

STRATEGIC RESPONSES BY KENYA METEOROLOGICAL
DEPARTMENT TO THE NEEDS OF THEIR CUSTOMERS

By

ATHERU ZACHARY K.K

A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF THE

MASTER OF BUSINESS ADMINISTRATION

SCHOOL OF BUSINESS

UNIVERSITY OF NAIROBI

2007

DECLARATION

This research project is my original work and has not been presented for a degree programme in any other University.

Signed ----- Date -----

Zachary K.K. Atheru
Student

This project paper has been submitted for examination with my approval as a University Supervisor.

Signed ----- Date -----

Mr Victor Ndambuki
Lecturer
Department of Business Administration
School of Business
University of Nairobi

DEDICATION

This project is dedicated to my parents, Mama Monica Nyoroka Atheru and late Francis Kamunara M' Atheru, my wife Jane, and my children, Douglas, Juliet, Anne and Tom.

TABLE OF CONTENTS

DECLARATION.....	i
DEDICATION.....	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
ACKNOWLEDGEMENT	vi
ABSTRACT.....	vii
CHAPTER ONE	1
1.0 INTRODUCTION.....	1
1.1 Background	1
1.2 Statement of the problem	7
1.3 Objectives of the study.....	8
1.4 Scope of the study.....	9
1.5 Importance of the study.....	9
1.6 Structure of the project	10
CHAPTER TWO	11
2.0 LITERATURE REVIEW	11
2.1 Strategic management	11
2.2 The concept of strategy	11
2.3 Environment, strategy and organisational capability	15
2.4 Strategic responses.....	17
CHAPTER THREE	21
3.0 RESEARCH METHODOLOGY	21
3.1 Research design.....	21
3.2 Data collection	21
3.3 Data analysis.....	22
CHAPTER FOUR.....	23
4.0 DATA ANALYSIS AND DISCUSSION OF THE FINDINGS	23
4.1 Respondents' profiles.....	23
4.2 KMD customer needs	24
4.2.1 Farmers.....	24
4.2.2 Energy sector	25

4.2.3	Water resources managers.....	25
4.2.4	General public.....	26
4.2.5	Disaster managers.....	26
4.2.6	Health experts.....	26
4.2.7	Airlines and air traffic services.....	27
4.2.8	Marine industry	27
4.2.9	Road transport	27
4.2.10	Insurance sector	28
4.2.11	Tourism and recreation industry	28
4.2.12	Building and construction industry.....	28
4.2.13	Government ministries and departments	28
4.2.14	Media.....	29
4.2.15	Research and learning Institutions.....	29
4.2.16	Environment sector.....	29
4.2.17	Students in meteorology and applied sciences.....	30
4.2.18	Other national, regional and global Meteorological Services.....	30
4.3	KMD strategic responses to customer needs.....	30
4.3.1	Restructuring.....	31
4.3.2	Technology development.....	31
4.3.3	Training, research and development.....	32
4.3.4	Culture change	32
4.3.5	Service delivery	33
4.4	Planning and strategy	33
4.5	Strategic fit	34
CHAPTER FIVE		35
5.0	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	35
5.1	Summary.....	35
5.1.1	KMD customer needs	35
5.1.2	KMD strategic responses to customer needs.....	37
5.1.3	Planning and strategy	38
5.1.4	Strategic fit	39
5.2	Conclusions.....	39
5.3	Recommendations.....	40
5.4	Limitations of the study.....	41
5.5	Suggestions for further study.....	41
REFERENCES.....		42
APPENDIX I: LETTER OF INTRODUCTION		48
APPENDIX II: QUESTIONNAIRE		49

LIST OF TABLES

Table 1: Number of people affected by drought in Kenya from 1975 to 2006-----4

Table 2: Respondents' work experience at KMD-----23

ACKNOWLEDGEMENT

I am deeply indebted to my supervisor, Mr Victor Ndambuki for his guidance throughout the project. Gratitude also goes to Dr Martin Ogutu and Professor Peter K'obonyo for their valuable suggestions during the conceptualisation of the project. I am also indebted to all my MBA lecturers for the knowledge they imparted to me during the programme and to my fellow students whom we went through the programme together for the simulating discussions we had especially during the group assignments and term papers.

My sincere gratitude goes to my wife and my children for their support, encouragement and understanding. They regularly missed my company as I concentrated on the MBA programme including attending lectures and group discussions during evenings and weekends. Special thanks also go to the members of the St. Titus small Christian community for their understanding when I failed to attend and chair several of our usual prayer meetings.

Gratitude goes to the Director of the Kenya Meteorological Department and the senior members of his staff for responding to my questionnaire and being available for the interviews. Sincere thanks also go to my Director and my other colleagues at the IGAD Climate Prediction and Applications Centre (ICPAC) for their support and encouragement throughout the study period. Lastly I wish to extend my sincere gratitude to all my friends and any other people who contributed to the success of this study in one way or another. God bless you.

ABSTRACT

This research project was a case study of the Kenya Meteorological Department (KMD). Its objectives were to identify and document the needs of KMD customers; to establish KMD responses to the needs of their customers; and to determine whether KMD capability matches the response to their customer needs. In order to meet these objectives pertinent primary data was collected through in-depth interviews of 25 senior officers of KMD. The collected data was then analyzed using the content analysis technique. The study identified and documented specific weather and climate needs of the KMD customers covering most of the socio-economic sectors including agriculture, energy, water resources, general public, civil defence, health, airlines and air traffic services, marine, road transport, insurance, tourism, building and construction, Government ministries and departments, media, research and learning institutions, environment, as well as other national, regional and global meteorological services among others.

The study established that KMD had responded to their customer needs through strategic response variables such as restructuring; technology development; training, research and development; culture change and enhanced service delivery. However, the KMD responses to their customer needs were inadequate. It was also found out that KMD did not possess the necessary capacity to address the needs of their customers. Both strategy and capability gaps therefore existed at KMD and as such the logic behind Ansoff's strategic success formula was not fulfilled. KMD could acquire the lacking capabilities through strategic alliances and joint ventures. It was found out that although KMD had a

strategic plan developed in 2005 it had not been effectively communicated throughout the organisation. The senior KMD officers were empowered to make strategic decisions but to a very small extent. The internal challenges faced at KMD included lack of legal framework, resistance to change, financial constraints, shortage of technical and professional staff due to Government's freeze on employment since 1997, Government bureaucracy that limits timely implementation of some strategies, overlapping roles between departments, inadequate training in management and customer care as well as inadequate office space.

KMD should position itself to be customer oriented by making deliberate efforts to shift its focus towards serving the future needs of their customers. KMD should reorganize its functions to harmonize the overlapping roles of some departments. KMD should enhance its research function to enable it undertake multidisciplinary research to address the diverse customer needs. KMD should ensure a law establishing KMD as a legal entity is enacted by Parliament as soon as practicable to facilitate revenue collection and formation of strategic partnerships. KMD should develop strategies to ensure efficient and timely delivery of services to the rural communities. The customer needs in this study were compiled from the views expressed by the senior KMD officers and not from the perception of the KMD external customers. It would have been of much benefit if views of the external KMD customers were also obtained. However, the time taken to carry out the study was very short to allow for such interviews. The study should be extended to cover strategic responses of KMD to the needs of their internal customers. It would also be useful to undertake a detailed study on strategic planning in KMD.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Organisations as open systems obtain their inputs from their environment and after transformation discharge their outputs into the same environment (Porter, 1985). Organisations do not operate in a vacuum but are environment dependent (Ansoff and McDonnell, 1990). Environmental forces impact upon the organisation and in turn the organisation seeks to influence the environment with its functions operating as inter-dependent sub-systems whose inter-relationships create emergent properties (Thompson, 1997). Bateman and Zaithmal (1990) assert that a firm exists in its industry and operates in a more extended task environment which includes competitors, suppliers, customers and other organisations with which the firm directly interacts while the macro environment includes governments, economic conditions and other fundamental factors that generally affect all organisations. According to Pearce and Robinson (1997), remote environment comprises factors that originate beyond firm's operating situation and can be classified into economic, social, political, technological and ecological factors. Grant (1998) indicates that the business environment for the firms consists of all the external influences that impact a firm's decisions and performance which can be classified by source as economic, technological, demographic, social and governmental factors. Johnson, Scholes and Whittington (2005) classify environmental influences and trends into three categories namely macro-environment, industry as well as competitors and

markets. In the macro-environment, the understanding of political, economic, social, technological, environmental and legal influences (PESTEL) provides an overall picture of the variety of forces at work around the organisation and reveals the key drivers of change. The five forces framework helps to understand the sources of competition within and around an industry in terms of barriers to entry, the power of buyers and suppliers, the threat of substitutes and the extent of competitive rivalry. The most immediate layer of the environment according to their classification consists of competitors and markets.

