THE NISPACEE JOURNAL OF PUBLIC ADMINISTRATION AND POLICY, VOL. XV, NO. 1, SUMMER 2022

10.2478/nispa-2022-0005

Municipal Solid Waste Management in the Czech Republic and in Slovakia

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Abstract

Contracting waste management services is one of the most commonly used approaches to the delivery of this service and this topic is clearly in the focus of frequent academic research.

The goal of this article is to examine trends in the area of solid waste collection and disposal on the municipal level for the Czech Republic and Slovakia in terms of developments over the past 20 years with a focus on the share of inter-municipal cooperation in the delivery of this service. In contrast to Western European countries, which are undergoing re-municipalization, the data obtained for Slovakia and the Czech Republic over 20 years show that the municipal solid waste management service is dominated by contracting, which has increased over the examined period. This fact is apparently a reflection of the high rate of fragmentation in municipal structures and the low willingness among municipalities to cooperate. The data obtained also indicate that using external suppliers seems to bring marginal savings that could certainly be substantially

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larger; potential increases in efficiency via contracting are unequivocally limited by the low quality of contract management. Regarding our core question, we found that the proportion of inter-municipal cooperation between service delivery modes did not significantly increase during the investigated period. The experts interviewed almost uniformly agreed on three critical limits related to the issue of inter-municipal cooperation in MSW management delivery – transaction costs of different types, non-existent regular comparisons of best solutions, and limited motivation to select optimal service delivery modes.

Keywords:

municipal solid waste, management, contracting, efficiency, inter-municipal cooperation

Acknowledgements

The article is a result of a research project supported by the GACR no. 19-06020S; "Alternative service delivery arrangements" and VEGA 1/0029/21, "Management of contracting services in the public sector." Furthermore, the authors would like to thank to all anonymous experts who helped us with their opinions and to Anne Johnson for her perfect editing services.

Abbreviations

MSW, municipal solid waste, IMC, inter-municipal cooperation, NPM, New Public Management, PPP, public private partnership, BVI, Best Values of Indicators, BVPI, Best Value Performance Indicator.

1. Introduction

Municipal solid waste (MSW) management is a core local public service, and its costs represent a substantial part of local budgets. In all countries, municipalities have to make decisions about the most efficient way to deliver this service and whether to contract this service to external suppliers or to deliver it "in-house." This question is specifically critical in highly fragmented countries with excessive numbers of small municipalities, such as the Czech Republic and Slovakia.

Contracting waste management services is one of the most commonly used approaches to the delivery of this service. Under this arrangement, the state is responsible for the service delivery, but the production is transferred to private bodies. This approach was promoted especially by the New Public Management (NPM) ideology, which suggested that contracting should contribute to increasing the efficiency of service delivery through competition (Hodge, 2000). Worldwide, the issue

of contracting public sector services has attracted the attention of both the expert and the non-expert public for three decades due to the fact that every year the government of each country spends a significant quantity of public funds on financing contracted services.

The contemporary literature and practice on contracting and on methods of local public service delivery show that the impact of contracting on the efficiency and quality of privately delivered public services is country-specific and sector-specific. Transaction costs emerge as an important bias.

More recent books explore the need for "re-municipalization" or "public ownership" (Albalate et al., 2021a, 2021b; Voorn, 2021). The volume edited by Koprić et al. (2018, p. 335) concludes that

> *The ideological belief that NPM-related mechanisms such as contracting out, outsourcing, public-private partnership, privatization, and others will bring about better solutions for users may or may not be supported by firm data on efficiency and user satisfaction. It depends on the type of service, municipality size, national legal, and institutional contexts, the level and nature of competition in particular local service sectors, local regulatory and managerial capacities, and other variables … Furthermore, contrary to ideological beliefs, the privatisation and implementation of NPM-driven arrangements may result in price increase, disinvestment, and other significant detrimental long-term effects, whether those are the consequences of model inappropriateness, regulatory deficiencies, or implementation inconsistencies.*

Kishimoto et al. (2020, p. 230) argue that "(Re)municipalization is one of the key strategies to address the challenges of our time, including pandemics such as Covid-19." Their book identifies more than 1,400 successful cases of (re)municipalization, involving more than 2,400 cities in 58 countries around the world.

