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## **Application of logistics principles in management of travel agency**

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Katarína Čulková\*, Erik Weiss,  
Andrea Rosová and Roland Weiss

Faculty BERG,  
Technical University Košice,  
Letná 9, 040 01 Košice, Slovakia  
Email: katarina.culkova@tuke.sk  
Email: erik.weiss@tuke.sk  
Email: andrea.rosova@tuke.sk  
Email: roland.weiss@tuke.sk  
\*Corresponding author

**Abstract:** The contribution is focused on the application of logistic management algorithms for travel agency sector. In the introduction the contribution explains the current state of the problem. As a methodology there is flash analysis, systems analysis and micro logistics analysis. The flash analysis points to the current position of the company on the local market, localisation, its products, customers, competitors, mission, vision and strategic goals for the future. System analysis shows ongoing systems in the company. Results of the contribution show to algorithms of major processes in the company and micro logistic model of the company. As a result of contribution measures are proposed, as for example a new website, modern reservation system and booking–accounting system.

**Keywords:** travel agency; algorithm; flash analysis; system analysis; micro logistic model of the company; Slovakia.

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**Biographical notes:** Katarína Čulková received her PhD study in the area of Corporate Financial Management. She is a Lecturer in the Department of Business and Management at the Faculty BERG, Technical University Košice. Her research interest is orientated to area of financial analysis, financial management and financial investment of corporations. She is the author of a number of articles, published in national and international journals, conference proceedings, as well as book chapters and monographs.

Erik Weiss is a solutionist of several grant projects, co-author of two academic textbooks and more than 30 publications, orientated to the area of financial analysis and models for evaluation of economical effectiveness. He is a respected expert in the area of measurement and evaluation of companies' performance.

Andrea Rosová deals with the area of evaluation of logistic system performance in the company. She cooperated at the projects, orientated to the indices system design of distribution logistics, transport logistics and materials flow as parts of controlling in enterprises. She is a respected expert in the area of measurement and evaluation of companies' performance in the frame of logistic access to the management.

Roland Weiss is a solutionist of several grant projects, co-author of several academic textbooks and more than 20 publications, dealing with the area of economic evaluation of utilisation of abandoned mining works and at the same time he deals with processing of results of geodetic measurements by alternative methods of estimation.

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## 1 Introduction

In recent years, the logistics become very popular in all business areas, but also in tourism. This kind of logistics has its own specific characteristics, which define the logistics of tourism. First of all logistics of tourism focuses on character of tourism products, beginning by their creation to customer consumption, while various organisations, as for example transporters, providers of hospitability and additional services are involved at the logistics. With the development of tourism as a global area of the economy increasing demands and needs of clients are constantly associated. The success of the sale of a comprehensive package of services or tourism product and its position on the market depends on its ability to satisfy customer needs.

Tourism today presents an essential part of the national economy of developed countries, which significantly contributes to raising the level of people's lives. It becomes slowly an integral part of consumption. Tourism creates a very important role in the gradual growth of the region, county or area, such as the creation of new jobs with guarantee of own types of service or during the development of tourism industry. Success of product sales of tourism and complex package of services and its marketing requires an important consideration when selecting a volume of distribution routes, and also appropriately selected logistics. For example, Pathumporn and Suphan (2016) studied behaviours of medical tourists who use medical service and travel in Thailand with use of planning a marketing strategy in order to be a guideline in running business of the medical tourism agencies for conforming to the behaviours of the travellers.

Activities providing and enabling the marketing of products can be designated as the distribution of tourism. The main task of distribution is the way to get product by fastest and easiest way from the producer to the final consumer, i.e., the client. So from an organisational point of view it means to sell products or services, for which the consumer has shown interest in the future. In area of tourism the main objects are not tangible property that is part of the distribution channel, but service that can be defined as an activity, which is given by one side and second side receives immaterial, intangible property. Therefore, provision of services is usually not associated with tangible property.

Logistics is usually understood as a transfer of tangible materials, where the final effect is to meet the need of purchaser to have goods. The logistics would not orientate only to some tangible thing, but it can be applied also in the provision of services in the

tourism sector. Tourism belongs to the sector of services; therefore in this case it means logistics of services. It is therefore necessary to apply the principles of logistics management to the management of travel agency and to analyse its activities as a whole.

