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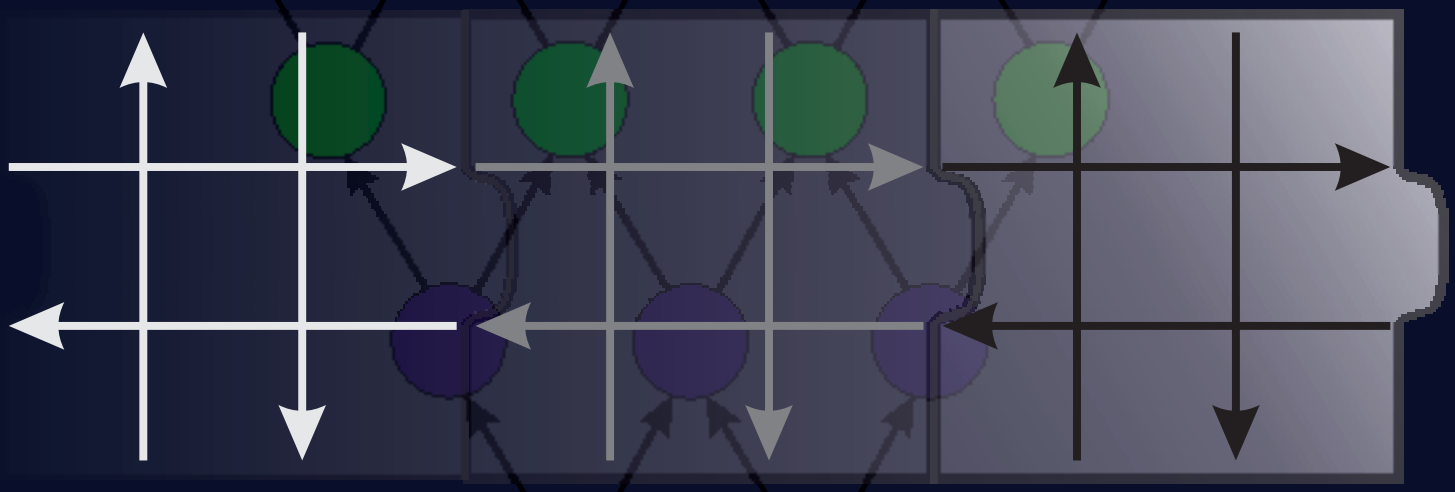

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MARKETING RESEARCH OF AREAS AMBIGUOUSLY DEFINED

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Keywords: marketing research, process chart, prognosis
Abstract: Marketing research is an integral part of every corporate strategy, or can be used for analysing and resolving of corporate issues. His creation is very important because it shows the kind of feedback possible opportunities, identifies the consumer and provides data about future motivations, requirements and market needs. The very creation of marketing research is often not so easy. Due to the complexity of products, market diversity and technological innovation, a process diagram has been created for areas ambiguously defined by the input. The diagram defines how to proceed in marketing research in these complicated and branched areas. Due to this diagram, marketing research can be more specific and closer to the desired results. The individual diagram inputs point to possible influencing factors. Marketing research of ambiguously defined areas is becoming more systematic and objective.

1 Introduction

Properly conducted marketing research must follow certain principles not only to avoid costly mistakes but to focus on objectivity and systematicity. At the same time, research needs to be done creatively and looking for new approaches [1-3].

Marketing research cannot always be uniformly modelled according to available systematic procedures, especially in difficult areas. In such cases, the definition of assignment itself is very important.

2 Proposal of the flow diagram

This definition may be more demanding and more difficult than research itself. Ignoring the fact that the assignment should correspond to the output, then you can divide the whole marketing research into three basic parts, see Figure 1.

A) Definition of assignment.
B) The collection of data.
C) Data evaluation and analysis.

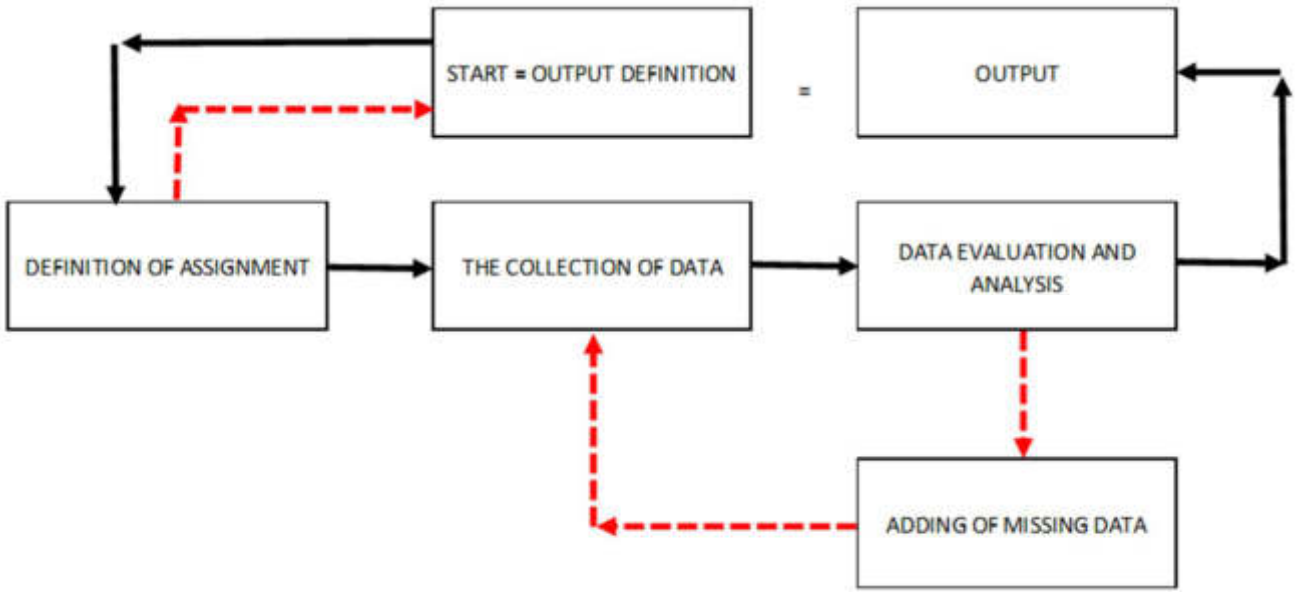

Figure 1 Graphical basic definition of marketing research

A) Definition of assignment

The most important part of marketing research for ambiguously defined areas by the assignment is the specification of the assignment. In many cases, the definition of individual input parameters alone is a complex secondary research. In order to create marketing research on a specific product, specific parameters affecting data collection and analysis must be strictly defined. A diagram has been created on this issue. Figure 2, which show the six most important parameters influencing marketing research itself.

1) **Definitions of terms** - what is the real "name" of the monitored object, how the object is perceived by experts, the public, according to regulations and legal practices, what is all under the research term included for the study.

2) **Definition of extent** - where, at what level the research is in progress, local, national, international, within the continent, worldwide ...

3) **Definition of time interval** - what period of time the research will involve. Here we must define short-term or long-term research, including a precisely defined time interval, fiscal year of the company, last 3 years, 10 years ...

4) **Definition of the criteria of origin** - How (technology) and from what (impute material) and its purpose of use. Here is an important specification of the manufacturing technology, the origin of the product and the material used. This definition can be very comprehensive and include several sub-parts of research.

5) **Definition of the monitoring unit** - we describe in which units the product is checked and generally monitored (e.g., tonnes, litters, euro, pieces, percentages ...)

6) **Definition of the area of data drawdown** - the sources from which the information for the analysis will be drawn and what information sources will be included in the research or, if necessary, we will determine the form of obtaining information / data for research. It is also important to divide data according to credibility.

B) The collection of data

Data collection is based on the last definition of point 6, from the definition of the data area. In making any marketing research, one of the most important tasks of the creator is the evaluation and splicing of data according to the credibility and certain objectivity, i.e.:

Verified Source = Source of Data Draw, which is always listed and can be traced

Credibility of author / media = Absence of alternative and peripheral resources and local research

Verify information from other sources such as Google, the same information used in another publication

C) Data evaluation and analysis

We prefer to solve the problem by combining multiple methods and gathering information from multiple independent sources. Of course, every analysis is not research. Marketing research should therefore function as a scientific method using scientific methods and applications, e.g. statistical, psychological, sociological, ethnographic and other. Using the scientific method, we just do not think, that our intuition is right. On the contrary, we will use this intuition, resp. already known information to create hypotheses that we must confirm (accept or reject) before the final decision. The scientific method promotes systematic research [1,2,4,5].

The systematic process of marketing research means determining when research will be used and what decisions to influence, determining the organizational security of the research, specifying the scope by determining the type and method of research, and also proposing approximate prices for the whole research.

