



Jakub **BARTAK** • Dariusz **FIRSZT** • Marek **JABŁOŃSKI** • Łukasz **JABŁOŃSKI**

## THE QUALITY OF SELECTED MUNICIPAL SERVICES DURING THE COVID-19 PANDEMIC IN THE OPINION OF STUDENTS OF CRACOW UNIVERSITIES

Jakub **Bartak**, PhD (ORCID: 0000-0001-7997-2432)

Dariusz **Firszt**, PhD (ORCID: 0000-0003-3156-1452)

Marek **Jabłoński**, PhD, DSc (ORCID: 0000-0002-5464-7147)

Łukasz **Jabłoński**, PhD (ORCID: 0000-0001-6922-0501)

– *Cracow University of Economics*

Correspondence address:

ul. Rakowicka 27, 31-510, Kraków, Poland

e-mail: firsztd@uek.krakow.pl

**ABSTRACT:** The paper aims to present the results of surveys of students' opinions on the quality of municipal services available in Krakow and its changes during the Covid-19 pandemic. The analysis covered most basic municipal services, in particular water, heat, and public transport. Opinions on the public services were collected through surveys carried out twice, in 2019 and 2021, on a representative group of students of several major Cracow universities. The analysis revealed that, despite the challenges associated with the Covid-19 pandemic, the municipal services' general quality has not deteriorated.

**KEYWORDS:** municipal services quality, Covid-19, perception of public services

## Introduction

Municipal services as a part of public services are an important determinant of citizens' quality of life (Castelli et al., 2009, Stiglitz, 2007) and provide public infrastructure regarded as the public intermediate input (Altenburg, 1987; Suga and Tawada, 2007). Although they are often recognized as traditional activities, and their set is relatively permanent, they might be subject to changes in the forms of provision. As a result of these changes, the needs of local community members might be better responded to. The modernization of the municipal sector<sup>1</sup> is primarily determined by supply factors, such as budgetary conditions, legal regulations, and the technical and organizational capacity of local governments. However, the expectations of stakeholders are also taken into account in the management of municipal entities. In particular, in an outcome of the spread of the New Public Management concept, there has been growing interest in both measuring the quality of public services and raising their standards to match better customer expectations (Hood, 1991; Sewart and Walsh, 1992; Zawicki, 2011, Ropret and Aristovnik, 2019).

The quality of municipal services can be defined in at least two ways (Błoński, 2015, p. 41). Firstly, this type of service might be recognized as an objective and measurable category and thus determined based on technical and organizational criteria (e.g. timeliness of communication, drinking water parameters). Secondly, municipal services might be recognized as a subjective category and, therefore, equated with consumers' perception, who confront their expectations about how a given service is provided with an assessment of the facts (Ruud, 2017). The latter approach to municipal services is applied in this paper, which is aimed at investigating the perception of municipal services provided in Cracow (Poland).

It is worth emphasizing that the research was carried out in Cracow, which is one of the key locations of shared services centres in Poland (ABSL, 2019, p. 6). Poland has recently held the third position (together with China and Mexico) among the most frequently indicated countries for locating shared services centres, after the United States (14% of the indications) and India (12%) (Deloitte, 2017, p. 6). The survey was conducted among students of Cracow universities, who constitute a large percentage of recipients of municipal services provided in the city. On the other hand, students of Cracow constitute a crucial part of the labour supply for shared service centres.

The questionnaire research was completed in two rounds, i.e. in 2019 and 2021. Therefore, the spread between the first and second round enables

---

<sup>1</sup> "The municipal sector is about creating a favourable framework that facilitates human and economic activity, while protecting the physical" (*Municipal...* 2012, p. 25).

us to check whether the changes in conditions of providing these services and, on the other hand, customers' way of life during the pandemic affected the perception of municipal services' receivers. In particular, our study aims to test the hypothesis according to which the target group's assessment of the quality of municipal services has deteriorated during the Covid-19 pandemic.

