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# INFORMATION MANAGEMENT IN THE REAL ESTATE INDUSTRY IN RWANDA: EXPECTATIONS IN THE CONTEXT OF KNOWLEDGE-BASED ECONOMY

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## **Abstract**

*The real estate industry is an important segment of a nation's economy. It comprises the real estate market, its products, services and participants. The participants in the real estate market require credible and reliable information for decision-making purposes. The Rwandan real estate industry is a developing one and as such requires efficient information sourcing and management for it to mature. This paper examines information management in the real estate industry in Rwanda. Data for the study were obtained from field survey of key stakeholders in the country's real estate industry. These stakeholders include real estate professionals engaged in real estate transactions. The study found that information management in the industry is not adequately supported with ICT tools and this has made information sharing and transfer within the industry difficult. The paper advocates for the establishment of a sustainable real estate information management system (REIMS) for the industry and concludes that such an electronic data base will facilitate information sourcing, sharing and utilisation, thereby enhancing the efficiency of the industry.*

**Keywords:** *Information Management, Real Estate Industry, Knowledge-Based Economy, Rwanda*

## **INTRODUCTION**

Every nation requires information for it to survive, grow and develop. At the micro level, industries, organisations and enterprises require information to carry out their operations and reach informed decisions on day-to-day basis. In the last few decades, the forces of globalisation have changed the way information is regarded in organisations. Information is now viewed as a strategic asset, just like other assets such as capital, labour, land and entrepreneur. This is because a single information can make or mar a nation, organisation or industry. According to Rao (1999), information is a resource that if properly managed and used can stimulate innovation, speed product development, raise levels of productivity and ensure consistent standards of quality and through all of this raise the level of competitiveness. Information supports day-to-day business operations, decision-making and almost any business function in a firm (Benson & Davies, 2008).



Information is the product of the contextual understanding and interpretation of data (Sheriff *et al.*, 2012). Thus, an industry's competitive edge depends to a large extent on the quality of information it uses in its operations and decision-making. Information plays a very important role in all sectors of an economy. It empowers organisations to create sustainable knowledge. Such knowledge enables them to be competitive and active in a knowledge-based economy. It is on this basis that most organisations today invest considerably in information technology and other tools of information management to add more economic value to their businesses.

Today's society is an information society and as such any individual, agency or organisation that is not properly informed in its area of business is deformed and doomed to perish. Advances in information and communication technology have led to significant improvement in telematics, resulting in access to any information by anyone at anytime and at anyplace. The real estate industry is an important sector of a nation's economy. Real properties are bought, sold or leased through transactions in the real estate market. These transactions depend heavily on information to be carried out. Effective management of information in the real estate industry facilitates the availability of information in the short-run and enhances transparency and efficiency of the real estate market in the long-run. It is on this note that this paper examines information management in the real estate industry with specific focus on the situation in Rwanda and expectations in the context of knowledge-based economy.

## **THEORETICAL FRAMEWORK**

Information is greatly required to create knowledge. On the other hand, knowledge is highly required to create wealth for the betterment and good welfare of the society at the local, regional, national and international levels. According to OECD (1996), knowledge is increasingly being codified and transmitted through computer and communications networks in the emerging "information society". In the last five decades or so, developments in information and communication technologies have made the global economy to rely heavily on knowledge production, transmission and utilisation, resulting in the emergence of knowledge economy (Kalim & Lodhi, 2002; Moahi, 2007). Davenport and Marchand (2000) explained that information is the essential medium through which knowledge, expertise, judgement, emotions and decisions held by individuals is expressed, shared and communicated with others. In today's

information age, information management is very essential for the survival of individuals, organisations and industries, including the real estate industry.

The process of information management is underpinned by motivation for information seeking, dissemination and utilisation. This is well illustrated by Afifi and Weiner (2004) in their theory of motivated information management. The basic premise of this theory is that individuals are motivated to seek for information in order to reduce uncertainty about themselves and their environments. This entails obtaining and managing information to create knowledge and utilising such knowledge in decision-making to minimise uncertainty. The framework of this theory can be applied to information management in the real estate industry because the real estate market is an information system which functions to facilitate information seeking, dissemination and utilisation by participants in the real estate industry.