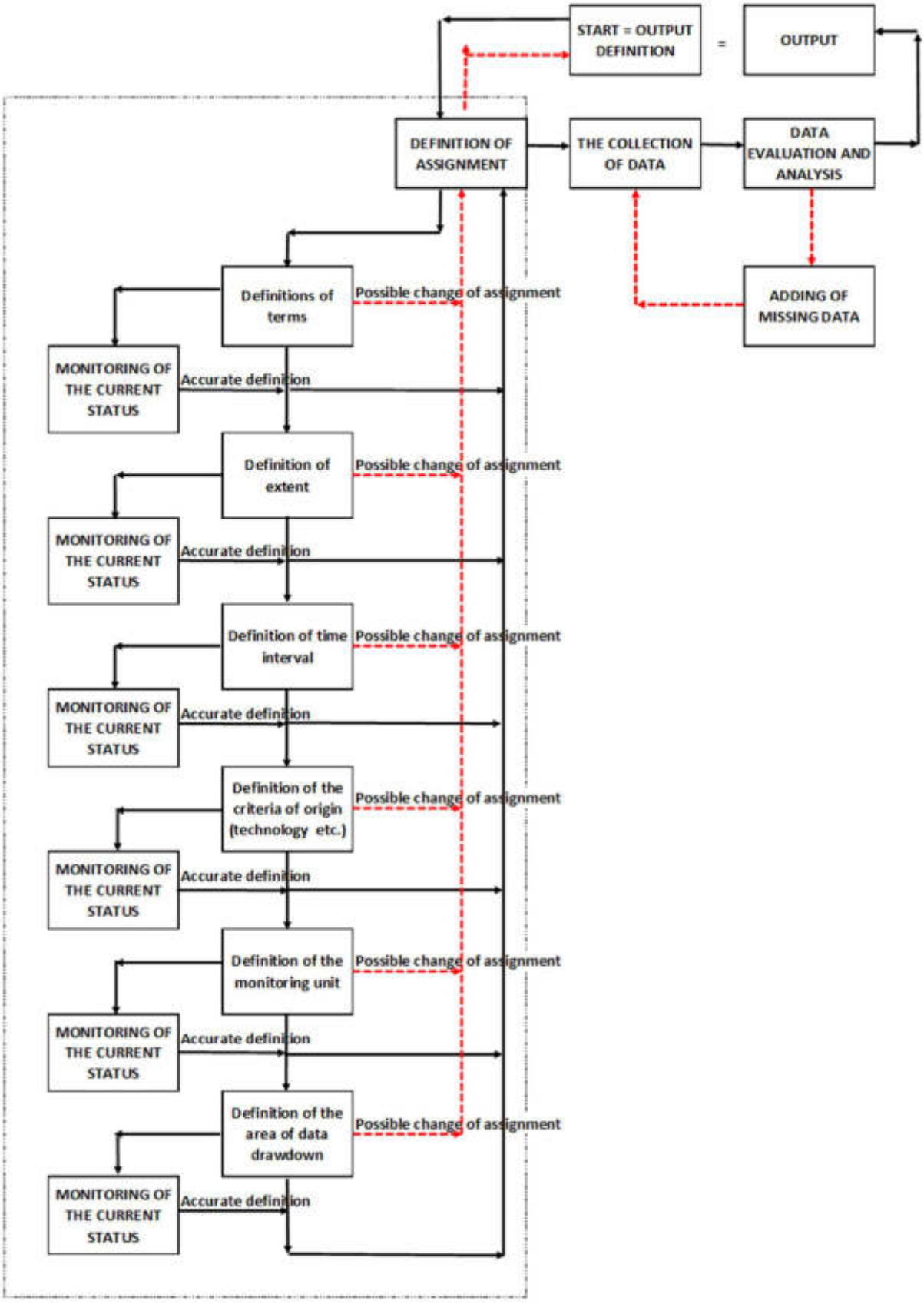

Figure 2 The flow diagram of the exact definition of the assignment

3 Verification in practice

The general diagram of the procedure for the precise definition of the assignment (Figure 2) was generated by the generalization of very extensive marketing research on the application of technical textiles. Here, marketing research should define what technical fabrics are currently produced, where they are in deficient quantities/ quality on the market and where they are completely missing (Figure 3).

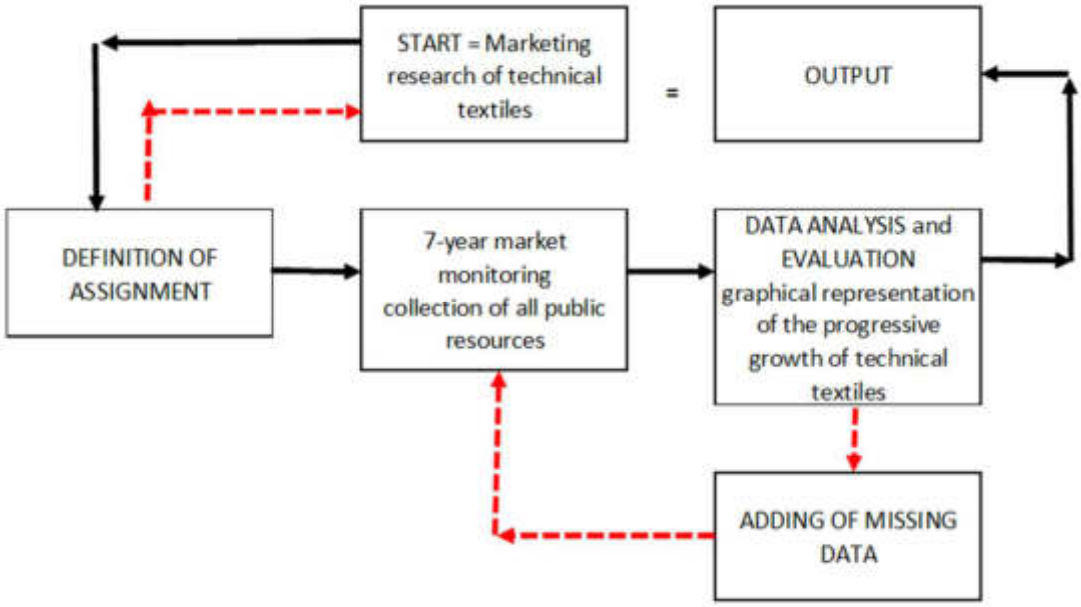

Figure 3 Diagram of basic division of marketing research of technical textiles

Based on the vast amount of data collected, they were selected into six groups and was created a specific flow diagram of the exact definition of process. (Figure 4).

1) **Definitions of terms** - what is included by the term technical textiles, how I understand this concept for this particular marketing analysis.

2) **Definition of extent** - Worldwide overview because the local has no benefits in this case.

3) **Definition of time interval** - dates from 1995 to the present.

4) **Definition of the criteria of origin** - this part was the most extensive. The technological possibilities of production are countless, including the use of input material. Here was selected a fabric that was divided into groups according to the field of use [6].

5) **Definition of the monitoring unit** - market monitoring carried out in tonnes.

6) **Definition of the area of data drawdown** - all publicly verified sources.

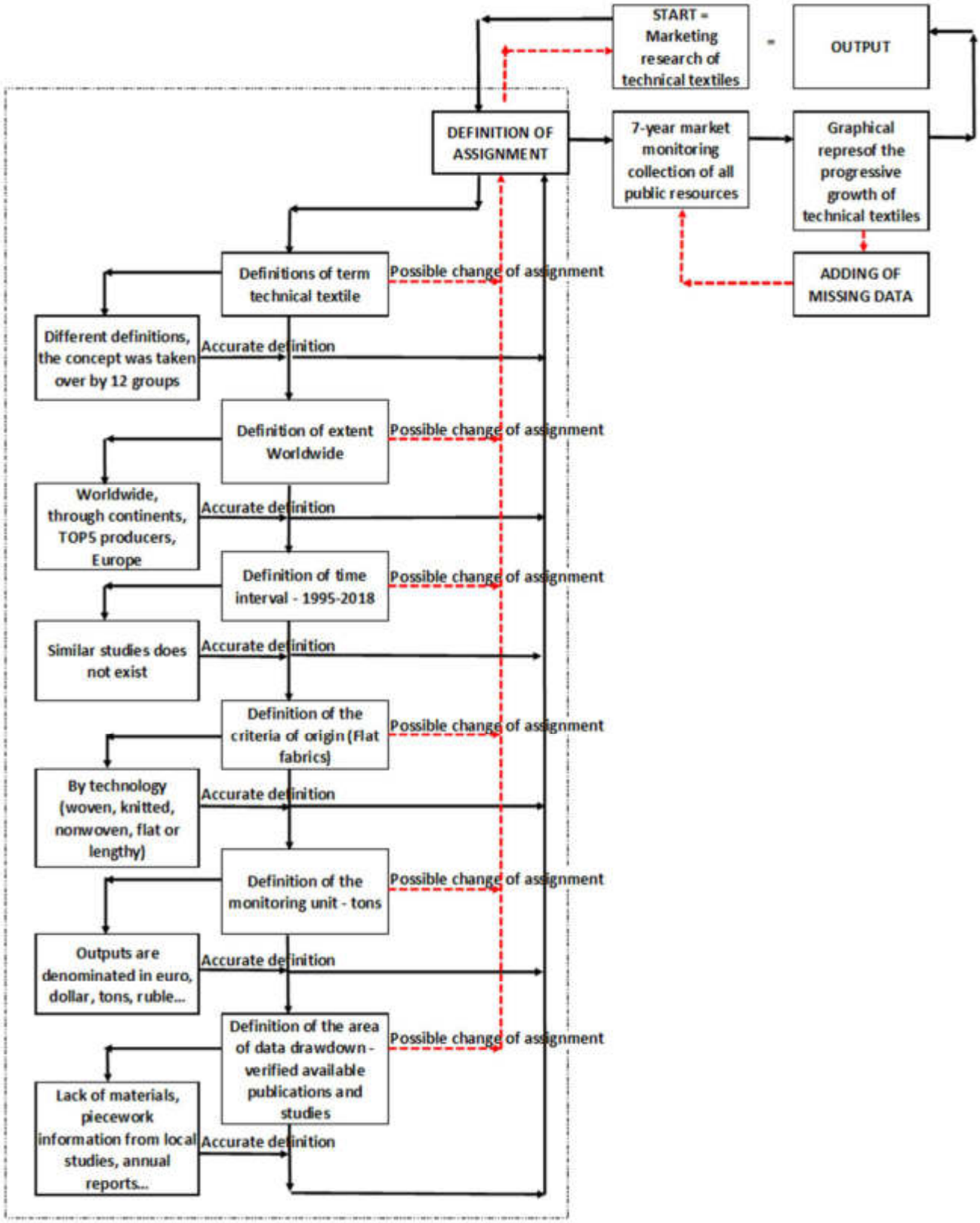

Figure 4 Diagram of the process of creating a marketing research on technical textiles

Here the ability to implement the diagram was verified on a specific example of an area that did not have a clearly defined or difficult to define assignment. Thus, it can be stated that the workflow diagram is applicable to marketing research that does not have a clearly defined assignment.

