GDP	16	14.06144	2.42436	224.98300	10.28400	18.03600

Pearson Correlation Coefficients, N = 16 Prob > r under H0: Rho=0		
	income	GDP
income	1.00000	-0.57979
GDP	-0.57979	1.00000

Source: own processing

The following step is to set the hypothesis. The parameters are taken from the Figure 19. So,

H_0 : There is no relationship between variables

H_1 : There is a significant relationship between variables.

$$t_1 = 4.99$$

$$t_2 = -4.39$$

$$p = 0.0002$$

$$p = 0.0008$$

$$\alpha = 0.05$$

$$\alpha = 0.05$$

Again, alpha level is within 0 and 1 and it should be compared to p-value

$$p < \alpha = H_0 \text{ is rejected}$$

$$p < \alpha = H_0 \text{ is rejected}$$

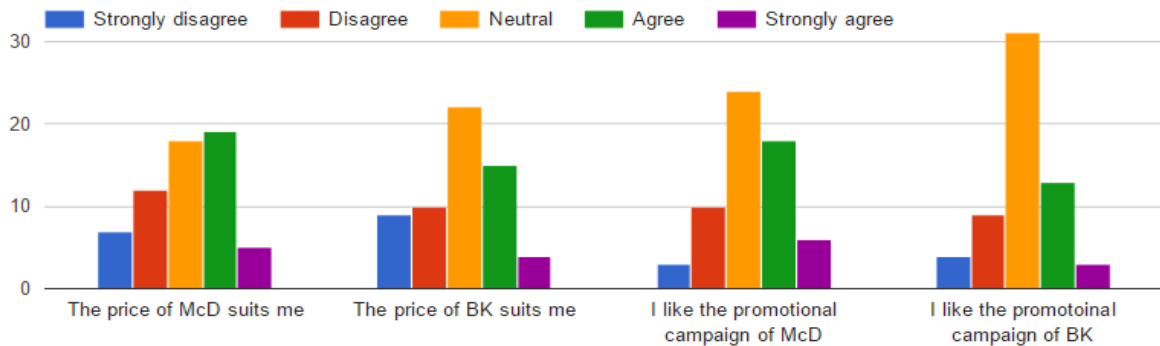
According to solutions, we rejected H_0 and accepted H_1 that means there is a relationship between variables. In fact, CSI is influenced by income and GDP.

6.3. Categorical data analysis.

Categorical data analysis (CDA) is the other way of statistical research. It is based on analysis of a contingency table. There are two branches of CDA such as testing of dependency and power of dependency. Like every research, it has its own conditions and compositions. First of all, the hypothesis should be determined, in order to accept it or not later on. When the hypothesis is set, the next step is to find the expected frequencies, which maximum 20 % of them has to be less than 5 and no expected frequencies are less than 1. After that, it is time to determine the conditions of testing such as we use X^2 test only when the sample size is bigger than 40; if it is between 20 and 40 and the all expected frequencies are less than 5, so, Fisher test should be used, but if it is not we use X^2 as well. And the last condition is if the sample size is less than 20, only Fisher test have to be used. Also, there is α , which is within 0 and 1, on this occasion.

There is a graph below, which is taken from the questionnaire that has been done among the population. So, the illustration shows the dependency, which has to be investigated, between variables. In this case, the CDA is analyzed by SAS program

Figure 22 Quiz



Source: own processing

This table is made in SAS. The numbers, which are in row frequency show the results of the quiz and, below them are expected frequencies. In this case, our sample size is bigger than 40, it is equal to 242. Fortunately, all the conditions are observed in a proper way. The exact 20 % of expected frequencies are less than 5, that means we can carry on our observation.

When the clauses are satisfied, the fulfillment of acceptance or rejection of the set hypothesis needs to be done. In CDA, as it was mentioned, we use Chi-square test. It is visible in the first row of the second table.

Figure 23 Categorical Data Analysis

		Table of type by answer					Total
		answer					
type		strongly dis	disagree	neutral	agree	strongly agr	
the price Mc	Frequency	7	12	18	19	5	61
	Expected	5.7975	10.335	23.946	16.384	4.5372	
the price BK	Frequency	9	10	22	15	4	60
	Expected	5.7025	10.165	23.554	16.116	4.4628	
campaign Mc	Frequency	3	10	24	18	6	61
	Expected	5.7975	10.335	23.946	16.384	4.5372	
campaign BK	Frequency	4	9	31	13	3	60
	Expected	5.7025	10.165	23.554	16.116	4.4628	
Total	Frequency	23	41	95	65	18	242

Statistics for Table of type by answer			
Statistic	DF	Value	Prob
Chi-Square	12	10.6659	0.5577
Likelihood Ratio Chi-Square	12	10.6728	0.5571
Mantel-Haenszel Chi-Square	1	0.1922	0.6611
Phi Coefficient		0.2099	
Contingency Coefficient		0.2055	
Cramer's V		0.1212	

Sample Size = 242

Source: own processing

H₀: There is no relationship between answers and questions

H₁: There is a relationship between answers and questions

χ^2 is equal to 10,6659

p-value = 0.5577, alpha = 0.05

Now, it is time to accept or reject the hypothesis. We can compare either p-value and alpha, or χ^2 with table value. In this case, it would be readily to match the p-value and alpha.

The H_0 is accepted and the H_1 is rejected, when the p-value is bigger than alpha and vice versa.

So, p-value > alpha = H_0 is accepted, there is no relationship.