Koprić et al. (2018, p. 336) argue that "Some results indicate that evaluating the same service within an identical national context over a longer period of time is not only sensible but necessary, because positive results during the period immediately following an NPM-induced change may be followed by a period of decreasing results and side effects."

The aim of this article is to contribute to the informed discussion about the current role of contracting local public services. Based predominantly on our own data collected through the primary field research, the goal of this article is to examine trends in the area of solid waste collection and disposal on the municipal level for the Czech Republic and Slovakia in terms of developments over the past 20 years with a focus on the share of inter-municipal cooperation (IMC) in the delivery of this service. The long-term series enables a comprehensive comparison and evaluation of developments

in this field.

The delivery of waste collection and disposal services is the responsibility of local self-governments in the Czech Republic and Slovakia (Soukopová & Klimovský, 2016). When deciding on the form of provision, local governments should take into account their population, area, and possible budget restraints. One specific feature of both countries is a suboptimal local government size, stemming from historical circumstances and the evolution of the local government structure. The excessive territorial fragmentation significantly influences local service delivery. More than half of Czech municipalities have fewer than 500 residents, and approximately 78% have fewer than 1,000 (Kadečka, 2012); the situation in Slovakia is similar. Waste management is an integral and indispensable part of local budgets; municipal waste management costs were more than 60% of the total current municipal costs for environmental protection, and they accounted on average for 4 to 5% of the total current costs for municipalities in the Czech Republic and in Slovakia in the 2012–2016 period (Plaček et al., 2020).

2. Contracting Waste Management Services

The issue of contracting local services has been a subject of academic research for many years, and many existing studies focus on or include the area of waste management and disposal. Some papers just present arguments why public ownership should be viewed in a positive or negative light (Monteduro, 2014). However, most advanced papers provide more than a normative point of view. They try to evaluate the situation from several viewpoints, addressing not only the question of whether to contract, but of what process should govern contracting or what the factors are in the contracting process and their results (Agiamoh, 2020; Soukopová et al., 2014; Schoute et al., 2021; Bel & Rosell, 2016; Swianiewicz & Brzóska, 2020).

As the contracting of public service production is based on a contractual relationship – a contract between a public institution and an external entity – many studies focus on the concepts of contracts and of contracting public services (Cooper, 2003; Weghmann & Hall, 2021).

Books and articles on this topic emphasize the tools that managers need to form, operate, terminate, and transform these contracts amidst a complex web of intergovernmental relations.

Many studies concentrate on the problem of comparing the cost-effectiveness of internalization and contracting, perceived from various perspectives. The authors attempt to investigate whether and to what extent there are differences in performance, particularly economic performance, between the public and private production of local services. Domberger and Jensen (1997) showed that the private production of local services led to efficient provision for a number of government services. However, more

recent evidence on the cost efficiency of private delivery is rather ambiguous and more mixed (Bel & Costas, 2006; Bel & Mur, 2009; Bel et al., 2010; Benito et al., 2015; Callan & Thomas, 2001; Dijkgraaf & Gradus, 2007; Gradus et al., 2016; Ohlsson, 2003, Schoute et al., 2021).

This simplified perception of contracting out services in the public sector is limited to addressing the issue of "make or buy" and does not answer the question of why contracting services in the public sector does not increase efficiency at the expected scale. This type of research focuses on single or multiple factors in one paper. One frequently investigated issue is the quality of contractual relationship management between the *principal*, or contracting authority, and the *agent*, or supplier (Dehoog, 1990; Sclar, 2000). The authors also investigate other factors that determine the quality of contract process management, such as the level of competition in obtaining a public contract (Savas, 1987; Greene, 2002), ex-ante evaluation of the tenderer (Rehfuss, 1989; Romzek & Johnston, 2002), the clearly defined subject of the procurement (Marlin, 1984), the extent and intensity of external production (Prager, 1994; Lavery, 1999; Brown & Potoski, 2003), penalties for non-compliance (Dehoog, 1990; MacNeil, 1978), the contracting authority's knowledge and experience in contract management (Dehoog, 1990; Rehfuss, 1989; Romzek & Johnston, 2002), and the contracting authority's expertise on the technical parameters of the contract service (Kettl, 1993).

