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Pieter-Hendrik Venter[1], Partson Paradza[2], Benita Zulch[3], Andries Masenge[4]

[1]Department of Construction Economics, University of Pretoria, South Africa
[2]School of Construction Economics and Management, Unieverity of the Witwatersrand Johannesburg, South Africa
[3]Department of Quantity Surveying and Construction Management, University of the Free State, South Africa
[4]Department of Statistics, University of Pretoria, South Africa

DATA CONSISTENCY AND ITS IMPLICATIONS FOR MUNICIPAL POLICYMAKING IN SOUTH AFRICA: AN ANALYSIS OF SURVEY, DEEDS, VALUATION ROLLS, AND MUNICIPAL BUDGETS

This paper seeks to present some empirical findings on the implications of inconsistencies in spatial data and valuation rolls on municipal budgets using a case study from South Africa. The focus is to inform policy and practice about the financial implications as well as to contribute to the existing academic debate on property rating.

Keywords: *budget, local municipalities, multidisciplinary approach, property rates, spatial data, valuation roll*

Statement of the problem

Accurate land registers, deeds registries, and valuation rolls are essential for municipal finances. Inconsistencies between these records have been identified in Colombia, Mexico, West Africa, Tanzania, and Mozambique, where incomplete and outdated valuation rolls have resulted in revenue shortfalls, impeding municipalities' capacity to provide services (Serageldin et al, 2003).

According to Statistics South Africa (Stats SA) (2019), municipal income is derived from electricity sales (27%), grants and subsidies (25%), and property rates (17%) – encompassing water sales, refuse removal, sewage, and sanitation – and a variety of smaller services (31%). This demonstrates the substantial contribution of property rates to municipal revenue, which consequently affects service delivery.

In South Africa, a significant discrepancy between the deeds registry and survey data was highlighted by the Surveyor-General in 2011. Some properties could not be accurately located geographically, while others, despite being surveyed, lacked corresponding deeds records, effectively rendering them non-existent. The Surveyor-General's data encompassed 5,972,949 properties, whereas the Deeds registry recorded 7,560,616, revealing a substantial mismatch of 1,587,667 properties, or 21% of the total (Surveyor-General, 2011).

These findings underscore significant concerns regarding municipal revenue generation and financial sustainability. Hlongwane and Nzimakwe (2018) highlighted the severe financial crises afflicting municipalities, as evidenced by the Auditor-General's reports from 2005 to 2007. This issue was also emphasised by Franzsen (2003), who concluded that unreliable revenue streams have led to widespread service delivery failures across many Southern and Eastern African nations. These discrepancies might be caused by gaps in statutes guiding data capture and storage by the Surveyor General's Office and the Deeds Registry Office. This study aims to quantify the potential revenue loss arising from data discrepancies, thereby contributing to knowledge and informing policy development and implementation.

Analysis of recent research and publications

Different views were put forward on how municipalities can charge property rates. Firstly, the benefit view argues that property tax is a user charge. Proponents of this view believe that the burden ultimately falls on consumers, often through rent increases (McCluskey & Franzsen, 2001). Landlords, for instance, might raise rents to compensate for higher property taxes, effectively shifting the cost to tenants. It reflects the value of public services, such as roads, water, and fire protection, that residents receive from the municipality (Hamilton, 1975). This user charge essentially acts as a price for the local public goods and services offered. In this context, municipalities need to maintain accurate property registers to ensure that property tax is levied in line with actual property values thereby maximising revenue for public service provision budgets.

Secondly, the UBC Real Estate Division (2009) argued that an ideal tax system should see taxpayers contribute based on their capacity to pay. Through this principle, property value serves as a measure of an individual's ability to contribute. By adhering to the

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ability-to-pay principle, municipalities can generate revenue from wealthier individuals who own property in affluent areas. These funds can then be redistributed to low-income areas through the provision of public services like schools and clinics.

The Parliament of South Africa (2003) identifies property rates as a cornerstone of local government revenue. Section 229 of the Constitution (1996) enshrines this power (Ramakhula, 2010). However, individual municipalities operate under the Municipal Property Rates Act No. 6 of 2004 (Greater Giyani Municipality, 2019; Makhado Local Municipality, 2018). This act empowers local authorities to set rates through effective policies.

South Africa utilizes three primary rating systems: site rating, flat rating, and composite rating. The site value rating involves taxing only the unimproved value of land (Franzsen, 2000). This system was piloted in three South African provinces: Gauteng, Limpopo, and Mpumalanga (Ramakhula, 2010). To calculate property value under site value rating, valuers must determine both the total improved value and the value of the land itself. Subtracting the land value from the total value yields the value of the improvements (buildings etc.) on the property.

According to Slack (2003), site value rating was initially considered the most suitable system for South Africa due to its potential to attract capital investment to cities. Ramakhula (2010) supports this notion, suggesting that 70% of South Africa's property tax revenue came from cities using site value rating, which does not tax improvements.

However, this system has limitations. Since it only considers land value, variations can arise, as it underestimates the actual market value of improved properties (Franzsen & McCluskey, 2017). Additionally, in areas with low capital investment, municipalities may lose revenue because they cannot tax improvements under this system.

According to Ramakhula (2010), the flat rating system involves assessing a property based on the value of the land and improvements. The calculation for the flat rating of a given property is the land value plus the value of improvements minus depreciation. This system was primarily used in the Western Cape under Valuation Ordinance No. 26 of 1994 (Ramakhula, 2010). Franzsen (2003) concludes that flat rating systems promote the development of slums because they discourage people from improving their structures, leading to depreciation and a reduction in tax payable. Conversely, illegal improvements on the land are made as a tax evasion strategy, which consequently contributes to revenue loss for the municipality.

According to Ramakhula (2010), under the composite rating system vacant land and developed land are taxed separately and at different rates. This was a common practice in the KwaZulu-Natal Province, where property values were assessed based on the value of the land, and an additional amount based on the value of improvements was used at a lower rate than that applied to the land (ibid, 2010). According to the City of Johannesburg Metropolitan Municipality (2004), this system is more productive for local authorities because the amount collected increases with development.

