Alternative Educational Service to Build a New Country
(A Technological swift to reap Socio-Economic Benefits in Ethiopia)

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Abstract
For any country, education is crucial for building vital human resources, such as teachers, healthcare professionals, lawyers, engineers, managers, businessmen, and researchers for its socio-economic development. Further, higher education is a center for knowledge and skills creation, adaptation and dissemination. It also plays a crucial role in providing relevant and quality community in public services. To keep abreast of the latest issues related to various professions is very important. Many books on the legal profession, including topics such as the management of law offices, corporate legal departments, merger management etc. are important, both for study and practice. Digital libraries can fill gaps amongst the distant case studies and developments as these resulting from the increasing amount of information available in digital format. Digital libraries have unique character that differs from traditional libraries and their approaches to information provision. Ethiopia is lagging far behind the world to build digital libraries and archives. It has not engaged in any significant discussions and dialogue on strategy and policy for preserving and accessing its resources in digital form. There is an urgent need to think major digital initiatives undertaken by other African or non-African countries, without widely accepted protocol and agreement on issues of ownership of intellectual property rights, local access rights, and long term sustainability. This paper presents the current status of the legal education in Ethiopia. It also lists down the donors and their participation in the proper dissemination of the funds. An Information Technological adoption, i.e. a Digital Library System for every one is proposed to bring the socio-economic change in the country. An attempt is made in this paper to discuss the present library system in Ethiopian universities and to give complete picture of digital library from the perspectives of advantages, guidelines for their establishment and implementation. The challenges of digitization and digital library are elaborately highlighted to enable the decision makers for a clear picture of digital library.

Keywords: Information Technology adoption, digital library, for socio economic development of a country

Introduction
Current Status of Education in Ethiopia
Ethiopia is considered as an under developed country in spite of its rich natural resources. The country is not colonized. This is one of the reasons for not having advanced foreign technology inputs in the country. Hence the country is lacking permanent assets and is struggling hard to be self-sufficient. It is suffering with the evils such as uneducated society, unemployed society, and serious gender discriminations etc. Government is continuously putting efforts to reconstruct the society. Revolutionary approaches are followed in education system such as free education up to graduation, vocational courses and short term courses for all age group people. For higher education, the system is not followed due to different due to lack of resources, brain drain, technical inefficiency etc.

Higher education and training in Ethiopia has started over 50 years ago, but still remains highly underdeveloped. For a population of over 70 million, the enrolment in both public and private higher education institutions is less than 200 thousand. In fact, it is only recently that the enrolment has reached such a figure with the establishment of new public and private educational institutions and expansion of programs access is still very low and the quality and relevance of the education and research activities of the institutions are not up to expected standards and levels.

The annual intake capacity of degree students has increased from around 3 thousand in 1994 to over 31 thousand in 2004. The system as a whole has enrolled a total student population, which includes degree and diploma, of 172,522 (77% in public and 23% in private and non-governmental institutions) in the 2003/4 academic year—an increase of 16% compared to 2002/03.

This is a significant increase from the situation in 1996/97 where the total student population was not more than 30 thousand. The total number of graduates in 2003/04 was over 39 thousand, of which 29% were female. It is a significant increase from 1999 which graduated less than 12 thousand students. The massification of higher education will succeed only with the active involvement of the private and nongovernmental sector in higher education system. In 2003/04, the student population in private higher education institutions has reached over 23% including both diploma and degree level en-
rolments and around 11% considering only degree level participation. This figure was zero in 1996.

Recently, the higher education in Ethiopia is moving away from exclusive enrolments of about 1% of the age cohort towards increasing massification of over 5%. Not only enrolments, but also issues of quality and relevance, as well as equity that mainly revolve around gender and underserved or marginalized regions loom large as issues seriously confronting higher education development in the country. Further, the research and development and publishing capacity and culture of institutions are also severely limited largely due to poor infrastructure, high brain drain and limited resources and inefficiency in the use of available resources. Overall, the challenges that are compounding higher education development in Ethiopia are numerous and complex.

Root Causes For Decline In Progress
The deepening economic decline, the political turmoil and the shifts in priorities caused by war created immense pressure on the Derg regime (1974-1991) to limit or diminish public sector expenditure. Accordingly, the capacity of the government and its willingness to support the provision and development of education, and in particular higher education, in Ethiopia was severely affected. Above all, there was a lack of a clear direction, vision and commitment for the development of higher education in the country. Until recently, the significant and meaningful role that higher education plays in the improvement of the life of the society, the eradication of poverty and the overall development of the country was not properly addressed in government strategies and was not given due attention.

However, these situations have changed positively and significantly since 1991. This has been demonstrated by the current government’s broad and forward-looking educational vision, clearly defined policies and priorities, realistic education sector development strategies, and sufficient support to attain better and equitable access and overall quality. In the early 1990s, the government identified the need for strengthened, re-oriented and revitalized human resource development as a key to the success of socio-economic policies and strategies. The need was felt during the transitional period (1991-1994) when a serious shortage of trained, able and adaptable workforce and leaders at different levels within the new government structure was encountered. Free market economic policies, improved environment for private investments, and the relatively better and steady growth of the economy, as well as openness to the world and the spread of information and communication technologies; have required more personnel with higher education qualifications and training.

In recognition of these multiple challenges, the Ethiopian government has introduced several policy and strategy provisions and major re-engineering or reform initiatives. The initiatives are mainly efforts to realign the system in order to contribute more directly to the country’s strategy for rapid economic development. Since the development and implementation of specific policies and strategies, as well as the implementation of reform agendas, the enrolment figures in the country and the number of universities have more than quadrupled, the number of private higher education institutions has dramatically increased, the recurrent budget and capital budget allocations have more than tripled, and institutions for policy research and quality and relevance assurance and enhancement have been established.

