

An Investigation into the Impact of Consumer Perception on Compliance to EMA Regulations: The Case of Hatcliffe Residential Area-Harare (2010-2015)

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Abstract: - The aim of the study was to investigate the impact of consumer perception on compliance to environmental management regulations using the case of Hatcliffe residential area (2010-2015). The objectives were to assess factors affecting perception and explore consumer perceptions of regulation, to investigate the characteristics of the processes that stimulate these perceptions and the nexus between communication and perception, to analyse the development and enforceability of Zimbabwe's Environmental Management Regulations. This study was based on an exploratory research design as it deals with perceptual and regulatory variables and explored the various perceptions of consumers and the executive in the Hatcliffe area in interpretation and implementation of EMA regulations and the possible impact of these perceptions on their compliance to the regulations. The researchers used questionnaires and interviews to collect data for the study. Researchers sampled 4% of the population which is 300 participants. The study found out that Hatcliffe residents mostly comprehend environmental issues through consequences of past experience. Most are knowledgeable of environmental issues in the area while some have shown no interest in some of the issues at hand. Telecommunication companies have also made an impact in imparting knowledge to consumers through their bulk messages which encourage consumers to conserve the environment. Policy makers and implementing bodies were recommended to conduct awareness campaigns to educate and impart knowledge on consumers to enable them to understand the different aspects of the environmental management legislation.

Key words: environmental management, perceptions, policy, EMA- Environmental Management Authority

I. BACKGROUND OF STUDY

Until 2002, environmental legislation in Zimbabwe was seriously fragmented since there were several statutes dealing with or that were relevant to the management of the environment. Chinamora (1995) noted that over eight different ministries were administering the different statutes and this resulted in development related decisions being made by bodies apart from those charged with protection of the environment. Against this milieu of environmental legislation being distracted by fragmentation, the Ministry of

Environment and Tourism in 1992 instigated a process of environmental law restructuring.

The reforms were also in light of the Rio de Janeiro Earth Summit in which Zimbabwe participated in the same year. This process involved extensive consultations by the Ministry of Environment and Tourism and resulted in the passage of the Environmental Management Act (Chapter 20:27), hereafter referred to as the Act, through Statutory Instrument No. 13 of 2002. The law forms a broad legal statement on environmental management in Zimbabwe and was the first consolidated piece of legislation on environmental matters in the country.

The Act provides for the viable management of natural resources and protection of the environment; prevention of pollution and environmental degradation; preparation of the National Environmental Council, National Environmental Plan and other plans for the protection and management of the environment; the establishment of an Environmental Management Agency, Environmental Management Board and an Environment Fund; the amendment of references to intensive conservation areas and committees and associated matters in various Acts; the rescinding of the Natural Resources Act [Chapter 20:13], the Atmospheric Pollution Prevention Act [Chapter 20:03], the Hazardous Substances and Articles Act [Chapter 15:05] and the Noxious Weeds Act [Chapter 19:07], and for matters connected with or incidental to the preceding. There are also provisions for the establishment of the Standards and Enforcement Committee, formulation of environmental quality standards and environmental plans, environmental impact assessments, audit and monitoring of projects and for other matters relative to environmental management and conservation.

Nhliziyo (2013) highlighted that, in the spell of the rapid urbanization process, development of residential areas has been of serious concern to accommodate the expanding populace within urban space. Problems associated with urbanization include unemployment, pollution, poor sanitation, and disease outbreak to mention but a few. In an

effort to accommodate the exploding population, the natural ecosystem has gradually been designed out through residential development. Low-income residential areas now constitute the largest space of the built environment in most cities in the country.

One such area is the Hatcliffe residential area which is situated in Harare rural, Harare, Zimbabwe with geographical coordinates 17° 41' 18" South, 31° 6' 35" East. The settlement resulted from the urban 'land-less' taking advantage of the opportunity created by fast-track resettlement programme to present their own land demands. Marongwe (2003) argues that the haphazard manner in which land was occupied mostly contradicted with the planned use for the affected areas and led to a serious deviation from the planning procedures and further created a huge demand for the servicing (sewage, water, electricity roads) of the demarcated stands.

"Development" has proceeded irrespective of the environmental threats to sustainability. The future of urban ecology is under threat and there are several questions regarding this phenomenon: how do low-income populations perceive environmental issues of urban settlements? How capable and willing are the local authorities to embrace and apply ecological based planning in residential development? What are the facilitating instruments of ecological-based planning? What are the prospects of integrating ecological based planning to low-income residential development? What are the restraining factors existing towards embracement of ecological based planning and how best can they be harnessed towards future ecological cities? The case of Hatcliffe residential area in Harare shows that there are many challenges faced to overcome uncoordinated planning approaches, ineffective policies and legislative frameworks, weak institutional settings, financial constraints, outdated planning standards and regulations, poverty, lack of environmental stewardship and lack of political will among others. According to Chirisa and Muzenda (2014), the issues addressed by these questions all have an impact upon environmental management and therefore are somewhat bound the environmental management legislation.

As countries develop, levels of regulation generally increase. Because of the costs associated with compliance, regulation has had an influence on consumer view of its implementation. Considerable attention has been drawn to the perception of regulation as a burden in Zimbabwe. This has been intensified by the economic downturn and its impacts on business and individual growth and survival and has largely resulted in a diverse mix of perceptions about regulation. Perception not only reflects the views of cost impact on a business or individual but can also exercise considerable influence over the strength of feeling about this issue. A key aspect of the research concerns the specific role of formal and informal communication in influencing perceptions and the influence of these perceptions on human behaviour. Shanker et al (2002) views that consumer perceptions of regulatory burden

can be exaggerated by the way in which regulatory information is transferred to consumers through the various communication channels available and by the involvement of consumers in the development of regulations. A detailed assessment will be done on the impact of consumer perception on regulatory compliance.

