

public urban transport; ticket distribution system;  
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## **RISK SHARING IN THE PAPER TICKET DISTRIBUTION SYSTEM ON THE EXAMPLE OF MUNICIPAL TRANSPORT UNION OF THE UPPER SILESIAN INDUSTRIAL DISTRICT IN KATOWICE**

**Summary.** Properly organized ticket distribution is a crucial tool to realize tariff policy of public passenger transport provider in the given area, as well as the factor influencing the ticket sale profits. Providing the proper accessibility of public communication ticket sale network requires signing contracts with third parties, which is consequently connected with the necessity to divide the tasks and responsibilities among them, which generates certain risk for each of the parties. In the article the types of risks have been discussed, as well as the methods of its sharing in case of agreements concerning public communication paper ticket distribution. Based on the example of the Municipal Transport Union of the Upper Silesian Industrial District in Katowice, the types of such agreements have been presented as well as their influence on organizing urban communication ticket distribution system in Silesian agglomeration. The paper presents a new approach to risk management as an important part of integration strategy of urban transport organizer.

## **PODZIAŁ RYZYKA W SYSTEMIE DYSTRYBUCJI BILETÓW PAPIEROWYCH NA PRZYKŁADZIE KOMUNIKACYJNEGO ZWIĄZKU KOMUNALNEGO GÓRNOŚLĄSKIEGO OKRĘGU PRZEMYSŁOWEGO W KATOWICACH**

**Streszczenie.** Odpowiednio zorganizowana dystrybucja biletów to ważne narzędzie realizacji polityki taryfowej organizatora miejskiego transportu zbiorowego na danym obszarze oraz czynnik wpływający na dochody ze sprzedaży biletów. Zapewnienie właściwej dostępności sieci sprzedaży biletów komunikacji miejskiej wymaga zawarcia umów z podmiotami zewnętrznymi, co z kolei wiąże się z koniecznością podziału zadań i odpowiedzialności pomiędzy stronami umowy i generuje określone ryzyko dla każdej z nich. W artykule omówiono rodzaje ryzyka oraz sposoby jego podziału w przypadku umów na dystrybucję papierowych biletów komunikacji miejskiej. Na przykładzie Komunikacyjnego Związku Komunalnego Górnośląskiego Okręgu Przemysłowego w Katowicach zaprezentowano typy takich umów i omówiono ich wpływ na organizację systemu dystrybucji biletów komunikacji miejskiej w aglomeracji śląskiej. Artykuł prezentuje nowe podejście do zarządzania ryzykiem, jako ważnego narzędzia realizacji strategii integracji organizatora transportu miejskiego.

## 1. INTRODUCTION

By the virtue of the Act of 8<sup>th</sup> March 1990 on municipal government, in 1991 the cities of the central part of śląskie voivodeship created the Municipal Transport Union of the Upper Silesian Industrial District in Katowice (KZK GOP) (see [13]). The Union has the legal personality and it realizes the duties of managing the urban passenger transport, consisting of fulfilling the needs of the municipalities as far as local collective transport and other public services correlated with it are concerned. The duties of the Union especially include organizing local collective transport, maintaining the developing Union infrastructure, running the research on transport systems development, realizing other rights and duties connected with the collective transport, taking the initiatives to develop electronic public services (including transport ones), promoting and informing about collective transport services, initiating and coordinating the activities connected with traffic management and parking in the cities (see [5, p. 175-184]).

KZK GOP as a urban transport organizer is unique on a European scale, because it brings together 27 very varied municipalities, which create the area of total surface of 1,7 thousand sq. km., inhabited by almost 2 million people, which constitutes 43% of śląskie voivodeship inhabitants [11]. The range of the Union activity also covers some of the neighbouring municipalities. Relatively simple and clear ticket price system of KZK GOP enabled the implementation of their sale in external networks with the cooperation with the private operators (see [4, p. 231-247]). The goal of the article is to characterize the ticket distribution system used for urban communication services of KZK GOP and to discuss the types of risks and means of their allocation among the partners of the ticket selling agreements. In the article there have also been presented the tools to limit the risk, used by KZK GOP.

