

E-governance and blockchain technology in local government

E-administracja i technologia *blockchain* w samorządzie terytorialnym

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Abstract

Purpose: One of the doctrines of New Public Management is increased efficiency and consumer satisfaction in local government. Implementing new technologies like digital administration and blockchain could be very helpful in achieving this objective. The article focuses on the usability of e-government as a management tool and the possibility of implementing blockchain technology in local government accounting. This research attempts to answer the following research question: What are local government employees' perceptions of e-governance and blockchain technology?


Methodology/approach: A survey was used as a research tool to determine the role of digital administration and blockchain technology in local government units at the community level. A questionnaire was emailed to all municipalities in Poland: rural, urban and urban-rural.


Findings: The results of the research show that, in the respondents' opinion, the use of e-governance in local government is very helpful in management. However, the use of blockchain technology in local government accounting is debatable.

Research limitation/implications: This paper will be useful to academics and practitioners to enable an understanding of the problems associated with introducing and using new technologies in local government. The limitation of the research is that blockchain technology is new and, unfortunately, there are very few examples of its implementation by local governments in Poland. Therefore, it is difficult to assess the positive and effective implementation of blockchain technology by local governments. The article shows the point of view of local government officials, which is also a limitation of our research.

Originality/value: The article makes an important contribution to the research on the use of new technologies in local government units. The research has made it possible to assess e-government as a tool for managing local government units and to present officials' attitudes to the possibility of using blockchain technology in local government accounting.

Keywords: local government units, new technologies, e-governance, blockchain, efficiency.

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Streszczenie

Cel: Jednym z postulatów koncepcji nowego zarządzania publicznego jest zwiększenie efektywności i zadowolenia konsumentów w samorządzie terytorialnym. W osiągnięciu tego celu bardzo pomocne może być wdrożenie nowych technologii, takich jak administracja cyfrowa i *blockchain*. Niniejszy artykuł skupia się na problemie użyteczności e-administracji (*e-governance*) jako narzędzia zarządzania oraz możliwości wdrożenia technologii *blockchain* w rachunkowości jednostek samorządu terytorialnego. Przeprowadzone badania są próbą odpowiedzi na pytanie, jak postrzegają *e-governance* i technologię *blockchain* pracownicy samorządów terytorialnych.

Metodyka/podejście badawcze: Jako narzędzie badawcze wykorzystano ankietę do określenia roli cyfrowej administracji i technologii *blockchain* w jednostkach samorządu terytorialnego na poziomie gminy. Ankietę wysłano drogą mailową do wszystkich gmin w Polsce: wiejskich, miejskich i miejsko-wiejskich.

Wyniki: Wyniki przeprowadzonych badań pokazują, że wykorzystanie e-administracji w samorządzie terytorialnym jest w opinii respondentów bardzo pomocne w zarządzaniu. Jednak wykorzystanie technologii *blockchain* w rachunkowości jednostek samorządu terytorialnego jest według respondentów dyskusyjne.

Ograniczenia/implikacje badawcze: Artykuł będzie przydatny dla naukowców i praktyków, pozwala na zrozumienie problemów związanych z wdrożeniem i stosowaniem nowych technologii w samorządzie terytorialnym. Ograniczeniem badań jest fakt, że technologia *blockchain* jest nowa i istnieje bardzo mało przykładów jej wdrożenia przez samorządy w Polsce. Dlatego trudno jest ocenić pozytywne i skuteczne wdrożenie technologii *blockchain* przez samorządy. Artykuł ukazuje punkt widzenia urzędników jednostek samorządu terytorialnego, co też jest ograniczeniem naszych badań.

Originalność/wartość: Artykuł wnosi istotny wkład w badania nad możliwością wykorzystania nowych technologii w jednostkach samorządu terytorialnego. Przeprowadzone badania pozwoliły na ocenę e-administracji jako narzędzia zarządzania jednostkami samorządu terytorialnego i przedstawienia stosunku urzędników do możliwości wykorzystania technologii *blockchain* w rachunkowości jednostek samorządu terytorialnego.

Słowa kluczowe: jednostki samorządu terytorialnego, nowe technologie, e-administracja, *blockchain*, efektywność.