II. STATEMENT OF THE PROBLEM

Amid urbanization and the influx of the populace into urban areas, there has been the designing out of nature which has resulted in the need for regulatory services continuously increasing. Considering that environmental management regulations are one of the set of regulations which regulates every person including members of the public, little has been done to explore the relationship between consumer compliance to regulation and consumer perception. It is against this background that the researcher has decided to investigate consumer perceptions of the current environmental management regulations, what has led to the existing perceptions, and the impact of these perceptions on consumer compliance to the regulations.

III. RESEARCH QUESTIONS

The major research questions for this paper are:

- What are the perceptions of the Zimbabwean consumers on regulations?
- What are the factors influencing consumer perception?
- Do the consumer perceptions influence their behaviour with regards to compliance to Environmental Management Regulations?
- What are the requirements of Zimbabwe's Environmental Management Regulations and how enforceable are they?
- To what extent were consumers involved in the development of these regulations?
- Which major environmental issues affect Hatcliffe area?
- Is there a relationship between consumer perception and compliance to regulation?

IV. INTERIM LITERATURE REVIEW

4.1 Consumer Perception

Consumer perception is described by Kotler et al (1998) as acting and reacting on what one sees. He further describes perception as the process of interpretation of a present stimulus on the basis of past experience. Stimuli received by our sense organs are converted into sensations that are then transmitted to the concerned parts of the brain which will in turn interpret these sensations. In the same vein, Sitter (2005) defines perception as how humans recognize and interpret stimuli. He emphasizes on how humans give attention to and select stimuli depending on the environment around them, psychological, economic and social anthropological circumstances.

Perception resultantly becomes an object which describes an entity's perceived image which they expect from any stimuli and observation is subject to influence by various factors. Munnukka (2008) viewed perception as the first impression drawn by an individual and used as a basis for selection and interpretation of information to give a meaningful depiction of the environment. This leads to the belief that consumer perception has an influence on levels of consumer satisfaction and therefore their buying and usage decisions.

However, perception is not as modest as it sounds but rather requires an integrated approach. It is a complex process where diverse emotional and functional processes are involved. Factors such as the accuracy of sense organs, the clarity of sensations and the state of mind of an individual need to be considered amongst many others otherwise our perception may end up off-beam altogether.

4.2 Factors Affecting Perception

Different individuals can look at the same situation and yet perceive it differently, and it is evident that numerous factors operate to profile and at times distort perception. Robbins (2005) predicts factors affecting perception to be in threefold. The factors may be classified as factors in the perceiver; factors in the target being perceived; as well as factors in the environment in which a perception is made.

As an individual views a target, their interpretation of it is heavily influenced by their personal characteristics. Robbins (2005) noted that such characteristics include past experiences, expectations, motives, attitudes and personality amongst many. If due to past experience, a perceiver regards a given target in a particular manner, they will regard them as such despite the target's actual traits.

Lewicki (1985) and Higgins (1996) concurred that previous experience and encounters exert a reliable assimilative impact on perception of an existing situation. Considering the consumer as the perceiver of legislation, past experience with already existing legislation, expected benefit from the legislation, motive in carrying out the regulated activities, understanding of the legislation, personality and even the attitude of each individual will influence how they perceive the legislation in question.

Factors in the Target

Perception drawn from a given target can be affected by features of the target. The more prominent features of a target are more likely to be observed than the dormant ones. Amongst these features are proximity, similarity, background, novelty, etc. Relating these factors to legislation and its implementation, issues that are more conspicuous and emphasized are the ones which are more likely to be observed by the consumer. The influence due to the relationship between a target and its background cannot be undermined as well.

Factors in the Environment

The moment or time during which a subject is experienced or has impact, demographic environment, economic environment, social environment, climatic environment and all other situational factors have great impact on how the subject will be perceived. Postman and Bruner (1948) noted that environmental conditions may influence a supportive or defensive view of the subject in question. In the same vein, when implementing any piece of legislation, the environment in which the consumer is embedded will contribute to how they will look at it and interpret it.

4.3 Importance of Perception in Decision Making

Decision making is defined as making a choice between two or more alternatives. According to Horn (2006), the perception of a problem is central to the decision process. Judgements made about a situation are made based upon what is known about it. Resultantly, details of perception representation in the brain is of utter importance in understanding the strengths and weaknesses of human decision making. Bechara et al (2000) found that there are many processes involved in decision making and that decisions require perceptual processes to extract factual information from the external world that can be used to help develop a solution to a problem and the senses are responsible for delivering information to the brain, which is the organ responsible for analysis and decision making.

Brehmer (1995) and Gonzalez et al (2005) concur that perception impacts heavily on decisions where individuals construct mental models of a situation to construct an understanding of the environment around them. These situations include dynamic decision making environments, where complex scenarios require detection and identification of cues will assist a decision maker to differentiate between the effects of their own actions and the extrinsic changes due to an existing environment.

4.4 Impact of Perception and its Influence on Human Behaviour

According to Elnaga (2012), understanding perceptual interpretation assists management appreciate why individual variances must be considered in the workplace. In the same vein, understanding perceptual interpretation should assist policy makers, the government and the executive understand why individual differences need to be considered in the development and particularly communication and implementation of regulatory infrastructure. Each individual views the world and environment around them in their own distinctive manner and thereby behave and respond in accordance with their interpretation.

