The Use of Less Relevant Heuristics in Mortgage Valuations in Tanzania

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Abstract

Valuation-surveyors, like all other disciplines, are invariably influenced by a host of factors when estimating values for different purposes. Faced with complex decision-making in valuation, many surveyors are compelled to make use of heuristics (shortcuts). The use of heuristics helps to improve information processing systems and thus increase efficiency in decision-making processes. However, the unconscious use of these shortcuts often leads to errors in selecting solutions for the problem at hand. This study was aimed at confirming the use of less relevant and less researched types of heuristics in mortgage valuations in Tanzania. These included availability heuristics, representative heuristics and positivity heuristics. The study employed a survey research method whereby a sample of 56 valuation-surveyors from valuation firms based in Dar es Salaam were given questionnaires to complete. Out of the 56 questionnaires distributed, 44 were returned. The findings revealed surveyors' propensity to use less relevant heuristics for virtually the whole valuation process. In all the identified uses of heuristics the surveyors were found to have diverted from the prescribed valuation procedure. Such behaviours have the potential for propelling the use of wrong inputs in the value assessment process and/or modifying the final assessed value. Therefore, the findings provide another explanation for the causes of the already observed valuation variance in Tanzania.

Keywords: Heuristics; Mortgage Valuation; Valuation Standards; Behavioural Study

1. Introduction

Valuations are carried out to estimate the probable market-price for a given property at a designated date. As such, a valuation is taken as a proxy of the price for a particular asset and is used in making financing and investment decisions. A valuation-surveyor provides a value estimate which is a close

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approximation of the market-price (French & Gabrielli, 2004; Mwasumbi, 2014). However, various researchers have indicated the existence of significant differences between price and the valuation opinions over the same property by different valuers (Parker, 1998; Crosby, 2000; Ayedun, et al., 2011), an observation which raises questions on the reliability of valuation output. In Tanzania, Geho (2004) noted an average of up to 35% deviation between assessed value and realizable market-price of properties located in areas with less vibrant real estate markets. Geho's observation not only indicates the inconsistency of valuations, but also the likely flaws in the estimates. Further, it has also been noted that such inaccuracies in valuation are inevitable (Havard, 2001; Babawale & Ajayi, 2011). Such assertions point out the need for actions to ensure accuracy in valuation, given the serious impact valuations have on the profession and property market in general (Babawale & Ajayi, 2011; Adegoke, 2016).

Adegoke (2016) posits that valuation inaccuracy has the potential to send wrong signals to the market and is thus likely to create future uncertainties in the property market. The impact of valuation inaccuracy has gained the attention of Tanzanian practitioners in the valuation for mortgage lending. Many complaints have been lodged with the National Council of Professional Surveyors[1] (NCPS) by financial institutions on losses suffered by relying on valuation-surveyor's advice (Geho, 2004). Elsewhere, a study on valuation variance in commercial lending in the UK observed behavioural influences of valuation-surveyors as the leading cause for valuation variance (Bretten & Wyat, 2001). These include the use of shortcuts in decision-making also known as heuristics (Diaz, 1999). These examples and other similar experiences in various types of valuation, like rating-valuation as identified by Rwechungura (1988), substantiate the consideration for more serious action to curb inaccurate valuation (Geho, 2004).

The use of heuristics in human decision-making process is a result of limitations of the human brain, especially when faced with a complex task environment (Hardin, 1997; Havard, 2001). The application of heuristics helps to increase efficiency of information processing and problem-solving and hence saves energy and time (Hardin, 1997). However, the decision made using heuristics is not guaranteed to be the best since it avoids the detailed analysis of all situations (Romanycia & Pelleti, 1985). Existing literature on behavioural property research has identified four types of these heuristics as shown in Table 1 below.

Table 1: Types and Meanings of Heuristics

Type of Heuristic	Explanation
Availability Heuristics	Use of information that can be easily retrieved or reached.
Positivity Heuristics	Tendency of confirming existing beliefs.
Anchoring and Adjusting Heuristics	Use of anchor information such as previous valuations and adjusting to ascertain a value of a subject property.

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[1] The Former Valuation Surveyor Registration Board of Tanzania

Representative Heuristics	Stereotyping behaviour. Defining a property by grouping it with other similar properties.

Source: Havard (2001)

Unlike others, the anchoring and adjustment heuristic received considerable attention by behavioural property researchers in the 1990's (Havard, 2001; Tidwell, 2011). Various studies such as Diaz and Hansz (1997); Baum et al. (2001); and Baum et al. (2002) confirmed the adoption of heuristics and its relevance to valuation tasks. This study, therefore, sought to further investigate the use of three less relevant and less researched types of heuristics in property mortgage valuations. These are availability heuristic, positivity heuristic and representative heuristic. The aim of this study was to confirm the use of these heuristics in the context of Tanzanian practice with regards to mortgage valuation. Through this confirmation, it was anticipated that the study will provide explanations for valuation inaccuracy which has been noted to be prevalent in property valuation practice in Tanzania. Further, the study aimed to establish a foundation of knowledge that will improve valuation practice.