In addition to the conventional perception of contracting in terms of principal-agent theory, where in the relationship between the provider (i. e. the responsible body, the local authority, in our case the municipality), the producer (municipality in the in-house production case or external firm) and the service provider, the last one is perceived as a manager or controller; the scientific literature also perceives a newer interpretation that understands this relationship as a partnership created through flexible collaboration. With this approach, additional factors appear to determine the contracting benefits: frequency of communication between the service provider and producer (Behn & Kant, 1999; Dehoog, 1990), shared problem solving (Cooper, 2003; Sclar, 2000), mutual trust, shared values, and changes from sanctions to negotiations (MacNeil, 1978).

More recent economic literature also deals with financial constraints and political and legal institutions as determinants of government decisions to contract out (Megginson et al., 2000). EU institutions, national governments, and local public authorities are paying increasing attention to cooperation with the private sector. Questions have been raised about the extent to which these partnerships will promote the public interest and defend collective interests. International institutions, policy makers, and scholars have become interested in this issue; in particular, the EU suggested implementing different types of public-private partnership arrangements in the provision of public utilities (Monteduro, 2014).

The topic of contracting out local services has been covered to some extent by

national sources in the two investigated countries. There were papers and books (Ochrana et al., 2007; Mericková et al., 2010) prepared or co-authored by the authors of this article, as well as other interesting publications analyzing the contracting of local public services in the Czech Republic and Slovakia. The most comprehensive analysis was delivered in the dissertation of Majlingová (2005), focusing on waste collection and disposal services. Majlingová used a representative sample of 213 municipalities and mapped several aspects of waste management on the local level, including the efficiency of contracting. Two other important monographs in Slovakia were prepared by Balážová (2006) and Beblavý and Sičáková (2006) with the support of Transparency International Slovakia. In the Czech Republic, the analysis by Pavel (2006) documented the limited transparency and inefficiency of local companies responsible for the delivery of local services.

3. Methodology and methods

The goal of this article is to examine trends in the area of MSW collection and disposal (management) on the municipal level for the Czech Republic and Slovakia in terms of developments over the past 20 years, with a focus on the share of inter-municipal cooperation (IMC) in the delivery of this service. The general part of this paper tries to summarize trends in terms of the proportion of contracted MSW management and the efficiency of contracted MSW service in comparison with in-house production. Because of methodological problems, covered later in this text, all the data in this part are of limited meaning, with the aim of providing background information for responding to our core research question.

The following breakdown was used for data collection. Firstly, the in-house production (internal production, inter-municipal cooperation, IMC) includes both municipalities' internal production and production by an external company where the municipality has an ownership interest of more than 50%.

Secondly, the externally delivered (contracting) covered production by an external firm where the municipality has an ownership interest of less than 50% as well as production by an external firm without the municipality as a shareholder.

The data provided with this article suggest that IMC delivers very good results in terms of the efficiency and quality of the service. However, the proportion of this form of service delivery has not substantially increased during the investigated 20-year period. This situation generated our main research question:

RQ: Why is inter-municipal cooperation not used more frequently to deliver MSW management services in the Czech Republic and Slovakia?

The illustrative part of our research assesses the following core aspects of MSW service delivery: contracting rate and contracting efficiency.

The contracting rate is assessed through a simple indicator: the proportion of municipalities that ensure MSW collection and disposal via an external entity. The core methodological problem connected with this indicator is the fact that different research samples used different approaches to weighting in relation to the size of municipalities – because of this, the pictures provided by selected samples are not fully comparable, although they are sufficient to show general trends.

Contracting efficiency is dominantly assessed via the cost-per-resident indicator. The supporting indicator is the cost-per-unit of output (one tonne of waste produced); this indicator is calculated only for selected years, depending on the availability of necessary data. Two core problems limit the chance for exact comparisons in contracting efficiency. One problem is that because of the existing accounting system (cost center accounting, as full cost accounting is not used on the municipal level), the costs with contracting must be higher. Municipalities do not monitor overheads or the transaction costs connected with, for example, public procurement or the subsequent monitoring of external delivery. However, the invoiced costs from external subjects include direct costs, overheads (including most transaction costs), added value, and – in most cases – also (monopoly or oligopoly) profit. The second problem is the limited reliability of the collected data. For the Czech Republic in the beginning and for all Slovak samples, the cost data were collected by questionnaires; thus not all data are necessarily correct. More recent economic data for the Czech Republic are collected from the national information system (ARIS). Pavel (2006) used both questionnaires and the information system. He found that data in questionnaires and data from the system show significant differences, even for the same municipality. He was unable to prove which data are more accurate.