According to Thompson (1997), the environment delivers shocks to an organisation and the way in which resources are deployed and managed determines the ability to handle these shocks. In a turbulent environment, the organisation must change its strategies and possibly its beliefs if it has to remain successful. The success or failure of organisations is based on how well they understand customer needs and are able to meet those needs. Kotler (1997) also observed that in the 1990s, many companies acknowledged the critical importance of being customer-oriented and - driven in all their activities. This concept had not taken root in the weather/climate industry in Kenya as it was mainly driven by the production concept. It was in this regard that the researcher focused the study to the responses of KMD to their customer needs with a view to establishing the strategy and capability gaps and make recommendations on how to acquire the capability to meet the customer needs.

The Concise Oxford Dictionary defines meteorology as the study of the processes and phenomena of the atmosphere especially as a means of forecasting the weather. Climate

is the average weather conditions of an area over long periods of time. Human socio-economic development activities such as forces related to population, economy, technology, governance, among others result to increase in the concentration of greenhouse gases in the atmosphere which cause climate change. Small changes in the mean climate can produce relatively large changes in the frequency and/or intensity of extreme weather/climate events resulting in increased climate related disasters. Climate/weather variability often has severe socio-economic impacts such as scarcity of food, water and energy, with adverse impacts on human health, economy and the environment. The flying machines that marked the beginning of aviation industry were extremely vulnerable to weather conditions (Kastelein, 1988). On first day of trial flights, a strong gust of wind overturned the aircraft, after four flights causing damage. The necessity of the meteorological assistance for such undertaking was demonstrated. During the First World War military operations had highlighted the need for meteorological support and military units were set up by hostile countries to handle weather information. This marked the beginning of aviation meteorology mainly to provide dependable observations and forecasts of wind speeds and direction, gusts, turbulence, visibility, precipitation and cloud. Recently in Kenya like the rest of the world, there has been an increase in aviation accidents some of which could be attributed to bad weather and human error among others. Air navigation is by nature sensitive to atmospheric conditions and meteorological information will remain an important factor in the planning and execution of flights.

Over 70% of all the disasters of natural origin globally are related to climate hazards such as floods, droughts, cyclones, lightning, frost, strong winds, extreme temperatures etc. In Kenya, the percentage of climate/weather related disasters is much higher as the prolonged droughts are followed or preceded by floods, particularly those associated with El Niño or La Niña (Ogallo, 1993). Over the last three decades the frequency of droughts and floods in Kenya has increased, resulting in loss of livestock. For example the floods experienced during 2006/07, led to loss of livestock and people mainly due to weather induced Rift Valley Fever among others. Table 1 below shows the number of people affected by droughts in Kenya since 1975.

Table 1: Number of people affected by drought in Kenya from 1975 to 2006

Year	Number of people affected
1975	16,000
1977	20,000
1980	40,000
1984	200,000
1992	1.5 million
1995-6	1.4 million
1999-2000	4.4 million
2004-6	3.5 million

Source: Kenya Food Security Steering Group

The major source of energy for industrial and urban use in Kenya is hydropower which is sensitive to climate variability. For example during the drought of 2000/01 there was inadequate hydropower generation due to low dam levels necessitating importation of generators to alleviate the problem. Climate change will affect availability of

hydropower, calling for an urgent need to assess the national potential of other clean energy resources such as solar and wind. A number of diseases are significantly influenced by climate conditions. High temperatures enhance the survival of bacteria, viruses and protozoa. A combination of wet and warm conditions is conducive to the transmission of malaria. In recent times, it has been observed that some areas that were once classified as cold and malaria free zones are now becoming warmer and good breeding sites for mosquitoes and hence experiencing frequent malaria epidemics (Githeko and Ndegwa, 2004). Timely early warning of impending climate extremes integrated within an effective national health policy can reduce risks related to frequent outbreaks of vector borne diseases. Floods also result in destruction of houses, infrastructure, and displacement of people. For example, the floods experienced in August 2007 in the Western Province of Kenya resulted in landslides that caused deaths of over 20 people and displacement of many others. The negative impacts of climate variability and change seem to be on the increase in the country.

In Kenya, the weather and climate industry has only one key player, the Kenya Meteorological Department (KMD). According to KMD Annual Reports, KMD was established on 29th May 1929 as British East African Meteorological Service responsible for the three East African territories and Zanzibar. In 1943, the Service became temporarily a branch of the Meteorological Office of the air ministry. In 1947, the Service was restored as an independent unit and in 1948, it became a department within the East African High Commission and was renamed East African Meteorological Department. On 1 July 1977, KMD became a department of the Kenya Government through

Presidential Decree after the East African Meteorological Department was dissolved upon the break-up of the East African Community. KMD is designated by the World Meteorological Organisation (WMO) as the Regional Telecommunications Hub, Regional Meteorological Instrument Centre and Regional Training Centre. It hosts the IGAD Climate Prediction and Applications Centre (ICPAC) and the WMO Sub-Regional Office for Eastern and Southern Africa. The Director of KMD is also the Permanent Representative of Kenya with WMO.

KMD customers include the current and potential users of climate/weather services from all weather/climate sensitive sectors including agriculture where meteorological data is required mainly in planning time for sowing, transplanting, cultivating, fertiliser application, harvesting and post harvest management among others; Aviation that requires weather information for safety and efficient operation of aircrafts; Hydro-power that rely on rainfall forecasts to plan for power generation and distribution; Insurance that use weather information in processing accident claims; shipping, fishing and marine tourism where weather information is required for safe operations; construction; sports where weather information is required especially for almost all outdoor sports and recreation activities; and general public that consume general forecasts and early warning advisories disseminated through the media. KMD has developed a service charter to demonstrate commitment to provide efficient, effective and customer-focused services to all their customers. The researcher was motivated to undertake this study on realising that no sustainable development can be achieved in Kenya without factoring weather and

climate in all socio-economic sectors, which is possible only if user needs are met by KMD the provider of climate and weather products and services in Kenya.