In a knowledge-based economy, the real estate industry is anchored on economics of information. In this scenario, providers and consumers of real estate services in the industry are guided by the dynamics of demand and supply of information. The key activity characteristic associated with the provision of real estate services is the provision of expert knowledge (D'Arcy, 2005). Expert knowledge cannot be provided without information seeking and utilisation. This study is motivated by the need for an active and efficient real estate industry in Rwanda through effective management of information in the industry.

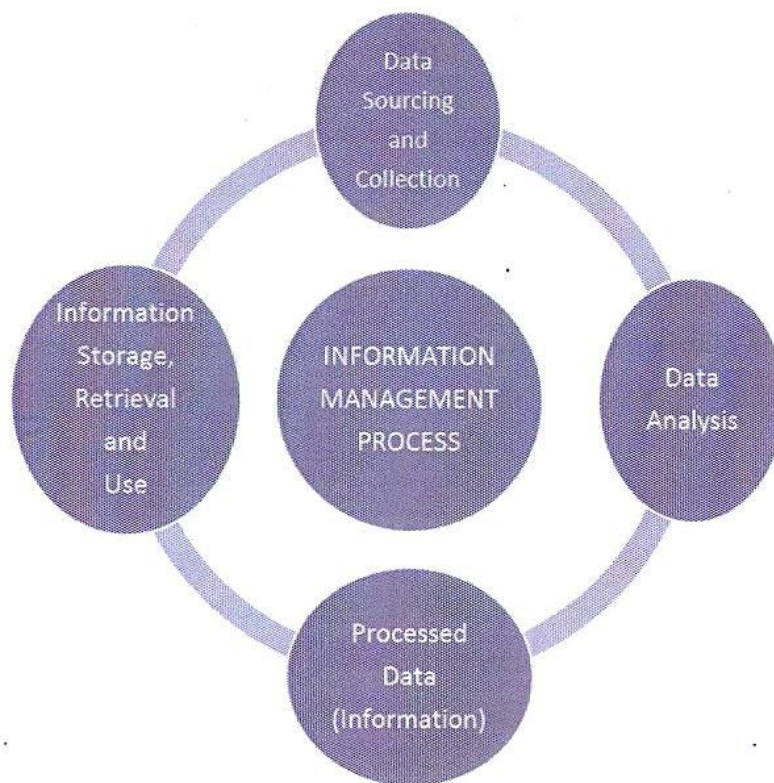
## **THE NATURE OF INFORMATION MANAGEMENT**

Although not relatively too new, information management is an emerging field of knowledge. Since its emergence in the mid-1980s, there is no consensus on a generally acceptable definition of information management. Scholars over the years have attempted to define information management based on the activities that constitute its domains. In simple terms, information management is the management of information in all its aspects and ramifications. It comprises the whole gamut of data sourcing, collection and processing into information and the storage, retrieval and use of that information for specific purpose(s).

Rowley(1988) argued that information management includes organisation-wide information policy planning, the development and maintenance of integrated systems and services, the



optimisation of information flows and the harnessing of leading edge technologies to the functional requirements of end-users, whatever their status or role in the parent organisation. This definition is concerned with information management in an organisation. Based on a general perspective, the United States Department of Agriculture Forest Service (1992) defined information management as a structured process to bring quality information in the right form to the right people at the right time to support sound and deliberate decisions and to generate ideas. Similarly, Rao (1999) explained that information management is a means by which a centre maximizes the efficiency by which it plans, collects, processes, controls, disseminates and uses its information and through which it ensures that the value of that information is identified and exploited to the fullest extent. Because information is the medium through which knowledge is created and used in decision making, the process of information management is universal across all fields of endeavour. This process is shown in Figure 1.



**Figure 1:** The Process of Information Management

The process of information management begins with the sourcing and collection of data. Then the data collected is processed into information. The information is then stored, retrieved and

used for specific purpose(s). Knowledge and ideas are generated when the right people receive quality information in the right form at the right time and apply such information impeccably to add value to an organisation, enterprise or industry. Hence, the worth of an organisation cannot be enhanced without information. To this extent, information management consists of activities that support the information life cycle from creation, representation and maintenance through communication and reuse (Hicks *et al*, 2006). These activities can only be achieved through the implementation of a functional information management strategy, properly embedded in information systems and technologies of the organisation, enterprise or industry.