The Municipal Property Rates Act section 19, amended by section 6 of the Act of 2014, permits the levying of differential rating on rateable property. Through this system, a municipality seeks to provide tax relief for a specific use or class of property that may otherwise be heavily taxed due to the amount of development or its physical size (Ramakhula, 2010; Makhado Local Municipality, 2018; Greater Giyani Municipality, 2019). This is a system in which the net taxes payable to a municipality do not represent an equal percentage of the values of all properties (Franzsen, 2000; Zyl and Fritz, 2022). Examples include properties belonging to indigent owners (such as the elderly or those relying on grants as their source of income), properties belonging to the state, religious, welfare, charitable, and educational institutions, as well as agricultural properties.

Franzsen and Olima (2003) indicate that South African municipalities have the authority to levy rates on property as granted by Section 229 of the Constitution. Valuation rolls form the basis of property rates and taxes in local government. Similarly, Kampamba et al. (2018) note that in Botswana, valuation rolls are also used as a base for property tax. They further opine that streamlining and implementing a valuation roll would benefit the government, including improved communication among the government, ratepayers, and intergovernmental bodies. Franzsen and McCluskey (1999) stipulate that land registration and spatial information are crucial for developing an accurate valuation roll. They also observe that a lack of maintenance in property registries will negatively impact the property tax obtained.

A valuation roll is a legal document comprising property information, including the values of rateable properties within municipal boundaries (Municipal Property Rates Act, 2004). The valuation roll is the foundation of property rates and taxes, contributing 17% of the budgetary income of the municipality.

- How do the deeds contribute to developing the valuation roll?
- Does the deeds registry information comprise all the information that should be included in the valuation roll?

Section 48 of the Municipal Property Rates Act of 2004 stipulates that the valuation roll should comprise all properties within the municipal demarcation, as identified in Section 30 of the Deeds Registries Act, 1937. According to this section, when a municipality

intends to levy property rates, it must value all properties in the municipality. Section 30 refers to rateable property, aligning with Section 7 of the Municipal Property Rates Act, 2004. All properties in the municipal area must, therefore, be included with the owner's name. Registered properties should then be incorporated into the valuation roll. According to the tax definition, only landowners and long-term tenants can pay taxes.

The Municipal Property Rates Act, of 2004, lacks a precise definition of valuation for rating. Section 45(1) affirms that properties must be valued according to standard valuation practices, methods, and principles. According to Franzsen and Olima (2003), the market value is commonly used as the base of the rating valuation method but they went on to question its suitability as a one-size-fits-all approach.

Accurate and up-to-date information enables local authorities to identify all taxable properties and determine their value correctly which translates to increased revenue collection (Avault et al., 2000; Boston Housing Authority, et al., 2004; Dye & England, 2010). Furthermore, consistency facilitates efficient property tax administration (Mangioni, 2010) and ensures a fair and transparent property tax distribution (Franzsen, 2003).

Several examples illustrate the positive outcomes of consistent data. Denmark's centralized property information system allows for effective land value taxation through consistent data (Mangioni, 2010). In New Zealand, the integration of cadastral information with Computer Aided Mass Appraisal and GIS systems yielded a significant rise in property tax revenue (Dye & England, 2010). Bogotá, Colombia, implemented property tax reforms that involved data collection and digitalization, ultimately leading to increased revenue collection (De Cesare, 2012; Bahl et al., 2013).

The drawbacks of inconsistent data are significant. Inaccurate data can lead to municipalities missing taxable properties altogether or undervaluing existing ones, resulting in lower revenue collection (Norregaard, 2013; Fjeldstad & Katera, 2017). Furthermore, inconsistencies can create an unfair tax burden, as registered properties may be taxed disproportionately compared to unregistered ones (Fjeldstad & Katera, 2017). Norregaard (2013) also highlights the potential for political manipulation when data is inconsistent.

Developing nations can introduce quasi-autonomous taxation systems to facilitate the taxation of unregistered property (Serageldin et al., 2003). Occupancy taxes can also be implemented to address situations of unclear property ownership (Menon et al., 2003; Serageldin et al., 2003). In certain instances, utilising street addresses as a substitute for traditional cadastres may be feasible (Menon et al., 2003; Serageldin et al., 2003).

The implementation of digital cadastral information systems, as advocated by McCluskey et al. (2018), could significantly improve data precision. Franzsen and McCluskey (2017) and Fjeldstad & Katera, (2017) highlighted the crucial role of GIS in achieving the accuracy necessary for property valuation, thereby facilitating efficient municipal revenue collection. Finally, enhanced information exchange between local authorities and relevant organisations, such as the Ministry of Justice's Registry and Notary Office, can reduce inconsistencies (Weimer & Fandrych, 1998).

Figure i summarises the concept, forming the foundation of this study.

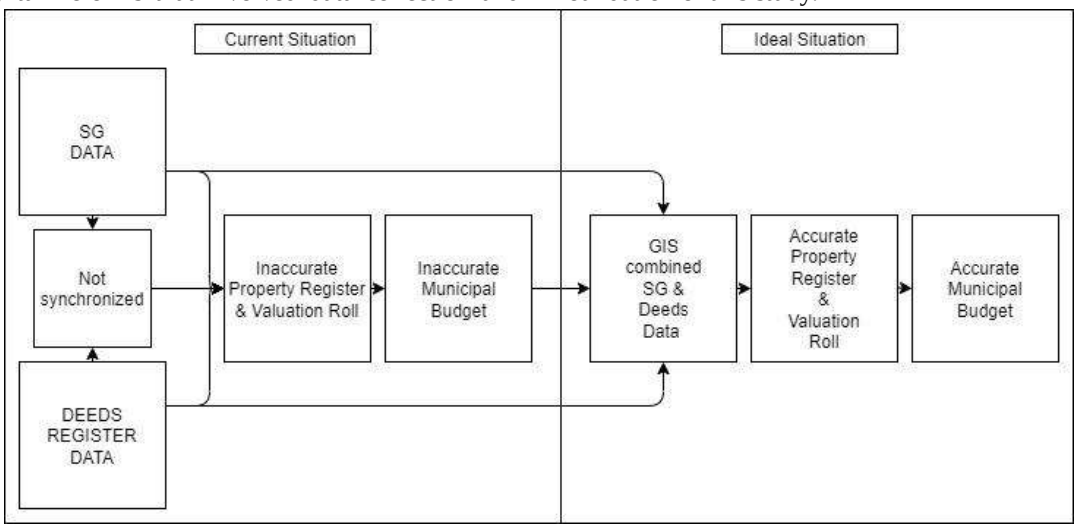

Figure 1. Conceptual framework
Source: Designed by the authors

As illustrated in Figure i, municipal budgets rely on spatial and property data sourced from the Surveyor-General and Deeds Registry Offices. The accuracy and consistency of these datasets are paramount for property valuation. Incompatible data will inevitably lead to valuation errors, while inaccurate source data will be propagated through the valuation process. An inaccurate valuation roll directly impacts the municipal budget, as it

underpins the calculation of property rates and tax revenue based on registered property values and classifications within the municipal boundary. Extensive research has highlighted significant discrepancies between the two property registries. These discrepancies are a foundation for inaccurate valuation rolls, property registers, and the municipal budget. Ideally, a multidisciplinary approach utilising a geographical information system to integrate data from both registries would enhance data accuracy, resulting in precise property registers, valuation rolls, and, consequently, a reliable municipal budget for rates and taxes.

