

FISCAL TRANSPARENCY OF THE LOCAL BUDGETS: DOES OPPOTRUNITIES FOR DIGITALIZATION EXIST?

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ABSTRACT

Advancements in information and telecommunication technologies (ITTs) have helped open governance to public participation. Citizen participation in government is necessary for transparent and sustainable development. This study examines the capacity and capability of local governments to provide a permanent assessment of openness and transparency of local budgets through digital technologies. The study, by using a variation of the Belarusian Local Budget Openness Index (OLBIT), found that adopting and using digital technologies enhances and promotes budget openness and transparency. This is consistent with local government's increasing use of digital technologies to disclose information to their citizens about their fiscal activities.

The paper attempts to develop and test a compact methodology for the operational analysis of online information openness and transparency of the budget process at the local level with the possibility of using digital technology. The developed methodology involves the use of two criteria: (1) the level of transparency of the local budget and (2) an assessment of authority's efforts in ensuring transparency of local budgets. The basis of the methodology is digital technology "snapshot assessment", digital matrix, and expert assessments of the informational significance of particular elements of websites of local authorities in issues of local finance and budget. Based on expert assessments of the significance and actual availability of these information elements, an integrated assessment of the information content of local authorities' sites was evaluated. The resulting assessment of the information content of the site with the local budget and finances data is interpreted as the online openness and transparency of local budgets (Online Local Budget Index of Transparency – OLBIT).

Key words: budget openness, budget transparency, local budget, digitalization, digital transformation,

JEL: H61, H72, H83

Introduction

In recent years, economic research using online technologies has become a great interest among scholars and practitioners in various countries. These technologies have been most active in reviews, ratings and assessments of financial transparency of municipalities and regions. Thus, on the basis of the analysis of budget documents, presented on the Internet, Beales and Thompson assessed the financial transparency of 134 municipalities in the state of Virginia (USA) on the scale of 100 points by using 16 criteria grouped into four categories: budget documentation presented, additional information, information on budget expenditures and information on signed contracts. The emphasis on the availability of documents online in the study was precisely made (Alt, J. and Lowry, R., 2010). Similar studies in European countries have been and are being conducted. Examples of approaches to assessments and ratings of financial transparency used in different countries have become a certain challenge to the use of digital technologies for assessing the transparency of local finances and budgets in Belarus.

In this connection, from November 2019 to February 2020, at the initiative of NGO "Lev Sapieha foundation", a pilot project was implemented to assess the openness and transparency of local budgets of 128 administrative-territorial units of the basic level (rayons and cities of regional and rayon subordination) in the Republic of Belarus on the websites of local authorities (Krivorotko,

Y., Sokol D., 2021) This study was designed to assess the online openness and transparency of local budgets in Belarus at the basic level, that is, within the rayon budgets (118 units) and city budgets of oblast subordination (10 units), recognized as administrative-territorial units (hereinafter - ATU). At the same time, previously in Belarus such assessments have not been conducted. The pilot project by using a simplified "snapshot assessment" methodology, covering 16 indicators (plus two qualitative criteria - the depth and relevance of the information provided), combined into an "index of transparency" (Online Local Budget Index of Transparency - hereinafter referred to as OLBIT) was conducted.

Research methodology and methods

Approaches and methods of different countries in their assessments were investigated. Our approach to assessing the transparency of budget systems is based on the Open Budget Index (OBI), which is compiled by the International Budget Partnership (IBP) (IBP, 2017. pp. 48-50). We tried to define indicators based on the information blocks of the official OBI assessments, namely: (I) identification of key budget documents, (II) assessment of the draft budget and related information, (III) assessment of transparency at all four stages of the budget process, (IV) assessment of the influence of the legislature on the executive during the budget process, (V) assessment of public participation in the budget process.

We assessed not only the information directly related to the budget, but also the issues related to the development of local territories, such as the presence of programs for socio-economic development of the territory, borrowing policy, implementation of investment projects and others. The study of openness and transparency in Belarusian local financial management includes three important results: a) assessment of openness and transparency using the OLBIT index; b) assessment of local government efforts to improve openness and transparency; c) possible ways of determining openness and transparency factors.

