A holistic categorisation of address purposes as an analytical entry point to finding solutions for addressing governance in South Africa

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Abstract

An address is structured information allowing one to locate a building or other feature in the physical world; yet, in large parts of the world, including South Africa, many people must get by without such a utility. Although addresses are being rolled out, there is still no clarity concerning stakeholder responsibilities in the governance of addresses and address data in South Africa. In this paper, we present a categorisation of address purposes based on a holistic analysis of the many purposes of an address found in literature. Supported by this categorisation, stakeholders who could or should be involved in addressing governance in South Africa are identified. This first hierarchical categorisation of address purposes can be extended with additional levels of categorisation of new and diverse uses and purposes of addresses as they emerge. The categorisation confirms the significant value of addresses to society, governance, and the economy, sanctioning the need for investments for implementing an effective addressing infrastructure. The study serves as the analytical entry point to finding solutions for more coherent policy formulation and governance.

Key words: *street address, postal address, address purpose, governance, South Africa*

1. Introduction

An address is structured information that allows one to locate a feature (e.g., a building or a house). According to the Universal Postal Union White Paper on Addressing the World (UPU, 2012), in most countries it is almost impossible to be part of society without a legal identity, and in most, an address is needed to establish such an identity. Addresses are also a key element in the delivery of policies in support of the Millennium Development Goals, which were replaced by the Sustainable Development Goals (SDG) in 2015 (UN General Assembly, 2015).

Yet, there are many people all over the world who struggle to exercise their rights as citizens and are unable to get deliveries or receive any aid, because they cannot provide an address for their place of residence. About 75% of the countries in the world have an inconsistent, a complicated, or no addressing system at all, and about 50% of the world's population is invisible because they don't have an address (Jones, 2015). In the case of Africa, the ambiguity that characterises residential and other addresses is a well-known problem (Njoh, 2010). Colonial influences in Africa resulted in the allocation of addresses to city centres and urban suburbs, with few, if any, addresses being provided in rural areas (UPU, 2012). Owing to the rapid and unplanned post-colonial growth of African cities,

a good many streets and land parcels are nameless and numberless, without any addresses, even in urban areas (Njoh, 2010).

South Africa is no exception to addressing challenges. Large parts of the country, and thus many communities, lack proper addresses. Street addresses are mainly available in the formal residential and commercial areas in urban suburbs. The rapid urbanisation of large cities, industrial towns and other built-up areas has resulted in the growth of informal communities on the outskirts of urban areas. These are not planned and lack proper infrastructure, including street names and addresses (Madubedube et al., 2018), and are some of the most impoverished areas in the country. Traditional communities or villages located in rural areas and other rural farming communities, as well as former township areas that were established during the country's non-democratic past, and mostly situated away from urban areas, lack addresses (IDATA, 2019; Du Toit, 2017; Fobosi, 2013). Although addresses are being rolled out in these areas, there are significant backlogs and there is still no clarity regarding stakeholder responsibilities in the governance of addresses and address data (Coetzee et al., 2020).

In this paper, we present a holistic and coherent analysis of the many purposes of an address as an analytical entry point to explore governance solutions. The systematic exposition of the purposes reveals stakeholders that could or should be involved in the governance of addresses. We found only a few cases of categorising address purposes in the literature. For example, Coetzee et al. (2010) distinguish between physical services, such as utilities, goods delivery and emergency response, and abstract services, such as opening a financial account, tax collection and land tenure. Gakh (2020) groups the purposes of street addressing into determination of the current location *vs* determination of a delivery point, and states that street addressing can be viewed from two perspectives: use by humans or use by technical solutions. International addressing standards distinguish between two broad groupings of purposes, namely, to identify and to locate (ISO 19160-1:2015, INSPIRE, 2014). While each of these categorisations considers a subset of purposes, none of them provides a comprehensive categorisation of address purposes as we are proposing in this paper.

In the next section, we explain the approach followed to search and review literature, followed by the categorisation of address purposes. We then discuss each category of address purpose with reference to potential stakeholders and their interest in the governance of addresses and address data in South Africa, before concluding with a summary of the findings and recommendations for further research.