Purpose of the article (task statement)A a mixed-method approach was employed, combining questionnaire surveys with archival research. Archival data included valuation rolls and deed information acquired from municipalities, and Surveyor-General data acquired from the Chief Surveyor-General's offices. Additionally, questionnaires were administered to key informants with subject-matter expertise.

The design for quantitative research focused on descriptive research. Existing data were compared to determine the influence of incomplete datasets. Data analysis identified the percentage of mismatched data and its associated monetary impact on the budget. Both public and private data were used, but private data was limited due to potential inaccuracies and edits.

The qualitative method focused on obtaining a deeper understanding of the phenomena to develop a theory. Qualitative data was obtained through a questionnaire administered to municipal property valuation professionals. This date allowed for an investigation into the meaning of discrepancies observed. The views of interviewees provided valuable explanations for these differences.

The population for the research consisted of the Chief Registrar of Deeds, Chief Surveyor-General, and 234 municipalities within South Africa. Given the specialized nature of the research, purposive sampling was employed to select a manageable sample of 10% (23 municipalities). Purposive sampling allowed researchers to directly target key data sources such as Valuation Offices, Deeds Registry Offices, and Surveyor General Offices. These institutions hold information on deeds registers, property registers, and valuation rolls, crucial for the study. Additionally, private companies were included in the purposive sample to mitigate potential bias that might arise from relying solely on data from central and local government officials.

Secondary data from 2018 to 2022 was statistically analysed to determine the impact of discrepancies between datasets. Descriptive statistics, including percentages, standard deviation, mean, and median, were used to summarise the research findings. The statistical analysis was aimed to quantify the over- and under-valuation of properties reflected in the valuation rolls. Thematic analysis was used to identify and analyse recurring themes within the qualitative responses

Presentation of the main material

While the analysed properties have an estimated value of R2 trillion, Figure ii reveals significant monetary losses due to discrepancies between valuation rolls, deeds registry data, and Surveyor-General data. This highlights the importance of data accuracy in municipal budgets.

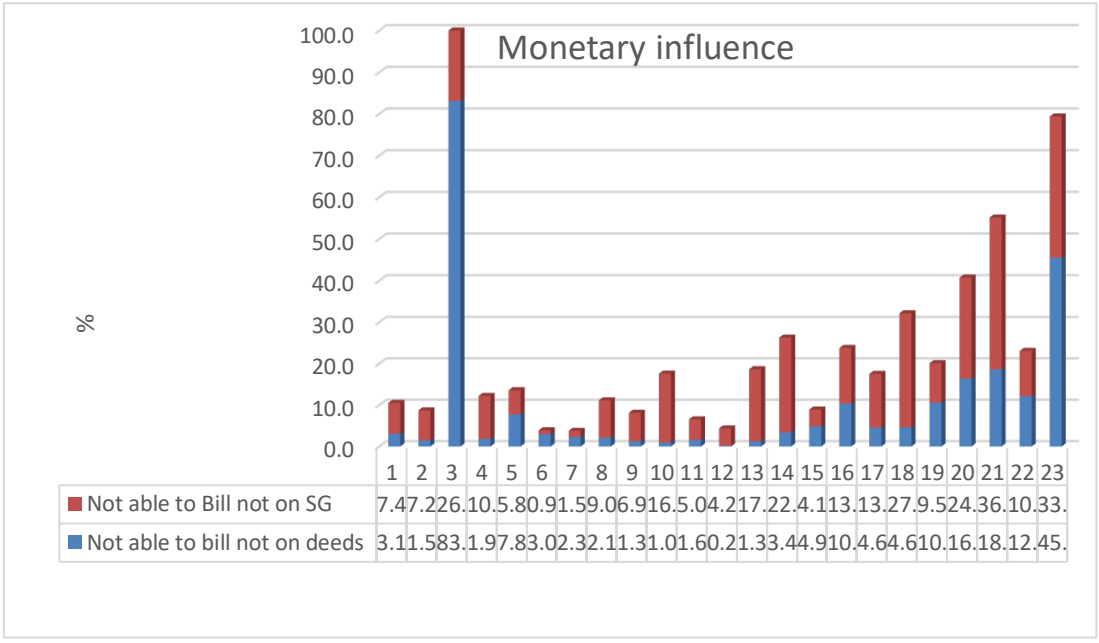

Figure 2. Monetary influence of valuation roll against deeds and survey-general information
Source: Research findings (2022)

Figure ii highlights inconsistencies in the data used to develop valuation rolls, underlining the need for data reconciliation. Simply accepting data at face value is insufficient. By cross-referencing information from the Chief Registrar of Deeds and the Chief Surveyor-General, these discrepancies came to light.

The Chief Registrar of Deeds' data revealed a minimum mismatch of 0.2% and a maximum of 83.1%. The average mismatch across the 23 municipalities was 10.5%, with a standard deviation of 18.6% and a median of 3.4%. These figures confirm a significant average mismatch of 10.5% between valuation rolls and Chief Registrar of Deeds data.

This finding suggests potential over or under-valuation of properties by 10.5%, resulting in potential losses for municipalities. Unregistered properties included in the valuation roll and registered properties excluded could lead to a 10.5% decrease in rates and tax income.

Data from the Chief Surveyor-General revealed similar inconsistencies, with a minimum mismatch of 0.9% and a maximum of 36.5%. The average mismatch was 13.7%, with a median of 10.3% and a standard deviation of 10.3%. These findings corroborate the discrepancies between datasets and suggest that a municipality's valuation roll might contain unbillable properties up to 36.5%, potentially leading to a 36.5% budget overestimation.