It required a lot of preparatory work related to the formulation of criteria for local budget openness and transparency. The approaches and methodologies of different countries in their assessments were studied as well. The approach taken into account for assessing the transparency on the base of OBI made possible to assess not only the information directly related to the budget, but also related to the development of local territories, such as the presence of programs for socio-economic development of the territory, borrowing policy, the implementation of investment projects and others.

As a variables/criteria 16 most important blocks of information (evaluation indicators) sufficient to ensure an appropriate level of local budget transparency on the official websites of local authorities were selected: 1) X1 - Economy section; 2) X2 - Separate Budget (and/or Finance) section; 3) X3 - Program for socio-economic development of the territory; 4) X4 - Project Budget; 5) X5 - Citizens Budget; 6) X6 - Minutes of public hearings on budget formation; 7) X7 - Decisions made to approve the current year budget; 8) X8 - Decisions to approve annual budget execution report; 9) X9 - Quarterly, (semiannual) reports on budget execution; 10) X10 - Statement of borrowing policy; 11) X11 - Information on current borrowings and repayments; 12) X12 - Information on "Investment atlas" ("District investment passport"); 13) X13 - Information on implementation of current investment projects; 14) X14 - Report on budget programs execution; 15) X15 - Feedback interface (opportunity to write a request or appeal); 16) X16 - Articles (news reports) on local budget in local media.

The availability of relevant information on the local government website was rated 1 point, while its absence - 0 points. Thus, the OLBIT criterion for any administrative territorial entity can be in the range from 0 to 16.

To assess the importance factors of openness and transparency, eleven experts were involved, who evaluated all 16 blocks of information on the degree of importance of budget information for the population on a 10-point system.

Results

The study results of local budget openness and transparency assessment showed that the generalized OLBIT index, which measures the disclosure of information on local budgets, shows that on average we received 43.7% of the expected information on local budgets within 100% of the possible estimate. This demonstrates, in our opinion, the still insufficient level of budget transparency of local budgets in all ATU of Belarus.

The highest value of the OLBIT index was received by the budgets of the ATEs of the Mogilev region - 62.92%, the Grodno region - 57.52%, the Vitebsk region - 51.04%, and the lowest value in openness and festiveness had the budgets of the ATEs of the Gomel region - 44.09%, the Brest region - 42.19% and the Minsk region - 32.31%. The study also identified the most open and transparent local budgets of the ATU which illustrated on the figure 1.