6.4. Discussion

The results of research reveal the substantial entities that influence on consumer behavior. The understanding of consumer's decision simplifies the promotional processes of the venture. According to the first analysis, the forecasting to CSI of the companies stay on one position or insignificantly increasing. We can see that both restaurants surrender of that there are healthy people around, the numbers of whom are growing up day by day, and companies loose substantial amount of their clients. The recommendation for it is to open the vegetarian menu and decrease the putting less preservatives in the products.

The second research demonstrates the observation of influencing income and GDP on purchase decision of the customers. It does not rely just on one key source of income, it comes from taste, preferences, lifestyle as well, but in that case the decision-making process is discussed by income and GDP statements. The researches shows that there is a relationship between estimation variable, means that, literally, income and GDP do influence on customer satisfaction index.

The last but not the least analysis is CDA. The research has demonstrated that the relationship between variable does not exist. In other words, the answers are not distinguishing from the expected one. They are all close to each other.

From the figure 20, we can see that majority of the people, who were surveyed, are feeling neutral about prices and promotions of the companies. The answer, which is the second dominant among the others, shows that population, who have gone through the quiz, are agree with the offered questions.

7. Conclusion

The "consumers and consumer's behavior" is the main topic of the bachelor thesis. The major objective of analyzing this topic is determining the main features of behavior, which can help us on the market. In fact, the investigation of the purchase decision of the customers can lead to attracting new loyal clients and increasing the revenues.

The promotion, the fame of the brand, and price are one of the important tools, which help to the companies with satisfying the needs and the requirements of their consumers.

The research, that has been done by means of statistics analysis, shows the correlation of consumers and the features, that have an influence on them. Of course, they are not the only

variables that have an impact on consumers. There are some other features that are substantial for examining the customers:

- *Lifestyle* is the part of the consumer's segmentation. The consumer's lifestyle is the way of life, connected with the using of resources (time, money, information). The lifestyle is depending on activities, interests and opinions of people. It is its own individual characteristics, formed in the process of consumer's life cycle. The life style of the customers is the subject, where external social factors as culture, values, social class, reference groups and individual characteristics as motives and emotions have a huge influence on it.
- *Environment* has an impact on consumers by the people that you are surrounded. People are usually influenced by relatives, friends. Also, people are dedicated to different sectors of society or community, therefore they use those goods or services that help them determine their belonging to any group.
- *Religion* is related to those groups that bounded by mutual system of value that are based on common life experiences. It limits you with moral norms, types of behavior and rituals.
- *Influencing*: The consumption of certain products can lead to addiction of using them. As we know, the companies usually put different colorants, preservatives in food, and we all understand how they influence on people's organism, they do it in order to have customers over and over again, without their will.

According to the research that has been made by comparison of two fast-food restaurants as McDonald's and Burger King. Both companies working by franchising programs, however, they use totally different strategies for attracting customers. As it was mentioned, McDonald's concentrates on opening new branches in order to receive more clients, while Burger King focuses on their menu campaign. Following inferences are made from practical conclusions:

- The customer's satisfaction will slowly grow up year by year. It happens due to the fact that number of healthy lifestyle consumers increases, while companies do not have numerous of suitable products for them as they do for the others.
- The income statements of the customers are in direct ratio to the consumer's satisfaction. This can be explained as the target group of the companies are mainly concentrate on dependent ones or young people until 30 years. Undoubtable, these consumers can afford less consumption because of the price that restaurants offer.
- The third conclusion is based on the quiz that have been made in order to explore the issues. The Figure 20 demonstrates the people mostly are feeling neutral for the questions that are based on Burger King. For instance, 31 people answered "neutral" to the question "I like promotional campaign" or 22 answered the same to "the price of BK suits me", while their main competitor has insignificantly succeeded.
- Also, McD is slightly going ahead in the question about campaigns. It means, that customers more likely satisfied with what they do for them.

8. Resources

Websites:

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- *2 Khan Academy; *What factors change demand?*: <https://www.khanacademy.org/economics-finance-domain/microeconomics/supply-demand-equilibrium/demand-curve-tutorial/a/what-factors-change-demand>
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*13 *Annual Reports*: <http://corporate.mcdonalds.com/mcd/investors/financial-information/annual-report.html>

Annual Reports: <https://ddd.uab.cat/pub/infanu/46852/iaMCDONALDSa2005ieng.pdf>

*14 *ИНДЕКС УДОВЛЕТВОРЕННОСТИ ПОТРЕБИТЕЛЕЙ*: <http://chiefengineer.ru/organizaciya-proizvodstva/pokazateli-effektivnosti/indeks-udovletvorennosti-potrebiteley/>

*15 *American customer satisfaction index scores of McDonald's restaurants in the United States from 2000 to 2016*: <https://www.statista.com/statistics/216696/mcdonalds--customer-satisfaction-in-the-us/>

*16 *Gross domestic product (GDP) of the United States of America from 1990 to 2015 (in billion U.S. dollars, current)*: <https://www.statista.com/statistics/188105/annual-gdp-of-the-united-states-since-1990/>

Average (median) household income in the United States from 1990 to 2015 (in U.S. dollars): <https://www.statista.com/statistics/200838/median-household-income-in-the-united-states/>

*17 *Gross domestic product (GDP) of the United States of America from 1990 to 2015 (in billion U.S. dollars, current)*: <https://www.statista.com/statistics/188105/annual-gdp-of-the-united-states-since-1990/>

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Figure 3 List of food`s cost

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Figure 12 Time series analysis McD

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