Introduction

There have been changes in public sector management for many years. One of the reasons for those changes is the attempt to implement the doctrine of New Public Management (NPM) (den Heyer, 2011). Those changes are present in the public sector all around the world as the effect of understanding globalisation as the „universal application of public policy” (Common, 1998, p. 440). NPM evolved into an approach in public administration that employs knowledge and experience acquired in business management and other disciplines to improve the efficiency, effectiveness and general performance of public services in modern bureaucracies (Kisner, Vigoda-Gadot, 2017, p. 534).

One of the doctrines of NPM states that the public sector should be as efficient as possible. However, the statement remains a problem, given that efficiency is just one of several values being sought through public administration (Peters, 2017,

p. 611). Rondeaux (2006, p. 571) found that more reforms tend to include other objectives, such as quality management, transparency and a client focus. McAdam et al. (2011, p. 320) found a need for local authorities to determine the effectiveness of performance management in local government as part of the broader modernisation agenda in terms of service efficiency and effectiveness. Also, when analysing West European local government focus, Vabo and Aars (2013, p. 708) focused on New Public Management reforms carried out to increase efficiency and consumer satisfaction in the production of welfare services. The importance of information and communication technologies for contemporary public administration is often understated. Meanwhile, Pratchett (1999, p. 731) believes that these technologies have profound implications for how local governments develop.

Manoharan and Ingrams (2018, p. 58) argued that adopting e-government could have immense potential for local governments to improve their service delivery, better engage their stakeholders and enhance citizen participation in government. E-government tends to create a new type of public service based on an increasingly integrated and effective relationship with society (Guarda, 2021, p. 89). What kind of tools could be helpful in the achievement of those objectives? The most innovative digital technology – blockchain technology – could be very helpful. Applying blockchain could have the following results: reduced economic costs, reduced bureaucracy, and increased automation and transparency (Allessie et al., 2019, p. 10).

Therefore, our article aims to show the usability of e-government as a management tool and the possibility of implementing blockchain technology in local government accounting. It uses a literature review and survey method, and it makes an important contribution by highlighting the importance of using new technologies as a management tool in local government units. The paper sheds light on the attitude of clerks toward the possible application of blockchain technology in local government units. It shows the point of view of clerks of local government units.

The remainder of the paper is organised as follows. The next section reviews the literature on e-government and blockchain technology and how motivated employees are to implement new technologies. The following section outlines the research question and research methods. The subsequent section presents the results of the research and the statistical analysis, while the last section includes the discussion and conclusion.

1. The literature review

1.1. E-government in local government

Digital government is the state-of-the-art paradigm in public administration science. The former, much narrower, concept of e-government acknowledged the role of digitalisation as an input or enabler of the modernisation of public administration. Digital government goes a step further, focusing on the provision of user-centric, agile and innovative public services (Allessie et al., 2019, p. 10).

The emergence of electronic databases, as opposed to file folders and filing cabinets, has dramatically improved the efficiency and cost of managing information (Killmeyer et al., 2017, p. 13). Janowski (2015) argued that the concept of digital government is evolving towards more complexity and greater contextualisation and specialisation, similar to evolution-like processes that lead to changes in cultures and societies. He showed a four-stage Digital Government Evolution Model that comprised digitisation (technology in government), transformation (electronic government), engagement (electronic governance) and contextualisation (policy-driven electronic governance).

Electronic government has the potential to shape public administrations to be more customer-oriented. To do this, municipalities need knowledge about customer needs (Schedler, Summermatter, 2006). E-government is defined „as the electronic provision of information and services by governments 24 hours per day, seven days per week” (Norris et al., 2001, p. 3). The concept and practice of e-government have also been defined using various terms, such as digital government and online government. Nowadays, there are terminologies such as mobile government, ubiquitous government, and smart government (Manoharan, Ingrams, 2018, p. 57; Dias, 2011, p. 98).

Three central statements are key to a comprehensive understanding of electronic government: (1) it uses information technology, above all the Internet, (2) it deals with organisational issues of public administration, and (3) it considers the interaction of public administration with its environment – that is, with customers, suppliers, citizens, politicians, and businesses (Schedler et al., 2004). In 2001, Backus (2001) wrote that e-governance will become increasingly present around the world in the next few years.

