

Paradigm Drift in Business Theory and Practices

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PREFACE

It gives us immense pleasure to release the Edited Book with the theme “Paradigm Drift in Business Theory and Practices” published by the department of Management Studies, Sri Vidya College of Engineering and Technology, Virudhunagar.

A platform is vital to encourage and promote research culture and to facilitate knowledge sharing in the field of management. This edited book shall be a publication to address changes in the functional areas of management. The book was initiated to reach all academicians, research scholars and students undergoing management under graduation. The editorial board supported us to review the articles and selected papers were published in this book. We believe that this book shall guide academicians and management practitioners to get aware of latest trends and practices in all functional areas of management. This book covers papers from Marketing Management, Human Resource Management, Financial Management, Information Management, Production Management, Logistic and Supply Chain Management and more...

The research and publications are the vital contributions of the academicians to the society at large. In this connection we express our hearty thanks to our Honourable Chairman Er.R.Thiruvengada Ramanuja Doss for guiding and motivating us to travel in the path of right direction and to achieve excellence. We also thank our principal Dr.S.Sankaralingam for mentoring and supporting to publish this book on this august occasion. The Editorial Board has guided us to publish this book in a successful manner. The moral support extended by the editorial team was marvelous.

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ABOUT THE INSTITUTION

Sri Vidya College of Engineering and Technology is located on the Sivakasi Main Road, 3km Nearby Virudhunagar. The college was established in the year 2008 by the Sri Vidya Education and Charitable Trust headed by Philanthropist. Er. R. ThiruvengadaRamanuja Doss, a retired Chief Engineer of Tamilnadu Electricity Board, Tamilnadu. Right from its inception, the institution has committed to provide quality education with international infrastructure.

The institution is designed with state of art of technology in accordance with modern industrial standards as per the leading institution focusing to develop rural students with technical and soft skills that are very much needed to face the current industrial needs. The College offers five under graduate programs namely, BE - Mechanical Engineering, Civil Engineering, Electrical and Electronic Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Information Technology, and the following PG courses – MBA, M.E - CSE, VLSI Design, Structural Engineering.

The Department of Management Studies (DOMS) realizes the importance of the combination of academics and practical learning to prepare oneself to face the competitive world, The DOMS in Sri Vidya College of Engineering & Technology, has been recognized as one of the Top Management Studies Institutions providing an environment that encourages students to cultivate and hone skills that are seldom learnt through textbooks. The learning experience at Sri Vidya College of Engineering & Technology, DOMS help students to develop their Creativity, Entrepreneurial skills, Decision Making Ability and essential skills needed to be competitive in today's rapidly changing corporate world since 2009.

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I dedicate this first International Edition book to all those who have actively or silently left an indelible mark on this endeavour.

It is a great pleasure to thank Thiru **Er.R.Thiruvengada Ramanuja Doss**, Chairman, Sri Vidya College of Engineering & Technology and **Er.T.Venkatesh**, Vice Chairman, Sri Vidya College of Engineering & Technology for their encouragement and inspiring guidance.

With profound sense of gratitude and gratefulness to **Dr.S.Sankaralingam**, Principal of Sri Vidya College of Engineering & Technology for his Continuous Encouragement and support which brought out effort in the form of this work.

I am very thankful to all the staff members in the department of management studies for their contribution in publishing this edition book in a successful manner.

I also express my hearty thanks to all research scholars and Academicians those who have contributed papers for this International Edition Book.

Finally we offer our sincere prayers to the almighty for his blessings by instilling confidence and courage to make this work a grand success.

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Assessing Skills Supply and Youth Employability in Kenya: secondary school education graduates training (miss-) match with Mumias Sugar Company labour market needs

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Abstract

In recent years concerns have arisen about growing disparities between education and labour market needs with new focus on the roles of both quantity and quality of human capital in the development process. This study assesses skills supply and youth employment at Mumias Sugar Company in Kenya, identifying skills gap as one of the major challenges that face labour market growth in the country. This study is guided by Labour Market Analysis Approach (LMA). LMA refers to measures of education and training requirements that are used to translate occupational classifications into skills requirements. LMA identifies and continually adjusts to current short-term needs. The study adopted demand and supply theories as espoused by Livingstone who believes that supply-demand theories provide better explanations of education-employment relations and uses them to argue that underutilization of knowledge and underemployment will be most common among those with the least power, including younger people. To understand labour market needs at Mumias Sugar Company, data was collected on openings, placements and un/employment rates so as to provide information which was analyzed for insights into shortages and/or surpluses. Shortages were reflected in high levels of un/employment and salary scales. The data also contained concrete information about the skills and qualifications that the sugar company is looking for in certain positions which contribute to occupational profiles. Particularly, profiles of employees who are secondary school graduates were studied so as to understand the skills they possess and were triangulated against skills required by the company. Interviews were held with secondary schools graduates working at Mumias Sugar Company in various positions to know a great deal about the scarcity or abundance of both soft and hard skills and hiring practices. Findings indicate that specific skills prioritised by MSC for employment include fabrication of bolts, and other machines that could be used at the plant. This is especially in the factory where breakdowns are common and some of the parts that breakdown may not be accessible easily yet they need urgent repair and maintenance. Direct and intense interaction between the workers and machines is emphasised in order to fully understand the behaviour of the machines and fellow workers. The study concludes that whereas the hard skills such as literacy and numeracy

which are emphasised in secondary school curriculum are desirable in Mumias Sugar Company, they cannot guarantee one any formal employment. This is because such skills were found important only for further tailor made training.

Key words: *employer, supply, Mumias Sugar Company (MSC), skills, employment, training, market needs.*

Background

Today Kenya faces youth employment challenges which, if not addressed, threaten economic development and social stability. Youth employment has become a major policy issue in the country with the focus on labour market needs and youth employment skills especially for secondary school graduates and higher unemployment rates in both urban and rural areas. In recent years concerns have arisen about growing disparities between education and labour market needs with new focus on the roles of both quantity and quality of human capital in the development process (see ILO,1995&1999; Vision 2030). It is within this context that this study assesses skills supply and youth employment at Mumias Sugar Company in Kenya, identifying skills gap as one of the major challenges that face labour market growth in the country. The study looks at policy options necessary to improve employment opportunities for secondary school graduates.

A fast changing labour market country context that takes account of the impact of technological revolution and increasing young population requires a reshaping and mobilisation of labour market programmes and services to meet current and future needs of enterprises and individuals. Currently, main challenges facing Kenya include the need to: raise skills levels of the labour force (both employed and unemployed) to improve employability and secure and maintain employment in line with objectives of Vision 2030; avoid potential skills mismatch by ensuring that secondary school students receive training in skills relevant to the needs of enterprises of existing job opportunities or those that will arise from replacement needs, start ups and expansions; and facilitate improved access to training, education and employment service provision for young Kenyans in schools

This study acknowledges the importance of skills to the economic and employment reform agenda in Kenya in terms of matching skills profiles to labour market needs, raising investment in human capital at secondary school level and adapting secondary education and training system to meet emerging challenges. It calls for a renewed endeavour to build employment pathways to young people and reduce youth

unemployment and also stresses the importance of improving the matching of labour market needs and adapting secondary education and training systems in response to new competence requirements. By proposing an initiative which aims at providing a more coordinated approach, it is hoped that the findings will make key contributions to the identification of labour market trends and skills shortages at both sector and national levels, and within both short- and long-term perspectives and also contribute to the increase of employment and the reduction of both frictional and structural unemployment for young people.

Research Problem

Kenya faces labour market demand and supply problems. The most important characteristic of employment in the country is that a high percentage of the job-seeking population are secondary school graduates who have little chance of gaining formal sector employment. Yet, skills development is a critical element in achieving the economic goals which the country has set for herself (see Kivuva, 2002; Republic of Kenya, 1988, 2005a,b,c; 2007). Although the Government is aware of this fact, it has not fully succeeded in taking advantage of emerging opportunities by matching the demand for labour with new skills and by creating an adaptable young workforce that can adjust to changing labour market conditions and needs. A major public policy concern that has emerged in recent years is whether there is a good match between the skills and knowledge that are supplied to the labour market and the skills and knowledge employers require (Abagi & Owino, 2000; Ferej, 2000). From the perspective of school leavers entering the labour market, the issue is the extent to which they are able to find employment that uses their skills. From the employer perspective, the concern is whether they are able to find suitably skilled staff from among secondary school graduates. This research uses the Mumias Sugar Company to analyse the relationship between the two.

The study focuses on demand-supply issue at Mumias Sugar Company (MSC) as a youth labour market, and if and how well the knowledge and skills that secondary school graduates gain are utilized on the job. The findings will raise concerns about labour market needs and about whether the skills and knowledge gained by young secondary school leavers are fully used in the jobs they find. There appears to be a mismatch between what secondary school graduates are being trained for and the requirements in the job market. While recognizing the variety of challenges facing Kenya, the common problem in the country is that investments in education and training are not yet resulting in satisfactory levels of productive employment.

Purpose for the Study

The goal of this study was to assess skills supply and youth employability in Kenya in general, but with a narrower focus on secondary school education and training in meeting labour market needs. The aim of the study was to critically examine secondary education graduates training (mis-) match with Mumias Sugar Company labour market needs. More specifically, the research undertook to:

- i) Identify employment skills needed by Mumias Sugar Company;
- ii) Identify the core skills possessed by secondary school graduates;

Rationale for the Research

Kenya has a high educated secondary school graduate population (Amutabi, 2003; Makau, 2000). Debate among policy and decision makers over how to tackle youth employment challenges in the country has been characterised by significant frustration. Secondary school education and training do not seem to result in the creation of more jobs nor materialise into anticipated employment benefits (Ikiara & Ndung'u, 1997). It is not certain that young people are able to fully contribute their skills and abilities to growth and development through gainful and meaningful employment. Much of existing research in Kenya deals largely with the training side of the labour market (see Haji, 2007; Manda, Mwabu & Kimenyi, 2002). A majority of studies have examined issues related to providing young people with skills and knowledge for their future careers (GoK, 2002; Manda, 2004). The increasing demographics, effects of climate change on the economy, impact of information technology and communication, and global transformations in general, have made labour markets and the adaptation to socio-economic changes even more imperative.

However, there is opportunity for the country's future skills supply and labour market needs to be transformed. Thus, this study focused on the relationship between supply and demand needs in the youth labour market in Kenya with a focus on Mumias Sugar Company. The company was chosen because it is representative of the formal employment sector and owing to the role it plays in economic development of the country. Moreover, the company has now resorted to retraining secondary school graduates in its employment in an expensive apprenticeship programme that is affecting its profit base. Thus, the research is interested in assessing the match between skills and labour market needs as one of the main factors for youth unemployment in the country and how to ensure that secondary school education and training improve their capacity to generate more and better skills attuned to present and future labour market needs. The study will make recommendations for improving the connections between the demand and supply sides of youth labour market in Kenya, including greater support for

vocational options in secondary school; developing better bridges between secondary school educational paths; and strengthening partnerships between secondary schools and employers in the design and delivery of programs and career information.

Methodological Approach

This study was guided by Labour Market Analysis Approach (LMA). LMA refers to measures of education and training requirements that are used to translate occupational classifications into skills requirements. LMA identifies and continually adjusts to current short-term needs (Canadian Council on Learning, 2007). Labour market analysis can take four different forms: Public Employment Services/Job Advertisements; Key Informant Interviews; Employer Surveys/Household Surveys; and Enrolment Data and Tracer Studies (Psacharopoulos, 1991). All the four forms were used as a supplement to increase the accuracy of projection techniques, as well as their applicability to national and sectoral projections.

Data on secondary school training and skills development and labour market needs at Mumias Sugar Company used in this report was sought from various sources. The Workplace and Employee Survey (WES) was designed to explore a broad range of issues relating to Mumias Sugar Company as an employer and her employees. The survey was aimed at shedding light on the relationships among competitiveness, innovation, technology use, and human resource management on the company side and skills, technology use, training, job stability, and earnings on the employee side. The survey frame of the workplace component of the WES was created from the information available from MSC.

To understand labour market needs at Mumias Sugar Company, data was collected on openings, placements and un/employment rates so as to provide information which was analyzed for insights into shortages and/or surpluses. Shortages were reflected in high levels of un/employment and salary scales. The data also contained concrete information about the skills and qualifications that the sugar company is looking for in certain positions which contribute to occupational profiles. Particularly, profiles of employees who are secondary school graduates were studied so as to understand the skills they possess and were triangulated against skills required by the company.

Interviews were held with secondary schools graduates working at Mumias Sugar Company in various positions to know a great deal about the scarcity or abundance of both soft and hard skills and hiring practices. Because the sugar company makes hiring decisions, it provided information on skills needs, and the types of jobs that are expanding and contracting. In-depth information was gathered from Mumias Sugar Company and her employees by way of surveys and interviews. This information provided details that are necessary to supplement data already gathered.

Theoretical framework

The relationship between learning outcomes and labour market needs have been analyzed by among other scholars Livingstone (2002) who identifies three groups of theories: supply-side, demand-side, or a combination of the two. Supply-side theories, such as “human capital” theories, suggest that more education gives workers the “intellectual capital” needed for a more productive economy. That is, as the level of education rises the demand for those skills rises and contributes to economic development.

Supply-demand theories emphasize relationships among education, employers and state agencies. Employers and some employee groups may raise entry criteria when there is an oversupply of employees, and thus use formal education to screen admission to jobs. This leads to the idea of a “credential society” in which job entry can be controlled by groups with the power to increase qualifications. These theories would also argue that both an undersupply of qualified applicants and greater productivity could lead to changes in job performance requirements.

Demand-side theories hold that employees and employers react to trends, rather than influence them, and the theories might be either optimistic or pessimistic. Optimistically, demand-side theories argue that the educational system needs to produce workers with the complex analytical skills needed by a “knowledge-based economy.” Pessimistically, the theories argue that underemployment and unemployment will result as modern production systems lead to deskilling of job requirements or automation.

Livingstone believes supply-demand theories provide better explanations of education-employment relations and uses them to argue that *underutilization* of knowledge and *underemployment* will be most common among those with the least power, including younger people. These theories also hold that demand – the number and types of jobs available – is influenced by “competition, technological innovation, and conflicts between employers and employees over working conditions, benefits and knowledge requirements” (Livingstone, 2002) and that the supply of labour is altered by changes in population, household needs and legislation. At the same time, the demand for education increases as people seek the knowledge, skills and credentials needed in a changing society. Thus, in Livingstone’s analysis, there are always “mismatches” between employers’ requirements and the supply and qualifications of job seekers. The use of education as a screen or filter applies most obviously and appropriately to specialized occupations, whether they are trades or professions. However, employers use education as a filter for non-specialized occupations as well. In any case, the aims of education are broader than a specific occupation and broader than imparting basic knowledge and skills to youth.

Referring specifically to the mobility involved in finding a match between worker and employer, Sofer (2000: 11) observed that there is no unanimously accepted single theory of that mobility. She goes on to note that alternative theories to explain supply and demand have developed largely because of the lack of relevant information on training and the characteristics that lead to a good match.

This study observes the linkage between secondary school education skills supply and the needs of Mumias Sugar Company and seeks to identify key policy issues that need to be addressed for education to contribute to positive labour market outcomes. It argues that educational outcome at secondary school level such as knowledge, skills and certificates, determine employability at the company. A general versus technical or vocational educational track has strong repercussions on labour market needs. Certificates attained and grades completed after secondary education often remain among the key determinants of labour market outcomes because school graduates who have an adequate skills and knowledge have more chances of ending up employed at Mumias Sugar Company. The mix between skills supply and employability is conceptualised diagrammatically as follows:

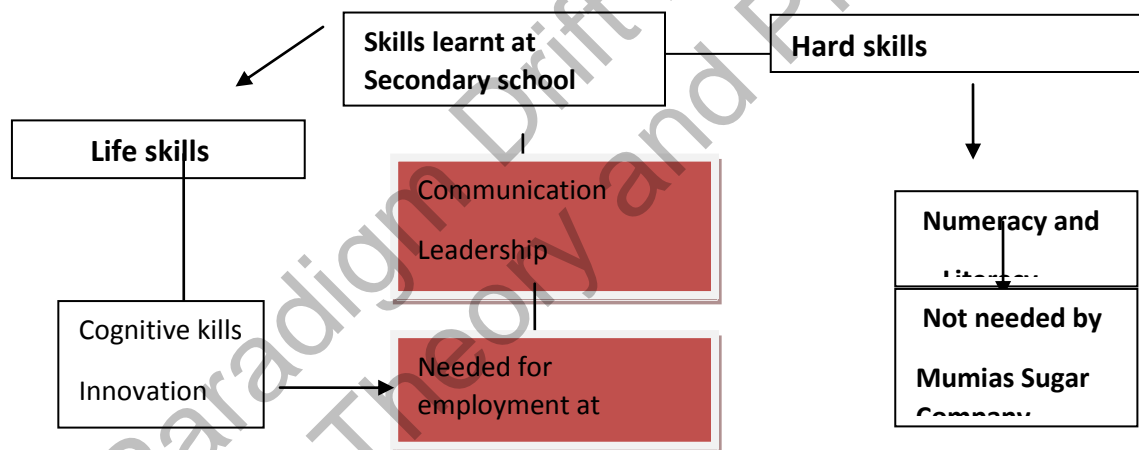


Figure 1:

Figure 1: Organogram of skills supply and employability at MSC

Figure 1 outlines three various perspectives that are used to explain relationships between skills learnt at secondary school and labour market needs at Mumias Sugar Company.

Significance of the Study

The current unemployment situation of young people in Kenya is worrisome. Yet the young people are the future of the country. The country faces major challenges in

generating sufficient employment to meet the aspirations of its rapidly growing population. Failure to tackle these now will entail substantial social and economic costs in the future. However, there are several practical ways to address the challenges.

Generally, this research is about making it easier for secondary school graduates to get the right skills and competences and to be able to use them in the appropriate jobs. By bringing the worlds of education, training and work closer together, this study focuses on effective skill development and effective skill utilisation. Enhancing relationship between skills provision and employment will ensure the responsiveness of education and training systems to the needs of the labour market.

This study is premised in the fact that employers have the potential to play an important role in the school-to-work transition, by helping students make more informed choices about their learning and career pathways. Employers can contribute in many ways about career opportunities, and by mentoring young people. Education policies and employer practices could help more young people in Kenya make an informed choice about learning pathways leading to a career and improve the level of utilization of skills in the labour market. As Kenya's demographic situation changes and more young people enter the labour market, the rate of growth of the labour force will increase. Sound human capital development policies for Kenya's youth will become increasingly important so that the country does not waste the youth's potential.

Specifically, the study argues that secondary school education policies need to be seen within a broader macroeconomic context if it is to contribute to national economic growth. The *World Development Report 2007* suggests that although curricula and teaching methods have remained largely unchanged in developing countries over the years, employers are increasingly demanding strong thinking, communication, and entrepreneurial skills—demands which are largely un-met by educational systems in developing economies including Kenya. Both general and core competencies and skills have become increasingly valuable in labour markets that are characterized by change and in which there is a constant need to adapt to new developments in technology and working methods.

Research Findings

Employment skills needed by Mumias Sugar Company

Specific skills prioritised by MSC for employment include fabrication of bolts, and other machines that could be used at the plant. This is especially in the factory where breakdowns are common and some of the parts that breakdown may not be accessible

easily yet they need urgent repair and maintenance. Direct and intense interaction between the workers and machines is emphasised in order to fully understand the behaviour of the machines and fellow workers. The interaction also helps the worker to detect the common faults and understand trouble shooting machines, appliances, and the logical but urgent solutions. Machine operations in many instances require concentration and quick decisions that can stem huge losses. This is only possible when the worker has experience with the running of the machines, servicing and detection of trouble shooting, malfunctions detection in the sugar plant and power generation points. As one of the respondents succinctly observed:

However well you are trained, without interaction with the machines and power generation, you can take an extremely long time trying to detect malfunctions within the factory. This can occasion the factory huge losses. On the contrary, an experienced person may simply take minutes to detect the fault and will save the company from incurring huge losses. In essence interaction with machines helps one to identify strategic points. [Lf 1]

This view was supported by another respondent who is one of the senior managers of the company and who entered the company through apprenticeship. He viewed secondary school curriculum as being rich in theory. He observed that the school curriculum builds the basics which are important for further training. However, he noted that such basics only, cannot earn the graduates a job in their company. He comments:

In apprenticeship, you reach a level where the sound only can wake you up from your sleep because you can detect that something is wrong. Meanwhile, for lay persons, they will think you are crazy seeing you agonize over a perfectly running and productive plant. (sic) [Lf2]

Asked about critical skills required for employment, the respondents noted that premium is placed on practical skills in mechanical engineering, electrical skills, fabrications, and production engineering. However, knowledge of such skills is not a guarantee for employment; rather, a surety to employment is intense interaction with the plant and other workers to the level of becoming part of the system. Such interaction is the source of smooth succession in retirement, resignation, interdiction, dismissals, leave of absence, deaths, promotions, and other forms of attrition.