Such a reform is necessary to make the system
(a) Democratic in all its affairs, centering on student learning experiences,
(b) More responsive in producing quality graduates and citizens,
(c) Involve in relevant research that focuses on solving societal problems, and
(d) Cost effective and result-oriented in all its undertakings.

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With a shift in the social and economic development directions of the country, it had become essential to expand equitable access and to reform the education system, including the higher education sector. The last decade or so a unique situation is experienced where the government is committed to education and the Ethiopian society seems to have woken up to the importance of education.

Ethiopia clearly understands that economic growth in the 21st century will be driven by the nation’s performance in raising levels of national productivity in comparison to its economic competitors, and it is determined to make up the ground lost over the past four decades because of political instability and economic stagnation. National policies were developed based on the government’s vision in transforming the economy, reducing poverty and improving the livelihood of the population. A succession of new policies, therefore, was designed and implemented in Ethiopia over the past few years.
with an eye to setting Ethiopia on a new course of development and poverty alleviation.

Realizing the fact that education is a key to human development and the overall socio-economic development of Ethiopia, a comprehensive Education and Training Policy was prepared and implemented. The ETP was drafted and discussed upon by experts in the field, with a number of discussion forums organized to collect views and opinions of stakeholders before its ratification. The policy has stressed issues of quality and relevance in educational programs; quality of teaching staff and facilities; improvement of learning process towards a focus on students; improvement of management and leadership; introduction of financial diversification, including income generation and cost-sharing by students; and improvement in the system of evaluation, monitoring, autonomy and accountability.

Higher education policies and strategies were also designed and implemented with the same objective of ensuring national development and competitiveness. Within the framework of the ETP and its strategy, the government and the higher education community have begun a concerted effort to design detailed strategies outlining the reform and the future directions of higher education in Ethiopia.

On the basis of the ETP and a 20-year strategic direction concept paper produced by government, a sector development program for education was initiated and prepared in 1997. This country owned and locally developed education sector development program is probably a pioneer in Africa. The Education Sector Development Program (ESDP) was drafted and prepared by the direct involvement of national experts, policy makers and stakeholders both at federal and regional levels. The final form of the ESDPs so far developed and implemented has a significant input from the donor-government consultations undertaken on the basis of partnership. The ESDPs had activities spanning over five years, the first ended in 2002 and the second ending in June 2005.

In 1995 the government took the initiative to organize a national conference on issues of higher education at Nazreth. Heads of institutions, regional institutions’ board members, renowned persons and education experts and other stakeholders participated in the conference. This conference was the first and comprehensive undertaking in building stakeholder consensus and bringing to the fore issues, problems and challenges of the higher education as a basis for policy and strategy formulation for the sector in Ethiopia. As a follow-up and consolidation of the Nazareth meeting, a larger and more focused conference was held at Debre Zeit in 1996.

The two conferences focused on issues of
(a) general status and major problems of higher education in Ethiopia,
(b) issues of effectiveness and efficiency,
(c) alternatives for widening resource base of financial requirements,
(d) undergraduate and graduate programs’ quality and relevance,
(e) research and studies in higher education,
(f) relations between regional governments and higher education institutions, and
(g) Relations between higher education and the other levels of education.

As a result, a document outlining the Future Directions of Higher Education in Ethiopia (MOE, 1997) was prepared. This was in its true sense, the first major step towards identifying the priorities for action and clearly defining the vision and mission of higher education in Ethiopia. It was also a major step in building and strengthening the already started consensus amongst the major stakeholders on issues and strategies on higher education reform.

The Future Directions of Higher Education in Ethiopia document identified the major challenges and problems of the higher education sector in Ethiopia as:
(a) Lack of clarity in vision and mission,
(b) Problems of quality and relevance of programs of studies and research,
(c) Lack of clear program and institutional evaluation mechanisms,
(d) Financial and resource constraints,
(e) Lack of alternative ventures in resource mobilization in addition to the public purse, (f) Inefficiency in resource utilization, and
(f) Poor quality and commitment of the leadership of the sector at all levels.

The document stressed the importance of properly tackling these major challenges in the ensuing activities of higher education expansion and reform in Ethiopia.

In 2000, the government initiated another detailed study on Higher Education Capacity Building, as one component of the overall National Capacity Building Programs study. The study was conducted by a group of professionals and decision makers, with a continuous consultations and feedback with higher education institutions. Furthermore, the draft document was discussed in all higher education institutions in the country and feedbacks were collected and included in the final document. In its findings it has mainly strengthened and elaborated the outcomes of the 1995 and 1996 conferences of Nazareth and Debrezeit, but including new developments in the country and in the world. The document gives new
and ensuing policy issues of higher education in Ethiopia, providing opportunities for deepening efforts for growth and accelerating the contribution of the sector to national development. At the start of the 21st century, Ethiopia’s higher education system is still traditional or conservative in its academic orientation and poorly connected with national development requirements and hardly meets international standards.