Figure iii further reveals that 10.3% of properties on the valuation roll lack geospatial identification. Accurately valuing and categorizing properties is impossible without proper geographical identification.

Recognising the data inconsistencies, the research team interviewed 13 professionals to gain insights into their observations and perspectives on the data's importance about relevant legislation. Figure iii outlines the interview questions and key findings.

The interviewees overwhelmingly agreed that discrepancies in valuation rolls could have a detrimental effect on municipal budgets. While they acknowledged inconsistencies in the deeds data as well, some suggested that the information held by the Chief Registrar of Deeds could still be a valuable resource. This was corroborated by their observation that registered properties might have been excluded from the valuation roll due to registration delays. Additionally, some interviewees reported a roughly 50/50 split among professionals regarding the inclusion of unregistered and registered properties.

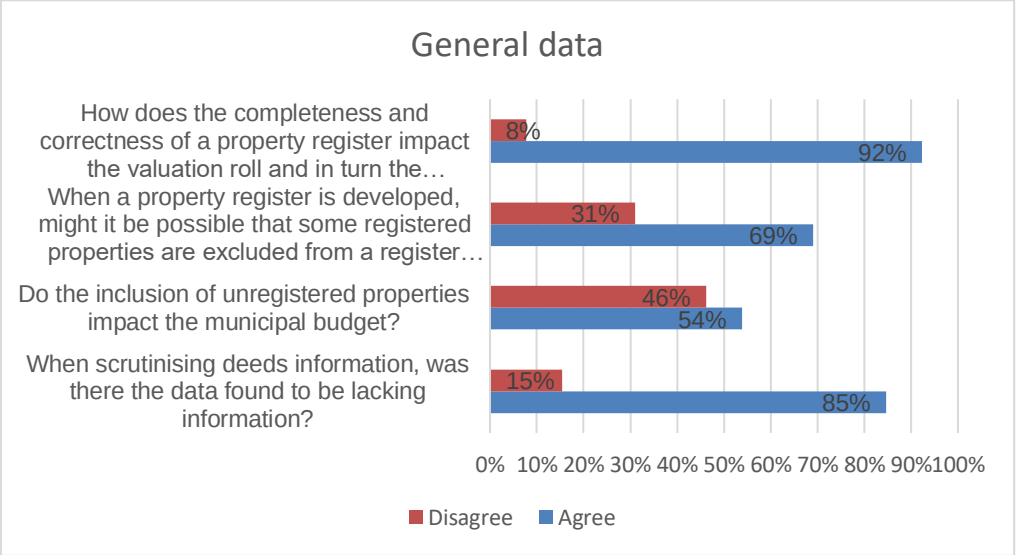

Figure 3. General data and influence understanding questions
Source: Research findings (2022)

Figure iv presents the percentage mismatch between valuation rolls and data from the Chief Registrar of Deeds and Chief Surveyor-General. While the data used is identical to that in Figure ii, the focus here is specifically on the size of the mismatch. This analysis aims to establish the magnitude of the discrepancies before investigating the underlying causes.

Comparing the valuation roll with the Chief Registrar of Deeds, a minimum of -4% and a maximin mismatch of 77.3% were observed. The mean was 17.9%, with a standard deviation of 20.5% and a median of 13.7%. When linking the Chief Surveyor-General data to the valuation rolls, a minimum mismatch of -37.2% exists, with the maximum being 57.7%. The mean was 11.2%, with a median of 8.9% and a standard deviation of 16.8%. The error when linking the data demonstrates that 37.2% to 57.7% of properties in a valuation roll could not be spatially identified, nor could they be linked to an owner to be billed for the rates and taxes. Considering the findings, a margin of error should be

allowed owing to the movements in property registrations; however, zero and higher percentile mismatches are incorrect, implicating the valuation roll completeness and correctness.

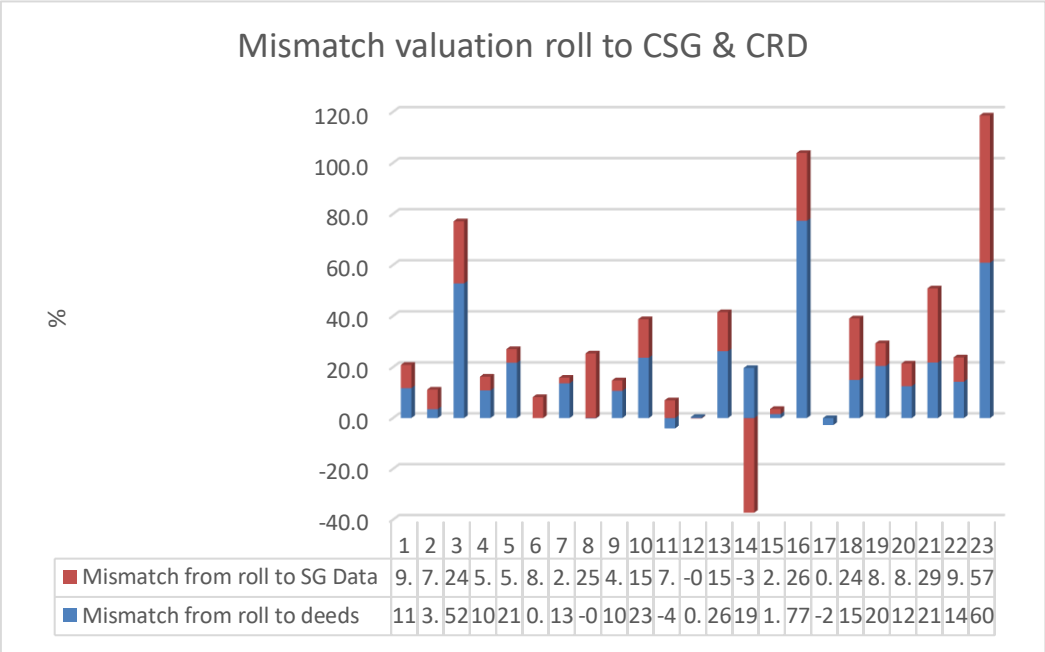

Figure 4. Data mismatch among the valuation roll and deeds register and Chief Surveyor-General data
Source: Research findings (2022)

The questions directed to the candidates, as shown in Figure v, aimed to gauge their technical understanding of the roles and legislation surrounding the Chief Registrar of Deeds and the Chief Surveyor-General. Some candidates demonstrated knowledge of the Chief Surveyor-General legislation; however, the majority were more familiar with the legislation related to the Chief Registrar of Deeds and the transactional aspects of properties. This lack of extensive knowledge about the Chief Surveyor-General's legislation could impede the recognition of the need for a multidisciplinary approach.