Conclusions and recommendations

From the findings of the interviews, it does emerge that whereas the hard skills such as literacy and numeracy which are emphasised in secondary school curriculum are desirable in Mumias Sugar Company, they cannot guarantee one any formal employment. This is because such skills were found important for further tailor made training. On the contrary, life skills such as cognitive thinking, innovation and decision making were found critical to the company's existence and therefore important for employment. However, from the respondents' perspective, the life skills were gained only through intense interaction with the machines and other workers within the company. In essence then, it means that schools only play a complimentary role to the employers by providing hard skills in numeracy and literacy which the company relied on to train their staff for employment at Mumias Sugar Company.

Interviews [coded in the text]

Lf1. Interview with one of the employees with MSC, June 30th 2012 [12.30-1.00 pm]

Lf2. Interview with a senior manager at MSC, July 1st 2012 [9.30-10am]

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**Report On the Survey, Documentation and Assessment of Mekuady-Debre-Zeit
Archaeological Complex of the Central Tigray Region of Ethiopia:
Snippets from Its Environs**

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This site is located about 7 kms from the Yeha highway junction at an elevation of 2365 meters above the sea level, and located south east of Yeha towards the direction of Enticho , which was explored by the author several times beginning in late May 2013 until the present in November 2013, on his own expenses and it seems the site has not been surveyed or any mention of it in the archaeological literature of Ethiopia nor registered which seriously demands conservation and protection measures as an endangered Pre-Axumite site(300 BC to 600 AD).Mekuady is derived from the Tigrinya word *Mukrawv* meaning *a pathway to walk* , which is a tough terrain taking one hour to reach this city but from here climbing the Debre Zeit rocky cliffs takes about 3 hours. Today Mekuady has an agricultural population of 3000 residents. The Adwa- Yeha – Debre Zeit (DZ) – Mekuady corridor demonstrates the attraction of South Arabian cultural features on the local population, although domestic labor was utilized and the indigenous technology and other semi skilled industrial cum agricultural practices is clearly visible. The carrying capacity of local agriculture was augmented by the maximization of irrigation within the Yeha-Mekuady basin which was sponsored by the elite responsibility for introducing south Arabian cultural elements into this area .The large mobile and resident population would have stimulated commerce wherein the commercial importance of Yeha and the trunk trade route of Mekuady town transformed this commercial militia center as a prominent barter market for exportable commodities .The spectacular aspect of religious ritual as exemplified by the monumental scale of the Yeha temple would have served as a powerful magnet for the neighboring populations.(Joseph Michel's, 1974, *Changing settlement patterns in the Aksum-Yeha region of Ethiopia*).Ruins at Mekuady in the vast three kilometer span

reveals south Arabian cultural affinity on the masonry technique , architectural style and inscriptions and the ruins of its standing structures depicts a comparable and unique stone working technique. The author has been working on this site for more than six months to unravel the exact status of this buffer zone of the Axumite Kingdom depicting the Sabean and Greek influence and serving as a commercial militia for about 4 to 5 centuries. The grand Commercial Caravans of the Sabean and Axumite kingdom passed through this route as evident in the picture illustrations attached below.

The Saune plains of Yeha leading to the back side of the rough and rocky terrain of Debre Zeit and Mekuady city, through the Kokob Allabi and Mitka rocky cliffs, which is about 6 kms from Yeha.

TOPOGRAPHY AND THE GEOARCHAEOLOGICAL CONTEXT OF MEKUADY- DEBRE ZEIT:

The whole topography and the geographical enclosures of this vital historical town contains large amygdales of chalcedony and quartz crystals .About 5 kms north of the town , on the edge of the Mekuady plateau are found red and white laterite soil with thin sandstones beneath. Granite and Precambrian metamorphic rocks (slates and greenstones) can be seen below the sandstone. Precambrian rocks below laterite and sandstone can also be seen in valleys from the Debre Zeit to Yeha, Adwa and south of Axum. Besides the great monument of Grat Bahl Gebri at Yeha is also made up of phonolyte rocks which is also seen in the periphery of Mekuady and Debre-Zeit zone of Yeha Corridor. The soil that is found here has a reddish color which is uniformly found in the Yeha valley system, its surrounding hills the interconnecting basins wherein Mekuady and Debre Zeit share the same characteristics and this soil is commonly referred to as *Sebaria*, *maykaichu* or *mariahu* which needs annual fallowing.(Joseph Michel's, 1974).The whole complex of Mekuady needs a scientific examination of the sites with a ground penetrating radar and laser equipments to trace the rich material culture buried underneath and more obviously a scientific radiocarbon dating of this ancient Pre Axumite city is required. Just one Km to the south west of Mekuady we have two more new sites called as *Nighist Belho* (the Intelligent queen) and *Kuma zala* (two Kms South east of Mekuady) which are potential in diagnostic potteries and ruined settlement structures.

Walking from the plains of Yeha called as *Saune (decomposed alluvium that resulted from the gold that melted from the decorated temple of Almoquah)* which is a strong evidence to show that agriculture was practiced extensively over Saune an evidence of earliest farming practices in Sub-Saharan Africa .This Saune leads to a vast and wide bedrock called as *Mitka* (means attacking) rocky cliff and Mount *Kokob Allabi* or the

falling star in turn leading to the backside of the Debre Zeit hills about 2 kms on a sloppy rocky terrain

With the first survey at Mekuady-Debre-Zeit, stone walls, burial sites and local waste items like animal bones and pottery shards were found dating back to different eras. Among them were also ceramic sherds with characteristics from the Ethio-Sabaeen Period dating back to the first millennium BCE.”

The chain of hills around Adwa, Yeha and Mekuady-Debre Zeit (about 2640 meters) are built of trachyte .In these valleys Precambrian slates, greywacke and greenstones can be seen, overlying the Precambrian metamorphic rocks (mostly slates and greenstones).Near the Mereb River and the Mayilah river stream running down the Dergouh area of Mekuady, plenty of granite occurs. Near Enticho and Mekuady mountainous bye pass, Paleozoic sandstones (the Enticho –Debre Zeit Sandstone) and a conglomerate with large granite boulders, overlies the Precambrian rocks. Tertiary basalt lavas makes up the high mountains south of Enticho and north and south east of Debre Zeit and Mekuady, a gossans mainly composed of limonite (Mekuady) can be seen in the Enguya and Debre Zeit valley.

Some of the important Late pre-Aksumite settlement sites dating back to 150 BC and 150 AD found in the **Yeha Enclave** and in its valleys, surrounding hills and basins , which has Elite residential quarters and religious structures are Musa Metahen, Ser Ser Adi Keshi, Hanza Mohollta,Sefra De Geznmati, Aoudi Welka,Mirai Aba Afsea, Min Gerger Abie Adi Maal a small hamlet to the west of Sienum Hanza are noteworthy to be investigated in detail with test pit excavations to be undertaken at the earliest to understand the eroded cultural materials. And down south east and west of Yeha are the great Grat Beal Gebri (800 BC), an early pre- Axumite settlement center dating back between 400 BC and 150 BC. With Hanza Mohollta (or part of Shilanat the oldest town of Yeha Principality) bearing rich artifacts and monumental architecture. Even more important to the south of Yeha valley are Enda Michael, Musa Welki and Assi with prominent elite residential structures of Early Aksumite period dating back to 150 BC and 450 AD.

Intrusive igneous rocks as sheet like bodies which were once the vents of volcanoes are called as plugs ,as they are often harder than the surrounding rocks ; these intrusions often stick out during erosion ; dykes look like walls ,while silts form lines of cliffs along the sides of the Debre Zeit valleys. Plugs often form steep sided hills as at Adwa, Yeha and Mekuady in the central Tigrai region and on Mount Wechacha, west of Addis Ababa. To the south of Adwa and Yeha descends an escarpment where one can see the Debre Zeit –Mekuady clearly which proceeds past the columnar pointed basalts and then down to red and white laterite which rests on Precambrian granite. Near the Mayilah river

hornfels, mica schist and slates can be seen. Gastropods (snails) can be found In the Mesozoic limestone around the northern part of Mekelle, Enticho, Mekuady, Yeha and Adwa and in the geological recent lake sediments in the rift valley. These Paleozoic sedimentary rocks contain many types of fossils , land plants, amphibians, flying insects .The Precambrian period (from the beginning up to 600 million years ago) simple forms of life were found like amoebae, bacteria's and algae and they also include various types of sea shell which includes gastropods and brachiopods.

MONUMENTAL FEATURES AND THE GEOARCHAEOLOGICAL CHARACTERISTICS OF MEKUADY-DEBRE-ZEIT:

The Mekuady site predominantly a Pre Axumite center of trade and commerce with contacts from overseas lands of Yemen and Arabia, overlooking south ad north east is awesome where ruins of ancient building structures and monumental architecture is visible giving the town a paradox of ancient civilization center preferably dating between 3rd century AD unto 7th century AD. Just sloping down the Mekuady town towards its north west is the lofty and solitary rocky cliff the Debre-Zeit and all along the mouth of its settlement wall are marks of habitation use during the late ancient and early medieval period. The water reservoir looking towards the east of Mekuady, the southern church at its lower edge and the northern church at its top are unique. A decorated drum is found near the eastern part of the church and massive courtyards with a stone basin are the fabulous findings. Residential buildings in the south eastern quarter of River Mayilah needs test pit excavations. The geographical significance is an entrance to room looking north towards the Yeha Mountains lays the famous Mekuady- Debre- Zeit- Yeha – Adwa Corridor

The Mekuady elite settlement and the dispersed tombs with numerous skeletal remains wrapped in donkey's and cattle skin according to the local priest Ato.Tesfamichael and Ato.Motalekah Mulu the owner of a heritage home near the church, which is now, placed inside the church complex under the foot of Debre zeit hills, needs careful examination as the North eastern part of Mekuady city ruins and under the foot of the cliff dating back to 300 AD although the date of building activity here in this area seems to be reasonable although the calculation remains hypothetical which warrants a detailed radio carbon dating. Mekuady- Debre Zeit seems to be a prehistoric site with lithic tools and potteries of the early and late Axumite periods are in abundance. Flint stones, flakes, hammers and choppers have been found besides in the lower part of occupation at the foot of the Debre Zeit hills were seen many grinding stones, crushers, bowl, threshing slabs, feet washing basins, broken thrones and altars, pots, and other agricultural and domestic stone tools and implements.

Monumental architecture of tombs and settlements is visible with fragmented inscriptions (now stored in the church museum) and motifs are a common view at Mekuady. The outer and inner sides of the city wall are laid with irregular stones on the bedrock wall of Mekuady ancient settlements, but no evidence of mortar except the local red and yellow clay being used in all the scattered and ruined occupations. The masonry and architecture of Aksumite Civil and ecclesiastical buildings in the Central Mekuady area resembles that of Yeha town and it is obvious to have such a regional character as Mekuady was the trade outpost of the Axumite Kingdom. Three types of lime stones were used at Mekuady all of them hewn locally in quarries: the hard rather crystalline stone, the soft chalky stone and the medium hard stone. The hard stones were only roughly dressed and because of their weight and hardness they were used as roofing slabs in Debre Zeit lower level of occupation where many rock cut shelters and caves have been found. The soft chalky stones are much lighter and therefore were used for arches where an accurate fit is necessary. The medium hard stones were used for general building purposes and as a rule for jambs, columns, lintels, and thresholds. In many cases intrusive layers of hard flint disturbs the smooth face of the stones.

The general quality of masonry at Mekuady is relatively poor when compared to other Axumite sites. For example the faces of the walls were not properly bonded. Only one face was of good quality stones and the other which was to receive a thick coat of plaster was constructed from irregular shaped stones, mud and masonry waste. The cores of the walls between the two faces were made of small stones, gravel and earth and were cemented with mud. No effort was made to gain symmetry or to build precisely straight walls and no effort was spared in the quality of the design and materials – high apses were made of fairly large **Voussoirs**, heavy arcades were erected and upper storey's were supported by extremely heavy roofing slabs, sometimes architectural elements and screens were lavishly decorated by local artists and sometimes imported marbles were used with the influence of Sabeian Civilization. Careful ground planning and a systematic aerial and radar survey can reveal the symmetry of the proportional walls and columns and what type of quality building materials were used at Mekuady city as the no evidence of an efficient building construction elements are visible.

ARCHITECTURAL SCULPTURE AND STONE OBJECTS AT MEKUADY-DEBRE-ZEIT:

The designs and patterns in the dressing and decoration of stone structures by the local artists are similar to that of Yeha temple and the Grat Beal Gebri of the great Damat kingdom which represents a vernacular art that can be defined as regional. In most cases in Aksum stelae, Mekuady ruins, the Yeha temple and the Grat Beal Gebri the first stage of production entailed marking the patterns on the smoothed surface of the stone with a

stylus, ruler and or compass. These lines can be seen on the surface of many stones. The second stage was the proper carving which was done with a knife or a chisel in the chip carving or *Kerbschmitt* techniques. (Smith, R.H., 1983, "The Rediscovery of a technique of Roman- Byzantine craftsman", **British Archaeology**, 46, PP.175-186.). Crosses, geometric and floral designs were the common motifs. The geometric designs were based on few elementary forms that when combined create interesting and pleasant composition which were circular or disc motif- rosettes which were common during the Byzantine period. Crosses were usually surrounded by circles and wreaths. **Cemeteries and settlements at Mekuady warrants urgent test pit excavations.** Shaft tombs are found in Yeha, Mekuady and Matara (Bard & Fattovich, 1995, Anfray, 1996) along with infant burials, metal pendants, skeleton wearing animal skins and iron shackles (Phillipson, 1998; Doresse, 1957).

The Civil Engineering technological skills of the Pre- Axumites at Mekuady-Debre Zeit:

Building architecture shows regional and local variations where rough stone work was widely used at Mekuady and at times stones are roughly dressed and lime cement was not used during the Axumite period. Heritage homes in the Tigray region and its highlands had two storey's, farmsteads had flat earth smeared roofs but other buildings had conical thatch which is currently replaced by corrugated iron. Some religious constructions and monasteries had the rectangular plan similar to that of the Axumite period. Here the stones used for the elite settlements was used undressed or roughly dressed and bonded with mud mortar and the building walls were standing freely. At times the yellow or red clay was used to make the stone fittings of the walls stronger. Most of the houses at the Mayilah complex and in the center of the ancient Mekuady city wooden frames and corner stones of dressed blocks were used and the architectural features were the bases, capitals, drainage channels, water spouts steps, pavement stones, covering shaft tombs slabs, shafts of columns and some massive stone slabs were used for constructing tombs, stelaes thrones etc. At Mekuady building stones were obtained locally and small pieces were dug out or broken into simple percussion from boulders and outcrops. Large blocks of stones were cut from nearby places of 3 to 6 kms. Stone construction did not reveal the use of mortar which was held with the locally available mud. Lime mortar was known during the Axumite Period and at Mekuady bricks and stone walls were used for small shaft tombs. As timber was in plenty here at Mekuady during the 5th and 6th century AD it was used as a sheet of plank up to a meter in the construction of layered walls and dressed stones. Beams gave a strong ceiling support in some of the elite buildings at Mekuady to which windows and door frames were inserted and then filled with stone rubbles. (Phillipson, 1992). The roofing technique is the thatch

found on many indigenous houses which was carefully layered, pitched and then stuck on to a wooden framework and the rubble ruins of settlement structures at Mekuady goes to reveal that elite buildings were used locally which had been roofed with flat earth covered roofs. The Debre Zeit complex reveals lots of stone quarrying work which has been exploited since the Pre Axumite period and we have strong testimony to mention that there were extensive buildings which is buried at least 4 to 6 meters deep and the farmers quite often unearth lots of dressed and undressed stone structures from Derguah the nuclei center of Mekuady town.

The settlement site on the north easterly and westerly directions of the Debre Zeit cliff show superimposed buildings. In both the directions buildings are of the same size. On both sides buildings stood on deep foundations that were essentially a system of retaining walls that created a raised platform. The buildings had two large wings each containing a series of rooms centered around an inner courtyard. The rooms and floorings had thick stone and local clayey soil bindings and some rooms which were (9 by 5.3 m) had unique features. The rooms and courtyards had flight of steps with each corner of the rooms showing evidence of stone bases standing probably for holding statues or some kind of ritual objects. There were cracks on the floors and on the walls of the houses showing some kind of attack or violence. The design and plan of the settlements, rooms and buildings are similar with most of the elite settlement plans found in the Axumite period, probably built during the 4th and 6th century AD. Some of the rooms are arranged in rows sometimes even two rows around a large leisure place. The importance of these buildings is the thickness of its walls and the size of its rooms and the thickness of the outer wall is as much as 5 meters which was probably part of the retaining walls that supported the entire building. The inner walls were also quite thick measuring 2.5 mts. A unique house shows the large space (width 6.5 m; length 14 mts) is rare here at Mekuady-Debre-Zeit. There were halls too, long and shallow and some courtyards were open. There were service rooms but this whole residential complex lacks architectural features and even the floors were unplastered or might have been eroded due to natural calamities and the climatic conditions or human violent interventions. Very rarely the walls were built of hewn stones but a majority of them were constructed with unhewn stones.

The large quantities of grinding tools and stones tells us about a small scale grain crushing industry was present here and it is assumed that the local inhabitants relied heavily on the exploitation and processing of crops. Teff, wild maize (*Teosinte*), barley and Sorghum was the common crops cultivated here as per the evidence available from the cultural materials. The local quarry was a factory for the inhabitants to make domestic stone tools for agriculture and other purposes. There are about 30% of grinding slabs and

70% of them are pestles , mortars, and hand stone tools which are quite less in other Axumite sites. The saddle shaped grinding stones are common in this part of Mekuady-Debre Zeit –Yeha zone whose prolonged use resulted in a mortar like item. Various lime stones, quartzite and silicified sandstone and sandstone were the raw materials used most of them available locally. Only a few grinding implements were found *in situ* on the floors of the settlement buildings and installation. A few complete stone bowls and dozen fragments are found in the St.Michaels Church and in the local houses.

Clay objects at Mekuady is known for its black (*Welkay*) clayey soil; archaeological and ethno archaeological evidence reveals clay objects such as baked and sundried clay fragmented objects /figurines, some molded ,fiber tempered clay which are sherds of larger vessels (bins, jars or oven like installations and some are burnt with wall plaster.

Palaeobotany:

An aerial view of botanical remains reveal that this region in the Neolithic times was heavily deforested but it is assumed that in the past about 10000 years before it grew different types of Wood (*Juniper*, *Pistachio* etc)in the mountainous slopes of DZ , Mekuady and the Yeha valley and its chain of mountains. On the calcareous soils in the Mekuady plateau perhaps forming an open forest with olive and pistachio (*Pistachio Atlantica*).Fruits were gathered here in large quantities although nuts and almonds were rare here. The cultivated plants are smaller when compared to the domesticated cereals – two rowed barley (*Hordeum distichum*), *emmer wheat (Triticum diccocum)* and teff.The use of stone and wooden pounding and grinding tools for foodstuff processing is also attested to by the high degree of teeth attrition found among the Tigre population of Adwa-Yeha-Mekuady-Enticho-Mekelle corridor although local farmers and inhabitants use *Chick and Field Pea (Pisum Sativum)* over here.

