

**EVALUATION OF THE GROWTH STRATEGY OF AN  
EDUCATIONAL INSTITUTION: *A CASE STUDY OF THE KIGALI  
INSTITUTE OF SCIENCE, TECHNOLOGY AND MANAGEMENT (KIST)***

**By**

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**CONFIDENTIALITY CLAUSE**

7<sup>th</sup> January 2006

**TO WHOM IT MAY CONCERN**

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Due to the strategic importance of this research it would be appreciated if the contents remain confidential and not be circulated for a period of five years.

Sincerely

M.M. NTUKANYAGWE

## Declaration

I declare that this research is my own and that the views expressed in the research are my own. Where other people's work has been used, it has been duly acknowledged. It is submitted for the degree of Master's of Business Administration (MBA) at the University of KwaZulu-Natal and has not been submitted for any degree.

Signed.....

Date.....

116056

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## **Abstract**

The aim of this dissertation is to carry out an evaluation of the Kigali Institute of Science, Technology and Management's organisational strategy using the criteria of suitability and feasibility. Specifically, this dissertation sets out to evaluate the suitability of KIST's growth strategy by assessing whether it addresses the circumstances in which the organisation is operating and to establish the feasibility of the strategy by assessing whether the Institute possesses the resources and competences to match the chosen growth strategy. In conducting this evaluation it is recognised that, although it is impossible to demonstrate conclusively whether a particular strategy is optimal or even guaranteed to work, one can nevertheless, test it for critical flaws using the above-mentioned criteria.

The findings from the case study and analysis show that the main strategic issues facing KIST are: - inadequate funding for vital, urgent capacity building; inadequate infrastructure and facilities for KIST's growth and sustainability; inadequate strategic planning; low employee motivation and high staff turnover. From the suitability analysis, it was revealed that KIST's growth strategy is not suitable since it does not address the circumstances in which it is operating due to its internal weaknesses. However, the strategy is attainable if the management of KIST puts in place mechanisms to address the strategic issues identified.

The feasibility analysis revealed that, as a result of KIST staff not being motivated, the Institute's capabilities of technology transfer would not be adequately harnessed. In addition, the Institute may fail to effectively and efficiently run and sustain its programs. Finally the financial feasibility analysis established that the Institute has a weak financial base as a result of inadequate government and reducing donor funding which renders the growth strategy unfeasible.

The last chapter provides recommendations that will serve as guidelines for the Institute, in order for it to address the strategic issues identified, and also successfully implement the chosen growth strategy. Further research by KIST has also been proposed in areas identified at the end of chapter six.

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## **List Of Abbreviations**

- ADB:** African Development Bank
- AVU:** African Virtual University
- CITT:** Centre for Innovation and Technology Transfer
- DFID:** Department of Foreign International Development
- GTZ:** German Technical Cooperation
- HLI:** Higher Learning Institution
- “ISAE”:** French acronym for Higher Institute for Agriculture and Animal Husbandry
- KFI:** Kigali Free University
- KHI:** Kigali Health Institute
- KIE:** Kigali Institute of Education
- KIST:** Kigali Institute of Science, Technology and Management
- MIFOTRA:** Ministry of Public Service, Vocational Training and Skills development
- MINALOC:** Ministry of Local Government, Social Affairs and Information
- MINECOFIN:** Ministry of Finance and Economic Planning
- MINEDUC:** Ministry of Education
- MTEF:** Medium Term Expenditure Framework
- NCDC:** National Curriculum Development Centre
- NEC:** National Examinations Council
- PEST:** Political, Economic, Social, and Technological
- PRS:** Poverty Reduction Strategy
- PRSP:** Poverty Reduction Strategy Paper
- SWOT:** Strengths, Weaknesses, Opportunities, and Threats
- UKZN:** University of Kwazulu-Natal
- UNDP:** United Nations Development Program
- UNESCO:** United Nations Scientific and Cultural Organisation
- UNR:** National University of Rwanda

# 1 CHAPTER ONE: INTRODUCTION

## 1.1 Introduction

Institutions of Higher Learning worldwide are finding themselves in a period of continuous transformation and change, characterized by increased demand for higher education, reducing government funding, changing student demographics, increasing competition with local and international institutions due to globalization, emerging models of higher education and increased operating costs. All these factors have thus made it necessary for them to engage in a strategic planning process to enable them cope with the challenges presented by the environments in which they operate (Lerner, 1999).

Strategic planning focuses on the direction of the organisation and actions necessary to improve its performance. Any strategic planning process must address four fundamental questions of: where are we going? (Mission), how do we get there? (Strategies), what is our plan of action? (Budgets), and how do we know if we are on track? (Control). These elements are crucial because they enable institutions like KIST to respond in a timely and appropriate manner to the changing dynamic environment in which it operates.

According to the KIST Partners, Donors and Stakeholders Conference Report (2003), donors are cutting back on their funding; the high cost of higher education and an overburdened government budget does not allow government to be generous to KIST all the time.

The aim of this study therefore, is to evaluate the existing organisational strategy at the Kigali Institute of Science, Technology and Management (KIST), and come up with recommendations that will enable the institute improve its organisational capabilities and become self-sustainable in the face of inadequate government and donor funding for higher education in Rwanda.

This chapter gives an overview of the study undertaken. The background of the study, brief overview of the organisation, statement of the problem, motivation and value of the research study are defined. The objectives of the study, as well as the structure of the study which provides the outline of the chapters in this dissertation are also presented.

## **1.2 Background of the study**

The Kigali Institute of Science, Technology and Management (KIST) was established in 1997 by the Government of Rwanda. The purpose was to establish a higher institution of learning that is committed to advancing Rwanda's development by graduating highly skilled people who will respond to the acute shortage of qualified and experienced, engineers, managers and technicians in Rwanda.

KIST is currently pursuing a growth and sustainability strategy. For its long-term growth prospects, it has to engage in other income generating activities to boost its revenue base, following the reduction in donor funding and inadequate government funding. The Institute faces challenging prospects for its future operations and this has necessitated the need for it to continuously transform and grow based on a strategy of greater cost effectiveness and increased internal revenue generation.

Strategic planning is one of the ways in which institutions like KIST attempt to provide a solid framework for achieving sustainable competitive advantage and enables it to prioritise in the allocation of its scarce resources. Literature suggests that institutions which engage in strategic planning have found it to provide a basis for measuring progress and identifying necessary changes to organisational processes and functions that will lead to better performance.

The KIST 2003-2008 Strategic Plan consolidates the planning activity that has taken place since the Institute was founded in 1997 and defines the road map for the Institute up to the year 2008. Through the different Boards, KIST formulated its objectives and functions, which were forwarded to Government for inclusion in the statute and set out a framework for KIST's governance (KIST Strategic Plan 2003-2008).

The strategic plan is in line with the higher education sector policy; it consolidates the progress made so far at KIST since 1997 and elaborates on the future projections for KIST in terms of student enrolment, increased staffing, infrastructure and the financial resources required to meet these needs. Given the inadequate government and reducing donor funding, the strategic plan provides a basis for constructive dialogue with government and potential international donors, as a means of seeking additional funding for the successful operation of the Institute (KIST Strategic Plan 2003-2008).

The Institute's Strategic Plan comprises a matrix for each objective, giving performance indicators, actions required, responsibility, timeframe, issues and remarks, and next steps. Progress is monitored at the weekly meetings of the management committee. KIST has set up a Planning and Organisation Unit reporting to the Rector through the Vice-Rector for Administration and Finance. This unit is responsible for progress facilitation and reporting. The time horizon for this Plan has been set at the end of 2008. KIST intends to conduct a major review of its Strategic Plan in the second semester of 2006 with the intention of producing a new five-year plan for 2007-2012. However, there is an annual review (roll-over) of the strategic plan in addition to the regular weekly evaluation of activities and actions at the management committee meetings. Evaluation of the strategies may also be conducted as and when management deems necessary (source: email excerpt).

Strategy evaluation is of crucial importance to KIST since it operates in an environment that is dynamic and the previously formulated and implemented strategies could become outdated therefore necessitating a need to regularly reassess the chosen strategies and their relevance, given the environment in which the Institute is operating.

### **1.3 Motivation for the research**

Rwanda as a country that is slowly recovering from the ravages of war and a genocide, in which a high proportion of its human capital was destroyed, recognises the role an educated and skilled population could have in its development. The Government of Rwanda has therefore invested heavily in education as one of the key sectors of the economy. In light of this, the Kigali Institute of Science, Technology and Management (KIST) was established to help bridge this gap by training and equipping students with advanced skills in the fields of science, technology and management as well as by promoting active research and technology transfer in the country.

The aim and motivation for the study is therefore, to evaluate the existing organisational strategy at KIST and come up with recommendations where gaps have been identified, in order to ensure the successful implementation of the strategy and also enable the Institute continuously cope with the challenges present in the dynamic environment in which it is operating.

## **1.4 Value of the research**

- The study will assist KIST to improve its institutional capabilities in providing higher education in Rwanda.
- The successful performance of KIST as an institution will go a long way in building an indigenous scientific and technical human resource base, capable in the near future, of propelling the country forward in its efforts to develop all sectors of the economy.
- The study will be used as a basis for formulating and implementing strategies by KIST and other institutions of higher learning in Rwanda having identified their shortcomings.
- The findings of this study could be useful for future reference as a source of secondary data.

## **1.5 Problem Statement**

With inadequate government and reducing donor funding, KIST as a growing institution is now faced with a situation where it has to source internally and come up with strategies to ensure that it successfully achieves its objectives as set out in the 2003-2008 strategic plan. The Institute is currently pursuing a growth and sustainability strategy and has to devise means of ensuring that it reduces its dependence on government and donor funds in order to become self-reliant and successfully implement the 2003-2008 strategic plan.

How suitable and feasible is the current strategy that KIST is pursuing? What strategies can KIST as an institution put in place to enable it grow, become self-reliant, sustainable and competitive?

## **1.6 Objectives of the study**

- To evaluate the suitability of KIST's growth strategy by assessing whether it addresses the circumstances in which the Institute is operating.
- To establish the feasibility of the strategy by assessing whether the institute possesses the resources and competencies to match the chosen growth strategy.

## **1.7 Limitations of the Study**

- The duration of the study was short and hence limited extensive investigation as a result of working within an academic framework and meeting deadlines.
- Resource constraints especially in terms of finance which hindered exhaustive research from being carried out.
- Most strategic management analysis techniques could not be used for example porter's five forces model and the value chain analysis since they were found to be more suitable to analysing a business entity and not applicable to an educational institution, thus the techniques used were those that were deemed suitable to the case under study.
- There was difficulty in working with senior management staff, as a junior employee and as such this hindered interaction as a researcher.
- The inability to access current financial data due to confidentiality reasons hindered an in-depth and comprehensive analysis of KIST and as such, the financial feasibility analysis was partly based on projections.

## **1.8 Structure of the study**

### **Chapter One**

An introduction in which, the research problem, a brief introduction of the organisation under study-KIST and the background of the research were presented. The statement of the problem, value and motivation for the study as well the objectives of the study were also presented.

### **Chapter Two**

A review of the literature on strategic planning in higher institutions and the evaluation of strategy using the techniques of suitability and feasibility was discussed in-depth.

### **Chapter Three**

The research methodology and procedures for the study were discussed in this chapter as well an explanation for why specific research techniques were used and their relevance to this study.

### **Chapter Four**

An overview of the education system in Rwanda is presented, highlighting the achievements and challenges the education sector faces. There is a discussion of the Institute's background, its

mission, objectives, strategic direction, existing strategies, and organisational performance as well as the constraints it faces.

### **Chapter Five**

An in-depth analysis of the case study using the strategic models that were discussed in the literature review was undertaken.

### **Chapter Six**

A summary of the analysis, findings and conclusions are provided based on the outcomes from the analysis in Chapter Five. Recommendations are made to KIST based on its present achievements and areas that need to be improved.

## **1.9 Conclusion**

This chapter presented the introduction, background of the study, objectives and points out the critical questions to be answered in the analysis as well as the motivation for the study. The main objective is to evaluate KIST's growth strategy. Specifically the study sought to evaluate the suitability and feasibility of KIST's strategy and thereafter give recommendations addressing the issues that have been identified from the analysis.

The next chapter provides a review of the literature and also highlights the importance of strategic planning in higher education and gives a detailed discussion of strategy evaluation which is the focus of this study.

## **2 CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter will build an argument as to why strategic management and planning are essential for organisations like higher education institutions to succeed in today's increasingly competitive world. There will be a brief look at the concepts of strategy and strategic planning; the process of strategic planning in organisations with emphasis on higher educational institutions; the challenges these institutions face as well as the need to engage in and the benefits from strategic planning.

In discussing strategic planning, the literature will include setting the mission, vision and objectives, the strategic planning process, challenges, the need and benefits of strategic planning. Strategy evaluation which is the focal point of this chapter will be discussed in detail using the criteria of suitability and feasibility.

Within a new global environment, characterized by rapid change, intense information flows and increasing competition through the reduction of barriers to trade and exchange, higher educational institutions worldwide are slowly emerging as organisations driven by the commercial imperative of market-led forces. Yet, their management strategies are embedded in models of higher education organisations as public institutions, rather than commercial organisations (Clarke 1997). The existence of both organisations and individuals depends on their ability to adjust quickly and keep up with the rapid rhythm of change (Tsiakkios and Pashiardis, 2002:6).

According to Porter (1996), strategy is creating fit among an organisation's activities. Thompson and Strickland (2001:3) add that "strategy is management's game plan for growing the business, staking out a market position, attracting and pleasing customers, competing successfully, conducting operations, and achieving targeted objectives".

Johnson and Scholes (1997) cited in Feurer and Chaharbaghi (1997), explain that strategy is the direction and scope of an organisation over the long term. It ideally matches its resources to its changing environment and in particular its markets, customers or clients so as to meet stakeholder expectations.

According to Wheelen and Hunger (2001), every organisation must follow a business strategy to improve its competitive position, a growth strategy is one which is designed to achieve growth in sales, assets, profits or some combination of these. For the case of an educational institution growth would be in student numbers, increased staff, increased number of programs and increased research activity by faculty members.

Strategy and strategic planning constitute an important weapon in the armoury of the modern manager. Strategy and planning have become inextricably linked. According to Bell (2002:408), strategic planning may be understood as an approach to establishing the long-term future of an organisation and then moving that organisation in an appropriate direction to achieve the future state to which its members or at least its key members aspire.

Strategic planning is one of the concepts used in successful organisations. For educational institutions to improve and be able to meet the demands and challenges of the new millennium and survive in the long term, then strategic planning should continuously be used; showing that educational institutions can borrow ideas from business and successfully implement strategies for their overall long term success (Tsiakkios and Pashiardis, 2002).

## **2.2 Vision, Mission Statement and Objectives.**

The strategy making process in any organisation begins with a clear definition of the vision, mission and objectives. Many organisations today develop a “vision statement” which answers the question, what do we want to become? Developing a mission is often considered the first step in strategic planning (David 2001:9). Dobson and Starkey (1994) are in agreement when they add that the mission is the first step of the strategy process that defines the long-term vision of the organisation. If an organisation does not have a vision, then there is no reason for it to exist.

According to Thompson and Strickland (2001:6), a strategic vision reflects management’s aspirations for the organisation and its business, providing a panoramic view of “where we are going” and giving specifics about its future business plans, it points an organisation in a particular direction and charts a strategic path for it to follow.

An organisation's mission is its purpose, or the reason for its existence. It states what it is providing to society. A well conceived mission statement defines the fundamental, unique purpose that sets an organisation apart from others of its type and identifies the scope of its operations in terms of products and (including services) offered and markets served. It reveals who the organisation is and what it does (Wheelen and Hunger 2001).

Pearce and Robinson (1997) view an organisation's mission as the unique purpose that sets it apart from others of its type and identifies the scope of its operations. In short, the mission describes the organisation's product, market and technological areas of emphasis in a way that reflects the values and priorities of the strategic decision makers. In a nutshell, an organisation's mission statement answers the question "what business (es) are we in?" It also clarifies an organisation's purpose or reason for existence (De Feo and Janssen 2001:4).

In discussing objectives, David (2001:11) sees them as specific results that an organisation seeks to achieve in pursuing its basic mission. They are essential for organisational success because they state direction; aid in evaluation; create synergy; reveal priorities; focus coordination; and provide a basis for effective planning, organizing, motivating, and controlling activities. They should be challenging, measurable, consistent, reasonable and clear.

### **2.3 What is Strategy?**

Proctor (1997:143) describes strategy as "an organisation's objectives and goals, usually set within a time framework, and specifies the main policies and plans for attaining those goals". He further adds strategy also usually defines the nature of the organisation's business which in turn influences the kind of economic and human organisation required.

Thompson and Strickland (2001:3) view strategy as "the game plan management is using to stake out a market position, conduct its operations, attract and please customers, compete successfully, and achieve organisational objectives".

Wheelen and Hunger (2001:7) define strategy as "a comprehensive master plan stating how the organisation will achieve its mission and objectives". It maximizes competitive advantage and minimizes competitive disadvantage. The definitions of strategy vary among authors. However,

most authors agree that strategy is all about matching an organisation's activities with its resources and capabilities in order to succeed in its activities.

### 2.3.1 Types of Strategy

The ways in which organisations go about the strategy formulation process varies from one organisation to another. Mintzberg (1994) cited in Sanchez and Heene (2004:35) focuses on the processes through which organisations devise strategies and asks the question, "how do strategies form in organisations?" Mintzberg's extensive research on the strategy process suggests that different types of strategies will result or emerge from different types of underlying processes and whatever the type of strategy an organisation adopts, its *intended strategy* (the strategy it planned) will always be different in important respects from its *realized strategy* (the strategy it actually implemented).

When a comparison of intended and realized strategies in organisations is done, it becomes possible to distinguish between **deliberate strategies** (those implemented as intended) and **emergent strategies** (those implemented in the absence of an intended strategy or instead of an intended strategy).

Graetz (2002:456) supports this view by adding, "The reality is that while an organisation may begin with a rational plan, what evolves may be something quite different to the actual intention". The successful or *realized* strategies are often *emergent* strategies that have evolved as part of a pattern in a stream of actions as opposed to a preconceived plan (Mintzberg 1987: 12-13).

KIST being a young institution that operates in a dynamic environment has a strategy formulation process that is both deliberate and emergent since it plans and adapts its strategy to suit the various challenges and changes that occur in it. The strategy evolves over time, emerging from proactive and purposeful actions on the part of its management, on the one hand, and on the other hand as a necessary reaction to unanticipated developments in its environment.

## 2.4 Strategic Planning.

As was pointed out earlier by Tsiakkiros and Pashiardis (2002:6), one of the solutions successful organisations use to cope with the challenges of our competitive world is “strategic planning”. In the management literature, this concept may also be found in terms of “business strategy process”, “strategic management” or “corporate strategy”. Most authors more or less mean the same thing; by simply describing the same process from different perspectives and highlighting different aspects of strategic planning. For purposes of this literature review, the term “strategic planning” will be used incorporating ideas from other terms as well. The common link of these terms is the word “strategy”.

According to Byars (1991:13), strategy is used “...to describe the steps taken by an organisation in achieving its objectives and mission”. In addition to this, Dobson and Starkey (1994) point out that the mission is the first step of the strategy process that defines the long-term vision of the organisation. If an organisation does not have a vision, then there is no reason for existing.

KIST’s vision is to advance Rwanda’s development by graduating highly skilled people for the country’s economy and providing technical and technological assistance and services to all sections of the community. KIST aspires to become a centre of excellence in science, technology and management education comparable in standards to the very best in the world.

Fidler (1996) cited in Tsiakkiros and Pashiardis (2002), adds, strategic planning is the process for creating and choosing a particular strategy to respond to future events and plan how to implement it.

The environment in which organisations operate is continually changing and therefore necessary for strategic planning to continually change in order to maintain a “balance” or “fit” with the external environment (Wright *et al.*, 1996; Proctor, 1997 cited in O’Regan and Ghobadian 2002:418). The analysis conducted in chapter five will establish whether there is a balance or fit between KIST and the environment in which it operates.

Strategic planning thus implies an attempt to alter an organisation’s strength relative to that of its competitors, in the most efficient and effective way. Strategic planning focuses on the direction of the organisation and actions necessary to improve its performance. It is the process by which

organisations derive a strategy to enable them to anticipate and respond to the changing dynamic environment in which they operate (Hewlett 1999, cited in O'Regan and Ghobadian 2002:418).