### **INFORMATION MANAGEMENT IN THE REAL ESTATE INDUSTRY**

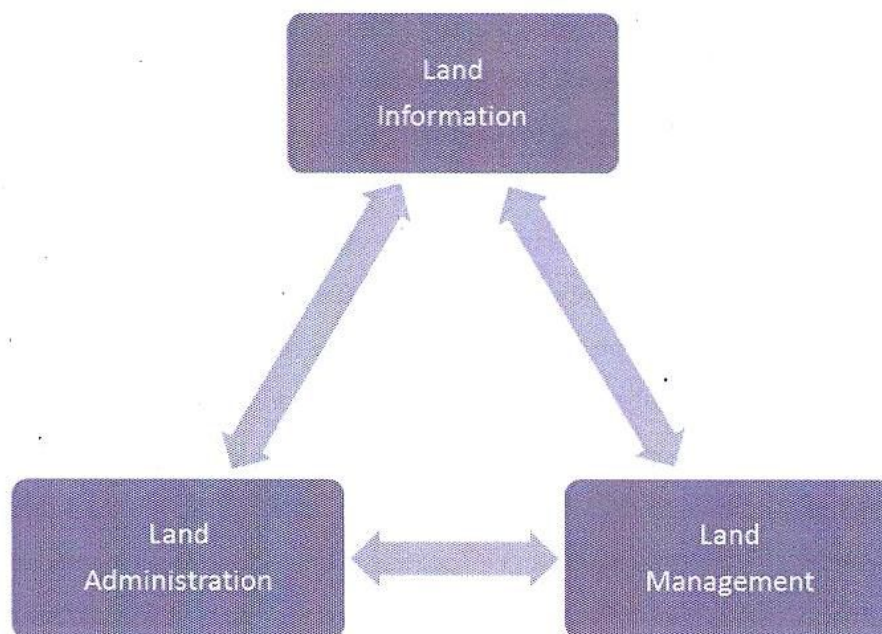
Information management in the real estate industry entails the sourcing, collection and processing of real estate data to obtain real estate information and the storage and retrieval of such information to generate real estate knowledge for real estate analysis and decision making. The real estate industry at the local, national and international levels operate through information. Participants in the industry cannot engage in any transaction in the real estate market without relying on information, whether formal or informal. Information management in the real estate industry consists of the management of land information (i.e. land information management) and the management of information on real estate transactions. Land in this sense means the physical land and improvements on it such as buildings, installations, etc. and all resources above and beneath it such as minerals. In the world over, land is a crucial factor of production.

No society no matter how sophisticated can exist without land. Land is essential for every human activity on earth and it is the source of all material wealth (Udoekanem *et al*, 2014). Land provides us with living space, with the primary products that support our material needs and with opportunities and satisfaction dear to our ways of life (Barlowe, 1986). Therefore, every nation strives to ensure that its land and land resources are efficiently managed and administered in a sustainable manner that will contribute to economic growth as well as enhance the socio-economic well-being of its people. This gives rise to two important state functions namely, land management and land administration.



Land management encompasses all activities associated with the management of land that are required to achieve sustainable development (Enemark, 2005). On the other hand, land administration involves determining, recording and disseminating information about the tenure, value and use of land (Adams, 2006). Land management and land administration depend heavily on land information. In fact, land information provides the foundation for effective land management and efficient land administration in any nation.

According to Potdar (2005), any information related to land is valuable information which serves as a key to financial investments, commerce, industry and agriculture. The interrelationship between land information, land administration and land management is shown in Figure 2.



**Figure 2:** The interrelationship between land information, land administration and land management

Land information is used to execute land management and land administration and the feedback obtained from the two functions is used to update land information and the cycle continues. Land information comprises spatial and non-spatial information on land uses, land rights, land titles and land values. The creation, storage, retrieval and utilisation of these spatial and non-spatial information to achieve desired results constitute land information management. Land information management is very crucial to the operation of any real estate industry. It facilitates the flow of quality land information for use by participants in the real estate industry.

Professionals in the industry such as property valuers, estate agents, lawyers, town planners and land surveyors require information to enable them provide credible professional advice to their clients. Property owners require information to know how much to ask for their properties in the real estate market. Buyers and sellers in the real estate market require information to reach well informed decision on whether to buy or sell their properties respectively. Land information management seeks to improve the quality of land information as well as facilitate access to quality land information by members of the public.