2. Study approach

To achieve the stated intent of the study, that is, to synthesise different understandings about the purposes of addresses, we conducted a systematic literature review. Following this approach, entailed the collation of evidence that fitted pre-specified eligibility criteria that answered to a specified research objective (Green et al., 2008; Cumpston et al., 2024). We applied the four phases of a

systematic review, as proposed by Moher et al. (2009) and later updated by Page et al. (2021), namely, identification, screening, eligibility, and inclusion of publications in the study.

We searched in electronic publication databases, namely, Elsevier's Scopus and Google Scholar, to systematically identify relevant scientific and other literature based on the study objective. We selected 2000 as the starting year because the United Nations embarked on their initiative towards sustainable development, first through the specification of the MDGs (UN General Assembly, 2000), to be followed by the SDGs in 2015 (UN General Assembly, 2015). Scopus is the largest abstract and citation database for peer-reviewed literature (Schotten et al., 2017); it claims to cover over 76 million records (Martin-Martin et al., 2020). In addition, we made use of Google Scholar, as suggested by Martin-Martin et al. (2020), based on their comparison of databases, since it has a significant amount of additional subject matter not found in other sources.

Our initial searches, based on the keywords related to the study objective (see Table 1, 1st row), identified 5480 publications. The initial screening of these publications was based on the title, abstract and keywords. It became evident that most of these publications were not within the scope of the study since the word 'address' was used as a verb. Nine publications were identified for possible inclusion (i.e., these were eligible for inclusion) and after reading these, only two were included in the study. Given this poor outcome, we broadened the scope of our search to include various adjectives that describe the different types of addresses (see Table 1, 2nd row), terms that addresses are sometimes known as (see Table 1, 3rd row), and lastly, other words commonly associated with addresses (see Table 1, 4th row). Lastly, 9251 publications in total were identified from the database searches, and after removing the out-of-scope publications, 84 publications were eligible for inclusion. Finally, after removing duplicates, reading in detail, and importantly, focusing on the study objective, that is, the purposes of addresses, 27 publications from the database searches were included in the study.

Table 1. Summary of publications included in the study

	Keywords used in searches	Publications identified by searches	Publications identified for possible inclusion *(eligibility)*	Publications included
1	Main study objective: address purposes; purposes of addresses; address usage; uses of addresses	5480	9	2
2	Adjectives: billing; city; home; physical; postal; residence; residential; road; rural; street; thoroughfare; urban address	2109	42	19
3	Address also known as: location code, location description; location descriptor; location coordinate; address coordinate	241	26	2
4	Address associated with dataset; database	1421	7	4
	Number of publications from the database searches	9251	84	27
	Other publications	-	-	17
	Number of publications included in the study			44

Given the low count of publications from the database searches described above and our endeavour to consider an exhaustive set of address purposes that would also cover contemporary and technological developments in addressing, we found an additional 17 publications from peer-reviewed journal articles, conference proceedings, published reports, and from online magazines and media articles. These were mainly identified by scanning the reference sections of articles, that is, by backward snowballing. Figure 1 summarises the publications obtained according to the four phases of systematic reviews proposed by Moher et al. (2009).