2. Literature Review

Valuation is a process of generating point estimates and sometimes interval estimates or approximations of the market or rental value of an interest in property for a particular purpose at a specific point in time or time-interval (Geho, 2004). Put simply, valuation is the process of estimating the worthiness of the property at a given time. This process is scientific in nature as it follows a systematic procedure and a prescribed normative valuation model to arrive at the final opinion of value (Ayittley et al., 2006). Arguing on the nature of valuation, Damodaran (2002) established that although the models that are used in valuation may be quantitative, the inputs leave plenty of room for subjective judgments. Thus, it requires one to have technical and professional skills before undertaking any valuation assignment. As decreed by RICS (2012) and IVS (2011) valuation-surveyors are required to apply professional judgment to interpret property values. Given the imperfect and heterogeneous characteristics of the property market and the resulting scanty information, application of a normative valuation model is normally complex, time-consuming and cognitively challenging (Tidwell, 2011). Accordingly, valuation-surveyors have had a tendency to divert from prescribed normative valuation procedures by using simplifying heuristics (Havard, 2001).

2.1 Human Information Processing System

The explanation behind problem-solving and decision-making as required in various stages of the valuation process is mainly found in the field of cognitive psychology. Researching in that field, Simon and Newell (1970) developed a theory, Human Problem Solving Theory (HPS) which described the human problem-solving process as similar to that of computers. Like the Random Access Memory (RAM) and Hard Disks for computers, the human information processing system was considered to have two aspects including short-term and long-term memory (Baddeley, 1999). In tackling the problem

or handling a task it confronts, the human brain makes use of its information processing system. In their 1970 study, Simon and Newell established characteristics of information processing system as shown in Table 2 below.

Table 2: Characteristics of Information Processing System

S/N	Characteristic	Implication
i.	Serial operation.	It only does one process at a time and not otherwise.
ii.	The inputs and outputs are stored in small short-term memory which has limited capacity.	The time it requires to access this memory is in order of milliseconds.
iii.	It has access to an infinite long-term memory.	The time it requires to store a symbol in it is in order of seconds.

Source: Simon and Newell (1970)

To solve a particular problem the human information processing system works alongside the problem space and the programme. The function of the programme is to search for the problem space. The HPS theory explains the problem space as the representation of the problem environment which is the way the actual problem is defined in the internal memory. It is where situations which are known to the problem solver reside. When an individual problem solver confronts a task, he/she uses the processor to selectively search for a solution from the multiple situations or nodes contained in the problem space which corresponds to the task environment (Simon & Newell, 1970). The search normally goes through the different nodes in the problem space, in a serial fashion, until it finds the correct node and operator. The size of the problem space is not the same for all problems, even so, most problem spaces have an enormous size. This problem-solving process is generally referred to as Weighted Additive Rule (WAR). The searching and analytical activity required by the WAR makes it tedious, inefficient and time-consuming.

According to Shah and Oppenheimer (2008), the WAR goes through a number of processes as shown in Table 3.

Table 3: Processes Involved in Weighted Additive Rule

S/N	Activity	Elaboration of the Activity
i.	Identifying all nodes.	All relevant pieces of information must be acknowledged.
ii.	Recalling and storing node values.	The values for the pieces of information must either be recalled from memory or processed from an external source.
iii.	Assessing the weights of each node.	The importance of each piece of information must be determined.
iv.	Integrating information for all alternatives.	The weighted node values must be summed to yield an overall value or utility for the alternative.
v.	All alternatives must be compared.	The alternative with the highest value should be selected.

Source: Shah and Oppenheimer (2008)

The choice mechanism process displayed in Table 3 above indicates the computational processing of the information (Ranyard et al., 2012). However, the capacity of the information processing system and the memory of humans has limitations. As the demand from the WAR tends to increase, humans have the habit of using the easy way around (Shah & Oppenheimer, 2008). These alternative means are referred to as Information Processing Heuristics (IPH).

2.2 Heuristics in Decision-making Defined

As is noted above, the use of heuristics is occasioned by the limited capacities of the human brain. The application of IPH has been found to be advantageous to problem solvers as it avoids the complex choice mechanism process of WAR. However, until recently the concept of heuristics has been defined differently by various authors. Romanycia and Pelleti (1985) summed some of the definitions as shown in Table 4 below.

Table 4: Definitions of Heuristics According to Various Authors

S/N	Author	Explanation	Definition
1.	Gelerner, Helbert (1958).	Earliest definition underscoring that heuristics work in effect by eliminating options from an impractically large set of possibilities.	"…Heuristic is a filter that is interposed between the solution generator and the solution evaluator…" Romanycia and Pelleti (1985: p.49).
2.	Sladge (1971).	After the early Artificial intelligence era in 1971, embracing all the standard definitions.	"…Rule of thumb, strategy, method, or trick used to improve the efficiency of a system which tries to discover the solutions to complex problems…" Sladge (1971: p.3).
3.	Boden (1977).	Heuristics considered as a process of evading unnecessary evaluations of information which seem to have no possibilities of providing a solution to the problem.	"…Heuristic is a method that directs thinking along the paths most likely to lead to the goal, less promising avenues being left unexplored..." Romanycia and Pelleti (1985: p.50).
4.	Newell (1980).	Heuristics seen in much similar way as those who did before 1980.	"…Heuristics are rules of thumb and bits of knowledge, useful (though not guaranteed) for making various selections and evaluations..." Newell (1980: p.16).

