A Framework to Assess the Impact of ICT on the Livelihoods of Students in Tertiary Institutions: A Case of Strathmore University

Elizabeth Wamicha and Ismail Ateya

Tel: 0721407225; 020606155

Email: lizwamicha@gmail.com;

ewamicha@strathmore.edu

Abstract

ICT has been considered to **i**nfluence the livelihood of many people in a number of ways. This has prompted a great number of citizens to take up training in ICT courses so as to harness the supposed livelihood benefits. The research focuses on the impact ICT has on the livelihood of students in tertiary institutions. The study uses the livelihoods model as the conceptual model with vulnerability context, human, social, financial capital of the student and the policies/processes of the tertiary institution as the main variables in developing a framework for the assessment **on** the impact ICT has on the livelihood of students in tertiary institutions

The developed framework is an extension of the livelihoods model that has been modified to include critical components such us curriculum development, collaboration with industry academic institutions and alumni to overcome the gaps observed that exist within the existing ICT tertiary institution. The administration of the framework is in four parts; the first part is the determination of the vulnerability context within which the student operates; the second part outlines the methods used to maximize livelihood assets of the student; the third part emphasizes on the adjustment of institutional policies and procedures. The fourth part details the incorporation of the livelihood strategies into the tertiary institution and the outcome expected from the framework is strengthened relationships between industry and top universities with increased accountability to stakeholders.

Keywords*: Impact of ICT, Livelihoods approach, livelihood assets, vulnerability context, institutional policies and procedures*

1. Introduction

Tertiary education in Kenya forms a critical entry level of the economy since it provides an opportunity for the Kenyan population to acquire skills that will aid in increasingly improving the country's economy.

According to Nyaigotti-Chacha (2004) and Sifuna (1998), the rise of new stakeholders, internal factors, together with globalization and the rapid pace at which new knowledge is created and utilized are among the recent developments which challenge higher education institutions. Kenya has also placed considerable importance on the role of education in promoting economic and social development after the achievement of independence in 1963.

According to Lwoga, Sife, Busagala, & Chilimo, (2004), aside from offering ICT courses, universities are now seeing the need to strategize on their curriculum implementation based on student evaluations once they enter the job market. Students are interested in doing those courses that will eventually aid them in improving and sustaining their welfare or livelihood. However, no system exists that can provide universities with the information they need to streamline their curriculums and generate marketable courses. ınspite of this, a large amount of research has been carried in this area. This is especially so for entrepreneurs in the small business sector. In the area of agriculture, as examined by Adeya (2002), in many developing countries, the population lives in the rural areas and depends on agriculture for their livelihood. In addition, the sector accounts for most country's exports. Many studies exist on the use of agricultural systems, but not necessarily in relation to ICTs.

Therefore, there exists scanty quantifiable information regarding the level to which ICT based curriculum impacts on the livelihood of students from tertiary institutions.

2. Livelihood model

The study employed the livelihoods model this model is based on the Department for International Development (DFID) poverty reduction efforts in the 1990s (DFID, 2007). In the late 1990s mechanisms had already been put in place to assess and analyse effectiveness of various livelihoods approaches. This included a web-based learning platform, which has then evolved into an online knowledge base that sources organises and disseminates the latest information on the use of livelihoods approaches. This is used by a wide range of organisations and individuals (Livelihoods Connect, 2011).

Its origin and guiding assumptions is that people pursue a range of livelihood outcomes by which they hope to improve or increase their livelihood assets and to reduce their vulnerability. The five types of assets that form the core of livelihood resources in the range from financial, human, natural, physical, to social capital. These constitute the actual building blocks for livelihoods. In a recent extension to the DFID SL framework, political capital has been added (DFID, 2007).

According to Parkinson and Ramírez, (2006).The Livelihoods model, which grows out of this more complex systems perspective, is a tool often used by development agencies for planning and assessing development interventions. It focuses on how people strategically use the resources available to them to forge livelihoods, and how development interventions affect the available resources and the way people interact with them.

The International Fund for Agricultural Development [IFAD] (2002) looks at the livelihoods model as a way of organizing complex societal issues. The model can be modified and adapted to apply to a specific situation. Figure 1 below illustrates the livelihood model.