In total, 44 publications were included in the study (see list in Annexure A in the supplementary material), which, amongst others, includes 26 peer-reviewed journal articles, five conference papers, three published reports, and three online magazines. In most cases, the purpose of an address was covered in a few sentences in the body of the article. Only a few papers had a separate or dedicated section covering the purposes of addresses. Figure 2 shows the distribution of the publications from 2004 to 2022 (we searched for publications released since 2000, but the earliest one was for 2004). The largest number of publications released were in 2020 (10), 2018 (4), 2010 (4) and 2007 (4).
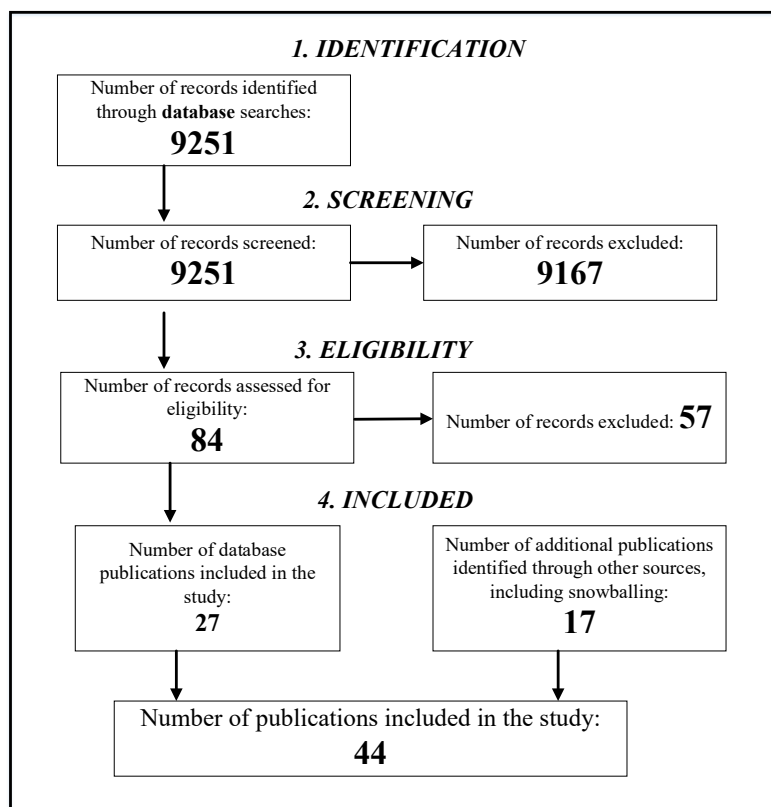

Figure 1. Publications obtained according to the four phases of systematic reviews proposed by Moher et al. (2009)
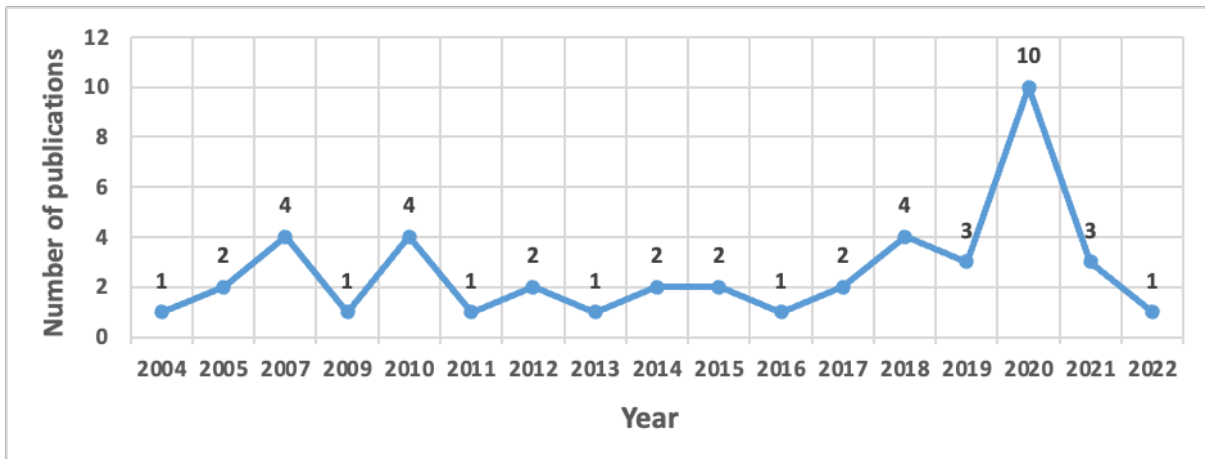
Figure 2. Distribution of publications included in the study over the years, 2004 to 2022 (n=44)

Table 2 shows the main topic covered in the publications over the years. The topic of a paper was identified after reading the paper in full. We observed that topics such as address standards and addresses providing a sense of identity dominated the earlier years for the period, 2004 − 2014, with the geocoding of addresses and the importance of geocoded addresses for urban management largely occurring across the entire period. The second half of the period, from 2015 to 2022, was dominated by location codes serving as addresses, national address datasets, analytics and address data governance, such as custodianship and stakeholders. Geocoded addresses or geospatial addresses proved to be a recurrent topic over the study period, reflecting an avid research interest in this topic. The need for a national address dataset stood out as a topic for 2020 − for verification, tracking and tracing during disaster management, and for conducting national population censuses.