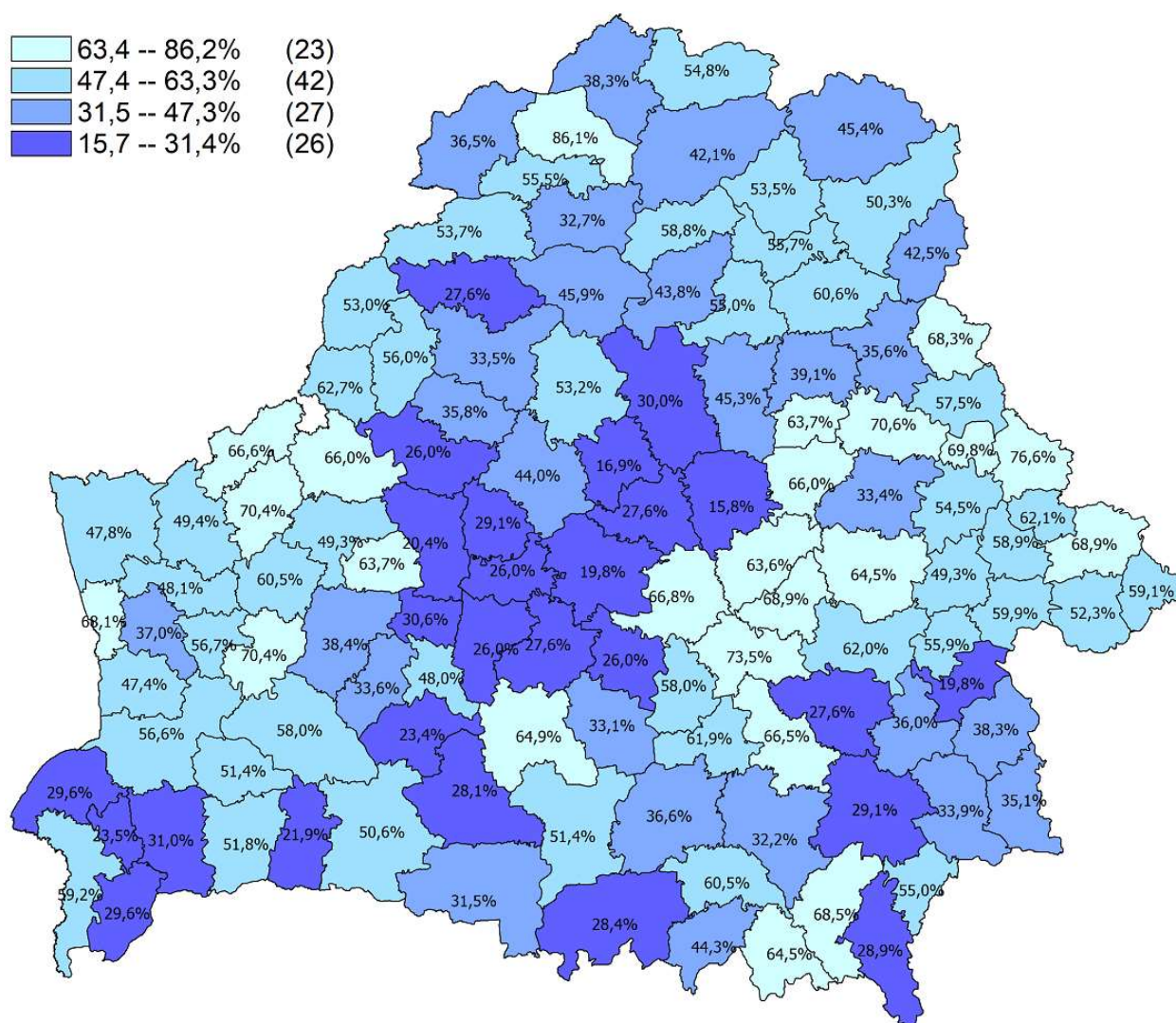


Figure 1. OLBIT Heat map on the basic territorial level of Belarus.

Source: Compiled by the authors

The study also identified the most open and transparent local budgets of the ATU. Among the leaders were: the budget of Miorsky rayon - 86.1% of 100% (140.82 points), the budget of Mstislavsky rayon - 76.6% (125.18), the city budget Bobruisk- 75% (122.64), city budget of Mogilev 74.2% (121.32), city budget of Baranovichy - 73.5% (120.2), budget of Shklovsky rayon - 70.6% (115.36), city budget of Lida and Slonim rayon - 70.4% (115.18), respectively.

Chechersky, Puhovichsky, Smolevichsky and Berezinsky rayons were at the bottom of the list with transparency rates of less than 20%. A characteristic feature of the assessment results, was that the level of transparency of local budgets in urban ATU was higher by 10.6 percentage points than in rural areas. Thus, the average value of the index of transparency of local budgets in urban areas was 57.6%, and in rural areas 47.0%.

The results of the authorities' evaluation of their efforts on the completeness of budget information disclosure, expressed in points, also showed a large differentiation. The gap between the efforts of the authorities and the achieved level of openness was greater in the lagging regions. Thus, the gap for the leader - the Mogilev region - is 10%, while the gap for the Minsk region, which is at the bottom of the list, exceeds 17%. It turns out that compliance with formal approaches to filling sites with budget information is cheaper and easier for districts and cities, while efforts to raise awareness do not bring the same growth in openness and transparency of local budgets. This state of affairs certainly does not motivate ATEs to be more open. The distribution of efforts to disclose budget information to ensure openness and transparency of local budgets for each of the regions in terms of the average value in the country allowed to determine the coefficient of effort, which in its essence shows the relative productivity in disclosure of budget information of all ATUs of each region. If we take the average coefficient of efforts of the authorities as 1, the leader was the Mogilev region - 1.30, it was slightly less for the Grodno region - 1.19, for the Vitebsk region - 1.05. In the Gomel, Brest and Minsk regions the efforts of the authorities to ensure openness and transparency of local budgets turned out to be less than the average - 0,92; 0,89 and 0,66, respectively, which can be presented as insufficient.