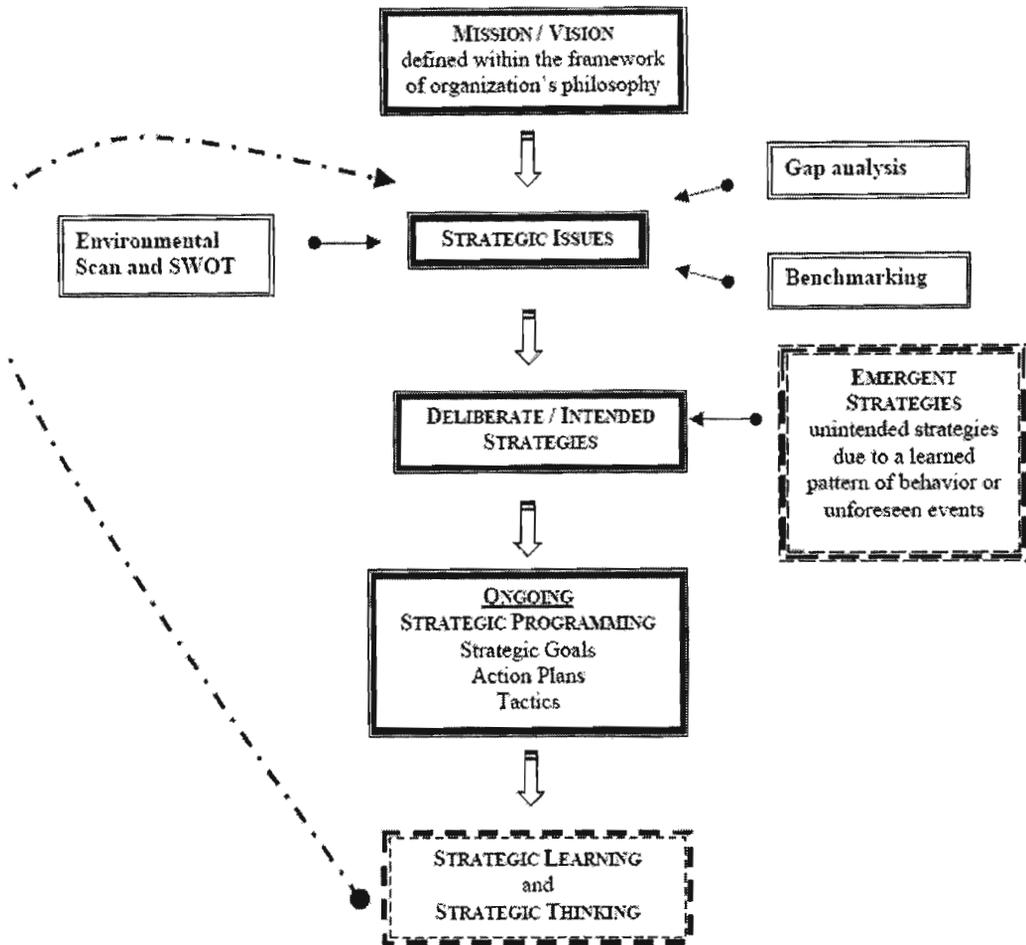
The evaluation and analysis in chapter five will also establish whether the direction KIST is currently pursuing is appropriate and whether actions to improve performance are necessary, and appropriate recommendations will be made.

Kotler and Fox (1985:72) conclude by defining strategic planning as “the process of developing and maintaining a strategic fit between the institution’s goals and capabilities and its changing marketing opportunities. It relies on developing a clear institutional mission, supporting goals and objectives, a sound strategy, and appropriate implementation”.

## **2.5 The Strategic Planning Process**

Although every strategic planning process is uniquely designed to fit the specific needs of a particular higher institution of higher learning, every successful "model" includes most of these steps. The institution usually begins by identifying its vision and mission. Once these are clearly defined, it proceeds to a series of analyses, including external, internal, gap, and benchmarking, which provide a context for developing the organisation's strategic issues. Strategic planning follows and the organisation develops specific strategies including strategic goals, action plans, and tactics. Emergent strategies evolve, challenging the intended tactics, and altering the realized strategy. Periodically, the organisation evaluates its strategies and reviews its strategic plan, considering emergent strategies and evolving changes. It usually takes several years before strategic planning becomes institutionalized and organisations learn to think strategically (Lerner, 1999). The full process is illustrated in figure 2.1 on the next page.

## Strategic Planning Process Model



**Figure 2.1: Strategic planning process model**

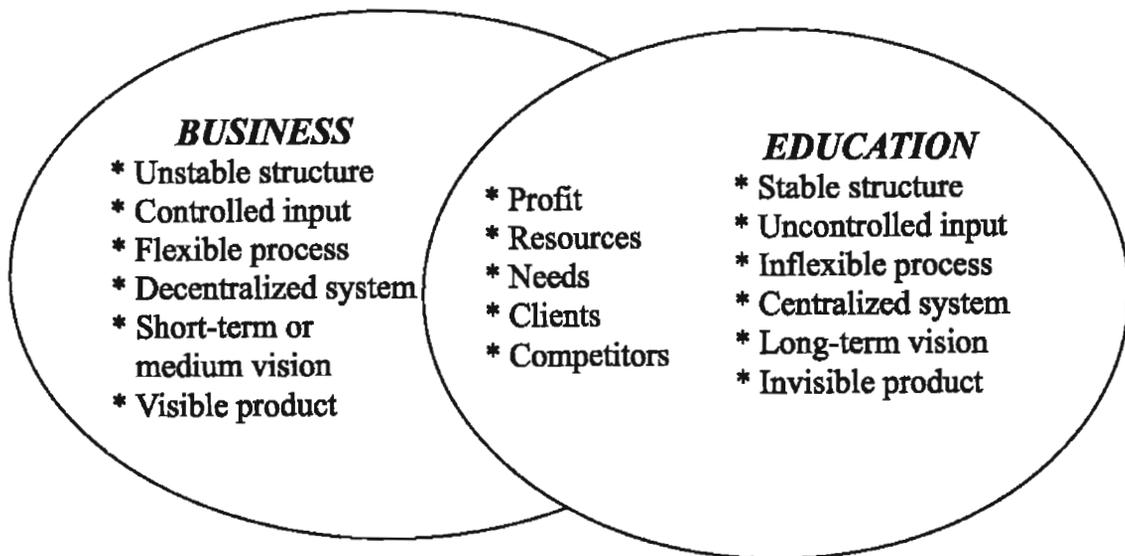
*Source: Lerner (1999:13).*

Figure 2.1 summarises the concepts discussed in the sections explained in the course of the chapter and also gives a picture of the strategic planning process adopted in higher institutions of learning.

### **2.5.1 Strategic Planning in higher educational institutions: a link between education and business.**

It must be admitted that there is some difficulty in comparing business with education, simply because for many years they have been regarded as two discrete and separate domains that dealt with completely different things (Tsiakkios and Pashiardis, 2002). In addition to this, Brunt (1997) cited in Tsiakkios and Pashiardis (2002), believes that there is considerable resistance to

equating the activities of a school with the activities of any other organisation- a factory, for example. The similarities and differences are illustrated in Figure 2.2 below.



**Figure 2.2: Comparison between business and education**

*Source: Tsiakkiros and Pashairdis (2002:10).*

Tsiakkiros and Pashairdis (2002) argue that, as far as the similarities of business and education are concerned, their major task is to make a profit. It could be argued that their profit is different, but what matters is that in one way or another, businesses and educational institutions both seek to achieve something. Businesses and educational institutions have limited resources, since there is a scarcity and they are constantly trying to obtain more for themselves. In contrast, their needs are usually unlimited and they are trying to satisfy as many clients as possible. Moreover, business and education have clients who are always demanding and are both trying to leave them satisfied, since the clients are those who will ensure their future.

A final similarity is that business and education have competitors. All organisations are competing with one another, either for clients or for resources (in the case of the public sector). Being a step ahead of your competitors is of vital importance. Business and education have not only similarities but differences as well. One of their main differences is their structure.

Business organisations usually have an unstable structure, which varies according to the particular organisation and the changes that happen in society (Tsiakirros and Pashiardis 2002).

Tsiakkiros and Pashiardis (2002) further argue that education has a relatively stable structure that does not have the flexibility to change easily compared to business. Their inputs and processes are also different. Business can control its inputs and its processes can be varied and flexible. In education, on the other hand, the inputs cannot be controlled and the processes are quite inflexible. Most of the business organisations have a decentralized system and their vision is either short-term or medium-term, whereas in education the systems are usually centralized and the vision is long term. Finally the product in business is visible but in education, it is not easily visible since one has to wait for quite a long time to see whether the product is really good or not.

One could however argue that, on the contrary, due to changing times and the dynamic environment in which higher they operate, higher institutions of learning have become more flexible and responsive to environmental changes and needs of customers who in this case are students. Education institutions nowadays are implementing business concepts such as TQM, business process reengineering and benchmarking in order to continuously improve services and the quality of services they provide. KIST has a TQM programme in place that needs continuous review and improvement to meet the changing needs of the environment in which it operates. The Institute also has medium term goals to guide in the realisation of its vision.

Pashiardis (1996) points out that educational institutions, communities, parents and legislators are all interested in the management of schools. They all want a greater participation in the whole educational process and schools are asked to be more responsive to the demands and wishes of the society which supports them as compared to a business which has stakeholders.

## **2.5.2 Challenges Facing Higher Education**

Recent years have brought many changes to the landscape of higher education. Lerner (1999) has noted the following challenges.

### ***2.5.2.1 Decrease in government funding***

Public higher institutions' share of national budgets is plummeting as governments are faced with so many demands. Despite budgetary constraints, they have to ensure an equitable and judicious distribution to ensure all developmental needs are met. At the same time, higher institutions of learning are faced with increasing operating costs per student.

### ***2.5.2.2 Increase in demand for higher education***

Demand for higher education is expected to increase sharply in the next decade. In addition to the expected population growth, the proportion of the population that will attend universities will increase. As more and more people recognize that a University degree is essential to their economic well being, demand for higher education will increase.

### ***2.5.2.3 New models of higher education and technology***

New models of providing higher education have also emerged in recent years. According to some researchers, a gap between what the public wants and what traditional universities provide is growing. Technological developments have also led to the establishment of virtual universities, which run programs online and do not need any physical infrastructure. These universities run at very low costs and make revenue from the increasing number of students who prefer to study online because of the convenience.

### ***2.5.2.4 Keeping elements of a "traditional" model***

According to Rowley *et al* (1997) as cited in Lerner (1999:3), "Universities cannot move completely away from a provider-driven model to a consumer driven form of higher education. ... The quest for new knowledge, the analysis of theories and practices, and the free exchange of ideas would suffer if colleges and universities only offered what was popular".

### **2.5.2.5 Economic transformation**

The global economy has undergone a profound transformation in the last two decades. The major economic growth areas, high-tech and applied industries, will employ well-educated individuals, able to move easily between careers and employers. People who lack adequate education and competencies useful across career lines, especially those without at least a university degree, will be at a disadvantage in terms of employment opportunities and earning capacity.

Like any other institution of higher education, KIST is also faced with the constraints enumerated above and the problem of inadequate government and reducing donor funding is one of the key strategic issues that it faces. This will be further amplified in chapter four where a detailed discussion is provided about the various income generating activities the Institute is engaged in to raise additional revenue.

## **2.6 The Need for Strategic Planning in Higher Education**

The challenges and opportunities facing institutions of higher learning are many and may either hinder or promote an institution's growth. Consequently, there is a constant need to secure greater value from available resources. Furthermore, the decisions and choices which institutions have to make become ever more complex as the requirements of students, staff, employers and society change thus, making good strategic planning a valuable process (Lerner, 1999). Strategic planning is one of the major steps institutions of higher learning can take to address the challenges mentioned in section 2.5.2

### **2.6.1 The Benefits of Strategic Planning**

According to Lerner (1999), engaging in strategic planning is beneficial to institutions of higher learning because it:

- Creates a framework for determining the direction a higher institution should take to achieve its desired future,
- Provides a framework for achieving competitive advantage, and allows all higher education constituencies to participate and work together towards accomplishing goals,

- Raises the vision of all key participants, encouraging them to reflect creatively on the strategic direction of the institution,
- Allows for communication between participants in the planning process thus improving an understanding of the organisation's vision, which in turn fosters a sense of belonging and an ownership of the strategic plan,
- Aims at aligning the institution with its environment, and allows it to set priorities.

The process, need and benefits from engaging in strategic planning for higher education institutions have been elaborated in the previous sections above. Before proceeding to the next section, it is important to reiterate that strategic planning should be regarded as an essential process that leads to effective institutional management, therefore, sufficient time should be invested to analyse the institution and its operating environment. All short, medium and long-term direction and goals should be given serious consideration for any action to be focused and goals to be achieved.

It is equally important to note that strategic planning should be carried out in a systematic way and should be embedded in the institution's processes and functions. There should be communication and consultation with staff at all levels throughout the planning process for them to be motivated to work towards achieving the institution's overall strategic objectives. The strategic plan should be closely linked to the budget process within the institution.

The strategic plan should be viewed as a working document and therefore should set out ways in which the institution should operate to achieve its goals and objectives, targets and timelines as well as nominating staff responsible for overseeing the implementation and practical steps that will lead to their realization. Finally it is mandatory that there is regular monitoring and evaluation of the implementation process, as this forms an essential part of any planning process. This ensures that the strategic plan remains relevant to the changes in the Institute and the environment in which it operates.

KIST is faced with challenges as identified in chapter 1, section 1.5 which have made it necessary for it to engage in strategic planning. However this should be backed by strong management commitment to ensure the process yields the desired results.

The next section focuses on strategy evaluation by discussing the criteria: - suitability and feasibility which as earlier mentioned will be the focal point of the literature review and will also form the framework for the analysis in chapter five.

## **2.7 Strategy Evaluation**

The best formulated and implemented strategies can become outdated as the external and internal environment in which an organisation operates changes. It is therefore very important that strategies are reviewed and evaluated in a timely manner to ensure the long-term success of the organisation.

Rumelt (1997) is of the opinion that, strategy can neither be formulated nor adjusted to changing circumstances without a process of strategy evaluation. Whether performed by an individual or as part of an organisational review procedure, strategy evaluation forms an essential step in the process of guiding an enterprise.

According to David (2001:302), the strategic management process results in decisions that can have significant, long lasting consequences. Erroneous strategic decisions can inflict severe penalties and can be exceedingly difficult, if not impossible, to reverse. Most strategists agree, therefore that strategy evaluation is vital to an organisation's well being; and timely evaluations can alert management to problems or potential problems before a situation becomes critical.

Strategy evaluation as pointed out by Rumelt (1997) could take place as an abstract analytic task, perhaps performed by consultants. But most often it should be an integral part of an organisation's processes of planning, review, and control. In some organisations, evaluation is informal, only occasional, brief, and cursory. Others have created elaborate systems containing formal periodic strategy review sessions. In either case, the quality of strategy evaluation and, ultimately, the quality of corporate performance, will be determined more by the organisation's capacity for self-appraisal and learning than by the particular analytical technique employed.

In undertaking KIST's situational analysis, the following questions will be answered from the analysis and evaluation in chapter five.

1. What are the organisation's resources strengths and weaknesses and its external opportunities and threats?
2. What strategic issues does the organisation face?

According to Rumelt (1997:2), it is impossible to demonstrate conclusively that a particular business strategy is optimal or even to guarantee that it will work. One can, nevertheless, test it for critical flaws. Of the many tests which could be justifiably applied to a business strategy, most will fit within one of these broad criteria:

- **Consistency:** The strategy must not present mutually inconsistent goals and policies.
- **Consonance:** The strategy must represent an adaptive response to the external environment and to the critical changes occurring within it.
- **Advantage:** The strategy must provide for the creation and/or maintenance of a competitive advantage in the selected area of activity.
- **Feasibility:** The strategy must neither overtax available resources nor create unsolvable sub problems.

A strategy that fails to meet one or more of these criteria is strongly suspect. It fails to perform at least one of the key functions that are necessary for the survival of the organisations. Experience within a particular industry or other setting will permit the analyst to sharpen these criteria and add others that are appropriate to the situation at hand. In selecting criteria for strategy evaluation, Johnson and Scholes (1999) present three tests: *suitability*, *acceptability* and *feasibility*. However for the purpose of analysing the case study, only suitability and feasibility criteria will be used.

### 2.7.1 Assessing Suitability

This concerns whether a strategy addresses the circumstances in which the organisation is operating, the extent to which new strategies would fit with the future trends and changes in the environment; or how the strategy might exploit the core competencies of the organisation Johnson and Scholes (1999:353).

In considering the various analytical techniques available for identifying and analyzing the organisation's operating circumstances, Thompson and Strickland (2001) suggest that judgments

need to flow directly from a solid analysis of an organisation's external environment and internal situation. The most important situational considerations are: the macro-environment comprising of the industry and competitive conditions and the micro environment made up of the organisation's own competitive capabilities, resources, internal strengths and weakness.

### **2.7.1.1 Environmental Scanning (Macro-Environmental Analysis)**

In today's world of uncertainty, it is of vital importance for organisations to stay abreast of environmental changes which may affect their future. Environmental scanning is an essential component of planning in today's changing world. Educational institutions, no less than organisations or governments, must understand what is happening in the environment in which they exist, be able to analyze it, and even predict it (Pashiardis 1996).

According to Popovics (1990) as cited in Pashiardis (1996) definitions of environmental scanning differ. However, the common ground is that, environmental scanning is an efficient, organized means for an organisation to collect relevant information regarding the external environment.

Morrison (1986) and Clagett (1988) believe environmental scanning to be a mechanism for interlocking issues, events, fads and trends with an institutional commitment to change and improvement. Issues, events, fads and trends are indicators of change and often suggest movement in a particular direction.

Thompson *et al* (2005:45) state that "all organisations operate in a macro-environment shaped by influences emanating from the economy at large, population demographics, societal values and lifestyles, governmental legislation and regulation, technological factors, and closer to home the industry and competitive arena in which the organisation operates. The forces in the macro-environment having the biggest impact on an organisation's strategy and typically revolve around the organisation's immediate industry and competitive environment. While many forces in the macro-environment are beyond an organisation's sphere of influence management is nonetheless obliged to monitor them and adapt strategy as may be needed".

In analyzing the external environment of any organisation, the PEST analysis technique is commonly used, this will be discussed in the next section.

## ***PEST***

In order to make the task of environmental analysis more meaningful, the general environment has to be broken down into more homogeneous and manageable subcategories commonly referred to as PEST. This acronym stands for Political, Economic, Socio-Cultural and Technological factors.

### ***Political Factors***

According to Pearce and Robinson (1997), the direction and stability of the political environment is a major consideration for managers in formulating organisation strategy. Political factors define the legal and regulatory parameters within which organisations must operate. Similarly, Fleisher and Bensoussan (2003:273) indicate how the political component of the general environment relates to government and public attitudes toward various industries, lobbying efforts by interest groups, the regulatory climate, platforms of political parties, and sometimes the predisposition of politicians. The legal component of the general environment consists of laws that members of society have to follow. In many countries, many legal constraints in the form of public policies and regulations affect an organisation's discretionary ability to act. Besides being a large consumer and producer in their own right, governments can actually legislate greater or lesser competition and therefore become a critical focus of the competitive and strategy analyst's efforts in this sector. For many companies, such as defence contractors, educational institutions, health care organisations, and not-for-profits, the action and mood of public policy makers are absolutely vital inputs to the competitive strategy development process.

### ***Economic Factors***

The economic component of the general environment indicates the distribution and uses of resources within an entire society, Pearce and Robinson (2003) note that economic factors concern the nature and direction of the economy in which an organisation operates. Because consumption patterns are affected by the relative influence of various market segments, each organisation must consider economic trends in the segments that affect its industry in its strategic planning. On both the national and international level, managers must consider the general availability of credit, the level of disposable income, and the propensity of the people to

spend. Prime interest rates, inflation rates, employment rates, the quality of existing infrastructure, and trends in the growth of the gross national product are other economic factors they should monitor in strategic planning.

Fleisher and Bensoussan (2003) add that changes in macroeconomic variables often have broad impacts, yet can affect some economic sectors in ways very different from others and this makes it more critical that organisations remain vigilant to both aggregate and more micro-level economic factors and adjust their policies accordingly so as to maximize their competitiveness.

### ***Social Factors***

Like other forces in the remote external environment, social forces are dynamic and they should be monitored constantly. David (2001) argues that social, cultural, demographic and environmental changes have a major impact upon virtually all producers, services, markets and customers. Small, large, for-profit and non-profit organisations in all industries are being challenged by the opportunities and threats arising from these changes.