Recognizing these shortcomings, Ethiopia is currently engaged in a highly ambitious effort to re-align its higher education system in order to contribute more directly to its national strategy for economic growth and poverty reduction. Its achievements over the last decade have been little short of extraordinary. The policy and strategy of reforms have targeted all levels: the overall system, institutions and the academic programs. The foundation for major reform has been provided by ratification of a new Higher Education Proclamation. The Higher Education Proclamation (FDRE, 2003) was a major step forward in showing policy and strategy directions of the sector in Ethiopia. This comprehensive law provides a thoughtful and forward-looking policy framework for guiding the growth of Ethiopian higher education. It is the first national law regulating higher education in Ethiopia in its history of over fifty years.

The law was produced by Ethiopians with strong, transparent and engaging involvement of public and private higher education institutions and their community, including the student body. Some inputs were also obtained from donors (mainly the World Bank through its technical assistance support) and other partners. The major provisions relate to administrative and financial autonomy of institutions, introduction of cost sharing in form of graduate tax, income generation and contracting out of services, and the allocation of block grant budgeting system using a funding formula. It has also established two important agencies, namely Higher education Relevance and Quality Assurance Agency and Ethiopian Higher Education Strategy Center. One important aspect that is necessary for the development of tertiary education policy and strategic vision is consideration of the political economy of reform.

Translating a vision into successful reforms and innovations depends on the ability of decision makers to build consensus among the diverse constituents of the community, allowing for a high degree of tolerance for controversies and disagreements. A potentially effective approach for addressing the political sensitivity of the proposed reforms is to initiate a wide consultation process concerning the need for and content of envisaged changes. This effort involves a blend of rational analysis, political maneuvering, and psychological interplay to bring all concerned stakeholders on board. When the initial reform and expansion agenda was put forward by the Ethiopian government in the mid-1990s, there were mixed opinions and attitudes by the academia, the leaders of higher education institutions, and even a few in the government itself. The reform and expansion required not just a simple change but a serious transformation in the system together with significant expansion of access. Many were pessimistic in that they concluded, without giving alternatives, that expansion would be an expansion would be a compromise to educational quality maintained by the university system existing at the time. However, even with the elitist system of limited enrollments, the quality of higher education had been in decline for over a decade. Issues of political partisanship were overwhelmingly influencing academia. At its initial stage, the reform agenda was seen by many as a purely political issue, rather than as a development objective. The difficulty resided mainly in the silence and indifference (neither openly opposing it nor expressing support) of many in the higher education community towards the reform. The major points of contention were the issue of expansion versus quality, and the wish to continue with the status quo versus the need to reform and change.

Some reluctance grew out of concern and caution, while other resistance was due to pessimism, many times infused with political partisanship. Many opposing the endeavor from political points of view were not looking at the agenda as issue of development and the way out of poverty and misery. These concerns were largely addressed and many were brought on board by the transparent manner with which the agenda was tabled and through consensus building efforts. Consultation meetings with leaders of institutions and other stakeholders (other sector ministries, chamber of commerce, private providers, etc.), periodic radio, television and newspaper press releases, as well as workshops with donors and partners, have helped to develop consensus and wider public awareness. At all echelons of the leadership of the government as well as to a large extent the governance of higher education institutions, keen interest and support has been observed and cultivated. This was later translated into ownership of the agenda that has helped generate success in the implementation.

World Support Towards Uplift

The World and the policies of donors and development partners have influenced the policy thinking, directions and implementation of higher education in Ethiopia. The Education Sector Development Program (ESDP), the Higher Education Sector Capacity Building Program and many specific implementation modalities of higher education expansion and reform in Ethiopia were informed and had given due consideration to several recommendations of the World community.
The World Conference on Higher Education (UNESCO, 1998) was unanimous in considering that “a renewal of higher education is essential for the whole society to be able to face up to the challenges of the twenty-first century, to ensure its intellectual independence, to create and advance knowledge, and to educate and train responsible, enlightened citizens and qualified specialists, with out whom no nation can progress economically, socially, culturally or politically.” The Declaration of the Conference emphasized that since society is becoming “increasingly knowledge-based (…), higher education and research now act as essential components of culture, socio-economic and environmentally sustainable development of individuals, communities and nations.” Thus, even in the twenty first century, the development of higher education figures among the topmost national priorities across nations. The Human Development Report (UNDP, 1999) sets out the mission of higher education, resolving that “beyond its traditional functions of teaching, training, research and study, all of which remain fundamental”, and higher education must “promote development of the whole person and train responsible, informed citizens, committed to working for a better society in the future”. Based on research and intensive discussion and hearings conducted over two year period, a Task Force report “Higher Education in developing Countries: Peril and Promise” (World Bank and Unesco, 2000), presents a powerful message: “higher education is not longer luxury; it is essential for survival”.

The Task Force has concluded that, without more and better education, developing countries will find it increasingly difficult to benefit from the global knowledge-based economy. These extracts from various reports clearly bring out the fact that the developed world is reacting quickly, with education as a major political priority. It believes that high-quality human capital is developed in high-quality education systems, convinced that even though the world as a whole is passing through a “knowledge revolution”, the four key principles – quality, access, equity, and accountability – which have always been crucial in the development of higher education continue to be the guiding principles when planning for higher education for the twenty-first century.

The World Bank has also contributed to improving support to tertiary level education through its publication as a policy document titled Constructing Knowledge Societies: New Challenges for Tertiary Education (World Bank, 2002). The document has reaffirmed the crucial role that higher education should play in alleviating poverty and in taking up the challenges emerging from the knowledge driven economy. There is also a growing awareness that the sustainability of long term capacity development depends in part on the local supply of high caliber talent and more broadly, country specific capacity for knowledge generation and management to pursue development and poverty alleviation objectives on a sustainable basis.