4 Conclusions

Based on personal experience with very extensive marketing research, a workflow model was created for areas ambiguously defined by the assignment. Here is described how to proceed in complicated and larger areas, a workflow scheme is created that can be implemented in different areas. The individual inputs of this workflow diagram point to possible influencing factors. They also show the need for a large number of analyses and comprehensive market monitoring that are essential for a proper understanding of the market. Marketing research of difficult-to-defined areas becomes more systematic and objective. Due to this diagram, marketing research can be more specific and closer to the desired outcome.

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THE CONCEPT OF BUILDING A SUPPLY CHAIN IN THE FAST FASHION CLOTHING INDUSTRY

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Keywords: supply chain, nearsourcing, fast fashion
Abstract: Nowadays, supply chains must be adapted to constant changes taking place in the company's environment, therefore, the need to efficiently configure and reconfigure them is fundamental. The study presents the specificity of the clothing industry, which defines the role of fast fashion business strategy in building a competitive advantage. On the basis of literature studies, the directions of development of the supply chain in the analysed industry were indicated.

1 Introduction

The feature of modern business is the very strong competition between enterprises that carry out all processes in the international economic space, locating individual links of their logistics systems in precisely defined regions of the world. Nowadays, supply chains must be adapted to constant changes taking place in the company's environment, therefore, the need to efficiently configure and reconfigure them is fundamental. These activities are constantly enforced by growing customer expectations, rapid changes in demand and supply, competition or a variety of technological innovations. These technological innovations force corporations to invest globally in their supply, production and distribution networks. The aim of the research was to determine the direction of changes in the clothing industry, with particular emphasis on supply chains and production placement. The clothing industry is one of the most dynamically changing industries in the world. Fashion, all trends, over a dozen collections during the year make it a very difficult market for enterprises, and the moment of inattention can lead to the edge of bankruptcy. The study presents the specificity of the clothing industry, which defines the role of fast fashion business strategy in building a competitive advantage. On the basis of literature studies, the directions of development of the supply chain in the analysed industry were indicated.

2 Characteristics of the Fast Fashion industry

Contemporary clients actively search for products using the Internet and thanks to the efficient flow of information, they gain access to market novelties much faster. As a result, they began to demand continuous updating and improving the offer. The impatient clients created a completely new market and clothing industry, shortening the life cycle of products and imposing a very high rate of introducing new products. This required the clothing industry to improve the organizational efficiency of enterprises that tried to keep up with consumer expectations. The essence of this business model is to maximally shorten the preparation time of the collection and the life cycle of the finished product. The products are placed on the market in small quantity batches, with very high frequency. As a result, goods change so often in stores, that it encourages customers to frequent visits and the client compares different brands, visits those that are characterized by a large variability of the offer. This approach has strategic features and requires an organizational commitment of the entire enterprise.

Fast Fashion is a term that primarily defines the business and sales strategy of textile and clothing enterprises. This concept puts a special emphasis on satisfying customers' needs in terms of two key elements - speed and diversity, at the lowest possible price [1].

In practice, this means quick trend updates, a shorter life cycle of products and low prices as well as high flexibility against changing demand. The most important priorities of the Fast Fashion strategy concept are:

- Speed - this concept is based on reducing the time of the flow of goods, information throughout the supply chain - from the preparation of product concepts, through their production, to delivery to stores, all in order to increase customer satisfaction. Compared to traditional models based on long-term forecasts, the time is shortened from 52 to 2-4 weeks. In the face of ever-changing trends, and thus the ever-changing demand for these goods, enterprises faced an extremely difficult challenge to meet these requirements.
- The golden mean according to this concept is the total concentration on time - the most important factor shaping the value of the product, and as a result, the customers' purchasing tendencies. Hence, time dethrones the price and becomes the main priority of the modern clothing industry. Consequently, by moving production to regions closer to places of consumption of goods and shortening delivery time; demand and life cycle of products - the previously mentioned speed of delivering novelties to the market is the key to the success of enterprises in the contemporary fashion industry. Accordingly, this feature

adds value to the goods and makes them capable of satisfying the needs of customers.

3 Result and discussion

K. Rutkowski defined the configuration of the supply chain as a combination - arrangement of its key elements, whereas reconfiguration as the ability to introduce changes in this combination / arrangement [2]. The purpose of the reconfiguration is to improve the functioning of the supply chain and the essence of it are significant changes in its subjective and process layout, which aim to improve efficiency in terms of flexibility, speed, reliability, quality and costs. All activities related to configuration and reconfiguration of the supply chain are crucial in the strategic management of the supply chain, thus determining further aspects of the operational functioning of the logistics network. According to Hout [3], companies competing on global markets apply strategies:

- Multilocal - geographic distribution of activities and its loose coordination; local supply and local production; customized products targeted at local customers. The goal was a regional competitive advantage; used by companies with branches in different regions of the world;
- Transnational, including global strategies - competitive advantage seen mainly in the economies of scale and integration of business activities in various markets. The goal was to focus on standardization in all markets.

Along with the intensification of globalization processes, most corporations began to abandon multilocal strategies for global strategies, which resulted in, among others, limiting the competences of local branches and departments. In addition, the development of information and communication technologies entails the integration of marketing, procurement, production and distribution processes, resulting in a virtually complete departure from multilocal strategies. Global strategies assume competition wherever it is possible. The existing transnational management models predict a strong unification of consumer needs from different parts of the world, which results in the offer of standard, almost identical products. However, recently it has been noticed that such an approach is not very effective, which will probably force large-scale application of compromise solutions that reconcile various expectations of recipients and maximize global efficiency - economies of scale or cost reduction. The Inditex company owes its increased effectiveness especially on the European market to such a configuration - global, multidimensional configuration of processes such as design, production, procurement, marketing or distribution. The use of international space and adding value guarantees building an advantage over competitors and achieving assumed strategic benefits. International clothing companies operating in a dynamically changing environment will eventually be forced to change the location and number of suppliers, production plants and distribution centres, similar to the mentioned Inditex. In such models, it will be possible to observe a strong restructuring of the complex logistic network, which will have to face the ability to easily change and adapt.

Table 1 Division of the motifs of delocalisation of the value chain modules by group of factors [4]

Cost Motives	Resource Motives
• reduction of labour costs; • reduction of other costs; • the ability to predict the level of costs more accurately; • change in fixed costs to variable costs;	• access to qualified personnel; • focus on key competences; • access to new technologies;
Organizational Motives	**Market Motives**
• improvement of the level of services provided and the quality of products; • implementation of development strategies; • improving the efficiency of the entire system; • changes in business processes;	• faster access to markets; • access to new markets; • reducing the company's response time; • competitive pressure; • adaptation to the behavior of other entities;

Difficult strategic decisions regarding the location of production facing the clothing industry are the key to effective functioning, development and survival. Transnational and global strategies, especially the clothing industry, in the original version emphasized mainly the cost motives - extreme reduction of labour costs, which resulted in the transfer of production to countries such as China or Bangladesh. However, the experience of the last twenty years has shown that the other factors - resource, organizational or market - are equally important and their optimal combination ensures competitiveness. This is the reason why many companies such as American Apparel [5] and GAP, which have been intensively applying economies of scale and extreme cost reduction, etc., have found themselves on the verge of bankruptcy. Attempts to optimize costs only in individual parts of the chain caused

that costs grew rapidly in subsequent stages. The lack of a holistic approach made it impossible to predict the total amount of costs, not to mention the multiplicity of crises throughout the entire chain. The division into four groups of factors allows a more holistic approach to the problem because it presents different elements of the chain (Table 1). Research by K. W. Platts and N. Song showed that enterprises have to reckon with approximately 50% higher outsourcing costs than originally expected [6]. This perfectly highlights the problems of proper configuration of the supply chain of the Fast Fashion clothing industry. In the past, the main determinant was to reduce production costs by moving it to countries such as China and Bangladesh. Rising crude oil prices (on the Shanghai - New York route in 2000, the cost of one container was about $ 3,000, while in 2008 it was almost $ 8,000), therefore, rising transport costs have made it not the only valid indicator of choosing the right, economically sustainable business strategy [7].