For the selected Slovak sample from 2009, the authors used best value performance indicators (BVPI) to construct composite efficiency scores on the basis of the combination of three indicators as efficiency benchmarks: the costs of service provision per inhabitant, the unit costs of output, and the quality of service. Citizen satisfaction was used as the measure of local public service quality. Data on service quality were provided by the users, the citizens of different municipalities, through a questionnaire.

Citizens evaluated local public service quality using the following scale:

Absolutely satisfied	Satisfied	More satisfied than unsatisfied	More unsatisfied than satisfied	Unsatisfied	Absolutely unsatisfied
100%	80%	60%	40%	20%	0%

To calculate BVPI, we assigned weights (vj) to the selected indicators using the Saaty approach (1983) as follows: Unit costs of service delivery per inhabitant – 30%, Unit costs of service delivery per service outcome – 30% and Quality of service – 40%.

The presented data comes from our own original field research, and data produced by other authors are used for a few years – Table 1 for the Czech Republic and Table 2 for Slovakia characterize the research sample. In some cases, the research involved a representative sample of municipalities; in others, only an illustrative sample. The response rate is calculated as the proportion of responses received to the total number of municipalities in a given country in a given year.

Table 1:

Samples analyzed for the Czech Republic

Year	Sample	Source
2000	53 municipalities of different sizes (non-representative sample, response rate 0.85%)	authors
2005	100 municipalities of different sizes (representative sample, response rate 1.6%)	Pavel, 2006
2007	900 municipalities of different sizes (representative sample, response rate 14.5%)	authors
2011	673 municipalities of different sizes (representative sample, response rate 10.85%)	authors
2013	1300 municipalities of different sizes (representative sample, response rate 20.9%)	authors
2014a	102 municipalities of different sizes (representative sample, response rate 1.6%)	authors
2014b	53 municipalities of different sizes (non-representative sample, response rate 0.85%)	authors
2014c	2065 municipalities of different size (representative sample, response rate 33.3%)	authors
2015a	675 municipalities of different sizes (representative sample, response rate 10.85%)	authors
2015b	1962 municipalities of different sizes (representative sample, response rate 31.6%)	authors
2019	90 municipalities of different sizes (representative sample, response rate 1.4%)	authors

Table 2:

Samples analyzed for Slovakia

Year	Research sample	
2001	55 municipalities of different sizes (representative sample, response rate 2.24%)	authors
2004	213 municipalities of different sizes (representative sample, response rate 8.69%)	Majlingová, 2005
2005	17 municipalities of the same size (non-representative sample, response rate 1.75%)	authors
2006	100 municipalities of different sizes (representative sample, response rate 4.88%)	authors
2008	28 municipalities of different sizes (non-representative sample, response rate 1.14%)	authors
2009	131 municipalities of different sizes (representative sample, response rate 5.3%)	authors
2010	141 municipalities of different sizes (representative sample, response rate 5.7%)	authors
2015	9 municipalities of different sizes (non-representative sample, response rate 0.36%)	authors
2020	115 municipalities of different sizes (representative sample, response rate 4.69%)	authors

To respond to our core research question, we decided to use a qualitative approach, i. e. opinions of experts. In both countries, we contacted three well-known experts on the topic – two academic experts and one practitioner. They were invited to respond to the following question: "*According to our data collected over the last 20 years, contracting is the main form of delivery of municipal waste management services in the Czech Republic and in Slovakia. According to these data, IMC is the most efficient form in many local cases; however, the proportion of this mode of delivery has not visibly increased in recent years. We would like to ask you for your opinion of why municipalities do not use IMC more frequently in the delivery of waste management services.*"

This first attempt was expected to serve as the start to the standard Delphi method, with 10–15 respondents. However, because the responses of this small sample of experts were almost identical, we decided that the results from this limited survey were fully representative, and there was no need to continue on this line.

For comparison purposes we use not only the simple cost-per-inhabitant analysis (see below Table 4) but also the method of best values of indicators (BVI) to construct composite efficiency scores (Table 6). BVI is one of the nonparametric multidimensional approaches to the evaluation of efficiency of Decision Making Units

(DMU) based on a weighted sum algorithm. Here we designated the service delivery method as a DMU. The method makes it possible to express the efficiency of evaluated DMUs, taking into consideration multiple indicators, measured in different units.