As pointed out by Fleisher and Bensoussan (2003:272) “the social component of the general environment describes characteristics of the societal context in which the organisation exists. Demographics, cultural attitudes, literacy rates, education levels, customs, beliefs, values, lifestyles, the age distribution, the geographic distribution, and the mobility of the population all contribute to the social component of the general environment. The pace of change in this sector can often be slow, but its effects are commonly both inexorable and profound. Therefore, it is important that the analyst monitor and evaluate this sector’s impact in terms of strategic directions and also take a proactive role in helping to develop competitive strategy that builds the organisation’s reputation among its key stakeholders”. Such an analysis can be useful for helping to identify emerging opportunities and threats.

### ***Technological Factors***

The impact of technological advancement can be felt by all organisations in their operations. Pearce and Robinson (1997) argue that in order to avoid obsolescence and promote innovation, an organisation must be aware of technological changes that might influence its industry.

David (2001) adds that technological forces represent major opportunities and threats that must be considered in formulating strategies. Technological advancements can dramatically affect organisations' products, services, markets, suppliers, distributors, competitors, customers, marketing practices and competitive position. Technological advancements can also create new markets, result in the proliferation of new and improved products and most importantly create new competitive advantages that are more powerful than existing advantages. No organisation or industry today is insulated against emerging technological developments.

Furthermore, Fleisher and Bensoussan (2003) note that, the major task of strategic planners is to identify and monitor the effects of impending technological change so that they can be viewed as challenges and promising opportunities in order to increase profitability.

Effective environmental analysis will have positive competitive performance effects only if proper actions are taken, proper evaluations are made and timely actions yield good results over an extended period of time.

#### ***2.7.1.2 Internal Organisation Analysis***

According to Wheelen and Hunger (2001), scanning and analyzing the external environment for opportunities and threats is not enough to give an organisation a competitive advantage. Strategic managers must also look within the organisation to identify internal strategic factors: those critical strengths and weaknesses that are likely to determine if the organisation will be able to take advantage of opportunities while at the same time avoiding threats.

#### **SWOT Analysis**

SWOT is an acronym for the internal Strengths and Weaknesses of an organisation and the environmental Opportunities and Threats facing that organisation. Fleisher and Bensoussan (2003) indicate that SWOT analysis is used to assess the fit between an organisation's strategy, its internal capabilities (strengths and weaknesses), and external possibilities (opportunities and threats). The SWOT analysis classifies the internal aspects of the organisation as strengths or weaknesses and the external situational factors as opportunities or threats. Strengths can serve as a foundation for building a competitive advantage, and weaknesses may hinder it. By understanding these four aspects of its situation, an organisation can better leverage its strengths,

correct its weaknesses, capitalize on golden opportunities, and deter potentially devastating threats.

### **Strengths and Weaknesses Analysis**

The internal analysis is a comprehensive evaluation of the internal environment's potential strengths and weaknesses. According to Pearce and Robinson (1997), a strength is a resource, skill, or other advantage over competitors, that meets the needs of the markets an organisation serves or expects to serve. This involves: skill or important expertise; valuable physical assets; valuable intangible assets and competitive capabilities.

Thompson and Strickland (2001:119) in addition, define a weakness as “something an organisation lacks or does poorly (in comparison to others) or a condition that puts it at a disadvantage”.

Factors should be evaluated across the organisation in areas such as:

- Organisation culture;
- Organisation image;
- Organisational structure;
- Key staff;
- Access to natural resources;
- Position on the experience curve;
- Operational efficiency;
- Operational capacity;
- Brand awareness and name recognition;
- Exclusive contracts;

The SWOT analysis summarizes the internal factors of the organisation as a list of strengths and weaknesses (Internet 5).

## **Opportunity and Threat Analysis**

An opportunity is the chance to introduce a new product or service that can generate superior returns. Pearce and Robinson (1997) further add that an opportunity is a major favourable situation in an organisation's environment. Opportunities most relevant to an organisation are those that offer important avenues for profitable growth and those where an organisation has the most potential for competitive advantage. David (2001) adds that opportunities can arise when changes occur in the external environment. Many of these changes can be perceived as threats to the market position of existing products and may necessitate a change in product specifications or the development of new products in order for the organisation to remain competitive.

Changes in the external environment may be related to:

- Customers;
- Competitors;
- Market trends;
- Suppliers;
- Partners;
- Social changes;
- New technology;
- Economic environment;
- Political and regulatory environment;

The last four items in the above list are macro-environmental variables, and are addressed in a PEST analysis. The SWOT analysis summarizes the external environmental factors as a list of opportunities and threats (Internet 5).

According to Thompson and Strickland (2001), several techniques can be used to help the organisation to create a fit between its resource capabilities and market opportunities. An impact analysis is helpful in assessing the impact of environmental changes on the current strengths and weaknesses of an organisation, which can in turn help managers to understand the changing environment in such a way that allows them to identify opportunities or to recognize threats which are very important.

In chapter Five, the suitability of KIST's growth strategy will be analysed using the PEST, SWOT and Impact analysis to assess whether the growth strategy addresses the circumstances in which the Institute is operating.

### **2.7.2 Analyzing Feasibility**

The second broad test of strategy is its feasibility. Rumelt (1997) states that feasibility is concerned with whether an organisation has the resources and competencies to deliver a strategy. Can the strategy be attempted within the physical, human, and financial resources available? The financial resources of a business or an organisation are the easiest to quantify and are normally the first limitation against which strategy is tested. In assessing the organisation's ability to carry out a strategy, it is helpful to ask three separate questions:

1. Has the organisation demonstrated that it possesses the problem-solving abilities and/or special competencies required by the strategy? A strategy, as such, does not and cannot specify in detail each action that must be carried out. Its purpose is to provide structure to the general issue of the business' goals and approaches to coping with its environment. It is up to the members and departments of the organisation to carry out the tasks defined by strategy. A strategy that requires tasks to be accomplished which fall outside the realm of available or easily obtainable skill and knowledge cannot be accepted. It is either unfeasible or incomplete.
2. Has the organisation demonstrated the degree of coordinative and integrative skill necessary to carry out the strategy? The key tasks required of a strategy not only require specialized skill, but often make considerable demands on the organisation's ability to integrate disparate activities.
3. Does the strategy challenge and motivate key personnel and is it acceptable to those who must lend their support? The purpose of strategy is to effectively deploy the unique and distinctive resources of an organisation. If key managers are unmoved by a strategy, not excited in its goals or methods, or strongly support an alternative, it fails in a major way.

There are a number of techniques used to evaluate feasibility, and these will be discussed as follows:

### **2.7.2.1 Financial Feasibility**

According to Johnson and Scholes (2002), a useful way of assessing financial feasibility is funds flow forecasting, which seeks to identify the funds which would be required for any strategy and the likely sources of those funds. This analysis is necessary because it shows whether the organisation will be able to finance any proposed strategy either from its internal or external funds.

### **2.7.2.2 The Resource Deployment Analysis**

A resource deployment assessment is used to judge two things: first, the extent to which an organisation's current resources and competences would need to change to reach or maintain the threshold requirements for a strategy. Secondly, the unique resources and core competencies required to sustain competitive advantage (Johnson and Scholes, 2002).

In support of this, Fleisher and Bensoussan (2003) argue that the unique value of the resource deployment analysis is that, it provides a useful and very realistic methodology for testing whether the existing or planned resources are capable of securing a competitive advantage in different environmental contexts.

### **2.7.2.3 Strategic Leadership**

Hitt *et al* (2003:386) define strategic leadership as "the ability to anticipate, envision, maintain flexibility, and empower others to create strategic changes as necessary. Multifunctional in nature, strategic leadership involves managing through others, managing an entire enterprise rather than a functional sub-unit, and coping with change that seems to be increasing exponentially in the 21<sup>st</sup> century competitive landscape". Strategic leadership in itself is an extremely complex, but critical form of leadership. Strategies cannot be formulated and implemented to achieve above average returns without effective strategic leadership, and because organisations may be poorly led and over managed. Organisations competing in the 21<sup>st</sup> century competitive landscape are challenged to develop effective strategic leaders (ibid).

Even if an organisation is composed of people and other resources, it is people who give life to the organisation. However, they are the most complex organisational resource, because they are unpredictable and different in various ways. Each individual in an organisation has a different combination of interests, capabilities, habits, beliefs, skills, and personal goals, and is motivated by different things (Smith and Cronjé, 2002:276). This means that, if properly managed and harnessed, human resources may be an invaluable asset to the organisation. However, if not handled properly, they might cause an organisation's downfall.

For managers in organisations to be effective and successful, they must not only be able to demonstrate efficient administrative skills and technical know how, but must also practice an appropriate style of leadership. The leadership style used can profoundly affect employee morale and productivity, such that, the success of an organisation may be directly dependent on good leadership (Burke, 2001:277). In this regard, subordinates can accept responsibility for a task and account themselves only if management delegates enough of the right sort of authority to them (Smith and Cronjé, 2002:280).

KIST has qualified personnel in management positions but requires leaders who are visionary, flexible and who can empower subordinates to effect necessary change that will drive the organisation to effectively and efficiently implement its growth strategy.

In chapter five, the feasibility of KIST's strategy will be determined from the outcome of the financial feasibility analysis and the resource deployment analysis to establish whether the institution possesses the resources and competencies to match the chosen growth strategy.

## **2.8 Conclusion**

The literature review presented has clearly shown that strategic planning in higher education is important because institutions of higher learning are organisations operating in a fast-paced and turbulent environment. As a result, these institutions are also being driven by the commercial imperative of market-led forces and have recognised the need to continuously undertake strategic planning in order to cope and succeed, given the changing environment in which they operate.

The strategic planning unit at KIST faces constraints of not having enough staff who are experienced, qualified and capable of handling the planning activities of a large educational institution like KIST (Source: email excerpt).

The Institute stands to benefit from continuous and more focused strategic planning because it would provide a framework for achieving a strong competitive advantage and allow it to set key priorities in the allocation of its scarce resources. Strategic planning would further increase KIST's organisational capability to effectively and efficiently achieve growth. Strategic planning at KIST would create a platform for exchanging ideas about the organisation's common vision, goals and objectives. The Institute also stands to benefit from strategic planning since it would provide a base from which progress can be measured and in the process a systematic mechanism for informed change can be established when necessary.

The process of strategic planning at KIST therefore needs to be backed by constant review and evaluation of organisational strategy in order to ensure that the strategies, which have been formulated and implemented do not become outdated and inappropriate as the external and internal environment in which it operates changes. It is therefore very important that strategies are reviewed and evaluated in a timely manner to ensure the long-term success of the institution.

Chapter Four will look at the Kigali Institute of Science, Technology and Management as a case study of an institution faced by the challenges brought about by the 21<sup>st</sup> century; as an educational institution that seeks to grow; improve; become self sustainable and survive in the long term despite the inadequate government and reducing donor funding.

The next chapter presents the research methodology adopted and gives a detailed discussion of the procedures used in the study.

## **3 CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter presents the research methodology and procedures used in the study. It highlights the sources used and simultaneously explains why particular research techniques were used and their relevance to the research and findings of the study.

### **3.2 Research Design**

Cooper and Schindler (2001:134) define research design as “the plan and structure of the investigation in order to obtain answers to the research questions and objectives of the study”.

According to Yin (2003), the research design is a logical plan of how the researcher carries out a study. Issues to be considered include the means of obtaining the required data, the objectives of the problem to be studied, the availability of time and financial resources for the research.

This research is qualitative in nature. It involved the collection of data and information through the use of secondary data and a case study approach using KIST as the case study. The primary research method was the collection and critical analysis of secondary data from vital publications on the subject matter of strategic management to provide a level of understanding of strategy, strategic planning and strategy evaluation. The strategy evaluation criteria of suitability and feasibility were used to analyze the existing organisational strategy at KIST.

A higher educational institution (KIST) was selected on the basis that it should consider applying continuous and more focused strategic planning for organisational success having highlighted the benefits of strategic planning in chapter two. The case study was not intended to reflect a representative sample of institutions of higher learning in Rwanda, but rather a more in-depth study to assess how educational institutions can use strategic planning and strategy evaluation to identify critical issues that would hinder the achievement of their organisational objectives. This chapter also outlines the structure of the research problem and the plan of investigation used to obtain information on the identified problem.

### **3.2.1 Nature of the study**

This research adopted a case study approach which was purely qualitative, descriptive, exploratory and analytical in nature, since the aim was to assess the suitability of KIST's growth strategy by establishing whether the institute's growth strategy addresses the circumstances in which it is operating; and to analyse the feasibility of the strategy by assessing whether it possesses resources and competencies to match the chosen growth strategy.

The design of the research is based on the research objectives and question, it describes the procedures for the research activity; and guided the selection of the sources and types of information and the techniques used to gather data.

The study is partly descriptive because the intention was to analyse the present organisational strategy at KIST using the previously identified criteria of suitability and feasibility as analytical tools.

The qualitative method of research was adopted for this study and the appropriate methodology chosen was a combination of the case study method for an in-depth and comprehensive analysis; and a review of KIST and secondary data analysis, by reviewing journal articles, textbooks, organisational reports and using Internet search engines.

### **3.2.2 Case Study Analysis**

According to Yin (2003), the case study research method is an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used and it is often used in qualitative research. According to Saunders et al., (2003:93), "the case study method of research has the ability to generate answers to the questions; "why?", "what?" and "how?" Yin (2003) supports this view, by adding that a case study is generally preferred as a strategy when "how" and "why" questions are being posed or investigated, or when the researcher has little control over events and when the focus is on a contemporary phenomenon within some real life context.

In the case of KIST, "how" would relate to the question of "how suitable and feasible is the current strategy that KIST is pursuing?" The "what" relates to "what strategies can KIST as an institution put in place to enable it grow, become self-reliant, sustainable and competitive?"

### **3.2.2.1 *Why a case study?***

A case study research excels at bringing us to an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research. Researchers have used the case study research method for many years across a variety of disciplines. Social scientists, in particular, have made wide use of this qualitative research method to examine contemporary real-life situations and provide the basis for the application of ideas and extension of methods. Case studies are ideal when a holistic, in-depth investigation is needed (Internet 7).

Another great advantage of the case study over other methods is that it attempts to be comprehensive, and involves a full description and analysis of events and issues in the organisation in question (Jancowicz, 2000).

For this research, a case study approach was used because of the qualitative nature of the study and since a holistic in-depth analysis of KIST was required in order to get a detailed insight of the current situation at KIST; the data collected was mainly qualitative. A detailed overview of KIST is presented in chapter four and an analysis of KIST's present situation is done in chapter five. Information was obtained from email correspondence with KIST management and academic staff of the Institute, organisation reports, KIST's strategic plan 2003-2008, KIST progress report 1997-2003 and the KIST Stakeholders Conference Report November 2003.

### **3.2.3 Secondary data analysis**

Secondary analysis involves the utilization of existing data, which is both quantitative and qualitative and can be used in both descriptive and exploratory studies but collected for a previous study, in order to pursue research that is different from the original work (Saunders et al., 2003).

The aim of this research was to carry out a comprehensive review and analysis of the available information in order to get a better understanding of strategic planning in higher education and strategy evaluation in an educational institution. The strategy evaluation criteria of suitability and feasibility were applied for the case analysis.

According to Cooper and Schindler (2001:139), exploration is useful when there is lack of a clear idea of the problem, and through exploration one is able to develop concepts more clearly, establish priorities and develop operational definitions. The exploration technique was used to critically review KIST's 2003-2005 strategic plan, the progress report 1997-2003 and other documentation from KIST. The important issues were identified as amplified in chapter four of this dissertation.

Journals, periodicals and books were also used in this study as a source of literature on strategic management, strategic planning and strategy evaluation. Secondary searches were conducted electronically and physically at the UKZN library, where books on strategic management were reviewed for the study. The UKZN library catalogue using Web OPAC and Telnet OPAC was also used to locate some of the journals used in this study. Catalogues, subject guides and electronic indexes were used in this search. The databases include ABI-Inform Global (online) and Business Source Premier (online) and EBSCO.

### ***3.2.3.1 Why secondary analysis***

Literature suggests that more generally, limited opportunities for conducting primary research and the costs of quantitative work have prompted researchers to consider maximising the use of data available to them. This approach was fast and inexpensive on the part of the researcher and also provided a good basis for the evaluation of KIST's current situation and strategy.

In addition, it has been suggested that secondary analysis is a more convenient approach for particular researchers, notably students, Szabo and Strang (1997) cited in Janet Heaton (1998) (Internet 8). It is, however, argued that where the researcher was not part of the original research team, the approach is best only when employed by experienced researchers because of the particular difficulties of doing secondary analysis in an independent capacity. While using secondary data and other sources of literature, care was taken to ensure accuracy of findings relevant to KIST.

Secondary data analysis and literature review was conducted since it reduced the inconvenience of accessing respondents from KIST, considering the travel costs to Rwanda.

### 3.2.4 Data Gathering Method

According to Saunders *et al.*, (2003:188), secondary data includes both raw data and published summaries. It can provide a useful source from which to answer, or to begin to answer research questions.

In answering the research questions and objectives, it was imperative to consider the available data gathering methods and to choose one that best suits the research. The exploration phase began with a literature search- a review of books as well as articles in academic peer reviewed journals.

The main sources for the secondary data were: -

- KIST reports;
- KIST 2003-2008 Strategic Plan;
- KIST progress report 1997-2003;
- Published documents and journals by peer reviewed authors;
- Library textbooks;
- The Internet;
- Email excerpts;

A comprehensive search of the published literature on strategic planning, strategic planning in higher education and strategy evaluation was conducted. Where possible, only the most recent journal articles and textbooks were used. The search for journal articles was conducted using electronic databases like: Emerald Insight, and ABI Inform Global (Online).

Furthermore, an Internet search was conducted using search engines such as Google, Webcrawler, Yahoo! AltaVista, and AskJeeves. Only websites with relevant information generated from the search were considered for review because the process can be very subjective and as such the researcher's discretion was used. Other reasons are explained in the limitations of this study.

### **3.2.5 Data analysis**

For the purpose of this study, the techniques and tools used, relied on the most appropriate models that have been developed for analysis and evaluation in strategic management by leading authors in the subject matter of strategic management. Thereafter, an assessment of the findings based on the models was done for KIST and presented in chapter five of this study.

### **3.2.6 Evaluating the analysis**

According to Hussey and Hussey (1997) once a method of analysis has been selected and applied following the most appropriate procedures and techniques, it is important to evaluate the analysis. A number of authors have suggested credibility, transferability and dependability as criteria which can be used to evaluate a research study in its entirety and these can be used to evaluate the quality of analysis.

#### ***3.2.6.1 Credibility***

Credibility demonstrates that the research was conducted in such a manner that the subject of the enquiry or study was correctly identified and described (Hussey and Hussey 1997). Care was taken to ensure that the research was conducted in such a manner that the organisation under review (KIST) was correctly identified and described. Email correspondence by colleagues from KIST on a continuous basis about the current issues at KIST increased the credibility of the analysis and findings.

#### ***3.2.6.2 Dependability***

Dependability should show that the research processes are systematic, rigorous and well documented (Hussey and Hussey 1997). In this study care was taken to ensure that the research process was systematic and well documented. This is evidenced by the methodology of the study which has been fully described and elaborated in detail to show how the entire research process took place.

### **3.2.6.3 Ethical Considerations**

The general ethical issue is that the research design should not subject the research population to any form of embarrassment or any other material disadvantage. Ethical issues further look at the implications for the negotiation of access to the organisation, employees and the collection of data (Saunders et al., 2003). An authorisation letter for the data collection was issued by the Graduate School of Business and presented to KIST for permission to carry out research. Thereafter, KIST management granted permission to use the institute as a case study and collect any relevant data for the case. For transparency purposes, a copy of this dissertation will be presented to KIST.

## **3.3 Conclusion**

This chapter discussed the research design and methodology used in the study, outlining in detail the nature of the study and the methods of data collection, explanations were given for choosing the case study approach and the advantages accruing from its use. Data analysis techniques were fully explained and the methods of evaluating the data analysis were highlighted. Finally the ethical considerations and limitations of the study were discussed. The next chapter presents an overview of the Kigali Institute of Science, Technology and Management as a case study.

## **4 CHAPTER FOUR: THE KIGALI INSTITUTE OF SCIENCE TECHNOLOGY AND MANAGEMENT**

### **4.1 Introduction**

This chapter presents a brief country profile, which includes the political and socio-economic situation of Rwanda. The educational policies in place are highlighted. Since the focus of this research is on the Kigali Institute of Science, Technology and Management (KIST), the case study was prepared from a review of KIST documents and email correspondence with management staff of the Institute. It provides an account of the Institute's background and its operations in detail. This includes KIST's mission, objectives, organisational performance, operations, strategic direction and constraints facing the institution.