The concept of observing, choosing and interpreting stimuli are linked to formulate the perceptual process, which paves way for any responses and the three main internal responses are attitudes, feelings and motivation leading to behavioural traits. Human conduct is also highly dependent on our

understanding of place in it, social perception, physical and economic environment and how circumstances are perceived. Motive, intention, reason, desire and purpose can be used to explain behaviour. Due to individuals selecting and therefore interpreting stimuli differently, individuals perceive the same subject differently and therefore react differently to the same situation. It is the individual perception of a subject and some objective understanding of the external environment which shapes and directs human behaviour.

Different stakeholders are likely to view and perceive a set of legislation differently and hence varying behaviours stimulated in reaction to the legislation. Thus, it is clear that human behaviour is a function of perception of the world around us, as well as perception of other people, situations and events. Due to the varying perceptions and behaviours, people often find themselves unable to understand each other's behaviour. Understanding the next person's perception and why they perceive things the way they do is therefore of paramount importance in understanding their behaviour. Elnaga (2012) predicts that an individual's behaviour is based on their perception of what reality is and not on what it actually is.

4.5 Errors in Perception

Elena Pasquinelli's scrutiny of diverse forms of illusive phenomena shows the practicality of considering illusions as perceptual errors. There are several types of errors in perception. Stereotyping is when an individual makes generalizations, positive or negative, about a class of targets, frequently founded on erroneous assumptions and opinions and applies them to a specific member of the class of targets. Consumers may conceive misguided assumptions about legislation and resultantly view the legislation in question in this misguided opinion. This results in a partial or total misunderstanding of the legislative requirements and purpose.

Horn Effect is based on a single negative or unclear quality that is identified, a target is assumed to be bad. Likewise, a consumer may end up regarding the legislation in question negatively stimulated by a specific characteristic of the legislative process that is negative. Halo Effect is unlike the horn effect, this perceptual error results from drawing a general impression based on a single, good characteristic or quality.

Regency Effect is when the most recent happenings or information leave the most vivid stamp about a target on an individual's mind, it is likely to be the main influence in making judgements and decisions concerning the target. This can be illustrated using the Zuva Case ruling of 2015 where within a few weeks of the ruling, thousands of employees from tens of companies had been served with notices of termination of employment on three months' notice. Primary Effect is when judgement, opinion or decision is made too quickly based on limited information, it may be erroneous owing to lack of clarity which due to the missing information. It is therefore important to gather the facts about any

circumstance before an opinion or decision is made to avoid this perceptual error.

Similar to me Effect is an error simply due to favourable judgement of targets because they possess characteristics similar to those of the perceiver. Fundamental Attribution Error is when the influence of external factors in a circumstance is under-estimated, and/or internal factors over-estimated, there tends to be bias towards the over-estimated and/or against the under-estimated factors. This is mainly because characteristics of the over-estimated factors seem more intense hence are more likely to stimulate sensation and response in perceiver while characteristics of the under-estimated factors seem less intense hence are less likely to stimulate sensation and response in perceiver.

Self-Serving Bias occurs when entities tend to attribute their achievements to internal factors while blaming failures on external factors. Self-Fulfilling Prophecy occurs when predetermined expectations and beliefs determine behaviour thereby influencing an individual's expectations to come true.

4.6 Nexus Between Perception and Communication

Communication is subject to diverse interpretations. Coulter et al (2001) described communication as the method through which people are familiarized with new things that they do not have prior knowledge about and La Tour et al (2004) envisages that this helps consumers interpret experiences. Gazetting and advertising are among the different forms of communication and Koslow et al (2006) perceives that good communication serves as a promotional activity in creating a strong institutional brand image in the minds of the public.

4.7 The National Constitution and Environmental Management Legislation

4.7.1 The National Constitution

The National Constitution of Zimbabwe emphasizes every citizen's right to an environment that is safe to their well-being and protected for the benefit of the present and future generations and recommends measures, legislative and in other forms, to avert pollution and damage to the natural environmental systems, promote conservation and secure naturally sustainable development and usage of natural resources while promoting economic and societal development. The Government of Zimbabwe, under the guidance of the constitution, has developed legislation to achieve the progressive comprehension of the environmental rights set out in the constitution in line with the available resources.

Chinamora (1995) notes that environmental legislation in Zimbabwe was, in the past, seriously fragmented with several statutes being relevant to the management of the environment and over eight different ministries administering the different statutes and this resulted in development related decisions being made by bodies apart from those charged with protection of the environment. This eventually led to the

enactment of the Environmental Management Act (Chapter 20:27) through Statutory Instrument No. 13 of 2002 and thereafter its subsidiary legislation. The legislation forms a broad legal statement on environmental management in Zimbabwe and was the first consolidated piece of legislation on environmental matters in the country.

4.7.2 *The Environmental Management Act*

The Environmental Management Act (Chapter 20:27) of 2002 provides for the viable management of natural resources and protection of the environment; prevention of pollution and environmental degradation; preparation of the National Environmental Council, National Environmental Plan and other plans for the protection and management of the environment; the establishment of an Environmental Management Agency, Environmental Management Board and an Environment Fund; the amendment of references to intensive conservation areas and committees and associated matters in various Acts; the rescinding of the Natural Resources Act [Chapter 20:13], the Atmospheric Pollution Prevention Act [Chapter 20:03], the Hazardous Substances and Articles Act [Chapter 15:05] and the Noxious Weeds Act [Chapter 19:07], and for matters connected with or incidental to the preceding.

There are also provisions for the establishment of the Standards and Enforcement Committee, formulation of environmental quality standards and environmental plans, environmental impact assessments, audit and monitoring of projects and for other matters relative to environmental management and conservation. Subsidiary legislation was later developed to further elaborate on the requirements of the Act in more detail.

4.7.3 *Environmental Management Regulations*

While the principles and policies of the law are set out in Acts of Parliament, power is delegated to the Executive to develop regulations. Regulations deal with matters of detail and implementation, issues of a technical nature and those likely to require frequent alteration and/or updating. The authority to develop regulations is contained in the Act. The Minister of Environment and Natural Resources Management has developed a set of regulations, whose implementation is mainly managed by the Environmental Management Agency, hereafter referred to as EMA, an instrument of the Environmental Management Act.