Role of Donors
The many policy initiatives of the government and higher education institutions in Ethiopia have been commented upon and indirectly influenced by studies or technical assistance works of donors and development partners. Specific requirements of different actors, mainly donors and development partners had some influence. Though, the major influences relate to the way policies and strategies are implemented, there are also some roles played in the initiation and development of policies and strategies by donors and partners. These refer to, in some cases, setting priorities for policy and action, ways in which they should be addressed, and manner and framework in which those are to be implemented. Such studies conducted by the World Bank (World Bank 2004) and many technical assistance works by international experts had their influence in shaping some policy or strategy considerations, particularly in terms of implementation. One important issue that Ethiopia requires from donors and development partners is to get support in form of budgetary support.

Although few, such as the United Kingdom support through DFID and the World Bank, have pledged and have started to give budgetary support many partners are skeptic to align their support to the country’s requirements. A very important principle usually neglected by donors and partners is the need to focus efforts around clear set of country-owned and defined objectives and expected results, and then following through with viable implementation strategies.

Donors and development partners need to make sure that their efforts are fully aligned with the strategies of the recipient country rather than with their own competing priorities and procedures. The reporting requirements of donors and development partners which are hardly harmonized with national systems, the insistence in the use of most of the support for technical assistance, and lack of understanding and willingness to support sustainable and long term capacity building efforts are few of the most critical influences. Most, if not all, donors will have their specific requirements for reporting which is different from the national system and which creates poor performance in disbursement and utilization of funds for the intended use in due time.

Many insist that large part of the fund be used for employment of technical assistance from their countries or elsewhere without addressing the real issue of local capacity building. Many focus on soft programs support
rather than on long term staff development, local institutional strengthening and capacity building. There are also many so called policy conditionality associated with external assistance that need to be strongly reduced. The World Bank, for example, puts some policy premises as conditions for loan agreements. The introduction of cost recovery schemes as part of the cost sharing policy, necessity for labor demand studies as prerequisite for expansion, greater emphasis on fiscal or budgetary situations rather than the need for capacity building are issues and sometimes stumbling blocks which donors and partners usually pose in higher education policy development and implementation. Some even put unnecessary conditions such as compulsory employment of experts in a ministry or an institution. Instead of this usually ineffective conditionality, ways of strengthening mutual accountability and monitoring of implementation should be put in place. In policy development dialogues, many partners and donors were and still argue that Ethiopia should not expand its higher education sector but focus only on universalizing access to primary education. In recent years, however, there is a growing acknowledgement of the need to systematically build local “capacity to build capacity” by strengthening institutions across the knowledge sector that supply this range of services including higher education.

The recently revised policy of the Netherlands Government support to Post-Secondary Education is a very good example of partnership. This policy empowers the receiving country to develop its project proposal and work together with the southern partner in shaping the proposal and seek for higher education institutions in the Netherlands that could deliver as per the jointly designed proposal to the benefit of the Southern partners. The support from NORAD to Mekelle and Debub Universities, SIDA support to Wondo Genet College of forestry, and Belgian support to Mekelle University are also good examples of project supports that are mainly based on the requirements of the receiving institutions in Ethiopia.

How Digital Library System Can Influence The Education.

Digital libraries system provides the services and resources, including the technical staff, to select, services, offer access to knowledge community to interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital contents, services and works so that they are remotely, readily and economically available to share by a targeted communities/individuals. Some definitions of “digital library” are broad enough to embrace services which integrate access to digital and traditional (e.g. print) materials.

In our perspective of this research paper, digital library system is a new version of converging technology and management, providing network access to organized digital collections, containing primary documents viz– Full text (e.g. books, journals), Images (e.g. photographs, scanned pages), Graphics (e.g. charts, drawings), Animations (e.g. cartoons), Audio (e.g. music), Video (e.g. movies, lectures, conferences and seminars).

It will be acting like an information and knowledge hub to collect the documents of any above mentioned type in different formats from the different sources as per the requirements of the users and disseminate them whenever and wherever required? Once the documents are collected they might be stored in ‘space requirement economy’ better preserved and conserved (do not decay with time).

A digital library collection may include two types of information resources. One type comprises the “created digitally” resources. The other type comprises “digital proxies”, which are created from traditional information resources through configurations or transformations. While both types of resource have the same access and management requirements, they raise different issues of selection and acquisition, and their preservation imperatives are also different.

Digital Document Management Issues

Integration of access and delivery services: Many studies as Lynch and Garcia-Molina have observed that the library system has a special responsibility to gather, transform and disseminate the information and knowledge content resources apart from the format, and indeed to strive to put in place mechanisms which will promote integrated access to all formats. This will become more important as an increasing proportion of information resources are available only in digital form.

The core objective of this study is to develop library information systems providing access to a coherent collection of content material, more and more of which will be in digital format as time goes on, and to fully exploit the opportunities that are offered by the materials that are in digital formats. There is, in reality, a very strong continuity between traditional library roles and missions and the objectives of digital library systems.

The Non-Selective Alternative: One way of bypassing the selection problem is to collect and preserve everything published on the Web. In this context, libraries have an interest in recent efforts to do just that. The Internet Archive is a well known project to archive the entire World Wide Web and some other components of the Internet, such as the Gopher hierarchy. The Archive was founded by Brewster Kahle in April 1996. In October 1998, the archive for the months of January and February 1997, containing two terabytes of data, was depos-
ited with the Library of Congress. In 1997 the Royal Library of Sweden initiated the Kulturarw3 Project, in order to archive the Swedish domain of the Web. This attempt at a comprehensive collection of digital publications is consistent with the Royal Library’s practice of collecting printed ephemera through a legal deposit framework under which printers, rather than publishers, deposit their product with the Library.