Information on a piece of real estate is usually obtained from a database known as the land register. Williamson *et al* (2010) explained that a land register is a public land record used to record the existence of deeds or title documents, thereby protecting rights in land and facilitating the transfer of those rights. The land register is a product of land registration. In a knowledge-based economy, the land register must be updated regularly to ensure that information stored in it is current, factual and reliable. In a digital economy, the land register is expected to be in an electronic form, anchored on an efficient land information system. Dale and McLaughlin (1999) defined land information system as a system made of human and technical resources which together with appropriate organising procedures are applied to collect, maintain, analyse, disseminate and use of land-related information. In some jurisdictions, the land register and its associated records are referred to as cadastre, particularly when such land register is established for valuation and taxation purposes. A cadastre is a parcel-based and up-to-date land information system containing a record of interests in land (FIG, 1995). Due to the sophisticated nature of today's land-related information, land information system is very crucial to the management of such information in a manner that enhances economic growth through the efficiency of the real estate market.

## **INFORMATION MANAGEMENT AND REAL ESTATE PRACTICE IN A KNOWLEDGE-BASED ECONOMY**

A knowledge-based economy is an economy dominated by the production, sharing, transfer and utilisation of knowledge to achieve economic growth. It is an economy which is directly based on the production, distribution and use of knowledge and information (OECD, 1996). Luthi *et al* (2011) argued that knowledge economy is that part of the economy in which highly specialised



knowledge and skills are strategically combined from different parts of the value chain in order to create innovations and to sustain competitive advantage. Information flow and management are very crucial in a knowledge-based economy because information is strategically required to generate knowledge to drive the economy. According to Tapscott (2014), knowledge-based economy is a digital economy where knowledge is the basic production factor. Thus, in a knowledge-based economy, knowledge and information management are the key core competencies (Hadad, 2017). A knowledge-based economy depends significantly on information and communication technology. In this economy, information management is achieved through digital information systems. Virtualization plays an important role in knowledge economy (Tapscott, 2014) and the importance of intellectual capital is amplified (Hadad, 2017).

Real estate practice involves the provision of real estate services to those who need them in an economy. D'Arcy (2005) defined real estate services as those services relating to the marketing, management and valuation/appraisal of real estate, together with the provision of professional advice regarding real estate use, investment or development. Real estate practice is an information-driven activity. It is knowledge intensive and as such depends heavily on highly skilled human capital.

In a knowledge-based economy, real estate practice must be innovative with the goal of creating new knowledge from the existing one to achieve and sustain competitive advantage. This requires efficient knowledge and information management. As explained by Neef *et al* (1998), the production of ideas, not goods, is the source for economic growth in a knowledge-based economy. Considering the current level of transformation in the global economy caused by globalisation and advancement in information and communication technology, knowledge and ideas cannot be produced without information. As an information - driven activity, information management is very vital to real estate practice in a knowledge-based economy.

The real estate market is an information system (D'Arcy, 2005) and information generation and sharing is an integral part of the real estate development process (Bulloch & Sullivan, 2010). Hence, information is indispensable to the functioning of the real estate markets worldwide. Real estate service providers engage in information intermediation, based on forward and backward

information flow structure. In a knowledge-based economy, the efficiency of information synthesis, processing and management is very necessary to the efficiency of the real estate market.

Thus, experts in the real estate market collect information relevant to real estate involvements, interpret it and communicate it to various groups of market actors such as users, investors and developers, who in turn use this information to achieve their market objectives (D'Arcy, 2005). These experts are skilled human capital engaged in the provision of real estate services in the economy.