The observations from these questions reveal that 40% of the delegates believe raw data alone can develop the valuation roll. They also indicate that only active properties in the deeds registry should be considered. This perspective might limit the effectiveness and comprehensiveness of property valuation processes, as it overlooks the crucial role of integrating data from both the Chief Surveyor-General and the Chief Registrar of Deeds for a more accurate and robust valuation roll.

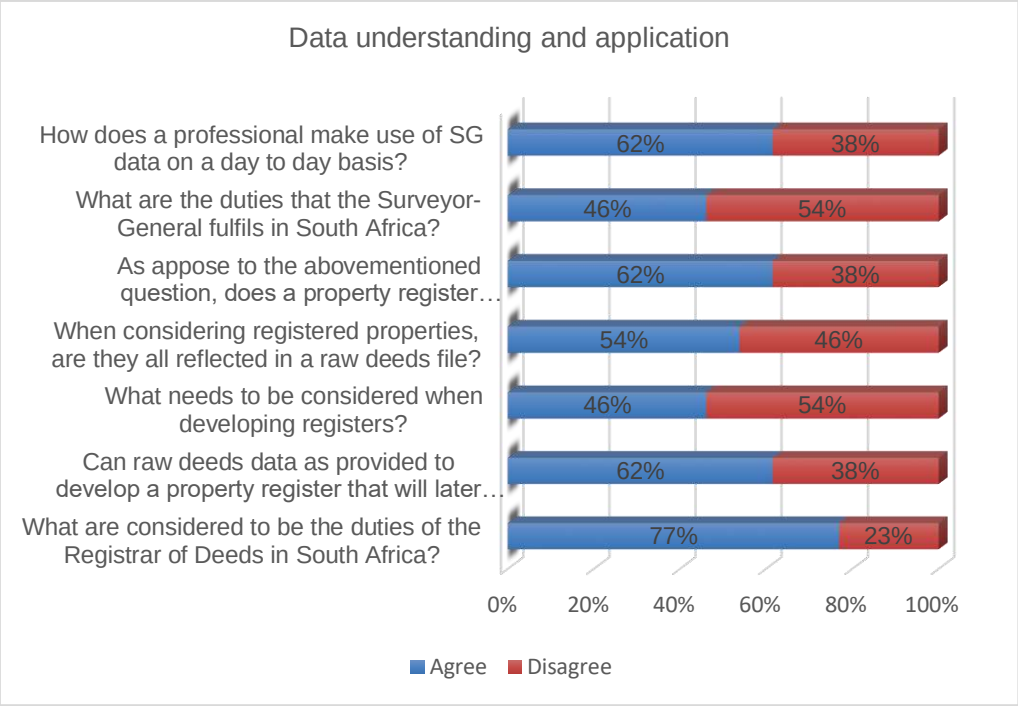

Figure 5. Data understanding and application questions
Source: Research findings (2022)

Figures ii and iv highlighted significant mismatches between valuation rolls and data from the Chief Registrar of Deeds and Chief Surveyor-General. To further emphasize the need for a collaborative approach, it was crucial to identify discrepancies within the Chief Registrar of Deeds and Chief Surveyor-General data itself.

This analysis reinforces the observation from Figure v. The findings suggest that a lack of in-depth understanding of the Land Survey Act and Deeds Registries Act (evident in the interview responses) could be contributing to these discrepancies.

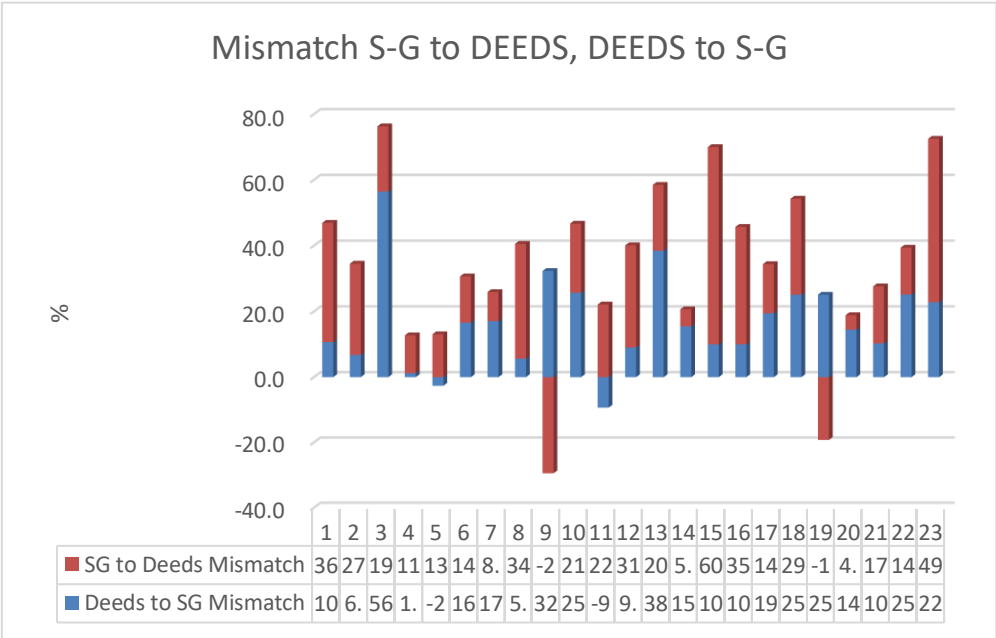

Figure 6. Chief Registrar of Deeds and Chief Surveyor-General data mismatch
Source: Research findings (2022)

Figure vi highlights the substantial discrepancies between the two most critical data sources: the Chief Registrar of Deeds and the Chief Surveyor-General data. This significant difference underscores the crucial role of a Geographic Information System (GIS) team in developing accurate property registers and valuation rolls.

These findings strongly support the concerns raised by the Department of Cooperative Governance and Traditional Affairs (2019).

Linking data from the Chief Registrar of Deeds and the Chief Surveyor-General revealed significant discrepancies. The mismatches ranged from a minimum of 1.2% to a maximum of 56.4%. The average mismatch was 16.7%, with a median of 15.45%. Interestingly, these smaller mismatches were observed in areas with a less active property market.