Many enterprises are not aware of the difficulties of the adopted strategy and do not overestimate costs, which often wrongly identifies outsourcing to countries such as China with being economical. This is primarily due to the concern for acquiring cheap labor in developing countries, with the lack of knowledge related to the risk incurred [7]. In addition, K.W. Platts and N. Song indicate that outsourcing carries a number of risks related to factors such as:

- Currency fluctuations (difficulties in estimating real costs),
- Increase in oil prices (increase in transport costs and plastic packaging),
- Political instability,
- Excessive bureaucracy ("long product waiting time for documents"),
- Unforeseen costs (the longer the chain, the more critical points and unexpected difficulties),
- A large number of defective products (necessity of returning goods, prolonged waiting time for products, complaints, deterioration of the image, etc.),
- Communication difficulties between businesses collaborates (ignorance of foreign languages, inadequate telecommunications technologies).

Backelin and Welchermill particularly emphasize the problems of cultural differences and the problems that arise from them. During his professional career, he noticed that the Chinese, but also the population of other nationalities in this region is characterized by a certain peculiarity - "reluctance to disgrace, to lose the good name." What, as the above-mentioned Authors say, means more or less, "the Chinese never say no", even when they do not understand the orders or are not able to fulfil the order [7]. According to Backelin and Welchermill, it is precisely due to communication and cultural difficulties that a large part of the quality problems arise, as well as the necessary excessive amount of control, which is also very expensive. Lilja from H&M additionally emphasizes the difficulties associated with transport to such a distance - above all, time and unforeseen costs associated with various types of accidents or disasters. Estimating that about 10% of transport must be renewed by airway.

4 Conclusions

The Forum for the Future organization forecasts that by 2025, the human population will increase by 1 billion. However, the number of elderly people will be more than twice as large as today. At the same time, the demand for water, energy and food will increase, which will result in higher prices, and access to these resources will become a key political issue. These are not the only problems the industry is facing, the next significant are climate changes that will have a strong impact on agriculture. Repetitive droughts, floods, tsunamis and other catastrophes of this type will additionally intensify the increase of prices of primary commodities. At the same time, it is expected that this will intensify demographic problems and may lead to the escalation of further conflicts and migrations of millions of people. Natural disasters will raise prices of cotton, silk, wool or hides. The intensifying conflicts will continue to drive the increase in rates for crude oil, from which various synthetic fibres are produced. Other factors will also shape the modern world, for example, Far Eastern countries such as China and India will exert an increasingly significant influence on the international economy. The increasing number of people and the simultaneous enrichment of society from these regions will completely change the balance of power in the world. Technology and the Internet will continue to change the lives of billions of people. That is why building flexible and economically, socially and ecologically sustainable supply chains is so important. In industries with a high degree of competitiveness, such as Fast Fashion, the ability to react quickly determines the situation and market position of enterprises. The trend to reduce operating costs, including logistic costs, means that companies often lose it, which is why it is necessary to use a mix of many concepts, including:

- nearsourcing;
- using the services of specialized logistic operators, especially those serving the e-commerce market;
- fast rotation in the chain;
- efficient consumer response (ECR),
- information technologies that support efficient management:
  - automatic data identification systems,
  - database technologies,
  - Integrated IT systems.

Logistic operators that are real intermediaries of physical flow between suppliers and customers have not even been treated as the next link in the supply chain, only the operational background. It caused a number of negative consequences, such as cell positioning and lack of

understanding of their problems, which led to a decrease in the quality of services offered. With ECR, operators can bring a certain value to the Fast Fashion supply chain and even increase it.

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CURRENT STATE OF CRM SYSTEMS IN CONSTRUCTION INDUSTRY IN SLOVAKIA

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Keywords: Customer Relationship Management, information systems, construction industry, Slovakia
Abstract: Customer relationship management systems are an important technology for resource efficiency in the management of relations with customers. The use of customer relationship management systems is essential for high level of customer retention. This paper discusses issue of usage rate of customer relationship management systems in construction industry in Slovakia. Main aim of research was to analyse current state of usage rate of customer relationship management systems between participants of construction project in Slovakia. Research sample includes developers, designers, contractors and sub-contractor from Slovakia. It was divided according to size of company and length of time on the market. Based on this, it were set assumption that company size has impact on use of CRM systems. Another assumption was that length of time on the market has impact on use of CRM systems in Slovak construction industry.

1 Introduction

Order management or customer relationship management is one of the key issues for good business results [1]. Effective order management and customer relationships require a lot of information [2]. This, on the other hand, requires an information processing system. Precisely for these needs arise so-called customer relationship management systems (CRM). This narrowly specified area of information systems is relatively often used in large corporations abroad. The construction industry has specific features and therefore the usage rate does not have to correspond with other types of industries. This is particularly true in the context of the current situation in the Slovak construction industry. Based on research and studies already conducted, trends in the use of information systems have been outlined [3,4]. This is at a lower level compared to foreign enterprises in the construction sector. For this reason, it is very important to investigate these technologies and their utilization rate in the Slovak construction industry.

1.1 Customer Relationship Management

CRM or Customer Relationship Management is a strategy whose main goal is to better understand customers to meet their needs effectively and maximize their satisfaction. Customer information and knowledge are the means to achieve the greatest possible satisfaction. This information is acquired by the company through information and communication technology (ICT). In fact, with the increasing emphasis on e-business applications, CRM has become a major component of e-business strategy [5]. CRM systems are programs that allow you to collect, sort, and processing the customer data. In particular, they are collecting their contacts, information on ongoing business processes, and information on revenue and size. CRM systems help track and evaluate all business activities throughout the company. For this reason, CRM systems also include different statistical data as a result of the collection, sorting and evaluation of the information. CRM systems are based on a technology tool for managing and developing customer knowledge, through which the company strives to create superior customer relationships. The CRM system is thus an indispensable part of a global CRM strategy that emphasizes customer value creation. Thus, the company strengthens customer relationships, defines key customers, segmenting the market on which it operates, and differentiating between its campaign [6].

Customer relationship management is a set of processes, strategies and metrics, technology solutions that enhance organizations' ability to see differences between their customers. These systems also enable them to track new opportunities and immediately respond to customer needs [7]. According to another authors [8], the CRM system represents a link between customer-oriented

strategy, marketing strategy, and initiatives combined with ICT tools. The primary purpose of these activities is to increase customer loyalty and satisfaction. This leads to increased sales of products resulting in increased sales. From these definitions, it follows that CRM is a system whose individual pages are closely related. CRM systems can not only be considered software solutions. However, software and technology solutions are a major part of the CRM system and act as a tool for implementing the core customer relationship management strategy. Thanks to these applications, the company can collect, analyse the necessary information that leads to important decisions of the company's marketing strategy.

The CRM system cannot be perceived merely as a software or technological solution. Many sources point to other views on CRM. Their difference is precisely from the functions and activities of stakeholders (participants). One is a management view that is geared to monitoring, research and output as such, regardless of the usage technique. There is also a view of business owners who are focused on concrete results without having to know their customers. Last but not least, this is a typical view from the point of view of software functionality, where software and technology itself is the focus [9].

In general, CRM can be viewed as:

- A marketing perspective - a specific marketing policy for a company practiced by a variety of tools, uses trends and methods of modern promotion, a strategy that is often part of its vision;
- IT (Information Technology) perspective - this is a technological, hardware and software solution, especially in terms of functionality, user environment, information flows and overall functionality as a system or part of the information system of the company.

From the marketing point of view, it is mainly about marketing activities connected with the effort to achieve customer loyalty, which results in great benefits for the company. For this reason, it is possible to talk about CRM as a strategy or a company's policy to coordinate processes and activities that are customer-oriented. According to one of the most prominent authors of marketing definitions, CRM represents the whole process of building a customer relationship. It deals with all aspects of acquiring, maintaining and building customer relationships that are of great value to the enterprise [10].

2 Methodology

2.1 Data collection and research sample

Data collection was realised by on-line questionnaire. All participants of construction project created a research sample. Especially, there were contractor, sub-contractor, designers and investors in Slovak construction market. The first, companies were divided into two categories,. First group includes SMEs (Small and medium sized enterprises) that means smaller (less than 49 employees). Next group includes large enterprises or bigger (50 and more employees). This is not a standard enterprise divided by size. However, given the research methods and statistical tests conducted during the research, they indicated the appropriateness of this divided. The second fact is that in Slovakia there are few large companies. With regard to the research sample, there would be great disparity in this breakdown and could lead to general conclusions that would not be supported by a sufficient research sample (because of size of sample n=55).

Secondly, research sample was divided according to length of time on the market. First group was set as new companies (from 0 to 10 years old). Second group was created by companies with length of time on the market between 11 and 20 years. Last group was from 21 and more years length of time on the market.

2.2 Problem statement, hypotheses and Data processing

The influence of company size on CRM systems using was desired. This hypothesis was established: Bigger companies desire CRM systems more useful than smaller companies. On the beginning, it was used very common test called Shapiro-Wilk test. It is test to determine if the null hypothesis of normality is a reasonable assumption regarding the population distribution of a random sample. The desired significance level alpha was used 5% in all statistical tests. Computation of this test was done in Matlab (Table 1).