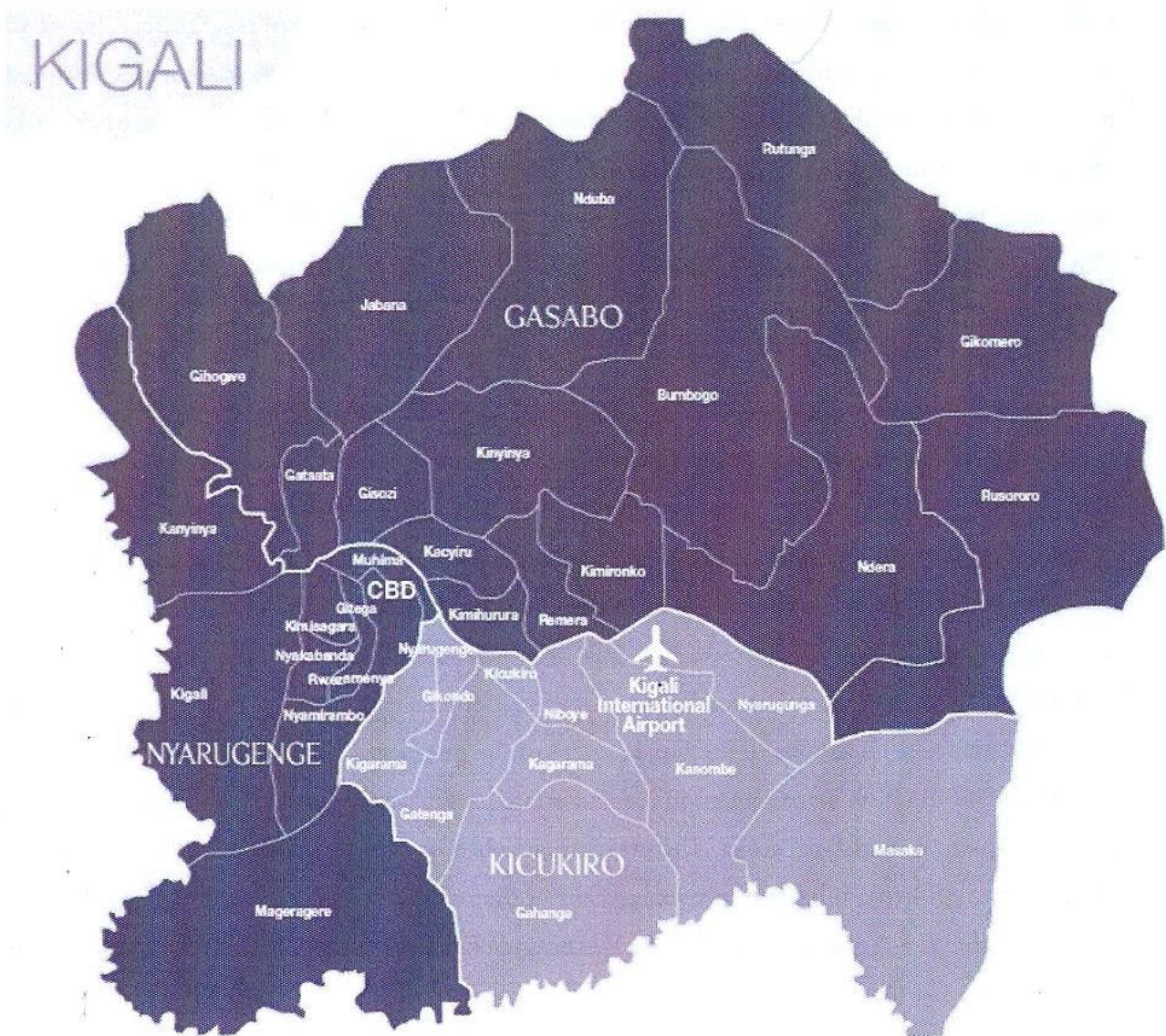
### **THE REAL ESTATE INDUSTRY IN RWANDA**

The real estate industry of any nation comprises the real estate market, its products, services and participants. The real estate market is a framework for exchange of interests in real estate. The products traded in the real estate market are land (building land, accommodation land, industrial land, commercial land and land for infrastructure development) and real properties (residential properties, offices, shops, warehouses, factories, leisure properties, etc.). The participants in the market comprise the real estate service providers, i.e. the professionals that provide professional advice to parties engaged in real estate transactions such as property valuers, lawyers and estate agents, developers and real estate investors (who act as buyers and sellers in real estate transactions).

The real estate industry in Rwanda is a developing one. Active real estate market exists in Kigali, the capital city of the country. The market operates in the three districts of the city namely, Gasabo, Kicukiro and Nyarugenge as shown in Figure 3. In 2017, real estate services and construction contributed 14.8% to the nation's GDP (Cytonn Real Estate, 2018). The regulation of the activities of professionals in the industry commenced few years ago. The Institute of Real Property Valuers in Rwanda (IRPV) was established in May 2010 based on the relevant provisions of Law of Rwanda No. 17 of 2010 to regulate the valuation of real property in the country. Real property valuation is one of the main activities in the industry. Other activities include auctioneering, real estate brokerage, property management and property development.



These activities are largely dominated by the private sector and depend significantly on availability and access to credible and reliable real estate information.