1.2 Statement of the problem

Local studies done in Kenya regarding strategic responses to environmental changes include Kombo (1997), Motor franchise holders; Sheikh (2000), Insurance; Warucu (2001), Banking; Kandie (2001), Telkom Kenya; Thiga (2002), Airlines; Mathenge (2003), Agriculture; Goro (2003), Commercial banks; Kiptugen (2003), KCB; Migunde (2003), KBC; Kathuku (2004), COOP Bank; Mulema (2004), TSC; Musa (2004), National Bank; Adoyo (2005), Post Bank; Mpungu (2005), AAR; Mueke (2006), Reproductive Health; Muthane (2006), NAS; Maina (2006), KPLC; Mwangi (2006), Construction firms; Kimani (2006), CCS; Lalampaa (2006), HELB; Lerasiah (2006) KWS; Mutugi (2006), Barclays Bank; and Wamalwa (2006), Catholic Health Institutions. Most of the studies focused mainly on competitive environment as a result of the liberalisation of the Kenyan economy in 1990s. Examples of their findings include the following: Kombo (1997) found out that motor vehicle franchise holders in Kenya generally made substantial adjustment in their strategic variables in order to survive in the competitive environment. Sheikh (2000) also found out that, firms in the insurance industry made moderate adjustments in their strategic variables in order to cope with the increased competition. Kandie (2001) on the other hand found out that although the onset of liberalisation forced Telkom Kenya to respond to the challenges emanating from its new environment, financial constraints and lack of managerial empowerment

considerably limited the company's capacity to respond. Kiptugen (2003) established that Kenya Commercial Bank (KCB) responded to changing competitive situation through restructuring, marketing, information technology and culture change.

None of the studies done in Kenya had covered the weather and climate industry. Most of the studies also focused on competitive environment and none had focused on the strategic responses to needs of customers. The managerial processes in the Kenya Meteorological Department (KMD) are different from those of the industries covered in the previous studies due to differences in the environmental and organisational factors. KMD did not face local competition as it enjoys monopoly. However with the globalisation and in particular the Internet technology, substitute climate/weather products could be downloaded from the websites of the advanced global climate centres. KMD customers cut across all weather/climate sensitive socio-economic sectors with varying needs. The intensity and frequency of extreme weather/climate events are expected to increase due to climate change calling for enhanced factoring of climate/weather products in all socio-economic sectors in order to reduce disaster risks and achieve sustainable development.

1.3 Objectives of the study

- i. To identify and document needs of KMD customers.
- ii. To establish KMD responses to needs of their customers.

- iii. To determine whether KMD capability matches the responses to their customer needs.

1.4 Scope of the study

This is a case study of KMD and only addresses the needs of KMD customers and KMD responses to the needs of their customers as well as KMD capability to respond to needs of their customers. The needs of the KMD customers were compiled from the views expressed by the senior KMD officers and not from the views of the KMD customers.

1.5 Importance of the study

- i. To contribute to the knowledge on strategic responses to customer needs in the climate and weather industry in Kenya.
- ii. To come up with recommendations that would be used by KMD and Stakeholders to formulate strategies to respond to unmet and emerging needs of KMD customers. The findings will enable KMD develop response strategies that match their customer needs and acquire capabilities that match their strategies. The findings of the study will also benefit entrepreneurs who would like to exploit the opportunities arising from the unmet customer needs.
- iii. To assist policy makers to formulate policies appropriate for the weather and climate industry in Kenya.

- iv. To serve as reference material to students and researchers. The limitations of the study could be used by students and researchers to undertake further research.

1.6 Structure of the project

Chapter one provides the introduction of the study including background on the research topic, statement of the problem, objectives of the study, importance of the study and scope of the study. Chapter two, gives literature review regarding fundamentals on strategic management; concept of strategy; environment, strategy and organisational capability; as well as strategic responses. Chapter three covers the research methodology including research design, data collection and data analysis technique. Chapter four provides the research findings and discussions. Chapter five contains a summary of the research findings, conclusions, recommendations, limitations of the study, and the suggestions for further study.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Strategic management

Lamb (1984) defined strategic management as an ongoing process that assesses the business and the industries in which the company is involved; assesses its competitors and sets goals and strategies to meet all existing and potential competitors; and the reassesses each strategy regularly to determine how it has been implemented and whether it has succeeded or needs replacement by a new strategy to meet changed circumstances, new technology, new competitors, a new economic environment, or a new social, financial, or political environment. According to Ansoff and McDonnell (1990), strategic management is positioning and relating a firm to its environment in a way that will assure continued corporate success. It is a systematic approach for managing strategic change. Strategic management has been defined by Pearce and Robinson (1997) as the set of decisions and actions that result in the formulation and implementation of plans designed to achieve a company's objectives. The strategic management definition that is most appropriate for this study is the one by Ansoff and McDonnell.

2.2 The concept of strategy

Chandler (1962) defined strategy as the determination of the basic long term goals and objectives of an organisation and adoption of course of action and the allocation of

resources necessary for carrying out these goals. Ansoff (1965) defined strategy as the product/market scope of an organisation. Porter (1980) argues that strategy was about positioning a company in its industry to gain competitive advantage. The events in the external environment are considered to be critical for success and hence making it important to understand one's industry and competitors mainly through strengths, weaknesses, opportunities and threat (SWOT) analysis. Mintzberg (1987) provides five definitions of strategy in terms of plan, ploy, patterns, position, and perspective. Strategy as a plan is some sort of consciously intended course of action, a guideline (or set of guidelines) to deal with a situation. Thus strategies have two essential characteristics namely they are made in advance of the actions to which they apply, and they are developed consciously and purposely. As plan a strategy can be a ploy, too, just a specific manoeuvre intended to outwit competitor. Strategy as pattern: a pattern in a stream of actions. Strategy as position is a means of locating an organization in its environment. Strategy as perspective: Its content consisting not just of a chosen position, but of an integrated way of perceiving the world. Strategy can be explicitly formulated or implicitly emerge over time. Deliberate and emergent strategy form the end points of a continuum along which the strategies that are formulated in the real world may be found. The realized strategy may be the result of interplay between deliberate and emergent strategy.

According to Quinn (1990), a strategy is the pattern or plan that integrates an organization's major goals, policies and action sequences into a cohesive whole. A well formulated strategy helps to marshal and allocate an organisation's resources into a

unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment and contingent moves by intelligent opponents. Strategy according to Michel Robert (1993) is thinking strategically regarding decisions pertaining to product and services; customers; market segments and geographic areas. Thompson and Strickland (1993) define strategy as the game plan management has for positioning the company in its chosen market area, competing successfully, pleasing customers and achieving good business performance. Game theory helps in the understanding interactive decision-making because most business situations are interactive, whereby outcomes emerge from the separate decisions of different people (McMillan, 1992). Hax and Majluf (1996) have proposed an integrated and comprehensive definition of strategy as follows:

- i. Determines and reveals the organisational purpose in terms of long-term objectives, action programmes and resource allocation priorities;
- ii. Selects the businesses the organization is in or is to be in;
- iii. Attempts to achieve a long-term sustainable advantage in each of its businesses by responding appropriately to the opportunities and threats in the firm's environment, and the strengths and weaknesses of the organization.
- iv. Identifies the distinct managerial tasks at the corporate, business, and functional levels.
- v. Is a coherent unifying and integrative pattern of decisions;
- vi. Defines the nature of economic and non-economic contributions it intends to make to its stakeholders;
- vii. Is an expression of the strategic intent of the organization;

- viii. Is aimed at developing and nurturing the core competencies of the firm;
- ix. A means for investing selectively tangible and intangible resources to develop the capabilities that assure a sustainable competitive advantage.

Pearce and Robinson (1997) also define strategy as a company's "game plan" that reflects its awareness of how, when, and where it should compete; against whom it should compete; and for what purposes it should compete. Strategy is the match of organisation's strengths with opportunities in its environment and using the strengths to confront threats and weaknesses. Johnson et al. (2005) define strategy as the direction and scope of an organisation over the long-term which achieves advantage for the organisation through its configuration of resources within changing environment to meet the needs of the market and fulfill stakeholder expectation. The strategy chosen should allow the firm, to best exploit its core competencies relative to opportunities in the external environment. The challenges in managing strategy successfully include the need to avoid strategic drift; understanding the impact of important contemporary themes affecting many organisations at any point in time such as internationalization, e-commerce, changing purposes and knowledge learning; and the desirability of viewing organisational issues in different ways commonly known as strategy lenses. A design view sees strategy in logical analytical ways while experience view sees strategy as the product of individual experience and organisational culture. The ideas view sees strategy as emerging from ideas within and around an organisation. Strategy according to Thompson and Strickland, Michel Robert and Johnson et al. are the ones that are most applicable in this study.

