

Feasibility of the Rational Decision-Making Model in solving problems in Local Authorities: A case study of domestic solid waste management in Gweru City Council.

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Abstract: The case study focused on Gweru City Council by investigating the feasibility of the Rational Decision-Making Model in solving problems faced by Local Authorities (LAs) in the management of domestic solid waste in the high density suburbs. The researchers were motivated into the research study by the rampant disposal of solid waste in high density suburbs. The top-down decision-making process in LAs tended to create red tapes that hindered effective solutions to the problem. The study's key objective was to establish the perceptions of stakeholders on the feasibility of using the Rational Decision-Making Model in the high density suburbs of four villages in Mkoba. The descriptive survey design was used to collect data on perceptions of workers in the refuse collection and disposal section of the Department of Health as well as residents in the high density suburbs. The design facilitated the use of cross-sectional survey to collect data from 82 respondents sampled from a target population of 815 people. A questionnaire for workers and residents, and an interview for the management group were used to collect data from the respondents. Both questionnaire and interview results revealed that non-payment of refuse collection tariffs by residents was a very serious problem. Most of the respondents had perceptions that favoured the use of the Rational Decision-Making Model in the management of domestic solid waste. The researchers concluded that Rational Decision-Making Model was feasible in solving problems faced by LAs. Following the research study conclusions, the study recommended that the Ministry of Local Government and Urban Planning should adopt a new philosophy in decision-making where local authorities can no longer use laid down decision-making models which are fraught with delays, mistakes, and defective service delivery systems.

Keywords: Local Authority; Rational Decision-Making Model (RDMM); solid waste management

INTRODUCTION

The success of Local Authorities (LAs) in solving problems they encounter depends on the decision-making models they use. Bureaucratic decision-making models have been more prevalent in most LAs (City Councils) in Zimbabwe since their establishment in the colonial era. From the 1980s, there have been a series of reforms taking shape in the governance of City Councils, resulting from increased awareness on the importance of quality client services in their different sectors. The top-down decision-making process seems to create red tapes that tend to hinder effective decisions to provide meaningful solutions to problems that face City Councils. In view of this, an interest to use alternative decision-making models has increased over the last decade [1] Thus, the focus of this study was on the feasibility of the Rational Decision-Making Model (RDMM) in the Zimbabwean City Councils grounded in Gweru City Council as the setting.

A Local Authority (LA) "...is a term that refers to a rural and urban political subdivision below the national level which is constituted by law and has substantial control of local affairs, and which includes authorities in counties, municipalities, cities, villages and others" [2]. The LA is also referred to as Local Government. It is responsible for the provision and maintenance of public services and infrastructure at local levels utilising funds generated from the local community, in addition to grants and loans from central Government, and other sources. Each Local Authority consists of democratically elected structures that can identify with the needs of the people who ensure the translation of the people's needs into programmes, projects and maintenance of essential services. Where an LA is efficient and effective, transparency and accountability are central to the decision-making process and the system is able to provide and maintain quality service and infrastructure[3]. "In practical term ... Local Government is not an independent sphere of government, but an appendage of central government which determines the birth, development and death of

this important sphere of governance [3], At the centre of the local government policy is the Ministry of Local Government, Public Works and National Housing which is the lead agency. It provides the legislative and policy framework within which LA units operate. Thus, decisions to solve problems are guided by this framework. The Ministry of Local Government administers all the Acts and Statutory Instruments promulgated in the local government area. The Minister retains a substantial supervisory role over all local government units and enjoys the ultimate power of intervention and suspension of any local council as well as nullifying their decisions [3]. Through its control of the legislature, central government is able to effect any amendments to the structures and functions of local governments. When faced with problems, it becomes very difficult for LAs to make effective decisions and implement them without consulting the Minister. Thus, many problems remain persistent and unresolved. This creates the need for Rational Decision-Making Models to solve the problems LA encounter of which random disposal of domestic solid waste is a key problem. Hence, the object of the study was to investigate the feasibility of the Rational Decision-Making Model in solving the problem with particular focus on Gweru City Council.

LITERATURE REVIEW

Institutional and Administrative Context

The *Urban Councils Act* [4] in Zimbabwe is the act through which national decentralisation policy has been promulgated. It provides Urban Local Authorities with a wide range of powers and responsibilities for the provision of services to urban residents and companies. The legislative framework relating to municipalities seem to restrict LAs to fulfil municipal functions [5]. In general terms, the central government performs an indirect provider role including resource allocation, regulation, approval, while the local government performs a 'direct' provider role. The central government is responsible for national policy formulation and monitoring in checking administrative competence in local authorities. City Councils formulate their own by-laws for the regulation of their services.