Table 1 Descriptive statistics and normality

	Smaller companies	Bigger companies
Mean	**1.9444**	**2.5789**
Variance	**1.1968**	**2.1462**
Number of respondents	**36**	**19**
Skewness	**1.2243**	**0.4782**
Kurtosis	**1.3895**	**-1.0613**
p value	**<0.0001**	**0.013**

The null hypothesis was rejected, so samples was not normally distributed. It was also done F-test Two-Sample for Variances to compare whether obtained variances were equal or not. We found out (p = 0.068) that our samples variances were equal. Therefore these results, the Mann-Whitney test (non-parametric alternative to t-test) was used to check our hypothesis about useful CRM systems for both cases. Firstly for assumption about company size and second assumption for length of time on the market.

For second scope of research, it was use other tests. These groups were not normally distributed because their p-values were 0.0025, 0.0244, <0.001, respectively. It was used Kruskal-Wallis test.

3 Results and discussion

First point of view, it was influence of company size on CRM system using in Slovak construction industry. It was assumption that bigger companies use CRM system more than smaller enterprises. It was done Mann-Whitney U test for this purpose (Table 2). Exactly, the mean ranks of two groups of companies were tested. The desired hypotheses:

H0: The mean ranks of two groups are equal.

H1: The mean ranks of two groups are not equal.

Table 2 The results of Mann-Whitney U test

	Smaller companies	Bigger companies
Sum of ranks	**925**	**615**
Mean of ranks	**25.69**	**32.37**
Expected sum of ranks	**1008**	**532**
U-value	**425**	**259**
Z-score	**-1.4602**	
p value	**0.1443**	
Expected U-value	**342**	

The gained results were not significant at significance level alpha, H0 was not rejected and it could be considered that means of samples were equal. So, bigger companies desire CRM systems equally useful than smaller companies. Based on this, general assumption about company size influence was not confirm. These results are interesting. This may have several reasons. Numbers of large companies in Slovak market can be a reason. One of them, it can be very small representation of large companies in Slovak construction market. Such is the Slovak construction market. This can also affect statistics. Perhaps if similar research was carried out in Poland where there are several large companies on the market, the results would be different. The reason could not be the fact that in Poland the systems are used to a greater extent, but the fact that, if there are more companies, there is a bigger prerequisite for the use of these systems as well.

The second, some dependence between length of time on the market and using CRM systems was investigated. The companies were divided into three groups according by length of time on the market (in years) (Figure 1).

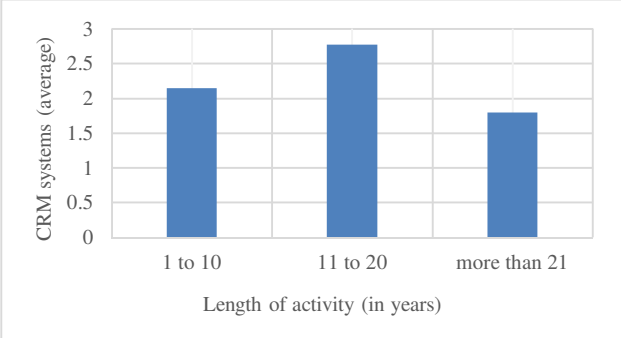

Figure 1 Desired groups

These groups were not normally distributed because their p-values were 0.0025, 0.0244, <.001, respectively. So, the Kruskal-Wallis test to find out statistical relevancy between means of these groups was done. It was calculated H statistic = 4.3121 and p value = 0.1158 which meant that result was not significant. It could have been considered that between means of each group were not any differences. But the interesting fact was visual and numeric difference between the second and the third column, so we have focused on their means using the Mann-Whitney U test (Table 3).

Table 3 The results of Mann-Whitney U test

	11 to 20 years old companies	More than 20 years old companies
Sum of ranks	**268**	**260**
Mean of ranks	**20.62**	**13.68**
Expected sum of ranks	**214.5**	**313.5**
U-value	**70**	**177**
Z-score	**-2.0336**	
p value	**0.0424**	
Expected U-value	**123.5**	

Hypothesis about equality of means was rejected, so it could be said that companies with length of activity from 11 to 20 years used CRM systems more than companies with length of activity over 20 years. We could see, what the frequency of using CRM systems in each was given year measurement. This dependence could not be fitted by simple curve, probably by some another group of function with more complicated course (Figure 2).

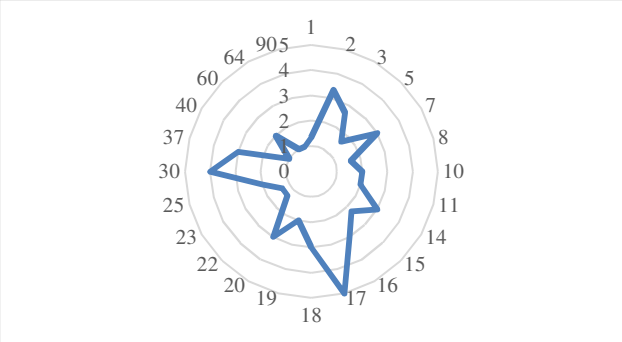

Figure 2 Frequency of using CRM systems

According to fig. 2, older companies use the CRM systems in more rate. That´s exploitation rate about value of 5. Values from 1 to 90 represent age of construction companies on the market. Values from 0 to 5 represent impact rate of exploitation of CRM systems. After this quick view, older companies use this tool in more rate than younger construction companies.

Research has highlighted the fact that if we only look at business size dependence and CRM usage, apart from the fact that large firms are one, they also use CRM systems the same way. And if we look at the use of CRM according to the length of market activity (divided into three groups), the statistically significant difference between these groups is not. If we looked at the significance of the differences between the pairs of the columns, we found one importance between the 2nd and the 3rd group. Businesses on the market 11 to 20 years use CRM systems as well as younger companies but significantly more than older companies (over 20 years). We also made a graph to see how many years we are using CRM systems (we see that it is about the 17th year).

4 Conclusions

Customer relationships management system are very progressive tool in management of relationships with customers. Use of this systems brings a lot of benefits. From this reason, it is very important to explore this area. This research discussed CRM systems in Slovak construction industry from use of this tool according to company size and length of time on the market point of view. Research didn't confirm assumption about use of CRM system depends on company size. Assumption, bigger companies use CRM systems more than small companies was rejected. Second point of view was more difficult for interpretation results. Research shown some trends and interesting facts about it. Based on, these technologies need to be discussed and explored. Potential for expanded research, it can be explore the impact on results of companies. Next space for research is in other markets (as mentioned Polish construction market and so on).

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DIFFERENCIES BETWEEN LOW-COST MODEL AND FULL-SERVICE MODEL IN AIR INDUSTRY

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Keywords: air transport, model, low-cost carrier, full-service carrier, development
Abstract: The aim of this paper is to review current state of operational models of airline on the market, based on history and development and the reasons behind them. Article compares Low-Cost operational model with established Full-Service carrier model in form of operational and pricing differences. Historically important events which caused rapid growth of Low-Cost carrier model are mentioned and discussed. For comparison of pricing approach actual data form airline reservation system Amadeus as well as live data provided on air carriers' websites was used. The ongoing development on the air transport market as well as high competition and new customer demands clearly shows that both of the operational models are partly outdated. This resulted in step-by-step product changes in both operational models which are now approaching similar product portfolio often called as hybrid operational model. Result of the review points to possibility for further research of airline hybrid operational model.

1 Introduction

In this article differences between low-cost carriers (furthermore LCC) and full-service carriers (furthermore FSC) will be discussed. These models are used in air transport industry for a prolonged period side by side. In the beginning they were focused on different segments of customers, however with changes in the air transport industry, they began to interfere with each other. Nowadays they mostly act as a direct competition and with actual demand on the market; both are forced to come up with new hybrid solutions or models. This is resulting from historical development on the market since World War 2, when partial liberalization on the air transport market begun, and thus allowed low-cost carrier model to be implemented on the market. The raise of the low-cost carrier began to be noticeable after year 2001 when low cost carriers were able to double their market share. This was the result of economy crisis during mentioned period; however the raising trend remains until today.

2 Methodology

Mainly statistical secondary data from annual reports reported by the airlines and collected by the company IdeaWorksCompany were used. For further analysis, annual reports from 4 previous years were used. After collection of the data, they were processed, considered by own experience, consulted with another aviation professional, compared and found measured ratios. As a result of these ratios, predictions are made for further development. Main source of prognosis data was processed from last three years, as these data are the most accurate in form of development on commercial aviation market. These predictions and prognosis are prepared from the results of the analysis adjusted by the estimate of the IATA as a most reliable source of the market.

3 Historical development of Low-Cost Carriers

After Second World War, demand for air travel rapidly increased and together with rapid innovation in technological area, airlines were able to offer very low fares which resulted in higher numbers of population to be able to afford air tickets which was impossible before. This resulted in the necessity to change status quo of the aviation market.

The first breakthrough came in 1978 when USA adapted 20 years old law with a new one called Airline Deregulation Act that deregulated the airline industry. The long title of this act is:" *An Act to amend the Federal Aviation Act of 1958, to encourage, develop, and attain an air transportation system which relies on competitive market forces to determine the quality, variety, and price of air services, and for other purposes*" [1].

Figure 1 The Causal Relationship between Air Service Liberalization and Economic Growth [2]

The figure 1 above shows relationship between liberalization on the market and economic growth. Even the long title of this act indicated purpose to encourage the competition on the market. This act removed the US Government as a controlling body over the aviation market in the United States and created free market enabling a new competition to arise.