Study findings: Opportunities for digitalization

A pilot project implementation of the local budget's openness and transparency has shown that there are some opportunities for the digitalization of this process on a permanent basis and key success factors for digitalization are exist.

Digital transformation allows residents to quickly and constantly observe changes in local budget's transparency and see their rating status among municipalities. This increases the accountability of local governments and prevents opportunities for corruption. Digital Citizenship is an integral part of the whole paradigm of citizenship nowadays, with all the rights and responsibilities it gives us. With the development of information technology, the integration of the individual into the digital space becomes crucial, both in terms of social interaction and with national, regional and local authorities. In general, digitalization in public finance is developing in three main directions:

1. budgets for citizens (budget openness)
2. tax payment
3. participatory budgets

It is important to emphasize that taxation and participatory budgets are internationally developed, while budget openness has a distinct national character and remains the domain of specialists. Digitalization of the fiscal transparency process can act as an important asset in open government, smart city or smart municipality platforms (see table 1).

Table 1. The genesis of a smart municipality

Smart municipality 1.0	Smart municipality 2.0	Smart municipality 3.0
Characterized by the introduction of isolated digital solutions and semi-automated urban infrastructure, whose main goal is to improve the sustainability and manageability of the city.	Characterized by the primary unified digital infrastructure of the smart municipality with the active use of technology for improve of quality life and the dominant role of the local authorities in terms of decision-making on the management and development of the municipality.	Characterized by the technology's integration that promote social inclusion and entrepreneurship into a fully integrated, intelligent local infrastructure that enables real-time data collection, processing and analysis to manage all municipal processes with active citizen involvement
Manual collection, processing and analysis of information, predominantly	In some areas automated data collection information, the use of data for urban and rural processes management are possible	Fully automated collection, processing and analysis of information; data-driven management of all municipality processes

Source: Compiled by the authors

Evaluating the methodology of fiscal transparency assessment, we can note the following key success factors in digitalization of fiscal transparency assessment:

1. Digitizing technologies. The first digitizing technology was «snapshot assessment" one. It was used by James Alt in 2002 (*Alt, J, 2006, p.18*) while estimating the transparency of local budgets in the USA and can be represented as the simplest digital technology to estimate the fiscal transparency on the municipality websites. In it, the fact of the presence of a criterion/indicator on the website in general and any information corresponding to this topic was coded as 1, and its absence as 0. Thus, the presence of relevant budgetary information on local government websites was coded as 1, its absence as 0. Due to its simplicity, this digital technology can be applied in any country for a quick overview of the financial transparency situation at the local level. This could be useful not only for local civil society organizations, but also for possible investors. The econometric models and digital matrices developed from this technology provide insight into what factors might be involved in understanding the individual variations of local governments regarding fiscal transparency. This technique, however, has one shortcoming, which is that in reality, criterion/indicator values may either be close to 1 or close to 0, or halfway between 1 and 0. Such situations require additional expert involvement to finally establish either a value of 1 or 0. It should be noted that later in 2014 Bernick E. Lee used a more differentiated approach to assess the criteria/indicators of fiscal information. They applied four levels of categorical dependent variables measuring fiscal transparency: 0 - no fiscal information; 1 - simple budget presentation or comprehensive annual financial report; 2 - simple line item budget and comprehensive annual financial report or having a more complex district budget; (*Bernik E., at al, 2014, p.176*).

Such a staggered approach could largely assess the completeness and depth of the information provided about the local budget.

2. Technologies of capturing financial information from the municipality websites for its subsequent transformation into a digital matrix. This process acts as the initial basis of digitalization, without which further processing of budget information is impossible. However, this is only possible if there is harmony and uniformity in the placement of fiscal information online (criteria or indicators of openness and transparency of local budgets on the websites of municipalities). The implementation of the pilot project showed that great efforts were made by researchers to bring all blocks of information (criteria/indicators) of fiscal transparency to

uniformity.