There is not enough using of logistics principles in area of tourism, since studies are mostly orientated to the area of production and individual industrial sectors. There are some studies in the area, when Aydogan et al. (2013) designed logistics network for plastic industry in Turkey and reverse logistics network design has been developed to minimise waste production and to achieve green production. Bai et al. (2015) uses mathematical analysis method to determine logistics transportation of agricultural products in order to provide reference for the government and enterprises. In area of travel logistics had been considered by Nachtmann and Pohl (2013) that provided a guide for developing the transportation readiness assessment and valuation of emergency logistics with consequent application to the three county level emergency operations plans to demonstrate the use of logistics in a real world plan assessment scenario.

## **2 Present state of problem and literature review**

One of the main reasons why to use logistics in the organisation is possibility to decrease costs (Dubovec, 2013). Luo and Tian (2015) researched the integrated logistics system of Shanghai free trade zone (FTZ) according to its characteristics, and on the basis of constructing integrated logistics system, also the relationship between internal elements using system dynamics. Compared with the general logistics systems, the logistics supply subject, demand subjects and service platform in Shanghai FTZ integrated logistics system are more complex.

Currently, the tourism industry is based on the principle of a system concept that can be regarded as a holistic concept of tourism, requiring the establishment of local and global systems of collection and processing of suitable data. These data must maintain their specific characteristics and rules of work with them. Logistics principles must be considered in life cycle aspects of manufacturing, including also supplier selection, initial manufacturing network design, supply chain coordination, complexity, inventory and capacity planning and management, lot sizing, enterprise resource planning, customer relationship management, and supply chain control (Mourtzis, 2016).

Information and logistics are two main problems in tourism supply chain. Tourism supply chain cooperation has become a critical success factor. Cooperation refers to the integration of different parts of an organisation or different organisations in supply chain to accomplish a collective set of tasks and to achieve mutual benefits. Several researches focus on applying artificial intelligence to solving the problem. Semantic web services and multi-agent are two technologies with great potential. However, semantic web services need for an upper software entity able to deal with them and, on the other hand agent technology has historically suffered from a number of drawbacks that must be addressed. Integrating these two technologies in a joint environment can overcome their problems while strengthening their advantages. In this paper, the necessity for integrating these technologies and the potential benefits of their combination are analysed. Based in this study we present our intelligent framework, provided a support of collaborative decision-making in the context of tourism supply chain (Benaissa et al., 2013).

Tourism presents a complex system that can be based on material or procedural principles, while these two principles must be respected during creation of tourism products. Tourism product is different in many ways from products of other sectors of human activity, since it presents a product of service. It means that the service has two characteristics, which make the specific requirements during its production, presentation and sale. The service is immaterial, intangible, inseparable, variable and temporal (Schejbal, 2011).

Significant growth trend in Europe and the USA is cruise tourism, but in recent years, it has gradually gained popularity among tourists in Asia, showing great potential (Chen, 2016). According to study results, Taiwan should prioritise on the following aspects: establishing a 24-h tourist service centre, providing a complete cruise logistics service, inviting foreign cruise operators to inspect special resources in Taiwan, cooperating with other Asian countries, setting up a special government unit, as well as planning and developing unique tourism resources.

Various authors used logistics models to evaluate area of tourism and to find possibilities for its development. For example the characteristics of the medical tourism industry were described by Levary (2011). He used multiple criteria to evaluate several popular medical tourism destinations and made ranking of medical tourism destinations, which will enable administrators at companies that specialise in arranging the logistics of obtaining medical care at foreign facilities to better advise patients regarding their choice of medical tourism destinations (Levary, 2011). Sarder et al. (2011) studied opportunity of river Mississippi to develop a world class intermodal facility in south Mississippi that takes advantage of two major trends that are impacting global freight transportation infrastructure. The first of these trends is the need for improved hinterland access for ocean ports through the establishment of inland port facilities. Highway connectors to ocean ports are clogged and this is expected to worsen in the next ten years.