Many address purposes were identified in the 44 publications that were thoroughly examined for the study. To present the purposes in an understandable and endurable manner, the address purposes were, in the first place, narrowly categorised so that the variation amongst the address purposes could be retained (i.e. sub-categories in Figure 3). Thereafter, these were grouped into broader categories, overall describing and representing the sub-categories within them. We made sure that the categorisation of the purposes of addresses was based on their similarities within a category, whilst at the same time keeping each category as distinct, or dissimilar, as possible from the other. The categorisation is presented and explained in the next section.

Table 2. Topics in publications included in the study from 2004 to 2022 (n=44)

Year	geocoding	standards	urban management	identity	location codes	national address dataset	analytics	governance
2004	1	-	-	-	-	-	-	-
2005	-	1	1	-	-	-	-	-
2007	2	2	-	-	-	-	-	-
2009	-	1	-	-	-	-	-	-
2010	3	1	-	-	-	-	-	-
2011	-	1	-	-	-	-	-	-
2012	-	-	1	1	-	-	-	-
2013	-	-	1	-	-	-	-	-
2014	1	-	-	1	-	-	-	-
2015	-	-	-	-	2	-	-	-
2016	-	-	-	-	-	1	-	-
2017	-	-	-	-	1	1	-	-
2018	-	-	-	-	2	-	2	-
2019	1	-	1	-	-	-	-	1
2020	1	-	2	-	2	3	1	1
2021	2	-	-	-	-	-	1	-
2022	-	-	-	-	-	-	1	-
Total	11	6	6	2	7	5	5	2

3. Categorisation of address purposes

Our research showed that there are many purposes for an address, and these are well referenced in the literature. As shown in Figure 3, we compartmentalised the purposes into four broad categories, with ten sub-categories. Tables 3 to 6 provide examples from the literature of how addresses are used for different purposes, followed by an explanation as to why these purposes were grouped into the same category or sub-category.
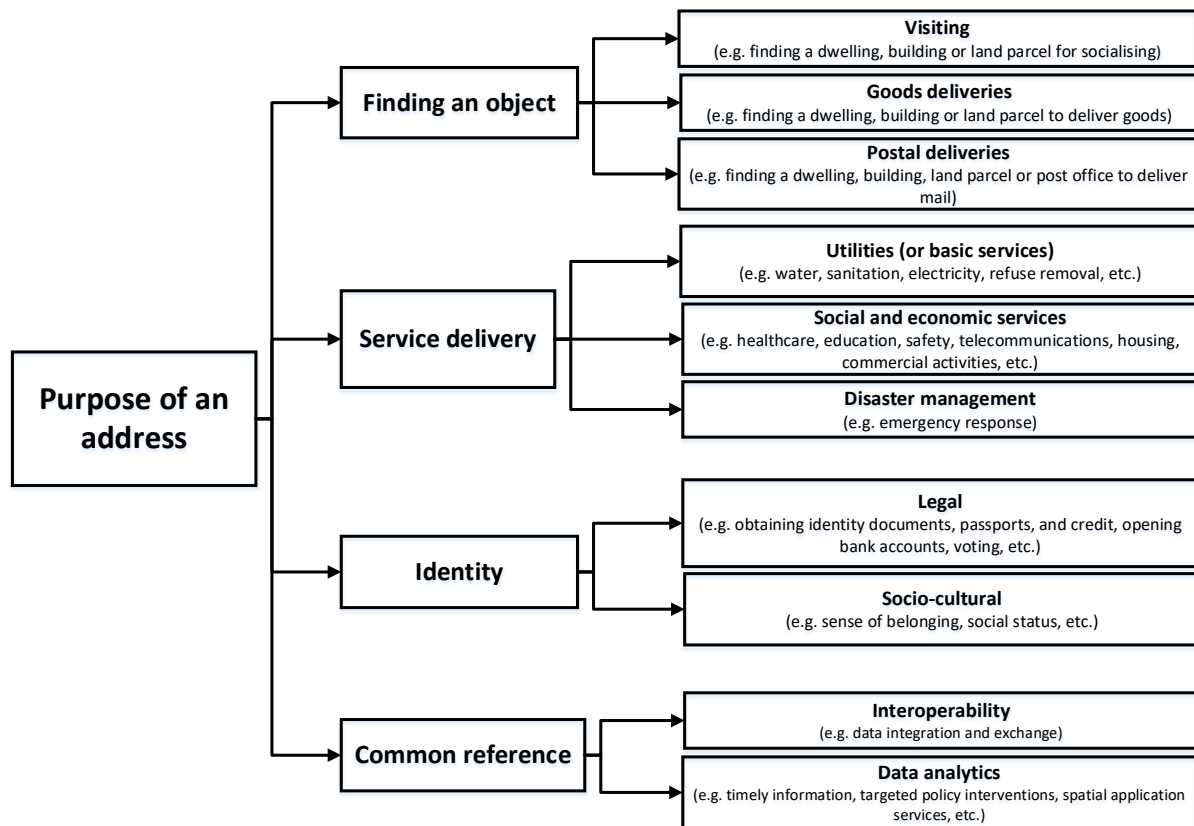
Figure 3. Categories and sub-categories for the purposes of an address