The local traditional crops like **Teff (*Eragrostis teff*)** is a tiny grained cereal used for making *enjara* (in Amharic) ,*enset*,**emmer wheat** ,**finger millet (*Eleusine coracana*)** locally known as *dagussa* is valued for making beer found commonly growing in Ethiopian highlands , **noog (*Guizotia abyssinica*)** grown for its oil yielding seeds is another Tigrai highland cultigens, indigenous cotton (*Gossypium spp*) *both wild and cultivated ones besides the domestic wild coffee (*coffea arabica*) was grown in less quantities* , has been cultivated before the Axumite period. Wheat and barley has been used for bread and beer. The numerous stone structures also indicate the protection shelters for livestock and for plants protection from birds and animals, harvesting, seed storage and deliberate planting or transplanting is a prime feature seen at Mekuady.In some areas fishing in small streams and rivers, hunting small game and gathering wild plant foods are also evident here (Phillipson, *The antiquity of cultivation and herding in Ethiopia*, in T.Shaw, et.al., (eds), **The Archaeology of Africa :Food , metals and towns**,

London, Routledge 1993; Huffnagel, H.P., 1961, **Agriculture in Ethiopia**, Rome, FAO-UNESCO).

FUANAL REMAINS:

The Mekuady –DZ assemblage are in decreasing order, the number of bones of the goats (*capra aegagrus*) and wild cattle (*Bos Primigenius*), Onager (*Equus cf, Hemionous*), wild boar (*Sus Scrofa*), Deer (*Cervus sps*), several rodents, rabbits, jackal, wolf, fox, hares, hyena, tortoise and different species of birds are seen at Mekuady-DZ. The abundance of *ovicaprine* bones in the past (3rd cent BC to 6th cent AD) at Mekuady-DZ display large morphological and metrical variations, suggesting that both domesticated and wild individuals (of goats, sheep and Cattle) were exploited here. However when we examine the faunal bones, the domesticated specimens outnumbered the wild ones. A size dichotomy which was observed between the cattle and goat/sheep bones reflected incipient domestication which is not clear. The main part of the meat diet relied heavily on domesticating animals supported by hunting of wild species. Here steles were found but they were transferred to the local St. Michaels church and some of them were used by local houses. Animal exploitation at Mekuady site seems to have been quite intensive – bones are fragmented, some chewed by foxes and hyenas which bear a lot of cut marks especially near the joints. Butchery seems to have taken place at the kill site. The skeletal elements of most of the common species of herbivorous animals are represented in their natural composition with no clear evidence for anatomical part selection. Mekuady was wet with an annual rainfall of 100 to 200 cms which goes to reveal that wildlife was abundant in this region. The abundance of donkeys since the 3rd millennium BC is a characteristic of north east Africa and more on the Ethiopian highlands along with the bones of cattle and sheep are abundantly found here.

AGRICULTURAL AND IRRIGATION ACTIVITIES:

The astounding pooling of population within the slopes of Debre Zeit and Mekuady and in the nearby town of Enda Galle (about 3 kms north west of Yeha) a mound of pottery debris at an elevation of 1650 meters, demonstrates the evidence of South Arabian cultural features had on the local population. The abundant cultural materials found here denotes the carrying capacity of local agriculture and the old reservoir which has been renovated has maximized irrigation within the fringes of Yeha and its slopes and basins which was an elite responsibility for bringing South Arabian Cultural elements into this area. Significantly the local population had given an impetus to local trade and commerce as these towns like Yeha and Makuady became prominent centers for exportable commodities. Archaeologically this has been exemplified in the underlying structures and cemeteries of Mekuady revealing the religious rituals on a monumental scale all over this city and the same was true for all the surrounding village populations. It is obvious by

500 BC that the Early Pre-Aksumite population kept on migrating into this area thus enabling the Aksumite families to form small towns like Mekuady, Enda Galle (in Tigrinya it means : a place of debris of Potteries) and Yeha. The ruins of the settlement and religious structures carry the south Arabian cultural affinity in its masonry and architectural style and the stone working technique which has been incorporated within the Aksumite culture. The ancient Mayilah river and the reservoir overlooking Yeha mountains in Mekuady justifies the broad drainage systems with a microcatchment irrigation and the type of small scale , stream fed irrigation which was indigenous to this place is valid . However one can say that the aggressive intervention of the Aksumites to bring about an indigenous system of irrigation is corroborated in the form of impoundments and canal features was of par excellence both for the farmlands created and the communities who had settled here with rain fed cultivation, although reclaiming and rejuvenating the secondary soils for cultivation. All the pottery sherds available from Mekuady in its spatial grouping show one or more attributes which is diagnostic of middle Pre-Aksumite and late Aksumite periods. Potteries were both handmade and wheel made during the Pre-Axumite period by the local craftsman.

From the detailed field walking and examination of structures it is evident that there has been a massive landscape erosion in the last 1000 years although traces of the ancient road and irrigation system is partially visible but the cultural material connections have been dilapidated which makes the archaeologist to give a correct interpretation of its history, dates and the type of religious -cultural systems that had been followed. In the last 500 years there has been settlements built upon one another and the continuous agricultural activity has made the top soil erode leaving the Aksumite remnants under speculation for future conservation and even an accurate dating. This small principality of Mekuady-Debre Zeit formed the Yeha valley chiefdoms with a stronghold on its commercial militia as it formed the grand trunk route for the Aksumite Kingdom.

THE SAINT MICHAEL'S CHURCH ON THE SLOPES OF DEBRE ZEIT MOUNTAIN:

This church is really unique which has precious church treasures dating back to the early Christian era (3rd to 4th century AD).Religious chronicles mention as Abune Aregawi, one of the nine saints of Ethiopia, landed at this place in 503 AD and it was renewed in the early 6th century AD by the local people. It was recently about 50 years ago once again this church was restored and maintained by the local resident population. The origins of this church mention that there was a temple like that of the Yeha Almoquah temple here before the creation of St.Michael's church and that it was the local artisans and craftsman of Mekuady who had had gone to Yeha to build the Great Palace of Grat

Beal Gebri and the Almoquah temple although we need to do test pit excavations surrounding the church so to archaeologically confirm the local legendary history.

Human skeletons are still found at the exterior entrance of the church and they were buried with the head facing west which a common ritualistic practice was found among the Damait people and the Pre Axumites. Inside the church there has been a pile of roof tiles made out of burnt clay dating back to about 500 years old which was said to be the roof of the Holy Communion Building called as *Betaliea*. ***The church complex needs test pit excavations.*** This church has three main parts 1. The inner sanctuary called as *Betha Mekdas* 2. The interior or the middle portion called as *Afesion* and the outer most part called as *Kine Malet* with exquisite wooden architectural sculptures. Among the treasures that were found inside this church were ancient clothes dating to about 500 years, bull shaped drums of the ancient Christian era, richly decorated metallic incense burners, wooden slabs, Candle holders both small and big made out of wood and stone, the ancient praying stick called as *Betra Musa* (the stick of Moses) dating back to the post Axumite period of the Christian era of 4th to 6th century AD.

The findings at Mekuady: Human bone remains:

Ancient human skeletal remains are abundant spanning from the 3rd century AD up to the medieval times. Building and agricultural activities at Mekuady has greatly disturbed many of the valuable burials and shaft tombs, whose remains were redeposited in the southern part of Mekuady with a clear relationship to its architectural remains. The disturbed nature of most of the burials does not allow their designation as subfloor burials. Isolated skull and bone skeletal fragments appear commonly in the secondary burials mostly placed near the eroded walls of the city and with stones around them. Many human bones belong to infants between the ages of 5 and 7, which shows a high infant mortality in ancient times. However the skeletons bear evidences of Periodontal diseases (jaws and teeth), malnutrition reflected by hypoplasia and frequent inflammatory conditions of the meninges and the skull vault. Skeletal remains also reveal evidence of vertebral disease especially that it shows us that infants suffered from lack of vitamins. Ato Haile, a priest of Mekuady also dug out four meters deep, a well designed architectural beautiful stone slab measuring two meters by one meter, probably a top side covering lid of a shaft tomb towards the east of Mekuady in a place called *Derguah*.

CONCLUSIONS:

The site of Mekuady and Debre Zeit demands serious attention and urgent test pit excavations have to be carried out before everything falls to erosion. Mekuady and Debre-Zeit is an early Axumite site with sufficient South Arabian influence and a few immigrant population would have settled here. The sites under purview are known

phases of occupation which falls between the 3rd century BC and the 4th Century AD wherein the stratum reveals different stratigraphic frequencies. Geomorphologically, botanically and faunal data suggest that in Neolithic times and early Christian era the climate was more favorable than today and that the major deforestation of the region occurred by 8th -10th century AD. It is difficult to estimate the number of inhabitants (possibly around 6000 to 8000 of the royal class and common man) in this city but the occupation phases and the size of the settlement and the given magnitude of the architectural remains of Mekuady and Debre-Zeit Hills which are interchained points to a sedentary large scale settlement, that more likely than not subjected to its immediate environment to growing pressures and might have played a role in the denudation of the region while the site's external contacts are clearly reflected in the non-local materials imported for the local production of various goods. Mekuady's place in Axumite settlement system is still unclear given the distance from Mekuady to Yeha/Adwa on the northern edge and to the Enticho-Mekelle to its southern borders, has been a major trading center and a commercial militia's because of the population trade movements to Eritrea, Yemen and South Arabia with the conspicuous presence of elite tombs, ancient churches, settlements and the massive architectural input found here, like in the northern periphery of Axumite kingdom. Whereas Debre-Zeit is not only an early Axumite site but also a prehistoric site with limited lithic assemblages found here from its slope occupations and rocky outcrops of this cliff have been traced. The raw materials came from granite and quartzite exposures and from flint pebbles on the top of the Debre Zeit hills. Bipolar (naviform) cores are high on the peak of Debre Zeit and very rare pre-pottery assemblages were found but as to the authors observation among the various occupations there was no typological shifts seen here. There appears to be a tendency to use blades for all tool types with blades and flakes showing high frequencies. Arrow headed group is also very few but an important characteristic at Debre-Zeit assemblages is the absence of sickle blades although grinding stones and other ritualistic stones have been recovered here. It seems that Debre-Zeit was a Stone tool industry. Borers, cleavers, choppers, scrapers etc have been noted in less quantity which forms as part of tool kit industry for bead manufacture both in the Sabeen and Axumite culture. Other tool types like burins (dihedral scrapers, denticulates, and knives, bifacial tools like picks, adzes and celts) which show a high degree of standardization in shape are very rare here. Mekuady must have been a flourishing Axum settlement in the 3rd Century AD because its elaborate civil engineering technology, excellent state of preservation of the buried settlements is a fine example of the rich monumental style of both Sabeen and Axum Civilization. Although the intensity of the exploration in the last rescue varied considerably we must consider the archaeological record in Mekuady-Debre-Zeit and its

recovery is far from satisfactory. The destruction of the settlements when this environment adjusted its course, when the wind blew away debris, by agriculture and other human activities has considerably altered the archaeological record. The obscuring of sites under rocks, stones and alluvium and wind blown sediments but especially under modern settlements has substantially altered our knowledge of settlements and cemeteries.

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**AN APPRAISAL OF ARCHAEOLOGY AND HERITAGE MANAGEMENT OF
THE EASTERN TIGRAI ZONE WITH SPECIAL REFERENCE TO THE
LAUNCHING OF THE UNDERGRADUATE PROGRAM IN ARCHAEOLOGY
AND HERITAGE MANAGEMENT AT ADIGRAT UNIVERSITY**

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AIM AND SCOPE

© This paper shall discuss the existing conditions of archaeology and the cultural heritage of Eastern Tigray zone which runs parallel to the rest of the zones of the Tigray state and inextricable in its language, history, culture and values.

© It has to be noted that Eastern Tigray zone is taken as a matter of convenience for research and its study for national development but it obviously remains integrated with the rest of the zones in the Tigray state for a holistic development in Ethiopia.

*Paper presented at the International Conference of Archaeological Findings of Menebeyti and its environs, Eastern Tigray and Launching the Undergraduate program on Archaeology and Heritage Management at Adigrat University, Adigrat, Ethiopia on 27th September, 2014.

© The definition of heritage in the Ethiopian context embodies communal appreciation; expressions, values, tangible and intangible often inherited, but at the same time dynamic and that heritage undergo change which may even lead to the production of a new heritage.

© The importance of a definition however is the opportunity it provides to go beyond the physical to consider the spiritual beliefs, language, sacredness, sounds, the whole array of intangible heritage that gives meaning to the tangible and this is how the heritage is administered and protected.

© In fact the Eastern Tigrai zone has some of the richest and best documented histories in Ethiopia which is plausible to make an entry on the UNESCO'S register of world Heritage sites, particularly the rock hewn churches found in the Irob, Gulomekeda, Ganta Feshum, Hawzen, Atsbi and Saesie Tsa'eda Emba Woredas which needs urgent attention to be preserved for the future.

© One has to understand that Eastern Tigrai region and Tembien in the central Zone is the home of rock hewn churches.

© Tembien is equally prominent to mention here for its numerous (Among the 28 of them, only 4 has been documented and registered by the Kola Tembien Woreda) rock hewn churches which needs urgent conservation.



Saesie Tsa'eda Emba near Edhagamus



The rock hewn church of Saesie Tsa'eda emba

© This article shall envisage opening all the archaeological sites of the Eastern Tigray zone so as to foster a sustainable tourism in Ethiopia and the world. Every woreda shall be systematically surveyed and assessed in the near future with the assistance of the Woreda administration and the respective Kebele councils followed by a productive documentation.

© ADU shall act as a harbinger and repository for establishing a *collective archive* of all the researchers conducted from time to time and duly reported to the ARCCH and the Ministry of Tourism and culture. If deemed necessary with the consultation of experts and university administration, ADU shall initiate a test pit analysis of the potential sites before it vanishes.

© Moreover it is the earnest endeavor of Adigrat University to take a lead role in surveying, documenting and protecting these rich heritages for the present and future generations.

© Besides ADU has opened its Undergraduate Program in Archaeology and Heritage Management wherein it shall fulfill its wishes to train the young students, staff and other stakeholders in the skills and techniques of excavation, conservation, preservation of artifacts and establishing museums.

© *Thanks to the city administration for having allotted to ADU, a space for a museum in the city.*

© We also aim to build capacity among individuals and communities to prevent the loss of cultural heritage assets by mitigating threats and through the development of better information about the extent and conditions of these items.

© We also wish to coordinate the cultural heritage management within communities between central, regional and zonal authorities and with other institutions like the churches and appropriate heritage institutions in Ethiopia.

© **The Objective of ADU** is to protect the unique historic artifacts, the local cultural traditions and other heritages of the communities of Eastern Tigray Zone thus spurring the sustainable development of local crafts and alleviating poverty.

INTRODUCTION:

■ Ethiopia is recognized not only as a cradle of humankind but also as a nation of great antiquity and civilization with many varied layers of history and its heritage is embedded in movable and immovable, tangible and intangible heritage.

■ Ethiopia's culture and history is found in its ancient monuments, cities and prehistoric cities and its living cultures are represented in its artisans and craftsman.

■ Much of these rich heritages especially the vast Eastern Tigray zone which is the second largest state of the Tigray region, is slowly being lost for posterity.

■ The Eastern Tigray zone comfortably sits on an ancient region of Ethiopia called as *Agame*, which was part of the D'amat Kingdom in northern Ethiopia and Eritrea which later led to the establishment of the Aksum Empire?

■ The word *Agame* comes from a Greek Word *Agamos* which means the home of the teenagers and this name was found to be inscribed in one of the monuments found in Adulis during the early 3rd Century BC. Adigrat which is part of this *Agame* is an ancient town dating back to the 16th century AD.

THE VALUES OF HERITAGE MANAGEMENT:

The largest number of sites in the Tigray state is found in the Eastern Part but unfortunately many are getting dilapidated or lost, hence Adigrat University is determined to salvage it. The elevation of these archaeological sites range from 3000 m to 2000m. Cultural heritage is immensely valuable for the following reasons:

❖ *Poverty is much more than a matter of low income*. If we protect the community's poorest, their social traditions, hospitality and cultural identity and make them self employed then our knowledge and skills transmitted from the past shall be a sign of solidarity for the present and future generations.

❖ In our work, ADU shall address these issues by providing technical and academic resources to national and local governments for regenerating historic and archaeological sites and conserving their cultural heritage assets, which are the physical setting where the cultural identity of local communities materializes and the right place to generate economic opportunities relating to traditional and indigenous skills.

❖ *Harnessing the economic benefits of Conserving cultural heritage*: To make the cultural heritage industry sustainable in this region ADU shall attract private investors, public authorities and local community groups to work on several fronts: 1. forge an investment climate of policies, frameworks and public infrastructure that conserve heritage assets and tourist sites. 2. help local communities develop attractions and businesses and 3. Build business linkages between investors, local producers and services.

❖ *Cultural Heritage as a Capital asset or Capital*: Heritage items can be interpreted as capital assets with the standard characteristics of ordinary physical capital in economics.

❖ *Economic, cultural and religious Values*: The notion of Cultural value of certain goods and services such as heritage can be set alongside the more familiar concept of their economic value as measured by variables such as price or as assessed by the tools of economic analysis.

❖ *Heritage items can be tangible or intangible*: The recently formulated UN Convention for safeguarding of the Intangible Cultural Heritage (2003) defines it as,

“the practices, representations, expressions, knowledge , skills- as well as the instruments , objects, artifacts and cultural spaces associated therewith- that communities, groups and in some cases , individuals recognize as part of their cultural heritage .The intangible cultural heritage , transmitted from generation to generation is constantly recreated by communities and groups in response to their environment , their interaction with nature and their history....”.

❖ It is unique to mention the intangible dimension of the North Eastern Tigrai region and the Ethiopian heritage at large, including its knowledge systems in woodcarving, baskets, ceramics, textile, costumes and musical instruments. One has to appreciate, recognize and use customary and value systems which *defacto* forms the foundation of Ethiopian culture.

❖ The beholding of traditional values and systems as time passes for the future there will be creation of new values for Ethiopian heritage and it is this vital element that we can solidify the community’s interest, ownership, management, participation and diversity.

❖ Even the private sector has a role to play in conservation and that this not solely the responsibility of the government.

❖ These historical and archaeological heritages of the Tigrai state and Ethiopia leads to the reconstruction of national identity and the promotion of a dominant national culture which in turn produces a harmonious society and a national consciousness .

❖ The cultural value becomes a vehicle for the transformation of the society thus dedicating the local inhabitants towards the heritage protection.

THE RAISON D’ETRE OF ARCHAEOLOGY AND HERITAGE MANAGEMENT IN THE EASTERN TIGRAI ZONE:

- Eastern Tigrai is a cockpit and a storehouse for the vast archaeological reserves lying surfaced, some eroded and some safely buried underground. It has 7 Woredas (*Irob, Gulomekeda, Ganta Feshum, Hawzen, Saesie Tsa’eda Emba , Atsbi, Kilde and Awlaelo*) and 2 cities (*Wukro* being a town and *Adigrat* is a city).

- Some of the well known heritage sites in Gulomekeda are Debre damo, Menebyti, Seboya and Aire; Mariam Kiat and Betyes are located in the Ganta Feshum Woreda while Gheralta mountains are seen in the Hawzen Woreda.

- Excavations are warranted in the Hawzen and Ganta Feshum woredas. Excavations need to be conducted at the Saesie tsa’eda Emba woreda wherein the Gunda Gundo site and Mariam Dengela are found

- .Atsbi Woreda is famous for its Michael Imba church.

- Wukro is famous for its rock hewn churches.

- It is unique to notice that there are many archaeological sites found in the Ganta Feshum woreda which is yet to be surveyed and documented besides conducting test pit analysis or excavations.
- In the Tabiya of Guhagot of this woreda there are a number of tombs and stelae scattered, besides the rock hewn churches. Sobeia is also another potential archaeological site.
- It is under the leadership of Prof. Catherine D'Andrea of Simon Fraser University, Canada and her team members that a systematic survey was conducted wherein several lithic artifacts, potteries, elite structures and settlements were unearthed from the Gulomekeda region.

The archaeological and excavated ruins of Gulomekeda.

- Eastern Tigray has been the continental belt for the Axumite kingdom viably a strategic commercial cum militia route connecting Eritrea (Matara, Kohaito and Adulis), Arabia and far flung areas.