Electronic government is continually evolving; it is a moving target. For this and other reasons, it is important that research continues to explore e-government adoption and impacts, particularly with longitudinal data from all levels of government, as well as in-depth case studies of e-government initiatives (Norris, Moon, 2005, p. 72). Presently, digital government is a state-of-the-art concept in public administration science, a successor to the e-government paradigm. The new paradigm focuses on the provision of user-centric, agile and innovative public services. Blockchain is currently the most innovative digital technology being considered under the new paradigm of governmental policymaking and service delivery (Allessie et al., 2019, p. 4).

1.2. Blockchain technology in local government

Blockchain has the potential to improve local government by enhancing transparency, efficiency, integrity and data management (Hamill et al., 2018, p. 3). This technology will certainly be a consideration for enterprises that seek to improve the timeliness, quality and accuracy of accounting information (McComb, Smalt, 2018, p. 5). Grover et al. (2019) showed that blockchain can also transform digital transactions by reducing transaction overhead costs, providing secure and speedy

transactions, and providing security, privacy, transparency, trust and traceability in digital transactions.

Blockchain technology was initially designed with a clear object and subject in mind. It presented a well-delineated „radical” technology to create immutable, widely vouched for and shared records of transactions in a fully decentralised and irrefutable manner (Lagendijk et al., 2019, p. 9).

Blockchain is still a relatively immature concept. Studies have highlighted that, beyond feasibility, few real-world applications exist, which poses a dilemma to organisations that are contemplating its adoption, as they must carefully consider the potential impact on their existing processes (Hughes et al., 2019, p. 128). Baturara et al. (2018) stated that the main challenges in blockchain adoption are rooted in the technological aspects, such as security, scalability and flexibility. There is a need for new governance models, and the acceptability of this technology is a major challenge from an organisational perspective.

In Georgia and Sweden, blockchain is used on the national level for land title registry and property transactions. Malta also uses it nationally to verify academic certificates and to store and share personal documents. The Netherlands implemented blockchain for pension management. On a local level, Switzerland uses the technology for digital identity to prove residency, e-voting, and payments for bike rental and parking (Allessie et al., 2019, p. 10). To consider the possibility of using blockchain technology, the state government of South Tyrol in Northern Italy, in cooperation with System Analysis Program Development (SAP) presented in their paper a case study by Treiblmaier and Sillaber (2019). They found that exploiting the full potential of blockchain needs complete rethinking by public management, which needs a more service-oriented administration that re-establishes citizen trust in public institutions. The most fundamental question for government leaders may be this: *Do you want to be positioned to capture the benefits of the new, potentially transformative technology that is blockchain* (Killmeyer et al., 2017, p. 16)?

1.3. The role of motivating employees in the context of implementing new technologies

Modern, efficient and competent public sector units should be characterised by highly efficient management, the availability of finances and the delivery of high-quality services for citizens. Additionally, they should also be open to their needs. This goal will be achieved by ensuring the stability of administrative staff, as well as by introducing appropriate incentive systems and improving their competencies, knowledge and skills (Filipiak, 2012, p. 67).

There are many definitions of motivation. One of them defines it as a psychological process that results from the interaction between the individual and the environment, and it determines the form, direction, intensity, quality and duration of work-related behaviour (Rinsum, Verbeeten, 2012, p. 380; Grant, 2008, pp. 48–49). A motivated employee gives the organisation his skills. He is also creative and energetic, and he quickly adapts to changes (Seredocha, 2013, p. 67).

Motivation is one factor that influences performance; it is a critical moderator between performance and other factors such as ability or situation. Improving productivity in local government units requires more than just customer service, technology, decentralisation or process reengineering. Whether these approaches succeed or fail will depend largely on the motivation of the employees who have been asked to implement them (Wright, 2001, p. 580). A contemporary public administration employee becomes a knowledge worker. His professional suitability is determined not only by his knowledge and professional skills but mostly by his willingness and ability to constantly learn (Marzec, Szymaniec, 2012, p. 151).

Jurkiewicz et al. (1998, p. 237) conducted comparative research on the motivation of employees in public and private companies. The public sector sample consisted of 296 employees from a variety of departments: public works, fire, police and administration. They showed that the chance to learn new things ranks high on the list of what public sector employees want in the context of motivation.