#### **4.1.1 Country Profile**

Rwanda is a landlocked country situated in central Africa. It is also known as 'the land of a thousand hills,' and has an altitude of 1000-4500m above sea level. Rwanda is bordered by Uganda to the north, Tanzania to the east, Burundi to the south and the Democratic Republic of Congo to the west. The overall size of the country is approximately 26,340 sq km. With a population of approximately 8.5million people, it is the most densely populated country in Africa (Internet 1).

Since the end of the 1994 war and genocide, Rwanda has made significant progress in rebuilding its economic and social infrastructure. The country is now viewed as secure in the region and internationally, it is hailed as the bedrock of good governance. Between 1994 and 1997, GDP growth rate rose by nearly 70%. In the following years, growth remained relatively high (between 6% and 9%). Rwanda also witnessed impressive growth rates of over 10% in the period 2001-2003 (Internet 1).

Rwanda came 162nd of 173 countries in the 2002 UN Human Development Index and 158th of 175 countries in 2003 – a significant improvement, as the 2001 position was 152nd out of 162 countries. The GDP per ca

Since 1994, the Rwandan government has made education a top development priority and today, education in Rwanda is mandatory and free through the first three years of secondary school. The sound educational policies in the country have boosted literacy rates from below 40% in the 1980s to more than 70% in 2003. Before 1994, total University enrolment was less than 1,000 students. Rwanda now has over 10,000 students enrolled in higher institutions (Internet 2).

Strong political leadership, driving a vision of a better future, has liberated the country from the shackles of the 1994 nightmare. To the majority of Rwandans, this decade is one of promise. The government's focus over the next years is to rebuild its social fabric and invest in a solid human resource base capable of steering the country in the new millennium by putting in place sound policies through good governance (Internet 3).

## **4.2 Overview of the Rwandan Education Sector**

There are four ministries, each with specific responsibilities, which have significant involvement in the provision of education and development:

- The Ministry of Education, Science, Technology and Scientific Research (MINEDUC): sets policy and standards for the education sector; oversees the formal system at pre-primary, primary, secondary and tertiary levels; promotes science, technology and research.
- The Ministry of Local Government, Social Affairs and Information (MINALOC): administers salaries; oversees decentralization functions of education; provides non-formal education for the youth and adults.
- The Ministry of Public Service, Skills Development, Vocational Training and Labour (MIFOTRA): sets salary levels and conditions of service for teachers; provides vocational training for youth and adults.
- The Ministry of Finance and Economic Planning (MINECOFIN): sets broad policy and planning frameworks, oversees financial planning, the Medium term expenditure framework (MTEF), and the Poverty reduction strategies (PRS)

The education sector comprises those educational activities that take place under the governance of the four ministries mentioned above. MINEDUC has the major responsibility and has been designated in the National Poverty Reduction Strategy Paper (PRSP) as the lead ministry for the development of the education sector (*Education Sector Strategic Plan 2004-2008*).

## **4.2.1 The Achievements and Challenges Facing the Education System in Rwanda**

### **4.2.1.1 Achievements**

The education system in Rwanda was completely destroyed during the war and the genocide of 1994. However, there have been significant achievements backed by the political will and commitment of the nation to reconstruct the education system after the events of 1994.

All schools nationwide have been rehabilitated and there is an ongoing modernisation of legislation governing education. The government has set up key institutions like the National Examinations Council (NEC) and the National Curriculum Development Centre (NCDC) that will contribute to policy formulation and oversee its implementation (*Education Sector Strategic Plan 2004-2008*).

The decentralization process of the education system has been speeded up by revamping the administrative and educational structures at primary, secondary and tertiary levels through the establishment of three private centres for special needs education. Six technical secondary schools, eleven teacher training colleges for training primary school teachers and the Kigali Institute of Education (KIE) to train secondary school teachers. Within the period 1994-2005, one public and three private universities were established and the existing public research institutions in agriculture were rehabilitated (*Education Sector Strategic Plan 2004-2008*).

### **4.2.1.2 Challenges**

The major challenge that the system faces is finding ways to effectively deal with the legacy of the genocide, notably the education of orphans. There is a major shortage of teachers at primary, secondary and tertiary levels coupled with improving working conditions for teachers, given the complaints of low salaries and poor working conditions. Other major challenges are finding

ways to increase the recurrent budget for education of which a huge portion is spent on salaries; and effectively managing donor funds which are reducing as Rwanda moves to a level of sustainable development (*Education Sector Strategic Plan 2004-2008*).

There is also the issue of providing adequate supplies of textbooks and relevant educational material in schools, in addition to putting in place mechanisms to improve teaching and learning in schools in order to reduce failure and drop out rates. The Government of Rwanda has identified increasing education in science and technology related areas, to be a major catalyst for social development and as such, the system is faced with the challenge of providing adequate laboratory and technical equipment in secondary schools to build interest in school leavers to pursue science and technology related courses at the tertiary level (*Education Sector Strategic Plan 2004-2008*).

Sourcing additional funds to supplement the limited budget for research in all domains is also another critical issue. Lastly, there is the challenge of including HIV/AIDS education in the curriculum from primary up to tertiary levels in order to curb the pandemic which is seriously crippling the education system (*Education Sector Strategic Plan 2004-2008*).

### **4.3 Higher Education in Rwanda Today.**

Before 1994, there was only one institution of higher learning in the country; the National University of Rwanda located at Butare in the south. In 1997, about three years after the war and genocide, the Government of Rwanda established three institutions of higher learning: Kigali Institute of Science, Technology and Management (KIST), Kigali Institute of Education (KIE) and Kigali Health Institute (KHI). In addition, the National University and the Higher Institute of Agriculture and Animal Husbandry (ISAE) have been rehabilitated. However, higher education enrolments are still lower than the average in sub Saharan Africa about 1% against 4% which is the target for the government's vision 2020 (*Education Sector Strategic Plan 2004-2008*).

There is a relatively low participation of girls in tertiary education at 26%, particularly in science, technology and related fields in public higher institutions. The case is different in private higher institutions where female enrolment is picking up at an encouraging 49%, while in public institutions it remains at 26%. This issue is addressed through affirmative action and

reduction of entrance quotas into higher institutions (*Education Sector Strategic Plan 2004-2008*).

There are also three private universities, which were established during the post genocide period. They are: the Kigali Free University, The Adventist University of Central Africa, and the Adventist University of Kigali. These institutions offer a broad range of courses and have a high level of enrolment due to their full-time and part-time programs running in French which is still the dominant language of instruction in Rwanda. Currently these higher institutions are relying to a large extent on expatriate lecturers. To alleviate this problem, the Government of Rwanda is committed to a human resource development program by sending a number of recent young graduates overseas for further studies at Masters and Doctorate level, so that they can replace the expatriates upon their return after studies (*Education Sector Strategic Plan 2004-2008*).

A cost-sharing scheme was adopted in 2002 for higher education, with students receiving study loans from the Government, for their studies and then paying the loan upon employment after graduation. As a result of this, enrolment levels in higher education have increased. The cost sharing scheme has also reduced the government's huge expenditure burden and will serve as revenue to the government after these students graduate (*Education Sector Strategic plan 2004-2008*).

#### **4.3.1 The objectives for the Higher Education Sector:**

- To establish a fully functional and active National Council for Higher Education (NCHE).
- To increase access to tertiary education, including greater representation of females in all fields most especially in the sciences, engineering and technology related fields.
- To introduce more diverse sources of funding for Higher Learning Institutions (HLI), including income generation, cost recovery and greater private-sector participation
- To produce up to 600 graduates at higher degree level annually by the year 2020 with emphasis on females for eventual placement in higher learning institutions, as part of a staff development programme for local lecturers who will eventually replace the expatriate teaching staff.
- To ensure full integration of an HIV/AIDS component into curricula in all Higher Education institutions (*Education Sector Strategic Plan 2004-2008*).

## **4.4 KIST Background**

The Kigali Institute of Science, Technology and Management (KIST) was established in 1997 by the Government of Rwanda. The purpose was to establish a higher institution that is committed to advancing Rwanda's development by graduating highly skilled people for the country's economy. Such people will respond to the acute shortage of qualified and experienced, engineers, managers and technicians as a result of the unfortunate events of the 1994 genocide in which more than 1,000,000 people were killed and thus left the country with a huge dearth of skills in all sectors of the economy. KIST's establishment as an Institute of science, technology, and management has been part of this on-going rebuilding effort. The onus to rekindle the scientific and technical resource base and managerial skills in Rwanda therefore is so far largely on KIST (Internet 1).

### **4.4.1 KIST Strategic Direction**

#### **The Vision**

KIST is committed to advancing Rwanda's development by graduating highly skilled people for the country's economy and by providing technical and technological assistance and services to all sections of the community. KIST aspires to become a centre of excellence in science, technology and management education comparable in standard to the very best in the world (*KIST Strategic Plan 2003-2008*).

#### **The Mission**

KIST is committed to promoting and maintaining competitive quality education for its national, regional, and international recognition through delivery of quality programs and services, provision of appropriate infrastructure and excellent facilities, and recruiting highly qualified professionals as well as developing the capabilities of all staff. High levels of achievement by all students and staff, is indeed, the Institute's major goal (*KIST Strategic Plan 2003-2008*).

#### 4.4.2 Objectives for 2003-2008

KIST's Strategic Plan 2003-2008 stipulates the following objectives:

- Regular review of existing curricula to keep abreast with national and global developments.
- Devise and introduce systematic arrangements for quality assurance.
- Maintain and establish further links with higher educational and other institutions in Rwanda, in the region and elsewhere, to identify opportunities for collaboration.
- Develop a strategy for entrepreneurship and graduate employment.
- Increase access to education through the establishment of distance learning courses.
- Increase the proportion of female full-time entrants from the present 30% to at least 45% by 2008, and seek means to reduce the higher attrition among female students.
- Graduate at least 80% of each intake within the normal duration of the program.
- Increase the library's stock from the present ratio of 1 student: 3 books to acceptable norms of 1 student: 20 books by the year 2006.
- Develop and implement a long-term plan for the recruitment and training of local academic staff for capacity building.
- Put in place adequate infrastructure to support KIST activities, develop norms for the planning and allocation of space in buildings, and improve the utilization of available space.
- Generate at least 35% (gross) of the recurrent running expenses by developing and spinning off commercial activities to supplement the government budget by 2006. .

#### 4.4.3 Organisational Structure

According to the KIST Strategic Plan 2003-2008, the Council constitutes the top governing body of the Institute and the highest decision making body. The Senate, chaired by the Rector, handles all academic matters and reports to the Council. The Senate oversees the committee of Deans, Faculty Boards and other academic committees. The Management Committee, also chaired by the Rector oversees all administrative activities. Several committees including Appointment, Finance, Development and Purchasing report to the Management Committee.

##### **The Office of the Rector:**

The Rector is the chief administrative, academic and disciplinary officer. He is responsible for the Council Secretariat, Internal Audit, Planning, logistics, public relations and external affairs.

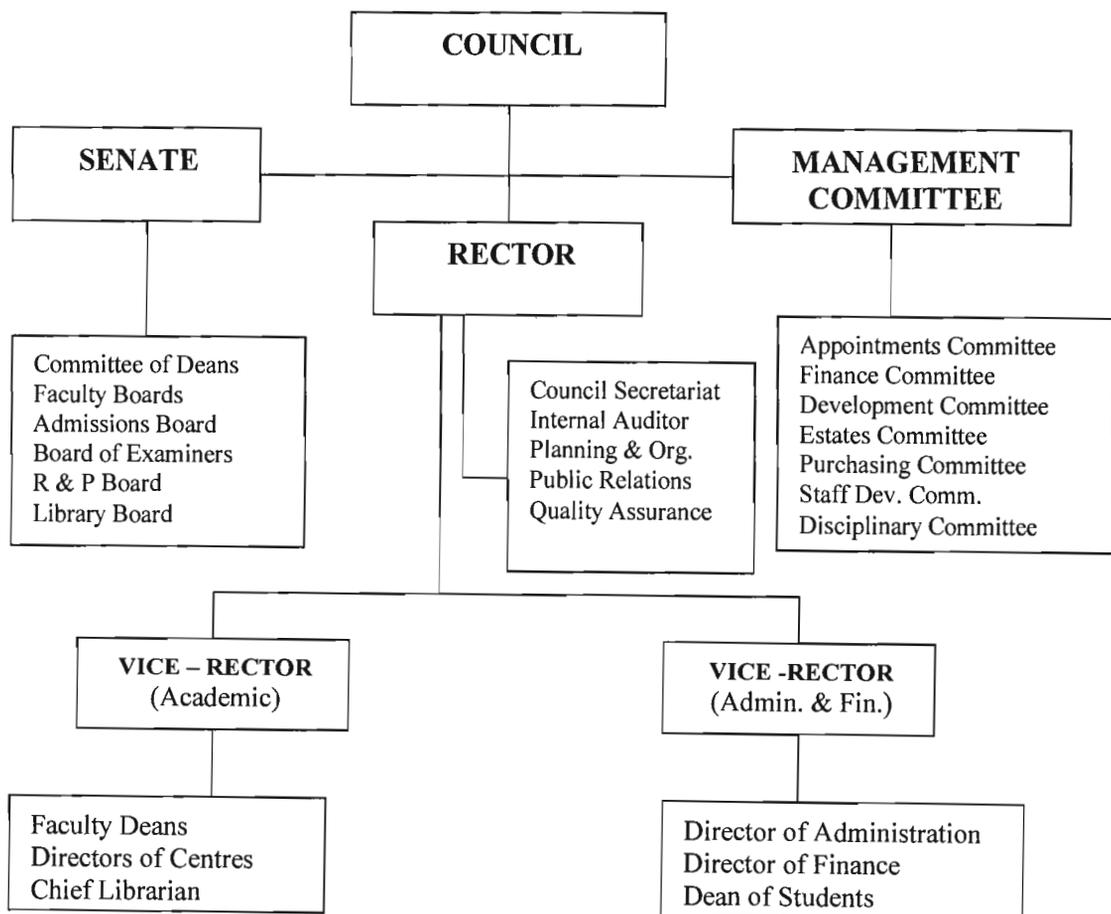


**The Office of the Vice-Rector (Academic):**

This officer is responsible for the formulation of broad academic policy and overseeing its execution. The Vice Rector (Academic) oversees Research and Publications, Quality Assurance, student records and general academic services.

**Office of the Vice Rector (Administration and Finance):**

This officer is responsible for management support for the delivery of the Institute’s programs. The Vice Rector oversees General Administration, Personnel, Finance, procurement, stores and municipal services (*KIST Strategic Plan 2003-2008*).



**Figure 4.1: KIST Organisational Chart**

*Source: KIST Strategic Plan 2003-2008*

#### 4.4.4 KIST Today

KIST since inception benefited from donor support. However, from 2003 this donor support has gradually reduced and the Institute now faces the challenge of sourcing internally for income to boost the existing revenue base. The Institute opened its doors with 209 students and 32 staff. As of June 2003, the Institute had 2,413 full-time and 891 part time students. Staff had grown to 490 in total. Among the 490 staff, 169 are academic staff. The total number of expatriate staff is 70, of which 46 were expatriate academic staff, 19 were expatriate administrative and technical staff, whereas, 5 were expatriate support staff. As of July 2004, KIST had 520 employees of which administrative staff were 64, academic staff 185, Technical staff 30 and support staff 241. The total number of expatriate staff in 2004 was 75, of which 49 were academic staff, 21 were administrative and technical staff and 5 were support staff (Source: email excerpt).

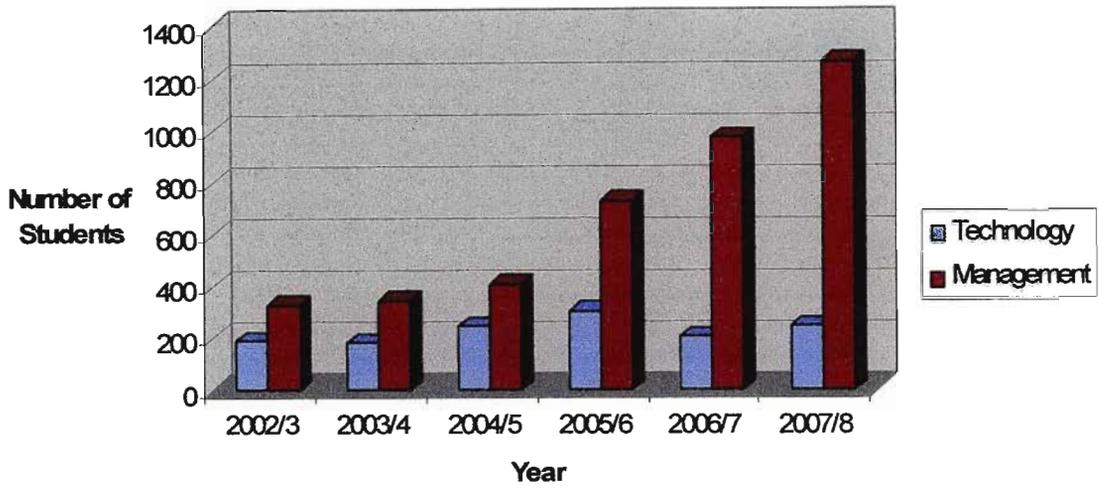
KIST is a fast growing institution. This growth is reflected in the number of staff, students and courses delivered. However, there is no corresponding growth in terms of infrastructure. According to the projected number of students, by 2008 KIST should have about 50,000 square meters more of built space than it now has. KIST graduated its first batch of students in July 2002, who had to make do with basic laboratory equipment and a library that had only 7,000 volumes of reading material (Internet 1).

##### 4.4.4.1 Student Numbers

The student population grew from 209 in 1998 to 3,304 in 2003 and in October 2003, a total of 2,696 students were admitted for the 2004 academic year. Full-time students constitute 73% of the student population. More than 90% of part-time students are enrolled in the Faculty of Management. The rapid increase in part-time students meant extra staff were needed to teach in the part time programs and the advantage was that the same facilities (lecture theatres, chairs, library facilities ) were used by both full-time and part-time students. It is important to note that, actual figures are up to 2004 and figures from 2005-2008 are projections (*KIST Strategic Plan 2003-2008*).

Figures 4.2 and 4.3 give a graphical representation of student numbers showing the rapid increase in student numbers. Majority of students enrolled for the part-time program are in the Faculty of Management, mostly staff of government agencies, banks, insurance companies, non-governmental institutions and other private companies.

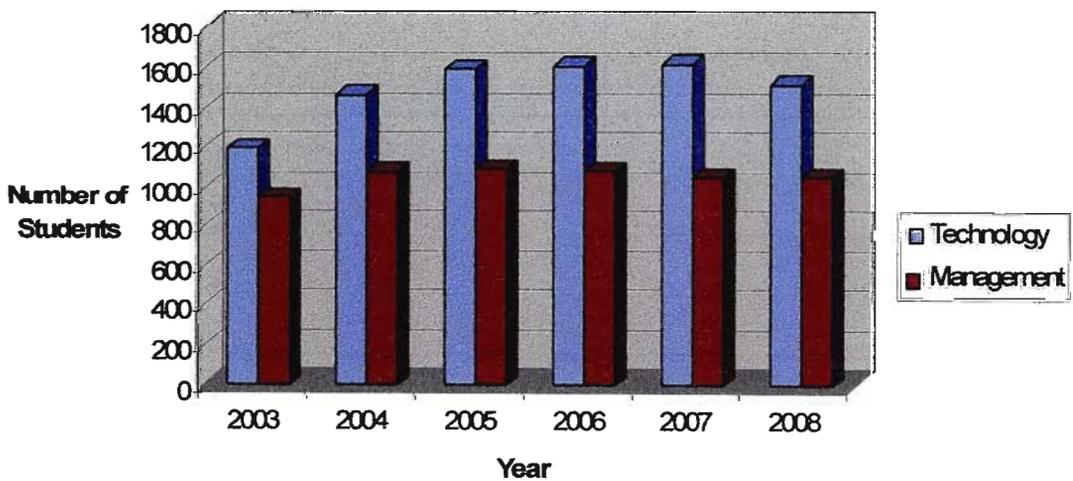
**Part Time Student Numbers**



**Figure 4.2: Part- Time Student Numbers**

*Source: KIST Strategic Plan 2003-2008*

**Full-Time Student Numbers**



**Figure 4.3: Full-Time Student Numbers**

*Source: KIST Strategic Plan 2003-2008*

#### **4.4.5 National Policy Imperatives: The role of KIST**

KIST's main contribution to the Vision 2020 strategies is by developing human resources, but in so doing it is promoting entrepreneurship by including that as a component in all the curricula. It is also playing a central role in preparing highly qualified people for a knowledge-based service sector, with emphasis on bilingualism. KIST's contribution to transforming the agricultural sector is through the identification, development and diffusion of appropriate technologies, through the training of food technologists and of engineers capable of improving the rural infrastructure. Through information technology, the country can access useful learning programs available around the globe. The Institute is committed to promoting information technology throughout the country in whatever way possible. Universities and other institutions of higher learning such as KIST are the logical extension of basic education for all (*KIST Strategic Plan 2003-2008*).