The method is simple to apply and easy to interpret. We consider m service delivery alternatives Ai (i = 1 … m), and n indicators of evaluation Kj (j = 1 … n). When we assign empirical values for all delivery alternatives and evaluation indicators, we obtain the evaluation matrix X. Because indicators use different measurement units we normalize their values xij as follows:

1. If the best value of the indicator is its maximum value, we normalize by:

$$a_{ij} = \frac{x_{ij}}{x_{max}}$$

2. If the best value of the indicator is its minimum value we normalize by:

$$a_{ij} = \frac{x_{min}}{x_{ij}}$$

Thus we generate a matrix of normalized indicator values (A), which fall in the interval ⟨0, 1⟩. Then we assign the weights vj to the indicators, where:

$$\sum_{j=1}^{n} v_j = 100$$

The final evaluation of the efficiency of each alternative is obtained by multiplying matrix A by the column vector of weights vj:

Alternative	Indicator						Weight of Indicator		Final Evaluation
	K1	K2	K3	K4	...	Kn			
	a_{11}	a_{12}	a_{13}	a_{14}	.	a_{1n}	v_1		h_1
	a_{21}	a_{22}	a_{23}	.	.	a_{2n}	v_2		h_2
	a_{31}	a_{32}	.	.	.	a_{3n}	v_3		h_3
	.	.	.	.	.	.	.		.
	.	.	.	.	.	.	.		.
	a_{m1}	a_{m2}	.	.	.	a_{mn}	v_n	=	h_m

The most efficient service delivery alternative is the option with the maximal composite score E. The composite efficiency of other options is given proportionally to AlternativeEmax.

We have chosen three indicators of evaluation as efficiency benchmarks in our

analysis:

1. The costs of service delivery per inhabitant.
2. The unit costs of service delivery – 1 metric tonne of waste.
3. The quality of service.

For service we have to acknowledge that measuring the quality of a service is generally much more difficult than measuring the quality of a good. Service quality may be identified in terms of performance characteristics, but their assessment may require subjective judgments. It can be measured through user satisfaction, but this is subjective because individual opinions on what constitutes a high standard of service quality may vary from one user to another. Data on service quality were provided by the users, the citizens of different municipalities, through a questionnaire. The samples are non-representative, so we accept that our summary data are partly preliminary.

Citizens evaluated local public service quality using the scale of satisfaction mentioned above in the Methodology part.

To calculate BVI we assigned weights (vj) to the indicators (Scheme 1).

Scheme 1:

Weights (VJ) for Indicators

Indicator	**vj %**
Unit costs of service delivery per inhabitant	30
Unit costs of service delivery per service outcome	30
Quality of service	40
Σ	100

To set the weights for indicators we used Saaty's method with inputs from a panel of ten experts on contracting in both countries.

4. Results and Discussion

The first issue addressed in the research is the comparison of the extent of contracting with other internal forms of service delivery against the rate of contracting local public services and the dynamics of its development. Table 3 presents the results.

Table 3:

Rate of contracting MSW collection and disposal (in %)

Czech Republic		Slovakia	
2000	71	2001	49
2005	80	2004	71
2007	65	2005	64
2011	83	2006	69
2014a	91	2008	80
2014b	65	2009	80
2014c	95	2010	86
2015a	79	2015	92
2015b	96	2020	88
2019	99		

The data presented, despite some variations caused by different samples and different methodologies (see above), indicate growth in contracting and the fact that this alternative form of public service delivery has recently become dominant in MSW collection and disposal. An indisputable reason is the limited staff and capital capacity of local governments in both countries; these limitations prevent them from reacting flexibly to the growing demands of residents regarding the extent and quality of these public services. A solution is using the capacity of the private sector and transforming this internal method of service delivery into an external one by contracting public services.

We present for illustration the structure of different legal forms delivering MSW collection and disposal service on a selected sample from the Czech Republic (2015c). The following service delivery forms were found in three categories: internal production, contracting, and mixed delivery.

Internal production is represented by the delivery with a municipal house staff (not a legal body); a municipality's own limited or joint-stock company (with a municipal shareholding of more than 50%); and inter-municipal cooperation with a participating municipality (most frequent in this category).