The Attainment Process: A digital library collection may be built through either or both of the following processes (in addition to creation of content by the library itself):

a) digital documents may be created by digital conversion of existing printed or other analogue materials; or

b) Existing digital documents may be gathered from the Web or from physical digital sources such as DVDs, CD-ROMs.

Content Conversion Into Digital Form: Before uploading we need data conversion. The digital conversion is a very costly affair because it is laborious both in processing time and in project management overheads. It is also a process which requires careful planning to ensure that the full informational value of the original material is preserved. Chapman and Kenney argue strongly for a strategy of “full informational capture”, in which the conversion process is matched to the informational content of the original, in those cases where the digital conversion is undertaken primarily for preservation. It is observed that the materials selected for the digital library will consist of non-contemporary heritage content materials or other resources which exist only in non-digital form. In such cases a digital conversion process, such as imaging or OCR scanning, or a combination of both, must be used if it is desired to deliver the resource through a digital service.

Collecting Digital Documents: Even where contemporary content materials are involved, some digital library projects have created collections through a combination of imaging and OCR scanning from print originals, such as journal articles. On the surface this appears to be unnecessarily costly and inefficient, given that these contemporary resources, during their preparation, existed as machine readable text. Moreover, the process of OCR scanning re-introduces errors, violating authors’ moral rights unless they are painstakingly corrected.

The builders of digital libraries would benefit greatly if they could obtain the authoritative version of any document in machine-readable form, complete with structural markup. By flagging the logical components of a document, structural markup allows descriptive metadata (author, title, abstract and so on) to be extracted efficiently from the document text. The processes of structural markup have been defined by the international standard framework known as SGML (Standard Generalized Markup Language). Use of this standard during the complete publishing process would support more efficient integration of documents from various publishers into the digital library. It would also support more powerful and precise searching of the contents of the digital library, by allowing searches to be focused on the descriptive metadata, the abstract, executive summary or other appropriate parts of the document.

Gathering Resources From The Web: An alternative way of acquiring documents which are already in digital form is to gather them from the Web, with limited HTML markup. The gathering process itself raises a number of challenges. To preserve fidelity to the original resource, it is necessary that the archive copy should replicate the directory structure, file names and internal links of the original resource, in parallel form. On the other hand, links to external resources will need to be disabled and replaced by a suitable message, unless these external resources have also been archived or continue to exist unmodified with permanent names.

The Control And Access Process: It was noted above that the world of digital publications has created challenges, for the libraries and others, such as: How to support navigation through levels of information resource in a collection, or within a collection item? How to integrate access to digitized and non-digitized collections of original heritage materials? How to construct metadata infrastructures to support access to nationally distributed digital collections?

Metadata And Integrated Access: Bibliographic data (or metadata) is the key to integrating access to digital and traditional collections. A researcher often needs to discover information resources in all formats relating to a given subject, or which have been created by a given author. Services such as “subject gateways”, which have been developed primarily to support access to quality information resources on the Web, have the potential to support browse and search access to distributed collections of both digital and traditional materials.

Integrated access can be a particularly desirable goal when only part of a collection has been digitized, which will usually be the case for any library with a large collection of original materials. For example, a national or state library with a large pictorial collection may offer a service which allows a searcher to discover a digitized image of a picture or photograph which meets a particu-
lar information need, if the library has digitized this picture. But what if the picture that meets this need is one of the majorities in the collection that have not been digitized?

The answer to this question is to offer a digital service which supports access to all of the library’s pictorial collection. The elements of this service might be

(a) the original collection items,
(b) the digitized images,
(c) the metadata about the entire collection, and
(d) A “digitization on demand” service which supports the progressive digitization of the collection.

Permanent Naming And Resource Registration: In 1996, James Miller has drawn attention to the important role of national libraries, as institutions of long standing, in relation to “handles” or permanent names:

“There must be one or more entities that take institutional charge of the issuing and resolving of unique names, and a mechanism that will allow this entire set of names to be moved forward as the technology progress. The Digital Library community must identify institutions of long standing that will take the responsibility for resolving institutionalized names into current names for the foreseeable future. I propose that a small consortium of well-known libraries could work to provide the computing infrastructure.”

It was noted above that the Kahn/Wilensky Framework assumes a highly reliable system of unique identifiers, called “handles”, to support basic universal access to digital information resources. The “handle” and its supporting infrastructure would ensure that a resource can still be accessed even if it changes its location. The standard for Uniform Resource Names (URNs) as proposed by the Internet Engineering Task Force (IETF), together with a network of URN resolve services, is compatible with the requirements for a universal system of “handles”.

The Preservation Process And Information Architecture
This research study has analyzed some of the disputes which are involved in designing and managing a digital library. These are all the subject of continuing research or standards development. But none of them is as serious or as potentially intractable as the problem of digital preservation. It takes an effort to recall that the personal computer is barely 11 years old. Computer technology is changing so rapidly that the design, the interfaces, the technical standards and the file structures of the computers of 2020 are very likely to be quite different from those used today. For the libraries, which have a tradition of building collections to meet the needs of scholars many decades or even centuries into the future, this presents a very formidable lacuna? The ability to access and read digital information in the future will depend on strategies such as migration (in which the data is migrated, if technically feasible, to new operating systems and data structures) or emulation (in which modern computers emulate the operating systems and data structures of previous eras).