In addition, during the pilot project we found a lack of visibility and readability of budget information on local government websites. The section of the local budget as an important document for the population did not receive on many sites an independent section. Budget information was often in the section of economy, then in the social block, then in the structure of the financial department of the executive committee, or even fell out of sight or appeared in other information blocks, not typical for the budget. This caused additional search efforts with special search options. The results received are largely optimistic, because the search for information was carried out by specialists and experts in the field of public administration and finance. If we imagine that such a search would be carried out by an ordinary person, we would not be able to count about a third of the amount of information collected. Published documents can be in any office format, there are also graphic files. To all this, it should be noted their low quality of design and a large number of errors and typos. All this significantly complicates the familiarity with the documents and the practical impossibility of their direct use in the analysis without prior processing and structuring.

On some websites of the local authorities, official documents on the budget approval and the report on its execution were redirected to the sites of legal portals, where it was sometimes difficult to access them, instead of such information being available on the municipalities' own websites. As a result, the existing haphazard, scattered and unordered budget information negates the uniformity of indicators/criteria of fiscal transparency.

In fact, it is not possible to form an objective picture of the state of local finances in the region or the country as a whole on the basis of a scanning review of the content of LSG Internet pages. Attempting to form such an integral picture turns into a rather laborious and time-consuming procedure. This is the practical value of the proposed methodology.

3. Digital Matrix. A well-developed digital matrix is a key element in the process of digitalization and represents where the budget information being read from the municipality websites will be

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Figure 2. Example - Fragment of digital matrix (Rayon municipalities of Brestskaya oblast)

Source: Compiled by the author

transformed. In other words, the digital matrix is the "skeleton" on which the encrypted budget information will be filled. Due to its large dimensionality, it is presented here as a part of the general matrix, as applied to the Brest oblast, which reflects either the presence of the variable (indicator/criterion) or its absence, as well as the necessary formulas for calculations (see Fig. ..).

During the study the place of the digital matrix in the architecture of the functioning of the "smart municipality" platform was also determined. In it, the digital matrix acts as a central link in the platform, and is illustrated by the following figure ...

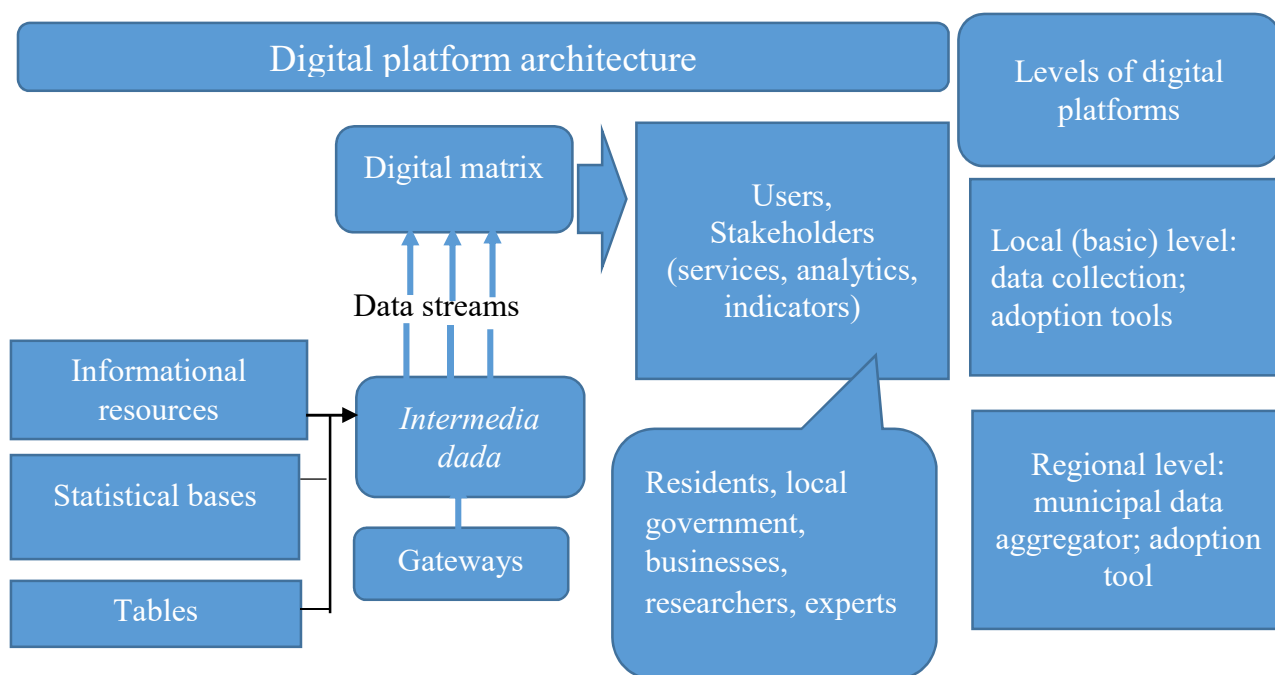


Fig 3. Digital matrix place in the architecture of municipal government functioning
Source: Compiled by the author