2.3 Environment, strategy and organisational capability

Ansoff and McDonnell (1990) note that environment serving organisations are in constant two - way interactions with the environment. They take in resources from the environment, add value to them, and deliver them back to the environment in the form of goods and/ or services. They have also asserted that successful environment serving organisations are open systems that use strategies to ensure continued organisational survival in the environment. Organisation is part of an open system whereby environmental forces impact upon the organisation and in turn the organisation can influence or manage the environment with functions within the organisation operating as inter-dependent sub-systems whose inter-relationships create emergent properties. The Ansoff's model aims to match resources with the dynamics of the environment. According to Thompson and Strickland (1993), organisations are environment dependent and cannot exist without the environment. Organisations depend on the environment for their survival and they scan the environment for trends and conditions that could affect the industry and adapts to them. Porter (1998) argues that strategy is creating a fit among company's activities. The success of a strategy depends on doing many things well and integrating them. If there is no fit among activities, there is no distinctive strategy and little sustainability. The company's activities include its effective interaction with the environment because these activities are geared towards serving the external environment. According to Grant (1998), strategy is concerned with matching a firm's resources and capabilities to the opportunities that arise in the external environment. The greater the rate of change in a firm's external environment the more likely internal

resources and capabilities are to provide a secure foundation for long-term strategy. Strategy according to Aosa (1998) is creating a fit between the external characteristics and internal conditions of an organisation to solve a strategic problem.

Johnson et al. (2005) define strategy as the direction and scope of an organisation over the long-term which achieves advantage for the organisation through its configuration of resources within changing environment to meet the needs of the market and fulfill stakeholder expectation. The resource based view of strategy postulates that the internal resources are the most important determinants of a company's strategy as it highlights the need for a fit between the external market context in which a company operates and its internal capabilities. In contrast to the Input / Output Model, the resource-based view is grounded in the perspective that a firm's internal environment, in terms of its resources and capabilities, is more critical to the determination of strategic action than is the external environment. Instead of focusing on the accumulation of resources necessary to implement the strategy dictated by conditions and constraints in the external environment, the resource-based view suggests that a firm's unique resources and capabilities provide the basis for a strategy. The strategy chosen should allow the firm, to best exploit its core competencies relative to opportunities in the external environment. However, due to the shortcoming of the resource-based view of the firm there is the need for the firms to have dynamic capabilities. The ability to build, integrate and reconfigure internal and external competencies to address rapidly-changing environments (Teece, Pisano and Shuen, 1997).

2.4 Strategic responses

Ansoff and McDonnell (1990) argue that a small number of industries still confront agenda similar to that of the first quarter of the twentieth century. The key challenge in such industries is to continue satisfying a basic demand for undifferentiated, reliable, unchanging products within a national market. They also assert that a significant number of industries still confront the challenges of the second quarter of the twentieth century thus sharing the challenges of differentiated and changing needs of their customers. The strategic success hypothesis (Ansoff and McDonnell, 1990) states that a firm's performance potential is optimum when aggressiveness of the firm's behaviour matches the turbulence of its environment; responsiveness of the firm's capability matches the aggressiveness of its strategy; and the components of the firm's capability must be supportive of one another. There are five levels of environmental turbulence namely: level one where the environment is repetitive; level two where environment expands slowly and incrementally; level three where environment changes fast and incrementally; level four where environment is discontinuous but predictable and level five where environment is surprising, discontinuous and unpredictable. Strategic responses involve change to the organisation's strategic behaviour. Such responses may take many forms depending on the organisation's capability and the environment in which it operates. Well-developed and targeted strategic responses are formidable weapons for a firm in acquiring and sustaining a competitive edge. Ansoff and McDonnell (1990) assert that turbulence level one is rarely observable in free market economies. A firm succeeds on turbulence level two if it changes its products only in response to competitors' moves. In

the absence of threats from competition such firms stick to their historical products/services, while minimising costs and under pricing competition. On level three firms progressively improve their historical products/services in anticipation of the evolving needs of the customers. Successful firms in level four continuously scan their environments in order to identify future economic, competitive, technological, and political discontinuities. The success formula on level five is to remain a leader in developing products/services incorporating the cutting edge of innovation and technology.

Ansoff and McDonnell (1990) indicate that the optimal strategic behaviour regarding responsiveness of the firms' capability on level one is to suppress strategic change. On level two the efficiency-driven firm permits strategic change to occur but only after failure to meet the firm's goals. The organisation is focused on internal efficiency and productivity with little attention being paid to environment. The production function drives the firm. Successful market-driven firms on level three are extroverted and future oriented. The focus is on serving the future needs of the firm's historical customers using the historical strengths of the firm. The marketing function typically drives the firm. A distinctive characteristic of an environment-driven firm on level four is that, unlike market-driven firm, it has no attachment to history. Unlike all other types of responsiveness no single function guides the behaviour of an environment-driven firm. The environment creating firms on level five have a feature in common with efficiency and market-driven firms. However, a characteristic which distinguishes an environment-creating firm from production - or market-driven firms is its total commitment to

creativity. The challenges confronted by different industries are different (Ansoff and McDonnel, 1990). As a result, it is not possible to devise a single prescription for responses to challenges which would apply to all industries and firms. Therefore the first step in strategic management is to perform a strategic diagnosis which identifies the type of strategic aggressiveness and organisational responsiveness that a particular firm needs to develop in order to meet the future challenges of its environment. However, turbulent environment calls for strategic issue management to enable early identification and fast response to surprising changes both inside and outside an enterprise (Ansoff and McDonnel, 1990). It offers advantages such as timely anticipation of new developments; quick internal reaction time; response to problems which may arise from any source that may be economic, political, social, technological; small system not affected by organisational size and complexity; and compatibility with most organisational structures and systems. The firm's performance potential is optimum when aggressiveness of the firm's behaviour matches the turbulence of its environment; responsiveness of the firm's capability matches the aggressiveness of its strategy; and the components of the firm's capability must be supportive of one another.

All socio-economic sectors are sensitive to weather and climate variability and as such they constitute KMD customers. Porter (1998) provides four broad criteria that determine the quality of buyers from a strategic stand-point namely purchasing needs versus company capability; growth potential; structural position and cost of servicing. Buyers' different purchasing needs carry strategic implications if a firm has differing capabilities for servicing these needs relative to competitors. Buyers who are not sensitive to price

tend to fall into various categories. However, the most relevant category for this study is where the buyer seeks a custom designed or differentiated variety. Porter asserts that if the buyer wants a specially designed product then this desire is often accompanied by the willingness to pay a premium price for it. A buyer with intrinsic bargaining power however, may demand unique or custom products but not be willing to pay extra for them. Serving these buyers puts the seller in the worst of situations, because it elevates costs without elevating margins.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research design

The research study was undertaken in form of a case study. A case study is a research design where data is collected from one or a few study units only. Data is usually qualitative, thus it is characterised by most features of a qualitative study. According to Cooper and Schindler (2005), case studies place more emphasis on a full contextual analysis of fewer events or conditions and their interrelations. As a research endeavour the case study contributes uniquely to our knowledge of individual, organisational, social, and political phenomena (Yin, 1988).