The Rock hewn church of

- It is obvious that Aksumite elites have been stamping their artifactual and material image for a long period of time so as to strengthen the core of the Aksum Dynasty and this is evident in the rich data culture.
- Aksumites were comfortable in the hilly and mountainous deltaic regions of the erstwhile Tigray state with a flourishing irrigation, dams and canals being dug out through the tough terrain of Eastern Tigray region; as a result trade, commerce and agricultural abundance gave a renaissance to their empire, nevertheless it was the backbone for the central Aksumite kingdom, southwest of Yeha.
- Settlements have been found in Natasit (North of Adigrat city), Amiat, Adi Awli, Adi Ahoune, Mihrey Libsu, Kesade Adifeto (all to the northeast of Adigrat City), Bete Kirkos, Fekada, Segetat, Embala, Adi Aymaat, Mezber, Debre Berhan, Sobeia (North east of Adigrat), Ona Adi and Dongola North.
- Artifacts have been scattered in the Mihrey Libsu, Bete kirkos, Fekada, Debre Berhan, Adi Ayamaat Embaba, Segat and north west of Ona Adi and Dongola North.
- It seems that the Aksumite Site locations were selected as per the land forms with abundant water supply being used for the dry farming in the arid environments of the erstwhile Tigray state.
- Lithic studies also confirm that the Aksumite people used stones as a raw material which is further corroborated by ethno archaeological research in Ethiopia.

The environs of Saesie Tsa'eda Emba

- **Eastern Tigray is a bone of Contention** for Ethiopia in the coming years, as it can reap rich dividends because it is exquisitely bestowed with innumerable antiquities, tourist attraction sites and natural eco tourist sites.
- Some of the worthy features of this region are multidimensional landscapes, wildlife, bird watching, the excellent climate, the archaeological sites, the rock hewn churches, rock art and paintings, the gorgeous traditional religious festivals like the Meskel, Epiphany, Ashenda, Lidet or Christmas ,the Easter or Good Friday, Haweria and many other grandeurs, the traditional and colorful marriages and other domestic and family oriented ceremonies and rituals are the **economic foundations** for a sustainable heritage and tourism management .

THE NEED TO STUDY ARCHAEOLOGY AND HERITAGE MANAGEMENT AT ADIGRAT UNIVERSITY:

The opening of the undergraduate program at Adigrat University is a boon for this region and which has several ramifications:

- Adigrat and its vicinity are visited by many tourists which go to boost heritage tourism.
- This region has become a focal point for several archaeologist, international researchers and organizations to explore and excavate.
- Recently many students are showing more interest in opting BA in Archaeology and Heritage Management.
- A viable, friendly, scientific and workable curriculum at the Undergraduate level is well in place at Adigrat University which is a progressive promise and hope for our younger and future generations to protect the vast ancestral and historical property of Eastern Tigray Region.
- Students and staff shall acquire all the training, skills and knowledge in archaeological techniques and methods and who can be the ambassadors of these heritages for tomorrow at the same time generating self employment opportunities and indigenous ways of harnessing the resources for a decent standard of living, besides involving them in learning and preserving the local handicraft culture of Ethiopia and the eastern Tigray Zone.
- **Community service** by the ADU students shall go a long way to assess their skills and knowledge and evaluate their participation as full time stakeholders, once they graduate.
- **In order to beautify the heritage sites and give an aesthetic touch, Students shall be trained to raise gardens and parks around the archaeological and historical**

sites with the support of ARCCH, Ministry of Tourism and Culture and the local communities.

- It is also viable for ADU to open up new research projects and collaborate with the International experts.
- It shall be the endeavor of ADU to open an Archive of complex historicity of this region.
- ADU is encapsulated among the beautiful mountains of monuments and sites, which aspire to be a center of Excellence by outsourcing the knowledge and skills of the archaeology of Eastern Tigrai region. The topography and landscape architecture of Eastern Tigrai itself is a covetous study for Heritage, ecology and environmental management whereby ADU shall venture upon and fulfill its vision and mission.
- ADU shall try its level best to carry out inventorying the antiquities of this Zone with the assistance of ARCCH and the Ministry of Tourism and Culture.
- ADU shall strive for the proper accounting of allocated resources and records which shall be part of institutional responsibilities.

BEST PRACTICES AND ETHICAL PRINCIPLES IN THE CULTURAL HERITAGE MANAGEMENT:

- ❖ The archaeological record is part of our cultural heritage which belongs to humanity and archaeologists by the merit of their specialized education and training serve as researchers and educators about the archaeological record to the society.
- ❖ We have to cultivate best practices towards the preservation of every archaeological site in our study and within the principle of archaeological ethics ,ADU shall steer to develop a guideline to help professional archaeologists to navigate in a rapidly changing world.
- ❖ It is deemed necessary that we shall bring the schools together to understand the history and value of the rich heritage that Ethiopia is bestowed with.
- ❖ ADU will also assist in translating all the research work in the local and national vernacular, conducted in this region to be incorporated in school textbooks all over the country.
- ❖ Despite the potentials for diverse tourism in Eastern Tigrai region, there are some constraints like: lack of asphalt road facilities towards the sites, lack of awareness among the local societies about the archaeology and heritage management, lack of coordination among stakeholders , vandalism of cultural heritage properties, lack of trained manpower, the dilapidated state of the heritage and archaeological sites, and the low participation of the Community dwellers , Adigrat University shall contribute

positively in addressing these issues and mitigate the problems being faced in an optimistic manner that is: Win to Win.

❖ However the progressive sides reveal us that there is ample time and opportunity for us to rescue and salvage these Vanishing heritages and protecting the Aksumite Legacy for the people of Eastern Tigrai.

❖ This master plan leads us to think about reducing poverty i.e., locals can generate their own income through protecting and preserving these cultural and natural heritages , initiating the local community to go for sustained cultural and natural heritage conservation and act as tour guides once they are trained, the locals can satisfy the tourists by supplying the basic amenities in such remote areas and campaigning both locally and nationally about the importance of such monuments and sites of this region.

❖ In fact the Ethiopian Radio and Television, Ethiopian Airlines, the Ministry of External Affairs, the Ministry of Tourism and the Ministry of Education can act as the Brand ambassadors for Eastern Tigrai region in unraveling the historical and heritage wealth to the rest of the world.

FORGING COMMUNITY RELATIONS IN AN ARCHAEOLOGICAL CONTEXT FOR A SUSTAINABLE TOURISM MANAGEMENT IN THE EASTERN TIGRAI ZONE:

✚ One of the most important aspects of any archeological project is developing and maintaining good community relations and a local understanding of what we are trying to achieve .

✚ Creating awareness for the local community in this Eastern Region is of prime importance because nationally and internationally it is recognized as of major significance in Ethiopia's history and Culture and for a role in outsourcing Ethiopia's rich heritage to the Outside world, in fact exhibiting the role of historical development and promoting transnational or East -West relations.

✚ It is obvious that communities should be routed towards democratic governance, equity and articulation in their systems of heritage conservation ethics.

✚ Focus on direct education of the local inhabitants, creating the genesis of an open air or inbuilt museum and contributing to site protection measures both temporary and permanent shall be the prerogative of Adigrat University in the coming years.

✚ Geographically Eastern Tigrai administrative Zone has a variety of landscape escarpments and it is here that our Ministry of Tourism and Culture have been promoting the establishment of Community lodges which is a strategic resting place for our tourist to view the vast cultural and archaeological sites.

✚ Tourist can have an aesthetic view of the beautiful mountains, plateaus, the streams and the water falls which is of par excellence environmentally speaking .There

are many small and big **community rest houses** here erected with the mutual collaboration of the local people. Some of these are found in places like Erar, Menebeyti, Sobe, Shimbreiti, Mariam Kiat, Beityes, Debre Damo, Anaf, Guhagot, Gheralta, Gunda Gundo (Currently under Tsa'eda Emba Woreda).

✚ These Pensions have certain characteristics in terms of the distance whereby tourists can trek through mud laid pathway and these resting houses are built with mud and clay with basic facilities like water and small rooms with the local illuminating lanterns and some have electricity .

✚ It is here we have the natural, economic and commercial inputs wherein we can initiate economic tourism so as to preserve and sustain these natural and historical heritages.

SUMMARY:

- This paper has tried to deal with the main areas of archaeological and heritage management instruments to see how they have played a vital role so far and what we can do further to exalt its status.
- There have been lots of inadequacies but with our present resource and infrastructural strength and staff potential, ADU shall initiate meaningful reviews in all its research endeavors of the Eastern Tigray Zone.
- Although the paper is not complete by itself, ADU shall incorporate Ethiopian perspectives and definitions of heritage for an effective management of the heritage sites.
- It is ostensible that when we look at the vast tangible and intangible archaeological potential of eastern Tigray region, ARCCCH, the Ministry of Tourism and Culture, Adigrat University and various other national and International bodies shall tirelessly work to transform and stamp this region as a **WORLD HERITAGE SITE OF OUTSTANDING UNIVERSAL VALUE WITH THE UNESCO WORLD HERITAGE CONVENTION, PARIS.**
- This paper has ample scope to discuss the way forward and the participant's involvement and deliberation in this International conference shall greatly benefit the university to move into the right direction and bring about innovation, excellence and a dynamic difference in the working culture of Archaeology and Heritage management.

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Report on the Survey, Documentation and Assessment of the Rock Hewn Churches of Tembien, Central Tigray Region, Ethiopia: Quest and Campaign for its Transformation as a World Heritage Site

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INTRODUCTION AND BACKGROUND:

It is amazing to mention that there are about 101 Rock hewn churches in the Tigray region of Ethiopia officially documented but remains unregistered, under the Tangible Heritages of Tigray region of Ethiopia , around 96 archaeological sites , monasteries, historical sites, principal monuments, parks , nature and other attractions from the tourist point of view.(Source: **Tigray: The Open Air Museum**, Tigray Culture and Tourism Agency, Mekelle , Tigray region, Ethiopia.) Several sites of the prehistoric times and the Pre-Aksumite and Aksumite Civilization have been established in the Central Tigray region of the Kola Tembien woreda during the 5th century BC and the 8th century AD. The civilization had significant contacts with South Arabia, script, coinage, architecture and cult of several deities have been brought by Sabeen immigrants in the first half of the 1st

millennium BC. Excavations at Yeha near Adwa and Maqabar Gaewa (near Wukro) revealed the temple remains of Almaqah whose cult existed in the kingdom of Saba (Gajda, I., Gebre Sellassie, Y., 2009, “Pre-Aksumite inscribed incense Burner and some architectural monuments from Addi Akaweh (Tigray, Ethiopia)”, in *Annales d’Ethiopie*, 24, 2009, 49-61.).

The influence of South Arabia and Da’amat kingdom on the archaeological sites of Werie Leke woreda is evident in its economy, trade, engineering and technology and social structures in both pre-Aksumite and Aksumite Civilization, the history of Ethiopia is obscure.

The objectives of our research team in the Kola Tembien woreda of the central Tigray region is a contribution towards the survey, documentation and assessment of its endangered archaeological sites and exploration of new archaeological sites with a focus on its conservation.

In this very context, **three main axis of research has been defined for the next five years:**

- A comparative study will be carried out especially on potteries and lithic artifacts coming from the various surveyed sites but also on different types of construction and artifacts.
- A study of local traditions both written and oral shall be carried out. The aim of this study is to detect antiquities, identify the toponyms, to trace ancient and modern roads and trade routes, Commercial militia, economic outposts and settlement structures, to search for historical information in the local traditions, legends, chronicles and memoirs and to study the inscriptions in their archaeological context.
- To train the young student and staff archaeologist of Aksum University and to involve them in action research so that these endangered monuments can be protected in a short span of time along with encompassing infrastructures and other hands on experience for all the woredas of Tembien and the Ministry of tourism and culture officials , creating awareness among the local stakeholders, community members on conducting excavations, initiating salvage projects and restoring the monuments to its original state thus inspiring the scholars and tourists to create a genuine interest in the rescue of these invaluable heritages of Central Tigray region of Ethiopia. Apart from educating and training the native people, responsible stakeholders and academicians of Aksum University – it is the desire of the Department of Archaeology and Heritage Management to generate job opportunities for the graduate students and the local community. *This salvage archaeological project aims at making Tembien as a great archaeological and tourism centre of Ethiopia and also be bringing in multilateral development of the local society and their economy thus creating sustainable*

development in the field of agriculture, construction activities, health, education and all the essential sectors of development.

- A detailed action plan for excavating these sites and offering remedial plans for the protection and conservation of these endangered sites shall be our top priority with inputs on the local sustainable development both socially and economically, shall be part of our research endeavor, besides train all our related stakeholders in the field of archaeology and heritage management and to involve the government agencies to promote sustainable heritage tourism in Tigray region. Furthermore creating employment opportunities by way of providing awareness lessons and workshops for the local community, staff, students and other responsible stakeholders in this Salvage archaeology program and enhancing the research potentials of this region both for the national and international community shall be our aim and goal which will be sincerely initiated and implemented.

- A work on the protection and conservation of these endangered archaeological sites based on the survey report and with the results obtained by our team's vision and mission, a detailed **Workable cum rescue oriented remedial action plan** for the conservation and restoration of these Danger Heritage Sites, as called by the UNESCO, shall be chalked out and it is the desire of the team that we get the technical and scientific support from global institutions.

Objectives of this survey:

General Objective:-

Generally, the objective of this preliminary study is to survey and register the endangered sites besides discovering any other new sites on the way within this Kola Tembien Woreda. The objectives of our research in the region of Tigray are therefore *salvage in purpose*; at the same time contribute to the periodization and interpretation of the antiquity in Ethiopia through the structural monuments and artifact assemblages and a study of ancient Ethiopian Civilization and its contacts with other countries from the Mediterranean unto South East Asia.

Specific Objectives:-

This preliminary task will have the following specific objectives:-

- To survey and register the endangered and contaminated sites of the vast Tembien region.
- To discover the new archaeological sites, religious structures, ancient monasteries and rock arts and rock hewn churches in the various Woredas of the Tembien region of Central Tigray region of Ethiopia.
- To provide a detailed description of the below said sites

- To identify the causes for the destruction of these endangering sites and to recommend immediate action cum remedial plans to rescue these archaeological monuments and sites.

RATIONALE:***Academic and Research Excellence at the Institutional level:***

The opening of graduate program in Archaeology for Heritage Management in Feb. 2013 at Aksum University will help to produce local scholars who can be actively involved in the archaeological research of the country in collaboration with the International organizations, foreign Universities, schools and Institutes of Archaeology across the globe. The MA students are involved seriously in this project including our staff for the sake of training them and to *save our vanishing heritage*.

The principal strategy of this program is to promote Archaeology for Heritage Management at Aksum University as an academic discipline focusing on Archaeology at the Ethiopian contextual level and more preference will be given to study the rich Aksumite civilization culture, environment and its management. The program aspires to open a field of specialization in Archaeology concentrating on the idea of African Archaeology with meticulous attention given to Ethiopian and the Nile valley, “Aksumology”, excavations and field work, conservation and Heritage management, archaeological ethics ,Epigraphy and Numismatics, Bio archaeology, geoarchaeology , and on the concepts of archaeology, its theory and thought.

The Department of Archaeology was started, as one of the 27 academic departments of Aksum University, when it was established in the academic year 2006/07. It began offering a four-year undergraduate degree program in archaeology from the start. It is now a program with approximately 130 students who strive to learn the principles of archaeology in the classroom, as well as the ability to debate on methodology, and engage in discussions with faculty members.

In order to respond to this positive growth of the department and the increasing need for competent workers in Heritage management and tourism, the university launched an M.A. degree program in Archaeology for Heritage Management in 2013 under the framework of the Department of Archaeology and Heritage Management in the College of Social Sciences and Languages. In preparation for this task, the university undertook a curriculum development process during 2012 and adopted a robust academic curriculum through a curriculum conference which was held in the university campus on November 12, 2012. The conference included discussions among the various scholars, archaeologists, academicians, administrators, and government officers in attendance. The university also invited two competent archaeologists from abroad to join the department

in order to implement the proposed curriculum and to provide students with ample professional academic advice.

PRELUDE TO THIS PROJECT PROPOSAL:

The above proposal is a joint effort of the fourth year BA students and the former students of Archaeology along with the Department staff members and other subject experts and stakeholders of the city of Aksum and the Ministry of Culture and Tourism, who wish to protect the below endangered sites at the earliest and list it among the world endangered heritage sites thus attracting tourism industry, at the same time offering job opportunities for the young graduates to take on the restoration project. This is an earnest attempt to salvage or rescue those archaeological sites of the Central Tigray region. Once the survey is done in detail, the Department of Archaeology and Heritage management wishes to gain the attention of UNESCO- World Heritage Sites Fund in Paris (a long term excavation and Conservation Project which will span from 10 to 15 years) to get involved directly in the restoration and conservation of these archaeological sites and the potential structures, monuments and the more profuse rock hewn churches of Tembien.

Duration of this rescue project: Ten years.

Location: Abyi Addi and Kola Tembien woreda of Central Tigray region of Ethiopia.

TOPOGRAPHY:

Tembien lies to the south east of Aksum. The Aksum-Adwa-Tembien highway gives a beautiful scenic look that is from the highlands of Adwa, the road falls into the Weri'e Gorge before it reaches the lowest point at the riverbed of the river Werie, a tributary of the Great river Tekeze after which the road leads to the magnificent mountains of Tembien as well as the mountainous ranges of Gheralta to the east.

Historically speaking Tembien is equated as the birth place of Emperor Yohannes IV and Ras Alula Aba Nega and most Tigrayians remember Tembien for its sweet honey and the hyperactive **Awris dancing** as it is called so locally, where both male and female jump up parallel to each other.

The Tembien Zone of Central Tigray region of Ethiopia which extends to about 120 Km from Aksum town is archaeologically and geologically rich with a substantial chain of archaeological sites predominantly of the Aksum Civilization, seriously threatened being located on Rocky Mountains and plateau areas. Here the climate of the area is warm and some are very cold. Generally, its climate is mentioned as **Weina Dega**. The Woreda has potential resources for tourism development and other scientific investigation and it is significant due to its natural and cultural attraction.

Most of the cultural attractions are the archaeological sites, ancient religious structures, treasures of monasteries and other historical antiquities and sites that are found in this woreda. *Thus, even though the woreda has numerous historical and archaeological*

sites, they have not been systematically studied, documented and unregistered as a result they are currently endangered. Hence this survey, attempts to identify the cause of destruction of these sites and duly report them to the concerned bodies for safeguarding and for further investigations.

Some of the endangered sites of the Abyi Addi and Kola Tembien woreda which are going to be assessed in this field survey are: the Archaeological sites of Enda Abune Tsahma monastery, Enda Georgis seguh, the rock church of Abune Mamas and Menkenakis, Nebelet along with a few other sites.

GEOLOGY:

The foundation of the Precambrian low-grade metamorphics such as slates, phyllites, and the chloritic and sericistic schists are overlain in the Aksum area with the Tekeze sandstones and variegated quartzose sandstones of the Triassic or Cretaceous periods. Around Adwa and Adigrat, Ordovician tillites and glacial sandstones dominate. During the Oligocene to Miocene periods, extrusions of Amba Aiba basalts have left hills containing prismatic basalt and andesites. These are non-porous and therefore ground water runoff is high. Mai Qoho is an example of this formation and translates as “water which comes from the rock”. The mountains directly north and northwest of Aksum are comprised of extrusions of Pliocene hyper alkaline silicic lavas (including the famous syenite from which the monoliths and monumental Aksumite architecture are fashioned) and laccolith domes overlaying the intrusive basalts.

Resources

This program will be run by Aksum University in collaboration with different institutions and sister Universities of Ethiopia, but it lacks trained manpower. At the moment, we do have only two Professors and three PhD student staff members on study leave, who will finish their education within the next three/four years.

The presence of a rich potential of archaeological sites within the near proximity of the University provides an open air laboratory, obviously an asset for our student, but also attracts the attention of many National and International projects which can provide a field school opportunity for our students, jointly with foreign Universities based in South Korea, Canada, Italy and America who are benefited with material support, and a great opportunity to link our program on every projects of this locality.

The resources for this master’s program are expected from Aksum University budget and other possible research centers and sister Organizations/ Universities and to create sabbatical and academic exchange programs with those institutions of the world where Archaeology and Heritage management is taught pragmatically.

The current team is also planning to salvage the old Aksum town which has so many undetected sites and monuments on the surface and a concrete excavation in the future shall be undertaken to expose the potential material continuity of Aksum Civilization.