2. The research question

The digitisation of the public sector should not be considered solely a technical project or a project merely about improving efficiency, freeing up resources and modernising service delivery. Instead, digitisation should be seen as a substantial reform driven by strong programmatic ideas and ideals and an often-unquestioned digitisation imperative (Plesner, Justsen, 2018, p. 1185).

Public sector organisations must continuously innovate using digital technologies to remain relevant and deliver their objectives in a rapidly changing, contemporary environment. Digital transformation creates a need for hybrid organisational forms in public sector organisations to effectively balance resilience and agility in the implementation of digital technologies (Faro et al., 2021, p. 18). Despite this, the impact of technology on fostering public value creation using open data and transparency websites, crowdsourcing and participation platforms, smart city sensors and social media technologies, among others, remains broadly unexplored from the perspective of public sector management (Criado, Gil-Garcia, 2019, p. 439).

Dias (2010) researched the websites of 239 Portuguese municipalities. He concluded that, despite the investments made in the previous decade, local e-government in Portugal still exhibits a medium level of development regarding information dissemination, and it remains substantially underdeveloped concerning online service delivery. He believes that a cultural breakthrough is needed to take full advantage of new technologies in government-to-citizen interactions at the local level.

Li and Feeney (2014) analysed data from a national random survey of 902 government managers from 500 local governments in the United States to examine factors that explain the adoption of two types of e-government technologies, e-service and communication technologies. They found that managerial perceptions of

the organisation, such as personnel constraints and organisational centralisation, are negatively related to the adoption of e-services, while citizen demands are positively associated with the adoption of e-services. Local governments increasingly focus on potential applications of blockchain technology in the public sector. For example, distributed ledgers may become a new information infrastructure that supports the exchange of information between public administrations, citizens and businesses (Allessie et al., 2019, p. 4).

That is why the local government will need to understand the new technology and figure out innovative ways to incorporate blockchain into their business processes to keep up with their competitors. Organisations differ in terms of sector, technical infrastructure, personnel, area of expertise, and management, all of which affect how they view blockchain and, eventually, their decision to adopt it (Turhan, Akman, 2021, p. 14). Wherever local government transactions involve, or could involve, digitising assets and decentralised exchange, there is a potential blockchain opportunity (Killmeyer et al., 2017, p. 13). Rana et al. (2021) explored 16 unique sets of challenges selected from the literature. They gathered data from nine experts from government settings, healthcare and education with significant knowledge and experience in implementing and using blockchain in their respective organisations. Their research suggests that the bottom level includes challenges like a lack of standards and validation. However, the topmost level consists of a highly dependent challenge termed „adoption of blockchain in the public sector”.

Turhan and Akman (2021, p. 14) surveyed 208 IT professionals. The results indicated that, aside from management, support and perceived ease of use, all the other factors in the analysis, such as facilitating conditions and organisational work climate, significantly influenced sector diversity regarding the timing of blockchain adoption.

Thus, the research question is: How do local government employees view e-governance and blockchain technology?

3. The research methodology

The research was conducted from March to April 2020 in Polish local government units at the community level. We used a survey as a research tool, which is often used in social research. All questions were closed and used the Likert scale (Albaum, 1997; Babbie, 2008, p. 277). We emailed the survey to all the communities in Poland and received 236 replies. We used 235 surveys as our research sample. We had chosen workers from the finance division to be respondents, of whom 55.74% represented rural communities, 25.11% came from urban-rural communities, and 19.15% came from urban communities. Most of the research population (64.8%) came from small communities with fewer than 10,000 citizens. More than 60% of respondents worked in communities where the number of employees in the financial department ranged from 0 to 10. Seniority was 11 years or more for 86.61% of respondents.

Table 1. Demographics

Variable	Characteristics	Respondents in %
Type of community	rural	55.74
	urban	19.15
	urban-rural	25.11
Size of the community	0–5,000 residents	31.06
	5,001–10,000 residents	33.62
	10,001–20,000 residents	19.57
	20,001 residents and more	15.75
Number of employees in the finance department	0–5 employees	25.96
	6–10 employees	36.17
	11–15 employees	10.64
	16–20 employees	6.38
	21–25 employees	5.11
	26 employees and more	15.74
Seniority of respondents	0–5 years	5.11
	6–10 years	8.09
	11–15 years	20.00
	16–20 years	19.15
	21–25 years	23.83
	26 years and more	23.82

Source: own elaboration.