The study does not consider all of the municipal services provided in Cracow, but only the majority of them: the supply of drinking water, domestic hot water, wastewater collection, domestic central heating, public transport (buses, minibuses, trams, railway), and city bikes.

### The rationale for changing the quality of municipal services and their perception during the Covid-19 pandemic

Municipal services are provided by local service providers organized as publicly-owned joint-stock companies, recognized as municipal companies. A municipal company is an autonomous organization owned by municipalities outside the local bureaucracy. Such enterprises have tariffs and commercial revenues and produce and deliver local public services (Voorn et al., 2017, p. 820). Municipal companies have several specific characteristics, i.e. 1) they are based by public law institutions (municipality); 2) Supervisory Board and Chief Executive Officer (CEO) is approved by the municipality; 3) they must deliver public service – private service delivery by municipal enterprises is considered as a competition restriction on the market and is not feasible; 4) the municipal enterprise is accountable to the founder (municipality); 5) The public enterprise is required transparency and accountability, as well as corporate social responsibility; 6) Audit and control of the public enterprise are carried out by the municipality (Narmania, 2018).

Since the Covid-19 pandemics has not finished yet, it is difficult to expect a comprehensive and clear assessment of its impact on the municipal services sector. However, the analyses have been emerging, mainly of a practical nature, concerning the functioning of its various segments under pandemic conditions (e.g., Anantharama and Kulkarni 2020; Krawczyk, 2021; Padovani et al., 2021, Tamm, 2020). In particular, these studies seem to be sufficient to identify the crucial challenges to be faced by municipal companies at that time. In creating a set of the main concerns of the municipal sector under the conditions of the epidemic regime, the following issues can therefore be mentioned, inter alia:

- ensuring the safety of employees involved in the provision of services;

- adapting to sudden changes in demand resulting from a different way of life of residents,
- organization of work ensuring the uninterrupted provision of services in conditions of increased absenteeism (e.g. due to illness, quarantine, childcare);
- ensuring the cybersecurity of remote work (in particular the protection of numerous sets of personal data of stakeholders);
- organization of effective contacts with customers (e.g. administration of new water and sewerage connections);
- ensuring liquidity (cushioning the effects of high costs of staff sanitation, reduced demand for certain services, and a possible increase in the backlog of municipal service charges).

When analyzing the impact of a pandemic on the conditions of provision of municipal services, it is worth noting their specific characteristics. They must be provided reliably (i.e. on an ongoing and continuous basis, as municipal goods cannot be stored), absolutely, and universally (Sadowska, 2018, p. 132). This puts municipal companies in a more difficult position than a significant part of the private and even public sectors (education, administration), where the possibilities for adapting flexibly to the new situation are much greater. It might be due to the fact that the scale and extent of changes during the pandemic were unprecedented. Changes in the municipal sector tend to be slow, evolutionary. If there is a need for radical changes (e.g. in the case of the establishment of new legal bases), it applies mostly to the selected municipal services. Crises resulting from accidents or natural disasters are usually short-term. Covid 19, on the other hand, has changed the operating conditions for the whole sector, and its implications seem to be observable in, at least, mid-term perspective.

The circumstances described above show that the pandemic was the source of significant impediments to the sector's functioning. Its effects on the quality of services should be neutral at most – maintaining existing standards can be considered a challenge for municipal plants.

It is much more difficult to formulate assumptions about changes in the social perception of municipal services during the pandemic. It should be stressed that, even under normal circumstances, objectivity related to facts does not have to be fully reflected in the customers' opinions. In particular, customers making the assessment may not have the complete information on technical parameters of the services provided and evaluate them based on subjective perception. Moreover, subjective assessment depends also on stakeholders' expectations – their increase may result in a deterioration in the assessments of the municipal sector, even if its objective standards do not

change. In the particular period of the pandemic, both subjective perception and expectations may have changed in unpredicted directions.

Unfortunately, theoretical settlements in this regard are absent in the literature. The analyses on the social impact of Covid 19, which have already been published, tend to address issues directly related to the pandemic (e.g. remote work). The perception of the public and, in particular, municipal services seems to be too specific. We still have to wait for a broad scientific discussion of this problem. This means that research hypotheses about stakeholder attitudes must be intuitive.