3.2 Data collection

Data was collected through in-depth interviews of the senior officers of the Kenya Meteorological Department. An introduction letter provided by the Co-ordinator of the MBA programme (Appendix I) was shown to the respondents to solicit for their cooperation in data collection. A questionnaire composed of both closed-ended and open-ended questions was used for data collection (Appendix II). Structured interviews were used to allow consistent data collection and analysis.

3.3 Data analysis

The data collected was evaluated to determine usefulness, consistency, credibility and adequacy. Data was analyzed using the content analysis technique. Content analysis involves explanation of status of some phenomena or contents of documentary materials or contents of verbal materials that can be spoken or printed (Kothari 1990). The technique enables inferences to be made through systematic and objective identification of specific messages and then relating the trends. This type of analysis has been used in similar studies in the past by Kandie (2001), Kiptugen (2003), Kathuku (2004), Adoyo (2005) and Maina (2006) among others.

CHAPTER FOUR

4.0 DATA ANALYSIS AND DISCUSSION OF THE FINDINGS

This chapter is based on the analysis of data collected by the researcher through in-depth interviews of senior KMD officers. It includes highlights on respondents' profiles, KMD customer needs, responses to customer needs, planning and strategy and strategic fit.

4.1 Respondents' profiles

The respondents were senior KMD officers including the Director, Deputy Directors in charge of branches, senior Assistant Directors in charge of sub-branches and Assistant Directors in charge of departments. The interviewed officers had wealth of experience in the study topic with 92% of the respondents (see Table 2) indicating that they had worked at KMD for more than 20 years. It should be noted that even the Director, who indicated he had worked at KMD for less than 10 years, had lectured meteorology at the University of Nairobi for more than 10 years before joining KMD in 2000.

Table 2: Respondents' work experience at KMD

Years of service	frequency	percentage
10 and below	2	8.0%
11 - 20	0	0
Above 20	23	92.0%
	25	100%

4.2 KMD customer needs

KMD customers include farmers; energy sector; water resources managers; media; research and learning institutions; disaster managers; air traffic services and airlines; fisheries; local authorities; recreation and tourism industry; marine industry; building and construction industry; insurance industry; banking industry; manufacturing industries; government ministries and departments; general public; and other national, regional and global meteorological services. Generally KMD customers need weather/climate information, forecasts and advisories. Most of the respondents indicated that KMD customers were willing to pay for the meteorological products and services to an average extent. The identified user specific needs were as follows:

4.2.1 Farmers

Weather and climate determine suitability, productivity and distribution of agricultural and livestock activities. Farmers require weather and climate forecasts to plan for land preparation, planting, weeding, pest and disease control, fertilizer application, harvest and post harvest crop management among others. The respondents identified needs of the farmers as maximum and minimum temperatures; humidity; soil moisture; evaporation rate; number of sunshine hours; rainfall amounts; onset and cessation dates; distribution of dry and wet spells within growing season; length of growing period; likelihood of hailstones.

Currently KMD provides rainfall forecasts on daily, weekly, monthly and seasonal time scales as well as onset and cessation dates of seasonal rainfall to the farmers. The

respondents identified unmet needs as forecasts for rainfall amounts and downscaled forecasts to district, division, location, and sub-location levels. This was mainly due to inadequate network of meteorological observation stations and lack of appropriate forecast models.

4.2.2 Energy sector

The respondents identified customer needs in the energy sector as extended range rainfall forecasts for up to a year ahead, areas with long periods of high wind speeds and number of sunshine hours. Currently KMD provides rainfall forecasts on daily, weekly, monthly and seasonal time scales to the sector. The unmet need identified by the respondents included extended rainfall forecasts extending to a period of a year mainly due to lack of forecast models.

4.2.3 Water resources managers

The respondents identified the needs of the customers in the water resources sector as, evaporation rates, rainfall and stream-flow forecasts, and storms risk zones. Currently KMD provides rainfall and estimated evaporation data for various catchments. The respondents identified unmet need in the sector as storm forecasts. This was mainly due to inadequate network of meteorological observation stations and delay in commissioning of weather radars.

4.2.4 General public

The general public needs included area specific forecasts on very short range, daily, weekly, monthly and seasonal time scales. Currently KMD provides daily, weekly, monthly and seasonal forecasts based on climatological zones. The respondents were in agreement that the needs for area specific and very short range weather forecasts had not been met.

4.2.5 Disaster managers

Disaster managers' needs included forecast of extreme weather and climate events such as floods and droughts, and potential risks such as landslides, forest fires and conflicts between people as well as between humans and wildlife. Currently KMD provides weather and climate forecasts and generalised risks. The respondents identified unmet need as area specific risks associated with forecasts of extreme weather and climate events.

4.2.6 Health experts

Health experts' needs included rainfall and temperature forecasts on monthly and seasonal time scales, water quantity and quality as well as associated risks. Most of the respondents were in agreement that the needs for monthly and seasonal temperatures had not been met.

4.2.7 Airlines and air traffic services

The needs of aviation industry included wind speeds and direction, temperature, and pressure at take off; route weather forecasts including cloud types and heights, wind speeds and directions, rainfall, thunderstorms, and positions of clear air turbulence; and terminal aerodrome weather forecasts including visibility, pressure, temperature as well as wind speeds and direction. Most of the respondents were in agreement that the aviation industry needs had been met to a large extent.

4.2.8 Marine industry

The marine industry needs included state of sea, wind speeds and directions, rainfall, visibility, tidal waves, tsunami, and tropical storms. Most of the respondents were in agreement that the needs of the shipping industry had been met to a large extent.

4.2.9 Road transport

The road transport needs included visibility and rainfall forecasts as well as associated risks on the roads. Most of the respondents were of the view that the needs of the road transport had been met to a very small extent.

4.2.10 Insurance sector

The insurance sector needs included basic meteorological parameters during periods of damage or accidents to determine compensation. Most of the respondents were of the view that the needs of the insurance industry had been met to a large extent.

4.2.11 Tourism and recreation industry

The tourism and recreation industry needs included medium range weather forecasts of rainfall, sunshine hours and comfort indices. Currently KMD provides medium range weather forecasts to the industry. Most of the respondents were of the view that the needs of tourism industry had been met to a small extent.

4.2.12 Building and construction industry

The building and construction industry needs included basic climatological data as well as daily, weekly and monthly weather forecasts. Most of the respondents were of the view that the needs building and construction industry had been met to a large extent.

4.2.13 Government ministries and departments

The Government ministries and departments' needs included weather and climate forecasts on weekly, monthly, seasonal and annual time scales. Currently KMD provides

weekly, monthly and seasonal forecasts. Most of the respondents indicated that the needs of the Government ministries and departments had been met to an average extent.

4.2.14 Media

Media needs included weather and climate forecasts in non technical terms and categorical forecasts such as whether it will be cold or warm, rain or dry. Most of the respondents were of the view that the needs of the media had been met to a very small extent.

4.2.15 Research and learning Institutions

Researchers and students need historical records of various meteorological parameters. Most respondent were in agreement that the need had been met to a large extent.

4.2.16 Environment sector

The sector need air pollution and climate change impact assessment. Currently KMD undertakes climate change impact assessments and provides air pollution data on some selected areas. The respondents were of the view that the needs had been met to an average extent.

4.2.17 Students in meteorology and applied sciences

Students need training in meteorology, applied meteorology and related disciplines. The unmet needs were identified as specialised courses in some related disciplines, higher Internet speed for the virtual laboratory. Most respondents were of the view that needs had been met to a large extent.

4.2.18 Other national, regional and global Meteorological Services

Other meteorological services need real time meteorological data. Most of the respondents were of the view that this need had been met to a very large extent.

4.3 KMD strategic responses to customer needs

Well-developed and targeted strategic responses to customer needs are critical in pleasing and retaining customers as well as attracting customers. KMD has responded to customer needs through strategic response variables such as restructuring, technology development, training, research and development, culture change and enhanced service delivery.