According Tularam et al. (2012), also Australian tourism has a logistic trend. The stagnation has not been reached so opportunities exist to increase tourism. The logistic model predicts 7.2 million tourists in 2015 but time series models of ARIMA and VAR improve the prediction and explain the data. Wu et al. (2013) used logistic model to analyse the weekend travel behaviour mechanism of influencing factors and master the needs of transport service for weekend travellers and identified key determinants in origin and destination of transport service level.

Wang (2014) studied the impact of income on tourism expenditures under different savings regimes. The results show that in a low savings regime the effect of an increase in the GDP per capita on international tourism expenditures is more pronounced. In a high-savings regime, there is strong motivation for precautionary savings and tourism is considered a luxury; therefore such spending is crowded out by an increase in savings as GDP per capita increases. Although international tourism expenditures also increase with GDP per capita, they do so at a slower rate. These findings establish an accurate understanding of the effects of savings on international tourism expenditures. Due to the achieving of sustainable development of tourism destination, Zhang et al. (2014) studied tourism eco-efficiency from the view of 'input', 'output' and process of logistics, energy flow, currency flow of tourism destination's 'natural-economic-social-tourism' complex system, making eco-efficiency as an entry point. Mrnjavac et al. (2014) display how linking all participants who provide private accommodation services into a logistics network will result in better and higher quality service for the guest and in reduced cost for the private accommodation provider. His research reached the conclusion that private

accommodation providers do not satisfy the principles of the logistic concept and that other participants in the process of providing private accommodation services do not adequately support them. Logistic concept could solve the problem of poor organisation that many private accommodation owners face and it could also possibly have a practical effect on both private accommodation owners and managers.

The other area of logistics principles using in tourist travel is travel apps. Dickinson et al. (2015) analysed the fundamental challenges facing users adopting travel apps, finding that transport practitioners, policy makers and app developers need to better understand the challenges associated with attracting users, the use of incentives and types of communities most appropriate to implement collaborative travel concepts using such approaches.

Liu (2015) constructed an empirical analysis model about urban residents' rural travelling decision-making, and then analyse influential factors mechanism by using logistic regression model. Based on the analysis of rural travelling decision-making behaviours, the result shows that the variables as disposable income, discretionary time of urban residents, infrastructure, traffic condition, tourism culture and tourism environment are significantly affecting rural travel decision-making, which is at 10% significant level; meanwhile, other variables as environmental quality, policy and media publicity is not obvious. Li et al. (2015) used geographical information system to map hotels and investigate the characteristics of the land use, attractions, and transport facilities around hotels. The spatial relationships are then analysed with a set of logistic regression models. On the other hand, Hsu and Song (2014) used multiple correspondence analyses, showing the different destinations correlated with diverse object and subject categories. Their findings can be utilised by destination marketing organisations to devise positioning and promotion activities for implementation in the Chinese market.

Finally tourism is closely connected with urban development. Correct evaluation of urban logistics is very important to promote economic, social and environmental sustainable development (Mei et al., 2015).

### **3 Methodology**

Basic principles of logistics would be considered in tourist agency. Given principles has general validity, applying without regard to the specific character of business activity. Proper using of given principle there could be provided fluent acting of tourist agency. During achievement of logistics goals we would follow effectivity of place and time with goal to satisfy claims of clients. Effectivity of logistics chain can be perceived as "effective management of logistics chain", orientate to the clients and their satisfaction, with saving of individual operations costs. It has two main elements:

- Logistics revenues – including level of logistics services (logistic quality) and productivity in logistics
- Logistics costs – including costs items, connected with organising of material and information flow.

In tourist agency, we will orientate to detail analysis of logistic processes, from which several main indexes will be determined, according which organisation can define its goals and to provide better management.

There was used flash analysis as analysis that rapidly finds position of the market. Such analysis is used in situation when changes in management are demanded. It shows to the attributes such as localisation of the company, which means content of business, goals and vision, clients and competitors, partners. Mainly such information is obtained by flash analysis, giving basic picture of real possibilities of the company.

System analysis and micro logistics modelling had been used as main methods of searching. Systems analysis deals with the systems, created by people, which consist of input and output processes. System analysis creates and applies methods of systematic approach and systematic modelling for solving of complex and simple problems (Rosová, 2013).