The central government has a policy of tariff increase restraint which generally inhibits appropriate tariff increases by city councils in order to maintain and sustain their services. Local authorities develop their own service delivery implementation plans and obtain external assistance as and when they require [5]. Despite this autonomy, the existence of the problem of solid waste disposal and management may imply that the decision-making models used are not effective. "In developing countries, including Zimbabwe, the problem of solid waste management is becoming more and more complicated and require long-term, and sustainable programmes for its solution" [6], "Considering

African cities, experience tells that less than 20% of urban solid waste is collected and disposed of properly." [7]. LAs are failing to provide adequate services of waste collection and disposal. It seems the decision-making process does not clearly focus on the problem of waste management; hence, it was the key objective of this research study to find out the feasibility of the Rational Decision-Making Model in solving the problem.

The Gweru City Context

The City of Gweru is located at 19°25'S 29°50' E, covering approximately 26,113ha including the newly acquired land [8]. The Gweru City Council (GCC) is the administrative organisation of the city. The city is managed with political and administrative consistency with cautious and targeted expenditure [5]. This implies that it has the capacity to make sound decisions to solve problems such as those in domestic solid waste management. However, in the context of rapid urban growth, the density of occupation and the rapid depreciation of infrastructure, there has been deterioration in the quality and quantity of water supplied in the sanitation system in the city. The densification of the low-income areas has exerted high pressure on domestic waste management. The Health Department is responsible for functions which include sanitation, refuse removal and health services [8]. The department is faced with the need to make rational decisions to curb the problems city's domestic waste management. A research study by Plummer and Nhemachena [5] has revealed that Gweru City Council managers, by then, did not consider customer management in terms payment waste disposal tariffs as one of their strengths. This means that the City residents, as clients were not well handled. "The GCC argues that the composite problem of inadequate infrastructure and poor customer management has helped to create a culture of non-payment for services and a resistance to tariff increases (sometimes even in areas where there was a history of regular payment)," [5]. Thus, domestic solid waste management is greatly incapacitated by shortage of funds. This clearly reflects the need for more logical decision-making models in which urban residents have a decision input to alleviate the problem from a common front.

Solid Waste Management

"Solid waste management (SWM) refers to the collection, transportation, processing, recycling or disposal, and monitoring of solid waste materials produced by human activity, and is generally undertaken to reduce their effect on health and the environment" [9]. According to Klemmer et al [6] solid waste is "any waste that is hard or solid and not water-like or liquid, for example; broken glass, used plastic bags, left-over food and remains, torn clothes, yard sweepings ..." Observations in urban residential areas indicate rampant disposal the solid waste. Good

practice in solid waste management involves collection and proper disposal of the waste in a regular and systematic manner and in time. From observation, this does not seem to happen in GCC. “Of all environmental problems that have come into focus in Gweru, institutional solid waste management has been the slowest to develop either direction or regulatory mechanisms”[7]. The general picture is that significant quantities of solid waste are generated in high density areas, but without sound practices for managing the waste[7].

The environmental and health hazards caused by random dumping of solid waste need all stakeholders’ attention. The adverse impact of solid waste might be addressed by establishing integrated unstructured decision-making programmes where all types of waste and all facets of the waste management process are considered together. “Setting this up calls for clearer information on the current situation with regards to practices, knowledge and perceptions on SWM, particularly at household level to assess community perceptions, attitudes and practices on the management and communication between local authorities and communities”[6]. Such an approach may create a platform to generate evidence to support stakeholder driven intervention, and to build strong partnership bonds between the GCC’s Health Department and residents. In view of this, the researchers sought to ascertain stakeholders’ perceptions of the feasibility of the Rational Decision-

Making Model in solving the problem of domestic solid waste management.

The Rational Decision-Making Model

Kelly says, “The Rational Decision-Making Model assumes that decisions are made in the best interests of the organization on the basis of data collection, analysis, along with evaluation of alternatives.”[10] From the definition, it is apparent that the model focuses on improving the organisation when decisions are made based on data collected from people.

Jenkins in Home Affairs Bureau states, “Public policy is a set of interrelated decisions taken by a political actor concerning the selection of goals and means of achieving them, which is held within the powers of the actors to achieve. It should be partly or wholly developed within the framework of Governmental procedures, influence and organisations.” [11]. Models can be used as simplification of reality to describe what is, or attempt to restructure and improve upon reality as a normative prescription of what ought to be as in the case of the rational model.