4.3.1 Restructuring

KMD had re-organised its structure in order to respond to the changing customer needs and to address emerging global meteorological issues. The restructuring included creation of branches, sub-branches and additional customer based departments as well as setting up of provincial meteorological offices. Most of the respondents were of the view that the objectives of the restructuring had been met to an average extent.

4.3.2 Technology development

KMD has enhanced technology through modernisation of weather observation systems, purchase of powerful computers to run statistical forecast models and Numerical Weather Prediction (NWP) Models, installation of VSAT Internet facility with uplink speed of 64KB and downlink speed of 512KB, automation of routing of meteorological data to national, regional and global centres. Setting up of agro-meteorological, air pollution, and hydro-meteorological stations. Installation of Tsunami early warning system, automatic weather observation systems at airports and other meteorological stations, drifting buoys on Lake Victoria, and lightening detectors. Setting up of community radio stations to broadcast weather information to the remote areas. Upgrading satellite receiving stations. The objectives of technology development had been met to a high extent. KMD had intentions to address the unmet needs through installation of network of weather radars and to increase observation network from the current 36 stations to at least 72 stations; acquire high performance computing platforms to run high resolution NWP models;

revive rainfall stations by setting up of voluntary rainfall observation unit; setting up of water quality laboratories, installation of seismic sensors; and to increase speed of Internet to 2MB downlink and 1MB uplink.

4.3.3 Training, research and development

KMD has trained its staff on specialised fields of meteorology and related disciplines and has undertaken research to develop forecast models and improve skills of weather and climate forecasts as well as developed tools for downscaling weather and climate forecasts for specific sectors. Re-designing training programmes to address emerging issues such as climate change, disaster risk reduction and information communication technology. The objectives of training, research and development had been met to an average extent. KMD had plans to undertake research to develop prediction models to provide temperature forecasts and improve the skills and lead time of forecasts. It had also intentions to undertake studies on comfort indices, weather modification, hailstone suppression and snow pack augmentation among others.

4.3.4 Culture change

KMD had implemented strategies on culture and attitude change through induction courses on management, Total Quality Management (TQM), change management and customer care. The objectives of culture change had been achieved to a low extent.

4.3.5 Service delivery

KMD had enhanced service delivery through setting up of provincial meteorological offices; installation of community radio stations in remote areas; as well as setting up public weather and media; public education and awareness departments; and development of a service charter. KMD in collaboration with the IGAD Climate Prediction and Applications Centre (ICPAC) had held workshops to train journalists on dissemination of weather and climate advisories. The objectives of service delivery had been met but to a small extent.

4.4 Planning and strategy

The first KMD strategic plan was developed in 2005. The KMD Mission Statement is “To facilitate accessible Meteorological Information and Services and Infusion of Scientific Knowledge to Spur Socio-economic Growth and Development”. The mission had changed within the last 10 years to facilitate integration of climate information in all socio-economic sectors for sustainable development and to address the changing customer needs. Most of the respondents were in agreement that the goals of KMD had not changed over the last 10 years. Most of the respondents indicated that senior KMD officers were empowered to make strategic decisions but to very small extent. On the other hand most of the respondents were of the view that the senior officers did not effectively communicate the strategic plan. The internal challenges faced at KMD included lack of legal framework to allow collection of revenue, resistance to change;

financial constraints, shortage of technical and professional staff due to Government's freeze on employment since 1997, Government bureaucracy that limits timely implementation of some strategies, overlapping roles between some departments, lack of team spirit, and inadequate office space. KMD had responded to these challenges by appealing to Government to allow for the recruitment of technical and professional staff; beautification of physical facilities and construction of additional offices. Most of the respondents rated the level of response to the internal challenges as average. The internal challenges that KMD had not effectively responded to included management of resistance to change, team building and clear demarcation of departmental roles.

4.5 Strategic fit

Most of the respondents indicated that KMD responses to their customer needs were inadequate. To meet the customer needs KMD should undertake multidisciplinary research, devolve further to be present at the districts and expand weather observation networks. Most of the respondents indicted that KMD did not possess the necessary capacity to address the needs of their customers. KMD could acquire these capabilities through formation of strategic alliances and undertaking joint ventures.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter provides summary, conclusions and recommendations for the research findings in line with the objectives of the study.

5.1 Summary

The objectives of the study were to identify and document needs of KMD customers; to establish KMD responses to needs of their customers; and to determine whether KMD capability matches the responses to their customer needs.

5.1.1 KMD customer needs

The study found out that KMD customer needs were maximum and minimum temperatures; humidity; soil moisture; evaporation rate; number of sunshine hours; rainfall amounts; onset and cessation dates; distribution of dry and wet spells within growing season; length of growing period; likelihood of hailstones for the agriculture sector. Extended range rainfall forecast; zones of high wind speeds; and number of sunshine hours for the energy sector. Evaporation rate; medium and long range rainfall forecasts; stream-flow forecasts; and storm risk zones for the water resources sector. Area specific and very short range forecasts as well as daily, weekly, monthly and seasonal forecasts for the general public. Forecasts of extreme weather and climate events such as

floods and droughts, and potential risks such as landslides, forest fires and potential conflicts between people as well as between humans and wildlife for the disaster managers. Health sector needs rainfall and temperature forecasts on monthly and seasonal time scales, water quantity and quality as well as the associated risks. Airlines and air traffic services need wind speed and direction, temperature and pressure at take off; route weather forecasts including cloud types and heights, wind speeds and directions, rainfall, thunderstorms, and positions of clear air turbulence and terminal aerodrome forecasts including visibility, pressure, temperature as well as wind speeds and directions. Marine sector needs forecasts of wind speeds and directions, rainfall, visibility, tidal waves, tsunami, and tropical storms. Road transport sector needs visibility and rainfall forecasts as well as the associated risks on the roads. Insurance sector needs basic meteorological parameters during the period of damage or accidents. Tourism sector needs medium range weather forecasts of rainfall, sunshine hours and comfort indices. Building and construction industry needs basic climatological data as well as daily and weekly and monthly weather forecasts. Government ministries and departments need weather and climate forecasts on weekly, monthly, seasonal and annual time scales. Media need weather and climate forecasts in non technical terms and categorical forecasts such as likelihood of being cold or warm, rain or dry. Research and learning Institutions need historical records of various meteorological parameters. Environment sector needs air pollution and climate change impact assessment. Other regional and global weather services need real time meteorological data. Most of the respondents indicated that KMD customers were willing to pay for the meteorological products and services to an average extent.

The unmet customer needs were identified as forecasts for rainfall amounts and downscaled forecasts to district, division, location, and sub-location levels for the agriculture sector. Extended range forecasts of rainfall for the energy sector as well as ministries of Finance and Economic planning. Storm risk zones for the water resources. Point and very short range forecasts for the general public. Area specific risks associated with forecasts of extreme weather and climate events for disaster managers. Monthly and seasonal temperature forecasts for the health sector. Storm and visibility forecasts as well as the associated risks on the roads for the road transport. Comfort indices for the tourism industry.