The current regulations that are in place under the Environmental Management Act are;

- Plastic Packaging and Plastic Bottles Regulations; SI 98, 2010
- Importation and Transit of Hazardous Substances and Waste Regulations: SI 77, 2009
- Air Pollution Control Regulations; SI 72, 2009
- Hazardous Substances, Pesticides and Toxic Substances Regulations; SI 12, 2007

- Hazardous Waste Management Regulations; SI 10, 2007
- EIA and Ecosystems Protection Regulations; SI 7, 2007
- Effluent and Solid Waste Disposal Regulations; SI 6, 2007

V. METHODOLOGY

Greener (2008) defines research design as a blue print of how information to answer the research questions will be gathered. De Vaus (2001) agrees by emphasizing that a research design is not just a work plan but a tool that enables the researcher to ensure that the evidence obtained answers the questions under investigation in a research as unambiguously as possible. In other words, the research design is the plan for enhancing the researchers internal and external validity and describes how the researcher got information that answers the research problem. Laboritz and Hagedon (1976), states that research design designate the logical manner in which individuals or other units are compared and analysed.

This study was based on an exploratory research design as it deals with perceptual and regulatory variables. This study establishes the causal relationship between variables. The main emphasis is on studying a problem or situation in order to explain the relationship between variable. In this study an explanatory approach is ideal as the research seeks to establish the relationship between perception and compliance to EMA regulations.

The researchers selected various sampling techniques depending on the characteristics of the population and also aiming on having representation of all the different target populations.

To ensure absence of bias from a single sampling method, purposive sampling was used and the process involved purposely handpicking individuals from the population based on the authority or the researcher's knowledge and judgment. This was also because the study area had a limited number of individuals possessing the trait of interest thus it was a viable sampling technique in obtaining information from a very specific group of people. This technique was mainly used to select a sample from the district council personnel.

This type of sampling, also known as chance or probability sampling where each and every item in the population has an equal chance of inclusion in the sample and each one of the possible samples, has the same probability of being selected. This kind of sampling was used to select samples from Hatcliffe residents, giving them all an equal chance of being part of the sample.

Interviews were one of the primary data collection techniques used by the researcher. Interviewing refers to structured or unstructured verbal communication between the researcher and the participants in which information is provided to the researcher. Interviews were used as a way of supplementing the questionnaires already filled, but at the same time they

would enable the researcher probe further into the responses from the questionnaires especially given the importance of the research and the specialized and sensitive nature of the topic under study.

The researchers took a deliberate strategy of using face to face interviews which besides affording probing also encouraged the generation of new ideas as respondents would be limited to some extent by closed-ended questions.

The researcher used the same questions as in the questionnaire during the personal interviews so as to ease the analysis of the data from a common perspective. During the interviews the

researcher took some notes which were transcribed into questionnaire format soon after the interview to avoid the researcher distorting the data by failing to recall responses given by the participants.

VI. FINDINGS

6.1 Perceived changes in Hatcliffe Environmental Issues in the Past 5 Years

Looking at the different environmental issues affecting Hatcliffe residential areas, residents expressed varied views on the state of each of the identified environmental issues.

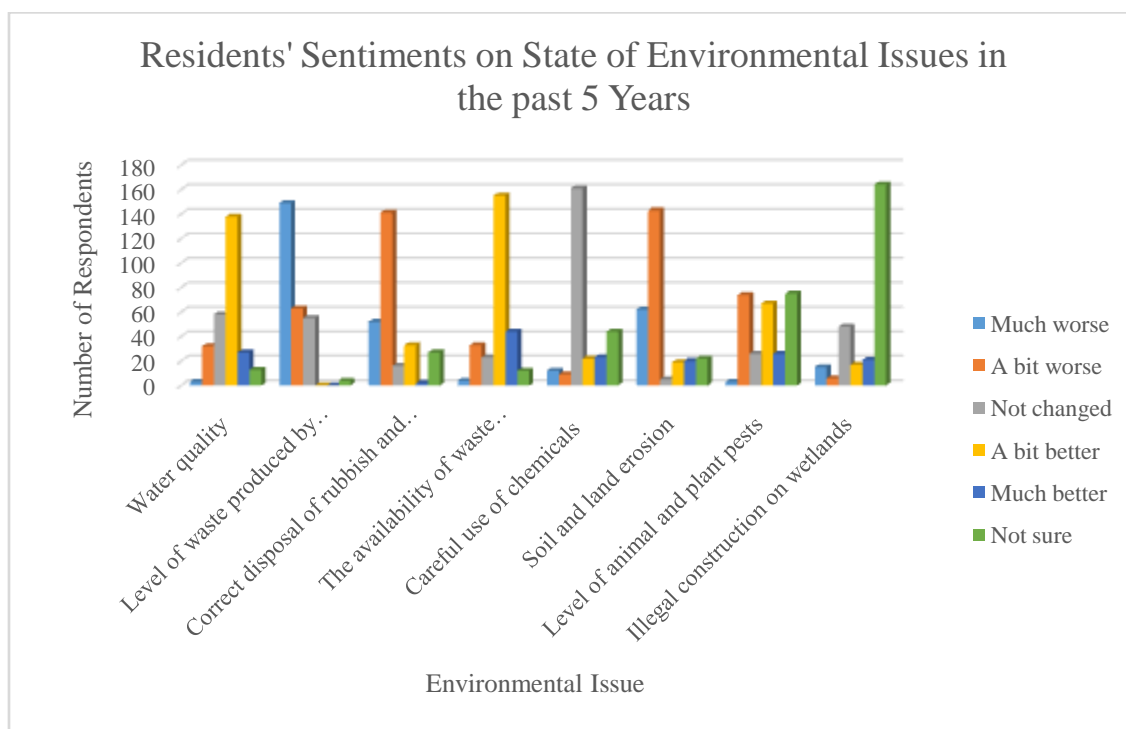


Figure1: Residents' Perception on the State of Environmental Issues in the past 5 years

Figure one above summarises residents' understanding of matters of water quality, waste generation and correct disposal and recycling and levels of soil erosion much more than issues of construction on wetlands and also plant and animal pests. The individual environmental issues shall be detailed in the following sections of the analysis.