## 2. RISK IDENTIFICATION AND THE TOOLS TO LIMIT IT

In the literature concerning the subject one may come across various definitions of risk, each of which put the emphasis on different aspects of this issue. Risk might be understood as the uncertainty about the results, actions, events [1, p. 1]. Risk may be considered as the chance to gain profits or as the danger to suffer losses and to fail to achieve the planned goals. Vast majority of the definitions specify the risk as the probability of an event to happen which will negatively influence achieving the planned goals [3, p. 32]. European Commission, for the needs of realizing the projects among public and private partners, defines the risk as any factor, event or influence that threatens the positive outcome of the project in terms of time, costs or quality [6, p. 61-62].

Sharing the risk between the private and public partner is one of the most important elements in the process of planning and realizing the investment funded from the public resources. On each stage of this process one may discuss risk management which may be classified as the set of measures which target is the complex analysis and systematic control of the undertaken projects viewed from the perspective of the possibility of potential interference. Risk management is of long-time character and covers all the time of the project realization. We may distinguish five main stages of this process [8, p. 17]:

- risk identification, understood as the identification of all the risk factors important for the project,
- risk analysis, understood as determining the probability if the previously identified risk factors will appear, as well as the character of potential results of their appearance,
- risk allocation understood as allocating each of the partners the responsibility for the consequences of the determined risk factor appearance,
- risk minimization, meaning undertaking the activities the goal of which is to minimize the probability of certain risk factor to happen and to limit its effect,
- monitoring and reviewing previously identified risk factors as well as new ones appearing during project realization process.

Most often, risk identification and its assessment is performed during the feasibility study. Despite that, the risk in big projects may also be the subject of separate analyses and studies. Feasibility study includes technical, organizational and financial characteristics of the project, taking into account the assumptions concerning supply and demand factors, market share, price level, legal and financial aspects. Such document includes detailed analyses concerning funding the project and the predicted financial flows. For the feasibility study, market research are often performed, dealing with the preferences and the needs of potential users; mathematic models are built, which help with following present trends and with predicting future ones [9, p. 262-290].

Risk identification also requires recognizing all risk factors which may influence project realization. According to the general classification, risk may be divided in legal-political one, technical and economic one. Legal- political risk is mostly connected with legal regulations, legal frames, authorities policies, arguments solving, general stability in a country (e.g. the risk of potential riots, conflicts), taxation, the threat of expropriation or nationalization. Technical risk concerns lack of knowledge concerning technical aspects, using improper building materials, faulty works performance, improper technical and project surveillance, mistakes made in technical specification and breakdowns of machines and devices. Economic risk is connected with, among others, insufficient demand on goods and services, cost increase and price decrease for goods and services due to regulations [9, p. 262-290].

European Union Statistical Office Eurostat differentiates three basic risk categories, which appear in case of the project realized with the cooperation of public and private partners [10]:

- building risk, concerning especially delay in delivery, not following the norms, additional costs, technical deficiencies and lacks, negative external effects of the investment (e.g. for the natural environment),
- availability risk connected with the lack of the possibility to deliver the proper amount of goods or services or with the impossibility to provide goods and services fulfilling the set quality standards,
- demand risk which covers the changeability of the demand on goods and services due to economic situation factors, economic trends, direct competition or technical progress.

In the European Commission papers there are defined much more types of risk, among which they are as follows [10] [2, p. 4-30]:

- the risk connected with the profits generated by the joined project which depend on the level of infrastructure use and on the level of the fees paid by the users,
- the risk combined with choosing the private partner,
- the risk connected with building works due to, among others, delays in finishing building works, costs increase, budget overrun, which threatens the realization of the whole project,
- currency risk, which appear in case when the private partner is the foreign one,
- the risk connected with not keeping the conditions of the agreement,
- political risk combined with political stability of public institutions engaged in the project; it is the subject of assessment for the international rating agencies,
- the risk combined with following legal regulations concerning natural environment protection and culture and heritage conservation, including not only the risk of the natural environment to worsen due to project realization, but also the risk of delays as the effect of social organizations or, for example, unexpected archeological discoveries on the area of the project,
- the risk of hidden faults appears in case of modification of the already existing infrastructure or equipping the building with proper installations etc., when previously unknown infrastructure faults appear, it may significantly increase the costs of investment or threaten its further realization,
- the risk of lack of social acceptance (e.g. protests or boycott of the community made to pay the private partner for certain services),
- the risk of losing public control over the service process,

- hidden protectionism, which is connected with the common fears of the society before the municipal infrastructure was built or with realization of public duties in cooperation with private investor, especially foreign ones.