5.1.2 KMD strategic responses to customer needs

KMD has responded to customer needs through strategic response variables including restructuring; technology development; training, research and development; culture change; and enhanced service delivery. The restructuring included creation of branches, sub-branches, additional customer based departments and setting up of provincial meteorological offices. Technology development included modernisation of weather observation systems, purchase of powerful computers to run statistical forecast models and Numerical Weather Prediction (NWP) models, installation of VSAT Internet facility, automation of routing of meteorological data to national, regional and global centres. Setting up of agro-meteorological, air pollution, and hydro-meteorological stations. Installation of Tsunami early warning system, automatic weather observation systems at airports and other meteorological stations, drifting buoys on Lake Victoria, and

lightening detectors. Setting up of community radio stations to broadcast weather information to the remote areas. Upgrading of the satellite receiving stations. KMD had planned to install a network of weather radars and expansion of observation networks, and to revive rainfall stations. KMD had trained its staff on specialised areas of meteorology and has undertaken research to improve skills of weather and climate forecasts as well as developed tools for downscaling weather and climate for specific sectors. KMD plans to undertake research to develop forecast models to provide monthly and seasonal temperature forecasts and improve the skills and lead time of forecasts as well as to develop comfort indices, weather modification, hailstone suppression and snow pack augmentation. KMD had implemented strategies on culture and attitude change through induction courses on management, Total Quality Management (TQM), change management and customer care. KMD enhanced service delivery through setting up of provincial meteorological offices; setting up of community radio stations in the remote areas of the country; development of a service charter as well as setting up public weather and media; and public education and awareness departments.

5.1.3 Planning and strategy

The current KMD strategic plan was developed in 2005 but it had not been effectively communicated throughout the organisation. The senior KMD officers were empowered to make limited strategic decisions but to a very small extent. The internal challenges faced at KMD included lack of legal framework to allow collection of revenue, resistance to change; financial constraints, shortage of technical and professional staff due to

Government's freeze on employment since 1997, Government bureaucracy that limits timely implementation of some strategies, overlapping roles between departments, inadequate training in management and inadequate office space. KMD has responded to these challenges by appealing to Government to allow recruitment of technical and professional staff; conducting courses on change management; inducting senior officers to performance based management; as well as beautification of physical facilities and construction of additional offices. KMD had not effectively responded to management of resistance to change, team building and overlapping roles between some departments.

5.1.4 Strategic fit

The KMD responses to their customer needs were inadequate. KMD also did not possess the necessary capacity to address the needs of their customers. KMD could acquire these capabilities by forming strategic alliances and/or undertaking joint ventures.

5.2 Conclusions

The needs of KMD customers were identified and documented. The needs of the KMD customers are very many and present huge business opportunities. The strategic responses of KMD to the needs of their customers were inadequate. KMD also did not have adequate capacity to respond to the needs of their customers. In this regard both strategy and capability gaps existed at KMD and as such the logic behind the Ansoff's

strategic success formula had not been fulfilled. The resistance to change at KMD could therefore be attributed to capacity development lagging behind strategy development.

5.3 Recommendations

KMD should reorganize its functions to harmonize the overlapping roles between some departments and also create a marketing department to manage the identified customer needs. KMD should also adopt the integrated marketing approach in which all its departments would get involved in marketing and its entire staff trained in customer care in order to deliver the desired customer satisfaction effectively and efficiently. KMD should enhance the role of research and development department to enable it undertake multidisciplinary research to address the diverse customer needs. KMD should adopt participatory approach to organisational strategy development and ensure that the strategic plan is effectively communicated throughout the organisation. In order to narrow the capability gap KMD should form strategic alliances and/or undertake joint ventures. KMD should ensure a law establishing KMD as a legal entity is enacted by Parliament as soon as practicable to facilitate revenue collection as well as formation of strategic alliances and joint ventures. KMD should commission an independent study to quantify the socio-economic benefits of weather and climate information and use the results of the study to convince the private sector to form partnership with KMD to expand weather observation systems across the country. The Government should set up a body to regulate weather and climate industry as other players are likely to join the industry to exploit the opportunities arising from the unmet customer needs.

5.4 Limitations of the study

This study focused mainly on the external customers of KMD and not on the internal KMD customers. The customer needs in this study were compiled from the views expressed by the senior KMD officers and not from the perception of the external customers. It would have been of much benefit if views of the external KMD customers were obtained. However, the time taken to carry out this study was very short to allow for such interviews.

5.5 Suggestions for further study

This study should be extended to cover strategic responses of KMD to the needs of their internal customers. It would also be useful to undertake a study on the KMD strategic planning. A study should be undertaken to quantify the socio-economic benefits of weather and climate information.

REFERENCES

- Adoyo, M. (2005). *Responses to Changes in the External Environment: A Case Study of Post Bank*. Unpublished MBA project: University of Nairobi.
- Ansoff, H.I. (1965). *Corporate Strategy*: McGraw-Hill: New York as in Burnes, B. (2004). *Managing Change*. Prentice Hall: Harlow.
- Ansoff, I., & McDonnel, E. (1990). *Implanting Strategic Management*. Prentice Hall: Europe.
- Aosa, E. (1998). The Leadership Challenges Facing Kenyan Organisations. *The Accountant Journal of the Institute of Certified Public Accountants of Kenya, January - March pp 24-26*.
- Bateman, T.S., & Zeithmal, C.P. (1990). *Management Function and Strategy*. Irwn: Burr Ridge.
- Chandler, A.D. (1962). *Strategy and Structure: Chapters in the History of American Industrial Enterprise*: Cambridge, MA, USA as in Burnes, B. (2004). *Managing Change*. Prentice Hall: Harlow.
- Cooper, D.R., & Schindler, P.S. (2005). *Business Research Methods*. Tata McGraw\Hill: New Delhi.
- Githeko, A.K. and Ndegwa, W. 2001. Predicting malaria epidemics in the Kenyan Highlands using climate data: a tool for decision-makers. *Global Change and Human Health*, 2: 54-63.
- Grant, R. M. (1998). *Contemporary Strategic Analysis*: Blackwell Publishers: USA.

- Goro, R.W (2003). *Strategic Responses of Commercial Banks to Threats of Substitutes*.
Unpublished MBA project: University of Nairobi.
- Hax, A.C., & Majluf, N.S. (1996). *The strategy concept and process*. Prentice-Hall: New Jersey.
- Johnson, G., Scholes, K., & Whittington, R. (2005). *Exploring Corporate Strategy*.
Prentice Hall: Harlow.
- Kandie, P.Y. (2001). *A Study of Strategic Responses by Telkom Kenya in a Competitive Environment*. Unpublished MBA project: University of Nairobi.
- Kastelein, J. (1988). *Meteorology in the service of aviation, WMO No. 706*. Secretariat of the World Meteorological Organisation: Geneva.
- Kathuku, J.K. (2004). *The Strategic Responses to Changes in the Environment by the CO-OP Bank of Kenya*. Unpublished MBA Project: University of Nairobi.
- Kimani, J.M. (2006). *Strategic Responses of CCS in Kenya to Changes in their Environment*. Unpublished MBA Project: University of Nairobi.
- Kiptugen, E.J. (2003). *Strategic Responses to a Changing Competitive Environment: The Case Study of Kenya Commercial Bank*. Unpublished MBA project: University of Nairobi.
- Kombo, H.K. (1997). *Strategic Responses by Firms Facing Changed Environmental Conditions: A Study of Motor Vehicle Franchise Holders in Kenya*.
Unpublished MBA project: University of Nairobi.
- Kothari, C. R. (1990). *Research methodology: methods and techniques*.
Vishwaprakashan: New Delhi.
- Kotler, P. (1997). *Marketing Management*. Prentice-Hall: New Delhi.