When discipline and consistency prevail in LAs, effective and efficient service delivery can be achieved and easily contained. Deducing from the above statement, the model may be a useful tool in domestic solid waste management Local Authorities and Gweru City is no exception.

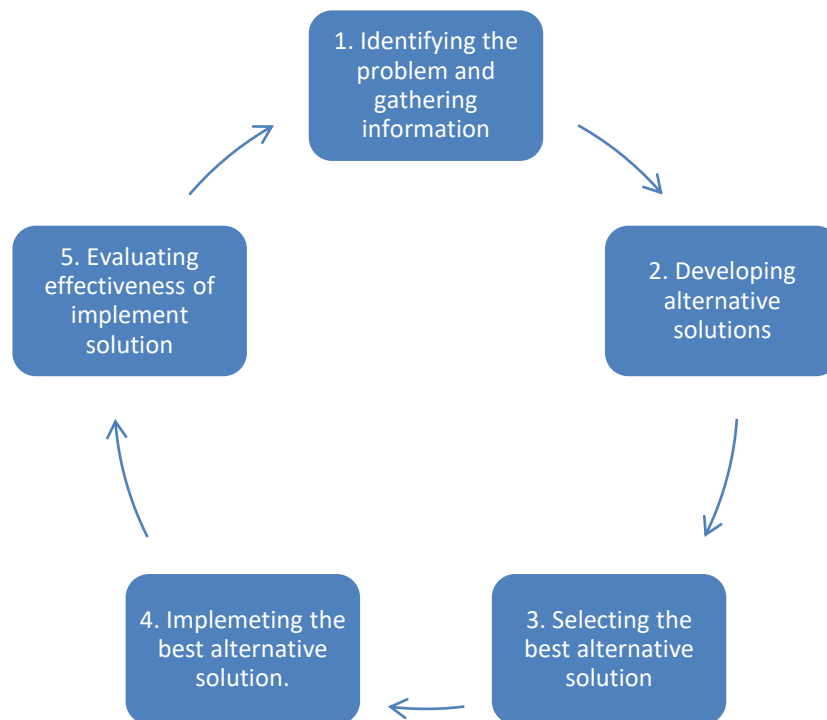


Fig-1: The Rational Decision-Making Model
 Modified from Management Skills Resource Centre (2008)

Causes of the problem are also diagnosed through some questions based on human relationships. Stoner, Freeman and Gilbert pose questions like, “What changes outside or inside the organization may have contributed to the problem? What people are most involved with the problem situation? Do they have insights or perspectives that may clarify the problem? Do their action contribute to the problem?”[12]. Such questions tend to qualify the model for solving the problem on domestic solid waste mismanagement in local authorities.

Strengths of the Rational Decision-Making Model

Using the Rational Decision-Making Model has quite some advantage which gives it potential usefulness in Local Authorities. The model provides a clear and objective structure and discipline to the decision-making process. This helps to ensure that a wide range of factors relating to the decision and the problem are treated in a logical and comprehensive manner,[13]. When group decision-making is involved, the model allows adequate participation of concerned stakeholders. According to Hofmann and Hahn the “guiding steps are so successful for technical problems and within the humanities” [14]. For this reason the researchers assumed the model might be suitable to solve the problem of domestic solid waste mismanagement in LAs.

The problem

While the RDMM is widely practiced by firms and other profit oriented organizations, its adoption by City Councils at operational level is less understood. The application and effectiveness of the model is still insubstantial and unknown in the sense that there seem to be no documented proof of its practice. This study is undertaken to fill this knowledge gap. It was imperative to study on how the RDMM can be effectively used by City Councils as a tool of mitigating the problem of solid waste management. City Councils were chosen as the setting because of their significant role as the second tier to the government.

Research objectives

The main objective of the study was to investigate the feasibility of the application of RDMM by City Councils in Zimbabwe. In so doing, the study sought to:

- i. To establish factors that impede the application of the RDMM in mitigating waste management problems in City Councils; and
- ii. To establish the feasibility of applying the RDMM in improving waste management in City Councils.

Research questions

In carrying out the research study the researcher is guided by the following questions.

- i. What are the impeding factors in the City Councils in using the RDMM in waste management?
- ii. How do stakeholders perceive the feasibility of the RDMM in improving waste management in Gweru City Council?

METHODOLOGY

The researchers employed the descriptive survey design as a methodology to collect information from the respondents. The methodology allowed the collection of information from sampled respondents within a well defined time frame using questionnaires and interviews [15].