Recognizing and assessing the risk combined with project realization plays a key role in the process of sharing the risk and the responsibility among the partners. Sharing the risk among the parties must take into consideration the character of the project and the strength of each of the partners. The main rule is that the risk should be passed on to that party which is able to cope with it better. Proper risk allocation has direct influence on the project costs and on its effectiveness [9, p. 262-290].

There are many solutions and mechanisms which consist of the tools to minimize the risk. The partners of the realized projects try to clearly share the risk and possibly best to predict the procedures and code of conduct that are mainly to minimize the effects of undesired events. The solution allowing to limit the legal- political risk is the due diligence. Due diligence is the complex examination of the project or of given company, run by independent professional companies or institutions. Most often, it covers the legal and financial issues, but may also concern human resources, management process and technical notions. Due diligence is a rather time-consuming and costly process [7, p. 4-6].

Among the solutions allowing to minimize the technical risk, one may enumerate mostly contractual penalties for failing to meet deadlines and for signing so called turnkey contracts, in which major part of the risk connected with planning and with building falls on general contractor. The instruments that limit economic risk are mostly guarantees and insurances, as well as appropriate payment mechanisms, such as: flexible mechanism of remuneration regulation depending whether certain criteria described in the contract have been reached, or deductions for improper services [12] [14, p. 15-20].

### 3. KZK GOP PAPER TICKET SALE AND DISTRIBUTION SYSTEM

Prior to the analysis of existing risks and sharing the tasks, it is necessary to identify the objects of cooperation in the ticket distribution system of the public partner, KZK GOP, and of private partners.

Municipalities that KZK GOP consists of are very varied (see Tab. 1). On the one hand, one may find in the Union territorially broad cities, such as Katowice (165km<sup>2</sup>), or Dąbrowa Górnicza (189 km<sup>2</sup>), with big number of inhabitants (Katowice: around 307 thousand, Sosnowiec: around 213 thousand citizens). On the other hand, KZK GOP membership have such small cities like Świętochłowice, Wojkowice or Radzionków (with the territory of 13 km<sup>2</sup>), inhabited by relatively small number of people (e.g. Chelme Śląski: around 6 thousand inhabitants).

Local collective transport, organized by KZK GOP, is funded with two basic sources: tariff profits (from ticket sale) and from member municipalities subsidies. The scale of the profit made from ticket sale is the result of the tickets price and the level of the demand for local collective transport services, which is in turn influenced by age and profession structure of the inhabitants (students and people professionally active travel more often), as well as of the access to the substitute means of transport (such as individual transport) and of the quality and access of the offered urban transport services.

Due to great differentiation of the member municipalities and the fact that the ticket sale profits constitute one of the main sources of financing urban communication, KZK GOP pays great attention to the activities that are to provide the proper ticket sale network. When KZK GOP started to operate, it took over the whole ticket distribution system from communication companies operating within the borders of the member municipalities. It consisted then of several distribution channels, which included communication entrepreneurs, Ruch S.A. (only single tickets) and minor private distributors, who signed agreements with particular operators. In that time various types of contracts were in use, and the sale coordination system did not really function. There were around 50 monthly tickets sale outlets and around 800 single tickets sale outlets in KZK GOP area (without calculating the possibility to buy a ticket from a driver).

Over next following years, due to the undertaken activities, there appeared dynamic development of the ticket sale network, which was mirrored in greater market share of private sellers, including big enterprises dealing with wholesale distribution, and also small retailers. In the structure of urban communication services ticket distribution, private investment is dominant. Private sellers market share, when compared to total worth of all sold tickets is around 84%, and in the segment of single tickets it is 78%, whereas in the periodic tickets segment it is almost 90%. The biggest private companies distributing paper tickets for the KZK GOP are: Ruch S.A., Kolporter S.A. and F.H. Kart-Tel. Meanwhile, one may include the following to public distributors (based on internal data of KZK GOP):

- urban communication companies - PKM Katowice Sp. z o.o. and PKM Gliwice Sp. z o.o. which have their own ticket outlets,
- Inter-municipal Union of Passenger Communication (MZKP) in Tarnowskie Góry, with which KZK GOP has had the cooperation agreement concerning common tariff-ticket system since 1994,
- Poczta Polska S.A., which sells tickets at the post offices.