RATIONALE FOR PLANNING AND RECONSTRUCTING THE CULTURAL HERITAGE SITES OF THE TEMBIEN REGION: REMEDIAL AND CONSERVATION PLAN:

The world bank uses a broad definition of physical cultural resources: **“Movable or immovable objects, sites, structures, groups of structures and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance”**

Key Decisions to be taken as part of this rescue archaeological and historical project:

- The local and the regional government of Tigray and the Woredas of Tembien shall mobilize the lead agency for heritage conservation and to address the damage to resources of national significance and to assist local communities and religious bodies.
- Communities in collaboration with the local agency and the lead agency for heritage conservation shall identify and prioritize cultural resources that require conservation during recovery and reconstruction and document the condition of these resources. They should activate the instruments of conservation and employ stakeholders who can work together to carry out the cultural heritage planning.
- Local and governmental agencies shall identify and mobilize financial and technical assistance.
- Churches and other tribal/ethnic organizations and other guardians of cultural resources should ensure that their resources are included in their disaster assessments and should request assistance in conserving them, if required.
- Communities being relocated and receiving communities should demand that the conservation of cultural resources be a consideration in resettlement planning, site selection and relocation plans.

TECHNICAL ISSUES IN THE PROTECTION OF ENDANGERED CULTURAL AND NATURAL HERITAGE PROPERTIES:

ω Risks to cultural heritage and the related losses of livelihoods, cultural identity and social cohesion can be mitigated before any damage occurs to the endangered archaeological sites but an effective and workable implementation is necessary. Cultural

heritage risks can be addressed by various means including the instruments listed below. The plateau of Laela Kataima and Mariam Yarfada are potential archaeological and ancient religious sites which needs further detailed exploration, excavation and the management of these hidden and buried material remains needs to be brought before it is totally destroyed within a few years.

- Risk and contamination management plans that incorporate cultural heritage consideration. For example Mariam Tamba at Guya is disturbed by frequent religious and other human activities.
- Culturally sensitive land use and spatial plans. The best example is Abune Samuel at Mai Lomin, where business activities are a source of disturbance and threat to this rock hewn church.
- Raising the cultural sensitivity of cultural heritage management authorities, the families of the local villages/kebeles and other users that occupy heritage properties.
- Systematic documentation of cultural heritage. Out of the 28 rock hewn churches of the Kola Tembien and Abyi Addi Woredas only 4 of them have been registered by the ARCCH and the Tembien Woreda.
- Regular maintenance and monitoring for risk reduction of heritage properties. Abune Mamas at Seguh and Menkenakis in Nebelet needs urgent conservation and restoration
- Post Disaster response and recovery programs that are consistent with management plans for heritage sites. Mariam Sekorti in Mai Lomin, Tembien, being the birth place of Queen Sheba, needs to be registered as a vital archaeological site but it is totally damaged by erratic human activities

CONSERVING CULTURAL AND NATURAL HERITAGE OF THE HISTORICAL HERITAGE OF TEMBIEN:

- ∂ To provide storage for movable heritage properties.
- ∂ Harmonizing new housing and settlements with local cultural and natural heritage.
- ∂ Creating incentives for the local communities to protect the endangered sites.
- ∂ A multidisciplinary approach to damage and assessments.
- ∂ Coordinating and preventing disaster and contamination of endangered sites with a viable management plan with the heritage authorities.
- ∂ Using authentic materials and skills for repairing and retrofitting heritage structures.

∂ Ensuring community participation. The religious endowment bodies of these rich rock hewn churches in the Tembien Zone need to be trained and oriented towards a ecofriendly and sustainable tourism

RISKS AND CHALLENGES FACING THE ROCK CUT CHURCHES OF TEMBIEN REGION UNDER STUDY:

√ The cultural heritage of the sites under scrutiny and survey are affected directly by natural disasters.

√ The secondary risks that arise during recovery and reconstruction includes the following:

- Rescue and relief measures that are carried out with no regard to heritage value of damaged areas (e.g., water damage and debris removal).The concerned Public works department, Land revenue , agriculture , roads , irrigation and any other related constructive bodies or ministries in Tembien Zone should work collaboratively to protect its rich cultural heritage properties.

- Looting of heritage structures and artifacts. This can be seen in Nebelet, Selam, Workamba and other woredas of Tembien.

- Reuse of cultural and heritage resources as fuel, food and reconstruction materials as in the famous Enda Gabriel Basement rock hewn church, located in the Workamba Kebele of Tembien. This church is the center of tourist attraction and of very high heritage value for Tembien which needs to be installed on the World map of Heritage sites in Ethiopia.

√ Infrastructure repair or replacement (e.g., road widening) disregards or encroachments upon cultural assets.

√ Temporary camps are installed without regard to cultural heritage concerns.

√ Illegal and uncontrolled relocation and reconstruction spoil heritage landscapes or damage other assets.

√ Financial assistance policies encourage demolition of heritage sites.

⊠ Authenticity and integrity may be lost because of inadequate repair and retrofitting measures.

THE ROCK HEWN CHURCHES OF TEMBIEN-BRIEF IMPLEMENTATION:

The main task in this survey trip was to include archaeological excavations and research on the scattered sites of this potential Abyi Addi and Kola Tembien woredas which we hope to proceed in the following years. In this purpose our mission is to initiate a geophysical survey on the site as well as test pit excavations and a provisional typology

of the stone tools and of pottery. Before an intensive excavation is executed, our priority was in fact, to estimate and evaluate the archaeological potentials of the relevant sites under examination, its area and organization, specific fieldwork objectives were to implement a sampling design by which we can employ geomagnetic techniques including GPS (Global positioning system) and GIS (Geographic Information system), to initiate a more systematic survey which employs specific techniques including geophysical methods. It is the earnest desire of our team members to carry out an electromagnetic survey which consisted on electrodes resistivity and reflectometry measurements – taking into account the nature of the soil. Besides we wish to carry out test pit excavations at Abune Tshama ,a 5th -6th century AD tomb located on a hilltop of the Edagarbi town.

THE LEGACY AND POSTERITY OF ROCK HEWN CHURCH HERITAGES OF ABYI ADDI AND KOLA TEMBIEN WOREDAS:

Between March 5th and March 10th 2013, the Archaeological team of Aksum university patiently surveyed and assessed the status of at least seven rock hewn churches; out of the total 28 rock hewn churches of Abyi Addi and Kola Tembien woredas, 24 remains unregistered while 4 of them are properly registered by the ARCCH and the Ministry of Tourism and Culture, besides there are a few rock hewn church structures in the Hagersalem and Tanqua Mekelle Woredas of Tembien. The Kola Tembien is the richest of all the woredas and a *LIVING HERITAGE* of Central Tigray region of Ethiopia. Most of these ancient monolithic structures are located and scattered in the following 27 woredas of Kola Tembien: Guya, Simret, Arena, Limat, Begashek, Debre genet, Ataklti, Workamba, Selam ,Mitsaworki, Chamo, Zelakme, Menji, Adiha,Awet Bkalsi, Santa gelebeda, Endabano,Tabote Giorgis, Wuhdet,Newi Dedere, Demetsab, Mirera,Gurero and Shilum Emni .

The team surveyed Debre Sekorti Mariam church of Mai Lomin, the birth place of Queen Sheba ,Leala Kathaima ,Abune Samuel rock cut cave church ,Mariam Yerfada ,Abba Yohanne of Atakilti woreda ,Wukro rock cut church of Selam Woreda ,Enda Gabriel rock hewn church of Workamba kebele ,Mariam Hibeti of Awet Tabia , Rock cut church of Adikova mountains and the numerous rock cut caves and monolithic massive church of Mariam Tamba of Guya Woreda .Just like Lalibela,Tembien woreda historical heritage sites should be inscribed by the UNESCO on the World Heritage List..Detailed examination and evaluation goes to emphasize that it should be the first and foremost restoration projects which should be sponsored by the World Monuments Fund by 2014-15.Here in these eye dazzling churches, the ecclesiastical objects and the religious practices constitute an important part of the local community and the traditional way of life. The conservation challenge is to safeguard both tangible and intangible aspects of the site in the context of development and town expansion of Tembien. The Department

of Archaeology and Heritage Management (ARHM) of Aksum University, right now and in the future, proposes to be a center and media for salvaging all the archaeological and historical sites of the Tigrai region of Ethiopia, when at a time the World Heritage status of the ten sites of Ethiopia has contributed to a sense of shared global responsibility for its conservation and to socio-economic development through the use of heritage as a tourism resource. What is shocking today for Tembien heritage sites is that, its neglect should precede development at the earliest and which needs to be balanced to prevent irreversible damage and loss of inestimable heritage resources of the Tigrai region of Ethiopia, undoubtedly being the cradle of classical civilization. Aksum University and Kola Tembien Woreda wishes to work together to establish a management plan process and which has become a forum for future conservation through participatory means in order to achieve sustainable development. With increasing globalization of heritage, Aksum University, the Ministry of Tourism and Culture and the ARCCCH shall inextricably forge a world heritage partnership for protecting the fragile resources of the Ethiopian Rock arts and looking at its research as an interdisciplinary field of study with the potential to create new opportunities for multidisciplinary research and dialogue both locally and globally. In the context of Heritage and social change Aksum University remains as a pioneering architect in rescuing the precious rock painting, drawings, engravings executed on rock surfaces in the naturally formed caves, rock shelters and boulders. Currently the rock arts of Kola Tembien woreda are facing threats from the nature, human beings and the cultural activities and tomorrow we may lose them forever as a prime source of information on the history of the past human beings and as an invaluable tourist heritage center. **The Enda Gabriel rock cut basement church of Workamba kebele, the Mariam Hibeti rock hewn church and the Mariam Tamba of Guya town *defacto* qualifies the international criteria for their inclusion in the World Heritage list.**

The team's objective is to create awareness about the paramount importance of the Ethiopian Rock art resources, for all the heritage lovers, researchers, local communities and government authorities to rescue and restore them for historical and economic benefits for Ethiopians and the world. Our quest to transform Kola Tembien rock arts and rock hewn church sites as a world heritage center, is amply testified under the below prescriptions:

- ♣ A masterpiece of human creative genius.
- ♣ Interchange of human values exhibiting the architectural and technological achievements, in erecting the monuments.

- ♣ A perfect living tradition of the past civilization, depicting the legacy of Ethiopian Christianity.
- ♣ Outstanding example of human feat in raising monuments, architectural or landscape mastery.
- ♣ A living example of *cultural landscape* where ancient people and environment interacted harmoniously for a natural and aesthetic beauty and novelty.
- ♣ The **unique highland ecosystems** and the natural habitat for *insitu* conservation of biological diversity and from the point of science, a place of threatened plant and animal species of **outstanding Universal Value**.
- ♣ Stupendous example representing the major stages of earth's history including the record of life, important ongoing geological processes in the development of landforms or significant geomorphic or physiographic features (Examples: Mai Lomin, Mariam Hibeti, Mariam Tamba, Guya, Menkenakis, Nebelet, Seguh and various other church landscape archaeology).

The rock hewn churches of Tembien have serious stability problems and strengthening and stabilizing the rock formation is mandatory. The team also aspires to devise a program for investigating and identifying those rock art sites meticulously with the help of experts and offering remedial solutions for stabilization and waterproofing with a minimal retouching work and the maximum retention of the original. Through National Legislation, the rock art property should be protected as a *reserve* preventing the **Rock collapse** and the **Erosion Landscape**. Although management is implemented through the cultural heritage law (*Negara Gazette, Proclamation of Ethiopia*, No.209/2000, Article 22(3), the Ethiopian Law should firmly regulate the research, studying, protection and promotion of the immovable cultural heritage in Ethiopia and the development of conservation and management plans for the future inscription of Tembien rock arts under the World Heritage list of immovable cultural properties. In order to strengthen and stabilize these rock hewn churches, the Department of ARHM of Aksum University and other agencies of the Tigray region shall pursue the implementation of the conservation measures.

DESCRIPTION OF THE VARIOUS ROCK HEWN CHURCHES OF ABYI ADDI AND KOLA TEMBIEN WOREDAS:

The edifices of Tembien is exceptionally a fine example of a long established Ethiopian building tradition, which are the oldest Ethiopian Monolithic churches found in the Tigray region. Dating back to the 2nd century AD and 7th century AD, all these churches were built by the Ethiopian Kings who commissioned these structures with the purpose of

creating a holy and symbolic place which considerably influenced Ethiopian beliefs. Tembien and its environs are located at an altitude of a minimum of 2200 meters up to 2800 meters in the rocky highlands, surrounded by a rich geological resource and with dry areas one can see the red volcanic rocks which has created more than 30 churches, some of them like Mariam Yarfada on the Laela Kataima is in ruins, some finished as completely free standing structures to their mother rock only at their bases like the Wukro Yohannes Wolde Negud Guad rock cut church of Selam Woreda with three caves on three different rock structures located at a height of 2700 meters. Mariam Yarfada is highly endangered but has a huge foundational structure on the base of a monolith although eroded has four carved niches each standing on an arch pillar and potteries have been found too. Whereas Laela Kathaima on the top of the Mai Lomin Hillock, has a brown soil which has been inhabited in the ancient times, being a pre-Aksumite site has several ancient settlement structures, buried churches and mounds, numerous potteries, grinding stones and a variety of prehistoric stone tools goes to indicate that a test pit excavation is needed. Abune Samuel rock hewn church of the early Christian period situated at the foot of the Mai Lomin hill is well preserved but needs conservation to restore the inner paintings, frescoes and the massive pillar arches. Burials, false doors and carved windows are a unique feature of this church. One common feature to be noticed in the rock hewn churches is the prevalence of burials insides the rock cut cave churches. Debre Sekorti Mariam church which is located above the Mai Lomin hill, has the ancient church ruins of pre-Aksumite period with a burial intact, has been damaged, contaminated and the settlement was destroyed by modern constructions. But the ancient steps leading to Mariam Sekorti church from the foot of Mai Lomin is intact and needs to be maintained.

ABBA YOHANNI:

This is a registered monastery which is about 8 kms away from the main highway which leads to the foot of the DebreAssa Mountain, the mountain on which this church is built. When you see from away the white washed façade of the church is glazing being incised from the tough cliff and this church is accessible only through a tunnel like passage on its western side.

The interior of Abba Yohanni church is very spacious, divided into several compartments or bays and with aisle on its arched columns; the church is 14 meters deep and 12 meters wide. There are seven free standing columns supporting the ceiling which is as high as nine meters. The ceiling is adorned by decorated domes and on its front portion there are finely carved crosses, some engraved on its portico which is a classical example of Ethiopian Rock arts in its workmanship.

WORK AMBA: This is a natural and historical site with numerous rock hewn churches, archaeological sites and monasteries which is about 45 kms from Adwa where there is abundance of bird life and more exuberant to see the migratory birds coming from overseas during the month of May and November. Workkamba has a beautiful landscape with steep hills and mountains and with a diverse vegetation and wild life too. Furthermore WORKAMBA is known for its geological significance portraying the abundance of lime stones.

A. The magnificent Enda Gabriel basement rock cut cave church located at a height of 2200 meters in the workkamba woreda is a fine example of rock carvings and surrounded by numerous burials and necropolis along with evidence of copper and iron smelting sites, objects and slag's. *This site deserves to be listed as an endangered World Heritage site.*

B. **Mariam Hibeti or Hibiito (The Hidden Mary) Rock hewn church** built in the 15th century is really hidden on a foothill surrounded by trees and plants is located at a height of 2800 meters, at a distance of 34 kms from Abbi Addi town, which takes about one hour walk to reach from the Adha Village, found located in Tabia Awet of Adikova mountains, has about 12 carved pillars depicting the Byzantium architecture style but water seepage from the inner part of the cave is a perennial problem although this water is used for holy purpose and supposed to cure problems of the pilgrims, needs urgent water proofing conservation. This church was built by King Zerai in 658 AD, can be a potential world heritage site but erosion on the top of this rock hewn church and the rock ceiling needs urgent conservation. What is stupendous about this rock cut church is the external beautification which has four free standing columns reminiscent of those at Medhane Alem Addi Kesho. Inside the church there are four free standing columns and six non-free standing columns with an unfinished dome found on the ceiling..Mariam Hibiito church is 13m deep and 9 meter wide.

C. **Gabriel Wukien:**

This church is located about 16kms North West of Tembien town and with a few kms walk across the field, one can reach to the base of the mountain. A fine example of Byzantine architecture this church has three aisles and four bays. It is well carved with six massive finely hewn freestanding pillars and three cupolas and Ethiopian scholars compare the architecture of this church as very much akin to that of Maraim Wukro and Medhane Alem Adi Kesho.

D. **Mariam Tamba of Guya town** is located at a height of 2900 meters has abundant rock cut caves and churches and settlements and the church has several antiquities. This church is among the Danger sites that needs remedial conservation at the earliest. Abba

Yohannes (6th cent AD) rock hewn church located at a height of 2200 meters in the Atakilti woreda of Kola Tembien is a registered site, well planned by the early Ethiopian Kings of the 3rd-6th century AD with a rich architecture, now maintained by the local religious board, needs patching of the fragments cave entrance and white washing chemical treatment to remove the corrosion on the walls and the base of the rocks. At the foot of this mountain evidence of potteries, stone tools and grinding stones have been detected.

E. The Rock Church of Abune Mamas:

This rock cut cave church is found in Tabia Seguh very near to the Enda Giorgis Seguh site found on a cliff. It is due to lack of a proper survey and research and lack of awareness among the local community this archaeological site is now endangered. It needs quick preservation if it has to retain its archaeological character. Today the society is making some kind of restoration but it should be on scientific lines based on the national guidelines, hence training for the local stakeholders is essential.

F. CHEMIT ROCK SHELTER- A VITAL PALEOLITHIC COMPLEX:

This site is an abandoned rock shelter and a rich source of quartz. This River is located eight kms from Nebelet town and 37 kms from Edagarbi town. Scanty amounts of potteries and stone tools have been recovered from this site.

RECOMMENDATIONS:

- ☐ Coordinate endangered site management with heritage management authorities so as to avoid irremediable losses to cultural heritage sites.
- ☐ Make sure that temporary camps or any construction activity or agriculture takes place which can create risks to heritage sites or properties in the study area.
- ☐ Incorporate heritage and conservation experts in assessing the site damage, form teams and conduct assessment of cultural heritage and the local community resources.
- ☐ Determine whether temporary works are needed to protect the rock art and rock cut caves and churches and any carvings, paintings, frescoes and murals.
- ☐ Try to upgrade the condition of the local community resources and their housing.
- ☐ Create incentives for the conservation of these endangered sites or consider declaring historic properties as community property if the owners are not willing or able to save them.
- ☐ Develop guidelines and codes for the endangered archaeological sites that are compatible with the local and regional best practices.

☐ Harmonize the local habitat and environment and materials of the heritage site with the local settlements and the cultural and natural heritage.

☐ Provide storage facilities for movable heritage properties so that they are not looted, sold or removed from the community.

☐ Ensure community participation in decisions regarding heritage conservation and realize that the cultural and spiritual importance of heritage sites and properties may be very **location-specific**.

The following are the **urgent interventions** needed to be put into effect:

- A detailed survey, documentation and extensive excavation should be carried out so that this site can be historically connected to the great Aksum and Ethiopian civilization and rescue archaeology should be put into immediate practice so that we can save its rich heritage.
- Regular monitoring and conservation of this site with an action oriented excavation plan can be pursued in a procedural manner.

The mounds, burials and other carved stone structures should be fenced and try to raise the original site layout and to regulate the cultural and natural factors persistent on the rock cut churches of Tembien.

Management and Restoration Plan:

A management and conservation plan has to be established for all the 28 rock hewn church sites and the rock art property should be administered by the woreda, the regional administration and the Tourism office, although the local religious authorities have a stronger control over these churches. The boundary for these immovable properties has not yet been clearly delineated and a buffer zone is yet to be provided. The active and energetic perspective is central to the management of the rock hewn churches of Tembien.

There is a need for stronger planning controls for the setting of the churches at Kola Tembien woreda that address housing, land use tourism, water, electricity, agricultural, education and health facilities can boost the holistic management plan which can be developed to integrate the action plan of Conservation thus addressing the overall sustainable development of the area with the involvement of the local population. No special legal framework is provided to protect the rock hewn churches except the general law as cited earlier, and which has established ARCCCH in charge but the Ethiopian Churches and other national and international partners should harmonize the different projects with effective coordination.

CONCLUSION:

The traditional society, evolving communities and the living heritage at the rock hewn church sites of Tembien woreda is seen a tool for social and economic development and that perennial tourism based development can contribute more towards the protection of these sites. Hence there is a need for an integrated site management plan with high standards for future protection, with long term conservation benefit for the local community and consideration for religious practices and the use of rock hewn churches as a sacred site. This challenge warrants continued commitment from the local and national stakeholders as well as support from the international community. Local farmers and religious authorities should concentrate their farming and religious activities in a ecofriendly way without damaging these principal rock arts and monuments, prevent mechanized farming and to restore the fallen and broken stone structures and stone slabs of the church to its pristine position.