An article by Arms, Blanchi and overly presents the issues relating to the information architecture for digital libraries, including the Kahn/Wilensky framework. In some other key research papers, Kahn and Wilensky described a special framework for digital libraries and described distributed digital object services in detail. This research framework takes account of the fact that while content in a digital library takes a wide variety of forms; it is possible to define a “digital object” which applies to all such forms in integrated shared environment. The digital object is conceptually contained within an envelope which invites the access software how to unpack it, what standards it conforms to, and so on. Furthermore, a digital object consists of digital material plus a unique identifier for this material, sometimes called a “lever”, and access to the objects is supported by a distributed system which supports the discovery of these “levers”. While the development of digital library systems is motivated by the imperative of improved information delivery for users, most of these projects also have a research aspect, as we have observed with the Digital Libraries Initiative projects across the world. Alongside these small projects initiatives, research is also proceeding to develop conceptual models of the digital library systems, and to clarify the technical scaffold.

When we look at the journey of library systems innovations across the globe the scaffolds has been unmitigated by researchers, including Payette and Lagoze, who have described architecture for storing and disseminating digital library content. Our proposed structural design provides a more specific and digitally complex model, for example by recognizing the ability to have a range of different interfaces to the same digital object, and the ability to associate rights management schemes with the dissemination of the object.

One Step Towards Convergence With Web
In 1993, the changing scenario with the emergence of the WWW, has allowed designers to facilitate global access to digital libraries. Previously, access to digital collec-
operations was supported by proprietary networks or by local or other kind of networks with a support of library management software. By contrast, access through the web is based on open standards (such as the Hypertext Transmission Protocol) and on widely available browser software which can be used from anyone’s desktop. Thus the Web, demolished all the barriers of distances.

Let us have a look on continuous efforts towards development of digital library systems. One of the premier successful trials of pre-Web digital collections was the design and development of content databases of text documents during 1970s. It was supported by software such as “STAIRS”. In this access was restricted to proprietary communication protocols and rudimentary interfaces only. A relatively ambitious pre-Web attempt to build a digital library was Project Mercury (1989-1992), a development of Carnegie Mellon University. It developed software for uniform access to textual and image databases, including page images of journal articles. Access was to be confined to the university campus, with X Window interfaces.

In 1993-1995 the TULIP Project was planned prior to the emergence of the Web, facilitated access to materials science journals. Each of eight US universities developed their own solutions for access to the electronic versions of these journals. The project revealed a host of practical problems with content delivery, content storage, and lack of integration with other services, printing, and authentication. In this way any examination of digital libraries must recognize the achievements of the National Digital Library Program (NDLP) of the Library of Congress and its predecessor, the American Memory Project (1990-1994). Key features of the NDLP are the attention given to selection, the quality of presentation of the digital surrogates, the use of quality cataloguing data, the standards and facilities which have been developed to support discovery and access, and the depth of the technical documentation made available on the project site. The NDLP was one of the first examples of a publicly accessible, model of converging technology and management of operations i.e. Web-based digital library system.

Friendliness In Accessibility
These documents and knowledge ware can be accessed from anywhere in the world. Along with these advantages, the availability of information and services in electronic form via the web has the potential to provide equal access for persons with different kinds of disabilities and differential abilities with the support of accessibility tools and assistive technologies; and to provide access more broadly, more cheaply and more quickly than is otherwise possible. People who are blind or have vision impairments can use appropriate equipment and software to gain access to electronic documents in Braille, audio or large print form. Deaf people or people with hearing impairments could have more ready access to captioning or transcription of sound material. Many people whose disability makes it difficult to handle or read paper pages can use a computer, for example with a modified keyboard or with voice control systems like text-to-speech and speech-to-text. Web publication may provide an effective means of access for people whose disability makes it difficult for them to travel to or enter premises where the paper form of a document is available.

Digital Libraries In Indian Perspective
This research paper is particularly concerned with the issues raised for Indian libraries in the delivery of digital information resource in convergence of library operations with the Technology. This paper examines some of the key challenges which encounter when dealing with digital collections, with particular attention to the issues which are raised for national or international libraries. Examples are the challenge of selecting significant national/international digital publications, the challenge of how to acquire efficiently those digital publications which are selected, the challenge of integrating access to digital and traditional information resources. What is the role of a national library in the digital age? And how should a national library facilitate the delivery of national digital services?

The key objectives of national digital libraries include; collecting, preserving and deployment significant national information resources; Cooperating with other institutions to ensure that there is an effective national infrastructure for the registration, discovery, access and delivery of information resources and Strong collaboration and networking with other libraries to ensure the most comprehensive possible collection storage and preservation of information and knowledge resources; like DELNET network.

DELNET was started at the India International Centre Library in January 1988 and was registered as a society in 1992. It was initially supported by the National Information System for Science and Technology (NISSAT), Department of Scientific and Industrial Research, Government of India. DELNET has been established with the prime objective of promoting resource sharing among the libraries through the development of a network of libraries. It aims to collect, store, and disseminate information besides offering computerized services to users, to coordinate efforts for suitable collection development and also to reduce unnecessary duplication wherever possible.
Current Status Of Digital Library Systems In Ethiopia

Today, the Library term can refer to any collection, including digital sources, resources, and services. The collections can be of print, audio, and visual materials in numerous formats, including maps, prints, documents, microform (microfilm/microfiche), CDs, cassettes, videotapes, DVDs, video games, e-books, audio books and many other electronic resources so recognized as Digital Library.