The vast variations in the respondents' perceptions towards each environmental issue confirms Elnaga (2012)'s concept that each individual views the world and environment around them in their own distinctive manner and thereby behave and respond in accordance with their interpretation.

One percent of participants' perceived water quality from the available water sources to have become much worse. A further twelve percent thought it had become a bit worse. Twenty-one percent perceive that it stayed the same. The majority which is fifty-one percent of respondents perceived

that the quality of water from the available sources had become a bit better over the years, while ten percent thought it had become much better. Five percent were unsure if there were any changes in the quality of water.

While some residents perceive that the quality of water to have become worse, most residents perceive that quality of water available has improved regardless of the fact that tap water supply is still erratic. The main reasons for this improvement could be attributed to the introduction of alternative sources of water by local authorities and Non-Governmental Organizations (NGOs).

Since 2011, the City Council and other Non-Governmental Organizations have tried to alleviate the water shortage issues by drilling boreholes for the people with bulk of them being bush pump powered and some electric and solar powered. Potable water in taps is averagely available once a week and

residents resort to the alternative sources when tap water is not available. Elderly residents are sometimes disadvantaged as they may not be able to travel the required distances to access the clean water and some resort to getting water from paddles in wet lands.

6.2 Level of Waste/Pollution Produced by Households in Hatcliffe

Fifty-five percent of participants' perceived that the levels of pollution and waste being produced by Hatcliffe households were getting much worse while twenty-three percent said that they were getting a bit worse. One fifth of the sampled population said there was no change in levels of waste and two percent were not sure if there were any changes in the levels of waste being produced or not. The reason why levels of waste are generally getting worse is that there was no control over rubbish and litter management. Residents are even resorting to burning rubbish and litter in the sanitary lanes also resulting in air pollution.

According to local authorities, Hatcliffe population has been on the increase mainly due to the increase in number of cooperatives in the area, which has seen an increase in number of household units in the area. Resultantly, with each household producing a portion of waste and pollution, the amount of waste increases as the number of households increase.

6.3 Correct Disposal of Rubbish and Waste

Fifty-two percent of participants said that rubbish and waste disposal in Hatcliffe were becoming a bit worse while twenty believed it had become much worse. The distribution shown is likely to be a ripple effect of the increase in amount of waste being produced in the area. With increase in population and resultantly waste produced in households, and minima; changes to waste disposal facilities, there will seemingly be a worsening of waste disposal situation. Although there are laws regarding environmental pollution the residents of Hatcliffe area are adamant to follow and maintain the laws. Some even lack knowledge of how to use facilities such as toilets. Residents are flushing everything in toilets and sinks resulting in sewer treatment plants being clogged buy things like used condoms, spoons and mainly sand after washing their pots.

Six percent did not see a change while twelve percent and one percent said rubbish and waste disposal had become a bit better and much better respectively. These were mainly the residents who live in the more established parts of Hatcliffe, where the council provides waste collection services.

Ten percent of the respondents were unsure of any positive or negative changes in waste disposal conditions in the area. This population mainly constitutes residents in areas where there is no road access and the city council does not provide waste collection services in these areas therefore the resident cannot compare any services.

6.4 The availability of Waste Recycling Services and Facilities in Hatcliffe

Two percent of participants' perceived that waste recycling services had become much worse in the past five years while twelve percent thought it had become a bit worse. Fourteen percent of respondents view the availability of waste recycling facilities as having become worse.

This could be attributed to occasional bursts in the sewer system. Due to water shortages, residents flush toilets using minimal water just to see the solids go but it is not enough to push the solids through the sewer system thus resulting in continual clogging of lines. Some actually expose themselves to diseases such as in a case cited by the local authorities were a farmer used to open manholes near his farm, throwing in stones so that sewer gets blocked and starts to leak into his farm during dry seasons. Due to the haphazard construction of houses on undeveloped land which occurred during the time when cooperatives were introduced, some areas do not have sewer systems as so they do not experience sewer bursts. Therefore, they do not see or are not sure of any changes in the waste recycling services.

Nine percent viewed the waste recycling services to have been the same within the same period while the fifty-one percent of respondents said that the quality of waste recycling services had become a bit better over the years. Sixteen percent said it had become much better and four percent were unsure if there were any changes in the waste recycling services. Local authorities have raised awareness amongst residents concerning deposit of unfit materials such as stones, plastic, sand, and condoms into the sewer system and this has seen an improvement in the residents' disposal of the unfit materials and throwing of stones into the sewer system resulting in fewer incidences of sewer blockages which would also cause leakages. Due to these reduced incidences, the flow of the sewer treatment process has improved and can be attributed to the seventy-three percent of respondents' who believe waste recycling has become better.

6.5 Careful use of chemicals

Five percent of respondents perceived that the use of chemicals had become much worse in the given five-year period while three percent viewed the situation as having become a bit worse. Fifty-nine percent said there was no change in the use of chemicals. Eight percent said the use of chemicals had become a bit better and nine percent said it had become much better.

