APPLYING NEW DISTRIBUTION CHANNELS IN HISTORICAL CITY CORES IN THE ADRIATIC REGION

Radivoj Nardin
University of Maribor, Faculty of Logistics
Mariborska cesta 7, 3000 Celje, Slovenia
E-mail: radivoj.nardin@siol.net

Assist. Prof. Péter Bajor, PhD
Széchenyi István University
Faculty of Engineering Sciences
Egyetem tér 1, 9026 Győr, Hungary
Phone: +36 30 6373270
E-mail: pbajor@sze.hu

Csilla Fejes
Széchenyi István University
Specialized College of Transportation Engineering and Logistics
Egyetem tér 1, 9026 Győr, Hungary
Phone: +36 70 6339588
Email: csilla.fejes.84@gmail.com

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Abstract

Ancient cities in the Adriatic region are facing similar challenges from the transportation (personal mobility) and logistics (city supply) point of view. City cores are usually small, streets are narrow, and the possibilities of the infrastructure do not match the needs of the 21st century. While urbanization and its effects are undoubtedly everywhere, historical city cores are often unable to meet modern logistics and distribution needs. As a result of urbanization and altered consumer needs, new types of shopping facilities have been developed, usually in decentralized locations, while the largest town and city centers have retained their commercial dominance. These changes have had significant negative competitive effects on all types of smaller traditional centres, especially middle-order centres (small towns, district centres and small market towns), where a 'spiral of decline' has been widely evident. Many communities face the prospect of losing their commercial and social focuses. In this paper, we present a case study of a typical small city from the Adriatic coast, which – due to its unique characteristics and location – facing several logistics, social and economic challenges. After introducing the main challenges, our preliminary findings and our research methodology, we propose a logistics solution- namely the FMCG pickup point network - which might enable the city, and other similar cities in the region, to recover itself and provide a smarter city for tourists and investors for many more years to come.

Key words: adriatic, distribution channels, historical center, measurement

1. INTRODUCTION

According to the OECD (Organization for Economic Co-operation and Development), a significant increase has been observed in the number of people living in the cities all over the world. In 1950, the proportion of people living in cities in comparison with the whole population of the world was 50 %, and by the year 2000 it increased to 77 %. Researches predict that in 2020 the proportion of people living in the cities all over the world will be as high as 85 % (OECD, 2003) (Crainic, *et al*., 2008).

The increase of urbanization undoubtedly has had a significant impact on many factors effecting social-economic development of cities. Increasing number of inhabitants results in the increase in turnover of goods as well as in the emergence of new production and trade companies. Consequently, the problems resulting from excessive number of passenger cars and trucks on municipal roads have arisen. This is connected with longer commuting time in the city, worse quality of roads, decreasing sense of safety or with problems with parking (Paglione, 2006). As the result, such situations have impacts on decreasing the quality of life of the inhabitants. According to Taniguchi, effective and environment friendly city logistics requires a vision that could be accomplished by setting aims within three fields (Taniguchi *et al.* 2003):

- Mobility,

- Sustainability,
- Liveability.

The main aim of 'mobility' is to obtain a balance between sufficient traffic capacity and decrease in congestion. 'Sustainability' refers to an essential issue, that is, environmental protection and energy saving. (Witkowski and Kiba-Jainak, 2012). 'Liveability' refers to the issues connected with the quality of life, such as safety, health, silence, attractiveness of the place of living, etc. (Tseng, *et al.*, 2005). In Taniguchi's opinion 'city logistics provides an opportunity for innovative solutions to be developed for improving the quality of life in urban areas' (Taniguchi, et al.,2003)

2. CHARACTERIZING CITIES BASED ON LOGISTICS INFRASTRUCTURES AND NEEDS

The Adriatic seashore is a one of a kind area in Europe. Old fishing towns - which used to foster the surrounding areas - turned into popular tourist destinations, but at the same time, lost their industrial and economic potentials. Residents are usually working in more industrialized bigger cities nearby, therefore their dependency on cars and personal mobility is inevitable. While the structures and specializations of these cities are so diverse, they can be characterized based on their transportation and logistics infrastructures and needs. Based on this hypothesis, we have formed 4 typical groups:

1. Metropolis (Trieste, Split)
2. Port and Industry (Rijeka, Koper)
3. Tourist center (Hvar, Porec, Piran, Portoroz)
4. Promising small town (Izola, Umag, Novigrad)

Our hypothesis assumes that the competitiveness and attractiveness of these cities depends on:

- the share of tourism versus other workplaces
- number and age of inhabitants / tourists / seasonal workers
- length of tourist season
- available transport and logistics infrastructure
- available services and shopping opportunities
- quality of life
- sights in town and in the surroundings
- prices of services and goods
- reputation

In our case study, we investigated and observed the Slovenian city of Izola, where – due to its location, historical city core and once industrial quarters – there are several boundaries before developing the factors mentioned above.