These discrepancies suggest potential inaccuracies in the property register, which could subsequently affect the valuation roll. In turn, this could translate into a potential over or underestimation of municipal budgets by up to 16%.

To gain a more comprehensive understanding of the discrepancies, the researchers conducted a "reverse linkage" by linking data from the Chief Surveyor-General to the Chief Registrar of Deeds. The results mirrored the initial findings, with significant mismatches ranging from a minimum of 4.4% to a maximum of 60%. The average mismatch was 19.2%, with a median of 19%.

These results suggest that approximately 19% of properties within the Chief Surveyor-General's data are not registered with the Chief Registrar of Deeds. However, it's important to note that these properties have already been surveyed and possess geospatial identification.

When considering the promulgating Acts, the discrepancy between the two data sets shows that 16% of the properties in the deeds registry cannot be geographically identified, and 19% of the Chief Surveyor-General's data are unregistered. If professionals rely solely on one data set, the implications for a municipal budget could be significant, potentially resulting in a loss of income by 16% and 19%, respectively.

This discrepancy underscores the importance of a multidisciplinary approach that integrates data from both the Chief Registrar of Deeds and the Chief Surveyor-General. Only by combining these data sets can municipalities ensure that all properties are accurately identified and registered, thereby optimizing property tax revenue and enhancing the accuracy of their budgets.

The interview responses revealed a positive shift in perception compared to Figure 5. Most participants recognized the potential of Chief Surveyor-General's data as a valuable tool and foundation for developing these registers. However, a knowledge gap persists. Similar to the findings in Figure 5, 38% of interviewees still rely solely on Chief Registrar of Deeds data.

Encouragingly, 38% of participants acknowledged the benefits of combining both datasets, highlighting the potential for a more accurate valuation roll and property register, driven by both property value and count accuracy.

Despite recognizing the value of a multidisciplinary approach, some interviewees expressed concerns about the high cost of employing Geographic Information System (GIS). Also, it was pointed out that a misconception exists that GIS professionals lack the knowledge of property transactions and legislation necessary for data reconciliation between Chief Registrar of Deeds and Chief Surveyor-General data.

Figure vii explores the potential application of a multidisciplinary approach using the Chief Surveyor-General's data for valuation roll and property register development.

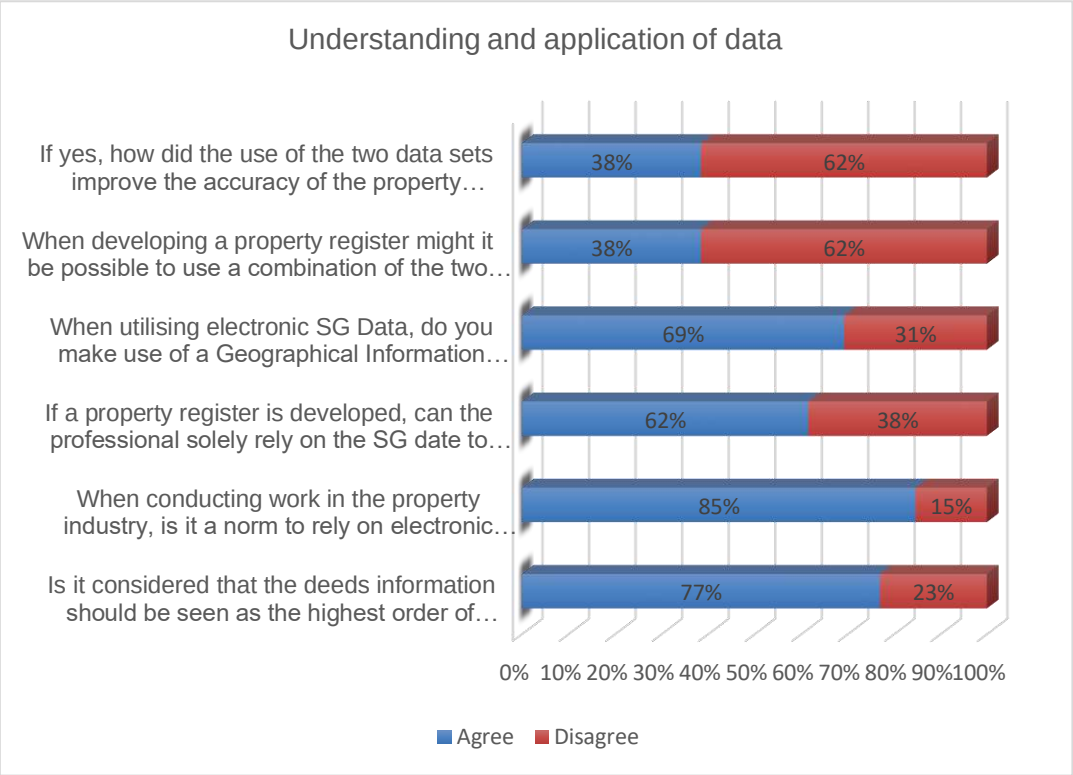

Figure 7. Data understanding and application questions
Source: Research findings (2022)

As highlighted throughout the analysis (previous figures), ensuring the accuracy of property registers and valuation rolls is crucial for municipal budgets. Inaccurate reconciliation of data from the Chief Registrar of Deeds and Chief Surveyor-General can lead to significant financial implications.

While existing legislation (promulgating Acts) outlines the legal framework for property valuation, it does not provide specific guidance on achieving accuracy. These Acts are intended to ensure the lawful compilation of property valuations, not to dictate specific working methods. The limitations of current legislation highlight the need for additional resources to support valuers. Developing clear guidelines for data reconciliation and accuracy measures could significantly improve the reliability of property registers and valuation rolls.

Views of interviewees as shown in Figure viii suggest that integrating multiple data sources, scrutinizing information for consistency, and considering a multidisciplinary approach could significantly enhance the accuracy of municipal property records and improve budget forecasting. Additionally, some legislative and contractual changes might be necessary to support these improvements, though flexibility should be maintained to accommodate the unique circumstances of each municipality.