Source: Romanycia and Pelleti (1985)

It is important to note that from the definitions given in Table 4 it is apparent that a heuristic is considered a shortcut to decision-making. The complexities in real estate valuation processes have made it a norm for valuation-surveyors to resort to simplifying shortcuts. The heuristic principles exhibited by valuation-surveyors in their task as identified by Tversky and Kahneman, (1974) and later by (Havard, 2001; Iroham et al., 2013a; Iroham et al., 2013b) include Anchoring and Adjustment Heuristics, Positivity Heuristics, Availability Heuristics and Representative Heuristics.

Anchoring and Adjustment Heuristics (AAH) have been termed as an exceptional heuristic since these can be used within a normative process of valuation depending on the source of anchor adopted (Baum et al., 2002). AAH is considered a strategy in prescribed valuation procedures adopted to arrive at a valuation opinion. In its application the decision is arrived after forming and adjusting initial judgement given the available evidence (Havard, 2001). On account of AAH's close relationship with conventional valuation procedures, AAH has received an enormous amount of attention by various authors, including Gallimore (1994); Black and Diaz (1996); Diaz and Hansz (1997) as cited in Havard (2001); Diaz and Wolverton (1998); Tidwell, (2011); Iroham, (2013b). Tidwell (2011) considered AAH as the most relevant type of heuristic to valuation practice as compared to positivity, availability and representative heuristics. Subsequently, AAH has received considerable attention relative to the other three heuristics. Therefore, the rest of this work aims at confirming the usage of the other three heuristics (PH, AH and RH) which have been considered less relevant yet are still being used in the valuation process.

2.2.1 Positivity Heuristics (PH)

According to Iroham et al. (2013b) Positivity Heuristics (PH) is the propensity of the human brain to seek information that is consistent with their current beliefs and ignore the collection of evidence that is against their perception. Technically, when one uses this kind of heuristic the facts that seem to be different to the existing knowledge are normally refuted (Havard, 2001).

In this regard, valuation-surveyors tend to look for ways of confirming their perceptions of the world. Gallimore (1996) asserts that in the valuation process valuation-surveyors tend to make more adjustments with the use of positive information, that is, evidence that supports existing perception than with the negative information. Valuers are often seeking evidence to support their value estimates or perception rather than evidence that contradicts their perception. It is no wonder that valuers are accused of confirmation bias. He further postulates an innate motivation to confirm existing views and the difficulty that people face in formulating ways to look for contrary evidence as probable reasons for such behaviour. Studying this behaviour in Nigeria, Iroham et al. (2013b) observed further that valuation-surveyors tend to form an initial opinion of value before the actual valuation assessment. This supports Gallimore's (1996) view that, in carrying out valuations, valuation-surveyors' behaviour is influenced by, among others, internal knowledge on the subject and comparable properties in the form of value and price, even before the properties are precisely identified. Further, even when there is no basis for value/price preconception, a typical valuation-surveyor would still form the limits for the comparable/subjects' value/price.

2.2.2 Representative Heuristics (RH)

According to this type of heuristic, the decision-maker classifies an event or object with others of a type that they are familiar with (Havard, 2001). In this regard, the decision is influenced by past experience of the decision-maker,

in particular, by the classification that he/she makes. In a study carried out in Nigeria on the usage of heuristics it was noted that valuation-surveyors exhibit RH especially during the data collection step of the valuation process (Iroham et al., 2013b). In this regard, surveyors tend to interpret the subject property to be more representative of the comparable than the actual features suggest (Hardin, 1999). Furthermore, there is more likelihood for a valuation-surveyor to treat two properties in a similar way where there are some resembling elements between the two properties. Consequently, valuation-surveyors tend to overlook some of the unique details of the subject property. Iroham et al. (2013b) observed that features such as an extra bathroom, floor and wall finishes, as well as the size of the garage are often ignored. Similar properties with such differences will typically be treated in the exact same or similar way.

2.2.3 Availability Heuristics (AH)

Availability Heuristics (AH) rely on the ease with which information comes to mind (Havard, 2001). Elaborating this heuristic, Tversky and Kahneman, (1974) established that some elements may be available more frequently than others, not because they occur more often, but because they are easier to recall or retrieve. In this regard, decisions are more likely to be influenced by past experience which can be easily retrieved or reached. The human decision-making mechanism in this accord tends to be based on previous situations faced and successfully negotiated. Once a perception on a concept has been formed it is very difficult to change this perception unless a negative feedback is provided (Hardin, 1999).

In the valuation process, data collection tends to be based on the ease of retrieval, meaning that the decision-maker (surveyor) will choose the most recent information or the information most easily recalled or obtained. This was found to be the case when valuation-surveyors utilise easy means of data input and ignore sanctioned procedures (Iroham et al., 2013b).

As seen from the discussion above, past experience of the valuation-surveyor appears to be the most dominant among the three types of heuristics. In the main, while PH is based on confirmation of ones' perception, the AH is about the influence of information that is easily recalled/retrieved. Noted here is that the two heuristics, namely availability and positivity (AH and PH), relate to the perception of the problem solver. While PH seeks to confirm the perception, AH is about the perception that is easily called to mind. In RH, past experiences tend to cloud the unique features of individuals/objects in the population by making classification based on their major similarities.