3. CASE STUDY - IZOLA

Izola is an old fishing town and a municipality in southwestern Slovenia on the Adriatic coast of the Istrian peninsula. Its name originates from the Italian *Isola*, which means 'island'. The ancient city – which is now the old city core – used to lie on island that was connected to the mainland by ballast over the centuries. While other parts of the town developed and rebuilt themselves, the old city core remained unchanged –and became less and less attractive to citizens and investors.

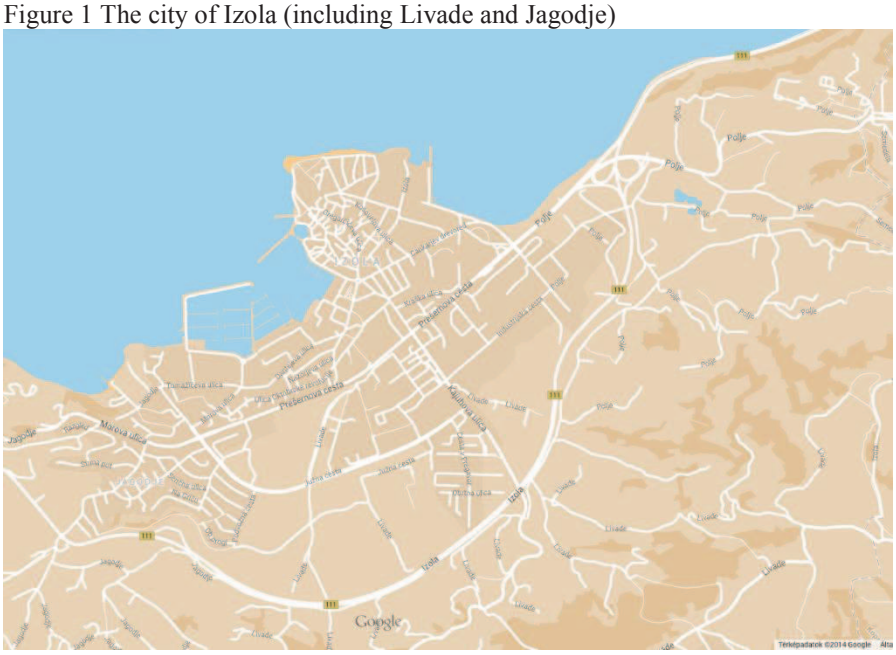
Before World War II, Izola was the economic center of its region. Several factories were built, and Izola kept its attractiveness even when the nearby Koper and Piran were struggling from the effects of the economic crisis. The postwar economic and demographic rise of Izola was based on the toy industry, food industry and shipbuilding, as well as on the development of tourism. Urban growth was correlated with territorial expansion, and the adjacent former villages of Livada and Jagodje were attached to Izola. (see on Figure 1.)

However, in the early1990s, things started to change within the city. While the neighboring cities were able to revitalize themselves, Izola had suddenly faced several logistics-based problems. The significantly increased car usage and lack of parking spaces, the decay of the industry and – due to the lack of shopping opportunities – unfulfilled consumer needs were expectations the old city core was not able to satisfy. The lack of services and infrastructure boundaries soon made the population to move their residence outside the city core, and caused an indirect decentralization. Migration from the city core lowered real-estate prices, making the area attractive for

immigrants and low-class workers. Physical and functional obsolescence appeared, and the area has reached the declining phase of its lifetime.

While the most popular tourist attractions – namely the dining and leisure area and the beach – are located within the old city core, reconstruction and revitalization of buildings and infrastructure are very difficult for the municipality. Besides of the fact that most of the estates are privately owned, several of them are part of the city's cultural heritage. The absence of shops and markets in walking distance forces tourists and citizens to use their cars all the time, while the limited amount of parking spaces and narrow streets are unable to handle the increased number of cars within the old city.