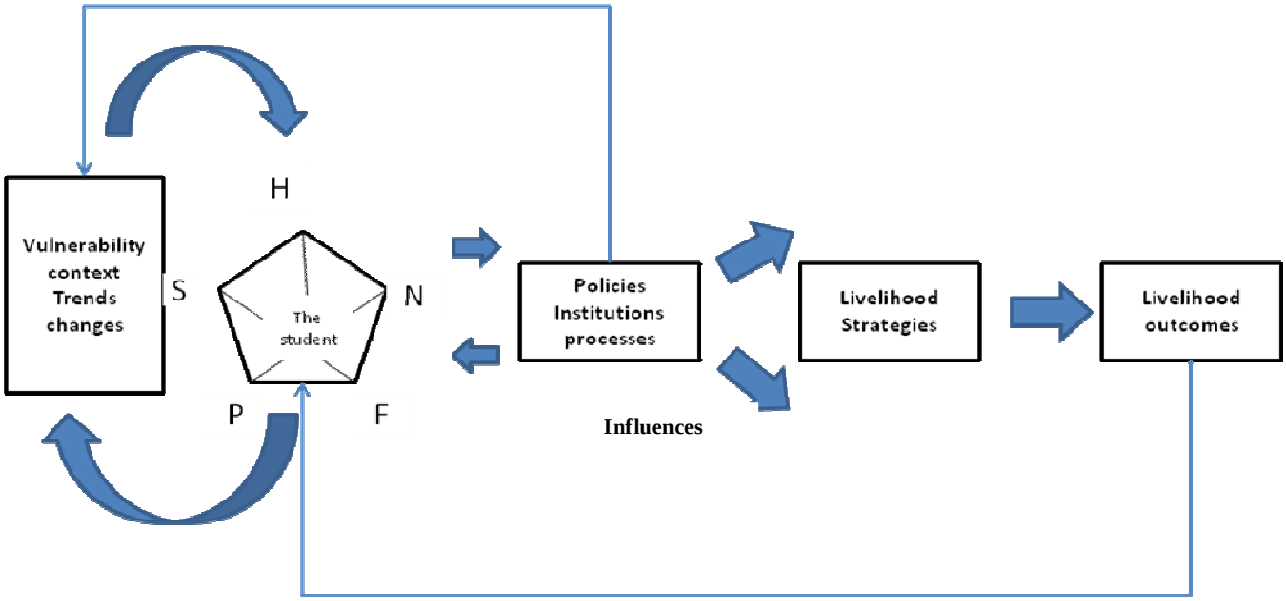

Figure 1: The Livelihoods model. (IFAD 2002)

Title	Description
H	Human Capital
S	Social Capital
F	Financial Capital
P	Physical Capital
N	Natural Capital

Table 1: Key of terms for the livelihoods model figure

In order to understand the model better it is important to outline the relationships that exist between the different aspects of people's livelihoods and the factors that influence them. These are described below:

Livelihood assets are those resources and capabilities available to an individual that allow the individual to make decisions or carry out activities to improve his livelihood.

i. Human Capital: This also looks into the education, the knowledge and skills acquired by the individual, the individual's capacity to work and the individual's capacity to adapt to new situations;

ii. Natural capital: Opted out of this particular study;
iii. Social capital: this includes networks and connections available to the individual;
iv. Physical capital: this includes the infrastructure tools and technology available to the individual;
v. Financial capital: this includes the savings, remittances, pensions, salaries and wages available to the individual.

The vulnerability context looks at external aspects such as trends and changes. These trends are observed in as much as they affect the capability of the individual to sustain his livelihood (IFAD, 2002). For the study the external factors that were analyzed were trends and changes in aspects such as technology, markets, trade and globalization.

Institutional procedures and processes involve social and political organization which is the decision-making processes, social rules and norms and leadership. service delivery: the effectiveness and responsiveness of the institution engaged in delivery of the service (IFAD, 2002). This was placed in the context of a tertiary institution for the particular study. Generation of livelihoods strategies for the study involved combining the assets the individual can access while taking account of the vulnerability context and supported by policies, institutions and processes within which the individual operates. This leads to livelihood outcomes that are used to inform the level to which the individual is able to sustain his livelihood as well as potential changes that can be implemented to improve the individual's situation, (IFAD, 2002)

Duncombe (2007) looks at the dual role of employing the livelihoods model that is as a research-led analytical framework and as a developmental or functional objective in its own right. This is described below:

• An analytical role that focuses on accessing and assessing empirical evidence (both quantitative and qualitative) to understand livelihoods, by researchers, project/program planners, policy makers, and the poor themselves.

• A functional role that focuses on action. That is the manner in which information is used within livelihood strategies (by the poor themselves and via the structures and processes that impinge on the lives of the poor) to create favorable livelihood outcomes.

The livelihoods model has therefore been used as an analytical tool to assess empirical evidence related to performance of student livelihood in a tertiary institution. But the model has limitations. Since the model is generic it fails to capture the various dynamics of different education institutions. We therefore aim to modify the model so as to capture some of the lacking components like curriculum development processes, collaboration measures with staff, alumni and continuing students, with industry and academic institutions. The integration of the components into a model gives rise to an extended livelihood framework given in section 3.

3. The Extended livelihoods Framework

The livelihoods model has been extended to include the following components; dynamic curriculum development, collaboration with industry and with the best tertiary institutions on a regional and global level, implementation of a feedback mechanism for both current students and alumni. The framework analyses each section of the generic livelihoods model. The diagram below outlines the integration process between the components of the generic livelihoods model and those identified above.