3.1. Purpose: Finding an object

The category, finding an object, has three sub-categories, namely, visiting, goods deliveries, and postal deliveries. The sub-category, visiting, is about locating people (such as friends, family, etc.) for the main purpose of socialising. It also includes locating leisure and recreational places of interest or attractive to tourists for a visit. The sub-category, goods deliveries, is about transporting sold merchandise from one location to another, where it can be used by a household or business, etc. The sub-category, postal deliveries, entails the movement of mail items and other such forms of communication, which is the main responsibility of the postal operators, from and to post offices and then to the final recipient, which may be persons at their home or place of work, or businesses (UPU, 2012). The sub-categories, goods deliveries and postal deliveries, overlap with the service delivery category; however, we placed them here, since these are well-established and perhaps the most popular or original purposes for an address.

This category and its sub-categories represent the well-known purposes of an address, that is, to locate individuals or organisations in society so that they can physically connect with one another, receive and use their purchased goods, which is an essential component of the business cycle, and to receive mail and other similar correspondence and communication.

3.2.   Purpose: Service delivery

The category, service delivery, refers to the actual delivery of services, by both the public and the private sectors, to citizens, residents and customers, which may result in revenue generation from service charges, investments and the sale of goods and services. In determining which services to deliver and how to deliver them, the aspect as to where the relevant service/product must be delivered is important; this is achieved by having access to information regarding the specific address or a description of the location of a particular recipient. Service delivery has sub-categories, namely, utilities (or basic-services), social and economic services and disaster-management.

The sub-category, utilities, covers the provision of basic services such as safe drinking water, electricity, sanitation, etc. to households. Identifying where to provide basic services is important in addressing equity in service provision and in identifying places or households experiencing the greatest need, as well as continuity in providing such services. Addresses for good governance in the form of service provider accountability and active citizen participation are included under "utilities" because service delivery is an important human right. eGovernance, which provides greater access to information and enhances communication through the influence of technology, is part of this.

The sub-category, social and economic services, includes the location and accessibility of social services, such as education and health facilities and other social services, and economic services, such as the location of businesses and other commercial activities.

The sub-category, disaster management, includes the important aspects of responding to save lives during unprecedented times, and having an address or locational description ensures that in a disaster, emergency services can reach a particular address as soon as possible.

3.3.   Purpose: Identity

The category, identity, has two sub-categories, namely, legal and socio-cultural. Legal identity includes recognition as part of a nation, called "nationality", which records a person's country of birth, and recognition as a citizen, called "citizenship", which gives a person the right to live and work in a country, and other rights, such as that to vote, to obtain a passport or employment. Legislation (e.g., the Identification Act No. 68 of 1997 of South Africa) provides for the compilation and maintenance of a national population register, also known as "vital records", where particulars, such as place of birth, place of residence and postal address, are compulsory. From such vital information recorded in the national population register, a birth certificate and an identity document are issued and used as a form of legal identity.

Having an address is important in the identification and verification obligations for various statutory legislations. In this category, we included municipal revenue collection, where, owing to the legalities (e.g., of having an ID, of providing proof of property ownership, etc.) that are needed in registering for a municipal account and in land and property administration, both of which require an address.