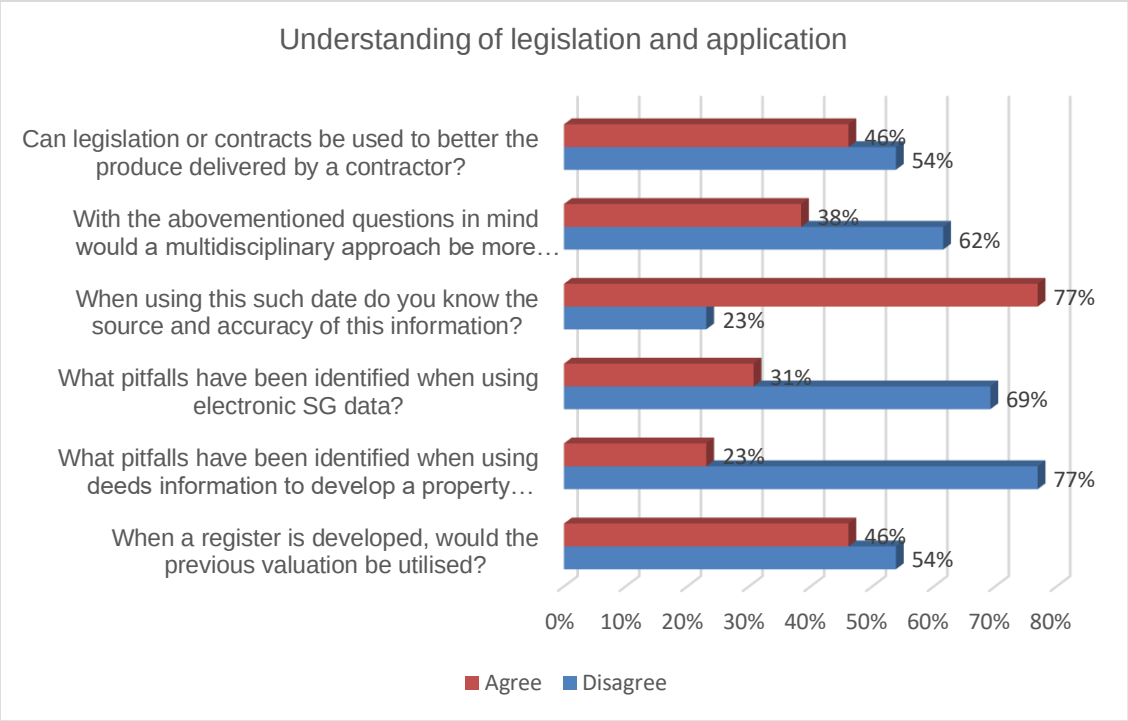

Figure 8. Legislation understanding and application questions

Source: Research findings (2022)

Figure ii underscores the significant financial impact of data mismatches between property registers, confirming observations made by the Surveyor-General (2011). These discrepancies lead to over- or underestimation of property values within the valuation roll, as highlighted by Franzsen's second finding (2003). This, in turn, results in incomplete data for levying rates and taxes.

The analysis revealed a potential annual loss of R2 billion due to unidentified properties. R180 billion worth of properties could not be verified in the deeds registry, and R200 billion lacked geospatial identification. These findings directly impact municipal budgets and corroborate the concerns raised by the Auditor-General between 2005 and 2007 (Hlongwane & Nzimakwe, 2018).

A clear correlation exists between Figures ii and iii. While the data discrepancies are evident in Figure ii, the interview responses in Figure iii reveal a gap between awareness and action. While the professionals acknowledge the discrepancies, they primarily rely on relevant statutes and delegate responsibility for maintaining updated registers to local municipalities.

However, their knowledge of existing data inconsistencies suggests a lack of solutions to address these concerns. This aligns with the third finding of Franzsen (2003), who highlights the potential limitation of skilled personnel within municipalities to analyze data and maintain accurate registers.

A critical finding is the professionals' understanding of the valuation roll's importance. However, their limited reference to legislation beyond the Municipal Property Rates Act suggests a need for enhanced professional development. Encouraging familiarity with a wider range of relevant Acts would promote greater compliance and a more comprehensive approach to data management.

The findings from Figure ii underscore the inherent limitations of achieving zero error in property data due to ongoing property transactions. The Deeds Registries Act, 1937 and the Land Survey Act, 1997 (Act 8 of 1997) both mandate the maintenance of registers containing historical and current properties. However, the Land Survey Act also allows for the inclusion of proposed properties, which can be a source of discrepancies.

This misalignment between Acts partially explains the data mismatches observed in Figure iv. These findings support Franzsen and McCluskey's (2017) assertion that accurate land registration and spatial data are fundamental for developing a reliable valuation roll. As Figures 2 and 4 demonstrate, inadequate maintenance of property registers directly impacts the accuracy of property taxes levied (Franzsen & McCluskey, 2017).

Relying solely on one register for valuation purposes poses a risk of including historical or even proposed properties. This highlights the importance of maintaining two distinct property registers: Deeds and Land Survey. Furthermore, effective reconciliation between these registers is crucial for accurate valuation roll development.

The current situation suggests potential shortcomings in administrative practices and communication among stakeholders. This aligns with

Fjeldstad et al. (2017) who point out that inadequate administration and political resistance can hinder effective property taxation.

The property register forms the foundation for the valuation roll, which ultimately determines the municipal budget. The South African Constitution (1996) emphasizes fairness and equitable treatment. If property taxes are not calculated based on accurate data, municipalities could be operating unconstitutionally.

The findings from Figure 4 suggest that professionals may lack in-depth knowledge regarding the roles and responsibilities of the two government institutions managing property registration and maintaining property registers. This aligns with Franzsen's (2003) observation that legislation is sometimes ineffectively applied, not only by the government but also by private contractors due to a knowledge gap.

While the interviewed professionals possess some knowledge of the Chief Surveyor-General and Chief Registrar of Deeds, the findings reveal significant gaps in understanding. Many professionals lack in-depth knowledge of the governing legislation and how these entities operate. Most continue to rely solely on the Chief Registrar of Deeds as the definitive source of property information. This aligns with Franzsen's (2003) observation regarding a lack of proper skill and knowledge for effective legislative implementation.

The substantial discrepancies between datasets in Figure vi further highlight the issue. Professionals advocating for a multidisciplinary approach recognize the incompleteness of the data and the need for data editing before utilization. They acknowledge that relying solely on individual Acts provides an incomplete picture of property registration.

This is because the Chief Surveyor-General cannot register property without the involvement of the Chief Registrar of Deeds. This reinforces the importance of a multidisciplinary approach, as emphasized by Franzsen and McCluskey (2017) who highlight the value of Geographic Information Systems (GIS) in achieving effective property taxation.