Digital libraries can be any places where this material is stored can range from public libraries, subscription libraries, private libraries, which are facilitated to be in digital form, stored on computers or accessible over the internet. A library is organized for use and maintained by a public body, an institution, a corporation, or a private individual. Public and institutional collections and services may be intended for use by people who choose not to or cannot afford to purchase an extensive collection themselves, who need material no individual can reasonably be expected to have, or who require professional assistance for their knowledge quenching or their research.

ASTU Library is one of the academic units of the Adama University. It is the center of all academic activities which supports the teaching, learning, and research process of the university. The library, as a subsystems, derives its objectives from the mission of the University. Along with this it has adopted IT supported Library Services. In addition to printed collections the library provides digital services which includes Dissertations & Theses , ebooks , ejournals, eresources and OPAC(eCatalogue). We can also use as Reference the following links from other external Databases:

- eGranary , Engineering Tv ,Ethiopian MoE eLibrary 
- Google Books ,Wiki-Books
- World Digital Library

Integrated library system (ILS) is adopted to track items owned, orders made, catalogues searched online and patrons who have borrowed managed through koha open source software by Library Automation Team.

- OPAC(eCatalogue) - this link will takes to online catalogue searching interface
- Greenstone (digital library)- this link will takes to greenstone eBooks collection interface

Like this the concept of elibrary should be appreciated and adopted by all the universities and also the public libraries should be open 24 hrs a day to quench the thirst of knowledge seekers.

Securing Your Digital Transactions Systems In Digital Library

Transaction systems are based upon Internet use, which provides open and easy communications on a global basis. However, because the Internet is particularly uncontrolled domain, it poses a wide range of risks and threats to the systems operating on it. The use of the Internet means that your internal IT and transaction systems are potentially accessible by anyone, irrespective of their location.

Risks: Some of the more common threats that hackers pose to transactions in e-com systems during payments for availing digital library services include:

a) carrying out denial-of-service (DoS) attacks that stop access to authorized users of a secured private website, so that the site is forced to offer a reduced level of service or, in some cases, ceases operation completely
b) gaining access to sensitive data such as price lists, catalogues and valuable intellectual property, and altering, destroying or copying it
c) Altering your website, thereby damaging your image or directing your customers to another site.
d) gaining access to financial information about your library business or your customers, with a view to perpetrating fraud using viruses to corrupt your business data

What Are The Threats?

Threats to e-transactions systems in digital library can be either malicious or accidental. The procedures and controls put in place to protect sites should help minimize both. Malicious threats could include:

a) Hackers attempting to penetrate a system to read or alter sensitive data
b) burglars cracking a server that has unprotected sensitive data on its disk
c) Impostors posing as legitimate users and even creating a website.
d) authorized users downloading a web page or receiving an email with hidden active content that attacks systems or sends sensitive information to unauthorized people

One should consider potential threats to sensitive information from three angles:

a) Where (or who) are the potential sources of threats?
b) What level of expertise is the hacker likely to possess? How much effort are they likely to expend in attempting to breach your security?
c) What facilities and tools are available to them?
Security Features
In digital library system, while we incorporate security features, they do not guarantee a secure system, but they are necessary to build a secure system. Security features have four categories:

a) Authentication: Who are you? Verifies who you say you are. It enforces that you are the only one allowed to logon to your online account of any kind.

b) Authorization: What can you do? Allows only you to manipulate your resources in specific ways. This prevents you from increasing the balance of your account or deleting a bill.

c) Encryption: Deals with information hiding. It ensures you cannot spy on others during Internet based transactions.

d) Auditing: Keeps a record of operations. Merchants use auditing to prove that you bought specific merchandise.

e) Install personal firewalls for the client machines.

f) Store confidential information in encrypted form.

g) Encrypt the stream using the Secure Socket Layer (SSL) protocol to protect information flowing between the client and the e-Commerce Web site.

h) Use appropriate password policies, firewalls, and routine external security audits.

i) Use threat model analysis, strict development policies, and external security audits to protect ISV software.

j) running the Web site.

Digital Library: Challenges

a) Cultural and historical heritage: Many digital library and museum collections contain artifacts that are fragile, precious, and of historical significance.

b) Heterogeneity of content and media types: Digital library collections have the widest range of content and media types.

c) Intellectual property issues: Unlike digital government or e-commerce applications that often derive their own content, digital libraries provide content management and retrieval services to many different information creators.

d) Cost and sustainability issues: Many patrons often would like library services to be "free" or at least extremely affordable.

e) Universal access and international collaboration: Digital library content is often of interest to not just people in one region, but possibly all over the world.

Legal Rights And Consequences

Libraries have a responsibility to collect and preserve the information resources, in all formats. In doing this, they must take account of the expanding world of digital publications, particularly given the rapid development of the World Wide Web since 1993. The fact that the Web has allowed large volumes of digital material to be published creates a particular problem for national level libraries. The high cost of publishing in traditional formats has meant that publishers have effectively undertaken a filtering role, selecting only quality works, or those with high market appeal, from the many manuscripts submitted by authors. However, the Web has allowed many authors to find an alternative, lower cost, publishing channel. For the libraries, this presents a significant challenge in identifying and selecting the publications to be preserved, and in identifying these in the absence of traditional selection tools and legal deposit provisions.

A statutory deposit system is often used to support the building of a comprehensive or highly intensive collection of resources relating to the country or jurisdiction concerned. Like for example in Australia, at the national level, the Copyright Act does not mandate legal deposit for digital publications, but the National Library is pursuing the development of amendments to the legal deposit section of the Copyright Act which will make electronic publications, both physical format and online,
subject to legal deposit. Of course, even when these amendments to the Act are made, the Library will not wish to retain all Australian electronic publications, just as it does not retain more than a small sample of printed ephemera.