Moreover, chosen single tickets are sold in all urban communication vehicles based on the contracts signed with KZK GOP. Such sale is offered by all public and private operators providing the services for the Union.

According to the data from 31<sup>st</sup> December 2013, KZK GOP has around 225 agreements with providers dealing with urban communication ticket distribution. Sale outlet network for paper tickets in that time covered 3419 sale outlets, including around 1075 special ticket outlets (outlets offering periodic tickets). The number of single ticket sale outlets and the number of special ticket outlets of KZK GOP are presented in Tab. 2 (based on internal data of KZK GOP).

The share of the outlets run by small retailers in the total number of all such outlets is 67%, and their value share in the value of all sold tickets is somewhat over 18%. It is therefore fragmented market.

Apart from stationary sale outlets, in KZK GOP area there function the network of 56 ticket selling machines to offer urban communication tickets twenty four hours a day, which enable passengers to buy single tickets as well as the chosen periodic ones.

#### **4. RISK SHARING IN KZK GOP PAPER TICKET DISTRIBUTION AGREEMENTS**

The distribution of paper tickets for local collective transport services may be realized by external parties after signing the proper agreement with KZK GOP. Such agreement allows the external party directly to sell the tickets and to distribute them further, meaning to sell them to other parties. Distributor should constantly update KZK GOP with the list of outlets where tickets are sold. Such agreement may concern only single ticket sale or single tickets and periodic tickets sale. One may distinguish two types of contracts due to payment period concerning the bought tickets:

- the contract allowing accessing the tickets from KZK GOP warehouses only based on the document confirming that payment was sent to KZK GOP bank account (the confirmation of the cash or bank account payment),
- the contract allowing granted credit terms.

Maximum payment terms allowed when buying tickets are 14 days for single tickets and 30 days for periodic tickets. The right to buy KZK GOP tickets with granted credit term may be acquired by the operators who have been selling tickets for at least 12 months and who in that time had average ticket sale profits no lesser than 40 thousand PLN. Moreover, the party's solvency is in such case guaranteed by additional requirements, such as the following:

- the party presenting the safety measures in the form of promissory note, bank deposit, registered pledge together with transfer of rights from the insurance, bank or insurance guarantees, reservation of money on the party's bank account or other form,

- the necessity to present up-to-date confirmation of settling the party's tax liabilities, as well as mandatory insurances, e.g. to Social Insurance Fund (ZUS).

Table 1

Basic data characterizing KZK GOP municipalities and śląskie voivodeship (data for 2012) [11]

	Municipality	No of inhabitants according to actual place of residence	Area in km <sup>2</sup>	Population density (no of inhabitants/km <sup>2</sup> )
1.	Będzin	58 735	37	1 587
2.	Bobrowniki	11 800	52	227
3.	Bytom	174 724	69	2 532
4.	Chełm Śląski	6 069	23	264
5.	Chorzów	111 168	33	3 369
6.	Czeladź	33 345	16	2 084
7.	Dąbrowa Górnicza	124 701	189	660
8.	Gierałtowice	11 328	38	298
9.	Gliwice	186 210	134	1 390
10.	Imielin	8 542	28	305
11.	Katowice	307 233	165	1 862
12.	Knurów	39 320	34	1 156
13.	Mysłowice	75 305	66	1 141
14.	Piekary Śląskie	57 502	40	1 438
15.	Pilchowice	11 250	70	161
16.	Psary	11 701	46	254
17.	Pyskowice	18 704	31	603
18.	Radzionków	17 141	13	1 319
19.	Ruda Śląska	142 346	78	1 825
20.	Siemianowice Śl.	69 539	25	2 782
21.	Siewierz	12 234	114	107
22.	Sławków	7 100	37	192
23.	Sosnowiec	213 513	91	2 346
24.	Sośnicowice	8 659	116	75
25.	Świętochłowice	52 372	13	4 029
26.	Wojkowice	9 172	13	706
27.	Zabrze	179 452	80	2 243
	<b>KZK GOP municipalities</b>	<b>1 959 165</b>	<b>1 651</b>	<b>1 187</b>
	<b>Served municipalities</b>	<b>712 084</b>	<b>1 974</b>	<b>361</b>
	<b>Śląskie voivodeship</b>	<b>4 615 870</b>	<b>12 333</b>	<b>374</b>