Main activities in the frame of systematic analysis are:

- research and analysis of associate systems
- determination of solving method
- establishment of new construction.

To facilitate the determination of holders of decision-making and responsibility for the decision, it is necessary to know the system itself, in which decision-making occurs (Antošová et al., 2014). Process is as follows:

- there is necessary to find out needs or demands that are satisfied by system towards its surrounding
- consequently, the way how the system is informed about raising of certain demand or need is determined
- the way of need information evidence, raising in the frame of system surrounding, is determined.

Result of the mentioned present scheme that presents basically description model (Rosová et al., 2015).

Systematical analysis belongs among systematic disciplines that can be described as:

- 1 Methodological discipline that is orientated to knowledge of system by gradual decomposition to subsystems or elements till single relations. It creates structure and connection of the system. It is orientated to searching of the system that is influenced by external stimulus provided its structure and individual elements are known (Rais and Doskočil, 2006).
- 2 Discipline that is orientated to analysis of information and management systems.

### *3.1 Micro logistic model of the company*

There is very important to define position of observer in hierarchic systems. Company as a whole presents element of logistics chain or logistics net only in case when observer is in the frame of the company (Malindžák et al., 2001).

Logistic model of the company can be divided to the following levels according hierarchy as follows:

- 1 non-logistic model of the company
- 2 micro logistic model of the company

3 macro logistic model of the company.

System analysis belongs among system disciplines that can be described as:

- a Methodologic discipline, leading to knowing of the system by gradual decomposition to the subsystems through elements till single relations. It creates structure and relations of the system, orientated to the system searching, influencing by external impulses with assumption that its structure and individual elements are known.
- b Discipline that is orientated to the analysis of information and managing systems (Rais and Doskočil, 2006).

System analysis searches operation of the company as a whole, but also its individual parts. Such analysis is considered as a most complex method of analyses and its goal is to find out operation of the company with its strengths and weaknesses and what areas demand to improve or demand to create full new system.

**Table 1** Scheme of logistics system of tourism

<i>Information</i>			
<i>Services</i>	<i>Transport</i>	<i>Services</i>	<i>Transport</i>
Logistics of preparation period	Logistics of transport	Logistics at the destination	Logistics of return transport
Marketing	Organising	Accommodation	Organising
Preparation of program	Transport to destination	Food	Services
Program securing	Services during transport	Transport at the place	Transport to original locality
Advertisement	Termination	Optional trips	Termination
Info providing		Animation services	
Sales			
Services			

The basic model of the logistics system of tourism can be viewed as a system of management of multi-product timely nets, unstable from the view of their content, and it can be divided to anthropogenic and natural systems (Table 1).

Concrete solutions depend on natural conditions and facilities of a particular destination or resort, the amount of time and financial restrictive conditions (Schejbal, 2011).

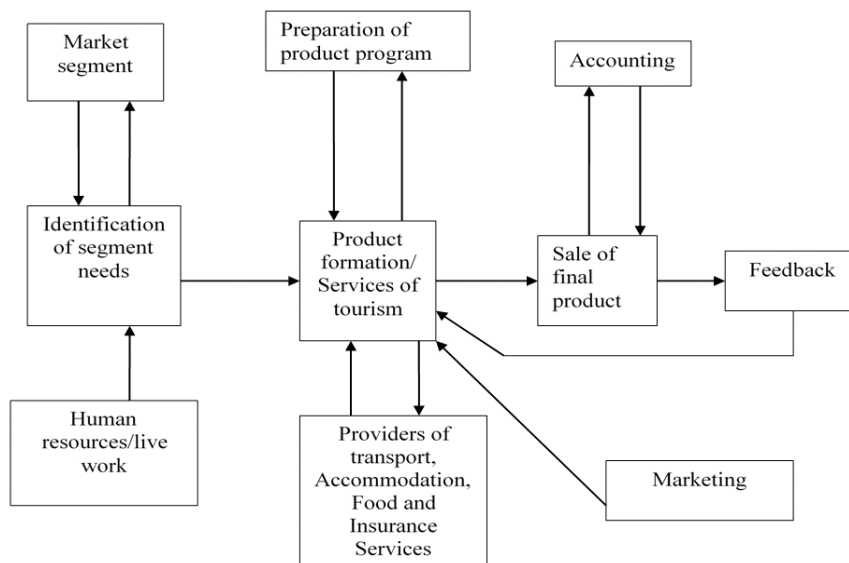
System analysis and micro logistics model had been used for travel agency that is limited liability company, dealing with creation and sale of own products of tourist travel as well as sale of foreign products and services, sale of international travelling tickets through company Student Agency, k.s. and Slovak Lines, joint stock company. Agency mediates also air ticket for Travel agency MALKO POLO ltd. to whole world through portal LeTenky.sk. Except of mentioned it closes commercial complex travelling insurance through insurance company Allianz, joint stock company and European travelling insurance company (Europäische Reiseversicherung AG, belonging to group Assicurazioni GeneraliS, p.A.).