Local authorities, the Kebele and Woreda councils and the heritage committee should stop vandalism, hold the antique collectors and refrain people from any illegal activities so that the archaeological remains can be in its safe position. Cleaning up activities near this ancient structure should be undertaken so that an open air museum can be established to promote tourism.

LET US ALL SAVE THE DEAD CIVILIZATIONS IN THEIR EYES OF THE MONUMENTS AND MATERIAL REMAINS THAT THEY HAVE LEFT BEHIND FOR THEIR FUTURE GENERATIONS.

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THE QUINTESSENCE, ISSUES AND JUSTIFICATION OF ARCHAEOLOGY AND HERITAGE MANAGEMENT FOR ETHIOPIA

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INTRODUCTION:

Paper presented at the Inaugural session of the launching of the Master of Arts Program in Archaeology for Heritage Management at Aksum University on the 12th of November 2012

This paper will discuss on the conditions of archaeology and its cultural heritage with special reference to Ethiopia in the last 100 years while at the same time there are many key challenges facing not only Ethiopian but also the African and World archaeological scenario:-

How is Archaeology relevant to the modern world?

How should archaeologists share control over the knowledge of the past? It is our quest to know what archaeologists want to learn, how they about learning it and what they do with what they have learned as we see archaeology today as scientific and humanistic, objective and subjective, ecological and ideational and when we characterize archaeology for Ethiopia there are serious ethical dilemmas facing the preservation of monuments and sites and its cultural heritage. And when we look at the business of archaeology – cultural resource management - and the preservation of cultural resources in the northern part of Ethiopia and its east we have to understand that the past holds different meanings for different people. Apart from archaeologists being interested in antiquities, everyone cares about the past and people care about their history but there are some issues facing like what is done with the knowledge of our past and who gets to tell the story; who controls access to data which is a soul searching task for the professional archaeologists but to understand and fulfill our responsibilities is daunting.

Today, archaeology applies its knowledge and insights to the modern world and it definitely become an applied science which warrants research to acquire the knowledge necessary to solve a specific and recognized problem. However, applied archaeology brings the techniques of archaeology to non-traditional avenues and also applies our knowledge of the human past to concrete economic or social problems. The ESDP –IV, 2011-12, and ETP clearly mentions that every citizen and inhabitant of Ethiopia should protect and preserve their own heritage besides impart knowledge and training to all the

locality stakeholders and more particularly to school students. Although very little emphasis is laid on archaeology in the national school Curriculum.

The proclamation of Ethiopia (No. 209/2000) for Research and conservation of Cultural heritage mentions "Cultural Heritage" means anything tangible or intangible which is the product of creativity and labor of man in the pre-history and history times, that describes and witnesses to the evolution of culture and which has a major and vital environments scientific, historical, cultural, artistic and handicraft content.

Special emphasis on the Establishment of Museums and Expropriation of Cultural Heritage is laid.

Any Cultural Heritage which is not properly protected, repaired and restored; or, which is exposed to decay, contrary to the provisions of this proclamation, regulations and directives to be issued for the implementation of this proclamation; or, which is exposed to damage or decay due to its use contrary to the manner prescribed in Article 22(3).

Background to the Archaeology of Ethiopia

What Factors contribute for the development of Archaeological site?

- **Geographical location**
- **availability of rich natural resources** like permanent water sources and fertile soil for harvesting
- **the presence of trade linkage and interaction** play a great role for the development of archaeological sites.

Its **strategic location** in the map of the world, plus **the presence of varied climatic conditions** in the country, ranging from tropical to temperate, highly modified by its altitude *creates* a good opportunity for the availability of different socio- economic and cultural setup in the country.

This is clearly **viewed** from the livelihood of the lowlanders and highland populations.

While discussing the archaeological sites of Ethiopia the following are the worth mentioning topics.

- Ancient settlement sites
- ruins of magnificent palaces and temples
- sites of impressive monuments
- megalithic stele
- centers of religions,
- several rock art spots etc

However, Archaeology of the Horn and Ethiopia is still in its ***infancy***. The archaeology of Ethiopia and the Horn is, therefore, ***characterized*** by:-

- very *fragmentary in nature*,
- *limited to monumental stone structure*,
- *very little published*
- *influenced by diffusionist and*
- *low technical and capital backup.*

As a result, the

- *chronology*,
- *history and*
- *cultural development* of Ethiopia and the Horn are not still well defined and established.

Very fragmented *textual* and *epigraphic* evidences and *oral traditions* are usually used for the reconstruction of the history of the region. It is only recently that information derived from *archaeological work* began to be used for the development of Ethiopian cultural history.

Ethical Principles and Archaeological practice

The archaeological record is a part of our cultural heritage and belongs to all of humanity. Archaeologists, by the merit of their specialized education and training, serve as researchers and educators about the archaeological record and to a degree even define what the significance within the record. We cannot ensure or guarantee the preservation of every archaeological site, but we can advise our fellow citizens about the importance of the archaeological record and the need to protect it for future generation. Within this context, the principle of archaeological ethics have been developed as a guideline to help professional archaeologists navigate in a rapidly changing World.

The Need for archaeology and Heritage Management at Aksum University

The opening of an MA program at Aksum University has several ramifications:-

- ❖ Aksum and its Vicinity is frequently visited by several tourists, thus encouraging Heritage tourism.
- ❖ Northern Ethiopia has become a focal point for several archaeologist, international researchers and organizations to explore and excavate.
- ❖ Nowadays, a growing number of students are opting BA in Archaeology.

The development of archaeological researches in Ethiopia has some constraints.

- **First**, archeological investigation has been initiated by foreign scholars and international organizations where in archaeologist have taken interest to explore this country. Local scholars started to involve very recently. Today, many Ethiopians have the opportunity to involve themselves in archaeological research imbibing the development of sustainable research method and capacity building in the field.

– **Second**, the absence of strong institutional system was another constraint that needs to be addressed.

– **Last**, a financial constraint has been a major obstacle for the development of archaeological research in Ethiopia.

Despite the constraint, the investigation has brought the following outcomes.

- A shift was made to the study of the ordinary people, the economic and settlement pattern.

- Made the country the oldest with cultural evidence due to the discovery of oldest sites in the world.

- Attracts more international researchers to the country and Ethiopia got attention by world Medias and scientific journals due to the central significance of the findings on humanity.

This in turn has brought many other **advantages**:

- ❖ it has changed the image of the country and the sites are able to attract a great number of international tourists which benefited the country by enhancing foreign currency in particular and the country's economy in general.

- ❖ Moreover, the research has brought application of modern techniques that liberated itself from traditional method of investigation.

- ❖ It also brought to light new perspectives on the archaeology of Ethiopia through the application of multidisciplinary approach.

- ❖ It is also important to note that the research has encouraged the opening of departments in archeology and heritage management in higher institutions of the country.

The Raison d'être of Archaeology and Heritage Management

Archaeologists have found ways to harness ancient technologies to benefit modern populations. Ancient techniques of storing foodstuffs have often fallen into disuse and been forgotten .Yet these techniques were developed in places ill-suited for agriculture and might be of value to modern populations coping with strained agricultural systems. The ancient technologies are seen to be cost effective and projects involving ancient technologies used human labor to produce subsistence products which eliminated the need to import seed, chemicals and machinery. Archaeological techniques and knowledge can shed light on modern problems and improve the lives of living peoples. It is now imminent for Ethiopia to incorporate the public actively in all the archaeological research programs of the various regions' will be a great step forward if the MOE, ARCCH and various other organizations promote the significance of archaeology through public web sites and produce educational materials for primary and secondary schools and that every institution /schools/ universities sponsor an Archaeology month with public lectures, tours, workshops and educational displays. A national education program that sponsors

workshops to train teachers and the stakeholders of the Ministry of Culture and Tourism, Land revenue departments and other public works departments who are engaged actively near the historical sites to train on the importance of stewardship of the nations archaeological sites besides Capacity building training and empowerment of leadership techniques is a must for every employer who is directly or indirectly associated with the historical sites and monuments. Moreover, there are hundreds of ancient sites in and around Aksum and in the Tigray region where the local and regional governments can raise gardens in and around the archaeological or tourist sites so as to infuse awareness and a sense of aesthetic appreciation for our past. But taking archaeology public is always not easy as there are many publics.

Who has the authority to study the past, the rights to access the data and to analyze it, are the challenges to archaeology as some of the ancient human skeletal remains can be claimed by the indigenous peoples. Archaeologists also have to answer questions like: What gives archaeologists the right to poke into the past and to study the dead? Who owns the past anyway? And who gets to decide?

Today, many students dislike History and Archaeology, as once Henry Ford said History is Bunk, which is not true. History tells us how we became people we are today and the nature of human and cultural change – the lessons that have practical applications, lessons that help us frame and understand the challenges facing the world today. Archaeology is seeking out new worlds and new civilizations as we can call it metaphorically but that day is not today. We live in a world partitioned by walls of our own social construction – barriers of race, nationality, ethnicity wealth, and culture. Listen to everyday news, how many monuments and sites are destroyed in Syria or in all the erstwhile conflicts across the globe and you will see this is the greatest challenge facing the world. Here archaeologists are salvagers as we understand the past it will enrich a better world tomorrow.

The Dilemma of Community relations in an Archaeological context for Ethiopia

One of the most important aspects of any archaeological project is developing and maintaining good local community relations and a local understanding of what you are trying to achieve.

The situation at Shire, in north-western Ethiopia, is in some respects unusual, but in others typical.

It is most obviously unusual in that the local community is generally unaware of the historic importance of their region, because an hour's drive away eastwards is Aksum – nationally and internationally recognized as of major importance in both Ethiopia's history and culture, and for its role in the historic development of east-west relations.

Focus on Direct education of the local inhabitants, creating the genesis of a museum and Contributing to site protection measures, both temporary and permanent are crucial.

In 2001, the question of site protection was first raised, especially for the large Mai Adrasha site near Indasellassie town that already had been systematically overrun for over a decade by the local inhabitants in search of gold – not the usual archaeological ‘gold’ but instead natural gold in the soil that they then panned in the nearby river. To extract the soil, they had dismantled stone after stone of walls of entire buildings, leaving large ‘potholes’ over the entire site.

Cultural Heritage Management and Assessment: A realistic outlook

CHM has traditionally been concerned with the identification, interpretation, maintenance, and preservation of significant cultural sites and physical heritage assets, although intangible aspects of heritage, such as traditional skills, cultures and languages are also considered. The subject typically receives most attention, and resources, in the face of threat, where the focus is often upon rescue or salvage archaeology. Possible threats include urban development, large-scale agriculture, mining activity, looting, erosion or unsustainable visitor numbers. The public face of CHM, and a significant source of income to support continued management of heritage, is the interpretation and presentation to the public, where it is an important aspect of tourism. Communicating with government and the public is therefore a key competence.

Salvage projects were hasty attempts to identify and rescue archaeological remains before they were destroyed to make room for large public-works projects or other construction. In the early days of salvage archaeology, it was nearly unheard-of for a project to be delayed because of the presence of even the most fascinating cultural sites, so it behooved the salvage archaeologists to work as fast as possible. Although many sites were lost, much data was saved for posterity through these salvage efforts. This is true of Northern and eastern Ethiopia.

In more recent decades, Ethiopian legislation has been passed that emphasizes the identification and protection of cultural sites, especially those on public lands.

The subject has developed from an emphasis on preservation of material culture (by record if not by physical remains), to encompass the broader concepts of culture, which are inseparable from the local communities. Modern thinking takes the view that cultural heritage belongs to the people, therefore access to cultural heritage has to be ensured.

While archaeological sites remain the primary focus for many CRM professional, others research historical records or on ethno historical projects. Public outreach also falls within their purview. A recent concept is Traditional Cultural Property or TCP. These are places (in southern Ethiopia) with cultural importance to a group that may not be either particularly historical or an archaeological site.

Where archaeological requirements apply to a site of proposed development, if no significant archaeological or other cultural property sites are found in the impacted area, construction may proceed as planned, often with the requirement that archaeologists are on-site providing a watching brief. If potentially significant remains are found, construction may be delayed to allow for evaluation of the site or sites found within the impacted area. This is done to determine the archaeological site's true significance. If archaeologists determine the site contains important/significant cultural remains, the adverse effects on the site must be mitigated. Site mitigation can involve avoiding the site through redesigning the development or excavating only a percentage of the site.

If archaeologists determine the site contains highly significant cultural remains, the adverse development effects on the site must be mitigated through a structured program that is often long and expensive. Mitigation can include preservation by record i.e. the site is destroyed by archaeological excavation rather than by the development and meticulous recording transfers the physical traces in the earth to information in archives. Mitigation also includes construction techniques which ensure that archaeological remains are protected in undisturbed parts of the site or even underneath the development.

Why give preference and pertinence for Aksumite Archaeology?

Aksum provides a counterpoint to the Greek and Roman worlds, and is an interesting example of a sub-Saharan civilization flourishing towards the end of the period of the great Mediterranean empires. It provides a link between the trading systems of the Mediterranean and the Asiatic world, and shows the extent of international commerce at that time.

It holds the fascination of being a 'lost' civilization, yet one that was African, Christian, with its own script and coinage, and with an international reputation. It was arguably as advanced as the Western European societies of the time. It provides a different impression of Ethiopia from the modern media representations. Above all, Aksum or the Northern Ethiopian history remains incomplete as there are several sites submerged beneath which can reveal interesting records of the past.

For Ethiopian schools following grade Nine to Twelve History in its National Curriculum, this section could be a case study to show what Africa was like long before the Europeans arrived through archaeological research and Museum studies.

Conclusion

Archaeology can show how environmental and historical circumstances work together to create the diversity of human societies. In so doing, Archaeology proves that unilineal evolution and the racist assumptions that stand behind it are wrong. But archaeology also contributes not only by what it learns about the past but how it goes

about learning it – the way in which it incorporates different perspectives, attitudes and concerns of descendant communities and other stakeholders in the past.

In the past 20 years Ethiopian Archaeology has become increasingly concerned with incorporating multiple voices into their research and educational efforts. In some cases it has created problems as the various stakeholders in the archaeology contest who owns the past and this is especially prevalent on what are perceived by some communities to be sacred sites.

“Archaeology is just not about the Dead; it’s also about the living. Thus, Archaeology is not just about the past it’s also about the future.”

THE CRAZE FOR STUDENTS’ NUMBERS IN KENYA’S PUBLIC AND PRIVATE UNIVERSITIES AND THE OPTIMAL OPERATION OF MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY: TOWARDS A COST RECOVERY STRATEGY

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The Research Issue

From 2003 when the university came into being as a constituent college of Moi University up to 2013, Masinde Muliro University of Science and Technology (MMUST) had experienced unprecedented growth. Student population had grown tremendously. As of 2012/2013 academic year, student enrolment stood at 10,100 majority of who were enrolled in the Privately Sponsored programme (PSSP). The University had also witnessed growth in new programmes, departments, schools and faculties. Quite a reasonable number of infrastructural facilities had also been developed such as the library, science complex building and hostels (CHE,2011). The university had also expanded its wings in study centers and campuses. These included, Bungoma Campus, Sangalo campus, Webuye, Kaimosi, Kobujoi, Eburnangwe, Nambale, Budalangi, Busia, and Nairobi campuses among others. Despite these expansions, the University had faced

myriad challenges. More serious challenges were reported between 2010/2011 to 2013/2014 FYs. The major challenges were:

- i) Fluid financial situation leading to inability of the university to meet its pecuniary obligations to staff and other service providers to pay salaries on time, inability to pay service providers for the PSSP programmes, inability to send SACCO capitation on time and delayed remittance of statutory deductions to banks, KRA and other stakeholders.
- ii) Inadequate staff support facilities and equipment.
- iii) Inadequate health care support facilities and equipment
- iv) Inadequate provision of tuition facilities and infrastructure
- v) Inadequate student accommodation and welfare services
- vi) Inadequate infrastructure to support research and innovation

Several attempts were made to remedy the situation through change of guard by University Council (UC) and Top University Management (TUM) including numerous austerity measures in 2012/2013 FY. However, it was believed that such changes alone would not steer the University to financial stability without proper identification of the problem from an empirical perspective. It is against this background that this study was proposed with a view of establishing the optimum level of operation of the University. The rationale behind this was to provide a foundation on which job rationalization, resource allocation, and University's target outputs can be measured through efficient utilization of the minimum resources available. Thus the purpose of this study was to establish the optimal level of operation of Masinde Muliro University of Science and Technology. This included identification of change in long-run average cost based on the concept of economies of scale and diseconomies of scale. The study argues that the university would enjoy economies of scale in a situation where average cost was equal to the marginal cost. By contrast, the university suffers from diseconomies of scale in a situation where marginal cost would be higher than the average cost of operation. The extent of diseconomies of scale can affect efficient operation of the University.

Objectives of the study

The following specific objectives guided this study.

- i) To determine the optimal level of operation of Masinde Muliro University of Science and Technology
- ii) To analyse the unit costs, the total costs and the marginal costs of operation of the university

Central Research Question

The study was guided by the following main question.

1. What is the optimal level of operation of Masinde Muliro University of Science and Technology?

Subsidiary Research Question

In order to address the main question, the study developed the following subsidiary research question stated as follows:

2. What are the unit costs, the total costs and the marginal costs of operation of the university?

Significance of the study

Prudent financial and physical management of any institution is of prime significance. In the recent past many higher education institutions in Kenya have been accused of inefficiency in human capital and resources management. The significance of this study lies in the fact that it will:

- i) Aid the university's top management organs such as the Chief Executive officer and the Vice Chancellor, University Council, the deputy Vice Chancellors including Registrars, Heads of Departments, Deans and Directors, to identify areas of inefficiency in financial and human resource management of the University.
- ii) It is also hoped that this study might form the basis for future policy decisions in the University that will enhance prudent financial management, accountability among staff and cost recovery mechanism

1.5 Concepts

According to Gerring (1999), concept formation lies at the heart of all social science research. The significance of concept formation lies in its ability to aid proper conceptualization of the topic of study since every author makes lexical and semantic choices as they write. In this study, the terrain of concepts was developed in an organogram as shown in Figure 1 below.

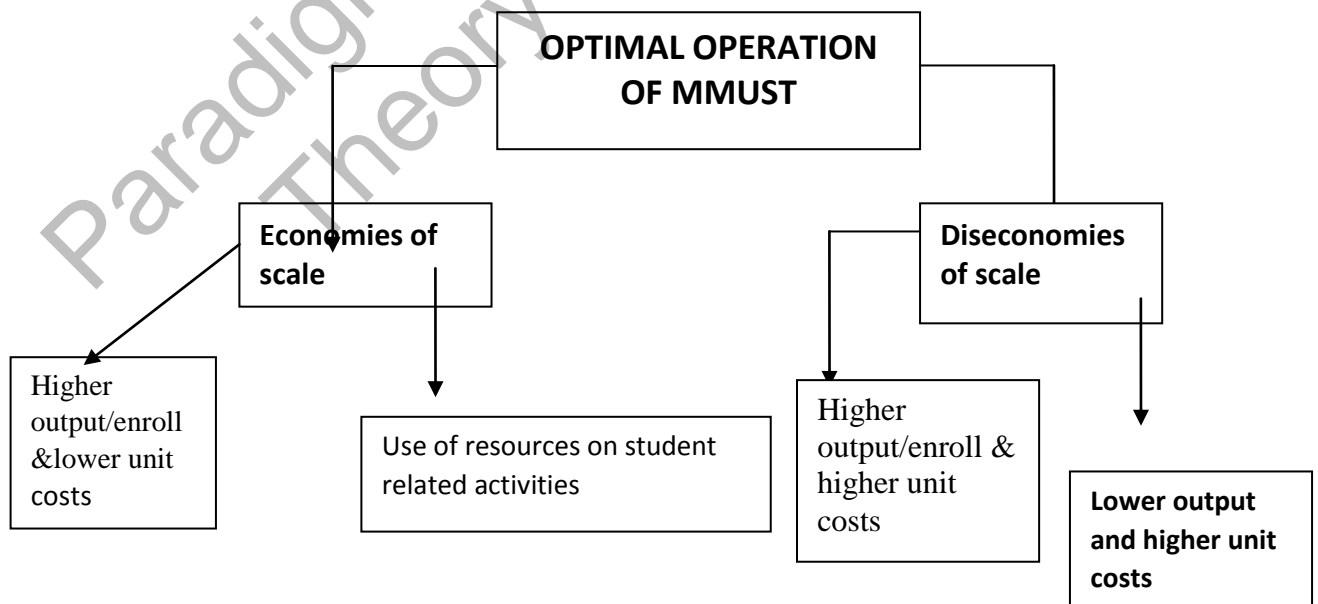


Figure 1: Organogram of the Main Concepts of the Study

Source: Own Conception.