Public parties, including public enterprises and companies, public administrative bodies, social organizations, chambers of commerce and the operators working for the KZK GOP order- regardless of legal form- from which it is possible to compensate their financial obligations from their profits from realized services, are the exception in such treatment. Such parties have the right to gain granted credit terms without the necessity to place the financial securities.

Distributor, when buying tickets in KZK GOP, receives certain discount calculated from the nominal value of a ticket due to the Tariff of transporting people and goods in KZK GOP urban communication. The size of the discount depends on the number and the type of acquired tickets and is

from 5% to 7% for single tickets and from 3% to 5% for periodic tickets. Therefore, the distributor gains profit from the difference between the nominal value of the ticket due to the tariff, meaning the price a passenger buys the ticket with, and the value of the ticket after the granted discount.

Table 2

KZK GOP paper ticket sale outlets (data for 31<sup>st</sup> December 2013)

Operators	No of single ticket sale outlets	No of special sale outlets	Total no of sale outlets	Total no of sale outlets share in %	Total value share of sold tickets in %
Ruch S. A.	40	254	294	8,6%	26,4%
Poczta Polska S. A.	6	286	292	8,5%	6,5%
KAR - TEL Sp. z o. o. S. k.	125	56	181	5,3%	30,8%
Tytanex Sp. z o. o.	92	-	92	2,7%	1,0%
Kolektura Biletowa Kawka Irena	67	22	89	2,6%	3,4%
Kolporter Sp. z o. o. S.k.a.	-	84	84	2,5%	7,3%
PKM Gliwice Spółka z o. o.	10	56	66	1,9%	1,7%
MZKP Tarnowskie Góry	4	26	30	0,9%	4,5%
Others (retailers)	2000	291	2291	67,0%	18,3%
<b>Total</b>	2 344	1 075	3 419	100%	100%

Using such mechanism of payment, directly dependent on the size of the sale, makes the demand risk being transferred to the party selling the tickets to the passengers. Therefore the contract for KZK GOP ticket distribution may be signed by any economic operator, with no extra criteria concerning market accessibility. It is verified by the market whether ticket sale outlet is needed in the given location. What is more, the contract obliges the distributor to have full ticket offer according to the current tariff. KZK GOP has the right to control the stock and the proper way of marking the tickets and in case the lacks or inconsistencies with the agreement are discovered, it also has the right to claim financial penalty.

Summing up, the party distributing tickets for KZK GOP may identify the following types of risk:

- the risk of maintaining the profitability of the sale in the situation where the margins are set in KZK GOP system and are not subjected to changes, which creates the risk of gaining proper profits and adequate costs of the business activity,
- the risk of demand and demand changes in time, meaning acquiring proper sale level in the conditions of great competition and with no barriers of entering and leaving the market,
- the risk of freezing of financial funds and losing financial stability, as selling tickets requires their buying from KZK GOP first, without the possibility to return the current surplus,
- the risk of maintaining constant sale,
- the risk connected with the possibility to lose or to have the tickets stolen, or with the occurrence of other extraordinary events, as from the moments tickets leave KZK GOP warehouse it is the buyer who bears full material responsibility for the acquired tickets.

The party distributing the tickets for KZK GOP has in fact no possibility to influence the profits from selling the tickets, as the demand on urban communication services depends on service offer and on tickets price. The only possibility to create the profits is to maintain ticket sale. On the other hand, in this case there are no risks appearing in other types of business activity, such as the risk of losing the worth, because KZK GOP tickets do not lose validity even in case the prices are changed.