2.3 Impacts of Information Processing Heuristic

To sum up the literature, the application of information processing heuristics seems to be advantageous to the problem solver. Dietrich (2010) noted that heuristics serve as a framework in which satisfactory decisions are made quickly and with ease, hence increasing efficiency in problem-solving by avoiding unnecessary evaluations. Moreover, heuristics were reckoned to be

preconscious since they allow for rapid acquisition and implementation of data search procedures when tackling familiar tasks (Hardin, 1999). But as noted by Havard (2001), these tasks are apparently uncertain and often complex on account of insufficient data. Consequently, valuation-surveyors might not be able to perform their duties without applying heuristic strategies. The application of heuristic strategies has tended to increase the effort-benefit ratio in the decision-making process (Dietrich, 2010). In earlier studies, Romnycia and Pelleti (1985) had contended that solutions arrived by the use of information processing heuristics could not be guaranteed as the optimal solution. Later studies, such as that by Havard (2001), established that diversion from sanctioned valuation processes (heuristics) invariably leads to valuation variance.

Unconscious usage of heuristics has been observed as introducing high chances of valuation variances by several authors (Bretten & Wyat, 2001; Havard, 2001; Diaz & Hansz, 2007; Babawale & Omirin, 2012). Whereas heuristics in valuation have not been studied in sufficient detail in Tanzania, a study carried out during 2014 confirmed biases and client influences in valuation processes were the main factors that led to complaints against valuation assessments (Mwasumbi, 2014). Complaints against assessed values were not necessarily a reflection of erroneous valuation, but rather the lack of uniform comparable data and therefore the greater lenience towards valuation clients' influences on the value assessment.

3. Methodology

This study involved valuation firms that are actively practising mortgage valuation in Dar es Salaam. Dar es Salaam metropolis is the most important commercial city in Tanzania and therefore, it provides a sufficiently vibrant economic base and enough valuation activities to provide rich studying conditions. Moreover, virtually all actively practising valuation firms in the country have their headquarters, or at least an office, in Dar es Salaam.

3.1 Research Approach and Method

The main objective of this study was to establish the extent to which heuristic behaviour in mortgage valuations is influencing valuation assessment in Tanzania. The focus was mainly to create an awareness of the usage of PH, AH and RH which have been categorised as less relevant to valuation practice as compared to AAH (Havard, 2001). The study was designed to determine whether heuristic behaviours are underpinning the replacement cost method, which is the most commonly applied in all mortgage valuations in Tanzania (Waigama, 2008). The excessive use of this method is alleged to be due to insufficient quantity and quality of open market transactional data (Geho, 2003).

In order to better understand the problem and achieve its objectives, this study adopted realism ontology assumptions which holds for the existence of a single truth, and therefore a quantitative approach. According to Tavakoli (2012), the quantitative approach enables a generalisation of the findings

since it involves tightly controlled and precise measurements. The choice of such approach was motivated by the desire to generalise the findings to the whole population of valuation-surveyors in Tanzania. This requires the involvement of a larger sample, as was done in other behavioural research (Gallimore, 1996; Diaz & Hansz, 1997; Iroham, et al., 2013b).

Under the quantitative approach, there were two options of the research methods to adopt; experiment and survey. Designing of an experiment is usual and logical in behavioural property studies since in such cases humanity becomes the object of description, as once observed by Diaz (1999). Indeed, there is a considerable number of behavioural property research that has employed the use of experiments in understanding the valuation surveyors' characteristics (Havard, 2001; Iroham, et al., 2013). However, the use of this method is limited by its large budget requirements (Akinjare et al., 2013). Experiments would also have required deploying research assistants with the likelihood of an inability to meet their operational expenses and the requisite morale to carry out the research. It would also have required reducing the size of the sample as costs increase with sample size as well as the time for the study. In the same way, an experiment designed in the form of simulation would not have involved all the necessary stages of the valuation process, such as actual property inspection and data collection, in which the surveyors' behaviour comes to light.

Consequently, this study employed the second option, the use of cross-sectional survey method. This involved an investigation of the valuation-surveyors' perception on the whole valuation process where replacement cost method is used. The identified disadvantage of using this method is the risk of overreliance on respondents' views and their analysis. To escape this predicament survey tools were prepared and pre-tested to pre-selected experienced valuation-surveyors prior to the actual data collection in agreement with what Krosnick (1999) had advocated.

3.2 Sampling

Given the distributed nature of the study population, the sampling process involved two stages; first selecting firms and then valuation-surveyors within the selected firms. The first stage of sampling adopted purposive non-probability sampling. Out of 54 valuation firms registered with the NCPS, which is the professional valuation registration board (as it was then), 20 firms were purposely selected to cater for the requirements of this study. On account of critique by scholars such as Kronsnik (1999) that the use of purposive sampling would produce non-representative samples, it was imperative to evaluate and consider only those firms that were proven to be active and with commonly acknowledged competent valuation personnel within the city of Dar es Salaam.

In the second stage of sampling, convenience and less invasive non-probability sampling techniques were applied. The convenience technique was used for 14 firms out of the sampling list. This technique was adopted to the firms that accepted to respond to the questionnaire at drop-off. The

application of convenience sampling was efficient since the questionnaires were collected on the same day that they were distributed, saving both time and money. The less invasive non-probability technique was adopted for the remaining 6 firms. Under this technique, the questionnaires were handed out to the managers of the firms for them to distribute to valuation-surveyors in their respective firms. The less invasive non-probability technique has been advocated in various studies for affording involvement of large samples and high completion rates (Kelly et al., 2012; Mwasumbi, 2014).