Population

The researchers used the City Council’s Health Department workers in the management category and in the refuse collection and disposal section, and residents of Villages 2, 3, 5 and 6 in Mkoba high density suburb. The workers were used, because they were directly involved in the collection of domestic solid waste from the suburbs, hence, reliable determiners of the feasible means waste management. Residents were used, because they were the key producers of solid domestic waste, and were likely to provide accurate information on why they dumped the waste randomly in their areas of residence. Table 1 below shows the target population used in the study.

Table 1: Target population figures

Management	Workers	Landlords				
		Village 2	Village 3	Village 5	Village 6	Total
10	50	200	150	200	200	810

Sampling

According to Fraenkel and Wallen [15], Nachmias and Nachmias [16] and Robson [17] when it is impossible to randomly select individuals from the target population made up of groups of respondents. This study used stratified random sampling. Fuller argues, “Stratified random sampling is a technique used to improve the accuracy of survey results, or to lower the cost of the survey without losing the accuracy”[18].

Thus, the researchers selected stratified random sampling to obtain accurate information from the respondents. The method was far much easier to use than other methods, because it was less time consuming in coming up with the final sample from the different target groups. According to McMillan and Schumacher[19], if a sample constitutes 10% or more of the target population, the information collected from it is an accurate, valid and reliable representative of the

whole population. Thus, the researchers involved a sample of 82 (10, 10%) respondents proportionally selected from the target population groups. The villages are distributed over a reasonable geographical area, and therefore, were relatively reasonable to obtain

information to address the research problem. Each of the 4 villages constituted a group from which part of the final sample of the study respondents was drawn. The table below shows how the sample was selected.

Table 2: Sampling of respondents

Group	Population	% out of 815 (approx)	Respondents out of 82
Management	15	2	2% of 82= 2
Workers	50	6	4% of 82 = 5
Village 2	200	24	25% of 82 = 20
Village 3	150	19	19% of 82 = 15
Village 5	200	24	25% of 82 = 20
Village 6	200	25	25% of 82 = 20
Total	815	100	82

To come up with the actual samples from each group, random sampling was used. A table three-digit random numbers ranging from 001 to 200 was designed. Each member in the population group was assigned a number from the table. The respondents with first 5 multiples of 5 from the random table of numbers were selected as the actual sample to the study. The respondents sampled were reasonable enough to cater for different administrative differences among the management and the workers, and social differences among the landlords from the villages. By using the above sampling method, the researchers saved time and costs.

**Instruments
Questionnaire**

A questionnaire for workers and landlords was designed to elicit from respondents information that could achieve the study objectives. The questions were focused to address as the key variables concerning the feasibility of the Rational Decision-Making Model in domestic solid waste management. The questionnaire consisted mainly of closed-ended and a few open-ended questions.

Interview

The study used one interview schedule for the respondents in the management group. The schedule had semi-structured questions with the same wording and sequence for all respondents. The questions were orally administered. Responses to questions confirmed and authenticated information from the questionnaire for workers and landlords.

Data analysis

Data was analysed and interpreted according to patterns and regularities derived from the response frequencies given to statements in the questionnaire and answers to interview questions.

DISCUSSION OF FINDINGS

Problems faced by Gweru City Council in domestic solid waste management

In the analysis, a total of 44 (55%) respondents conceded to the statements that the council failed to fund the collection of domestic solid waste. This might be correct as a majority of 74 (93%) respondents indicated that the residents did not pay their refuse collection tariffs in time. This also agreed with information from interview results from the management group. This problem tended to incapacitate the council to effectively carry out its refuse collection services.

The results showed that 70(87%) respondents stated that the council did not collect refuse regularly. This could be tied to lack of funds inter alia other problems. At the same time this can also be attributed to shortage of refuse collection vehicles as indicated by 19 (23%) of the respondents. 30(28%) respondents agreed that the council had no by-laws on refuse disposal as opposed to 65(81%) who concurred that the council had the by-laws, but was not strict on their compliance by the residents. It is apparent that this was one of the major causes of the problem of rampant domestic solid waste disposal. On the issue of shortage refuse collection workers, 28 (25%) respondents agreed to the problem. However, the responses were less than half the sample, which implied that the problem was not quite acute. The analysis further indicated that 68 (85%) respondents conceded that the residents were not aware of the health hazards caused by random disposal of domestic solid waste. This high rate of response, gave the impression that there was need for strong campaign by the council on the health dangers that emanate from random disposal of solid waste.

76(95%) respondents indicated that workers and residents were not involved in the decision-making process concerning refuse collection and disposal. This meant that the management used top-down decision-making procedures. This reflected element of

ineffectiveness in decision-making, since the problem was not solved and was getting to serious levels.