Contracting is represented by the delivery with a municipality's own limited or joint-stock company (with a municipal shareholding of less than 50%, very frequent form); inter-municipal cooperation in which a municipality is not participating; contracting to private companies (most frequent solution in this category); and PPP companies in which a municipality participates in ownership. Mixed refers to different types of PPP companies in which a municipality participates in ownership.

The Slovak situation was mapped by Majlingová (2005), and the results look very similar; minor differences include specifically the existence of semi-budgetary companies and the non-existence of PPPs at that time. The next step is evaluating the effect of contracting on the efficiency of service delivery. Tables 4 and 5 construct an index of production efficiency for service using data on the costs of delivering services that rely primarily on contracting out compared to those that rely primarily on internal

production. Using the average costs of internalized services as the base (= 100), the index scores are constructed by taking the ratio of costs for outsourced services to costs for internalized services (measured per inhabitant in Table 4 and per service unit in Table 5) and multiplying by 100 to normalize. Thus Table 4 presents data for samples where this indicator has been calculated. Table 5 presents the results of research, where unit costs have been calculated.

Table 4:

Efficiency of contracting MSW collection and disposal (expenditures per resident, in-house costs = 100%)

Czech Republic		Slovakia	
2000	76	2001	94
2005	137	2005	94
2007	136	2006	125
2011	115	2008	184
2019	116	2009	100
		2010	138
		2015	158
		2020	114

Table 5:

Efficiency of contracting MSW collection and disposal (expenditures per tonne MSW) for Slovakia (in-house costs = 100%)

2009	2010	2015	2020
109	60	189	146

In Table 4 the values for 2005 and 2007 are large in the Czech Republic as well as those for 2008 and 2015 in Slovakia. The reason is the complexity problem of capturing the service provision cost indicator when internalizing. It cannot be guaranteed given the available data (absence of cost centers in the early years of the research, their formal operation in the later years of the research). Thus, in real terms, we have compared the expenditure from municipal budgets on the internalization of services with the expenditure on contracting of services (even though here we cannot talk about costs – municipalities do not track transaction costs associated with procurement or subsequent monitoring of external production). In any case, expenditure on internalization is less close to costs than contracting and therefore contracting looks less efficient – hence the index value is higher. Because of this, we also switched to the

BVI method of efficiency evaluation. The following table presents data for multi-dimensional evaluation.

Table 6:

Efficiency of contracting MSW collection and disposal: Multidimensional evaluation for Slovakia, 2009 sample (maximum score = 100)

Service delivery alternative	Number of inhabitants					Average
	less than 999	1000–4999	5000–9999	10000–19999	20000–49999	
Internal form	100.00	94.26	100.00	100.00	74.55	94.26
Contracting	60.90	83.01	87.83	66.33	100.00	83.01

Based on the calculations above, it is not possible to reach unequivocal conclusions or reject the assumption that contracting has a positive impact on the efficiency of the MSW service delivery (the values obtained contain considerable extremes). The "jumping" results are firstly connected with the problems with measuring efficiency, as described in the methodology. To a certain extent, however, they indicate that contracting has the potential to deliver savings. Secondly, given the small percentage of municipalities, providing this service in-house, no valid conclusions can be drawn as to whether in-house production would be clearly cheaper.

However, based on the opinion obtained from an expert who has been dealing with municipal public contracts in the field of waste management for more than 20 years, it can be stated that the outsourcing of municipal waste collection is overpriced by waste collection companies. The reasons for this are cartel agreements on market sharing and prices between the companies concerned and, secondly, cost inefficiencies in providing the service to one or a few municipalities in a region that is largely served by another company.

Because of the lack of cost accounting in municipalities, values up to 125% certainly represent savings.

The average value of the efficiency indicator expenditures per resident over all years is 122 based on the data in Table 4. The average value of expenditures per tonne of MSW calculated from the data in Table 5 is 126. Taking this into account, we can say that on average contracting is more expensive by approximately 25%.

However, the data collected by our research and by other authors clearly document that the potential of contracting is not utilized properly by municipalities: the efficiency calculations indicate that contracting probably brings marginal BVI increases in efficiency, but this difference is certainly not as substantial as it could be. According to our research, more factors contribute to the large inefficiencies connected with contracting.