A total of 56 questionnaires were issued to valuation-surveyors employed in private firms; 44 were completed and collected. The response rate as therefore 78.8% which was considered satisfactory for the study.

3.2 The Questionnaire and Data Analysis

The questions contained in the questionnaire were all closed-end type structured as inspired by other related studies (Gallimore, 1996; Diaz & Hansz, 1997; Iroham, 2012; Iroham, et al., 2013a). However, some of the questions were formulated after consultations with the experienced valuation-surveyors in the field. The lack of challenges on the use of such instruments in these other early studies became proof for validity and reliability of the instruments.

The questionnaire was structured such that each heuristic type had a set of questions depending on how much it was anticipated to be used in the valuation process. In that manner, the tool contained seven questions for AH, three questions for RH and four questions for PH. All questions in the questionnaire used nominal scale except one under RH which adopted the use of a Likert scale making it an ordinal scale type. The use of Likert scale to test for relativity had also been used by other researchers in the behavioural property research field including (Iroham et al., 2013a).

The analysis started with descriptive statistic for the whole dataset whereby the frequencies and the percentages for all responses were identified. The analysis was in the form of a univariate which entails the description of a single variable only (Babbie, 2007). According to the requirements of the objective for this study, the analytical tool was descriptive statistics using Microsoft Excel. The obtained frequencies/percentages were then presented in tables and various types of bar charts, including compound and simple bar charts. For the ordinal scale question which adopted a Likert scale, the Relative Importance Index (RII) (see equation below) was used. According to the RII, the feature with the highest index is the one with the highest ratings and so most influential considering the perceptions of the respondents.

$$RII = \frac{\Sigma W}{A * N}$$

Where: W – is the weight given to each factor by the respondents and ranges from 1 to 3, (where "1" is "Low" and "3" is "High");

A – Is the highest weight (i.e. 3 in this case); and

N –the total number of respondents.

However, since the requirement was about how much the features, in general, were being considered in valuation, the average RII for all features was calculated.

4. Results

In this study we investigated the extent of use of the three heuristics selected (AH, PH and RH) and its implication to valuation practice in Tanzania. For each of the three heuristics studied a set of specific questions probed the use in the order below.

4.1 Availability Heuristics (AH)

AH behaviour was examined through seven independent questions that sought to establish the sources of various information and tendency to use easily available information when carrying out valuations for mortgage.

With regard to sources of information, valuation-surveyors were asked to pick on average the number of sources they consulted in ten valuations they could recall. More than half of the respondents (29) indicated using at least two sources of information to arrive at value conclusion whereas 15 conceded to using more than two sources. Probing the approaches used by the valuation-surveyors to obtain land rates it was observed that about half of the respondents (23) rely on rates provided by the Office of Chief Government Valuer (CGV) in the Ministry of Lands, while a small proportion indicated using market evidence as indicated in Table 5 below.

Construction rates per m^2 is one of the most important inputs in valuation in Tanzania. Table 5 highlights the sources relied upon by valuation-surveyors to obtain construction rates. Thirty six percent of the respondents confirmed the use of "*general knowledge or intuition*" such as unguided adjustments of the rates from previous valuations. Interestingly, about 61% indicated adopting construction rates obtained from various institutions in the construction sector, i.e. the Architects and Quantity Surveyors Registration Board (AQRB) and the National Construction Council (NCC). Among those who obtain construction rates from the boards, 7% adjust these rates by intuition to fit the subject property. Seventy Four percent of respondents were noted to adjust rates in line with market cost levels, while 19% make adjustment on the basis of previous rates approved by the CGV.

Table 5: Availability Heuristics

Sources of Data	Approaches to Arrive at Land Values			Approaches to Construction Rates			Techniques used to obtain details of materials			Approaches to Depreciation Amount/ Factor			Approaches to Forced Sale Value Amount/ Factor		
Sources	#	%	Approaches	#	%	Approaches	#	%	Techniques	#	%	Approaches	#	%	Approaches	#	%
Single	4	9%	Adjusting the rates provided by the ministry	23	52%	Using "general knowledge"	16	36%	Enquire from the client	8	18%	Experience from the previous valuations	4	9%	Experience from the previous valuations	9	20%
Two	25	57%	Obtaining the rates from the market evidence	12	27%	Calculations using formulas as per Valuation Handbook	1	2%	Using Experience	29	66%	Estimate from the appearance of the building	33	75%	After market search	13	30%
Three	8	18%	Relying on other surveyors' information	9	21%	Obtaining the rates from NCC, AQRB and other relevant boards and agencies	27	61%	Applying general knowledge	7	16%	Using yardstick and mathematical formulas	5	11%	Using company standards	18	41%
More than three	7	16%	others	0	0%	Others	0	0%			0%	Other	0	0%	Other	0	0%
												No response	2	5%	No response	4	9%
Total	44	100		44	100		44	100		44	100		44	100		44	100

Source: (Author, 2016)

Normally, the construction cost unit rate to be applied in the Depreciated Replacement Cost (DRC) method is an all-inclusive rate that covers all costs which, according to IVS 105 of 2017, is reflective of either (i) cost of similar asset offering equivalent utility (ii) cost of recreating a replica of an asset or (iii) sum of separate value of the components that form the asset.