Interview results on problems in domestic solid waste management

Results augmented the information obtained from the questionnaire for landlords and workers. The respondents were required to give problems the city council was facing in the management of domestic solid waste. Quite a number of problems were highlighted.

- Residents in the high density suburbs were supposed to have their own bins from which the city council collected the domestic waste. Unfortunately many residents did not have the bins. It was then difficult for the refuse collection team to collect from the households during the refuse collection days which by then were regular. As a result of the uncollected waste, residents resorted to random dumping of the solid waste especially during the night.
- The council had limited funds to increase the refuse collection frequency. The major reason being that the residents did not honour the payment dates for charged tariffs.
- The city council had by-laws on refuse disposal, but they were difficult to enforce due to lack of policing staff. The problems were compounded by night dumping of the solid waste by residents.
- The interview respondents agreed with the questionnaire results that residents appeared unaware of the hazards of rampant solid waste disposal.

In terms of decision-making concerning refuse collection and disposal, the council followed laid down procedures as in encapsulated in Urban Councils Act [4]. It was difficult for management to waiver the procedures.

Perceptions of on the feasibility of the Rational Decision-Making Model

The ratings of the respondents indicated a general agreement that supported the use of the Rational Decision-Making Model to solve the problems the City Council was facing in the management of domestic waste in the high density residential areas.

The results analysis reflected that:

- A majority of the respondents 74 (92%) supported the involvement of all those concerned in refuse collection and disposal in decision-making processes. It was apparent that, if workers and residents were involved, lasting solutions to the problems could be formulated.
- The questionnaire provided the respondents to rate the five steps in an ideal Rational Decision-Making Model. A resounding majority of the respondents

favoured the process of the model. The implication given was that, if the model was used in the management of domestic solid waste, the problems conceded by all the respondents could be solved.

Interview results on perceived feasibility of the Rational Decision-Making Model

- Both respondents were aware of the Rational Decision-Making Model and its implementation procedures.
- The respondents agreed that the model was very feasible, especially if all stakeholders were involved. The only impediment to its implementation was the top-down decision-making procedures.

CONCLUSIONS

From the research findings the majority of the respondents highlighted the existence of quite a number of problems faced in refuse collection and disposal. The researchers concluded that the problems were valid and needed urgent attention. The researchers also concluded that the decision-making model currently used was not effective in solving the problems encountered in domestic solid waste collection and disposal. Most of the respondents showed that they were not aware of the health hazards caused by random disposal of domestic solid waste. From this it was concluded that most of the high density suburb residents disposed the solid waste without considering its health effects on people.

Where there is no enforcement of laws and by-laws, people tended to relax and did whatever they wanted irrespective of the problem. The Gweru City council was not strictly enforcing its refuse disposal by-laws in the high density areas. The researchers therefore, concluded that this was one of the main causes of random disposal of solid waste.

The results of the study indicated that workers and landlords were not involved in the decision-making process in the management of domestic solid waste disposal. A conclusion drawn was that, residents as stakeholders needed to be involved in the decision-making process, and one way was through the Rational Decision-Making Model.

The majority of the respondents showed perceptions that favoured the use of the Rational Decision-Making Model in the management of domestic solid waste in the high density suburbs. The researchers concluded that the model was very feasible in solving the problems faced by local authorities in domestic solid waste management. When a service delivery problem occurs, organisations which depend on a single decision-making model may run short of possible solutions. This is reason in its own right for the

feasibility of the rational decision model in increasing the effectiveness of service delivery to the urban communities.

RECOMMENDATIONS

Following the above conclusions the following recommendations were made. That:

- Local Authorities should implement the Rational Decision-Making Model to solve problems in domestic solid waste disposal problems. When decision-making is rationalised to a point where workers and landlords are involved, residents will honour the decisions they make ;
- Local Authorities' refuse collection and disposal activities should be rationalised to the point where standard operating procedures are developed to provide certainty and facilitate coordination. This organizational atmosphere would also facilitate rational evaluation of the success of the decision-making outcomes where bureaucratic view would not be a dominant consideration.
- The Ministry of Local Government and Urban Planning should adopt a new philosophy in decision-making where local authorities can no longer live with commonly laid down decision-making management styles which may be fraught with delays, mistakes, and defective service delivery systems;
- The rational decision-making process depends upon creative and critical thinkers being fully engaged in a collaborative process based on a strong community ethic of fairness. Therefore, there was need for local authorities to lay down standards for the selection of people involved in decision-making; and
- The researchers should increase the delimitation of the research study geographical area and target population to cover existing conditions in many local authorities. This would increase the validity and reliability of the research findings.

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