If we assume that high-quality contract management is a necessary precondition to assure that external service delivery is efficient and of a high quality, then the reality is far below the optimum. Table 7 illustrates the calculated values of the quality of contract management for two in-depth researched Slovak samples (for a detailed methodology, see, for example, Mikušová Meričková & Nemec, 2013). The results indicate the serious problems in the quality of contract management in MSW collection and disposal service; these problems increase the risks associated with contracting and limit the efficiency and quality.

Table 7:

Values for the quality of contract management in % (max = 100)

	Rate of competition	Ex-ante evaluation of applicant	Expert knowledge	Monitoring frequency	Contract length	Type of payment to supplier
2010	42.84	67.12	N. A.	70.32	38.63	65.65
2020	46.53	50.00	48.15	67.89	34.36	71.89

The specific problem of contract management connected with its starting phase is non-competitive tendering. Table 8 illustrates the situation in Slovakia (the Czech situation is similar).

Table 8:

Public procurement procedures for contracting public services in Slovakia (in %)

Procedure	2001	2005	2006	2008	2009	2010	2015	2020
Open procedure	16	17	27	32	17	21	87	24
Restricted procedure	5	0	5	3	14	6	9	2
Negotiated procedure	0	13	30	0	7	1	0	14
Price quote	0	0	0	25	4	5	0	27
Direct award	31	17	38	30	11	5	0	33
Municipality did not specify	48	55	–	25	66	62	4	0

Non-transparent procurement procedures can lead to the contracting authority not selecting the most suitable supplier/agent for external service delivery. Such cases often occur for subjective reasons on the part of the contracting authority, who does not "want" to select the most suitable bid (Grega, 2013).

Another critical efficiency factor frequently investigated by authors is competition, which is expected to play a crucial role in the provision of public services

at the local level. Many authors have claimed strong evidence that competition has been one of the most significant factors influencing the efficiency of municipal waste service delivery (Bel & Fageda, 2011). However, the results from our research samples indicate that a competitive environment is not a key factor of waste management efficiency. This is not in accordance with other existing similar studies that confirm that competition is a key feature underlying theoretical claims for costs savings. However, we feel that our results are correct and simply underline the fact that the results from contracting differ in institutional factors.

5. The Role of Inter-municipal Cooperation in Solid Waste Management in the Czech Republic and Slovakia

Interesting findings in recent years have been reported in studies on inter-municipal cooperation, which seems to be the most effective form of providing local public services (Soukopová et al., 2017; Bel et al., 2014; Bel & Mur, 2009; Bel & Warner, 2015; Bel & Gradus, 2018; Franzke et al., 2016). In the municipalities we studied, inter-municipal cooperation accounted for only 15–18% of the applied forms of providing local public services in the period under review.

This part of the text aims to respond to the core research question defined in the methodology. Its starting point is to document that all our in-depth surveys (i. a. Mericková & Nemec, 2007; Merickova et all, 2010; Ochrana et al., 2007, 2008, as well as the results by Majlingová, 2005) clearly show that the costs of MSW services significantly differ between different legal forms supplying the service. These studies focus on five local public services in total (waste collection and removal of MSW, public greenery, local roads, public lighting, cemetery services). The conclusions presented here are drawn and summarized only on MSW with regard to the topic of the article and the subject of the research.

As Majlingová (2005) found, and other data sets confirm, the most expensive form of MSW management in early 2000 was the municipality's own company (for one size category, the costs of this form represented more than 700% of the costs of the least expensive delivery form). By contrast, the least expensive form of delivery is definitely inter-municipal cooperation, for all investigated years. This was confirmed by our study (Soukopová et al., 2017) testing the model of the effect of selected factors on the MSW collection and disposal costs. The descriptive power of the model was high – over 90% – and almost all variables (except distance to landfill/incinerator) delivered results. The model confirmed that the inter-municipal cooperation variable was the second strongest variable in terms of its impact on costs.

However, data collected for the last 20 years do not show any visible trend of shifting delivery modes to the form of IMC. In the Czech Republic, the situation was mapped in detail by Sedmihradská (2018). According to that data, the scale of IMC in

the waste management area started to increase between 1997 and 2003, peaked in 2010, and has been stable since then. The trend in Slovakia for samples where the structure of external forms was investigated is as follows: 2000: 0%, 2006: 15%, 2010: 3%, 2015: 15% and 2020: 18%.

This raises an obvious question: Why is IMC not more frequently used in the Czech Republic and Slovakia to deliver MSW management service?