In the survey, we probed an all-inclusive cost rate used irrespective of the above categories. In the discussion, it was apparent that most valuation-surveyors subscribe to IVS 105: 70.11 which provides for an all-inclusive rate that includes direct and indirect costs. These are listed in the IVS 105 as cost items:

a) Direct Cost Items: materials and labour.
b) Indirect Cost Items: transport, installation, professional fees (design, permit, architectural, legal, etc.), other fees (commissions, etc.), overheads, taxes, finance (e.g. interest on debt financing), and profit margin/entrepreneurial profit to the creator of the asset (which will include return to investors).

As such, in deciding on the construction rate to use, among other items of cost, valuation-surveyors need to have a clear understanding of the materials used to make various elements of the building and their pertinent details. This helps in making a proper search for such materials and thus allows them to do the needful adjustments in order to obtain an appropriate construction rate. In this regard, valuation-surveyors were asked to pick from the list of alternative means of getting details on the materials or list any other if not included in the list. Table 5 indicates over 60% of the respondents rely on data available within their jurisdictions in deciding on the rate to adopt. It is further noted that a small percentage of 16% rely on rates available in their offices which are often broad in nature and ignores variation in the specifications, quality and type of materials used in the construction. For example, although floor tiles are available in different sizes, brand, quality and prices, this group of valuation-surveyors assume a uniform rate for all tiled structures. The general observation indicates that 82% of all respondents tend to use information that is readily available to them.

Further, surveyors were asked to identify an approach that they mostly use in determining depreciation amounts when using DRC method. The results as displayed in Table 5 above show that the majority of respondents estimate the depreciation just from the appearance of the building with a few using probabilistic yardsticks, mathematical formulas and their experience from other valuations to estimate the depreciation amount of the subject property.

In valuation for mortgage purposes, valuation-surveyors are required to provide their clients with a two-value opinion; market value and Forced Sale Value (FSV) of the subject property. The reason for providing FSV is to help the mortgagee understand the appropriate amount to lend given the risks of defaults. Thus, the FSV refers to the proxy of the price that can be obtained in a shortened marketing period. Since the forced value is the function of market value and the FSV factor, it was deemed important to establish the

determinant of the FSV factor. From Table 5 it is evident that the use of company standards and market research is more pronounced among the respondents. As observed earlier on, valuers also use experience from the previous valuations to estimate the FSV factor for the subject property.

4.2 Positivity Heuristics (PH)

In the search for the use of PH, respondents were asked four related questions. All of these questions were set to determine the valuation-surveyors' tendency to confirm the preconceived value in the valuation process, particularly when the replacement cost method is adopted.

Out of the 44 responses received, 32 conceded that they normally have an indication of the value prior to undertaking the valuation. However, 13 out of these 32 (40.6%) would nevertheless ignore the preconceived value and adopt assessed value. Interestingly, a similar number of respondents expressed that they would adjust the assessed value with the preconceived value, while a minority of 6 (18.8%) would average the two opinions as to arrive at the opinion of value, as summed up in Table 6 below. Such statistics show that among the 32 surveyors who formed value predictions, 59.6% of them are influenced by such predictions in concluding the opinion of value.

Further, it was observed as displayed in Table 6 that the majority of respondents who form value predictions do so by using the experience they have had in doing valuation of properties in a particular locality. A small proportion (9%) of the respondents admitted to forming predictions of value due to clients' influence. The confirmation bias was also tested by looking at the reasons provided by surveyors when ending the data collection stage of the valuation process. The question suggested three possible factors used to determine when the data collection stage of valuation should come to an end. The results are as presented in Table 6 below.

Table 6: Positivity Heuristics

Tendency of Forming Predictions of Value before the Actual Valuation Assessment			Action taken due to great variation between pre-conceived and assessed value (Follow-up Question to those who form Prior Predictions)			Basis for Value Predictions (Follow-up Question to those who form Prior Predictions)			Decision to End Data Collection Stage of Valuation Process		
Responses	#	%	Action	#	%	Basis	#	%	Reasons	#	%
Yes	32	73%	Adjust the assessed value to preconceived value	13	41%	Experience in valuing such kind of properties in that locality	29	91%	After being satisfied that the collected data will support your valuation	27	61%

No	12	27%	Average the two values	6	19%	Influence from clients	3	9%	After reaching the set standard of the firm such as the number of comparable properties	2	5%
			Adopt the assessed value	13	40%	Other	0	0%	After being satisfied that all reasonable comparable properties have been captured	15	34%
Total	**44**	**100**		**32**	**100**		**32**	**100**		**44**	**100**

Source: Author (2016)

A further inquiry based on information as indicated in Table 6 above revealed the majority (61%) end the data collection stage after collecting data which they assume supports the valuation assignment. Thirty four percent of the respondents end the search after capturing all reasonable comparable properties' data, while 5% of the respondents follow their company's standard by evaluating a set number of comparable properties.