**Figure 3:** Locational segment of the real estate market in the city of Kigali, **Source:** Cytonn Real Estate (2018)

## METHODOLOGY

The respondents for the study were real estate professionals in the city of Kigali, selected through purposive sampling technique. They were selected because they are actively engaged in real estate practice in the country. The city of Kigali is the only city in Rwanda where active real



estate practice exists and as such majority of real estate professionals in the country are based in the city. Consequently, the real estate industry in the city represents that of the entire country. Purposive sampling technique was used due to the smallness of the population. The instrument used for collecting data for the study was a structured questionnaire. There is no official list of all real estate practitioners in the city. All practising real estate firms in the city were identified through field survey and the questionnaire administered to real estate professionals working in those firms. A total of 46 questionnaires were administered to real estate professionals in the city, out of which 38 were properly completed and returned, representing a response rate of 83%. The questionnaire was designed to elicit information from the respondents on their perception of information management in the real estate industry in the country.

The questionnaire was designed with closed-ended questions, arranged in three segments. The initial draft of the questionnaire was given to some academic colleagues for scrutiny to ensure the validity of the contents of the questionnaire. The first segment of the questionnaire contains questions on the demographic characteristics of the respondents. The second segment contains questions on the type of data normally collected and used by the respondents when carrying out a real estate transaction, information systems used by them to store, process and retrieve information for use in real estate analysis and reasons for data sourcing and processing for use in real estate analysis. Questions in the last segment of the questionnaire focused on the challenges to effective information management in the real estate industry in the country and were measured using a 5-point Likert-type scale. The weights attached to the respondents' opinions on the challenges to effective information management in the real estate industry in the country were: Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and strongly Disagree (1).

## **RESULTS AND DISCUSSION**

The demographic characteristics of the respondents is presented in Table1. Majority of the respondents are males (71%). This indicates that real estate practice in the country is dominated by the male gender. Most practitioners in the industry (84%) are University degree holders. This means that the real estate industry in Rwanda is knowledge intensive. It is also a reflection of the fact that professional knowledge is required for the provision of real estate services in the industry.



**Table 1: Respondents' Demographic Characteristics**

<b>Characteristics</b>	<b>Frequency</b>
<b>Gender</b>	
Female	11 (29%)
Male	27 (71%)
Total	38 (100%)
<b>Age Group (in years)</b>	
21 – 25	6 (16%)
26 – 30	19 (50%)
31 – 35	8 (21%)
36 – 40	3 (8%)
41 + Above	2 (5%)
Total	38 (100%)
<b>Highest Educational Qualification</b>	
AGCertSE	1 (3%)
Diploma	5 (13%)
Bachelor's Degree	25 (66%)
Master's Degree	7 (18%)
Total	38 (100%)

About 84% of real estate professionals in the industry are holders of bachelor and master's degrees. This proportion of the professionals provide most of the real estate services in the country. The designation of these professionals is presented in Table 2.

**Table 2: Professional Designation of the Respondents**

<b>Professional Designation</b>	<b>Frequency</b>
Property Valuer	20 (53%)
Property Valuer + Estate Agent	10 (26%)
Quantity Surveyor	3 (8%)
Engineer	3 (8%)
Architect	1(3%)
Town Planner	1(3%)
Total	38 (100%)

Property valuers and estate agents constitute the largest segment of real estate service providers in the country (79%). The type of data normally collected and used by the respondents when carrying out a real estate transaction is presented in Table 3.

**Table 3: Type of Data collected and used by the Respondents when carrying out a real estate transaction**

Type of data	Responses
Locational data	32 (84%)
Neighbourhood data	28 (74%)
Cadastral data	26 (68%)
Demographic data	7 (18%)
Building data	36 (95%)
Topographic data	11(29%)

When carrying out a real estate transaction, most of the respondents collect building data (95%), locational data (84%), neighbourhood data (74%) and cadastral data (68%). Data not frequently collected by the respondents are demographic data (18%) and topographic data (29%). By these responses, the dominant real estate services provided by the respondents are valuation, land acquisition and compensation, sale and purchase of property. These services require the collection of building, locational and cadastral data for them to be rendered properly. This is further confirmed by the responses of the respondents on the reasons for data sourcing and processing as presented in Table 4.