#### 4 Results

System analysis of the analysed company means process, beginning by identification of needs and desires of the segment that are explored through personal contact with clients. The information collected are sorted, analysed, evaluated and the result presents a common type of demand. This kind of demand is provided by tourist services which are immaterial, not storable and requiring high consumption of human labour.

Systems analysis in tourist agency is illustrated at Figure 1.

**Figure 1** System analysis of tourist agency



Source: Own processing according to Rais and Doskočil (2006)

System analysis in the tourist company presents a process, beginning by finding of needs and claims of the segment that are searched by the way of personal contact with clients. Obtained information is further collected, analysed, evaluated and their result is common type of the demand. Such type of demand is services of tourism that are not material, not storable and they demand high consumption of live work.

Based on demand, the company will proceed to the creation of tourism product, in which agency must ensure that providers of transport, accommodation, catering services as well as comprehensive travel insurance. Product must be limited in time, containing program and of course establishing a marketing strategy to promote and increase its sales.

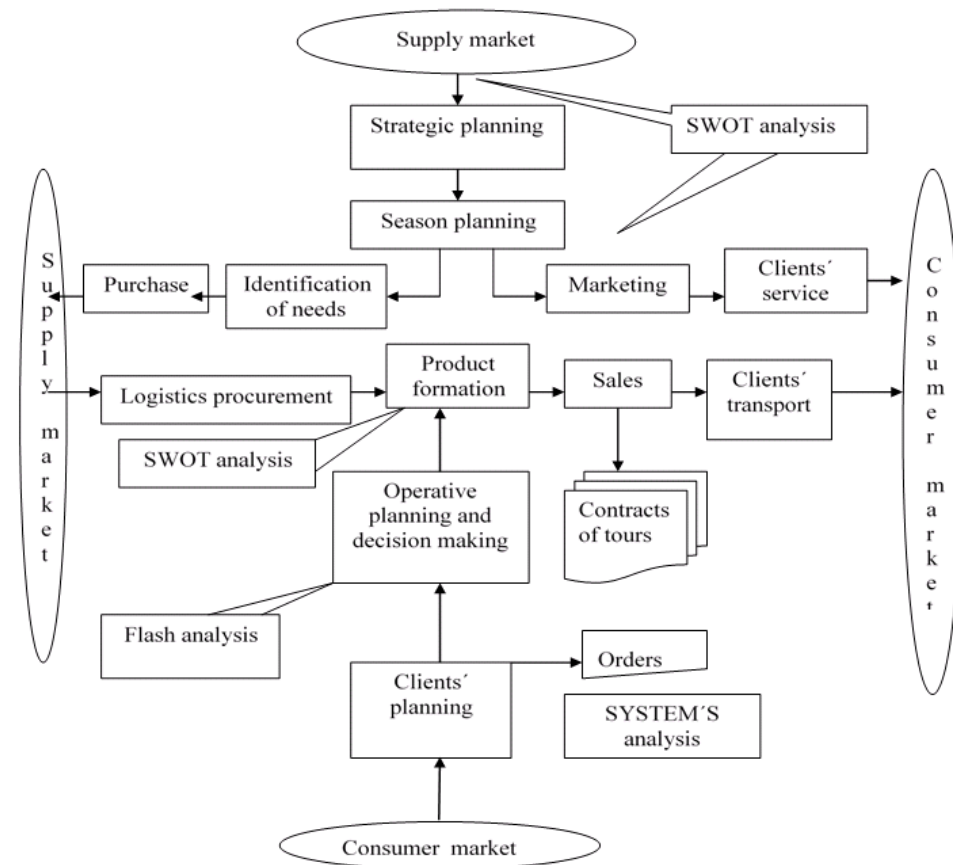
External accounting firm oversees over registration of the economic activity of the enterprise, i.e., assets, equity, liabilities, expenditure and incomes. Feedback occurs at the end of every process, with outputs by the way of information, whether the product has been designed according to the wishes and demands, what lacks in product, with hat were the customers satisfied and what should be improved in the future.