4.3 Representative Heuristics (RH)

To test RH, respondents were asked three questions based on property inspection and description stage of the valuation process. These questions aimed at checking the valuation-surveyors' tendency to ignore the impact of unique features of the property because of some easily noticeable similarities. The first question inquired whether the respondents typically take interior measurements when valuing for mortgage purposes. As observed in Table 7, only 16% of all respondents did take interior measurements. Despite this, 43% of all respondents admitted that interior measurements of various units of the property like the sitting room, kitchen or bedroom are significant to the value of the property.

Table 7: Significance of Interior Measurements on Value Estimate

Responses	Taking Interior Measurements		The significance of Interior Measurements to Value of a Property	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Yes	7	16%	19	43%
No	37	84%	25	57%
Total	**44**	**100**	**44**	**100**

Source: (Author, 2016)

In addition, surveyors were asked whether they would be willing to pay more (as buyers) for a property that is similar to the other in general design, gross external area and materials located in an estate with slight differences in some features including; extra kitchen, number of bedroom, extra sitting room, larger parking, larger store and extra bathroom. In this question, a 3-level

Likert scale was used to calculate relative importance index (RII) as displayed in Table 8.

Table 8: Added Property Features

Features	Scale	Ratings		RII
		Frequency	Percentage	
Number of bedrooms	High	36	82%	**0.94**
	Medium	8	18%	
	Low	0	0%	
Extra sitting room	High	12	27%	**0.72**
	Medium	27	62%	
	Low	5	11%	
Larger garage/parking	High	12	27%	**0.63**
	Medium	15	34%	
	Low	17	39%	
Extra bathroom	High	7	16%	**0.58**
	Medium	18	41%	
	Low	19	43%	
Extra kitchen	High	3	7%	**0.51**
	Medium	18	41%	
	Low	23	52%	
Larger store	High	3	7%	**0.49**
	Medium	15	34%	
	Low	26	59%	

Source: (Author, 2016)

From Table 8 above it can be noted that valuation-surveyors are most likely to ignore the size of storeroom in their value assessment than they would for the size of the kitchen or an extra bathroom. As listed above, the number of bedrooms seems to be the most important factor for the value of the property compared to the rest. The results of the RII means that valuation-surveyors regard all other features except for the size of the storeroom. The general average RII for all rated features as shown in Table 8 above is 0.645.

5. Discussion of the Results

5.1 Reliance on Easily Available Information

This study has provided evidence for valuation-surveyor's inclination to use easily available information. Such an observation confirms the dominance of AH in mortgage valuation in Tanzania. In establishing land values, this study noted the excessive use of two data sources, land value rates fixed by the CGV in the Ministry of Lands Housing and Human Settlement Development, and to a lesser extent rates that the individual valuers pick from local market transactions. However, valuation normative models developed by professional bodies including the IVSC, prescribe reliance on information from the market for accurate value estimates. Land value rates developed by the CGV office are more indicative rates than market rates as they are developed and reviewed every 3-5 years. These rates were developed to ensure uniformity and consistency in value predictions. Valuers rely on these

rates mainly because they are easily available relative to market rates which are limited due to a fairly inactive property market.

Likewise, deviations from standard practice were observed in estimation of FSV and deprecation. A considerable percentage of valuation-surveyors (41%) disclosed using uniform forced sale factor standards set by their valuation firms usually established through the licensed valuation-surveyor (lead consultant). Twenty percent admitted to using their own experience, usually from previous valuations. Whereas in establishing depreciation, findings showed that 84% of the respondents estimated depreciation factors based on observed physical appearance of the building but also on the basis of rates used in previous valuations. In the final analysis, it was evident that the basis for establishing FSV and the depreciation factor is arbitrary and inconsistent, lacking the required comprehensive market search and physical examination of the subject property.

As argued by Tidwell (2011), deviation from a normative valuation model is likely to introduce bias and inaccuracy in valuation. It is therefore possible for the observed practice in the study to lead to biased and inaccurate valuations, hence defeating the purpose of adopting heuristics as suggested by Shar and Oppenheimer (2008), i.e. easing and hastening decision-making. However, it is argued elsewhere that bias introduced by the use of heuristics in decision-making can be improved by the consideration of more information.

The use of past experience was also observed in the investigation on the use of AH. Valuation-surveyors were noted to use past experience in estimating depreciation as well as FSV. This practice has been observed in other studies on decision-making such as Juliusson, Karlsson and Garling (2005). Indeed past experience may be useful in valuation but consideration of other factors such as what is happening in the market as well as those suggested in the valuation normative model is important for arriving at acceptable value predictions. Tversty and Kahneman (1974) noted that as much as AH is important for considering some signals and alternatives for a particular decision-making task, there are more factors that effect decision-making other than the ones that are easy to recall from knowledge and experience. They further argue that non-consideration of all relevant factors is likely to result into predictable biases.

It can therefore be argued that valuation-surveyors need to consider all possible alternatives and information necessary for every valuation assignment instead of relying on knowledge and experience that comes to mind, thereby avoiding introducing bias in valuation.

5.2 Value Preconception

About half (40.6%) of the respondents who had admitted to forming value predictions confirmed that they would adjust the assessed value to the preconceived value. This view is consistent with a study by Gallimore (1996) who noted that surveyors are more likely to adjust the value more with

positive information than with negative information. From the study it could be concluded that valuation-surveyors tend to adjust the assessed value more when they have data that supports their predictions.