**Table 4: Reasons for data sourcing and processing for use in real estate analysis**

Reasons for data sourcing	Responses
Valuation of property	36 (95%)
Land acquisition and compensation	16 (42%)
Sale of property	18 (47%)
Purchase of property	15 (39%)
Property Management	6(16%)
Property Development	6(16%)
Mortgage Financing	13(34%)
Land Administration	3(8%)

Respondents' responses on the type of information system used by them to store, process and retrieve information for use in real estate analysis is presented in Table 5.

**Table 5: Type of information system used by Respondents' to store, process and retrieve information for use in real estate analysis**

Information System	Responses
Land Information System (LIS)	9 (24%)
Geographical Information System (GIS)	17 (45%)
Property Management Information System	2 (5%)



(PMIS)	
Property Valuation Database (Electronic)	8 (21%)
Manual files and records system	28 (74%)

About 45% and 24% of the respondents use GIS and LIS respectively. Majority of the respondents (74%) store, process and retrieve information for use in real estate analysis through manual files and records system. This has made information sharing and transfer in the industry difficult. The responses of the respondents on the challenges to effective information management in the real estate industry in the country is presented in Table 6.

**Table 6: Challenges to effective information management in the real estate industry in Rwanda**

Opinion	Mean	Relative Importance Index	Rank
Absence of integrated information management system on real estate transactions	4.36	0.87	1
Reliance on analog form of information storage and retrieval by real estate practitioners	3.82	0.76	2
Inadequate qualified personnel to manage digital data bases of real estate practitioners	3.50	0.70	3
Absence of clear-cut legal framework on information ownership, sharing and transfer in the industry	3.36	0.67	4

The three important challenges to effective information management in the real estate industry in Rwanda as ranked by the respondents are absence of integrated information management system on real estate transactions, reliance on analog form of information storage and retrieval by real estate practitioners in the country and inadequate qualified personnel to manage digital data bases of real estate practitioners. The respondents also ranked absence of clear-cut legal framework on information ownership, sharing and transfer in the industry as the least challenge to effective management of information in the industry.

## EXPECTATIONS IN THE CONTEXT OF KNOWLEDGE-BASED ECONOMY

The real estate sector in Rwanda is an important segment of the nation's economy. Because it deals with housing (one of the basic needs of man), it can be operated in a manner that stimulates job creation and facilitates economic growth. With an average housing demand of 16,923 housing units per year (Cytonn Real Estate, 2018), the real estate sector in the country offers prospect for sustainable investments. This could be achieved if information in the industry is properly managed and utilised for knowledge production and decision-making.

There is need to change the operational paradigm of information management in the industry from client-focused information management system to industry-focused information management system. Such initiative will enhance access to quality information by all participants in the industry, including foreign investors who may be attracted to investment opportunities in the industry. The state of information management in the real estate industry in Rwanda and expectations of the industry in the context of knowledge-based economy is summarised in Table 7.

**Table 7: The state of information management in the real estate industry in Rwanda and expectations in the context of knowledge-based economy**

	<b>The state of information management in the real estate industry in Rwanda</b>	<b>Expectations in the context of knowledge-based economy</b>
<b>Operational Paradigm</b>	client-focused information management system in which the overall goal of information storage, retrieval and use is to satisfy the needs of clients	Industry-focused information management system in which emphasis is on access to quality information by all participants in the industry and creation of new knowledge from the existing one to create wealth and add value to the economy.
<b>Information Sourcing</b>	Information is generated from the databases of individual participants in the industry.	Information is expected to be generated from integrated information system that covers the entire industry.
<b>Information Flow</b>	Limited access to information on real estate transactions in	Digital economy based on multi-media technology through



the industry due to poor information synthesis, sharing and transfer. which information can be accessed and utilised by industry participants at anytime and at reasonable cost without barriers.

<b>Outcome</b>	The efficiency of the real estate market is constrained by limited access to information on current transactions in the market due to absence of an integrated information system for the industry.	The flow of quality information in the industry is expected to enhance the transparency and efficiency of the real estate market.
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## CONCLUSION

Real estate practice in a knowledge-based economy is anchored on expert knowledge. This expert knowledge is consistently created from synthesis of information generated from the industry and sustained by information and communication technology. As the economy of Rwanda evolves from traditional economy to knowledge-based economy, effective information management in the nation's real estate industry is essential if the efficiency of its real estate market must be achieved.

To this end, there is need for the establishment of a sustainable real estate information management system (REIMS) for the industry in the country. Such an integrated information management system should be industry-focused in order to facilitate the sourcing, transfer and utilisation of information for knowledge and wealth creation.

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