4. Data processing acts as the final process of digitalization. At this stage, automated processing and analysis of information is carried out, which is extracted from the digital matrix. Here, the results of the transparency rating for users and stakeholders are formed, which are used in services, analytics, indicators. The results of the financial transparency rating become the property of the inhabitants of the municipality, local administration, business structures, researchers, experts. In our study, they are represented by the following result fragment for Brest region (see Table 3).

Updating the financial transparency rating (OLBIT) should be on regular basis. This area is dynamic and can change quickly if the representatives of the authorities pursue an active policy or, on the contrary, "forget" about the openness and transparency of administrative procedures and budgets. Static ratings quickly lose their relevance and the rating itself loses its credibility with users.

Table 2. Fragment of results after the data processing by the municipalities of Brestskaya oblast. Example of rayon municipalities of Brestskaya oblast - Fragment of processing's result

code	Municipality	Number of matches by monitoring points	Rating points of local budget transparency (general)	Rating points of transparency ensured by the efforts of authorities	Level of local budget's transparency, per cent	Level of transparency of local budgets ensured by the authority's efforts, per cent	Coefficient of authorities' efforts to ensure transparency of local budgets, per cent
1	Baranovichiski	6	62.9	31.55	39.7	19.3	0.81
2	Berezovski	8	84.0	55.83	52.0	34.1	1.07
3	Brestski	8	96.7	75.20	58.7	46.0	1.25
4	Gantsevichski	4	38.2	11.25	23.4	6.9	0.47
5	Drogichinski	8	84.7	56.15	50.7	34.3	1.06
6	Zhabinkovski	3	38.4	11.84	22.6	7.2	0.50
7	Ivanivski	3	35.9	10.17	20.9	6.2	0.46
8	Ivatsevichski	9	94.9	69.94	56.6	42.8	1.18
9	Kamenetski	3	48.4	19.76	29.5	12.1	0.66
10	Kobrinski	4	50.7	21.27	32.0	13.0	0.67
11	Luninetski	3	45.9	17.59	27.8	10.8	0.62
12	Liahovichski	5	54.9	23.99	33.7	14.7	0.70
13	Maloritski	3	48.4	19.76	29.5	12.1	0.66
14	Pinski	6	82.7	56.29	50.4	34.4	1.09
15	Pruzhanski	7	92.5	69.71	55.7	42.6	1.21
16	Stolinski	4	51.5	21.55	31.1	13.2	0.67
17	Brest city	8	100.4	80.11	58.6	49.0	1.28
18	Baranovich city	10	120.1	115.66	72.3	70.7	1.54
19	Pinsk city	7	79.4	49.46	46.9	30.3	1.00

Source: Compiled by the author

Updating the financial transparency rating (OLBIT) should be on regular basis. This area is dynamic and can change quickly if the representatives of the authorities pursue an active policy or, on the contrary, "forget" about the openness and transparency of administrative procedures and budgets. Static ratings quickly lose their relevance and the rating itself loses its credibility with users. Thus, the summarized research findings in the following table can be presented.

Table 3. Critical success factors for fiscal transparency digitalization

Factors/Category	Contributing success factors
Digitizing technologies	a simplified digital formation; a well-designed criteria/factors
Techniques for capturing financial information from municipal websites	maintaining harmony in the placement of fiscal information online uniformity of all blocks of information (criteria/indicators) of financial transparency on web-sites of municipalities visibility and readability of budget information on local government websites culture of posting budget information on the websites of municipalities
Digital Matrix	matching digital matrix of the budget information evaluation's model a well-developed mathematical and statistical apparatus
Data processing	Matching the needs of the population, local government, auditors, local businesses, researchers, experts

Source: Compiled by the author

Overall, the success factors presented for the digitalization of budget information can serve as a useful guide for all those involved in local financial management. Going forward, as digitalization in local financial management develops and experience is gained, new digital transformation projects in local and regional economies and finances should be launched. Researchers should examine which areas and blocks of information are proving to be effective and what additional factors ensure the success of digitalization. In particular, local governance would benefit from further research on digital information, which can focus on successful public-private partnership projects in infrastructure and social areas (construction and operation of kindergartens, schools, hospitals and recreational facilities), attract investment in the local economy, reduce transaction costs and, therefore, provide better value for money for society.