After the successful implementation of US deregulation act, other countries followed the example and started with liberalization of their markets step by step. Liberalization on the different markets resulted in rapid development in the aviation industry in terms of passengers' traffic and movements thus enabling further competition on the market and therefore again lower prices. In Table 1 below the most important events and their results are noted.

Table 1 Main events of liberalization and their effect [2] (own processing)

Event	Results
U.S. deregulation, 1978	Emergence of hub and spoke systems, low cost carriers with nationwide route networks, new entrants and integrated cargo carriers.
U.K Liberalization of Secondary Airports	Growth of international services to Manchester, Birmingham, Glasgow, etc.
Open Skies Agreements for United Arab Emirates	Growth of Dubai as major international hub.
Domestic deregulation in India	Development of low-cost carriers and aggressive, expansion-oriented airlines.
U.K-India Bilateral and Creation of New Frequencies	Growth of capacity, new gateways and additional carriers operating U.K.-India service.
Domestic deregulation in Brazil	Growth of low-cost carrier Gol and others.
Single European Market	Growth of low-cost carriers. Ryanair, EasyJet, etc. New services, traffic growth, new gateways throughout European Union.

All in all, the liberalization of aviation market enabled new types of competitors to enter the market. After all, the changes done, the environment in the aviation was very open and even smaller companies were able to invest to new modern aircrafts with guarantee that the legislation will not be in the way.

The price of product consists of cost items that we must reduce. Direct and indirect costs will be reduced by using of new methods [5]. New Low-Cost Carrier model was introduced in US by Southwest Airlines, which began the era of LCC around the world resulting from the successful implementation and wide acceptance model on the market by the US citizens. This whole model was driven on one thought still advertised by Southwest airlines until today: *„If you get your passengers to their destinations when they want to get there, on time, at the lowest possible fares, and make darn sure they have a good time doing it, people will fly your airline"* [3]. Their model consisted of several factors that enabled them to offer very low fares and thus attracted customers who would otherwise not fly:

- Fares: Unrestricted and low price;
- Network: Point to point high frequency routes;
- Distribution: Travel agents and call centres, no tickets;
- Fleet: High utilization, same type of aircraft across the fleet;
- Airport: Secondary airports with short turnaround times;
- Sector length: Short (around 400nm);
- Staff: High productivity with competitive wages and profit sharing [4].

At later stage, this was widely accepted by other carriers on the market. In Europe, after adaptation to Single

European Market, this was used by two new airlines which, until today, are still playing the important part in European aviation industry. Ryanair and EasyJet adapted these policies and according IATA study from 2006, they were able, together with other smaller LCC, to gain almost 20 percent of passengers share in just 7 years – from 1.4% in 1996 to 20.2% in 2003 [2]. On the Table 2 below development of LCC growth is represented.

Table 2 Share of capacity of Low-Cost Carriers on European Market [2] (own processing)

Year	LCC Share of capacity
1996	1.4%
1997	2.8%
1998	3.7%
1999	4.2%
2000	6.0%
2001	6.4%
2002	11.1%
2003	20.2%

With development of LCC, classic network carriers gained new challenge in form of a price competition on similar routes. Previously, they were able to offer premium services, which customer accepted as they had no other choice and necessity to travel remained. With growth of Low-Cost model classic customers were offered much cheaper option to travel. This situation resulted in lower load-factors for full-service airlines. They began to have difficulties to operate profitably on short and medium haul routes. This, together with the Great Recession, led to bankruptcy of several airlines in US and Europe. Not only airlines had economic problems, but also customers' purchasing power decreased. To survive such an environment, all airlines needed to focus on profitable operations and therefore they needed to focus on cost-saving and to generation of additional revenue in form of auxiliary services.

4 Comparison of Low-Cost Carrier and Full-Service Carrier model

To understand the importance of auxiliary services it is also necessary to understand the different approaches by the Low Cost and Full-Service Airlines. Even when the core product and main service they provide is the same – transport from point A to point B – they are approaching the pricing differently.

Table 3 Pricing comparison between LCC and FSC on similar route as of 19th April 2018 (own processing)

Budapest to Dubai 05.Sep 2017	Emirates to DXB	Wizzair to DWC	Dubai to Budapest 12.Sep 2017	Emirates from DXB	Wizzair from DWC
1x 30 kg bag	Included	HUF 19,850	1x 30kg bag	Included	HUF 19,850
Airport Check-in	Included	HUF 3,200	Airport Check-in	Included	Included
Cabine Bag	Included	HUF 5,750	Cabine Bag	Included	HUF 5,750
Seat Selection	Included	HUF 2,250	Seat Selection	Included	HUF 2,250
Refreshement	Included	HUF 2,195	Refreshement	Included	HUF 2,195
Air Fare	HUF 102,400	HUF 106,500	Air Fare	HUF 102,200	HUF 30,990
Grand Total	**HUF 102,400**	**HUF 139,745**	Grand Total	**HUF 102,200**	**HUF 61,035**
Vienna to London 04.Sep 2017	Austrian to LHR	EasyJet to STN	London to Vienna 11.Sep 2017	Austrian from LHR	EasyJet from LGW
1x 23 kg bag	Included	38,38 €	1x 23kg bag	Included	38,38 €
Airport Check-in	Included	Included	Airport Check-in	Included	Included
Cabine Bag	Included	Included	Cabine Bag	Included	Included
Seat Selection	Included	5,04 €	Seat Selection	Included	6,05 €
Refreshement	Included	15,30 €	Refreshement	Included	15,30 €
Air Fare	173,87 €	93,92 €	Air Fare	89,52 €	41,42 €
Grand Total	**173,87 €**	**152,64 €**	Grand Total	**89,52 €**	**101,15 €**

In the Table 3 above, we can see the most common difference between the typical LCC Wizzair and EasyJet compared to FSC Austrian Airlines and Emirates. As with the FSC such as Emirates or Austrian Airlines, the typical holiday traveler has all the services included in the fare typically and does not need to worry about any additional payments for the services he expects. On the other hand, LCC offers mostly lower fares for customers who would like to travel light, but only the basic transport fare is included in the price, and customer needs to pay additionally for services included in the fare of FSC. Also, on the table we can see that LCC serves only smaller

airport with higher distance to the city center, thus enabling them to offer lower fares as normally landing and handling fees are lower in such airports.

The big advantage of LCC airlines is use of harmonized fleet, as they are normally offering just routes suitable for the aircraft and do not need to provide any feeder flights, they are able to minimize training and maintenance cost. Due to position of network airlines and due to necessity to optimize capacity according the need, network carriers use variety of the aircraft that are able to serve different destination, but this is increasing costs of training of the crew and maintenance.

Another difference can be found in customer care approach. Network carriers provide their customers with ability to contact them directly in several ways, such as social networks, call centers or email contacts, which are provided nonstop and free of charge. LCC often offer just paid call centers with premium rates or just internet form with no published email contact. FSC normally have their own ground staff to assist customers in case of any requests or problems directly on-site, comparing to ground handling – outsourced - companies contracted by LCC.

If we look on customer comfort, typically FSC offers better on-board comfort as they are using lesser seats on the same aircraft type comparing to LCC, thus providing better seating comfort on board of the aircraft

Table 4 shows different seating capacities of comparable aircrafts with different carrier types.

Table 4 Seating capacity comparison (own processing)

Seating Capacity / Airline	EasyJet	Wizzair	Lufthansa	British	AirFrance
A319 - 100	156	n/a	138	144	142
A320 - 200	186	180	168	168	178
A321 - 200	n/a	230	205	205	212

The last-mentioned difference, however; for some customer the most important, is offered network. FSC offer a possibility to transfer at their hub or on their airline, and therefore guaranteeing for the customer higher variety of destination reachable. In case of any disruption network carrier will get customer to contracted destination by other routing or by use of their partner airlines. Low-Cost airlines are normally point to point airlines and do not offer any possibility to transfer within one ticket. Even in case customer holds two tickets on LCC and because of the disruption of the first flight, he will miss connecting flight, LCC will not accept any liability and customer must find and alternate solution himself.

All these differences are enabling LCC to provide lower fares on the similar routes. This approach made it easier for LCC to survive the great recession, however as recession is coming to its end, customers are again willing to pay more for the quality of travel but at the same time are still very price sensitive.

5 Conclusions

Article clearly shows different approaches done by both operational models. These differences began in early years after World War II. Notable event was liberalization on the market which resulted to growth of the air transport market which thus resulted in better economy and increased job possibilities. Liberalization of the air transport market is one of the key events in development of industry (see Table 1). After liberalization was in later stages, there was a clear rapid growth of new industry model on the air transport market when in 1996 only 1,4% of the market was taken by LCC, but in 2003 it was already 20,2% (see Table 2). With more and more shares taken by LCC model, interference between two previously separated models began. With raising passengers share and with development of information technologies and aviation equipment, customer demand for quality increased, but at the same time acceptable price for ticket was expected to decrease. Both models started to operate side by side, however different approach to pricing prevailed (see Table 3). Given on customer demands, both models might be suitable for customer and not always the Low-cost approach is cheaper, however it is still offering more flexibility in pricing of included services. As of today, models still prevail, however due to ongoing change in customers' demands, both models need to implement services of the other into their product portfolio partially or completely, and thus new hybrid model is being applied to airlines operations. This means both airlines are now able to offer flexible but cheap fares and at the same time offer premium quality product for adequate prices. It is expected that in the future hybrid model will be used as a primary one on the aviation market.