The six experts involved in the qualitative part of our research provided almost the same set of three critical purposes: transaction costs (of different types); non-existent benchmarks (non-existence of regular comparisons of the best solutions); and limited motivation to select the optimal service delivery mode.

The most frequently noted factors were transaction costs, in all their different forms. Experts mentioned several barriers related to this dimension. One response directly connected this issue with the limited reliability of any calculation of efficiency, as also indicated in the methodology part of this paper:

"Without including the full transaction costs in the calculations any comparison of the efficiency of internal and external forms of delivery is misleading" (Academic expert, Slovakia).

The financial and non-financial transaction costs and limits of cooperation were mentioned by all the experts. The following responses are representative in relation to transaction costs:

"IMC requires complicated coordination and acceptance of leadership and leaders. Some municipalities are not ready to cooperate simply because of relations among their mayors" (Academic expert, Slovakia).

"Municipalities do not trust each other. Particularly smaller municipalities do not trust larger ones. The leaders of a municipality may prefer to tender the service, to deal with a legally tendered organization to deliver the service, in order to prevent the need to defend their own solutions" (Academic expert, Czech Republic).

"The creation of a new MSW management inter-municipal body requires significant starting costs and guarantees" (Practitioner, Czech Republic).

The fact that there are no existing benchmarks and municipalities normally do not organize any in-depth investigation of the most effective solutions was confirmed in the following statement:

"Most municipalities never approach this theme in any systemic way and do not carry out or order the analysis of the efficiency of different delivery options" (Academic expert, Slovakia).

The third critical limit – the lack of motivation to select the "best" option – was confirmed in several responses, for example: "Municipal leaders are interested in whether the MSW management system functions; they do not want to deal with details or to search for possible improvements. A role is also played by lobbying and other

activities by private waste management companies, which protect their business as well as possible" (Practitioner, Czech Republic).

"If citizens do not show visible dissatisfaction, municipal managers do not see any need to change existing solutions. Political motivation, will, shared information, local capacities – all these elements to promote a change are lacking" (Practitioner, Slovakia).

In sum, our qualitative research of the opinions of experts in this field has come to several reasons for this state of affairs: high transaction costs, limited motivation of municipalities to choose the most effective form of provision, ill-functioning benchmarking (successful examples of inter-municipal cooperation, the so-called cases of good practice, are often not known to other municipalities), insufficient or absent "testing of services." Other authors added the additional administrative costs associated with the organization of cooperation (Klimovský, 2014).

6. Conclusion

In contrast to Western European countries, which are undergoing re-municipalization, the data obtained for Slovakia and the Czech Republic over 20 years show that MSW municipal service is dominated by contracting, which has increased over the examined period. This fact is apparently a reflection of the high rate of fragmentation in municipal structures and the low willingness among municipalities to cooperate in exercising their power (Klimovský, 2014). The data obtained also indicate that using external suppliers seems to bring marginal savings that could certainly be substantially larger. We are also able to prove that potential increases in efficiency via contracting are unequivocally limited by the low quality of contract management, which has not improved at all in the last 10 years, according to our two Slovak samples.

The core part of our research responds to the specific contradiction discovered in both investigated countries. On one hand, the data indicate that inter-municipal cooperation might be the most efficient form of external delivery of MSW management service in situations in which externalization is necessary because of the highly fragmented municipal structure of both countries. However, the proportion of inter-municipal cooperation between service delivery modes did not significantly increase during the investigated period.

The qualitative approach (expert opinion method) provides an interesting explanation for this contradiction. The experts almost uniformly agreed on three critical limits related to the issue of inter-municipal cooperation in MSW management delivery – transaction costs of different types, non-existent regular comparisons of best solutions, and limited motivation to select optimal service delivery modes. Concerning transaction costs, it seems than most critical limits are connected with non-financial

transaction costs, which limit inter-municipal cooperation in both countries in general – see, for example, Klimovský (2014) for Slovakia and Sedmihradská (2018) and Soukopová and Vaceková (2018) for the Czech Republic. Non-existent benchmarking and limited motivation to select optimal service delivery modes are at least partly interconnected and are fully predictable in countries with limited accountability and responsibility of politicians and bureaucrats on all public administration levels – see, for example, Veselý (2013). If citizens do not demand better and more efficient services, local "bosses" are not motivated to seek better options and to change.

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