We divided our questionnaire into two parts. The first part looked at the role of e-government in local government units. We wanted to know what the local government employees thought about using e-services.

3.1. First part – e-governance administration

In the first question, we wanted respondents to give their opinions on the role of digital administration in local government. To what extent does digital administration influence the development of local government units?

Table 2. The structure of answers

Answer	No	%
Not important	5	2.13
Less important	30	12.77
So-so	69	29.36
Important	109	46.38

Answer	No	%
Very important	22	9.36
Total	235	100.00

Source: own elaboration.

As shown in Table 2, for 55.77% of respondents, digital administration is important or very important for the development of local government units. Only 14.9% said that digital administration is not very important for developing local government units. To check if there were any differences in the answers to this question, we used the Kruskal-Wallis test (Table 3), which showed that the size and type of community, as well as the number of employees in the financial department, had an impact on the answer of the respondents.

Table 3. Results of the Kruskal-Wallis test

Variables	p-value
Size of the community	0.035
Type of community	0.002
Number of employees in the financial department	0.012
Seniority of respondents	0.501

Source: own elaboration.

The second question asked respondents the extent to which e-services (e.g. obtaining an ID card online, submitting an application for voter registration online, settling the tax on means of online transport) help:

- a) officials of local government units in their work,
- b) citizens' access to public services,
- c) business owners to settle matters faster.

Table 4. The structure of answers

Answer	a		b		c	
	no	%	no	%	no	%
Not at all	7	2.98	1	0.43	1	0.43
To a very small extent	21	8.94	6	2.55	8	3.40
To a small extent	19	8.09	10	4.26	9	3.83
Medium	67	28.51	35	14.89	45	19.15
To a large extent	95	40.43	125	53.19	113	48.09
To a very large extent	26	11.06	58	24.68	59	25.11
Total	235	100.00	235	100.00	235	100.00

Source: own elaboration.

Table 4 shows that, in the opinion of more than 50% of respondents, e-services in local government are very helpful for clerks in their work. According to 77.87% of respondents, it facilitates citizens' access to public service to a large or very large extent. Additionally, 73.2% believe that e-services allow business owners to settle matters faster. To ascertain if there were any differences in the answers to this question, we again used the Kruskal-Wallis test (Table 5). It showed that, for the question about the extent to which e-services facilitate citizens' access to public services, the type of community and the seniority of respondents had an impact on the respondents' answers.

Table 5. Results of the Kruskal-Wallis test

Item	2_a	2_b	2_c
Variables	p-value	p-value	p-value
Size of the community	0.881	0.108	0.535
Type of community	0.390	0.024	0.224
Number of employees in the financial department	0.058	0.051	0.154
Seniority of respondents	0.344	0.027	0.828

Source: own elaboration.

3.2. Second part – blockchain technology in accounting

In Poland, the Toruń Shared Services Centre (TSSC) has implemented ChainDoc, an Atende proprietary solution based on blockchain technology. ChainDoc supports TSSC by authenticating documents transmitted electronically, reducing the need for paper or other costly solutions. ChainDoc has been integrated with the Internet Document Circulation System (ISOD) platform. TSSC mainly provides financial, accounting, payroll and tax services for 75 municipal units, including all municipal educational institutions. TSSC's goal is to increase operational efficiency and optimise the costs of servicing municipal units. In the third question, we asked respondents what they thought about possibly using such a solution in their units.

1. Would you like to introduce such a solution based on blockchain in your unit?
2. Do you think that this solution would allow you to optimise your work (faster information flow) in the city/commune office?
3. Do you think that this solution would reduce costs in the city/commune office?

Table 6. The structure of answers

Answer	1		2		3	
	Number	%	Number	%	Number	%
Yes	47	20.00	94	40.00	73	31.06
No	39	16.60	34	14.47	50	21.28
I don't know	149	63.40	107	45.53	112	47.66
Total	235	100.00	235	100.00	235	100.00

Source: own elaboration.

Table 6 shows that the respondents were very careful when asked if they wanted to implement ChainDoc in their community. Only 20% of respondents wanted to do so. Few respondents (only 40%) thought it would help optimise their time. Even fewer respondents (only 31.06%) thought that it could help reduce costs.