One of the most obvious social consequences of the pandemic was that society spent more time at home. Some municipal services are directly related to this fact (e.g. drinking water, heating). This is especially true for students who have pursued remote learning. So it can be assumed that customers had more opportunities to observe the quality of some public services than when they spent most of their time away from home. Simultaneously, there was a strong increase in the amount of free time in the lockdown (at least in some professions), so there was a greater chance of leisure in this area. Under these conditions, it seems reasonable to believe that recipients of municipal services will, in their view, be more critical than before the pandemic.

Pandemic establishes a testing ground for many solutions in communication, work organization, and customer service for both private and public sector entities, including municipal enterprises. Undoubtedly, in such situations, the private sector takes advantage in terms of flexibility and pace of implementation of improvements. Thus, against the backdrop of an innovative private sector, the municipal sector could have fared slightly worse. Although this is merely a conjecture, a reverse option in which the public sector would be a role model in terms of the dynamics of adaptation to the new conditions seems less likely. Therefore, the theoretical considerations show that there are indications that the assessment of municipal services by stakeholders during the pandemic period is lower than before it began.

## Research methods

The source of information on the assessments of municipal services available in Cracow presented in the study was a survey conducted on a representative group of students of Cracow universities. The size of the research population was based on the 2019 City State Report (UMK, 2020). It shows that the total number of students studying in Cracow, including full-time and part-time students, engineering, master's, doctoral and postgraduate studies,

was app. 143 thousand. The following sample selection parameters were adopted: 95% confidence interval, 0.5 fraction size, 3% statistical error. It was assumed that students are a homogeneous group in the context of the problem under question. On this basis, it was determined that 1061 respondents are required for the survey to meet the criterion of representativeness for the entire population.

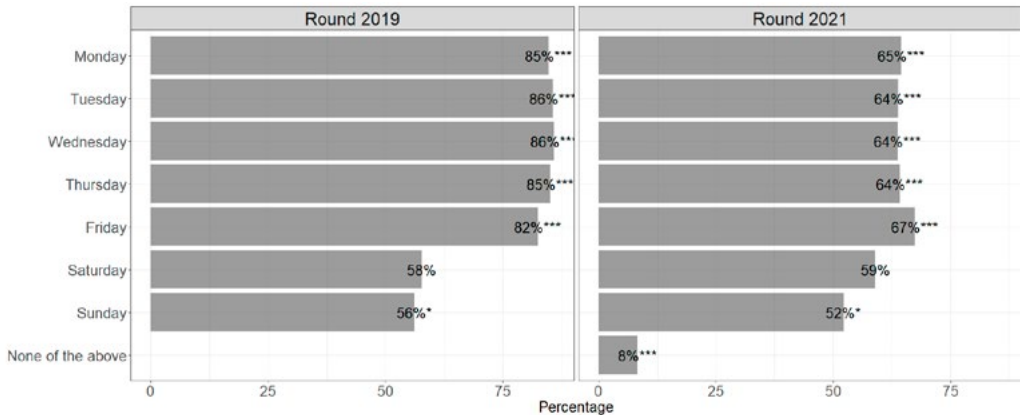
The diagnostic tool used in the study was a survey questionnaire. Besides the questions about municipal services, the questionnaire also contains additional questions that help interpret the results, e.g., the place of residence and the number of days a week in which the interviewee stays in Cracow. The correctness of the questionnaire was verified as part of a pilot study conducted in a group of several dozen students of the Cracow University of Economics.