Research by Mohamed et al. (2020) suggests that incorporating a GIS into property rate and tax assessments could lead to a 77% increase in revenue. These findings underscore the importance of collaboration between valuers with expertise in Chief Surveyor-General data and GIS teams. This combined knowledge would facilitate the development of a comprehensive property register encompassing historical, current, and proposed properties.

A truly comprehensive property register, adhering to its definition, must include all properties within the municipal boundaries. The findings from Figures 4 and 6, along with interview responses, help explain the data discrepancies observed in Figures 2 and 4, which ultimately contribute to valuation roll inaccuracies and budget shortfalls.

The interview responses regarding a multidisciplinary approach revealed a split in opinion. While the majority viewed it with skepticism, believing it wouldn't eliminate errors and that Chief Registrar of Deeds data remained the most reliable source, a minority recognized its potential benefits. The discussions highlighted the need for potential adjustments to the Municipal Property Rates Act, 2004, and service level agreements (SLAs) to ensure data completeness and accuracy.

Conclusion and recommendation for further research

This paper provides a comprehensive analysis of the discrepancies between data held by the Chief Registrar of Deeds and the Chief Surveyor-General, and their subsequent impact on municipal property records and budgets. The study reveals that the data inconsistencies highlighted by the Surveyor-General (2011) persist thirteen years later, significantly affecting municipal budgets and valuation rolls. This is an indication that, even though the challenge of data mismatch is not new, it might not have received the attention it deserves given the key role played by property data in municipal revenue generation.

It is therefore recommended that collaborative efforts between valuers, GIS teams, and relevant government departments be urgently initiated to enhance property register accuracy and optimise municipal revenue through property rates. Unskilling or reskilling of professionals involved in municipal data in use of GIS and legislative amendments prioritising data accuracy and standardised procedures should also be considered. By implementing these recommendations, municipalities can establish more reliable property records and improve the efficiency and equity of their property taxation systems.

Data Currency: The primary limitation stemmed from the scarcity of recent data. Valuation rolls are cyclical, typically conducted every five years. Consequently, the data used in this study ranged from 2014 to 2020, potentially introducing an element of obsolescence in the context of a continuously evolving property market.

Limited Sample Size: Due to cooperation limitations with local municipalities and private valuers, the study could only analyze data from 10% of the targeted population. This restricted sample size necessitates caution when generalizing the findings to the broader population of municipalities.

Despite these limitations, the study offers valuable insights into the challenges associated with property data discrepancies.

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Рецензент: д-р. екон. наук, доцент, професор кафедри підприємництва та бізнес-адміністрування Рудаченко О.О., Харківський національний університет міського господарства ім. О.М. Бекетова

Автор: ПІТЕР Х. ВЕНТЕР
Магістрант (Нерухомість)
Кафедра економіки будівництва, Університет Преторії, Преторія, Південна Африка
E-mail: pieter@realmatrix.co.za
ORCID: https://orcid.org/0009-0006-2200-4602

Автор: ПАРТСОН ПАРАДА
Старший викладач
Школа економіки та менеджменту будівництва, Університет Вітватерсранду, Йоганнесбург, Південна Африка
E-mail: paratsonparadza@wits.ac.za

ORCID: https://orcid.org/0000-0001-5289-3179

Автор: БЕНІТА Г. ЗУЛЬХ
Завідувачка кафедри та доцентка
Кафедра кошторисної оцінки та управління будівництвом, Університет Фрі-Стейт, Блумфонтейн, Південна Африка
E-mail: ZulchBG@ufs.ac.za

ORCID: https://orcid.org/0000-0001-8777-2510

Автор: АНДРІС МАСЕНГЕ
Науковий консультант
Департамент статистики, Університет Преторії, Преторія, Південна Африка
E-mail: andries.masenge@up.ac.za
ORCID: https://orcid.org/0000-0001-8372-2356

ПОСЛІДОВНІСТЬ ДАНИХ ТА ЇХ ВПЛИВ НА ПРИЙНЯТТЯ РІШЕНЬ НА МУНІЦИПАЛЬНОМУ РІВНІ В ПІВДЕННІЙ АФРИЦІ: АНАЛІЗ ОПИТУВАНЬ, РЕЄСТР ПРАВ ВЛАСНОСТІ, ПОДАТКОВИЙ РЕЄСТР ТА МУНІЦИПАЛЬНИЙ БЮДЖЕТ

Пітер Х. Вентер[1], Партсон Парада[2], Беніта Г. Зульх[3], Андріс Масенге[4]
[1]Департамент економіки будівництва,Університет Преторії, Преторія, Південна Африка
[2]Школа економіки та менеджменту будівництва, Університет Вітватерсранду Йоганнесбург, Південна Африка
[3]Департамент вимірювання кількості та управління будівництвом, Університет Фрі-Стейт, Південна Африка
[4]Департамент статистики**,** Університет Преторії,Південна Африка

Ця робота представляє деякі емпіричні результати щодо наслідків невідповідностей у просторових даних та податкових реєстрах на муніципальні бюджети, використовуючи приклад з Південної Африки. Основна увага приділяється інформуванню політики та практики щодо фінансових наслідків, а також внеску до існуючих академічних дискусій щодо оподаткування нерухомості. Дані були зібрані за допомогою змішаного методу, що поєднує опитування та архівні дослідження. Архівні дані включали податкові реєстри та інформацію про право власності, отриману від муніципалітетів, а також записи генерального землеміра, отримані від офісів головного землеміра. Крім того, було проведено опитування ключових інформаторів, які мають предметну експертизу. Ця робота виявляє значні розбіжності між реєстром прав власності, даними землеміра та податковими реєстрами. Ці невідповідності можуть мати суттєвий фінансовий вплив на розробку муніципального бюджету, що може призвести до недооцінки/переоцінки доходів від податку на нерухомість. Автори рекомендують використовувати географічну інформаційну систему (ГІС) для порівняння інформації про право власності з даними землеміра. Візуальний аналіз цих наборів даних у ГІС дозволить виявити та виправити розбіжності, що призведе до більш точного обґрунтування визначення муніципального бюджету.

Ключові слова: *бюджет, місцеві муніципалітети, міждисциплінарний підхід, податок на нерухомість, просторові дані, податковий реєстр.*