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URBAN LOGISTICS: SPREADING OF THE CITY INCREASES FOOD COSTS

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Keywords: urban sprawl, food, price, spatial planning
Abstract: If you want to live in city. You want to have, a house, garden and no less than two cars. Of course, you want to life in city centre. However, if price of ground is high you has decide to buy a house outside the city centre. You are not alone, because many other people think the same. Then around Your new house are placing other new houses. This process is called an urban sprawl. That is source to increasing the price of food in the shops. New territories of houses around city has extend a way of food. That is important to show how is possible to reduce these costs.

1 Introduction

1.1 Why was the city created?

When the first cities had been created in the ancient times, about 10 millennium before our ages, the sources of the food was just behind the boundaries of the settlement.

The first information's about the oldest cities we can know from the archaeological research. We know that one of the oldest cities have been located on the Jordan river valley, today in Palestine (Israel) and the Catahuyuk in Turkey. In both of these places, the archaeologists have found a similar structure – the granaries. The granaries are the special build structures (reservoirs) for warehousing the seeds, which are necessary to baking a bread. It means that the first permanent places occupied by the settlements have been created to protection of the results of collection of the agriculture products. Today similarly, structures we can see in the Caro culture in Omo river valley in Ethiopia and in others places in whole world (Fig. 1).

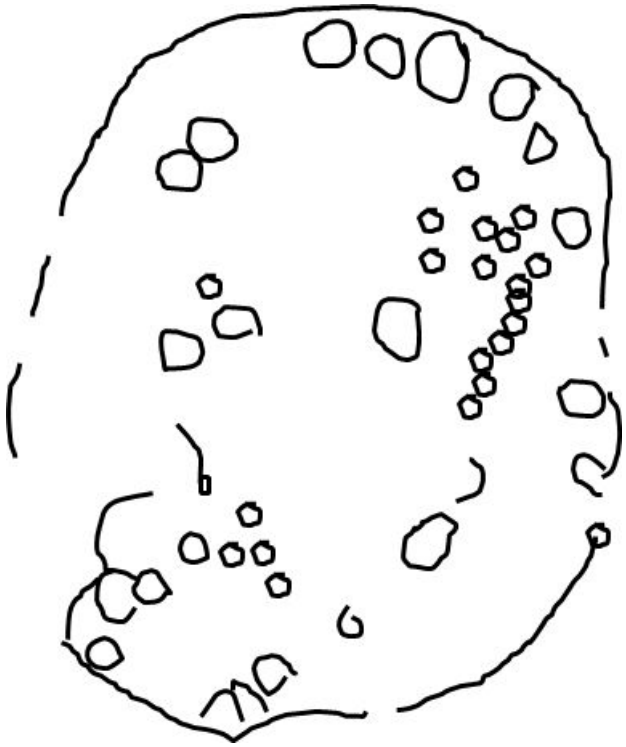

Figure 1 Scheme of Desenach village, the Caro culture, Ethiopia, based on Google Earth satellite view, small structures that are granaries (own work)

The source of the permanent settlement of people we can find in the changes of the climate. We know from drillings from glaciers of Arctic and Antarctica that about 10.5 kyr. BP the climate on earth have been rapidly changed. Rapidly means very fast. From the territory of the Ireland, we obtained information that on this island

temperature changed from warm to subarctic in half of one year. The result was similarly when we moved the Ireland for the place of the Svalbard Island. The source of this was the hitting of the Earth with the space body in north Canada, Greenland Island [6]. This event changed the humidity in the air in whole Europe, north and middle part of Africa and on Near East. In these regions, have been decreasing a humidity in air and created a massive drought. Many animals escaped or was killed be people. This changed the accessibility of food. People have to change their culture of life, from gatherer hunting for agricultural breeding. People started to have the agriculture.

Probably problems of finding of the food was source of conflicts on this area. This suggestion are based from results from the massacre at Nataruk near Turkana Lake in Kenya dated on 9,680 ± 805 years BP [8].

When about 5 kyr BP the climate has been much more stabile the people extended of the agriculture fields and started to breeding of the animals. Thanks, the agriculture the people have obtained a big volume of seeds and many people changed their professions. They started to be a Craftsman's which only produced things from skin, metal, or the clay.

Very shortly have emerged a people who only transported of these products for exchange, the merchants. That was source of trade and trade routes. Later in some villages was created a religion places and administration.

When peoples had built, the walls the region outside the town was used for placed of the manufactures or had settlements by the pauper peoples. The region of the source of the food has been moved outside. The distance of the agriculture fields to the city walls had have less than 2 kilometres. When in the beginning of the 20th century had increasing the structure extension of the rail and later of the motorization many people had decided to living outside the town and placed on the former places of the agriculture fields. The distance of the agriculture fields to the city walls had have over 10 kilometres. In this time had been created the mass production of the food.

1.2 The present seen to the city

Today when we go for shopping something to eat, we do not take into consideration what is source of the still increasing of the price of food. Current understanding of urban logistics (pol. *Logistyka miejska* - LM) relates primarily to optimize the transport and supply of state of the media with the already existing state of urban infrastructure. LM began its life in the first half of the nineteenth century, and so at greatly the existing urban development. His first steps LM started from of transport of the people by public transport and water supply and electricity, and sewage and litter. With time, the LM began to include strategic planning cities.

The city as an entity of economic and socio-economic needs to provide transportation as the determinant to maintain the basic conditions of life for residents and visitors, according to the data of the Athens of Le Corbusier of 1933, the city is the sum of the many functions [5] (1):

$$\text{City} = \text{apartment} + \text{work} + \text{leisure} + \text{services} + \text{communication} \quad (1)$$

On local scale administrative functions of the city, they are carried out by the offices of authority municipal, treasury, judiciary, etc. The task of LM is the distribution of offices close to each other in the city centre, while other authorities assigned districts to assign the location to form the district administrative centres, located near the centre of communications or geographic region of the city.

Cities also act as centres of cultural, educational and entertaining. LM boils down to ensure good public transport and road network links and ensure a sufficient number of parking spaces in the immediate vicinity of educational centres. With regard to entertainment venues, LM involves the construction of parking spaces on the property in order to relieve the centre of the neighbourhood.

Currently, the main role of the urban logistics sees in order to minimize the external costs of transport, among others in ensuring the mobility of the population of public transport and the supply of merchandise for trade and manufacturers in the city. City logistics changes its meaning in order to meet the needs of residents and visitors due to do the coordinating the spatial plan of the city development communications plan. Translated into practice, this means that all the authorities' actions are coordinated with each other in terms of long-term goals including determining priorities for development of the city.

City logistics takes of the integrated transportation of goods is recognized as a factor influencing the fluidity of movement of goods in transit through the city, as well as the liquidity of the supply to consumers in the city and collection of the products from the manufacturers and their export outside the city limits.

Getting stronger and faster development of cities brings about a distancing the areas where is produces the food which is transported from the increasingly longer distances. This creates a conflict with the city community formed of due to increased external costs of transport supply. Effective reduction of the causes of the conflict is one of the main objectives of urban logistics.

2 Definition of the problem

The price of food in the shop is the sum of many elements.

The first is the cost of production for the farmer pf. It is sum of the seeds, fertilizers, food for animals, water, cost of the electricity ce for halls and machines, the fuel cf for the all machines, oil for lubrication of all machines and others. Based on these components is calculate the final price for the trader.

The second is the profit p for the trader t and costs of the transport and management. Two last components needs electricity and the fuel.

The third is the profit for the merchant m. This is composed from the electricity and the fuel.

The fourth is the profit for the shopkeeper s. This is composed from the electricity and the fuel.

Then the total price of food is composed from (2):

$$tc = \sum_1^n cf\{pf + t + m + s\} + \sum_1^n ce\{pf + t + m + s\} + \sum_1^n p\{pf + t + m + s\} \quad (2)$$

As the conclusion is the question how changed the prices of fuel and the electricity for production of the food?

3 The analysis

3.1 Increasing of population in the cities

With the increase in the number of people living in cities is becoming increasingly important city in the supply of products essential to the life of residents in the city. Already in the 20s of the twentieth century, it was observed that the increase in population in the cities had affected by the necessity to ensure the supply of the household materials. The basic significance for urban settlements is the availability of water, sewage system and receiving rainfall and supply system in the food and highly processed elections - industrial equipment personals and household goods. Very interestingly has been wrote about in the paper of 1921. Author Eng. Adam Lewandowski pointed out that it is worthwhile to expand trade ties and expand rail transport systems that Bessarabia was part of Romania, could at its productive potential of agriculture for "provision all of Poland" in the corn [7].

Another article indicated that are needs building trade halls in the cities due to the search for "new opportunities for sales of agricultural products from the agricultural sphere". because in towns and cities are such these problems [12]:

a) The increasingly growing number of inhabitants in the cities, especially where are over 200 thousand. People, which causes congestion and braking of traffic, which causes problems for "retail sales in the trade points and also for the trade halls or to retailers"

b) The existence of the problem of "regularity of the self-support" and "regularity of the delivery" due to the fact that the agricultural production is seasonal of which affect for the "stability of prices" for the sold products,

c) Ensure adequate conditions of hygiene for product sales,

d) The growing importance of trade in large cities, especially the "vegetables, fruits, dairy products, poultry and others" in the wholesale and retail trade,

e) Widening export capacity "of different foods, such as poultry, fish, crayfish, mushrooms, forest berries and other goods".