The survey was conducted in two rounds: January and February 2019 and March and April 2021. We collected answers from 1760 and 1067 students, so the minimum sample size requirement representative of the entire student population was met in both rounds. Although both samples are different in terms of the number of collected and completed questionnaires, they satisfy the statistical criteria for research sample representation, such as confidence interval (95%), fraction size (0.5), and statistical error (3%). Therefore, both samples provide reliable information representing the feature of the population under investigation. In Round 1, the surveys were collected during classes in lecture halls. Paper questionnaires were distributed to students with a brief oral instruction. In Round 2, this method was modified due to sanitary restrictions. Respondents received a link to the questionnaire and filled it out during online lectures. The interviewer had real-time contact with the interviewees through a video application used in the class.

For the 2019 and 2021 surveys, the analysis of the results was based on comparing the frequencies of individual answers. To objectize these comparisons, we use a chi-squared test for equal proportions, which tests the null hypothesis that the percentages for a given response in 2019 and 2021 are equal. On this basis, statistically significant differences in the opinions of the respondents were identified. Statistically significant differences were considered to be those for which the p-value of the test does not exceed 0,05. We consider our data to be measured on the ordinal scale; we thus refrain from calculating averages of the responses and from performing any tests designed for interval scale variables. This choice is evident in the case of the question on the opinions on innovations in the public sector. In the case of the questions on the quality of municipal services, we follow the literature on the subject (e.g. Joshi et al., 2015), and we also treat such a scale as an ordinal one.

## Results of the research

During the pandemic, students' lifestyles and the extent to which they used municipal services provided by the city of Cracow may have drastically changed. Therefore, the first step of the analysis was to check how often the respondents were present in the city. Answers to this question are illustrated in figure 1.

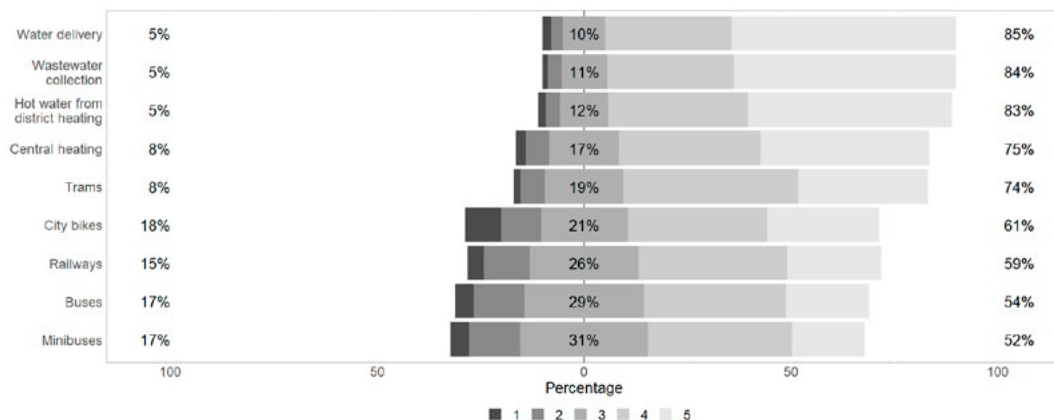


**Figure 1.** Answers to the question: On which days a week do you usually stay in Cracow this semester?  
Notes: \*\*\* for  $p < 0,001$ ; \*\* for  $p < 0,01$ ; \* for  $p < 0,05$ . The p-value was calculated for the chi-squared test of equal proportions for each row of the graph

Source: own study.

The results show that the frequency of students' stay in Krakow has significantly decreased. On Monday-Friday, about 85% of those surveyed were in Krakow in 2019. This proportion in 2021 was 20 percentage points lower than in the previous round of the survey. In regards to the weekends, there were almost no significant changes. In 2021, some people did not need to come to Krakow – app. 8% of those surveyed. These changes are not surprising due to the proliferation of remote education. However, they do not seem to be large enough for respondents in 2021 to be able to reliably assess the municipal services available in Krakow. A comparison of the results from rounds 1 and 2 is eligible. However, the share of 'no opinion' responses in the 2021 study can be expected to increase.

The results of the survey indicate an unequivocally positive assessment of municipal services. The lump-sum responses for 2019 and 2021 are illustrated in figure 2. It follows that the highest-rated service was the supply of drinking water. 85% of respondents rated it positively, only 5% negatively. Bus and bus services were rated the lowest, but also in this case, positive ratings prevailed.