Due to Hatcliffe having soils which are good for agriculture, use of fertilizer and agricultural chemicals is very low. This is an advantage since water table in the area is high and there is minimum contamination of underground water due to chemicals. Most residents do not use fertilizers and chemicals therefore believe there has been no change in the use of chemicals in the past five years. Nonetheless, when residents

practice farming on the river banks, the agricultural chemicals that are used contaminate the water source.

6.6 Level of Animal and Plant Pests

One percent of participants' said that the level of plant and animal pests had become much worse in the past five years and twenty-seven percent had it had become a bit worse. It was observed during the survey that in areas where there had recently been sewer bursts there were high levels of flies. Residents also noted that mosquitoes were prominent whenever there were stagnant pools of water and in wetland areas. This observation explains the fraction of residents who perceive levels of plant and animal pests to have become worse.

Nine percent viewed the level of plant and animal pests to have been the same within the same period. Twenty-five percent of respondents said that the level of plant and animal pests had become a bit better over the years. Ten percent said it had become much better and four percent were unsure if there were any changes in the level of plant and animal pests. Since local authorities are working frantically to address issues of sewer bursts, residents in areas where incidents of bursts have reduced are likely to experience an improvement

in terms of exposure to flies and mosquitoes hence perceiving the level of pests to have become better.

6.7 Soil and Land Erosion

Twenty-three percent of respondents perceived that soil and land erosion had become much worse in the given five-year period while fifty-three percent viewed the situation as having become a bit worse. Two percent said there was no change in the level of soil and land erosion while Seven percent said the level of soil and land erosion had become a bit better and a further seven percent said it had become much better. Eight percent were not sure of the trends in the levels of soil and land erosion in the district.

Due to the escalation in the amount of construction, tree cutting has increased as residents' clear land, use wood for construction and sometimes for firewood. This leaves the ground bare exposing soil to forces of wind as well as water. Also, with increase in population, movement on the unprotected ground increases, contributing to erosion of soil. Residents have resorted to farming along the river banks which loosens soil, eroding soil from the banks and increasing levels of siltation in the river.

6.8 Illegal Construction on Wetlands

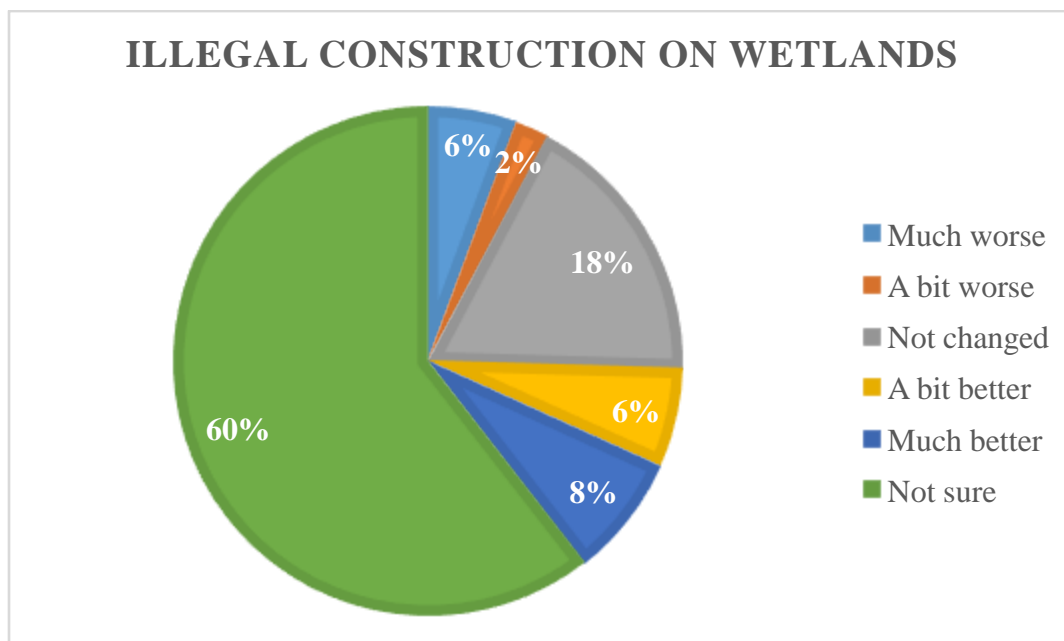


Figure 2: Distribution of Respondents' Perception on Wetland Construction in Hatcliffe in the Past 5 Years

Six percent of participants' said that illegal construction on wetlands had become much worse with two percent saying that it had become just a bit worse. Due to the fast track settlement that transpired mainly as a result of the introduction of cooperatives, time was not taken to conscientise residents on the types of land they were settling on and the associated construction requirement. Resultantly, residents constructed basic structures even on wetlands which