Research, innovation and technology transfer are also among the most important contributions of higher education to poverty alleviation and this can be in the following ways.

- Mobilization and harnessing of local resources into technological products for human development;
- Facilitation of design for appropriate technologies that is needs based and affordable;
- Facilitation of training for technological transfer careers (technicians, artisans);
- Aiding in customization of science and technology for the benefit of society;
- Emphasis on involvement of the local people, thus helping to create a population with scientific awareness (*KIST Strategic Plan 2003-2008*).

The practically oriented approach adopted by KIST through its mission and objectives as laid down in the Statute establishing it, combine together to put KIST in a position to deliver its expected contribution to Vision 2020. If the following objectives and strategies are achieved, KIST will certainly vindicate the expectations of its partners and stakeholders (*KIST Strategic Plan 2003-2008*).

## 4.4.6 Organisational Performance

### 4.4.6.1 *The Planning Process*

Strategic planning at KIST is a combination of the top-down and bottom-up approach. The bottom-up approach involves departments preparing action plans and presenting them to respective faculties during consultative meetings. Thereafter, the respective faculties present their strategic plans at the management committee meetings and from then up to the Senate. In preparing departmental action plans, there is a review of program offerings taking into account student interests, the needs of the wider society and developments in particular fields of study. Decisions are sometimes made about program improvement or restructuring and in such cases, low enrolment programs may be reorganized or phased out for example the Tourism and Hospitality program in the Faculty of Management had to be phased out as a result of lack of staff to run the program and pipeline students were sent to complete their studies in South African Technikons (Source: email excerpt).

The top-down approach involves the office of the Rector in conjunction with the Planning and organisation unit which prepares overall institutional policies and procedures. This is done in such a way that it is directed at creating the conditions (for example policies and resources) that enable faculties, departments, and administrative units to accomplish their objectives, while also coordinating some effort of these individual units toward Institute-wide strategies (Source: email excerpt).

The Planning officer reports to the Vice-Rector (Administration and Finance). This officer is in charge of monitoring the implementation of the Strategic Plan and makes available a monthly report on this at management committee meetings for onward presentation to Senate. In addition to the regular monitoring at the various committee levels, there are also reviews at the end of every year to measure progress. A major mid-term review of the Strategic Plan is scheduled in 2006 with a view to building on the achievements made by then, consolidating them, evaluating capacity to implement the remaining activities and develop the action plan for 2008-2013 (*KIST Strategic Plan 2003-2008*).

The strategic planning unit consults with the Directorate of Research and Publications as well as other departments in KIST in the establishment of an information data-base for use in on-going and *ad-hoc* analysis and in the review of events in the Rwandan economy in general and the education sector in particular so as to facilitate sound decision-making at the Institute (*KIST Strategic Plan 2003-2008*).

Currently at KIST, the planning unit is faced with serious constraints of inadequate staff that are experienced, qualified and capable of handling the planning activities of a large educational institution like KIST. As a result of this, the Institute has to rely on the services of external consultants who are very costly and cannot be retained on a permanent basis especially given the inadequate government and donor funding (Source: email excerpt).

#### ***4.4.6.2 Human Resources (Staff Capacity Building and Training)***

Based on the 2003 figures of 490 total staff, 70 were expatriate staff, accounting for only 14.2 % of the total staff, yet their salaries accounted for 85% of the total staff costs. (Source: KIST Stakeholders Conference Report, November 2003)

The situation on budgetary implications for the year 2004 remained the same. For sustainable growth, an intensive training program for local capacity building is of paramount importance, in order to get enough qualified local staff and eventually reduce the costs incurred on expatriate staff.

The World Bank through the Human Resource Development Project implemented by the Ministry of Education allocated \$ 516, 000 for local staff capacity building from the year 2000-2006 (*KIST Strategic Plan 2003-2008*).

KIST has over the last three years recruited 40 Tutorial Assistants, from the top-graduating students in each department to work and train for one year. These teaching assistants are then sent abroad for postgraduate studies at Masters Level, as part of the local staff development program. Over the past seven years, local staff have undergone training in different fields leading to Masters and Doctorate degrees. In 2004, 29 completed their studies, 19 with Masters Degrees and 2 with Doctorates. In the same year, 60 academic and technical staff were pursuing studies outside Rwanda, a majority of them in India and South Africa due to the bilateral



agreements signed with both countries based on reduced costs of staff training. Others were sent to Kenya, Uganda, Europe and the United States. In Table 4.1, a detailed breakdown of staff that were sent for postgraduate studies from 2002-2004 is given. Administrative and support staff also get in-service-training in addition to attending seminars, conferences and workshops conducted at KIST, in other part of the country and outside Rwanda (*Source: Email Excerpt*).

**Table 4.1: Staff Sent for Further Studies**

| Level of Study        | 2002      | 2003      | 2004      | Total      |
|-----------------------|-----------|-----------|-----------|------------|
| PHD                   | 3         | 10        | 3         | 16         |
| Masters               | 12        | 39        | 15        | 66         |
| Post Graduate Diploma | 10        | 4         | 10        | 24         |
| <b>Total</b>          | <b>25</b> | <b>53</b> | <b>28</b> | <b>106</b> |

*Source: Email Excerpt.*

#### **4.4.6.3 HIV/AIDS Policy**

KIST as an institution of higher learning recognizes the detrimental effect the HIV/AIDS pandemic has on the social and economic fabric of society coupled with the scourge of the disease. The main threat to staff security and welfare is HIV/AIDS. KIST is aware of the devastation HIV/AIDS can cause to its staff and students and it is in this regard that the Institute has strengthened the HIV/AIDS counselling centre and increased sensitization efforts. An HIV/AIDS policy has been developed which stipulates the details of how KIST will fight the scourge and support its staff who are living with HIV/AIDS.

The Institute has developed a policy to introduce workplace-based activities to address the impact of the disease in the work environment. The policy incorporates a Code of Ethics and provides guidelines to deal with the incidence of the disease in the workplace as well as interaction among students. Specific components of the policy also include blueprints relating to prevention, education, counselling and effective management of the risks associated with the disease. KIST regularly holds lectures and has an HIV/AIDS counselling centre and Anti-AIDS Club, which carries out training of peer educators on HIV/AIDS. Some 32 peer educators from six institutions of higher learning throughout Rwanda, including KIST were trained in the year 2003 (*KIST Strategic Plan 2003-2008*).

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#### ***4.4.6.4 Links with the Alumni, Business and Social Responsibility***

Although KIST is a very young institution its alumni have stepped up to the challenge of contributing to national development by providing scholarships to deserving school leavers to pursue studies at KIST with more emphasis on Science and Technology courses. The private sector also sponsors students for studies and works with KIST in providing students with opportunities for internships after their third year of study as well as partnering through the Graduate Placement Programs. KIST is also committed to community and social responsibility and to this effect, established a Genocide Survivor's Fund. The Institute provides full scholarships, covering tuition, book allowances and pocket money to students who are genocide survivors, purely on academic merit (*KIST Strategic Plan 2003-2008*).

#### ***4.4.6.5 Networking and Partnerships.***

KIST collaborates with several higher learning institutions and other organisations, in Rwanda, and abroad. The cooperation, in instances, is backed by Memoranda of Understanding, involving, mainly, staff visits and technical exchanges. In Rwanda, KIST has established links with the National University of Rwanda at Butare and the Rwanda Institute of Administration and Management (RIAM) in Gitarama and Kigali to advance cooperation in the form of technical exchange.

KIST is a member of and is affiliated to several universities, colleges and other educational institutions and associations. These include:

- Association of African Universities (AAU)
- Association of Francophone Universities
- International Association of Universities
- UNESCO Centre for Engineering Education in Africa
- UNESCO-based African Network for Scientific and Technological Institutions.
- The Royal Melbourne Institute of Technology (RMIT), which supports KIST in running distance learning computer courses (diplomas and degrees).

KIST, in partnership with Harvard Business School (HBS) successfully ran “Making Markets Work” a tailor-made executive program targeting senior level managers from Rwanda and the region in October 2003 (Internet 1).

#### **4.4.6.6 Sources of Funding**

- The Government of Rwanda: this is the main contributor to KIST's operating budget.
- Multilateral and Bilateral donors like the UNDP, GTZ, ADB, the World Bank, the Government of Japan and the Government of the Netherlands.

Income generating activities to supplement government and donor funding including, consultancy services in business and management research projects, civil engineering and ICT. Other avenues include, the production and sale of fuel efficient and energy saving firewood and charcoal cook stoves; biogas; bio latrines; energy saving ovens; telephone and photocopying services; hiring of halls for conferences and seminars; in-service training and revenue from the centre for continuing education from the tuition fees of part-time and self-sponsored students (*KIST Strategic Plan 2003-2008*).

#### **4.4.6.7 Infrastructure Development**

KIST opened in Kigali's Kiyovu suburb, in buildings acquired from the Ministry of Defence and which were previously in use as a Military Academy. The barrack-like structures were remodelled into administrative offices, computer laboratories and workshops. Other acquired buildings were the former "La Colombière Primary School" at Remera in Kigali which now houses science laboratories and the Centre for Innovation and Technology Transfer (CITT). The Kiyovu campus has been expanded with three new buildings, two four-storey multi-purpose blocks, KIST I and II. The third, KIST III, is six-storied and was completed in June 2004. These buildings contain office space, amphitheatres, lecture rooms and conference facilities (*KIST Strategic Plan 2003-2008*).

In exchange for the prime property acquired from the Ministry of Defence that became the KIST campus, the Institute undertook to construct medium to low-cost residential units for members of the Rwanda Defence Forces. The "Low-Cost Housing Initiative" under which 10 one to three-bedroom units were constructed at Camp Kigali, close to the International Airport, the units have been completed and are housing about 40 families. The housing initiative was a project for KIST students enabling them to practice what they were taught in the classroom as well as experimenting with the use of new appropriate local construction materials (*KIST Strategic Plan 2003-2008*).

#### **4.4.7 Constraints faced by KIST**

The Institute is now facing the challenge of having to expand very quickly to assist Rwanda to prepare itself for global competition, to keep pace with the rapid progress being made in communication and information technology and to play an important role in the region, while ensuring that quality norms are maintained and that due emphasis is given to research and consultancy. It is in this regard that the Institute is pursuing a growth strategy. However, this will not be possible unless it addresses the constraints of inadequate funding which is the primary concern of management (Stakeholders Conference Report, November 2003).

According to an unpublished survey by a KIST staff and Email Correspondence with senior staff of the Institute, other constraints include: inadequate strategic planning, low employee motivation and high staff turnover.

##### ***4.4.7.1 Inadequate funding for capacity building and Infrastructure.***

The major constraint faced by KIST is, raising adequate funds to sustain its activities of teaching, research and technology transfer. The offices of the Rector and the finance division have used all manner of creative methods and strategies to source required funds from donors. The modest gains from consultancy services, income generating activities and revenue from the part-time studies program in form of tuition fees in addition to funds from the Ministry of Education have all been used to ensure KIST continues to operate and stays afloat (*KIST Strategic Plan 2003-2008*).

So far, The United Nations Development Program (UNDP) core funding (\$2.7 million), in addition to grants from its trust fund have been prudently used. Through the generosity of the Japanese Government (\$4.7 million) and the Netherlands (\$2.4 million) which both contributed to the to the UNDP Trust Fund, the barrack-like compound of the former Military Academy was refurbished and equipped, often using student and faculty expertise and craftsmanship to cut down costs. The Japanese aid went largely into the construction of the 4-storey KIST II block and the procurement of furniture and equipment. The building accommodates the library on two floors, a conference hall, four lecture theatres and staff offices (*KIST Strategic Plan 2003-2008*).

When the KIST Project was signed in November 1997, it was anticipated that the donor funding over a six year period (1997-2003) could amount to some \$17,000,000 (excluding land and

buildings). However, by October 2003 only about \$11,000,000 had been made available through the UNDP Trust Fund while total expenditure amounted to \$14,000,000, with the balance financed by the African Development Bank and the World Bank, as well as from other government subsidies and the Institute's own income generating activities (*KIST Strategic Plan 2003-2008*).

While the fund raising achievements have been commendable, KIST has been under tremendous and persistent financial strain, constantly weighing on its growth. There is an urgent need for the major stakeholders to shape a consistent financing modality for both operational and development budgets. The key organisations in this regard being the Ministry of Finance, the Ministry of Education, KIST and its development partners (*KIST Strategic Plan 2003-2008*).

The Trust Fund was phased out in 2002, and since then the government has borne the full weight of recurrent and development expenditure for KIST. Apart from the Government of Japan and the Netherlands, other donors that also contributed to KIST since its establishment, include the Department for International Development (DFID) which committed £1.7 million pounds sterling to support ICT, to train technicians and to support the establishment of the Centre for Innovation and Technology Transfer (CITT), a flagship of the Institute. The DFID also provided technical expertise for the elaboration of the 2003-2008 Strategic Plan (*KIST Strategic Plan 2003-2008*).

In providing support for capacity building, the German government disbursed some €1.5 million over the period of 1998-2003 for the training of technical teachers and business managers. The World Bank also backed KIST's human resource development program with some \$1.4 million to cover staff training, recruitment of expatriate staff and the purchase of equipment for laboratories. This support will last for the 2000-2008 period (*KIST Strategic Plan 2003-2008*).

KIST management hopes to be able to raise funds to finance the range of projects and activities spelled out in its 2003-2008 strategic plan to further its growth and sustainability strategy. The projects and activities in the strategic plan will enable KIST to reach its full potential in delivering high quality education and service to Rwanda and the sub-region through research. In order to do this, the Institute must be well disposed in terms of vital infrastructure, equipment

and services required for teaching, training and general knowledge acquisition (*KIST Strategic Plan 2003-2008*).

Much has been done and achieved in infrastructural capacity building in six years. However, there still remains a lot to be done. Immediate funding is required for the following projects:

- Constructing and equipping a library block
- Construction of a block of laboratories, lecture theatres, seminar rooms and staff offices.
- Acquisition of laboratory/workshop and office equipment
- Human resource capacity building
- Computerization of management functions
- Establishment of a facility/park for technology and business incubation (*KIST project funding briefs November 2003*).

#### ***4.4.7.2 Inadequate Strategic Planning***

The strategic planning unit at KIST is currently faced with insufficient and inexperienced staff, not capable of handling the planning activities of a large educational institution like KIST. Consequently, the Institute has to rely on the services of external consultants who are very costly and cannot be retained on a permanent basis especially given KIST's present financial situation. Other major constraints the strategic planning unit faces in carrying out its functions include:

- The failure to achieve the set objectives due to inadequate funding from the internal revenue generation activities, the Government of Rwanda, multilateral and bilateral donors.
- Lack of a Management Information System (MIS).

#### ***4.4.7.3 Low employee motivation and high staff turnover***

Another major problem KIST faces is that of low employee motivation and high staff turnover. Most academic staff are leaving the Institute to seek better terms of employment in other organisations because working conditions at KIST are not conducive. The Academic staff complain of low salaries compared to the expatriate staff who earn up to three times what local staff are paid; lack of incentives to encourage good individual and team performance; lack of

involvement in the decision-making process and lack of proper performance management systems (Uwamariya, 2005).

The management of KIST is aware of this problem and has set up annual rewards to encourage good individual and team performance. Little is being done however to address the issue of low salaries because KIST is a government institution and the staff salaries are at par with those in the civil service which is not attractive. The government of Rwanda of recent however, has been on a civil service reform in an attempt to make it more attractive to professionals. The salary adjustments envisaged in the near future should therefore motivate staff at KIST (Source: email excerpt).

Furthermore, most of the KIST academic staff have a very high teaching workload, which leaves them with little time for research. In developed economies, academic staff spend about 60% of their time teaching, 30% doing research, and only 10% for consultancy activities. On the other hand, it seems that most KIST staff spend more than 90% of their time in teaching, leaving little time for other activities (*KIST Progress Report 1997- 2003*). For research and consultancy to improve at KIST, the above situation needs to be reversed.

#### **4.4.8 Other Institutions of Higher Learning in Rwanda**

##### **The National University of Rwanda**

Founded in 1963 jointly by the Rwandan Government and the Congregation of the Dominicans from the Province of Quebec (Canada), the National University of Rwanda (NUR) is the oldest higher institution of higher learning in the country. It was initially composed of three academic units: the Faculty of Medicine, the Faculty of Social Sciences and the College of Education, with an initial population of 51 students and 16 lecturers. Since then, the number has gradually increased and the student population currently stands at 7,609 students and 275 lecturers (Internet 2).

The University has 7 Faculties namely; Agriculture, Law, Arts and Human Sciences, Medicine; Science and Technology, Economics, Social Sciences and Management as well as Education

Sciences. It also has three schools: Public Health and Nutrition, Information Sciences and Modern Languages (Internet 2).

Although the growth in size is noticeable, the quality of service does not meet the needs of its customers, because of the 275 teaching staff, only 9 lecturers are Professors, 18 Associate Professors, 17 Senior Lecturers, 63 Lecturers, and 118 Assistant Lecturers. These figures show that the number of academic staff does not match the growing number of students (Internet 2).

The University operates a bilingual policy with French and English as the medium of instruction. It also operates distance-learning programs in languages and computer studies through the African Virtual University (AVU).

The University has the major setback of being located at 170km from the capital city Kigali, which has alienated it from constant interaction with major public and private companies and government ministries all located in the capital city Kigali.

The National University of Rwanda is also involved in other income-generating activities such as the part-time studies program that operates in the Faculty of Education and the Faculty of Economics, Social Science and Management. The program has attracted students who are employees of the University and others from public and private organisations, and business people who are willing to have or increase the knowledge needed for successfully running their businesses. The program is self-sustaining and the resources come from tuition fees paid by the students (Internet 2).

The University's major source of funding is the Government of Rwanda and external donor agencies. This is supplemented with the revenue from Income generating activities such as the Part-time studies program and the consultancy services offered by the University to various government ministries (Museruka, 2005).

### **Kigali Independent University**

Established in March 1996 by the Rwandan Association for the promotion of Education and Culture, it is the first private University in Rwanda with three faculties namely; Law, Social Sciences, Economic Sciences and Management. The University offers full time and part time

programs, and is currently the largest higher institution in terms of student numbers. It has 7885 students and 245 lecturers (Internet 4).

The University is self-sustaining and all its financial resources come from student tuition fees. Like all institutions of higher learning in the country, it is also faced with constraints, the most pressing one being the low proportion of local academic staff. In this regard the University is also pursuing an aggressive staff development program for its staff since the year 2003. So far 21 staff have completed their masters' degrees from the University of KwaZulu-Natal and the University of Pretoria. An additional 20 are currently pursuing their studies at Masters Level elsewhere in South Africa. The University intends to send between 10 and 20 staff every year for the next five years for further studies at masters and doctorate level (Internet 4).

The main advantage the University has is its location in the capital city Kigali. It was the first higher institution in Rwanda to have a part time program and this program has been very beneficial to the country in terms of human resource development. Most of the students in the part-time studies program are staff in the private sector and government ministries who attend the part time program to upgrade their qualifications.

The University also has a satellite campus at Gisenyi which is two and a half hours from Kigali. This campus offers the same courses as the main campus, but caters for people in the western part of the country and in the east of the Democratic Republic of Congo.

The medium of instruction at the institution is French, and can only cater for French speaking people. This is a shortcoming compared to KIST and the National University of Rwanda which conduct teaching in both French and English (Internet 4).

#### **4.4.9 Towards a brighter future: the road ahead for KIST**

In order to continuously improve its operations despite the challenges it faces, KIST plans to seek different sources of funding by increasing enrolment in the numbers of private sponsored students, making more modular short-term courses and in-service training, increasing consultancy services, boosting the various income generating activities that will strengthen its core business of teaching, research and technology transfer.