Figure 1 The city of Izola (including Livade and Jagodje)



4. PROBLEM STATEMENT

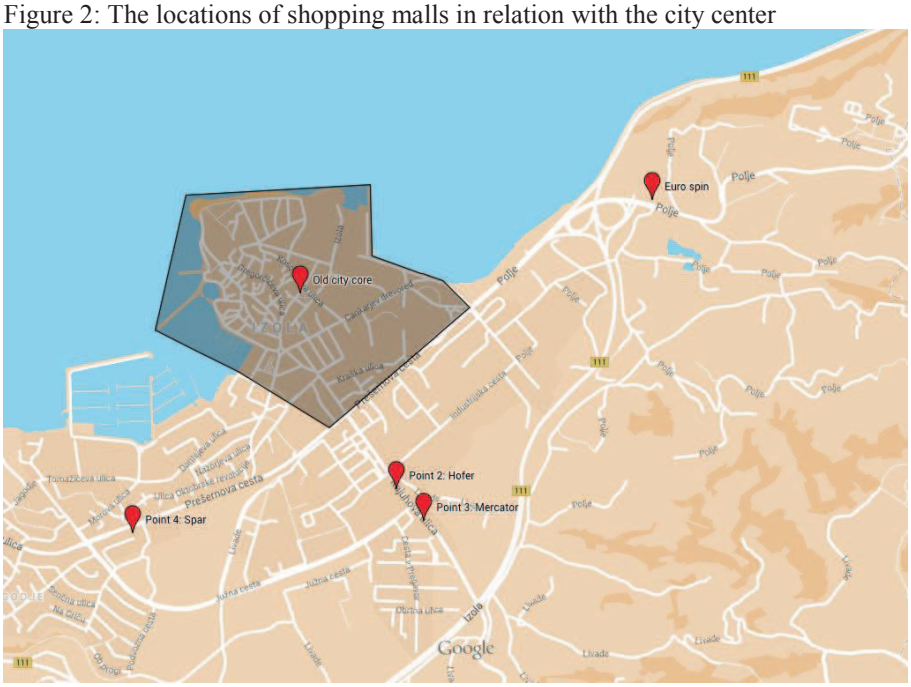
In the past, there has been several efforts and measurements led by the municipality in order to decrease the car load of Izola's city core. Ideas about car-free or eco-friendly zones, bike-rental and public transport development were considered – and were mostly rejected by tourists and inhabitants, or by the municipality itself. Meanwhile, the obsolescence of estates and roads reached a critical level.

Based on our observations and deep interviews with both locals and tourists, the people of Izola have two reasons not to leave their car at home. (1) is the lack of workspaces within the city, that forces people to commute on a daily basis and (2) is the lack of shopping opportunities and the proximity of the nearby shopping centers of Koper. Although the needs and expectations of citizens and tourist regarding Izola are different, there is one key factor in common: time is a valuable asset for both of them. And spending long minutes in a queue at the cashier or in traffic jams around the shopping center is not only a waste of time, but also a waste of money.

While there are four major supermarket chains represented in Izola – Mercator, Eurospin, Spar and Aldi -, all of them are too far from the center to access them on foot (Figure 2).

When considering alternatives to achieve reduced car usage – despite of the above-mentioned obstacles – approaching the problem from a different perspective can result in different solutions. If it takes time, money, efforts and social responsibility to go shopping by car, then why not bring the shops closer to the end consumer; or as the proverb says: "If the mountain won't come to Muhammad then Muhammad must go to the mountain."

Figure 2: The locations of shopping malls in relation with the city center



Over the past decade, e-commerce has experienced steady growth all around the world. A striking aspect is that it is now widespread among different segments of the population, including suburban and rural households. This growth has generated significant demand for dedicated delivery services to end consumers. E-retail, like many other information technology-based activities (telecommuting, telemedicine etc.) offers a potential substitution of travel by telecommunications. Traditional shopping activities typically consist of a visit to a store in which product information is sought, and a decision on purchase is made. Pending that decision, the product is obtained and most often self-delivered by the consumer. Certain types of products are store-delivered to the consumer premises. In the face of E-retail, consumers can acquire information, make a purchase transaction and choose a delivery arrangement from a remote location. (Morganti, Dablanc and Fortin, 2014) These options may result in a reduction of transport activity, as a delivery by the supplier is potentially more efficient than the traditional process. (Rotem-Mindali and Salomon, 2007) Regarding transport models from a city logistics point of view, three main delivery strategies are commonly seen in practice:

(1) Home deliveries from a supermarket, where orders are prepared by a picker (store-picking), mainly on the outskirts of the urban area without major changes in the supply strategy. The purchased products are either directly delivered at home or picked up by the consumer, mainly by car, avoiding queues and waiting times at the checkout of the store (car picking services are also known as "shopping drive"). However, for proximity supermarkets or commercial centers with good public transport accessibility, car is not the only transport mode for end consumers. In all cases, these trips can be assimilated to personal trips for shopping purposes.
(2) Home deliveries from a specific warehouse, where orders can be prepared (warehouse-picking) and where important changes are noted in the supply chain, because the warehouse is not located in a peripheral area. Then, the ordered products are delivered to the place of consumption using light goods vehicles, through an optimized route. These trips are made by small city freighters and can be assimilated to traditional e-commerce home deliveries with more restrictive constraints.
(3) Out Home Deliveries (Pick up points) - through proximity reception points, where the supply changes consist of including new local depots. In this case, the ordered products are directly transported to a depot (pick-up point), located near the place of consumption where they are picked up by the final consumer (Cairns, 1996)

After the deep examination of all three strategies Durand and Gonzalez-Feliu (Durand and Gonzalez Feliu, 2011) had shown that the combination of Scenario (3) (Pick up points) and Scenario (1) (Store picking) seems to be, *a priori*, the most favorable: more than 30% gain in driven km when the utilization rate is 50%. This reflects a sharp decline in motorized shopping trips over 30% drop, with the assumption that the pick up points are located near the heart of residential neighborhoods and the density of these points is sufficient to lead to changes in user behavior, including the use of their car. According to Taniguchi and Kakimoto (Taniguchi and Kakimoto, 2003), the application of models to test road network indicates that introducing e-commerce (B2C) may lead to more traffic in urban areas and make negative impacts on the environment unless e-commerce is widely used by consumers to some extent. However, some measures including co-operative freight transport systems of home delivery companies and designating time windows by home delivery companies and pickup points are effective

to reduce the total costs as well as total running times and NOx emissions.

5. METHODOLOGY AND PRELIMINARY RESULTS

In order to examine the raison d'etre of establishing a pick up point network in Izola, we have constructed a measurement strategy and methodology to record and analyze key influential factors. While there have been traffic flow and other transportation measurements in Izola before, most of them focused mainly on suggestions for future infrastructure development instead of solving the daily, everyday problems of the city and its inhabitants. However, they had provided relevant starting points for our investigations, as they pointed out key spots and outbreaks within the city.

Our measurements were executed using our self-developed, Android based application, the Elli3 Pro©. Through customizable screens and voice recording possibilities, the Elli3 Pro is able to measure and record various activities – from order-picking processes till traffic counting. Later, the acquired data be can easily exported and promptly evaluated on any computer.

During the preliminary tests of the methodology, we have made several measurements regarding parking spaces, the number of pedestrians, cars and bikes entering the city and the beach, and the proportion of local (Koper region) cars versus cars from other parts of Slovenia and from abroad. We have also observed customers entering the only small shop within the city center, as well as the peak and off-peak hours at local shopping malls.

Based on our observations, local shopping malls have three major peak periods, early in the mornings (7-9 am), early afternoons (2-4 pm) and early evenings (6-7 pm). Besides these intervals, we assume that there might be free capacities for shop assistants to collect, consolidate and send the electronically ordered goods from local malls to the pick up points. However, in order to prove our assumptions, further scenarios, investigations and measurements are necessary.

In order to establish an ideal density and location of pick up points, measurements inside the old city cores are also inevitable. Our measurements pointed out, that there is a huge density of pedestrians around the Marina bay and the beach throughout the whole day – with an average of 500 pedestrians in the afternoons and more than a thousand in the evening. These preliminary results had shown, that with well-located pick up points and with extended opening hours, the vast majority of tourists and locals could be attracted to use this option instead of using their car within the city core.

6. CONCLUSIONS

In our paper we presented the pick-up point distribution channel as a new innovative methodology for fulfilling logistics needs in Adriatic towns – as an example we made some preliminary research in the city of Izola at the Slovenian coast. Applying the methodology of Elli3 Pro measurements we were able to prove that all critical factors to establish an effective pick-up point network are present, however – since all of our measurements were conducted during the season - further off-season measurements and the financial analysis of sustainability are necessary.

According to the idea and the results we can conclude that pick-up point distribution network, as new type of urban logistics tool might enable the city – and other similar cities in the region - to recover itself and provide a smarter city for tourists and investors for many more years to come.

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