3.2 *Urban sprawl*

Studies conducted in several cities have shown that the current radius of transporting of basic foodstuffs is at least 25 km. These are mostly fresh products with a short shelf life. Other products, particularly industrial, electronics, chemicals in use are from outside these areas. These are products with a long shelf life for use and is not relevant here the date of packaging or production. The distance of the limit of 25 km has been adopted here the administrative boundary of the city. Therefore, the actual distance from the city centre to the locations of manufacture can be from 50 to 150 kilometres (Fig.2).

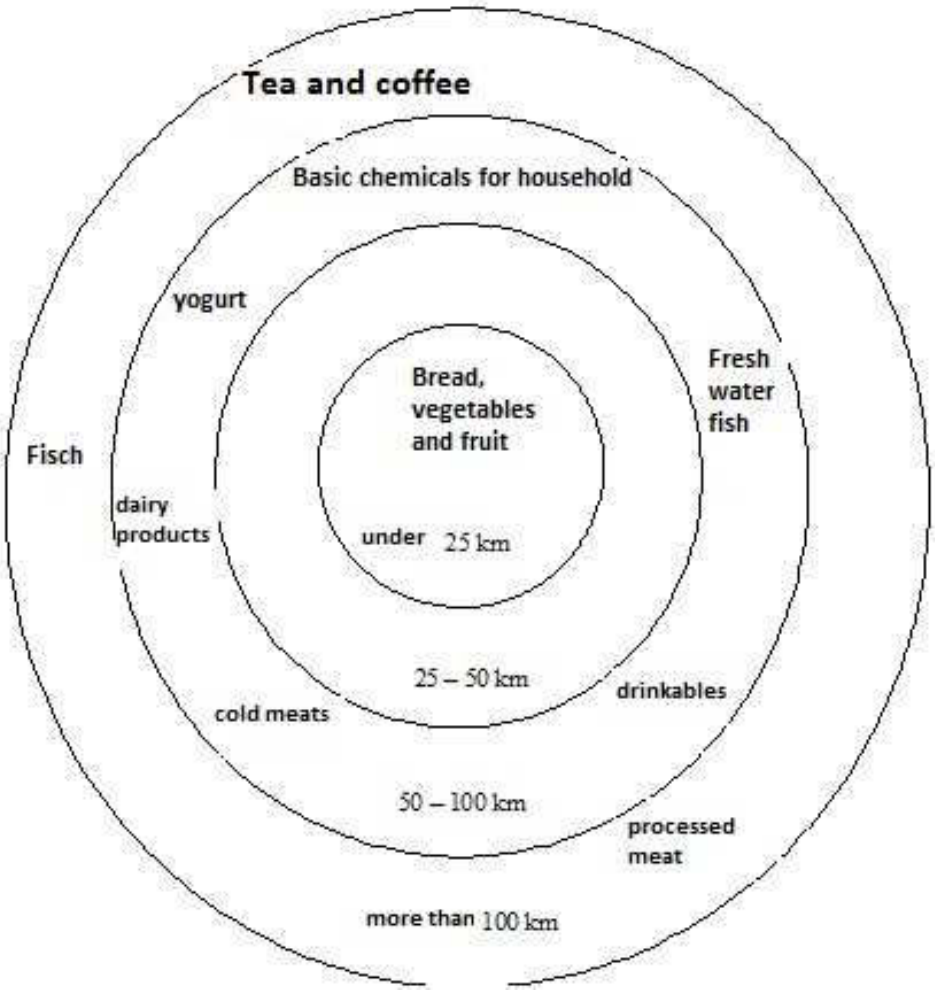

Figure 2 Radius of self-sufficiency of city and its agglomeration (own work)

Figure 3 City and its region (own work)

More dangerous is the fact that currently approx. 70% of the food products is outside the administrative borders of the land district of the city, if not in this zone manufacturing or processing. Only the economy of scale allows to maintain the low price of food products imported from far distances. This changed the usage of the regions, which are placed close to border of the city. Many fields had changed from the agricultures for the resident regions. Only of the regions which are placed close with the water streams or river and where are placed the wet meadows have still without the resident buildings (Fig.3).

4 How to decrease of the price of the food in the city centre?

4.1 The first step is the change of the regulation of the usage of the areas around of the city

Managers of this region should change theirs opinion that extended of the journey to the agriculture fields from the city can increased of the price of food. Then if the distance will be shorter, the price of transport will be cheaper.

4.2 *The second step is the change of the regulation of the free trade in the city centre*

Is very good known that are many countries which have small agriculture fields on the city area – the allotments. It is possible that these people's will to sell of the products – the vegetables and fruits. In addition, the owners of the small agriculture fields close to the city may sell their products. It may to create of the small fresh products markets. There may be sell by the famers with the milks and meat products based on the traditional fabrication of them.

4.3 *The third step is to create of the small artificial agriculture farms on the city area so called the urban farming*

It is possible to use the modern technologies of small agriculture fields. It may be:

- The house balcony vegetable gardens. It may be made from pallets or pvc pipes and other materials placed on the house balcony for supply for the kitchen into vegetables or small fruits. It may be of the horizontal or the vertical garden (Fig.4, Fig.5, Fig.6, and Fig.7).
- The vegetables houses for the small private gardens or the social gardens (Fig.8).
- The automatic containers for vegetables and fishes, as the mobile urban farming units as the community gardens for group of people from one high-rise building (Fig.9).
- The farms on the roofs of the city buildings as the "Rooftop Farms" as the community gardens for group of people from one high-rise building. Thus usage of the flat roofs is possible to builds the vegetable farms and to place of the beehives (Fig.10).

Figure 4 Balcony vegetable garden in the flowerpots [3]

Figure 5 Balcony vegetable garden inside horizontal wood pallet [11]

Figure 6 Vertical vegetable garden in the pvc pipes on the balcony [9]

Figure 7 Vertical vegetable garden inside the wood pallet on the balcony [1]

Figure 8 View of the "eatable house" [10]

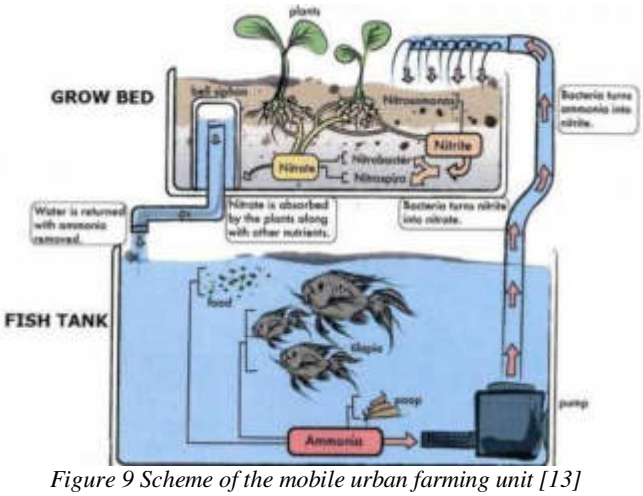

Figure 9 Scheme of the mobile urban farming unit [13]

Figure 10 View of the Rooftop farm on Long Island, NY US [4]

4.4 The fourth step is to build the special buildings for vegetables – the plant-scrapers for one city district

It will be special constructions which will be operate hydroponically farms, meaning vegetables (mostly greens) will grow without soil in a nutrient-rich, water-based solution (Fig.11).

Figure 11 View of planned plant-scraper in Linköping, Sweden [2]

4.5 Rainwater collection and usage of the treated wastewater

The increasing of the climate warming on the world may change of accessibility of the fresh water. Today we see that in many cities is the problem with this: see Capetown. Solution for this is collecting of the fresh rain water or use of the water from treated wastewater with usage of the sunlight. Thanks directly usage of the treated wastewater is possible to place the farms for production of the vegetables or seeds for bread on the city is possible to reduce the price of food.

4.6 Production of the meat

Today this is based in the animal husbandries farms. Is possible than in future we will be eat of the insects or the small animals: snails, guinea pigs or rats. Today they are eaten in the east Asia and South America. In Peru the traditional grilled dish is the guinea pig is so called in Spanish language as the cuy. It's very lean delicate meat as the young chicken. I have been tasted it in Peru in 2012 (Fig.12).

Figure 12 The guinea pig as the cuy dish with potatoes on the local marketplace bar in Peru (own work)

5 Disscusion

This points to the need for a strategic look at the city in the long term.

In order to ensure that in a crisis situation of supply for basic foodstuffs to life in the metropolies, their authorities can pursue a policy of logistical support for the city by:

- Coordinated management of space within urban areas in terms of land area under agricultural production and the accompanying industry.
- Spatial planning policy coordination within the city limits, part of the space should be remain as the regions and as the fields for potential security of food production in a crisis situation.
- Encourage of the traders to firstly receive any food from the nearest metropolitan region which will result in a double positive effect, will have job around there, and will be work in order to sell.
- Settlement policy coordination in the region towns, so as to achieve the effect of load-balanced of the transport axes and preventing of the urban sprawl process.
- Long term planning of the self-production for the food in cities.

6 Conclusion

Desire to stop increasing the price of food in big metropolises requires raising safety of supporting in the food from the close areas. This require the total coordination in management of space in city and its neighboring areas. This required to teach urbanists in the understanding about of the supply in the food for habitants in the designed cities. Thanks the reduction of the costs of transport of the semi products or ready products is possible to reduce the price of food.

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