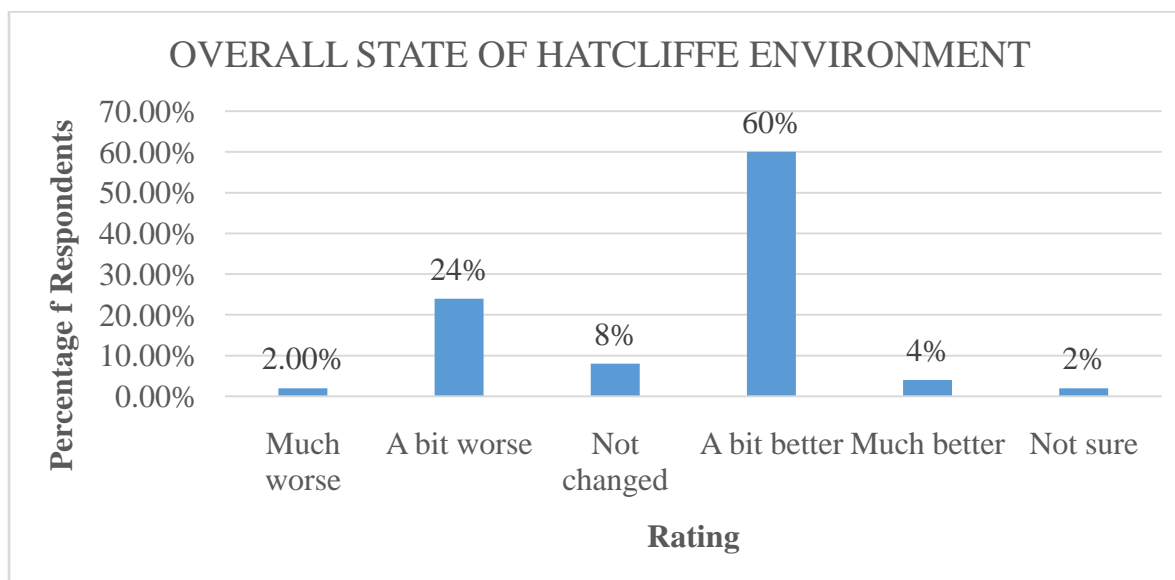
had special construction requirements and most residents are uncertain of where exactly there has been construction on wetlands and weather the situation has improved or become worse.

Almost a fifth of the respondents said that it stayed the same. Six percent and eight percent said that issues of illegal construction on wetlands had become a bit better and much

better respectively while the majority were unsure of the trends of illegal construction on wetlands. Most residents who were allocated stands especially through cooperatives settled on the stands without knowledge of the construction requirements of the areas that they were settled.

6.9 Overall Perception on the State of Hatcliffe Environmental Issues

Table 1: Respondents perception of overall state of Hatcliffe environment



Sixty percent of the respondents perceived that the environmental issues in Hatcliffe had become a bit better while twenty-four percent perceived that they had become a bit worse. They perceive it as worse because things are getting bad daily and local authorities are not doing anything to improve the situation.

Differences in perception arise from the specific characteristics of the immediate environment in which a respondent resides. These results show that there has generally been an improvement in Environmental issues in Hatcliffe. This is also evident from the reduced cases of Cholera and Typhoid since 2009 which result from environmental and water contamination.

6.10 Environmental Issue Perceived to be most Important

Asked to single out the one environmental issue they considered to be the most important, forty-six percent of the respondents highlighted water pollution, quality and unavailability. Twenty-seven percent mentioned wetland construction and thirteen percent talked about absence of roads. Nineteen percent gave a variety of responses which include deforestation, increased generation of waste and soil erosion. Although respondents were asked for one response to this question, some gave more than one issue in their response and all issues were included in the analysis.

Water quality and availability is perceived to be the most important environmental issue. The impact of water quality issues are felt directly by residents as they usually result in disease such as cholera and typhoid therefore residents regard this issue with high importance. As much as the other issues

are important, they may not be perceived as the most important because residents may not be able to relate the consequences of these issues to their day-to-day lives.

6.11 Environmental Issue Perceived to be Most Important in Five Years

Fifty-nine percent of respondents perceived that water quality and availability issues would be more prominent in the coming five years. Twenty-three percent and twenty-six percent said wetland construction and increased levels of waste would be produced in the next five years. One point five of the respondents highlighted other environmental issues which included deforestation, soil erosion and disease due to rearing of poultry in confined spaces. Again, water quality and availability is perceived to be the most important environmental issue due to the impact of water quality issues are felt directly by residents as they usually result in disease therefore residents regard this issue with high importance. It is important to note that all the environmental issues that were mentioned by respondents have a direct relationship with the increase in population in the area.

6.12 Levels of Environmental Concern

Looking at the different environmental issues affecting Hatcliffe residential areas, residents expressed varied levels of concern for each of the identified environmental issues.

6.12.1 Activities Perceived to be Damaging Air

Eighty-seven percent of respondents believe that there are activities that are damaging the air quality in Hatcliffe. Ten percent believe otherwise and three percent said they did not

know if there were any activities damaging air quality in Hatcliffe. The respondents who believed there were activities damaging the air quality were further asked to select the activities they thought were contributing to damage of air quality.

Thirty-eight percent cited indoor farming as a contributory factor to air pollution. This is particularly the case where residents have resorted to rearing chickens as a means of making a living. Some of these projects are carried out indoors as there may be limited space outside the houses and also in fear of losing the chickens to thieves. The unpleasant gases from the chicken droppings are emitted into the air thereby contaminating the air.

No respondents noted industrial emissions probably because there are no formal industrial sites in the area. Twenty-three percent of the respondents noted vehicle emissions as damaging air quality in the area. Since the population in Hatcliffe is mainly low income earners, probability of using vehicles which are not well maintained as well as public transport is high, therefore most of the vehicles in the area emit combustion gases into the air.

Forty-two percent of residents highlighted that backyard fires contribute to damaging of the air quality. This is so because due to increased generation of waste without the waste collection services improving, residents have resorted to burning of rubbish and waste in their backyards. As roadside barbers and hairdressers also increase, there has been an increase in amount of hair and hair products being disposed of by burning, producing chemicals which are released into the air.

One percent of respondents cited chemicals as an air pollutant. The contribution of chemicals is very low as most chemicals that are released into the air are usually agrochemicals but because of the good soils in Hatcliffe, most agricultural activities successfully go ahead without the use of these chemicals as the agro products are mainly for domestic consumption.

Seventeen percent of participants said that sewer is also contributing to damage in air quality. This is so in area where there will be bursts and blockages in the sewer system. One percent of respondents cited smoking as an air polluting agent. Smoking releases nicotine which is a pollutant into the air.