KIST also plans to continuously build in its research and development capacity by focusing on staff training, infrastructure for post graduate training in Rwanda, reinforcing partnerships with other higher institutions, seeking core funding from the government and other development partners to increase its present infrastructure (*KIST Stakeholders Conference Report, November 2003*).

## **4.5 Conclusion**

The focus of this chapter was to provide an overview of the organisation under review, the Kigali Institute of Science, Technology and Management and the higher education sector in Rwanda. From the situation highlighted above, it is evident that KIST has achieved tremendous progress in its operations despite its being a very young institution.

However, as the evidence portrays in section 4.4.7.1, a lot needs to be undertaken to ensure that the Institute stays on a clear path and strategy of growth through expanding its activities and acquiring a broader base of funding to facilitate its operations of education and research that will ultimately lead to the economic development of the country.

In order for KIST to continuously transform itself, upgrade its strategy and strengthen its culture of execution, there is need to focus on clear strategic priorities in addition to understanding that for impact, it should relentlessly execute its action programs, recruiting qualified personnel and constantly training its present personnel. As the literature review suggests, strategic planning is one of the ways that KIST management can use to cope with the challenges it faces and thus make KIST a centre of excellence in the sub-region.

In light of the above therefore, the next chapter attempts to identify and analyze some of the strategies, policies and practices that KIST has in place using the various tools illustrated in the literature review. It will also point out the strategies and policies that KIST needs to put in place in order to continuously improve and increase its competitiveness.

## **5 CHAPTER FIVE: ANALYSIS OF THE INSTITUTE'S SITUATION AND STRATEGY EVALUATION**

### **5.1 Introduction**

As was highlighted in chapter 4 section 4.4.7, KIST is presently pursuing a growth and sustainability strategy, in that it is aiming to grow in terms of student numbers, academic and non academic staff, increased number of programs and increased research activity by faculty member to build a strong research base and reputation as a higher learning institution.

In this chapter, an analysis of KIST's strategy will be conducted using the strategy evaluation criteria of suitability and feasibility.

The main purpose of this chapter therefore is to present the findings and assessments with specific reference to KIST, in light of the strategy evaluation criteria of suitability and feasibility that were discussed in section 2.7 of the literature review in chapter two.

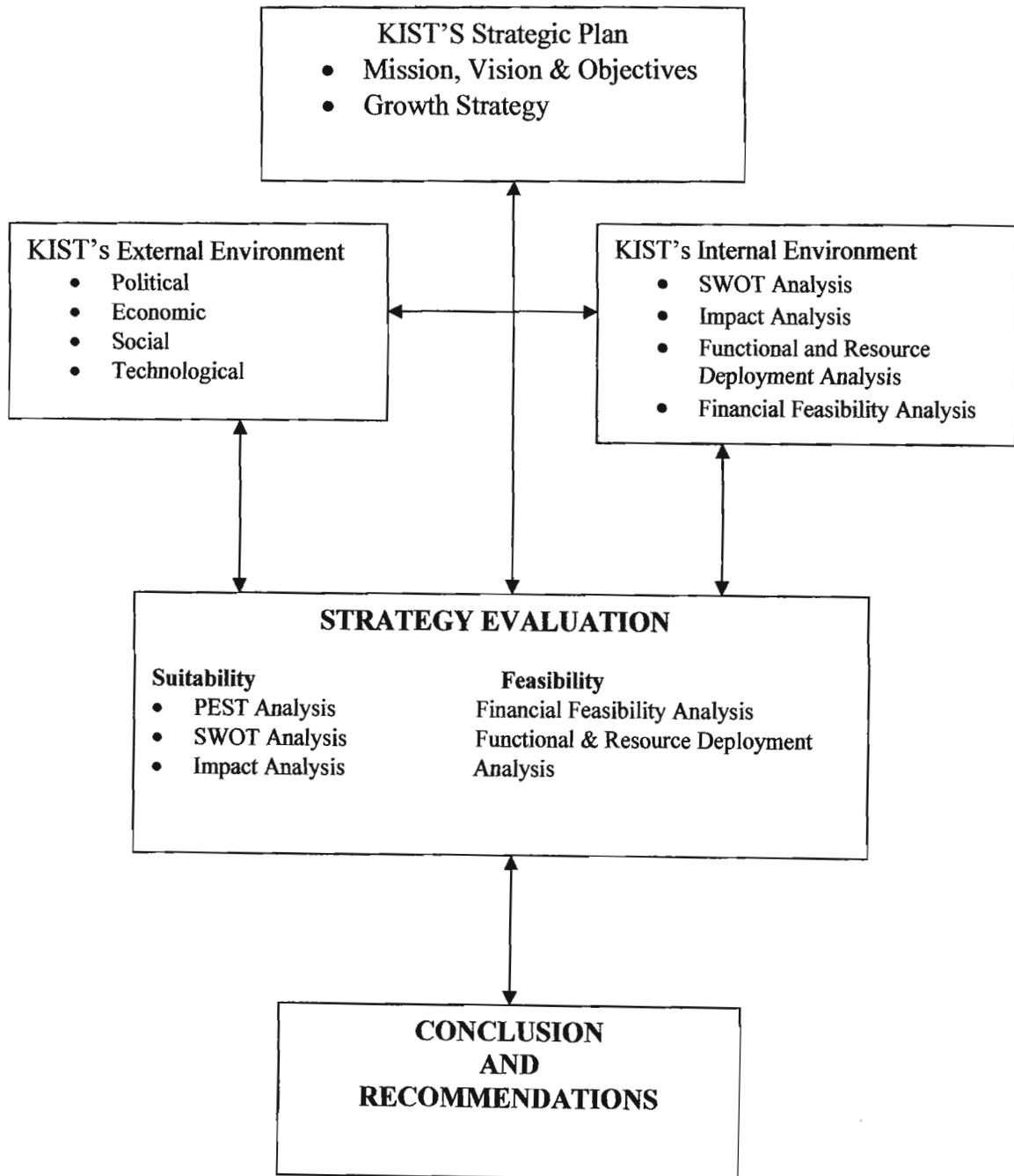
In assessing the suitability of KIST's growth strategy, the PEST, SWOT and impact analysis were used to assess whether the growth strategy addresses the circumstances in which KIST is operating.

The feasibility of KIST's strategy was determined from the outcome of the financial feasibility analysis and resource deployment analysis to establish whether the institution possesses the resources and competencies to match the chosen strategy in section 5.3. The strategy evaluation model to be used in the analysis is shown in figure 5.1

The inability to access current financial data due to confidentiality reasons hindered an in-depth and comprehensive financial analysis of KIST.

It must also be noted that, not all strategic management analytical techniques could be applied in the evaluation because tools such as the porter's five forces model and the value chain analysis can only be used to a limited extent in the analysis and evaluation of strategy in educational institutions like KIST and are deemed more suitable to analysing and evaluating strategy in business entities.

The strategic issues that KIST is currently facing will then be identified from the analysis and will form a basis for the recommendations and conclusion in chapter six. The next chapter will therefore present recommendations to address the strategic issues identified.



## **Figure 5.1 Strategy Evaluation Model**

*Source: Adapted from Johnson and Scholes (1999:354).*

The model above was adopted for this study in the external/internal analysis and for the evaluation of KIST's strategy.

## **5.2 Suitability Analysis**

### **5.2.1 Macro-Environmental / External Analysis (PEST ANALYSIS)**

The macro-environmental analysis will be used to analyze the external environment of KIST as part of assessing the suitability of the growth strategy in order to establish whether it addresses the circumstances in which it is operating, the circumstances being the internal and external environment.

#### **5.2.1.1 Political and Legal Environment**

The political component of the general environment relates to the political and social stability in a country or region, government and public attitudes towards the activities of organisations. The political climate in Rwanda today is characterized by peace and stability, which forms the basis for any country's socio-economic development.

KIST being a government institution benefits from limited government support, not adequate for a growing institution like KIST. The government of Rwanda recognizes the pivotal role KIST can play in the development of an indigenous and technical human resource base that will propel the country toward greater socio-economic development. In this regard therefore, the government's policies seek to integrate management, science, technology, scientific research and innovation in a framework that shall include capacity building, technical transfer initiatives, and the promotion of innovation in science and technology.

The cancellation in February 2005 of Rwanda's external debt by the IMF-World Bank Heavily Indebted Poor Countries Initiative which stood at a staggering US \$1.2 billion means that the government will be able to channel \$ 36 million annually into the economy towards improving and expanding social service delivery around the country (Internet 9). In this regard, KIST needs to put in place strategies to ensure it gets added funding from government to help in meeting its

current needs of increased infrastructure such as increasing the present library capacity, class rooms, laboratory equipment and additional funding for staff development in terms of training to strengthen the local staff capacity, which would reduce reliance and expenditure on expatriates. The introduction of universal primary education policy by the government has also resulted in over 90% primary one enrolment. This means literacy levels have increased and as a result more pupils will continue to secondary school and then on to higher institutions like KIST. The Government of Rwanda has taken measures to increase and improve the quality of scientific and technical studies, to integrate technological literacy in all schools, and to integrate instructional technology at higher levels of education hence the creation and support for Institution's like KIST.

The recent directive by the Government of Rwanda in August 2005, to move the Faculty of Management at KIST to the School of Finance and Banking effective January 2006 (Internet 1 to expand hyperlink) however, will further exacerbate KIST's financial situation, because the faculty of management was a large contributor to the income generating activities of the Institute through the tuition fees of part-time students see figure 4.2 for details of part time student numbers.

#### ***5.2.1.2 Economic Environment***

Economic factors are very important and cannot be ignored by any organisation since they have a direct bearing on its operations. They are an important factor to consider since consumption patterns are all influenced by economic trends like unemployment rates, exchange rates, inflation rates to mention but a few. It is therefore important that management continuously assesses the environment in strategy formulation in consideration of their effect on the organisation's strategic direction.

Presently, the Rwandan economy is experiencing a stable positive growth after a total collapse as a result of the Genocide in 1994. Rwanda's inflation rates have dropped from 65% in 1994 to 5% on average in 2004 and the GDP growth has averaged between 6-9% in the last ten years. The monetary and exchange rate regimes have been liberalized and various state assets are undergoing privatization. This is intended to create an enabling environment to local and foreign investment, much needed for economic growth (Internet 2).

Major companies, banks, insurance companies and government agencies have increasingly sent their staff for in-service training as well as part time studies at KIST, which is another major source of revenue for the Institute. The growing economy means that there is an increasing need for skilled manpower in all sectors mostly in the areas of science and technology. KIST in its 7 years of existence has graduated a total of 1865 students with degrees and diplomas in Computer Engineering and ICT, Civil and Environmental Engineering, Electromechanical Engineering and Management. These graduates have been rapidly absorbed by the growing economy thus reducing unemployment levels.

The improving economic situation also means that the working population who might be interested in studying at KIST on part-time basis can afford the tuition. The same applies to high school graduates who did not qualify for admission to KIST on government sponsorship who can therefore afford the fees structure as private/ self-sponsored students.

#### **5.2.1.3 Socio-Cultural Environment**

The socio cultural environment is another major factor to be considered by organisations when they are formulating and implementing strategies. The pace of change in this environment can often be slow but the effects are unavoidable and the organisation has no control over them. It is thus paramount that the management of any organisation to constantly evaluate these effects in terms of the strategic direction and to take a proactive role in helping to come up with strategies which are suitable and competitive

A large proportion accounting for 65 % of school leavers get admitted to institutions of higher learning in Rwanda and this number is spread among the various higher learning institutions. With the government's emphasis on increasing enrolment into science and technology related courses and the population's awareness of the importance of these courses, KIST has witnessed an increase in its annual intake from an intake of 134 in 1998, 1195 in 2003 to 1617 in 2004 in its science and technology courses (*source: email excerpt*)

As mentioned earlier, HIV/AIDS is another issue that is affecting KIST; staff and students alike are affected by the enormity of the pandemic. Members of staff who are affected can no longer be as productive and as a result, general performance has been affected. The same applies to infected and affected students who irregularly attend classes and end up dropping out of school. The AIDS pandemic also affects the Institute's growth because of increased expenditure on staff in terms of health care costs, burial expenses and then the training and recruitment of replacement employees.

The fact that better working conditions present in the private sector are attracting more academic and non academic staff of KIST to leave the Institute in search of greener pastures. This has led to high staff turnover, especially among the academic staff. It is a major problem that will have serious implications for KIST's growth prospects and needs to be addressed by management.

#### ***5.2.1.4 Technological Environment***

Every aspect of an organisation's operations is impacted by the changes in technology directly or indirectly. The technological aspect of the organisation's general environment is affected by the impact of science and technology in product and process innovation. This includes new approaches to producing goods and services; new procedures as well as new equipment. Thus, management has to be keenly aware and ensure appropriate response to any changes as they might affect an organisation's operation and strategy.

KIST being an Institute of Science and Technology is continuously faced with challenges and opportunities emerging from the changing technological environment in which it operates. Technology has brought about new ways of teaching, learning and courses can now be pursued virtually online without any physical contact between teachers and students. KIST is running such programs through the African Virtual University (AVU) and the student enrolment into these courses is steadily increasing. With technological changes unfolding so rapidly, KIST is faced with programs that could become outdated in content and should consequently assess the environment for changes and opportunities to exploit.

Changes in the technological environment have necessitated that all staff at KIST should be computer literate and the Institute runs free computer appreciation classes for staff. Basic computer literacy skills are part of the general curriculum at KIST, irrespective of the faculty to

which a student belongs. KIST continues to face challenges because, state of the art equipment, connectivity and infrastructure are critical to support leading-edge instruction and research opportunities necessary for its growth as a centre of excellence and research in Rwanda and the sub-region.

The above macro-environmental analysis reveals that as a public higher institution of learning, KIST is backed by the government though the support is inadequate to meet its growing needs. With the recent cancellation of Rwanda's external debt more funds will be channelled to social service delivery more specifically education and KIST therefore needs to put in place strategies to ensure that it benefits from these newly available funds. The growing economy means that there is an increasing need of skilled manpower in all sectors mostly in the areas of science, technology and management which provides an opportunity for KIST to absorb more students and further its growth objectives. The HIV/AIDS pandemic, low motivation and high staff turnover are the most important social issues that KIST needs to address. With technological changes unfolding so rapidly, KIST is faced with programs that could become outdated in content if it does not continuously adapt to those changes.

The next section presents an internal analysis which points out KIST's internal capabilities resources, strengths and weaknesses.

### **5.2.2 Internal Analysis**

The internal analysis is also used as a part of the analysis to evaluate the suitability of KIST's strategy by assessing whether it addresses the circumstances in which the Institute is operating. It is important for management to look within the organisation to identify internal strategic factors in terms of the critical strengths and weaknesses that are likely to determine if it will be able to take advantage of opportunities while avoiding threats in its operating environment. In this regard therefore, it will be able to tailor strategies to suit its position.

### 5.2.2.1 SWOT Analysis

The SWOT analysis provides information that is helpful in matching the organisation's resources and capabilities to its highly competitive operating environment. It is a very useful tool in helping management to make informed choices and decisions about broad action areas that capitalise on the organisation's comparative advantage.

**Table 5.1: SWOT Analysis**

| <b>Strengths</b>  | <b>Opportunities</b>  |
|---|---|
| <ul style="list-style-type: none"> <li>• Ideally located in Kigali the capital city, thus increasing access to industry.</li> <li>• National recognition as the first Institute of science, technology and management.</li> <li>• Experienced academic and support staff.</li> <li>• Strong staff development program.</li> <li>• Six years of proven experience in University level education with growing emphasis on research and consultancy activities to further enhance quality of teaching and training.</li> <li>• Quality assurance of courses/examinations through established links with foreign universities leading to international recognition of KIST qualifications.</li> </ul> | <ul style="list-style-type: none"> <li>• Strategic alliances and partnerships with, national, international institutions and the private sector.</li> <li>• Increasing enrolment into part time programs by working population.</li> <li>• Use of distance education, flexible learning and adoption of ICT to increase access.</li> <li>• Increasing demand for research and consultancy services in ICT, engineering and management.</li> <li>• Strong emphasis by the Government of Rwanda on higher education especially in the fields of engineering, technology and ICT.</li> </ul> |
| <b>Weaknesses</b>   | <b>Threats</b>  |
| <ul style="list-style-type: none"> <li>• Inadequate research due to lack of funding for research projects.</li> <li>• Low proportion of PhD holders among academic staff.</li> <li>• Inadequate strategic planning.</li> <li>• Inadequate library facilities.</li> <li>• Large class sizes make it increasingly difficult to provide quality teaching.</li> <li>• Low recruitment and retention levels of staff due to unattractive work conditions.</li> <li>• Dependence on part-time lecturers.</li> <li>• Lack of office space.</li> </ul>  | <ul style="list-style-type: none"> <li>• Inadequate government and donor funding which could limit future growth, productivity and expansion.</li> <li>• Private sector offering more competitive salaries and terms of employment</li> </ul>   |

### 5.2.2.2 Impact analysis

Using information from the SWOT analysis in table 5.1 above, an impact analysis was conducted to show the impact of the environmental changes on KIST. Thereafter, an

interpretation on KIST's growth strategy is provided. According to Ambrosini (1998), the scoring system (measurement) for the impact analysis is as follows:

- A positive (+) score denotes that a strength an organisation possesses would help it take advantage of, or counteract a problem arising from an environmental change or a weakness that would be offset by the environmental change.
- A negative (-) score denotes that a strength an organisation possesses would be reduced by the environmental change or a weakness would prevent the organisation from overcoming the problems associated with an environmental change or be accentuated by the change.
- A zero (0) score indicates that the current strength or weakness would not be affected by the environmental change.

**Table 5.2: Impact Analysis of KIST**

| Environmental Change (opportunities and threats) | Opportunities  |  |  | Threats   |                                       |
|--|--|--|--|---|---------------------------------------|
|  | Strategic alliances with industry and private sector | Increasing enrolment into part-time programs | Increasing demand for research and consultancy | Private sector offering more competitive salaries | inadequate government & donor funding |
| <b>Institution's strengths</b>                   |  |  |  |   |                                       |
| Proximity to industry                            | +  | +  | +  | -   | 0                                     |
| National recognition                             | +  | +  | +  | 0   | 0                                     |
| Experienced staff                                | +  | 0  | +  | -   | -                                     |
| <b>Institution's Weaknesses</b>                  |  |  |  |   |                                       |
| Inadequate research due to lack of funding       | +  | 0  | -  | 0   | -                                     |
| Inadequate strategic planning                    | -  | 0  | -  | 0   | -                                     |
| Low staff recruitment and retention levels       | -  | -  | -  | -   | -                                     |
| <b>Environmental Impact scores</b>               | <b>+3</b><br><b>-2</b>                               | <b>+2</b><br><b>-1</b>                       | <b>+3</b><br><b>-3</b>                         | <b>0</b><br><b>-3</b>                             | <b>0</b><br><b>-4</b>                 |
| <b>Net Impact Score</b>                          | <b>+1</b>  | <b>+1</b>                                    | <b>0</b>                                       | <b>-3</b>   | <b>-4</b>                             |

**Overall Net Impact Score = (+1) + (+1) + (0) + (-3) + (-4) = -5**

An overall indication of KIST's position, given the changes it faces, is shown by the environmental impact scores at the foot of table 5.2. In these terms, the existing strengths are likely to be offset by the existing weaknesses unless urgent action is taken by management. Given the inherent weaknesses, KIST is therefore not strategically positioned to take advantage of the environmental opportunities and at the same time harness the existing strengths, which include experienced staff. The next chapter will identify possible strategies for management to implement in order to strengthen its existing position as the premier institution of science and technology in Rwanda.

## **Interpretation of the Impact analysis for KIST**

### **1. KIST's strength (1) tested against environmental opportunities and threats.**

- a) Proximity to industry tested against strategic alliances with industry and the private sector.

**Score (+):** Being located in the capital city makes KIST accessible to the industry and the private sector which would lead to the fostering of strategic alliances with the private sector.

- b) Proximity to industry tested against increasing enrolment into part-time programs.

**Score (+):** KIST being located close to industry increases the accessibility to part-time programs in management, ICT and engineering by employees from the private sector, consequently the Institute stands to benefit from increased revenue in the form of tuition fees.

- c) Proximity to industry tested against increasing demand for research and consultancy services.

**Score (+):** KIST's proximity to industry and the private sector would enable it take advantage of the increasing demand for research and consultancy services in services such as ICT, engineering, management and technology transfer which the Institute is capable of handling through its research and consultancy bureau, which will consequently lead to an increase in revenue for KIST.

d) Proximity to Industry tested against the private sector offering more competitive salaries.