- Lalampaa, T. (2006). *Responses by the HELP to the Environmental Challenges of Financing Higher Education in Kenya*. Unpublished MBA project: University of Nairobi.
- Lamb, R. B. (1984). *Competitive strategic management*. Prentice-Hall: Englewood Cliffs, NJ. (on line) available at http://en.wikipedia.org/wiki/Strategic_management
- Lesiyampe, L. (2006). *Responses of Kenya Wildlife Services to Increased Competition in the Tourism Industry*. Unpublished MBA project: University of Nairobi.
- Maina, I.W. (2006). *Responses of the Kenya Power Lighting Company to Changes in Environment*. Unpublished MBA project: University of Nairobi.
- Mathenge, B.M (2003). *Organisation Responses to Environmental Changes in the Agricultural Sector: The Case of Apex Public Crop Management Organisation in Kenya*. Unpublished MBA project: University of Nairobi.
- McMillan, J. (1992). *Games Strategies and Managers*. Oxford University Press: New York.
- Mintzberg, H. (1987). *Five Ps for Strategy: The California Management Review*. Regents & the University of California.
- Mintzberg, H. (1987). *Crafting Strategy: Harvard Business Review*. as cited in Mintzberg, H, Quinn, J.B. & Ghoshal, S. (1999). *The Strategy Process*. Prentice Hall: Europe.
- Mockler, R.J. (1993). *Strategic Management: An Integrative Context – Specific Process*. Idea Group Publishing: Harrisburg, USA.

- Mpungu, A.M. (2005). *Strategic Responses to Changing Environmental Conditions: A Case of AAR Health Services Ltd.* Unpublished MBA project: University of Nairobi.
- Mueke, A.M (2006). *Strategic Responses of International Reproductive Health NGOs Operating in Kenya to Challenges in the Environment.* Unpublished MBA project: University of Nairobi.
- Mulema, N. (2004). *Responses to Changes in the External Environment in Service Industry: A Case of Teachers Service Commission.* Unpublished MBA project: University of Nairobi.
- Musa, A.H. (2004). *Responses by Commercial Banks Operating in Kenya to Changes in the Environment: A Case of National Bank of Kenya.* Unpublished MBA project: University of Nairobi.
- Muthane, G.J (2006). *Responses of NAS Airport Services to Environmental Challenges in the Catering Industry in Kenya.* Unpublished MBA project: University of Nairobi.
- Mutugi, R.M.(2006). *Strategic Responses of Barclays Bank to Changes in Retail Banking in Kenya.* Unpublished MBA project: University of Nairobi.
- Mwangi, J.G. (2006). *Responses by Kenyan Construction Firms Facing Changing Environmental Conditions.* Unpublished MBA project: University of Nairobi.
- Ogallo L. A., 1993: Dynamics of Climate Change over Eastern Africa *Proc. Indian Academy of Sciences, 102, 1, 203-217*
- Pearce, J.A., & Robinson, R. B., (1997). *Strategic Management: Formulation, Implementation and Control.* Irwin/McGraw-Hill: USA.

- Porter, M. E. (1980). *Competitive Strategy*. The Free Press: New York.
- Porter, M.E. (1985). *Competitive Advantage*. Free Press: New York.
- Porter, M.E. (1998). *Competitive Strategy*. The Free Press: New York.
- Quinn, J.B. (1998). *Strategies for change: Logical Incrementalism*. Irwin: Homewood. as in Mintzberg, H, Quinn, J.B. & Ghoshal, S. (1999). *The Strategy Process*. Prentice Hall: Europe.
- Robert Michel (1993). *Strategy: Pure and Simple*. McGraw-Hill. (On line) Available at http://home.att.net/~nickols/strategy_definition.htm
- Sheikh, A.O. (2000). *A Study of the Strategic Responses by Kenyan Insurance Companies Following Liberalisation*. Unpublished MBA Project: University of Nairobi.
- Teece, D. J., Pisano, G. and Shuen, A. (1997) "Dynamic capabilities and strategic management," *Strategic Management Journal* (18) 7, pp. 509-533. (On line) Available at <http://www.istheory.yorku.ca/dynamiccapabilities.htm>
- Thiga, S. M (2002). *Strategic Responses of Airlines Operating in Kenya in the Face of Changing Environmental Conditions*. Unpublished MBA Project: University of Nairobi
- Thompson, J.L. (1997). *Strategic Management Awareness and Change*. Thomson Business Press: UK.
- Thompson, A.A. & Strickland, A.J. (1993). *Strategic Management: Concepts and Cases*. Richard, D.Irwin: New York.
- Wamalwa, P. (2006). *Responses of Catholic Health Institutions to Environmental Changes*. Unpublished MBA project: University of Nairobi.

Yin, R.K. (1988). *Case Study Research: Design and Methods*. Sage Publications:
Newbury Park, California.

APPENDIX I: LETTER OF INTRODUCTION

DATE: 21 August 2007

TO WHOM IT MAY CONCERN

The bearer of this letter **Mr Zachary K. K. Atheru**, Registration No: **D61/P/8863/2004** is a Master of Business Administration (MBA) student of the University of Nairobi.

He is required to submit as part of his coursework assessment research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate if you assist him by allowing him to collect data in your organisation for the research.

The project is entitled **Strategic responses of Kenya Meteorological Department to the needs of their customers.**

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.

J.T. KARIUKI

CO-ORDINATOR, MBA PROGRAM

APPENDIX II: QUESTIONNAIRE

Strategic responses of Kenya Meteorological Department to the needs of their customers:

Research project in partial fulfilment of the requirements of the Degree of the Master of Business Administration, School of Business, University of Nairobi.

Please answer the following questions:

SECTION A: RESPONDENT’S PROFILE

- 1. Position held-----
- 2. Number of years of service at Kenya Meteorological Department (KMD) -----
- 3. What is your responsibility in KMD? -----

SECTION B: CUSTOMER NEEDS

- 4. Who are KMD customers-----

- 5. What are the needs of KMD customers?-----

- 6. Do you have direct contact with customers? Yes () No ()
If not, describe the process of getting products/services to the customers-----

7. How do you rate customers' willingness to pay for the KMD products/services?

Very low - 1 Low - 2 Average - 3 High - 4 Very high - 5

() () () () ()

SECTION C: STRATEGIC RESPONSES

8. Please explain in detail how KMD has responded to the customers' needs -----

9. How do you rate the level of KMD response to customers' needs?

Very low - 1 Low - 2 Average - 3 High - 4 Very high - 5

() () () () ()

10. Are there customers' needs that KMD has not responded to? Yes () No ()

If yes kindly give reasons why you have not responded-----

11. What is KMD intending to do in future about the needs it has not responded to?---

12. Has the structure of KMD changed in the last 10 years? Yes () No ()

If yes kindly give the main causes of the changes-----

13. To what extent have the objectives for restructuring been met?

Very small - 1 Small - 2 Average - 3 Large - 4 Very large - 5

() () () () ()

SECTION D: PLANNING AND STRATEGY

14. What is KMD Mission Statement?-----

15. Has the Mission changed within the last 10 years? Yes () No ()

If yes kindly explain the changes-----

16. What are the Goals of KMD?-----

17. Have the Goals changed within the last 10 years? Yes () No ()
If yes kindly explain the changes-----

18. Does KMD develop strategic plans? Yes () No ()
When was the first strategic plan developed? -----

19. Are Senior KMD Officers empowered to make strategic decisions? Yes () No ()

20. Do Senior KMD Officers effectively communicate the strategic plan?
Yes () No ()

21. What internal challenges have you faced within KMD?-----

22. How have you responded to the challenges?-----

23. How do you rate the level of response to the challenges?
Very low - 1 Low - 2 Average - 3 High - 4 Very high - 5
() () () () ()

24. Are there internal challenges KMD has not responded to? Yes () No ()

If yes kindly explain-----

SECTION E: STRATEGIC FIT

25. Do you consider KMD responses to the needs of customers adequate?

Yes ()

No ()

If not what else do you feel KMD should do to meet the needs -----

27. Does KMD currently possess the necessary capacity to address the needs of customers? Yes () No ()

If not kindly indicate the possible means by which KMD could acquire these capabilities-----

THANK YOU FOR YOUR COOPERATION