Conclusions

The conducted study of the level of openness and transparency of local budgets in Belarus leads to the following conclusions:

1. This study is designed to fill a gap in the existing studies of openness and transparency conducted in Belarus, and aims to assess the transparency of local budgets in a wider range of basic local budgets, i.e. rural budgets and urban budgets of regional subordination. This goal was achieved by applying a simplified methodology to assess external budget transparency, which we call "snapshot assessment". The advantage of this methodology compared to the aforementioned: we do not need to fill out questionnaires or directly observe the activities of local governments; the only thing needed is their website and the information posted on it. The presented methodology is very easy to use and can be recommended to both professional researchers and researchers of civil society representatives.
2. The research based on to assessing the transparency of budget systems based on the Open Budget Index (OBI), which is compiled by the International Budget Partnership (IBP). We succeeded to identify the indicators based on the information blocks of official OBI evaluations,

namely: (I) identification of key budget documents, (II) assessment of the draft budget and related information, (III) evaluation of transparency at all four stages of the budget process, (IV) assessment of influence of the legislative power to the executive during the budget process, (V) assessment of public participation in the budget process.

3. The main problem of the study approach was to choice of indicators participating in the rating/assessment of openness and transparency of local budgets, which should subsequently be combined into an "index of transparency" (Online Local Budget Index of Transparency - OLBIT); Moreover, not only information directly related to the budget, but also issues related to the development of local territories, such as the presence of programs for socio-economic development of the territory, borrowing policies, implementation of investment projects and others, were assessed as well.

4. Assessment of local budgets 'openness and transparency was not limited by the OLBIT rating only. It was supplemented by a rating/evaluation of the local authorities' efforts in achieving maximum fiscal disclosure. In the course of openness and transparency assessment of local budgets, there were situations when some ATUs rating positions were high, while the local authority contribution in ensuring openness and transparency of local budgets was low. This situation through the coefficient of local authorities' efforts to ensure openness and transparency of local budgets was assessed and the constant of which was 1.0. As a result, in those ATUs where the coefficient was more than 1.0, the efforts of the authorities were assessed as sufficient. Conversely, where the coefficient was less than 1.0, the efforts were deemed as insufficient.

5 The study revealed findings related to the possibilities of permanent assessments of the local budget transparency based on digital technologies. Updating the financial transparency rating (OLBIT) should be regular. On the contrary, static rating assessments quickly lose their relevance and the rating itself loses its credibility with users. Therefore, budget transparency digitalization can promote permanent updating of information for authorities and residents. The results of ratings assessing can successfully be built into the digital platforms of a "smart city" or "smart municipality," which are being widely developed. In general, digitalization in public finance is developing in three main directions: budgets for citizens (budget openness), tax payment, participatory budgets. It is important to emphasize that taxation and participatory budgets are internationally developed, while budget openness has a distinct national character and remains the domain of specialists.

6. Based on summarized study findings the following critical success factors for fiscal transparency digitalization can be presented. They are: digitizing technologies; techniques for capturing financial information from municipal websites; digital matrix; data processing.

The digitizing technologies success factor depend on a simplified digital formation and well-designed criteria/factors of openness and transparency. As to techniques for capturing financial information from municipal websites concerned depend on maintaining harmony in the placement of fiscal information online; uniformity of all blocks of information (criteria/indicators) of financial transparency on web-sites of municipalities; visibility and readability of budget information on local government websites; culture of posting budget information on the websites of municipalities. Contributing success elements for digital matrix factor is matching digital matrix of the budget information evaluation's model well-developed mathematical and statistical apparatus. Finally, the contributing success elements for data processing factor depend on matching it needs of the population, local government, auditors, local businesses, researchers, experts.

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