**Figure 2.** Opinions on municipal services in Cracow, measured on a scale from 1 (very bad) to 5 (very good). Round 2019 and 2021 combined

Source: own study.

It is worth noting that with the decrease in the percentage of positive ratings for individual services, there was primarily an increase in the percentage of “I don’t know” responses and not in extremely negative responses. As a result, even for the worst-rated services, the percentage of people assessing them poorly or very badly did not exceed 17%.

When comparing the results of the 2019 and 2021 surveys, it should be noted that the general assessment of municipal services has not deteriorated. The overall rating for all services in both rounds is similar. Thus, according to the respondents, it was possible to maintain the standards for providing these services before the pandemic, despite the difficulties associated with sanitary restrictions.

By analyzing the different services separately (see table 1), there are slight changes. The pandemic study shows a slight improvement in the quality assessment of water supply and rail and bus services. The percentage of very good ratings has increased slightly, and the share of the most critical assessments has also decreased. The answer to another question also confirms a positive assessment of the water supply service. It turned out that during the pandemic, the percentage of people who were sceptical about drinking this water straight from the tap decreased (table 2). In the case of rail and bus services, the observed improvement may result from the increasing comfort of travelling due to the reduced number of passengers and less traffic.



**Table 1.** Evaluation of selected public services in 2019 and 2021

Opinions on the municipal services on scale from 1 (very bad) to 5 (very good).		
Opinion	Round 2019	Round 2021
Wastewater collection		
Don't know	28%***	40%***
5 (very good)	37%	35%
4	23%***	16%***
3	8%	7%
2	3%	2%
1 (very bad)	1%	1%
Water delivery		
Don't know	17%***	23%***
5 (very good)	43%	45%
4	27%***	20%***
3	8%	8%
2	3%	3%
1 (very bad)	2%	1%
Trams		
Don't know	6%	6%
5 (very good)	29%	31%
4	40%	39%
3	19%	16%
2	5%	6%
1 (very bad)	2%	1%
Railways		
Don't know	25%	28%
5 (very good)	15%***	19%***
4	28%	25%
3	20%	18%
2	9%	8%
1 (very bad)	3%	3%
Busses		
Don't know	5%**	7%**
5 (very good)	18%*	21%*
4	32%	33%

3	29%*	25%*
2	12%	10%
1 (very bad)	5%	3%
Minibusses		
Don't know	29%*	32%*
5 (very good)	13%	11%
4	26%*	22%*
3	22%	21%
2	8%*	10%*
1 (very bad)	3%	4%
City bikes		
Don't know	41%*	45%*
5 (very good)	19%***	10%***
4	23%***	14%***
3	12%	12%
2	4%***	8%***
1 (very bad)	2%***	10%***
Central heating		
Don't know	26%***	35%***
5 (very good)	29%	28%
4	27%***	20%***
3	12%	11%
2	4%	4%
1 (very bad)	2%	2%
Hot water from district heating		
Don't know	20%***	30%***
5 (very good)	38%	37%
4	28%***	22%***
3	9%	8%
2	3%	2%
1 (very bad)	2%	1%

Notes: \*\*\* for  $p < 0,001$ ; \*\* for  $p < 0,01$ ; \* for  $p < 0,05$ . The p-value was calculated for the chi-squared test of equal proportions for each row of the table.

Source: own study.

**Table 2.** Water quality assessment in 2019 and 2021

Do you agree with the opinion that you can drink tap water in Cracow?		
Answer	Round 2019	Round 2021
Definitely yes	13%	13%
Yes	13%	12%
Rather yes	20%***	25%***
Neither yes, neither no	15%	14%
Rather no	19%	19%
No	8%	7%
Definitely no	13%***	9%***

Notes: as below Table 1.

Source: own study.