Identification and the analysis of possible risks enable working out the method to share the duties and the responsibilities among the parties with the contracts for distributing paper tickets, as well as to create the tools to minimize the risk for such public body as KZK GOP. Among the main categories of risk appearing on the side of KZK GOP and the tools to minimize them, one may enumerate [15]:

- the risk of other parties incorrectly fulfilling the contract conditions (e.g. wrong labeling of periodic tickets), minimized with paragraphs concerning contractual penalties calculated as nominal price of a ticket sold with wrong label,
- the risk combined with providing full ticket range within distribution system- it was limited with implementing in the ticket distribution contract the obligation to maintain full ticket offer in sale together with defining contractual penalties for lack of proper types of tickets,
- the risk of choosing the private partner and, connected with it, the risk of not fulfilled obligation for taken tickets minimized by the procedure of issuing tickets after money is paid on KZK GOP bank account or, in case of the contract with granted credit terms (only for partners fulfilling certain conditions) with protecting the due payment in the form of promissory note, bank deposit, or registered pledge as well as the necessity to present the confirmation of settling the party's tax liabilities, as well as mandatory insurances,
- the risk of losing financial stability in settling liabilities towards KZK GOP, minimized with introducing the debt limits depending on average monthly turnover of the given operator in last six months,
- the risk of losing of having the tickets stolen after they have left KZK GOP warehouse has completely been transferred on the buyer.

Nonetheless, one should pay the attention to the fact that even owning such tool of minimizing the risk as contractual penalties and being able to terminate the contract with unreliable party, it does not change the fact that these are only the results of improper providing of the services. They influence the image of the public party - KZK GOP- and there are no effective tools to prevent such situations. These problems are fixed in the neighboring countries [16].

Such a public party such as KZK GOP, there also exist other risks, which cannot be minimized by using legal- formal tools. First of all, one should point to demand risk which is completely of different character than in case of a distributor. For KZK GOP it is connected with the threat of increasing disproportion between the gained profits from ticket sale and the costs, which is combined with the increase of the share of the subsidy from the municipalities in the profit structure and which in consequence may lead to limiting the transport offer. The risk of losing public control over ticket distribution process is also important, as such services are almost entirely provided by private operators. In case one big or several private operators refuse to provide the services, the situation may occur when the inhabitants of certain KZK GOP area will not be able to buy tickets for urban communication services. Therefore, the channels of paper ticket distribution are diversified, e.g. by increasing the number of ticket selling machines, selling tickets by urban communication vehicle drivers or implementing the possibility to buy tickets in electronic form through a mobile. Such risk is also limited with market mechanism itself, as it is a very fragmented market.

## 5. CONCLUSIONS

Profits from tickets sale are, beside the subsidies from member municipalities, the main source of funding the urban collective transport organized by KZK GOP. Therefore, properly organized ticket sale system is of key importance for providing the right availability of the service and the income from the provided services. Creating the effective distribution system requires identifying the potential risk and preparing the model of sharing the duties and the tasks among the partners. Lack of limitations in accessing the possibility to sell tickets has influenced the development of sale network and the increase of the market share of private seller and in consequence- the diversification of the distribution channels.

The accepted division of tasks and duties is the risk allocation effect, meaning allocating each of the partner the responsibility for the results connected with the presence of the previously identified threats. The system of paying the distributors has been based on discounts from paper tickets bought from KZK GOP, thanks to which the demand risk has been transferred on distributors and the



relevance of ticket outlets functioning in given areas is verified by the market. In the agreements concerning selling urban communication tickets some of the risks have been limited with proper instruments, such as contractual penalties or various forms of financial protection.

One may therefore claim that the system of organizing the ticket distribution network, accepted by KZK GOP has made the demand shape it greatly. Such solution has both advantages and disadvantages, however, when assessing it, one ought to take into consideration the wide area serviced by KZK GOP, as well as great differences among member municipalities. Despite of this fact, one may assess positively the accepted way of sharing the tasks and the duties, because the responsibility for possible occurrences is given to parties that have some influence over them and may, to lesser or greater extend, prevent them or minimize their potential effects. In the case of KZK GOP, which is quite unique public transport organizer on the European scale, risk management has become an important element of the strategy for the integration of public transport services of such varied and large area.

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