Subsequently, the main concepts of the study were operationalised as follows:

Optimal operation of MMUST: As used in this study, this refers to a situation where average/unit costs equals to marginal costs

Marginal costs: This is the extra costs that an institution will incur by admitting one additional student. It is
$$\frac{\text{Change in total costs}}{\text{Change in number of students}}$$

They are cost that change with number of students being admitted in the university for example the more the number of students being admitted in the university, the more the costs of food, water, electricity, hired lecture space, hired accommodation space, stationary and chairs. The University must get interested in marginal costs and average costs in its operation. This is because, when the marginal costs are increasing by a big margin, you cannot keep on admitting more students. However, when the marginal cost is equal to average cost, the institution is operating optimally. The University should aim at maintaining this.

Unit cost: It is the total costs divided by the number of students in the university. At the moment, the university should be concerned with lowering unit cost in its operation. The aim is to ensure the university operate optimally and therefore avoid wastage of scarce resources. Unit costs are also referred to as average costs or operating costs. All these terms will be used interchangeably.

Total costs: It is the additional fixed costs and variables costs. It includes all the costs that the university will incur in order to function or operate.

The Causal Path

Causality has been defined as a theoretical concept independent of the data used to learn about it.

(King, Keohane and Verba, n.d:76). In this study the outcome variable denoted by Y (dependent variable) is the optimal operation of the university that encompasses low unit cost. At this point, the marginal cost is equal to the unit cost. However, the causal variable denoted by X (independent variable) is efficiency in financial expenditure. This explained by proper utilization of HC in the, teaching and non teaching staff. This will be shown by planned growth rates in staff employment and student numbers. The causal path assumes that funds will be utilized on student related activities. However, there could be intervening variables such as corruption, political pressure, court action, etc. Such factors are denoted by Z. This is shown in Figure 2.

xcausal MechanismY

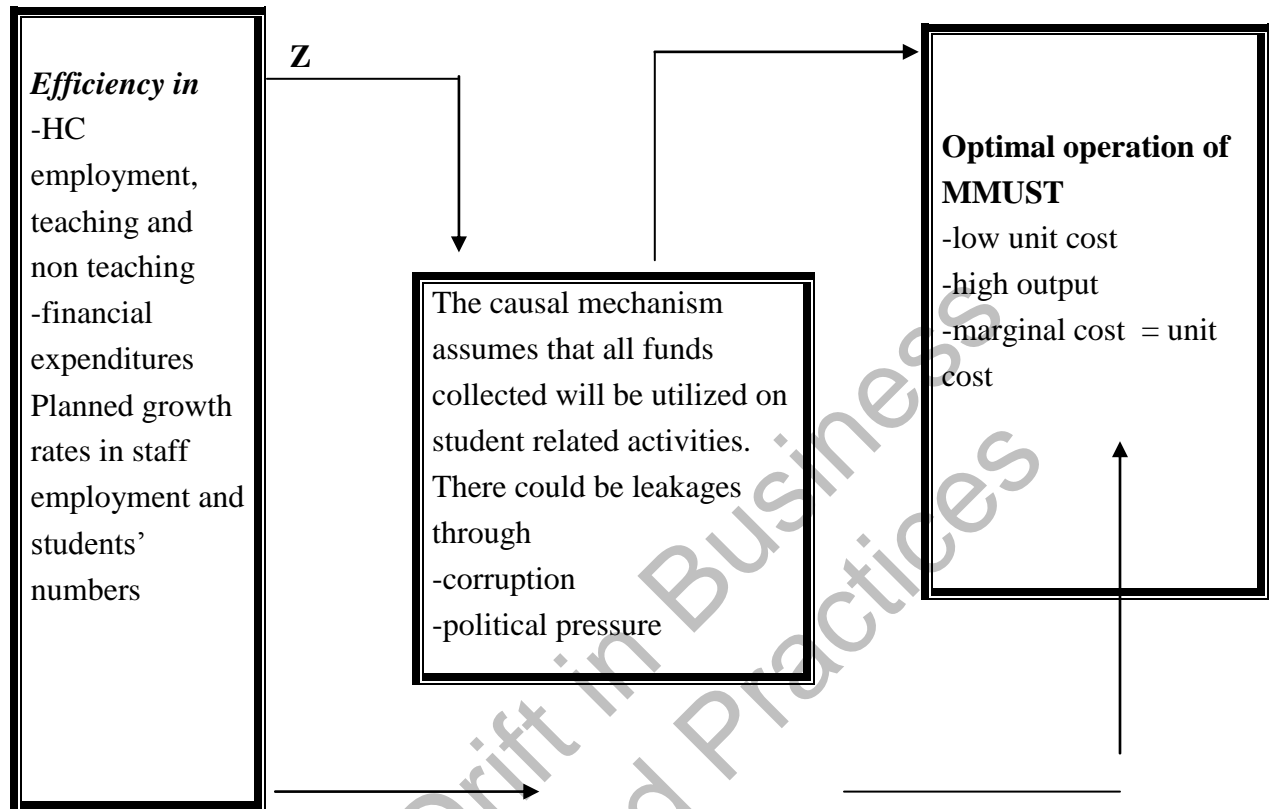


Figure 2: the causal path

Source: adopted from Odebero, 2012

Theoretical framework

Educational Cost Function Analysis

The survey was based on the theory of Cost function analysis of educational investment. Cost function analysis models the relationship between firm costs, firm output, and input prices (Very and Layard, 1975; Grogberge, Jansen, Taylor and Booker, 2005). As such, an educational cost function uses statistical techniques to measure the systematic relationship between actual expenditures and educational output and outcomes given input prices and technological factors (Grogberge, Jansen, Taylor and Booker, 2005).

Economically, output (Q) has a direct relationship with the total cost since an increase in the output leads to a rise in the total cost and vice versa. Be that as it may, an

improvement in the state of technology usually provides the producer with cost saving techniques of producing the output. Technology therefore has an indirect relationship with the total cost. Rises in the prices of the factors of production directly lead to increases in the total cost of production, hence, a direct relationship.

Graphically, the other factors of the total cost function apart from the output (Q), act as shift factors as changes in any or all of them shift the cost curve outwards or inwards, depending on the direction of change. The relationship between total cost and output can be plotted on a two-dimensional diagram allowing for movements along the cost curve, holding all other factors constant. This implies that the cost function may be written as

$$C = f(Q)$$

The short-run total cost function is given as

$$C = f(Q, T, P_f, K)$$

and the long-run function is

$$C = f(Q, T, P_f)$$

where C = total cost

Q = output

T = technology

P_f = prices of factors of production

K = fixed factors of production

In the area of higher education, any analysis of costs must acknowledge and explicitly take into account in the estimation technique the multi-product nature of production. Universities by their very nature are engaged in production and dissemination of knowledge (Cohn and Cooper, 2004). As such, the final outcomes are in the form of the knowledge generated through research and its subsequent dissemination by way of teaching.

Application of Cost Function Approach to the Optimal Operation of MMUST

The cost function approach has a number of desirable technical properties. It is reasonable to expect that education systems will be evaluated with respect to multiple outcomes, and the cost function framework accommodates this requirement handily.

Some other statistical approaches, such as estimation of an education production function, are not as readily adapted to a multiple outcome situation. Second, the cost function approach is applicable as long as firms are minimizing costs. Public education systems may attempt to provide education services at minimum cost, but they are certainly not profit maximizing as must be presumed in some other methodologies. Hence a cost function approach has often been employed in studies of nonprofit institutions, both in the public sector and in the private sector.

Finally, a cost function-based approach encourages or even forces researchers and policy analysts to be explicit about what outcomes are being studied and what inputs are being considered, as well as what assumptions are being made regarding behavior of decision makers at the school or any other level under analysis.

Criticisms of the Cost Function Analysis in Education

The cost function approach has been criticized because its technical complexity makes it difficult to communicate to the policy-making community. A number of judgments and assumptions must be made by a researcher attempting to estimate an education cost model. The basis for and importance of these choices may, indeed, be less than transparent to the policy audience (Psacharopoulos and Woodhall, 1985). In our view, a singular focus upon transparency is a poor policy lens. The primary objective should be to use the approach which can provide the most accurate policy information.

Simplicity, bought at a price of significant inaccuracy, is a poor bargain. Another related criticism of the cost function approach is that the cost function does not directly inform how education systems should spend their money. This is a relevant observation about the cost approach, but we don't see it as a fatal criticism. The cost function approach provides a predicted available technology, and given a target level of efficiency.

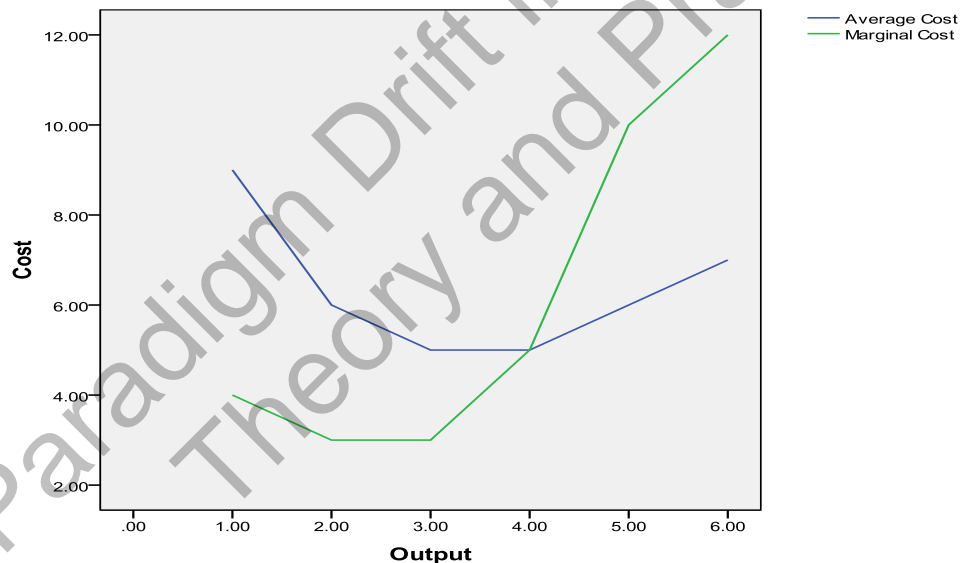
Cost Behaviour in Public Universities

Cost behavior is the general term describing how a cost will change when the level of output changes. Normally as the level of activity rises or falls, a particular cost may rise, fall or even remain constant. It is therefore against this background that a manager should be in a position to predict how a certain cost will behave in response to a change in an activity. Understanding these dynamics is critical for the purpose of planning and decision making. As such, hypothetical set of data can be used to illustrate this relationship as presented in Table 1 and Figure 3.

Table 1: Variation in educational costs against enrollment/output

Enrollment	Total Cost	Average Cost	Marginal Cost
0	5		
1	9	9	4
2	12	6	3
3	15	5	3
4	20	5	5
5	30	6	10
6	42	7	12

Table 1 uses hypothetical data to demonstrate how average costs and marginal costs vary with changes in the level of output or enrollment. Accordingly, the average cost is initially higher than the marginal costs. However, as the student enrollment continues to increase, the marginal costs start increasing until they surpass the average costs. The point where average costs are equal to marginal costs signifies the stage of optimal enrollment. This information is further expressed graphically as shown in Figure 3.

**Figure 3: Cost against Output**

From Figure 3, three relationships between average costs and marginal costs can be deduced.

- i) When the average cost is falling, the marginal cost is less than the average cost.
- ii) When the average cost is at the minimum, marginal cost is equal to average cost. This is a point of optimal operation/ optimal enrollment
- iii) When the average is rising, marginal cost is greater than average cost

In addition to the above relationships, it is important to note that the stage, at which the marginal cost is lower than the average cost, represents the economies of scale. When the economies of scale are in existence, it is possible to increase production or enrollment without incurring substantial expenditure. In educational institutions, unit costs decline as the student/pupil enrollment increases, until the point where economies of scale are exhausted. Once economies of scale have been exhausted diseconomies of size set in. For example, if there is spare capacity in a university, it is possible to increase enrollments without incurring substantial expenditure. However, once this capacity is exhausted, diseconomies of scale will set in and the marginal cost will exceed the average cost. This is because continuing to enroll students in the university where facilities are exhausted will necessitate the construction of new buildings, purchase of more books and equipment among others. It is the acquisition of these new facilities/items that causes the marginal cost to exceed the average cost, thus ushering in the diseconomies of scale.

Typology of optimal operation at MMUST

H L Inefficient operation High Unit Cost Low output	H H Diseconomies of scale High unit cost High output
LL Below optimal Low unit cost Low output	LH Optimal level Low unit cost High output

Output

Figure 4: source: *derived from Odebero, 2012*

The typology explains that low unit cost and low output would lead to an undesirable type of operation called *below optimal*. This means that the institution would still require to enroll more students to maximize the use of existing facilities and resources. The reverse of it is when the institution has low unit cost but high output. This would result in a desirable type of operation called *optimal operation*. Any institution would want to maintain this level of enrolment to keep the costs low and manageable.

In the event of the institution increasing enrollment, this would result in even higher unit cost and the result would be a *diseconomies of scale*.

Methodology

The study was done as a descriptive survey to carry out a survey of the existing status with regard to optimal operation of the university. This involved personal interview with senior managers of the university who were purposively sampled in order to establish the status of the phenomenon.

In addition, questionnaires were administered to a random sample of students, teaching staff, non-teaching staff, and University community members such as suppliers, the business community and parents. The main object of this was to establish the level of efficiency in institutional operation. The information got from questionnaire was cross validated by in-depth interviews from key informants such as senior officers in university management.

Process tracing of employment policies for staff, financing policies from exchequer, and policies governing income generating units was done. Specifically, document analysis was used to establish trends in university financing through government capitation and PSSP collections and students enrolment. The major documents used included but were not limited to, audited annual reports and accounts, budget proposals and senate reports.

Sample and sampling techniques

Table 2: Target Population, sample population and Response rate

Item	Target	Sample	Response rate
Teaching staff	285	30	17
Non-teaching staff	700	80	84
Students	9000	100	88
Community		40	22
coordinators	10	05	03
Deans	5	1	1
Finance Officer	1	1	1
Registrars	3	1	1
DVCs	3	3	1
Grand Total			218

Findings

Optimal Level of Operation of Masinde Muliro University of Science and Technology

The main objective of this study sought to establish unit costs, total costs, marginal costs and optimal level of operation of the university. The findings are discussed as follows.

STUDENTS COSTS

Students' costs were divided into two components: average (or unit) costs and marginal costs. The calculation of these costs makes two underlying assumptions: first, that all expenditures in the university are incurred to further the objectives for which a student is enrolled, and that there are no disparities in students fees payments that may arise from differentiated program costs or inability to pay. Thus students pay equal amounts of money to get a carefully packaged set of services from the university.

Average (or unit) costs were determined by the following formula:

$C_{av} = \frac{C_j}{E_j}$ where C_{av} is the average cost, C_j is the total expenditure in the given year, and E_j is the total student enrolment in the given year.

Average cost therefore is the amount of money required to keep one students in the university for the given year.

Marginal costs were determined using the formula:

$C_m = \frac{C_j - C_i}{E_j - E_i}$ where C_m is the marginal cost, C_{av} is the average cost; C_j is the total expenditure

in the given year; C_i is the total expenditure for the previous year; E_j is the total enrolment in the given year, and E_i is the total enrolment in the previous year.

Marginal cost is the expenditure that the university incurs to enroll an extra student. When marginal costs equal average costs, the institution is said to be operating at its optimal level. *When average costs are higher than marginal costs, it means the institution is operating below capacity* and there is need to enroll more fees paying students. *When marginal cost is above average costs, the institution is said to be over established and diseconomies of scale set in.* Difficulties associated with maintaining optimal levels of operation include the challenge of keeping strict fiscal discipline and managing incidental expenditure drivers such as unforeseen emergencies. Table 6 gives statistical data of the total costs, unit cost, unit cost growth rate and the corresponding marginal costs.

Table 7: Operational Costs at MMUST

Year	Total Cost Ksh.(Millions)	Unit Cost Ksh. (Thousands)	Marginal Cost Ksh. (Thousands)
2006/07	597.796	294.917	
2007/08	747.159	217.324	105.856
2008/09	967.822	181.240	116.016
2009/10	1214.953	181.255	181.314
2010/11	1519.713	184.252	197.256
2011/12	1802.003	192.316	251.595
2012/13	2154.731	213.340	483.189

The table shows that total costs have been rising steadily over the years as students enrolment grow. Starting with Ksh. 597.796 million in 2006/7 academic year, total costs reached Ksh. 2.14 billion in 2012/13 academic year. An examination of unit costs however shows an initial decline from Ksh. 294,917 to reach the lowest level of Ksh. 184, 252 in the year 2010/2011 before rising again to reach the highest level of Ksh. 213,340 in the 2012/2013 academic year. Marginal costs on the other hand started off at the lowest level of Ksh. 105,856 to reach the highest level recorded at Ksh. 483,189.

Cost curve analysis was employed to help pin point the optimal operating point for the university, as illustrated in Figure. 4.

Figure. 4: Average costs, Marginal Costs and optimal operation of MMUST

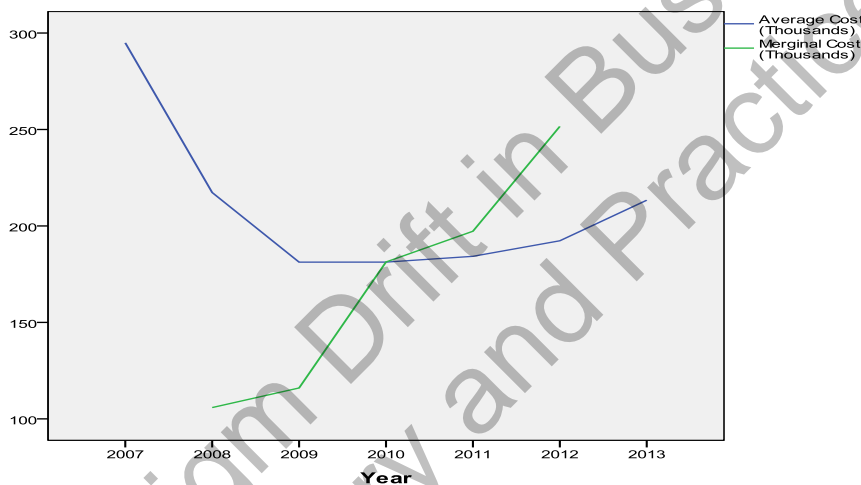


Figure. 4 shows a comparative diagrammatic representation of students' average costs and marginal costs and optimal level of operation.

As seen earlier, marginal cost is the expenditure that the university incurs to enroll an extra student. While average cost is equivalent to unit cost. Between 2007 and 2009 the university experiences higher *average costs than marginal costs and this implies that the institution is operating below capacity. At that point it was advisable for the university to enroll* more fees paying students. This is because there were more facilities that were underutilized. More students would ensure that university facilities are exhaustively utilized to meet the set objectives. From the figure, the average costs were dropping from around kshs.300, 000 in 2007 to kshs.181,000 in 2009. The marginal costs on the other hand rose from kshs.116, 000 in 2007 to kshs.116,000 in 2008.

However, the university experienced optimal operation in the year 2010. This is the point of intersection or the point when marginal costs equaled average costs. Specifically, the average cost and the marginal cost were equal at kshs 181,000. It is advisable that the university should have tried to maintain this point because this was the cheapest it could get in its operation. At this point, the university would make surplus cash, the salaries would be paid on time and statutory deductions would be paid on time. However, it is important to note that the fees charges were lower than the average cost at the optimal level of kshs. 181,000. It is recommended that fees be raised to match the costs at the optimal level of operation.