**Score (-):** KIST's proximity to industry further exacerbates the high staff turnover at the Institute, because staff are lured away by the better salaries and working conditions that are available in the private sector.

e) Proximity to industry tested against inadequate government and donor funding.

**Score (0):** this indicates that the current strength is not affected by the threat.

## **2. KIST's strength (2) tested against environmental opportunities and threats.**

a) National recognition tested against strategic alliances with the industry and private sector, increasing enrolment into part-time programs and increasing demand for research and consultancy services.

**Score (+):** all the three environmental opportunities will lead to strengthening of KIST's brand image. More students will want to study at KIST part time and full time and the fact that the Institute is nationally recognised would further enable it take advantage of increased demand for research and consultancy.

b) National recognition tested against all threats namely; inadequate government and donor funding, and private sector offering more competitive salaries.

**Score (0):** this indicates that the current strength is not affected by the environmental change.

## **3. KIST's strength (3) tested against environmental opportunities and threats.**

a) Experienced staff tested against strategic alliances with industry and the private sector.

**Score (+):** experienced staff at KIST would enable the Institute develop and foster strategic alliances and links with the private sector.

b) Experienced staff tested against increasing enrolment into part time programs.

**Score (0):** this indicates that the current strength is not affected by the environmental change.

c) Experienced staff tested against increasing demand for research and consultancy.

**Score (+):** KIST is better positioned to take advantage of the increasing demand for research and consultancy services in management, science and technology because it has experienced staff at the Institute. However management needs to recognise the role of incentives in motivating staff for increased productivity.

d) Experienced staff tested against all threats namely; inadequate government and donor funding, and the private sector offering more competitive salaries.

**Score (-):** this indicates that the current strength is affected by the threat since the private sector lures away KIST staff, given the better salaries and working conditions. As a result of inadequate government and donor funding there will be less time available for research, which will negatively impact KIST's growth and reputation as a higher institution of learning.

#### **4. KIST's weakness (1) tested against environmental opportunities and threats**

a) Inadequate research due to lack of funding tested against strategic alliances with the private sector and industry.

**Score (+):** the strategic alliances would enable KIST acquire partial funding and grants to fund its research projects which are much needed at the Institute for its continued growth and reputation.

b) Inadequate research due to lack of funding tested against increasing enrolment into part-time programs.

**Score (0):** this indicates that the current weakness would not be affected by the environmental threat.

c) Inadequate research due to lack of funding tested against increasing demand for consultancy services.

**Score (-):** this indicates that KIST cannot develop expertise internally due to lack of funding and as result may not be able to fully take advantage and exploit the opportunities provided by the increasing demand for research and consultancy.

d) Inadequate research due to lack of funding tested against private sector offering more competitive salaries.

**Score (0):** this indicates that the current weakness would not be affected by the environmental change.

e) Inadequate research due to lack of funding tested against inadequate government and reducing donor funding.

**Score (-):** inadequate government and reduced donor funding would aggravate the already existing problem of inadequate research at the Institute thus hindering its growth.

## **5. KIST's weakness (2) tested against environmental opportunities and threats**

a) Inadequate strategic planning against strategic alliances with industry and the private sector.

**Score (-):** KIST may not be able to fully take advantage of strategic alliances with the industry and private sector, due to inadequate strategic planning as a result of the weak planning unit, which is constrained by a scarcity of experienced and qualified staff who are capable of handling the planning activities of a large educational institution like KIST.

b) Inadequate strategic planning tested against increasing enrolment of students into part-time programs.

**Score (0):** this indicates that the current weakness would not be affected by the environmental change.

c) Inadequate strategic planning tested against increasing demand for research and consultancy services.

**Score (-):** KIST may not be able to cope and fully take advantage of the increased opportunities in research and consultancy, as a result of inadequate strategic planning as highlighted in 5 (a) above.

d) Inadequate strategic planning tested against private sector offering more competitive salaries.

**Score (0):** this indicates that the current weakness would not be affected by the environmental change.

e) Inadequate strategic planning tested against inadequate government and reducing donor funding.

**Score (-):** the negative score denotes that as a result of inadequate government and donor funding, the planning unit is affected and hence, unit will not have funds to recruit more qualified staff, buy required equipment and send existing staff for training and refresher courses to overcome its existing weakness as mentioned in section 4.4.7.2.

## **6. KIST' weakness (3) tested against environmental opportunities and threats**

a) Low retention levels tested against strategic alliances with industry and private sector as well as increasing enrolment into part-time programs and increasing demand for research and consultancy services.

**Score (-):** Low staff retention levels are as a result of KIST staff being lured away to the private sector and this would also prevent the Institute from taking full advantage of the increasing enrolment into part time programs. In addition, the Institute would not have the capacity to take advantage of increasing demand for research and consultancy services.

b) Low retention levels tested against private sector offering more competitive salaries.

**Score (-):** this further exacerbates the existing weakness since KIST staff would want to leave the Institute for better salaries and conditions of employment in the private sector.

c) Low retention levels against inadequate government and reducing donor funding.

**Score (-):** this weakness is worsened by the environmental threat because no funds will be available for the recruitment of more staff to alleviate the problem of low retention and high turnover levels.

## **5.3 Feasibility Analysis**

### **5.3.1 Financial Feasibility Analysis**

The financial feasibility analysis will be used to determine whether KIST has the financial resources to match its growth strategy. A comparison will be made between the income and the expenditure to determine if there is a surplus or deficit and hence determine whether the growth strategy is feasible in financial terms.

**Table 5.3: Income and Expenditure Account for the Year 2002-2003 in USD**

| <b>INCOME</b>                       | <b>2003</b>      | <b>2002</b>      |
|-------------------------------------|------------------|------------------|
| Budgetary funding from Govt         | 6 407 006        | 5 353 086        |
| Tuition fees                        | 417 172          | 963 624          |
| Income from products/services       | 809 090          | 360 305          |
| Other operating income              | 494 403          | 202 211          |
| Donor income grant                  | 87 888           | 139 395          |
| <b>Total</b>                        | <b>8 215 560</b> | <b>7 018 622</b> |
| <b>EXPENDITURE</b>                  | <b>2003</b>      | <b>2002</b>      |
| Administrative expenses             | 2 928 628        | 2 603 716        |
| Payroll costs                       | 4 268 397        | 3 202 703        |
| Student expenses                    | 988 785          | 1 459 159        |
| Expenses for products/services      | 687 726          | 228 425          |
| Training expenses                   | 124 757          | 52 870           |
| <b>Total</b>                        | <b>8 998 294</b> | <b>7 546 873</b> |
| (Deficit)/Surplus from operations   | (782 734)        | (528 251)        |
| Net finance income/(cost)           | —                | 1012             |
| <b>Deficit/Surplus for the year</b> | <b>(787 734)</b> | <b>(527 239)</b> |

Total expenditure in 2002 and 2003 respectively was higher than income generated internally and externally from donors, hence the increase in deficit as depicted in Table 5.3. Major expenses for both years were administrative and payroll costs, which accounted for over 75% of total expenditure.

**Table 5.4: Income and Expenditure Account 2004-2008**

| Years                                      | 2004                          | 2005               | 2006               | 2007               | 2008                |
|--|-------------------------------|--------------------|--------------------|--------------------|---------------------|
| <b>EXPENDITURE</b>                         |                               |                    |                    |                    |                     |
| Staff Training costs                       | 70 000                        | 84 000             | 78 000             | 80 000             | 80 000              |
| Capital Expenditure                        | 21 329 459                    | 7 969 064          | 8 757 794          | 7 712 355          | 2 536 518           |
| <b>Recurrent Expenditure</b>               |                               |                    |                    |                    |                     |
| Student Expenses                           |                               |                    |                    |                    |                     |
| Staff Salaries                             | 5 506 228                     | 6 265 743          | 6 694 348          | 7 184 042          | 7 204 714           |
| Regular Operations                         | 4 882 126                     | 5 591 495          | 6 113 469          | 6 381 606          | 6 539 973           |
| Sub-total                                  | 10 388 354                    | 11 857 238         | 12 807 817         | 13 565 648         | 13 744 687          |
| <b>Total Expenditure</b>                   | <b>31 787 813<sup>1</sup></b> | <b>19 910 302</b>  | <b>21 643 611</b>  | <b>21 358 002</b>  | <b>16 361 205</b>   |
| <b>INCOME</b>                              |                               |                    |                    |                    |                     |
| Income generating activities*              | 1 160 376                     | 1 458 061          | 1 719 493          | 1 841 637          | 2 038 397           |
| Government Funding- Recurrent              | 4 587 780                     | 9 424 812          | 10 148 926         | 10 845 094         | 10 909 324          |
| Government Funding- development            | -                             | 4 189 080          | 4 189 080          | 4 189 080          | -                   |
| Donor Funding                              | 18 786 114                    | 612 072            | 570 152            | -                  | -                   |
| <b>Total Income</b>                        | <b>24 534 270</b>             | <b>15 684 025</b>  | <b>16 627 652</b>  | <b>16 875 811</b>  | <b>12 947 721</b>   |
| Surplus/(Deficit)                          | -7 253 543                    | -4 226 277         | -5 015 959         | -4 482 191         | -3 413 484          |
| Savings/ funds b/f 1 January               | - 677 829                     | -7 931 372         | -12 157 649        | -70 173 609        | -21 655 800         |
| <b>Accumulated Surplus / (Deficit) c/f</b> | <b>- 7 931 372</b>            | <b>-12 157 649</b> | <b>-17 173 609</b> | <b>-21 655 800</b> | <b>- 25 069 284</b> |

*Source: KIST strategic plan 2003-2008*

**Note:** Figures are in US Dollars

<sup>1</sup> Total expenditure in 2004 was very high because of the high capital expenditure in the same year that included new buildings, furniture, computers and other equipment.

The expenditure on staff salaries is increasing as a result of expatriates whose salaries account for 85% of payroll costs yet they form only 15% of staff.

\* Income generating activities include (tuition fees, consultancy, in-service training, ICT services, the production unit and the e-documentation centre).

**Table 5.5: Recurrent Expenditure (% Change)**

|                       | 2004             | 2005       | 2006       | 2007       | 2008        |
|-----------------------|------------------|------------|------------|------------|-------------|
| Recurrent expenditure | 10 388 354       | 11 857 238 | 12 807 817 | 13 565 648 | 13 744 687  |
| % Change              | <b>Base year</b> | <b>14%</b> | <b>8%</b>  | <b>6%</b>  | <b>1.3%</b> |

As depicted by the percentages above, projected expenditure in 2005 rose by 14 % and it is envisaged that in 2006, recurrent expenditure will rise by 8%. This is in sharp contrast to the level of income over the years.

Total expenditure in 2004 and projected expenditure in 2005-2008 far exceeds the total income, as shown in table 5.5 above. Government funding is insufficient and donor funding is drastically reducing and also not guaranteed in the future, which suggests that the available funding cannot meet KIST's operations and growth strategy.

The accumulated deficit in 2005 of US \$ 12 157 649 further exacerbates the poor financial situation and this deficit is projected to increase over the years because currently the income generating activities at KIST account for only 4.7% of the institute's income. Government has continued to provide KIST with funds to keep it afloat though it can only do so much, and this means that KIST needs to devise means of generating more funds internally to help alleviate the burden on the government, which has continuously funded the deficit.

The recent directive from the government of Rwanda to transfer the Faculty of Management from KIST to the School of Finance and Banking will further exacerbate this deficit because a large percentage of the part-time students whose tuition fees contributed to the Institute's internal income generating activities were in the Faculty of Management.

From the table, it is therefore clear that the growth strategy of KIST is not feasible given the weak financial position depicted. In order for KIST to realise its set objectives and also successfully implement its growth strategy, there is need to reverse this situation by devising more aggressive means of generating funds internally. The recommendations in chapter six will propose how this can be done.

## **5.3.2 Functional and Resource Analysis**

### **5.3.2.1 Critical Success Factors for KIST**

The following are key success factors that are required for any higher educational institution's continued growth and success in the delivery of its various programs.

#### **Availability of Funding and requisite financial support**

A strong financial base is a prerequisite for the smooth running of all activities at the Institute to enable it successfully implement its growth strategy, and to support and sustain the Institute's mission and purposes.

#### **Infrastructure**

A solid infrastructure in terms of buildings, laboratories, equipment and a good library are prerequisites for effective teaching and learning at KIST.

#### **Human resources**

A highly qualified staff base is the axis of any institution of higher learning and will determine the calibre of the institution's output in terms of graduates and the ability of the institution to function effectively and efficiently in achieving its objectives. KIST must therefore be able to recruit, develop and retain diverse and dedicated high- quality faculty and staff to sustain the Institute's mission and purposes

### **Strong links with the private sector and community**

Higher institutions of learning must harness the support of the business community and the private sector in order to draw from industry experience in developmental matters of innovation, competitiveness and the creation of business opportunities. The benefits could also be in the form of financial support, grants, donations and opportunities for students in terms of clerkships and internships.

### **New courses and curriculum development**

With the rapidly changing environment in which higher learning institutions operate, it is paramount that courses and curricula in these institutions are adapted to suit the demands of the marketplace for national development.

### **The use of technology in teaching and research**

Integrating technology in research and teaching at higher institutions of learning is of crucial importance. Up-to-date technology, resources and training opportunities for faculty and other support staff is vital to the successful operations of any higher institution of learning.

### **Strong research environment and research activities**

Research drives and defines the quality of any higher institution's programs, it is the combination of teaching and research that enriches students' experiences and increases their opportunities in the job market. An enabling and supportive environment for conducting research is a prerequisite for the continued growth and reputation of any higher learning institution.

#### ***5.3.2.2 Identification of KIST's Resources and Organisational Capabilities***

Having identified the Critical Success Factors (CSF), it is important to then identify the tangible resources, capabilities and competencies that KIST possesses. According to Fleisher and Bensoussan (2002) these competencies and resources must provide access to a variety of markets, and contribute to customer value.

### **5.3.2.3 Human resources:**

KIST has qualified and experienced staff who have the capacity to make meaningful contributions to the growth of the Institute. As of July 2004, the Institute had 520 employees of which 64 were administrative staff, 185 academic, 30 Technical staff and 241 support staff.

The management of KIST is building local capacity by sending staff for postgraduate studies at masters and doctorate level so that they can gradually replace the expatriate staff who are taking a heavy toll on the Institute's finances. 15% of the total staff are expatriates and 30% of the academic staff are expatriates. However, these expatriates account for 85% of total staff costs. *(Source: Stakeholders Conference Report November, 2003:16).*

### **5.3.2.4 KIST's ability to transfer technology via its outreach programs:**

The Center for Innovation and Technology Transfer (CITT) has improved productivity in different sectors of the economy by making available simple but efficient and relevant technologies in:

- Energy and Environmental Management
- Water Supply Technologies
- Crop post Harvesting and Storage
- Sanitation and Waste Management
- Low Cost Housing
- Rural Transportation

The Center for Research and Consultancy (CRC) acts as liaison between KIST and the delivery of its research to the community. The benefits of this initiative include enhanced outreach services to the people with respect to dissemination of appropriate technologies and sustainable adaptation by the community, thus contributing to poverty alleviation and improved living standards in the country. Consequently the following contribution has been made to national development.

- Import substitution through locally developed competitive products;
- Creation of employment for the majority of the people especially those in the rural areas through working in small-scale industries using technologies developed by the KIST.

This focuses especially on young graduates who not are absorbed into the labour market;

- Improved productivity in different sectors of the economy through the availability of simple but efficient and relevant technologies;
- Improved standard of living of the rural based communities through making available technologies relevant to their needs;
- Conducting training in technical skills and entrepreneurship, for youth and women groups;
- The Provision of seed capital to KIST graduates and other small and medium business operators;
- The provision of research and consultancy services at affordable rates to the public and private sector.

The Technology and Business Incubator facility provides seed capital to KIST graduates and other small and medium business operators. Among the mechanisms which have been used in other countries to enhance technological development is technology and business incubation which provides ‘incubator units’ for new businesses – not only in terms of space and physical facilities but also ready access to ‘know-how’ in technical and business aspects. The Center for Technology and Business Incubation has enabled entrepreneurs to get exposure to knowledge required for the successful running of their ventures and has inspired technical creativity and innovation among small business owners.

The Center for Entrepreneurship Development is involved in exploring opportunities to entice students to be creative entrepreneurs; and put in place a mentoring program for businesses that have potential to assist others. The center aims at making technology transfer and the licensing of new ventures and start-ups more business-friendly. The Staff at the Center also teach entrepreneurship courses to students in the faculties of management and technology. The center has enhanced the number of business start-ups, increased investments in business expansion and the number of jobs created by small businesses.

### **5.3.3 Appraisal of KIST's key resources**

In this section, an appraisal will be done to establish whether KIST's organisational capabilities have the potential to deliver on its growth strategy. In order for KIST to successfully pursue its growth strategy, it must develop competences from its resources that will allow it perform activities better.

According to Fleisher and Bensoussan (2003), resources must pass through several tests to determine if they are capable of delivering competitive advantage. KIST's Human resources and the ability to transfer technology via its outreach programs will be subjected to this test. It is important to note that, the inimitability, appropriability, substitutability and durability tests will not be applied to KIST since they are not applicable given the circumstances and environment in which it is operating.

#### ***5.3.3.1 Organisational Capability.***

##### **Technology Transfer**

KIST has been able to successfully transfer technology via its outreach programs through the Center for Innovation and Technology Transfer (CITT); The Center for Research and Consultancy (CRC); The Technology and Business Incubator facility and The Center for Entrepreneurship Development whose functions have been explained above in section 5.4.2.2

There is a strong public wish for KIST to ensure the transfer of the technologies developed, to the rural communities, as they are the most in need. The benefits of this initiative include enhanced outreach services to the people with respect to dissemination of appropriate technologies and sustainable adaptation by the community, thus contributing to poverty alleviation and improved living standards in the country.

The Government of Rwanda is committed to position KIST as a regional ICT Training and Research Centre under the Development Gateway Foundation, a World Bank non-profit organization. The main objective of establishing the center was drawn from the National Information and Communication Initiative NICI plan (2001-2005) that addresses the existing problems in ICT and human resources, which are quite unique and different from all countries in the region. The intention is to build an indigenous and technical human resource base, capable in

the future of propelling the region forward in its efforts to develop all sectors of the economy. The center assists the effective application of ICT throughout the economy, leading to increased employment, more efficient public services and therefore contributing to the reduction of poverty among the people of the region.

The ability of KIST to transfer technology through its outreach programs will enhance KIST's capacity and competitiveness to successfully implement its growth strategy and further its growth objectives.

### **Human Resources**

In order for KIST to effectively pursue its growth strategy and achieve its objectives, it needs to fully harness its human resources. The staff at KIST are presently not motivated due to low salaries; lack of incentives to encourage good individual and team performance; lack of involvement in decision-making and the lack of a proper performance management system.

This has led to high staff turnover and is worsened by staff leaving the Institute on completion of their postgraduate studies in search of better jobs in the private sector, after having been sponsored by KIST. The management of KIST has done nothing to curb this problem and as a result the Institute will not be able to effectively implement its growth strategy and achieve its objectives of replacing expatriates with local staff. In addition to the Human Resource Development Program of the Ministry of Education failing to meet its objective, KIST is also losing qualified and competent staff.

In these circumstances therefore, KIST does not pass the competitive superiority test unless the critical issue of human resource needs is urgently addressed.

Management at KIST must understand that it is only through a motivated human resource base, that it will be able to successfully harness its organisational capability of technology transfer through its outreach programs, and as such, should ensure that working conditions are conducive so that staff are adequately motivated to be more effective and efficient in their roles to help the Institute achieve its objectives.

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### 5.3.4 Identification of KIST's resource gaps

**Table 5.6: Gaps between KIST's resources and critical success factors**

| <b>Critical Success Factors (CSF)</b>                   | <b>KIST's resources that address (CSF)</b>   |
|---|--|
| Availability of Funding and requisite financial support | Weak financial position depicted in the financial feasibility in section 5.3.1   |
| Infrastructure  | Sound infrastructure that includes buildings, equipment and computer laboratories but inadequate to meet its current growth strategy.                |
| Human resources   | Insufficient local staff capacity. KIST has to rely on expatriates who are expensive. Low staff motivation and turnover explained in section 4.4.7.3 |
| Strong links with the private sector and community.     | Established few links with private sector and community.   |
| New Courses and Curriculum Development.                 | Curriculum and courses are developed to meet the changing needs of the environment in which it operates.   |
| Use of Technology in teaching and research.             | Presently adequate, but there is need for more funding for new and emerging technologies to meet the ever changing needs of the Institute.           |
| Strong research environment and research activities.    | Inadequate research due to lack of funding.  |

From the analysis in table 5.6, it is evident that there exist gaps between KIST's resources and the critical success factors. The major issues facing the Institute include the weak financial position and insufficient local staff capacity.