Ølnes et al. (2017) argued that implementing modern technologies has potential benefits and promises – strategic, organisational, economic, informational and technological (Table 7).

Table 7. Potential benefits and promises of new technologies

Category	Benefits and promises
Strategic	Transparency, avoiding fraud and manipulation, reducing corruption
Organisational	Increased trust, transparency and auditability, increased predictive capability, increased control
Economical	Clear ownership, reduced costs, increased resilience to spam and DDOS attacks
Informational	Data integrity and higher data quality, reducing human errors, access to information, privacy, reliability
Technological	Resilience, security, persistency and irreversibility, reduced energy consumption

Source: Ølnes et al. (2017).

We asked the respondents their opinions about Ølnes et al.'s (2017) statement and the benefits and promises of new technologies. The answers are given in Table 8.

Table 8. The structure of answers

Answer	Strategic		Organisational		Economical		Informational		Technological	
	no	%	no	%	no	%	no	%	no	%
Not at all	8	3.40	9	3.83	19	8.09	10	4.46	9	3.83
To a small extent	38	16.17	38	16.17	43	18.30	39	16.60	37	15.74
Medium	84	35.74	87	37.02	94	40.00	90	38.30	89	37.87
To a large extent	95	40.43	91	38.72	69	29.36	90	38.30	90	38.30
To a very large extent	10	4.26	10	4.26	10	4.26	6	2.55	10	4.26
Total	235	100.00	235	100.00	224	100.00	235	100.00	235	100.00

Source: own elaboration.

More than 40% of respondents said that implementing modern technologies could give strategic, organisational, informational and technological benefits to local government units to a large or very large extent.

The Kruskal-Wallis test showed that community size had an impact on the respondents' answers about the organisational and economic benefits of using blockchain to effectively manage local government units.

Table 9. Results of the Kruskal-Wallis test

Item	Strategic	Organisa-tional	Economic	Informat-ics	Technol-ogy
Variables	p-value	p-value	p-value	p-value	p-value
Size of the community	0.104	0.020	0.005	0.251	0.251
Type of community	0.052	0.069	0.242	0.407	0.259
Number of employees in the financial department	0.637	0.489	0.015	0.367	0.099
Seniority of respondents	0.143	0.130	0.182	0.206	0.378

Source: own elaboration.

Kwilinski (2019) argued that blockchain aims to put an end to the traditional methods of billing, documentation, processing, registering, inventory systems and paying for business. The technology will allow both sides to record a transaction simultaneously in a shared book in real time rather than keep audited records of financial transactions in separate, privately created databases or accounting books. The need for traditional double-entry accounting will disappear as the legality of accounting will be fully automated. This means that blockchain technology could be very useful in accounting. Therefore, the next question concentrated on determining the potential benefits using blockchain technology can bring to accounting. To what extent could blockchain technology influence accounting processes in local government units?

In the last question, the respondents were asked to what extent they thought the benefits of implementing new technologies in accounting records (for example, distributed registers – blockchain) would be significant to effectively manage local government units.

Table 10. The structure of answers

Answer	Transpar-ency		Performance		Security		Record Control	
	no	%	no	%	no	%	no	%
Not at all	14	5.96	13	5.53	11	4.68	11	4.68
To a small extent	42	17.87	39	16.60	40	17.02	37	15.74
Medium	94	40.00	96	40.85	95	40.43	90	38.30

Answer	Transparency		Performance		Security		Record Control	
	no	%	no	%	no	%	no	%
To a large extent	73	31.06	76	32.34	83	35.32	87	37.02
To a very large extent	12	5.11	11	4.68	6	2.55	10	4.26
Total	235	100.00	235	100.00	235	100.00	235	100.00

Source: own elaboration.

Almost 40% of respondents thought that, to a medium extent, blockchain technology could improve accounting in ways such as transparency, performance, security and record control. More than 36% of respondents thought that blockchain could improve accounting to a large or very large extent.

Table 11. Results of the Kruskal-Wallis test

Item	Transparency	Performance	Security	Record Control
Variables	p-value	p-value	p-value	p-value
Size of the community	0.010	0.023	0.097	0.013
Type of community	0.011	0.060	0.173	0.038
Number of employees in the financial department	0.281	0.150	0.296	0.123
Seniority of respondents	0.374	0.590	0.712	0.269

Source: own elaboration.