There is existing micro logistics business model that shows the internal flows of the company, mainly material, financial and information flows. This model can be considered a functional model. In the enterprise, there is a cross micro logistic model (Figure 2), which has vertical and horizontal flows. If any of these activities in any chain



is not working – whole enterprise is not working. Under this business model we understand a company as a living organism of mutually transforming flows (Malindžák et al., 2001).

**Figure 2** Cross micro logistics model of tourist agency with using of methods' map



Source: Own processing

Micro logistic model of the company illustrates internal flow of the material, mainly material, information and financial flows. The model can be considered as functional model. In the tourist company, there is also cross micro logistics model that has its vertical and horizontal flows. Horizontal flow searches logistics of procurement – product creation – sale – transport. Vertical flow creates strategic planning – seasonable planning – custom planning – operational planning and decision (Rosová, 2013). Such cross model can be created by four basic relations/markets:

- 1 Strategic planning – seasonable planning – obtaining of needs – purchase – market presents chain of information and decision activities.
- 2 Strategic planning – seasonable planning – marketing – customer service – market presents chain of information activities.

- 3 Logistics procurement – product creation – operative planning and decision – customer planning – market means chain of management and realisation of material flow.
- 4 Customer management – operative planning and decision – creation of product – sale – transport of participants – market means chain of decision and managing activities.

In case any of mentioned activities are not running in any chain – the whole company is not operating well. According the model company can be seen as living organism of mutually transforming flows (Rosová, 2013).

Base of cross micro logistics model is to minimise number of interfaces with costs savings, but also with effort to minimise losses and to create the value for the travel agency.

During evaluation of effectivity of logistics processes in tourist agency there is necessary to consider all factors, which could influence each other, for example:

- change of demands for clients services
- pressure of competition
- changing structure of costs
- pressure to increase revenues
- necessity to improve logistics systems
- development of information technologies, etc.

## 5 Discussions

Operational decision is focused on the meeting of short-term and tactical decisions, and these may be affected by flash analysis, which examines the current state of the company and its microenvironment.

Based on the flash analysis, systems and SWOT analysis certain weaknesses in the company been identified.

Flash analysis examined the localisation of the company and its microenvironment. Regarding location and seat, company is situated on quite a busy and easy accessible place. The company's business is focused mainly on selling own products, but also the mediation of products of other travel agencies and other services. Company focuses its activities on residential summer tours, which present its main income. In a flash analysis, it was found that the company does not have any strategic objectives for the future, which is a big mistake, because based on strategic objectives the company may proceed. Company is not restricted segment of the market; its customers present all types of customers such as young people, families and elderly people. It presents rather heterogeneous segment, since each type of clients has its own requirements, and they are difficult to summarise into a unified product.

Competition of the company in the local market is quite strong, since they have similar products, in which case price of product plays a role during the sale, but also goodwill of employees and of course access to the customer. Of course the company also has other competitors who cannot compete without strategic objectives. Strong side of the

company is that it has many agents but it lacks the interesting new offer, which would be sold not only in domestic market, but also in abroad.

In the system analysis there is necessary to warn immediately on the process entering, where the identification of needs and desires is examined only through personal contact, which is considered a rather weak form, because it does not address the general public, only still the same customers who come into the company.