An address is also considered to be part of a person's identity (UPU, 2012) and provides a sense of belonging and of recognition in society. We included these human aspects of an address, such as the ease to remember an address and to communicate it to others, and the cultural identification and appreciation of addresses, mainly in respect of the names of places and streets in an address, and the sense of equity and inclusion provided by an address. Collectively, these provide for a socio-cultural identity.

3.4.   Purpose: Common reference

The category, common reference, has two sub-categories, namely, interoperability and data analytics. An address is a common reference because it is used in various sources of information, such as the population register, voter's register, business register, and recently, in health information, to combat the spread of the COVID-19 virus.

The sub-category, interoperability, recognises the needs and benefits of integrating and sharing different sources of information. Standardised addresses facilitate the interoperability of diverse and disparate information in modern data and information ecosystems. Importantly, such addresses enable disaggregated spatial policy analysis, planning and decision-making. The sub-category, data analytics, includes the collection of timely statistical data with reference to an address, based on which geo-statistical analysis can be performed to inform policy and decision making. The two sub-categories are closely associated, since interoperability enables and is an important precursor for data analytics.

4. Discussion: potential governance stakeholders in South Africa drawing on address purposes

4.1.   Purpose: Finding an object

Addresses are important if individuals are to be connected to the rest of society, and in turn, if society is to be connected to individuals (Vivas and Lubenow, 2009). The reciprocal relationship, that is, of individuals connected to society and society connected to individuals, plays an important role in achieving social justice and inclusion, especially in a country coming from a divided past. Since addresses are used for the purpose of visiting friends or family, and for socialising generally, society at large is the first potential stakeholder in addressing governance. Society's interest is in ensuring that addresses allow for socialising and in allowing citizens to play an advocacy role in this regard.

For goods delivery, the logistics industry should be involved in the governance of addresses. This industry needs to ensure that addresses allow for the efficient and effective delivery of goods to organisations and individuals, and ideally, address data should be available to facilitate this with digital tools and systems.

Finally, the South African Post Office, South Africa's postal operator, has a large stake in addresses for postal deliveries. However, it faces many challenges. Before 1994, South African Post Office addresses were mainly the norm in urban areas, and more than half of these were post box

addresses, not street addresses. In rural areas, people typically received mail via a rented post box. In 2003, the South African Post Office was mandated by government to provide addresses for all provinces in the country, that is, for both urban and rural areas (Rossouw and Kgope, 2007). However, recent reports indicate that the South African Post Office may be liquidated (Nkanjeni, 2023).

4.2.   Purpose: Service delivery

With the advent of the new Government of National Unity, post-1994, the need for an address for all citizens in the country became more prevalent in respect of all types of service delivery. Service delivery, such as the provision of adequate housing, safe drinking water, healthcare services, etc., is stipulated in the Bill of Rights, as set out in Chapter 2 of the South African Constitution (South Africa 1996), as a citizen's right. However, dissatisfaction with service delivery has led to frequent service delivery protests (Breakfast et al., 2019). An address is needed so that the necessary services can be delivered to citizens (Coetzee and Cooper, 2007). The importance of service delivery in South Africa is reflected in the definition of an address in the South African National Standard, SANS 1883-1:2009, namely as "an unambiguous specification of a point of service delivery". Therefore, all public sector organisations providing services are potential stakeholders in addressing governance. Most importantly, among these, are the municipalities which receive electricity and water from the relevant state-owned entities and pass these services on to their customers. Services such as waste removal are typically contracted out. While most traditional councils do not provide services in their areas of jurisdiction, they do have an interest in service provision. They must support municipalities in the identification of community needs (e.g., for integrated development plans) and may perform functions, as agreed to in a service level agreement with the municipality in question (du Plessis, 2023).

There are many role players in the case of social and economic services, including, for example, the national departments for education, healthcare and social security. Instead of involving a plethora of these in addressing governance, a representative organisation could be a better solution. The Presidency's mandate relating to "alignment and coordination in the implementation of the strategic agenda of government" renders it a suitable candidate for representing government (Presidency of South Africa, 2024).