The size and type of the community had an impact on the respondents' answers about using blockchain technology for transparency in accounting. Additionally, community size impacted the answers about using blockchain for performance and record control in accounting.

4. Discussion

On the one hand, we can say that the public sector is moving toward smart governance. This means that there might be a new and transformative public management perspective. From this perspective, we use smart technologies and strategies to better manage the public sector (Criado, Gil-Garcia, 2019, p. 446). The problem could be the barriers to achieving success in e-government. This research has shown that more than half of respondents believe that digital administration is important for the development of local government units. This means that there are still some barriers to implementing digital administration. Manoharan and

Inrams (2018, p. 60) divided those barriers into managerial (lack of training, education, motivation) and technical (hardware and software).

On the other hand, more than 50% of respondents believed that e-services in local government are very helpful for clerks in their work. It is especially important that e-government solutions prominently improve the management and efficiency of government at the local and central levels (Seifert, 2003, p. 4; Alessie et al., 2019, p. 10). According to almost 80% of respondents, digital administration facilitates access to public services for citizens to a large or very large extent. Additionally, more than 70% of respondents believed that e-services allow business owners to settle matters faster. Our research answered the question of the role of digitalisation in modernising and improving management in local government. The responses confirm that the objectives of e-governance are generally to improve efficiency and effectiveness and to save costs (Backus, 2001, p. 20).

Innovations in both technology and perspective create an understanding of new concepts such as „governing with people”. In public administration theory, this is called governance (Öktem et al., 2014, p. 1926). Atzori (2017, p. 4) believes that many enthusiasts simply promote the blockchain as a more efficient, decentralised and consensus-driven public repository, which can have several applications to make citizens less dependent on governments. Local government is not ready to use modern technology like blockchain. The research of Tarhan and Akaman (2021, p. 12) shows that the private sector tends to be more inclined to adopt blockchain earlier compared to public-sector institutions.

Only 20% of respondents wanted to implement blockchain technology in their units. Few thought that this tool would help optimise their work and could have an impact on reducing costs. The respondents did not agree with the statement that „public sector organisations can receive large savings of time and cost by adopting blockchain technology” (Rana et al., 2021).

The research confirms the fears of Lacity (2018) that using a blockchain solution with challenges in the areas of performance, scalability and integration with other systems is no easy task. More than 40% of respondents said that implementing modern technologies could provide strategic, organisational, informational and technological benefits for local government units to a large or very large extent (Hostle, Schoeber, 2018, p. 6). Almost 40% of respondents thought that blockchain technology could improve accounting via transparency, performance, security and record control to a medium extent. More than 36% thought it could improve accounting to a large or very large extent. Fuller and Markelevich (2019) thought that the implementation of blockchain in accounting has not yet made the economic case for it. They have concerns about whether blockchain technology can adequately address risks associated with data security and privacy.

Conclusion

The results of the research show that, in the opinion of respondents, the use of e-governance in local government is very helpful in management. It confirms Manoharan and Ingrams' (2018, p. 58) opinion that adopting e-governance may have great potential for local governments to improve service delivery.

On the other hand, the use of blockchain technology in local government is debatable. The findings of our research in this aspect are in line with earlier research conducted by Killmeyer et al. (2017, p. 16). They argued that realising the potential of blockchain technology requires reevaluation by public management, with the primary organizational challenge lying in achieving widespread acceptance of this technology (Batubara et al., 2018; Turhan, Akman, 2021). The employees were quite cautious about using it in local government units. This caution may result from the fear of introducing new solutions that will require additional workload from employees.

However, Jurkiewicz et al. (1998) showed that learning new things comes second in terms of motivating employees in the public sector. The implementation of blockchain technology also requires an appropriate IT infrastructure, which is associated with large financial outlays.

Our research makes an important contribution to the research on the possibility of using new technologies in local government units. The research has made it possible to assess e-government as a tool for managing local government units and to present officials' attitudes to the possibility of using blockchain technology in local government accounting. The limitation of the research is that the blockchain technology is new and, unfortunately, there are very few examples of its implementation by local governments in Poland. Therefore, it is difficult to assess the positive and effective implementation of blockchain technology by local governments.

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