It is also necessary to distinguish between selection for current access (including online reference services and licensed information services) and preservation for future access. In the first case (and unlike the traditional library) the library does not need to collect the object, but only provide the means for discovery and access. In the latter case, the library must either collect the object and take responsibility for its ongoing access through technological change, or make sure that some other institution has taken responsibility for this.

Tips For The Investors
Towards establishing the digital library there could be two suggestions. One simple and straightforward way is to initiate new Digital library set up with huge data server, proper network system with sufficient no of nodes and a sophisticated ISP service. Note that no need of worrying about physical storage for documents as there is no need to keep out dated documents unwillingly. In a considerably limited space we can set it up.

Once technical infrastructure is ready, with limited IT skilled staff, start document collection in an authenticated way through all mediums. Proper evidence to be maintained for all electronic documents collected. Such document collection, organization and proper dissemination are the main work in digital library and it will be going on through out.

After considerable no of documents are collected hosting its own portal is next step for interaction with the customers or the library members. Library membership registration, receipts and payment maintenance has to be as usually with library management application software. In such libraries there can be two types of visitors one type is regular visitor of library who come to library premises and utilize its network and node for reading or collecting information. They will keep have their authentication for such usage. Since error free easy coping is one of the features of digital library proper authorization and privileges can be set and charged as per them. Otherwise on demand copying and printing services can be given by the library on extra payments. Another type of visitor is web visitor who will be logging into the library website from remote area and can use the facilities provided to him.

The authenticated user’s database has to be maintained. The membership can be of different privileges like read only, read print and read copy. Each of these can have different charges. There can be one time bulk payment pattern can be fixed for such visitors. Added revenue can be generated by, keeping the library web site open for external advertisers. Also the unpublished papers, journal, books etc can be given a chance to reach the target reader on payment bases. The passionate student community can start their venture into the field of knowledge filtering from this platform on fulfilling nominal payment patterns.

Conclusion And Recommendations
This paper has discussed key features and challenges faced by the developers and providers of digital library services, with emphasis on the features and challenges for national and international libraries. The challenges span the entire range of library functions: selection, acquisition, access, management and preservation. In many of these areas, research efforts are attempting to pilot possible solutions, develop better conceptual models, or formulate improved standards. However, the solutions to these challenges cannot be left only to the researchers. They will require a response by all of us who are attempting to build new or improved digital services. This paper has identified some themes which might influence these responses. One theme has been the importance of standards to the processes involved in digital services. More effort is still required in the development and implementation of standards. For example:

a) It is desirable to encourage the use of common standards for the storage of digital materials, and for the recording of preservation and other management information;

b) Improved and more precise search access mechanisms, including integrated access to open or closed domain resources in all formats, will depend on the adoption and further development of metadata standards.

c) Standards are clearly needed to support navigation through the collection levels of digital materials in the digital collection; and

d) Widespread adoption of long term persistent names such as Uniform Resource Names is needed to support access to materials which change their location. Another of the themes of this paper is that many of the responses to the challenges of digital services appear to require a more concerted dialogue with publishers, and with the rights owner community. For example:

e) Legal deposit libraries, in consultation with publishers, should work more urgently to secure legislation which mandates legal deposit for digital publications;

f) The library community should establish better processes to attempt to reach agreement with publishers.
on reasonable access conditions for digital publications received on deposit;

- g) Standards bodies, libraries and systems developers should work with publishers to improve their mutual understanding.

- h) Libraries network in consultation with publishers, should begin to implement working registration and permanent naming services for digital publications.

- i) The Internet is changing the way we live and provide services therefore it facilitates opportunities for libraries, governments, and businesses to better deliver its contents and services and interact with its many constituents – educationists, students, researchers, citizens, patrons, businesses, and other government partners.

- j) Exciting and innovative transformation could occur with the new technologies and practices: in addition to providing information, communication, and transaction services.

- k) Now no need to leave the home or office: information now readily available on-line via digital gateways in 24 by 7 models, furnished by a wide variety of information providers.

- l) Information is multimedia: electronically available in a wide variety of formats, many of which are large, complex (i.e., video and audio), and often integrated.

- m) Interface to the Web has evolved from browsing to searching: but the commercial technology has remained largely unchanged from its roots in the 1960s. New research presents new opportunities.

- n) Social impact matters as much as technological advancement: It needs to examine the broad social, economic, legal, ethical, and cross-cultural contexts and impacts.

- o) Local content, cultural heritage, education and deployment, multilingual retrieval, other new technologies.

Suggestions:

- a) Finally it is stated there is huge vacuum in terms of digital library system. But tremendous interest is there in setting up digital libraries system’s network.

- b) It is a good opportunity for innovative thinkers, researcher and investors. Such people should plan for strong IT infrastructures development and. Automate the library completely.

- c) Appoint IT skilled library staff. Host your own web portal fully tailored with all kinds of online digital services.

- d) Keep in house expert team to meet technical challenges.

- e) Appropriate business model can also be implemented for self sustainability.

The development of digital libraries has opened up an exciting new world of information storage, dissemination for the users, researchers and citizens of tomorrow. It is our responsibility to improve these services by addressing these challenges in concert with our colleagues around the world. In future many active and high-impact research opportunities for researchers in information science, library science, computer science, public policy, and management information systems will be well positioned to become the “agents of transformation” for the new Net of the 21st century.

References