Weaknesses revealed by the SWOT analysis, and which would need to be addressed, are the high fluctuation of referents. Frequent changes of referents may lead to leakage of internal information to the public. Terminal for payment by card is much desired and demanded in the company, yet still lacking. The provision of such terminal would require a disposable fee and subsequent monthly fees for the use of the terminal. Another shortage is the weak hardware of tourist agency that is outdated as well as slow computers. Not sufficient is also website whose appearance, content, and site options are at very low levels. This website has been sufficient only ten years ago.

Analysis shows that the information system is quite adequate, because of incoming written invoices, which are type of official document, must be registered, as well as the revenue and expenditure documents. The reservation system is unsatisfactory, which calls for very thorough writing reservations to avoid duplication of the same room or a seat on the bus.

After detail analysis of the running processes and systems in Tourist Agency following measurements are necessary:

- 1 Strategic goals to the future and research of the market:
  - to create product by the way of new destination to four years
  - to renew Office in Košice and Prešov to five years
  - cooperation with other V4 countries due to the inflow of tourists to the eastern Slovakia and increasing of domestic tourism to five years.

According determined goals there is necessary to make better market research through social net, questionnaires and inquiries.

- 2 New reservation and accounting system

There is necessary to improve better reservation and accounting system that would be connected after installation between them due to the actual information, available always at any PC without necessary setting and collecting of contracts from shared documents, other sheets and manually written records of tours participants, list of insured clients, rooming lists and settlement of tours participants according purchased reservation tickets. It will enable more detail list of tours payment, any manual writing of income receipt documents, as well as possibility to calculate prices directly in the program without any other useless costs on paper and colour in printer. And finally, accounting system would enable work of accountant during VAT calculation for individual items of the tour and monthly VAT calculation.

- 3 New and modern website

Over the past two decades, there has been an increasing focus on the development of information and communication technologies (ICTs). For example, Amaro and Duarte (2013) studied several gaps and provides some orientation for future research.

But many businesses are unable to utilise ICTs due to its complexity and expense (Supak et al., 2014).

New designed and more modern website has as a top priority to offer own tours, the ability to search foreign tours and reservations, online chat with the officer of tourist agency during visiting of a site, other complementary services such as online purchase of tickets, ordering a comprehensive travel insurance online, information on the use of bus services and driving schools. It will content also documents for download for customers and dealers, currently ongoing discounts for customers of course not missing the online catalogue with the possibility of withdrawal, offer of holidays in exotic, wellness and spa, offering tours through other travel agencies, as well as quick electronic communication without logging into own e-mail of so called 'Callback', where the customer enters his demand that tourist agency will receives as demand, also giving of e-mail address in the list on the admission of newsletters. Additional information would be also provided, such as price lists, actual weather prognosis in selected destinations and not least links with social networks and statistics of website visits. During creation of such site there is necessary to consider the smallest number of clicks to search for information. Too much of clicks discourage customers and stress them, and sometimes it happens that they give up, and by this way the tourist agency may lose future clients.

## **6 Conclusions**

Measurement and evaluation of systems in the enterprise as a whole shows that they work with each other, but immediately after beginning of the process there is lacking a proper market research, which their customers desire and want to get. Based on this survey travel agencies could specify the strategic objectives of the company, especially one that will focus on creating new product.

During management of tourist agency there is proper also to suggest and create logistic algorithms, mainly for such activities as process of product creation, purchase of accommodation capacities, customer logistics and finally also management of claims. For better review of running systems in the tourist agency it would be useful to create also micro logistics model with map of analysis methods. Due to the mentioned cross micro logistics model of tourist agency, scheme of logistics system of tourism and system analysis of tourist agency present main contribution of the article. Such model and scheme can have implication also in other types of business activities.

In case tourist agency does not have determined any strategic goals, it could not achieve increasing of profit and go forward. In case tourist agency would not provide accommodation tours, it could be orientated to shorter learning trips. Other measurements could be new modern website, offering all tours of own tourist agency or tours of other tourist agencies, where clients themselves can calculate price offer per tour.

During the research we made application of logistics principles only for travel agency, future research could be orientated to the whole tourist industry and to the better market research with aim to increase domestic tourism and urban development in the country.

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