6.13 Knowledge of Environmental Legislation

Respondents were asked about their knowledge of environmental legislation. The responses to questions in this section are based around Zimbabwe's environmental legislation. By identifying the gaps in knowledge, policy makers will be able to tailor-make compliance promotion programmes in the community.

Ninety-one percent of the respondents demonstrated that they have knowledge of what the acronym EMA stands for. They indicated that they acquired this knowledge through television

and radio programmes, billboards in public area, exhibitions such as the Harare Agricultural Show and even through bulk messages sent by the telecommunications service providers to their clients.

Nine percent of the respondents were not sure what EMA stands for. They indicated that they just knew that EMA had something to do with environmental issues.

Knowledge of Environmental Regulations and Suggestions to Improve Knowledge

In as much as the majority of respondents knew what EMA stands for, they showed that they did not fully understand the mandate of EMA as they believed the duty of EMA is to regulate industries and local authorities and not necessarily individuals. Respondents showed that they have limited knowledge of aspects of the environmental regulations such as prevention of veld fires and use of clean water but do not have in-depth information on the detailed regulations.

Respondents expressed that they had not really made effort to find out more about environmental regulations besides what the city council makes them aware of through their council bylaws. They also felt that EMA was not doing enough to raise awareness on the regulations that they enforce to members of the public. Respondents suggested that detailed campaigns be arranged to raise awareness of regulations to members of the public.

VII. CONCLUSIONS

Perception was found to be an object which describes an entity's perceived image which they expect from any stimuli and observation is subject to influence by various factors. Factors affecting perception were classified into three classes which are factors in the perceiver, factors in the target and factors in the environment. Hatcliffe residents mostly comprehend environmental issues through consequences of past experience. Most are knowledgeable of environmental issues in the area while some have shown no interest in some of the issues at hand. The environment in Hatcliffe however presents challenges in trying to make effort to alleviate the environmental issues with the main challenge emanating from overpopulation as well as settlement before the land was developed and serviced.

Some residents resist the environmental management initiative simply because it was presented as law and they view it as a method of force and a profit making business. How the law is presented therefore plays an important role in how the consumer perceives it. Knowledge and education contributed to how the residents' comprehended matters of environmental management. Most residents got to know about environmental management through television and radio programs and some through newspapers and exhibitions such as the Harare Agricultural Show. Telecommunication companies have also made an impact in imparting knowledge to consumers through their bulk messages which encourage consumers to conserve the environment.

The majority of residents know what EMA stands for but are not certain of how its influence and mandate directly affect. A reasonable percentage believe that EMA is mandated to work with the local authorities and industries rather than with every consumer. Hatcliffe residents have shown knowledge of aspects of the Zimbabwean environmental management regulations and not the actual regulations in detail. The aspects they are well versed with are mainly those issues whose consequences they have felt directly such as water quality which previously exposed them to the threat of diarrhoea, cholera and typhoid; wetland construction which has seen some of their constructed structures collapsing; backyard fires which have introduced unpleasant smells and particulate matter in the air; excessive dust as well as soil erosion.

Hatcliffe residents have generally shown that they abide by the requirements of the law when they understand them, they know the consequences associated with not addressing the particular environmental issues and when they believe it is their duty to address the issues. The economic crisis has not spared the community and some residents carry out some activities such as use of blare toilets because they believe their economic situation leaves them no other options. Some circumstances such as the uncontrolled burst in population which result in difficulties in environmental management are a result of leadership carrying out activities to gain political support without considering the pre-requisites for such activities to be carried out and the long-term effects of the activity.

VIII. RECOMMENDATIONS

A key contributing factor to how consumers perceive a concept is how much they know about it and how they comprehend the matter. It is therefore important for the policy makers and implementing bodies such as EMA and the council authorities to conduct awareness campaigns to educate and impart knowledge on consumers to enable them to understand the different aspects of the environmental management legislation.

Involvement of stakeholders and stakeholder representatives at policy making stage as it improves the dual flow of information between the policy makers and the consumers and enables better understanding of regulatory matters by the consumer. Combining communicative and punitive methods of implementing legislation will help eliminate the notion that some of the consumers have that regulatory agencies are there for political influences, power and profit making and inspire the understanding that these implementing bodies are agents of the higher government mandated to help protect citizens from the undesired consequences of environmental mismanagement.

Use of political influence to bypass regulatory requirements encourages consumers not to value the importance of conserving the environment as well as abiding by the requirements of the regulations. Leadership should therefore

avoid carrying out activities or introducing circumstances which disrupt the implementation of the law and using political power to bypass council bylaws simply to gain residents' support.

The sewer system in Hatcliffe needs to be redesigned in order to facilitate the amount of sewer waste being generated in the area, especially considering that the residential stands are too small for inclusion of septic tanks. Redesigning and improving the sewer would also alleviate some of the sewer blockages as most of them are mainly due to overload of the current system.

The system of refuse collection needs to be improved in order that rubbish and litter is disposed of accordingly and to reduce the amount of backyard fires that are currently being used to dispose of the uncollected waste.

Hatcliffe has a high water table and council authorities need to put measures in place to control the construction of pit latrines which are sometimes even being constructed in close proximity to the shallow wells which are being used as a water source by some of the residents. This activity is prominent in areas where there is no sewer system available.

Local authorities also need to put measures in place to control the mushrooming of roadside businesses, particularly barber and hairdo businesses which produce waste hair products and because there are no proper facilities to dispose of these products, they are burnt and contribute to air pollution.

The environmental problems being faced in Hatcliffe are mainly as a result of overpopulation. It is therefore important for the government and local authorities to work together to plan on how to develop new settlements and work towards depopulating Hatcliffe area. There also needs to be control over cooperatives which are continuously sprouting resulting in population increase.

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