For disaster management and emergency response, there are stakeholders from the public sector: the National Disaster Management Centre in the Department of Cooperative Governance is responsible for disaster management and fire-fighting services and the private sector (e.g., many emergency responders and ambulance services which are privatized or provided by volunteers). For the latter, there does not seem to be a representative body.

4.3.   Purpose: Identity

Increasingly, South African legislation requires what is commonly referred to as 'proof of address'. For example, regulations in terms of the Financial Intelligence Centre Act (FICA) No 38 of 2001 state that proof of a residential address is required to establish and verify a person's identity

(FICA Regulations, 2002) before using any financial services. The Regulation of Interception of Communications and Provision of Communication-related Information Act (RICA) of 2002 sets similar requirements for mobile phone contracts. These legal requirements imply that not having an address effectively denies residents their civic identity and citizenship rights (Molelekoa et al., 2017). Furthermore, the importance of providing all voters with addresses has been upheld several times by the Constitutional Court of South Africa (Coetzee et al., 2020). The denial of an address can be constituted as a social injustice (Molelekoa et al., 2017). For many in South Africa, having an address means social status, the provision of a sense of identity and of being recognized as a proper citizen (Coetzee and Cooper, 2007). Therefore, the dignity of being identifiable through an address is also important for the country's democracy.

The stakeholders with an interest in legal identity are the citizens, on the one hand, who need proof of address, and on the other, those who assign the respective addresses so that proof of residence can be provided. The South African Post Office and the local municipalities have been mandated to assign addresses (National Integrated ICT Policy White Paper, 2016; Postal Services Amendment Bill, 2018; Coetzee et al., 2020). However, street addressing is complex and expensive (Gakh, 2020). Even for a small area, assigning street names and numbers can take years and cost a significant amount of money (Rinckes and Bunge, 2018). Furthermore, the South African Post Office may be liquidated (Nkanjeni, 2023) and many municipalities have been in financial distress for some years now, to the extent that some are facing a 'collapse' (Glasser and Wright, 2020). In their absence, 'alternative addresses', such as descriptive information (e.g., "the house with the red door") and coordinate-based alphanumeric codes (e.g., "7656+WQ Pretoria" − the Google Plus Code for the Union Buildings in Pretoria) have emerged (Douglas, 2015, Gah et al., 2018). The City of Cape Town in South Africa has embraced the latter for 146 000 households in informal settlements. However, there are some concerns about how these codes will be used (Mwareya, 2022). Also, such a code identifies a grid cell on the Earth's surface, and per definition, it is, therefore, not an address that "unambiguously determines an object for the purpose of identification and location" (ISO 19160:2015). It has limited suitability as proof of address because more than one building could overlap a particular grid cell, and unless a local authority should become involved, as in the case of Cape Town, there are significant risks in allowing an external big-tech company to be a governance stakeholder in something as important as addressing in a country.

To ensure that addresses are a means to provide socio-cultural identity, the names of places and streets must be assigned in a culturally sensitive way. The South African Geographical Names Council, established in terms of the South African Geographical Names Council Act No 118 of 1998, is responsible for standardising geographical names. Amongst others, it relies on the recommendations of experts in place names, the official languages and cultural history, and representatives from the Pan South African Language Board. The Council formulates policies, principles and procedures regarding geographical names and is, therefore, a relevant stakeholder in addressing governance.

4.4.   Purpose: Common reference

Address data are required to benefit from the fact that an address is used as the common reference. To standardise addresses and facilitate the interoperability of address data, the South African Bureau of Standards (SABS) has published three South African National Standards. However, implementation is slow (Coetzee et al., 2020). To this date, for large national projects, such as an election or a population census, address data must be acquired from various sources and be standardised to meet each organisation's particular purpose (Cooper et al., 2020). Once a project budget ends, there are no funds to maintain the data. The process of acquiring, standardising and updating the relevant data can only commence again in the next round of developing such national projects.

The Committee for Spatial Information (CSI), established in terms of the South African Spatial Data Infrastructure Act No 54 of 2003, has identified addresses as one of the fundamental geospatial data themes (Siebritz et al., 2021) and is mandated to prescribe standards and measures on the sharing and integration of these datasets. The CSI and the SABS therefore have an interest in facilitating and achieving the interoperability of address data.