Services which rating in the pandemic has deteriorated are minibuses and city bikes. The interpretation of these results is quite obvious. During the period of epidemic danger, the minibus was probably considered an unsafe means of transport. As for the city bike, the operator of this service has completed its provision in Cracow. Therefore, the downgrading was likely because more and more respondents experienced a lack of availability of this mode of transport.

Between the first and second rounds, the assessment of services related to central heating, domestic hot water, and wastewater collection was not fundamentally changed. The changes in the way these services are provided are usually minor and thus are difficult for consumers to notice. If they were not radical (e.g. cumbersome outages), the opinions likely remain unchanged.

Respondents were also asked about their expectations of changes in public services (table 3).

The survey showed that the vast majority of students expect innovation in this sector. Moreover, during the pandemic, the proportion of respondents who saw the need to introduce them has increased. In particular, the proportion of people expressing the need for innovation to reduce the cost of services has almost doubled. The proportion of students pointing to the need for eco-innovation has increased markedly. Simultaneously, more than half of those surveyed expect pro-quality innovation. It is worth noting, however, that the question of innovation concerned public services in general and not only municipal services.

**Table 3.** Opinions on innovation in the public services sector in 2019 and 2021

Potential innovations in the public services sector should be directed to:		
Answer	Round 2019	Round 2021
Dissemination of ecological methods of providing public services	35%***	48%***
Lowering the costs of providing public services	35%***	62%***
Introducing new public services	30%***	40%***
Improving the quality of public services	46%**	52%**

Notes: as below Table 1.

Source: own study.

## Conclusions

The pandemic is undoubtedly a period of major challenges facing the municipal sector. Problems regarding safety, management, and sudden changes in customer demand may have caused problems maintaining the quality of the services provided to date. The results of the research presented in this paper indicate that in the case of Cracow, these problems did not adversely affect their assessment by customers. A survey of a representative group of students, one of the largest recipients of these services, showed that they rated the municipal sector's functioning relatively well during the pandemic period. For some services, ratings in the pandemic were even slightly higher than before it exploded. However, it should be noted that the study was conducted amid epidemic restrictions (March-April 2021). Therefore, some of the negative effects may have manifested themselves after the survey was carried out. This means that only preliminary assumptions can be made based on the data obtained.

The reason for the positive assessment of the functioning of the municipal sector in the pandemic may be that it has coped with the challenges and has not lowered the standards of customer service. This is likely as no major failures or availability issues have been revealed so far. Confirmation of this assumption will be possible as further data on the functioning of Cracow municipal enterprises are made available in 2020 and 2021.

It is also possible that the results of the study reflect the pandemic-specific attitudes towards public services. The perception of the respondents is subjective and relative and reflects the relationship between expectations and facts. Thus, when assessing the quality of municipal services, our respondents might have taken into account the objective difficulties and

challenges associated with the pandemic. This could have translated into positive assessments even if minor shortcomings were identified.

The study revealed signs of increased expectations of innovation in the public sector. This thread of analysis seems particularly interesting and forward-looking. The quality of specific municipal services is largely a local issue. The degree of coping with the pandemic challenges can also depend on the quality of management in a given city or municipality. However, changing stakeholder expectations may be social. Therefore, the perception of the implementation of public services is an issue worth analyzing in subsequent studies, and it is advisable to check whether the trends revealed are temporary.

### The contribution of the authors

Jakub Bartak – 25% (acquisition of data, data analysis and interpretation)

Dariusz Firszt – 25% (acquisition of data, writing – original draft preparation)

Marek Jabłoński – 25% (acquisition of data, conceptualization, writing – review and editing)

Łukasz Jabłoński – 25% (acquisition of data, conceptualization, writing – review and editing)