From the year 2011, the marginal costs surpassed the average cost at kshs 251,500 for MC and ksh 192,000 for average cost respectively. This means that the university was spending more to maintain an extra new student than to maintain the already admitted old student. Because the *marginal cost is above average costs, we conclude that MMUST has been over established from 2011 to date. By implication, the university is operating at diseconomies of scale. At the moment, the university spends a whopping ksh 483,000 to admit an extra student as opposed to ksh 213,000 in maintaining an old student.*

Some of the glaring indicators of over establishment include congested lecture halls where students to attend lesson outside classrooms. Numerous incidents of students catching voices of their lecturers through windows without visual contact with the lecturers have been observed. Indeed the possibility of a lecturer covering the entire course without coming in physical contact with some students is not farfetched possibility. The study discovered that there was one public address system in the University. This could partly explain the apathy lecturers have in enforcing the quality requirement of 80% lesson attendance for a student to sit examinations. Would such a lecturer therefore deploy the most appropriate teaching methodology to effectively deliver the content to student? And if the University is unable to provide sitting space for students, is it possible that it is facilitating effective teaching through provision of teaching aids that expose students to what the knowledge economy demands of them after school? The university has responded to this by hiring lecture halls, Office space and teaching spaces outside the university. This has only helped to increase costs of operation.

In the interest of education quality and institutional competitiveness, management should lay out a clear time bound activity plan to ensure students do not learn in noisy environments, lecturers have office and preparation rooms from where students can consult on academic issues, administrative staff have adequate office space to attend to those seeking assistance of confidential nature. Such measure may help improve employee and student moral and promote responsible behavior. The exponential growth

in academic units that are often unstructured has exacerbated the already sorry situation of infrastructure such as lecture space, staff offices, access to reliable internet and other ICT facilities, students' hostels and recreational facilities. Hiring of facilities that are spread out wide exhaust students as they run about to catch up with lectures while at the same time denying the university the required revenue for its critical operation. In addition, hiring lecture halls and students accommodation may be a conduit through which corruption related schemes are incubated and hatched.

It is advisable that the university must quickly stop further admission of new students since it's uneconomical. It is further advised that the university expands existing facilities such as lecture halls, office space, students' hostels, recreational facilities, etc before any new admissions can be done as opposed to hiring of lecture halls, teaching spaces and office spaces outside the university as this only leads to increased costs. The university could also start new campuses outside the main campus where the new students can be housed. In such a case careful planning and spontaneous investment in one campus to optimality could be more efficient than hurried but haphazard expansion. Increment in fees to mitigate the average costs may not be an option because other institutions charge much less especially private universities.

Difficulties associated with maintaining optimal levels of operation include the challenge of keeping strict fiscal discipline and managing incidental expenditure drivers such as unforeseen emergencies.

Table 6 gives statistical data of the total costs, unit cost, unit cost growth rate and the corresponding marginal costs.

Conclusions and recommendations

The main objective of this study sought to establish unit costs, total costs, marginal costs and optimal level of operation of the university.

Students' costs were divided into two components: average (or unit) costs and marginal costs.

Average cost was defined as the amount of money required to keep one students in the university for the given year.

Marginal cost was defined as the expenditure that the university incurs to enroll an extra student.

The institution was said to be operating at its optimal level when marginal costs equaled average costs. However, when average costs were higher than marginal costs, the institution was said to be operating below capacity. At this point there was need to enroll more fees paying students. On the other hand when marginal cost was above average costs, the institution was said to be over established and diseconomies of scale were seen to have set in.

The study shows that total costs had been rising steadily over the years as students enrolment grew. Starting with Ksh. 597.796 million in 2006/7 academic year, total costs reached Ksh. 2.14 billion in 2012/13 academic year.

The study also shows unit costs declining initially from Ksh. 294,917 to reach the lowest level of Ksh. 184, 252 in the year 2010/2011 before rising again to reach the highest level of Ksh. 213,340 in the 2012/2013 academic year.

Marginal costs on the other hand started off at the lowest level of Ksh. 105,856 pa to reach the highest level recorded at Ksh. 483,189.

Marginal cost was defined as the expenditure that the university incurs to enroll an extra student. The study shows that between 2007 and 2009 the university experienced higher **average costs than marginal costs and this implies that the institution was operating below capacity. At that point it was advisable for the university to enroll** more fees paying students. This is because there were more facilities that were underutilized. More students would ensure that university facilities are exhaustively utilized to meet the set objectives.

According to the study, the average costs were dropping from around kshs.300, 000 in 2007 to kshs.181,000 in 2009. The marginal costs on the other hand rose from kshs.116, 000 in 2007 to kshs.116,000 in 2008.

The study reveals that the university experienced **optimal operation** in the year 2010 ie the point of intersection or **the point when marginal costs equaled average costs**. Specifically, the average cost and the marginal cost were equal at kshs 181,000. It is recommended that the university should have tried to maintain this point because this was the cheapest it could get in its operation. At this point, the university would most likely make surplus cash because it was cheap to run its operations.

It is however noted that the fees charges were lower than the average cost at the optimal level of kshs. 181,000. This implies that the tuition fees charges were not based on any empirical study and can therefore not be relied upon to finance the university operations. It is recommended that fees be raised to match the costs at the optimal level of operation.

From the year 2011, the marginal costs surpassed the average cost at kshs 251,500 for MC and ksh 192,000 for average cost respectively. This means that the university was spending more to enroll and maintain an extra student than to maintain the already admitted old student. Because the marginal cost is above average costs, we conclude that MMUST has been over established from 2011 to date. By implication, the university is operating at diseconomies of scale. At the moment, the university spends a whopping ksh 483,000 to admit an extra student as opposed to ksh 213,000 in maintaining an old student.

It is advisable that the university must quickly stop further admission of new students since it's uneconomical. Our recommendation is that the university must cease further admissions and gradually lower the students numbers to the optimal level so as to be able to maximize its operations. However, in the interest of growth, it is advised that the university expands existing facilities such as lecture halls, office space, students' hostels, chairs, library facilities, recreational facilities and related facilities before surpassing the optimal numbers in admissions.

The study also observes that hiring of lecture halls, teaching spaces and office spaces outside the university only leads to increased costs. The university could also start new campuses outside the main campus where the new students can be housed. In such a case careful planning and spontaneous investment in one campus to optimality could be more efficient than hurried but haphazard expansion. Increment in fees to mitigate the average costs may not be an option because other institutions charge much less especially private universities and this could only serve to make the university unpopular.

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A SUSTAINABLE CHANGE -NEW PARADIGMS OF BUSINESS EDUCATION- Literature Review

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ABSTRACT

The greatest competitive challenge facing companies today is said to be embracing change. The business environment is in constant flux and companies must grapple with a host of new realities. This backdrop of change has catalyzed a reassessment of traditional managerial concepts and practices. In the same context this paper aims to trace the evolution of a new management paradigm and identifies its main drivers. The higher education sector has undergone enormous growth in recent years and it is widely believed that future success in a globalized world economy belongs to those organizations that go the extra distance in providing and building a workforce and management to cope with

these challenges has placed management education in a much sharper focus than ever before. Universities must continually assess their services and even should thrive to adopt the innovative ideas of making today's higher education more relevant and meaningful in the management paradigms. The paper provides narrative and analysis. Assesses the implications of the change in management paradigms for the educational system, highlights needed adjustments in orthodox management education and lingering challenges for management education providers. Provides help in understanding the perspectives of the various business stakeholders that can help academics allocate resources and design programs that cater for the needs of managers in the 21st century.

INTRODUCTION

The dawn of the 21st century has brought with it an unprecedented wave of change. The days of mass production or standardized products appear to be over. The key words for the future are variety, flexibility, and customization. Indeed, a new techno-economic rationale is emerging, with a clear shift towards information intensive rather than energy or material intensive products. Globalization has also brought with it new business opportunities, and a growing global marketplace, where information goods and capital flow freely and customer choice is expanding. Against this backdrop of change, the field of management has suffered some degree of dislocation (Collins, 1996). This dislocation has in turn catalyzed some soul-searching on the part of managers and academicians alike, and a reassessment of traditional managerial concepts and practices. This paper argues that this introspection has resulted in a discernible evolution in traditional theoretical approaches/orientations as well as fundamentally changed organizational practices, to the extent that the changes qualify as a genuine paradigmatic transformation. Noting that a paradigm is a framework of basic assumptions, theories and models that are commonly and strongly accepted and shared within a particular field of activity, at a particular point in time (Mink, 1992; Collins, 1998), this paper synthesizes the main assumptions of what is commonly referred to as the traditional management paradigm and identifies the main drivers that facilitated the ascendancy of an alternative management paradigm. The philosophy and guiding principles of this new paradigm are then addressed. The implications of this paradigm shift for institutions of higher education are in turn assessed to delineate the challenges associated with the evolution of new management pedagogy in universities.

The traditional management paradigm Functional hierarchical line management was the main management paradigm for nearly 200 years. The system was based on the theories of Fayol, Taylor and Weber that viewed the management environment as stable and as such tended to prescribe centralized decision-making processes and hierarchical communication channels (Table I). Organizations were perceived to be rational entities

pursuing specific rational goals through their organization into highly formalized, differentiated and efficient structures (Turner and Keegan, 1999; Burnes, 2000; Jaffee, 2001). This mechanistic orientation dominated most businesses in the past and is still commonly encountered especially in the context of developing countries. As shown in Table I, the traditional management paradigm was characterized by its inward focus, with special attention accorded to cutting costs, complying with rules, respecting hierarchy, and dividing labor into simple, specialized jobs. It was narrowly focused on promoting production efficiency and combating waste.

TABLE 1: THEORETICAL PILLARS OF THE TRADITIONAL MANAGEMENT PARADIGM

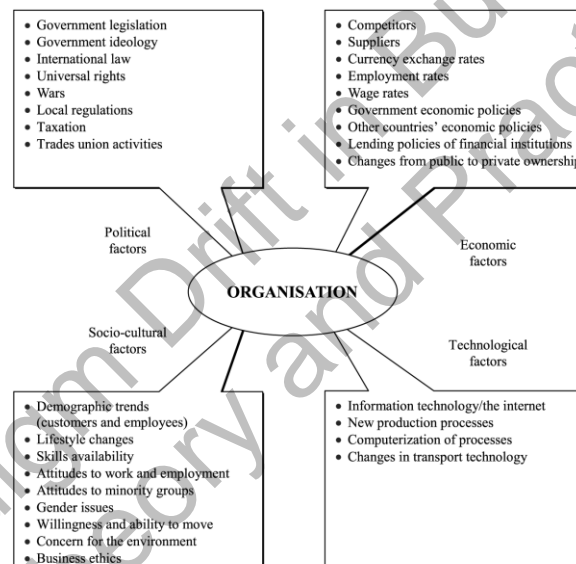
Based on	Contribution	Emphasis
Taylor (1913)	Scientific management	Experimentation, standardization, and the use of diligent scientific observation, time and motion study, systematic worker selection and training and managerial responsibility for monitoring and control.
Fayol (1949)	Functional management	A core management process revolving around universal functions (e.g. planning, organizing and controlling) and principles such as division of work, discipline, centralization, order and stability.
Weber (1922)	Bureaucratic management	Division of labour, hierarchical authority, formal rules/regulations, and impersonality contributing in turn to efficiency, precision, consistency, subordination, and reduction of friction/persona costs.

Source: Kreitner (2002); Robbins and Coulter (2003)

DRIVERS OF CHANGE

A rapidly changing techno-socio-economic environment is presenting new challenges for structuring and managing organizations. Increasing technological complexity and the need to diffuse information and technology within the organizations is proving to be beyond the capacity of the old rigid hierarchal management system. Technological complexity implies the need for higher levels of human knowledge and multi-disciplinary involvement (Bridges, 1996; Boyett and Boyett, 2000). Firms operating in the knowledge economy need to harness growing knowledge, technology and engineering advances and a whole range of new skills and dynamic competencies (Liyanage and Poon, 2002). Knowledge workers on the other hand rightfully perceive the old management system as under-utilizing their expertise and under-estimating their willingness to take initiative and responsibility.

FIGURE: 1 STAKE HOLDERS TO DRIVERS OF CHANGE



Source: Adapted from Senior (2002)

NEW MANAGEMENT DIMENSION

Organizations have become increasingly aware that the world has turned on its axis, necessitating a fundamental re-assessment of objectives, operations and management orientation. Therefore the 1980s have witnessed the emergence of a paradigm shift, or to be more accurate the search for new more appropriate paradigms (Collins, 1996; Burnes, 2000). The theories that have most widely affected contemporary management thinking include the behavioral approach, the systems theory, the contingency approach, the culture-excellence approach, and the organizational learning theory, each of which

contributed new insights to our understanding of contemporary management processes. The behavioral approach for example turned attention to the human factor in the organization and the importance of group dynamics and complex human motivations. The systems approach alerted managers to the notions of embedded-ness and interdependencies, while the contingency approach underscored adaptability/situational appropriateness. The culture-excellence approach reminded managers to accord more attention to the softer issues of people, values, and employee/customer satisfaction. It also posited innovation as a central driver of excellence in organizations. The organizational learning approach emphasized the usefulness of carefully nurturing and cultivating the capacity to acquire new knowledge and to put it into new applications.

Inspired by these various contributions, traditional management perspectives are being transformed, and the long-held criteria for evaluating organizational and managerial effectiveness are being reinvigorated. While the changes have proved unsettling for many managers and organizations, 21st century corporations are surely charting new grounds where familiar themes and practices are being disrupted and remolded. Business discourse increasingly revolves around intelligence, information and ideas (Handy, 1989) and capitalizing on brainpower and intellectual capital to add value and sustain competitiveness. Management in the 21st century has accordingly taken a new orientation. It is increasingly founded on the ability to cope with constant change and not stability, is organized around networks and not hierarchies, built on shifting partnerships and alliances and not self-sufficiency, and constructed on technological advantage and not bricks and mortar (Carnall, 2003). New organizations are networks of intricately woven webs that are based on virtual integration rather than vertical integration, interdependence rather than independence, and mass customization rather than mass production (Greenwald, 2001).

Massification of Higher Education

Other challenges arise due to the increasing massification of higher education, as well as the rapidly changing preferences of students, employers, governments and other stakeholders. Business schools will have to develop new strategies to increase their resources and the wealth of their offerings, and will have to globalize their programmes and resources in order to remain competitive and relevant. Academic clusters are one strategy that business schools will be adopting more and more in the future. By merging or forming partnerships and alliances, schools will benefit from economies of scale and, at the same time, multiply the resources and opportunities offered to faculty and students. Mergers, partnerships and other interconnections among institutions and across borders will generate greater opportunities for student and faculty mobility, will provide incentives for the internationalization of curricula and will encourage the participation of

different stakeholders in the higher education system. The collaboration of different institutions with complementary strengths, as well as collaboration with other stakeholders, such as the corporate world, is a popular trend that will continue to grow. Business schools are increasingly forging links with corporate universities and the corporate world in general. Through these links, they can provide an education that is relevant to the productive economy by identifying common goals and objectives with the corporate world. Links with the corporate world should also be created in order to conduct joint research projects in areas of common interest. Leveraging resources from the two stakeholders may lead to a great deal of useful research and, ultimately, innovation. One example of such collaboration is India, where several private higher education institutions forge links with the fast-growing private sector in order to fulfill the expectations of the corporate world in terms of their applicants' academic preparation, in return for funds. This allows for the development of a more practice-based education, which benefits both students and their future employers.

GLOBALIZATION OF EDUCATION

Globalizing education also implies internationalizing the faculty of business schools for the benefit of the global learning of both faculty and students. This internationalization, however, has not yet spilled over into the research area, where most research papers still focus on Western businesses. This can be a shortcoming to the development of global course content and mindsets. Student bodies are also becoming more international, and this trend will have to be encouraged through different tools in the future. Some business schools have now made great strides in this regard: the establishment of cross-cultural programme teams, regional and national days on campus, exchange programmes with other business schools around the world, student treks to other countries and internships in locations outside the student's own region are only some of the initiatives under way. Some businesses are structuring themselves to offer business schools the opportunity for students to build their vision of corporate global responsibility and improve their experiences of social and environmental projects by organizing visits and/or internships on such projects. Such opportunities should be encouraged – and increased.

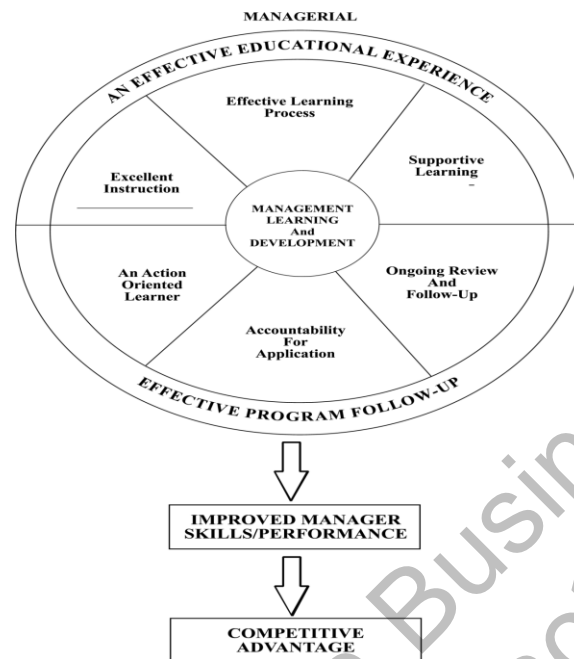
ENDURING CHALLENGES

The changes in management paradigms have no doubt created a more challenging environment for management education providers. While some advances have been made, management education still faces the responsibility of shaping results and behavior, through reinforcing innovation, creativity, flexibility, the capacity to respond to widely different situations, autonomy, self-direction and self-expression. Management education also faces the challenge of cultivating the entrepreneurial imagination and sustainable development for a better futuristic approach. Another challenge facing

management academics is to develop alternative curricula and modes of delivery, which not only stimulate but also facilitate a process of continuous learning. Sexton and Kasarda (1991) advance the notion that the two goals of most business education programs are to prepare people for career success and to increase their capacity for future learning. Exposure to different learning styles promotes a propensity for life long learning, which in turn posits itself as increasingly vital for fighting the rapid obsolescence of technical skills (Davies, 1998). Higher education today has an acknowledged role in lifelong learning, and in shaping capable people who not only know about their uniqueness, but also have the confidence to apply their skills in varied situations and to continue to update their knowledge and learn from experience (Yorke, 1999).

To the extent that every career in business involves some combination of knowledge and skills, management education also faces the challenge of the integration of functional knowledge. This is an area where little progress has been achieved, given the continuing inclination in many business schools to compartmentalize education either in business or in engineering, to focus on specific business functions (e.g. accounting, marketing, finance and human resources) and limit interdisciplinary fertilization (Khalil, 2000). There is a growing body of opinion that delineates that one of the major focal point to ponder or focus in the future should be on process-based approaches with an emphasis on holistic action skills which stress the fluidities of managerial work in its different guises (Garavan and O’Cinneide, 1994; Jack and Anderson, 1999). To cater to the needs of a highly skilled and internationally orientated workforce business schools also face the challenge of pursuing complex inter-university networks and symbiotic relationships with industry. Global alliances of this sort seem increasingly important to secure new forms of diversity with excellence for an expanded student population (Hagen, 2002). They offer promising prospects for sharing fixed costs and associated risks, synergizing expertise and utilizing complementary assets/skills, facilitating new processes and enhancing innovation. Fighting insularity thus seems crucial to stay at the leading edge of the global knowledge network.

**FIGURE: 2 SUSTAINABLE DEVELOPMENTS FOR
COMPETITIVE ADVANTAGE**



CONCLUSION

While the management education institutions struggle to improve their traditional approaches and pedagogies in order to achieve ever-greater value propositions, they will need to adopt strategies that will allow them to differentiate themselves from their competitors and prove their value. The most competitive business schools are already looking for benchmarking opportunities as well as quality improvement programmes that will provide them with an opportunity to gain a thorough understanding of their strengths and weaknesses, to develop new and better programmes, and to prove the level of their offerings to the market through accreditations. Students and faculty will also benefit greatly from having tools that aid them in their choice of institution and programme. The successful business schools of the future will offer innovative programmes, backed by the appropriate resources, to guarantee an excellent faculty body, an international experience and a multi-cultural environment to its students. The top business schools of the future will not only implement changes to remain competitive, but they will seek accreditation and quality improvement programmes to prove to the market that they are committed to excellence and innovation.

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