Once address data have been standardised and commonly used as a reference for other information, the power of data analytics can be realized. South African stakeholders with an interest in such data analytics are Statistics South Africa (Stats SA) and several private sector companies which sell value-added information (e.g. about trends in the real estate market or customer preferences).

4.5.   Summary

Table 3. Potential stakeholders and their interest in addresses and address data in South Africa

Purpose category	Sub-category	Potential stakeholder	Interest
Finding an object	Visiting	Society	Addresses facilitate socialising
	Goods delivery	Logistics industry	Addresses and address data for the efficient and effective delivery of goods
	Postal delivery	South African Post Office (postal operator)	Street addresses for postal delivery in both urban and rural areas
Service delivery	Utilities	Municipalities	Service delivery to customers residing at particular addresses
		Traditional Councils	Communities' addressing needs related to service delivery
	Socio-economic services	Presidency	Addresses facilitate socio-economic services to protect citizens' rights in the Constitutional Bill of Rights
	Disaster management	National Disaster Management Centre	Addresses facilitate disaster management and emergency responses
		Private and voluntary emergency responders	Addresses are needed to locate the site of an emergency incident
Identity	Legal	Municipalities	Assign addresses
		South African Post Office	Assign addresses
		Citizens	Proof of address needed for civic identity

	Socio-cultural	South African Geographical Names Council	Standardises the geographical name that constitutes an address
Common reference	Interoperability	Committee for Spatial Information	Prescribes standards and measures for the integration of address data
		South African Bureau of Standards	Facilitates the development of addressing standards
	Data analytics	Statistics South Africa	Performs data analytics to inform policy and decision-making
		Providers of value-added data analytics	Provide data products based on data analytics

5. Conclusion

In this paper, we presented our findings and interpretations of the past, present and emerging purposes of addresses, grouped hierarchically into four broad categories and ten sub-categories. The categorisation was based on a systematic review of international literature. The four broad categories cover the key purposes of an address: to locate (finding an object category), to deliver services (the service delivery category), to provide identity (the identity category) and to be a reference (the common reference category). The latter is specifically important for the future, as it can enable the data revolution and analytical interventions to advance policy decision-making. To our knowledge, this is the first hierarchical categorisation of address purposes; it provides a first building block towards growing the tree of purposes and sub-purposes, and it can be extended with additional levels of categorisation, thus providing for new and diverse uses and purposes for addresses. Based on the systematic exposition of the address purposes, we proposed potential stakeholders for the governance of addresses and address data in South Africa and pointed out some of their addressing challenges.

Through the categorisation of addresses, we confirmed the significant value of addresses to society, governance, and the economy, which sanctions the need for investments in addressing. Addresses are multifaceted, and currently, they have multiple purposes. An address enables global connections (e.g., to online shopping) and at the same time facilitates local presence (e.g., so that friends can visit). As opposed to other categorisations, our categorisation provides a holistic perspective that covers the social, economic, legal, cultural, and technological aspects as to the purposes of addresses. It is worth noting that a partial categorisation can, however, put the understanding and relevance of addresses at risk, which could in turn impact investments and innovations in addressing. Therefore, in this study, we systematically obtained a holistic perspective on the purposes of an address, which we regard as the entry point to finding solutions to the challenges in addressing, and to inform addressing policy. For example, to advance addressing, those addresses fit for a specific purpose can be prioritised without losing focus of the broader spectrum of purposes. At the same time, the broad spectrum of purposes provides a strong argument for key stakeholders, like cities and local municipalities, as well as the postal service, together with other stakeholders, to improve the quality and coverage of address data and the standardisation of addresses, which will improve the usability of address information.

South Africa faces many challenges related to the respective address purpose categories. The synthesised perspective of the purposes of addresses presented in this paper provides an important foundation for determining a transformative pathway that can guide governments and other stakeholders to appropriately direct their investments and innovations in addressing. However, more work is needed to better understand why we are experiencing these challenges and how they can be solved, e.g. Which address purposes are important for the relevant organisations? How are addressing related legislative mandates implemented at the different levels of Government? We plan to interview stakeholders in South Africa to gain further insights into the country's addressing challenges.

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