Further, there was overwhelming evidence to suggest that a majority of valuation-surveyors (61%) would end data collection when they perceived the amount of information already at hand to be indicative of pre-conceived values. These findings support the view that valuation surveyors' behaviour confirms their beliefs during the data collection and analysis stage. The data also indicated that most valuation-surveyors who form value predictions tend to tweak the assessed value towards the preconceived value. With such practices there is a danger of bias and the introduction of errors resulting from individual surveyors' judgement, particularly where information collected is incorrect.

5.3 Neglecting Property's Unique Features

In probing the use of RH it was noted that there is a tendency by valuation-surveyors to ignore some of the property's unique features. This was confirmed by 57% of the respondents who held that the size of various units of the property, such as sitting room and kitchen, does not have an impact on the value of the property. This is not surprising since such findings have also been observed in a study by Tan (2012) in Kuala Lumpur where the number of rooms were noted to have a significant influence on house choice over kitchen and number of bathrooms. It is possible that other factors such as culture, socio-economic status and lifestyle influence preference of one factor over the other (Adair et al., 2000). Whereas the number of bedrooms and bathrooms are significant factors in Saudi Arabia (Opoku & Abdul-Muhmin, 2010); a study in Ghana observed swimming pools, car parks and boundary walls to be other important price determinants (Anthony, 2012). Olusenyi (2014) on the other hand noted that for medium density areas, among others, the presence of a burglar alarm was a significant factor in renting decisions. With this consistency, it is evident from the findings of this study that valuation-surveyors in Tanzania benchmark their decisions on some prototypes.

On the other hand, surveyors were also found to ignore heterogeneous features of real estate. Thence, two properties cannot be construed to be identical in valuation merely because of the existence of some general similarities. The RII in Table 8 highlights the relationship between property features and value. The RII ($0 \leq RII \leq 1$) for the number of bedrooms was 0.94, an extra sitting room 0.72, a larger garage was 0.63, an extra bathroom was 0.58, an extra kitchen was 0.51, and 0.49 for a larger storeroom. From the indices it can be noted that valuation-surveyors are more likely to ignore the size of the store room in their value assessment than they would for the size of the kitchen or an extra bathroom.

6. Implications of the Findings to Valuation Practice

This study provided evidence regarding a number of fundamental aspects of heuristics research in the context of valuation practice in Tanzania. In particular, the study has confirmed the use of three less relevant types of heuristics in mortgage valuation in Tanzania. However, the use of these cognitive shortcuts does not guarantee accuracy of the decision made since it avoids the analysis of all alternative solutions before making a choice (Romanycia & Pelleti, 1985). From the results, valuation-surveyors were noted to leave aside the prescribed normative valuation procedures and adopt descriptive procedures that are considered to be heuristics.

Although validating the valuation results obtained by applying various heuristics was not part of this study, deducing from the observed application, the usage of heuristics tends to introduce errors to valuation output. The results indicate that heuristics is present in virtually all stages of valuation decision-making processes. In that perspective, the valuation stages that are directly affected by the heuristics include the data collection and analysis stage.

The findings indicate valuation-surveyor's tendency to use easily available information. This shows the disregard for the data and data source's quality. Further, the cases of property classification for the purpose of valuation such as establishing valuation rates tend to ignore unique features of each property. In other instances, the formation of preconceived value, as seen in this study, tend to influence the opinion of value. The influence of the predicted value can reveal itself from the data collection stage to the value assessment stage of valuation processes.

As it has been asserted above, the use of heuristics in property valuation has the potential for introducing errors particularly when it is applied unconsciously. The implication of this study's findings cut across the whole valuation profession. For the profession, the findings call for the consideration of the risks of applying these shortcuts in the valuation process. The valuation firms should carefully consider directives given to their valuers that interfere with the prescribed valuation process since in the end the adopted procedure will be more important than the value opinion, especially when it comes to a negligence claim. Professional standards enforcing boards should examine and review impacts of the prescription of indicative rates to the profession. There should be deliberate efforts in establishing a more live and comprehensive database regarding the performance of the property market.

This study on heuristics has emerged as an aspect of research in valuation in general. Little is known about its prevalence in valuation, the factors influencing it and the potential significance of heuristics in valuation. Hence, there is a need for more systematic research on heuristics in valuation as well as valuers behaviour in the valuation process within the context of Tanzania. This is necessary to address the gaps as depicted by the issues noted above. It is important to understand valuation-surveyors' behaviour and how it affects

the final value estimate. From the findings there are indications that the behaviour of the valuation-surveyor has implications to a range of aspects in the valuation process.

An intriguing area for future research relates to development of a methodology for studying heuristics and the accompanying bias in valuation, taking into consideration the normative valuation model prescribed by professional bodies.

7. Conclusion

This study focused on the decision-making behaviour exhibited in the valuation process by valuation-surveyors in Tanzania. The study confirmed that availability heuristics, positivity heuristics and representative heuristics are widely used in various stages of the valuation process by valuation-surveyors in Tanzania. However, it was noted that by using these heuristics, there is a potential for using incorrect inputs in the value assessment process as well as modification of the final assessed value. Hence the need to understand the use of simplified shortcuts and the associated impacts in curbing the improper and unconscious use of such information processing heuristics. The realization that such heuristics are in use is an important milestone towards understanding valuation-surveyor's decision-making behaviour, particularly in the Tanzanian context and how this impacts the opinion of value.

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