### References

- Altenburg, L., 1987. Production Possibilities with a Public Intermediate Good. *The Canadian Journal of Economics / Revue canadienne d'Economie*, 20(4), 715-734, <https://doi.org/10.2307/135412>.
- Anantharama, V., Kulkarni, B. N., 2020. Repercussions of COVID-19 pandemic on municipal solid waste management: Challenges and opportunities. *Science of The Total Environment*, 743, <https://doi.org/10.1016/j.scitotenv.2020.140693>.
- Błoński, K., 2015. Jakość usług publicznych w opinii respondentów w wybranych krajach Unii Europejskiej. *Marketing i Rynek*, 8.
- Business Service Sector in Poland, 2019. Report prepared by the Association of Business Service Leaders (ABSL), ABSL 2019, accessed at: <https://absl.pl/storage/app/uploads/public/5d0/7a1/406/5d07a140668f0191663458.pdf>.
- Castelli, A., Jacobs, R., Goddard, M., Smith, P.C., 2009. Exploring the Impact of Public Services on Quality of Life Indicators. *ESRC Discussion Paper Series No. 0902*.
- Deloitte, 2017. Global Shared Services 2017 Survey Report. <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-global-shared-services-report.pdf>.
- Hood, Ch., 1991. A public management for all seasons? *Public Administration*, 69, <https://doi.org/10.1111/j.1467-9299.1991.tb00779.x>.

- Joshi, A., Kale, S., Chandel, S., Pal, D.K., 2015. Likert scale: Explored and explained. *British Journal of Applied Science & Technology*, 7(4), 396-403, <https://doi.org/10.9734/bjast/2015/14975>.
- Krawczyk, B., 2021. Pandemia uderza w budżety samorządów. *Przegląd komunalny*, 1.
- Municipal and Environmental Infrastructure. Sector Strategy, 2012. Document of the European Bank for Reconstruction and Development, approved by the Board of Directors at its Meeting on 26 June 2012, <https://www.ebrd.com/downloads/sector/mei/mei.pdf>.
- Narmania, D., 2018. Efficient Management of Municipal Enterprises. *European Journal of Multidisciplinary Studies*, 7(2), <https://doi.org/10.26417/ejms.v7i2.p76-79>.
- Padovani, E., Iacuzzi, S., Jorge, S., Pimentel, L., 2021. Municipal financial vulnerability in pandemic crises: a framework for analysis. *Journal of Public Budgeting, Accounting & Financial Management*, Ahead-of-print, <https://doi.org/10.1108/JPBAFM-07-2020-0129>.
- Ramm, K., 2020. Wartość usług wodociągowych. Część 2. *Technologia wody*, 3-4 (71-72).
- Ropret, M., Aristovnik, A., 2019. Public Sector Reform from the Post-New Public Management Perspective: Review and Bibliometric Analysis. *Central European Public Administration Review*, 17(2), 89-115, <https://doi.org/10.17573/cepar.2019.2.05>.
- Ruud, O., 2017. Successful digital transformation projects in public sector with focus on municipalities. *Central and Eastern European e|Dem and e|Gov Days 2017*.
- Sadowska, B., 2018. Rola usług komunalnych w rozwoju lokalnym. In: Klasik A., Kuźnik F (eds.), *Rozwój lokalny i regionalny: teorie i zastosowania*, Polska Akademia Nauk, Komitet Przestrzennego Zagospodarowania Kraju, Warszawa.
- Stewart, J., Walsh K., 1992. Change in the management of public services. *Public Administration*, 70.
- Stiglitz, J. E., 2007. *Ekonomia sektora publicznego*, Wydawnictwo Naukowe PWN, Warszawa.
- Suga, N., Tawada, M., 2007. International Trade with a Public Intermediate Good and the Gains from Trade. *Review of International Economics*, 15(2), 284-293. <https://doi.org/10.1111/j.1467-9396.2007.00648.x>.
- UMK, 2020. *Cracow 2019 City State Report*, Department for Strategy, Planning and Monitoring of Investment, Town Hall of Cracow, Cracow.
- Baart, V., van Genugten, M. L., van Thiel, S., 2017. The Efficiency and Effectiveness of Municipally Owned Corporations: A Systematic Review. *Local Government Studies*, 43(5), 820-841, <https://doi.org/10.1080/03003930.2017.1319360>.
- Zawicki, M., 2011. *Nowe zarządzanie publiczne*, PWE, Warszawa.