It is therefore clear that KIST's current growth strategy is running into difficulty given its financial position and human resources, which highlight major strategic gaps that currently exist between the Institute's resources, its growth strategy and the environment in which it is

operating. Recommendations will be made in chapter six to address the strategic issues facing KIST.

### **5.3.5 Strategic Leadership**

Leadership is a factor that cannot be ignored by any higher learning institution in its quest to grow and excel in carrying out its core activities of teaching and research. The right leadership can steer an institution to academic excellence.

The leadership at KIST has been very proactive in establishing favourable policies that have steered the Institute on the path it has now found itself. However, there are complaints from staff about the lack of democratic participative leadership that empowers them to aid in decision-making, which has consequently led to low staff morale and high staff turnover. The next chapter will identify new leadership styles for management to consider and implement.

## **5.4 Strategic issues facing KIST**

From the constraints identified in section 4.4.7 of chapter four and the analysis conducted in previous sections of chapter 5, the following are some of the strategic issues that need to be addressed at KIST:

- Inadequate funding for urgent capacity building; infrastructure and facilities for KIST's growth and sustainability.
- Inadequate strategic planning.
- Low employee motivation and high staff turnover.

## **5.5 Conclusion**

This chapter sought to analyze and establish whether KIST's overall growth strategy addresses the circumstances in which it is operating. Using the PEST analysis technique it was discovered that KIST being a public institution benefits from government support though limited. However, the Institute stands to benefit from increased funding given the recent cancellation of the country's external debt if it develops feasible strategies to get access to these funds. The rapidly growing economy requires skilled manpower in all sectors, but most especially in science, technology and management presents KIST with an opportunity to absorb more students and

further its growth objective. The social factors affecting KIST are the HIV/AIDS pandemic, high staff turnover and low motivation. With changes unfolding so rapidly in the technological environment, the Institute is faced with programs that could become outdated in content and applicability, if it does not continuously monitor and adapt to change.

In assessing the suitability of KIST's growth strategy, the SWOT and Impact analysis were utilised. It was revealed that, despite the fact that KIST is currently offering the right kind of courses (ICT, engineering, Food Science and Technology and Management) relevant to the needs of the Rwandan economy, the Institute will not be able to successfully transfer technology through its outreach programmes in addition to attaining its growth objectives. This is as a result of the inadequate government and donor funding; and also the existing dissatisfaction amongst local staff who are not motivated to further the Institute's strategies.

It can therefore be argued that KIST's growth strategy is not suitable given the existing internal weaknesses. However, this strategy is attainable if mechanisms are put in place to address the issues raised. There is a strong will in Rwanda to advance education and training in science and technology.

The feasibility analysis was further used to establish whether KIST possesses the resources and competences to match the growth strategy. The analysis established that the Institute has the ability to transfer technology through its outreach programs. It was, however, established that staff at KIST are not motivated and for this reason, the Institute could face difficulty in the future and fail to run and sustain its programmes and activities. The financial feasibility analysis also established a weak financial base, which therefore renders the growth strategy unfeasible.

Based on the findings discussed above, the next chapter will present a conclusion and recommendations that could be adopted by KIST management to help the Institute grow and increase its self-sustenance in the face of inadequate government and reducing donor funding.

## **6 CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS**

### **6.1 Introduction**

This chapter will present conclusions and recommendations based on the findings, analysis and the strategy evaluation of KIST. The discussions in this chapter are based on the literature review discussed in chapter two, the case study in chapter three and the findings from the analysis conducted in chapter four. A conclusion is made thereafter, based on the recommendations and findings of the study. The recommendations made will address the three strategic issues identified in section 5.5 of chapter five.

The objective of this study was to conduct an evaluation of KIST's strategy, using the strategy evaluation criteria of suitability and feasibility. The suitability analysis was done by assessing whether the overall growth strategy addresses the circumstances in which it is operating. Thereafter, an assessment of the feasibility was conducted by establishing whether KIST possesses the resources and competencies to match its chosen growth strategy.

The literature review highlighted the importance and relevance of strategic planning as a means for higher education institutions to cope with the constantly changing environment in which they operate and succeed in their operations. Strategy evaluation using the criteria of suitability and feasibility which was the main focus of the study was also discussed. In conducting the literature review an attempt was made to ensure that the important and relevant aspects of strategic planning and strategy evaluation were explained in detail and applied to KIST.

The research methodology and design used for this study was qualitative in nature using a combination of secondary data analysis and a case review of KIST. The case study approach was used because of the qualitative nature of the study, since a holistic in-depth analysis of KIST was required in order to get a detailed insight of the current situation at KIST.

Chapter four presented the case study, giving a detailed review and insight into the Institute's background and its operations. The main issues that were pointed out include KIST's mission as an institution that is committed to advancing Rwanda's development by graduating highly skilled people for the country's economy and by providing technical and technological

assistance and services to all sections of the community. Its objectives, organisational performance, strategic direction, the competition and most importantly the constraints facing the institution were also discussed.

In chapter five, an analysis of KIST's growth strategy was undertaken using the strategy evaluation criteria of suitability and feasibility to answer the questions; how suitable and feasible is the current strategy that KIST is pursuing? What strategies can KIST as an institution put in place to enable it grow, become self reliant, sustainable and competitive?

## **6.2 Conclusion**

Reducing government funding, increasing student numbers, new models of teaching and learning in higher education, increasing competition as a result of globalisation and increasing operating costs make strategic planning in higher institutions of learning a necessity now more than ever to enable these institutions cope with the ever present changes in their operating environment.

Strategic planning provides higher institutions like KIST with a solid framework for achieving sustainable competitive advantage and it allows them to prioritise in the allocation of their scarce resources. By engaging in strategic planning, these higher institutions of learning are able to measure progress and identify necessary changes to organisational functions and processes that will lead to enhanced performance by focusing on the direction of the organisation and the necessary actions to improve its overall performance.

Institutions like KIST understand the need and importance of strategy evaluation and as such, the institution plans a major review of its Strategic plan in the second quarter of 2006 to measure the progress made and identify shortcomings in order to come up with a better five year plan for 2007-2012. This is of crucial importance because KIST recognises that its operating environment is dynamic and the previously formulated and implemented strategies could become outdated and no longer suitable. In addition there is also a need to continuously assess the ability of KIST to successfully implement strategies by assessing how its resources and capabilities match its chosen strategies.

The following objectives guided the study:

1. To evaluate the suitability of KIST's strategy by assessing whether it addresses the circumstances in which the organisation is operating;
2. To establish the feasibility of the strategy by assessing whether the institution possesses the resources and competences to match the chosen strategy.

With regard to the first objective, from the suitability analysis, it was found that as a result of the internal weaknesses identified in section 5.2.2, the Institute's growth strategy is not addressing the circumstances in which it is operating, consequently, rendering the growth strategy unsuitable. However, this strategy is attainable if mechanisms are put in place to address the issues identified. KIST provides relevant courses and services that are crucial to the needs of Rwanda's economy. What is currently lacking is a committed workforce to steer the Institute to greater heights and a management team that is not doing enough to address the issues raised. There is need therefore, for the Institute to continuously assess its internal and external environment to establish obstacles and hindrances that might affect its service provision and contribution to the economic and social development of the country.

With regard to the second objective, the feasibility analysis revealed that the Institute's capabilities are undermined by its weak financial position as a result of a high dependence on government and donor funding. Without a committed workforce, KIST's capabilities, strengths, competences and its achievements over the last seven years are further undermined, therefore rendering the growth strategy unfeasible.

From the case review and analysis in chapter five of the study, it can thus be concluded that the growth strategy of KIST is not suitable because it does not address the circumstances in which it is operating. It is also not feasible because of inadequate funding and a workforce that is not committed.

With an implementation of the recommended strategies in addition to strengthening its financial and human resource base, the growth strategy at KIST is attainable, given the government's commitment to advance higher education in Rwanda. KIST therefore has the potential to grow and sustain itself in the long run.

## **6.3 Recommendations**

From the analysis, findings, strategic issues identified in section 5.4 and conclusion presented in previous sections of this study, the following recommendations are made. In order for KIST to ensure its long-term growth and sustainability in the ever-changing environment in which it operates, it can consider implementing the following recommendations: -

### **6.3.1 Strengthen the Public Relations Office**

The Institute needs to strengthen the existing public relations and marketing department with additional resources in terms of qualified personnel and equipment. The major role of the department is acting as a liaison between the Institute and the public; it will also be in charge of marketing the Institute's income generating projects and the marketing of the KIST brand. In order to maintain a high level of service, the staff should be regularly trained in customer service and satisfaction. Having competitive salaries and a conducive working environment in which staff are motivated is also paramount to creating the right entrepreneurial environment.

### **6.3.2 Strengthen the income generating activities**

In the face of inadequate government and reducing donor funding, the Institute has had to accept that it must become self-reliant and increase its income generating activities. In order to successfully engage in rewarding income generating activities, there needs to be incentives to motivate staff who are involved in these activities. This will increase their interest and motivation levels leading to higher productivity. The following income generating activities are proposed to KIST:

#### ***6.3.2.1 Organise more short courses and in-service training***

Presently KIST offers short courses and in-service training as part of its income generating activities. However, more of these courses and in-service training need to be developed and tailored to the needs of the students from the various government ministries, non-governmental organisations and the private sector. In order to fully utilise its staff, KIST should note that there needs to be incentives for staff who are involved in teaching these courses. The Institute currently has highly equipped computer facilities which is a good starting point.

### ***6.3.2.2 Provide professional consultancy and contract research***

KIST needs to consider motivating staff to apply their knowledge and expertise to solve relevant problems in collaboration with industry and commerce for contract research. Motivation could be in the form of commissions on completed projects. Professional consultancy services can also be provided to the public in Civil Engineering, Management and Information Technology (IT), using its existing facilities and knowledge base. KIST should establish an in-house consultancy registered with the relevant professional bodies, which would generate income, provide staff development opportunities and also be an avenue for carefully controlled student projects.

### ***6.3.2.3 Strengthen strategic alliances and partnerships***

KIST needs to foster strategic alliances with the private sector to seek funding for physical infrastructure, like classrooms, office blocks, laboratories and donations of books to the library. KIST also needs to seek donations from potential benefactors who could be private individuals, industry and the alumni to fund research projects, provide scholarships to deserving students who are employed by these sponsors upon completion of their studies.

### **6.3.3 Strengthen the KIST Planning Unit**

Strategic planning is a continuous process. To be effective, it must be ongoing and responsive to changing conditions both within and outside the institution, and it must involve all the stakeholders of the Institute. Commitment and engagement by faculty, students, and staff are critical for the development and maintenance of a sense of purpose and contribution towards the successful achievement of the Institute's objectives.

In addressing this issue, KIST will also be ensuring effective quality management by reinforcing the existing strategic planning and quality assurance directorate with highly qualified personnel who are capable of handling all the required activities to ensure effective strategic planning and quality assurance. The staff at the unit need to be sent for training regularly in strategic planning and quality assurance.

The planning unit needs to incorporate measures to ensure fiscally responsible budgeting processes based on strategic academic goals and emerging priorities; provide management

systems, procedures and practices that support the Institute's academic and administrative activities thereby promoting quality assurance.

Management at KIST needs to acquire a Management Information Systems (MIS) program that will enable the Institute to establish relevant and measurable objectives; monitor results and performance; and send alerts, in some cases daily, to heads of department at each level of the Institute, on all deviations between results and pre-established objectives and budgets.

#### **6.3.4 Staff Motivation**

In order for KIST to grow and excel as a higher institution of learning, it needs to better manage its human resources. Therefore, it is essential the Institute develops innovative and effective strategies to recruit, retain and develop high quality staff, both internationally and nationally who can foster leadership, creativity, critical thinking and communication. Staff contribution is essential in creating an environment that supports excellence and knowledge creation. In order to increase employee productivity and reduce high turnover the following is recommended for KIST.

##### ***6.3.4.1 Strengthen human resources***

There is need to seek additional funds for staff training from development partners abroad. The human resource base at the KIST could also be strengthened through inter- institution cooperation and memoranda of understanding with other higher institutions outside of Rwanda to promote the exchange of staff in various departments. Staff development and training needs should also be integrated into the planning and implementation of new technologies and initiatives through a training unit that also needs to be established. This will strengthen staff capacity at the Institute, in line with its vision of having more qualified and skilled local staff to run the various programs and initiatives in order to reduce the dependence on expatriate staff.

##### ***6.3.4.2 Provide competitive salaries and benefits***

There should be a regular review of compensation for all staffing positions and the adjustment of salaries to meet market demands as well as recognition of individual and team performance. This should curb the high staff turnover levels at that Institute and if more local staff are retained, the dependence on expatriate staff will be reduced, consequently reducing the high

payroll costs. It is important to note that expatriates at KIST only account for 15% of staff numbers yet account for 85% of payroll costs. KIST needs to develop an effective performance-evaluation system to regularly review staff performance in order to ensure consistency with the Institute's strategies, priorities, goals and objectives.

#### ***6.3.4.3 The use of intrinsic factors of motivation***

Although money is an important motivator to employees, many arguments have been advanced in support of the use of intrinsic factors or non-financial rewards to ensure employees' loyalty and commitment to the organisations for which they work. This will in turn increase organisational performance (Deresky, 2002:446). The management of KIST needs to understand that its employees do not only work for money; they need their jobs to provide them with an opportunity to learn above all, and that those employees who are leaving the institute are not leaving for the monetary reasons alone, but are leaving to work in an environment that will give them the due recognition and rewards for their efforts.

#### **6.3.5 Benchmarking**

Through benchmarking, KIST will strengthen its existing relations with higher institutions in the region and internationally, to better understand other and emerging practices in management and teaching. By emulating best practices and strategies, the Institute will continuously improve and adapt to the changing and dynamic environment in which it operates.

KIST needs to apply benchmarking in its operations in order to identify operational and strategic gaps. This will enable it to search for best practices and strategies. By implementing best policies and strategies the Institute will be able to eliminate such gaps and as such gain strategic competitive advantage that will have a positive effect on its performance as a higher institution of learning.

Godfrey and Godfrey (1999:47) state that the main advantage of benchmarking is that it leads to "increased awareness of organisational processes and how well they work. A major insight into what processes are critical to effective performance is derived by delineating key activities, such as communication, administration and database management, thus deriving measures to manage performance in those areas".

KIST currently benchmarks itself to other universities in East Africa. However, this is not sufficient. More activities, processes and practices should be benchmarked to the best universities in Africa for a start, then with time and sufficient progress, to the best universities in the rest of the world.

### **6.3.6 Leadership**

The kind of leadership style required by the Institute to achieve its growth strategies should be a more democratic, participative leadership that is all inclusive, supportive and empowers staff in their day to day job responsibilities and decision making. KIST needs to further develop better communication systems and ensure effective consultative processes in decision making involving all staff in order to make them feel appreciated at their workplace. This will also contribute to increasing staff morale and motivation.

## **6.4 Summary**

In the ever changing environment in which higher learning institutions operate, there is a constant need for environmental monitoring and strategic planning to ensure that these institutions cope with changes such as reducing government and donor funding, increasing student numbers, new models of teaching and learning, increasing competition as a result of the forces of globalisation coupled with steadily increasing operating costs.

Strategic planning gives higher institutions a structure for the achievement of sustainable competitive advantage and also enables them to allocate resources according to priorities due to the scarcity of these resources. In undertaking strategic planning, higher learning Institutions are thus able to monitor progress and easily identify required changes to processes and functions that will lead to enhanced performance by following necessary actions to improve organisational performance.

In undertaking strategy evaluation, KIST would be able to measure progress made so far in executing its growth strategy from its strategic plan and identify any hindrances, so that it can devise a better strategic plan that will steer it in the right path of growth and sustainability.

As elaborated in section 6.2 the growth strategy of KIST was found not to be suitable and feasible given the shortcomings identified, however recommendations such as strengthening the income generating activities; strengthening the strategic planning unit; increasing staff motivation by the use of intrinsic factors and using benchmarking to emulate best practices, If implemented, the Institute has the capacity to grow and attain long term sustainability despite the ever changing external environment in which it operates.

## **6.5 Areas for further research**

From the analysis, findings, conclusion and recommendations, the study further recommends the following areas for further research:

1. KIST should develop a plan of action for the implementation of the strategies identified. This plan of action should be specific; should have time limits; should have a clear allocation of responsibilities to key personnel and the specifications of budgetary implications.
2. The application of benchmarking in higher institutions of learning, specifically KIST and how it can continuously and strategically learn from identified best practices and strategies of other higher institutions of learning.
3. The importance of strategic leadership in KIST, this cannot be over-emphasized , since it has been established that strategic leadership is key to organisational success as it enables organisations to take strategic actions that enable them respond effectively to their dynamic operating environment.

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Internet 2: <http://www.nur.ac.rw>

Internet 3: <http://www.gov.rw>

Internet 4: <http://www.ulk.ac.rw>

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## **SEARCH ENGINES**

[www.google.com](http://www.google.com)

[www.yahoo.com](http://www.yahoo.com)

[www.altavista.com](http://www.altavista.com)

[www.webcrawler.com](http://www.webcrawler.com)

[www.askjeeves.com](http://www.askjeeves.com)

## APPENDICES

### Appendix 1: KIST Part-time Students 2003-2008

| Year                                       | 2002/3     | 2003/4     | 2004/5     | 2005/6      | 2006/7      | 2007/8      |
|--|------------|------------|------------|-------------|-------------|-------------|
| <b>Degree Programs</b>                     |            |            |            |             |             |             |
| <b>Faculty of Management</b>               |            |            |            |             |             |             |
| B.Com                                      | 182        | 205        | 369        | 651         | 856         | 1113        |
| <b>Total Degree Students</b>               | <b>182</b> | <b>205</b> | <b>369</b> | <b>651</b>  | <b>856</b>  | <b>1113</b> |
| <b>Diploma Programs</b>                    |            |            |            |             |             |             |
| <b>Faculty of Technology</b>               |            |            |            |             |             |             |
| Electronics Technology                     | 53         | 50         | 60         | 69          | 34          | 34          |
| Computer Technology                        | 77         | 73         | 81         | 89          | 34          | 45          |
| Information Technology                     | 63         | 60         | 69         | 77          | 34          | 45          |
| <b>Faculty of Management</b>               |            |            |            |             |             |             |
| Ordinary Diploma                           | -          | -          | 40         | 78          | 114         | 148         |
| Advanced Diploma                           | 148        | 141        | 40         | 78          | 114         | 148         |
| <b>Total Diploma Students</b>              | <b>341</b> | <b>324</b> | <b>210</b> | <b>391</b>  | <b>330</b>  | <b>420</b>  |
| <b>Total Degree &amp; Diploma Students</b> | <b>523</b> | <b>529</b> | <b>579</b> | <b>1042</b> | <b>1186</b> | <b>1533</b> |

Source: KIST Strategic Plan 2003-2008

## Appendix 2: Number of KIST full-time students

| SUMMARY                                | 2003        | 2004        | 2005        | 2006        | 2007        | 2008        |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Civil Eng. & Env. Technology           | 276         | 307         | 292         | 271         | 290         | 249         |
| Electrical Engineering                 | 40          | 64          | 87          | 108         | 114         | 133         |
| Electronics and<br>Communications Eng. | 118         | 164         | 247         | 279         | 298         | 264         |
| Mechanical Engineering                 | 295         | 378         | 436         | 429         | 443         | 396         |
| Computer Engineering and<br>Info. Tech | 251         | 265         | 270         | 306         | 250         | 250         |
| Food Science and Technology            | 215         | 270         | 265         | 218         | 228         | 228         |
| Faculty of Management                  | 952         | 1078        | 1092        | 1082        | 1053        | 1053        |
| School of Languages                    | 0           | 60          | 117         | 171         | 171         | 171         |
| Faculty of Science                     | 0           | 150         | 443         | 673         | 892         | 977         |
| <b>TOTAL</b>                           | <b>2147</b> | <b>2756</b> | <b>3248</b> | <b>3538</b> | <b>3738</b> | <b>3721</b> |

Source: KIST Strategic Plan 2003-2008

As shown in annex 2, there was a steady increase in student numbers. In the academic year 2003-2004, there was a 6% increase; and in the year 2004-2005, an increase of 5% was marked. For the year 2005-2006, the increase in admitted students was (3%). These figures show that, while the student numbers are increasing, the infrastructural capacity of KIST is not adequate to handle this large increase.