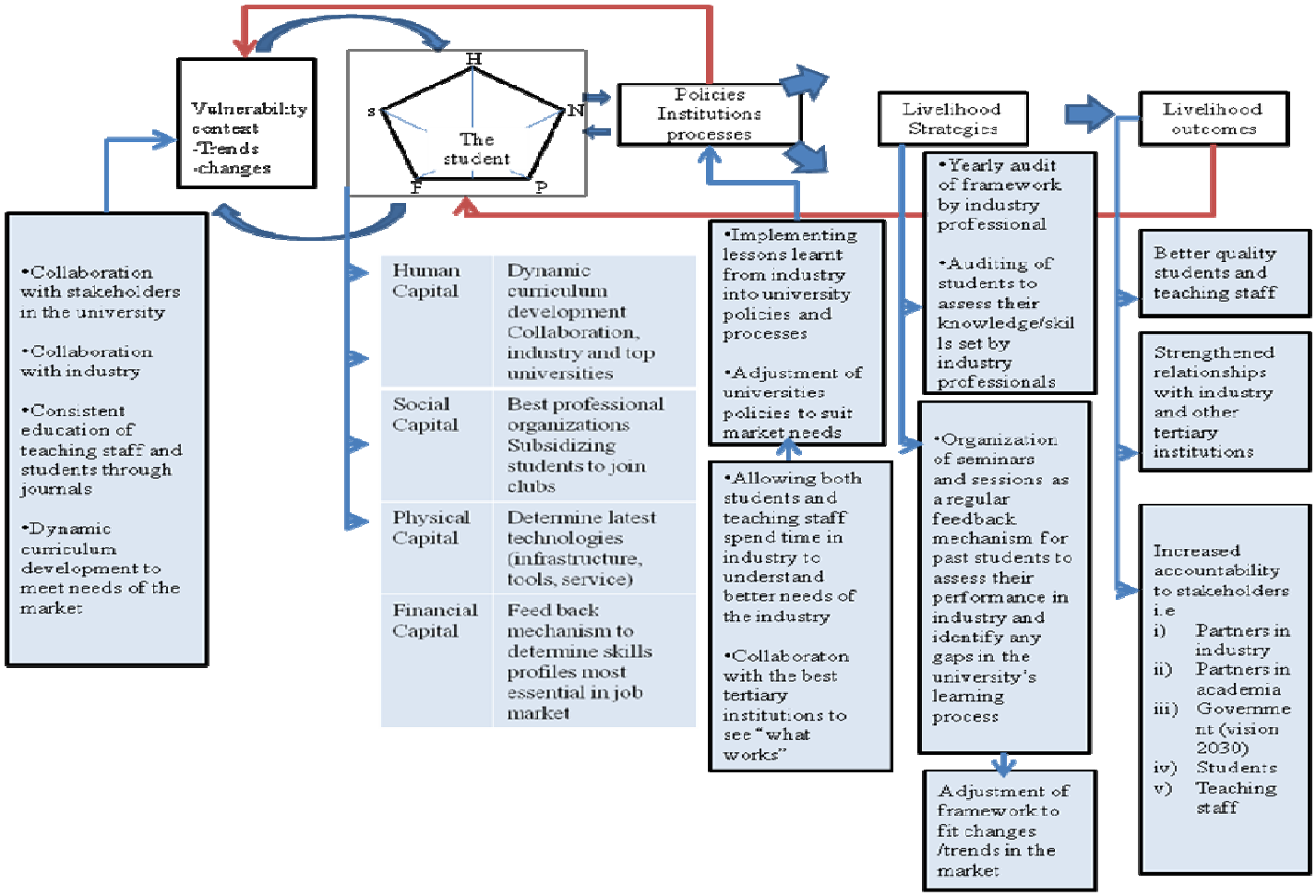

Figure 3: Illustration of the application of the developed framework

4. The Implementation Phases for the developed framework

For effective utilization of the framework, it is considered that it be implemented in four phases.

i) Phase One: Application of the framework in the determination of the vulnerability context

This process will involve the collaboration with stakeholders in the university. These stakeholders comprise of the students, lecturers, library staff and research officials. These stakeholders will be used to give input into the trends and changes in the information technology world and how these trends and changes are affecting the global market. The university needs to consistently acquire this knowledge so that it is able to keep track of what the market wants and then incorporate this into the University's courses and teaching techniques.

The stakeholders can participate in the knowledge acquisition process through the student who can be able to analyse and determine trends and changes mainly through exposure to the market through internships and attachments as well as participation in research projects. They can then present their findings in form of end-of-attachment reports or research project reports. The lecturers and research officials can widen the universities knowledge base through reading of the latest journals, carrying out consistent research in information technology and analysing this to determine the skills needs of the current market and then incorporating this into the existing course curricula through the university knowledge base. Library Staff can track changes in market requirements, through the provision of online library resources, offering of journal repositories and storing the university library with books as recommended by lecturers of the subject. Figure 4 below illustrates how this implementation strategy takes place.

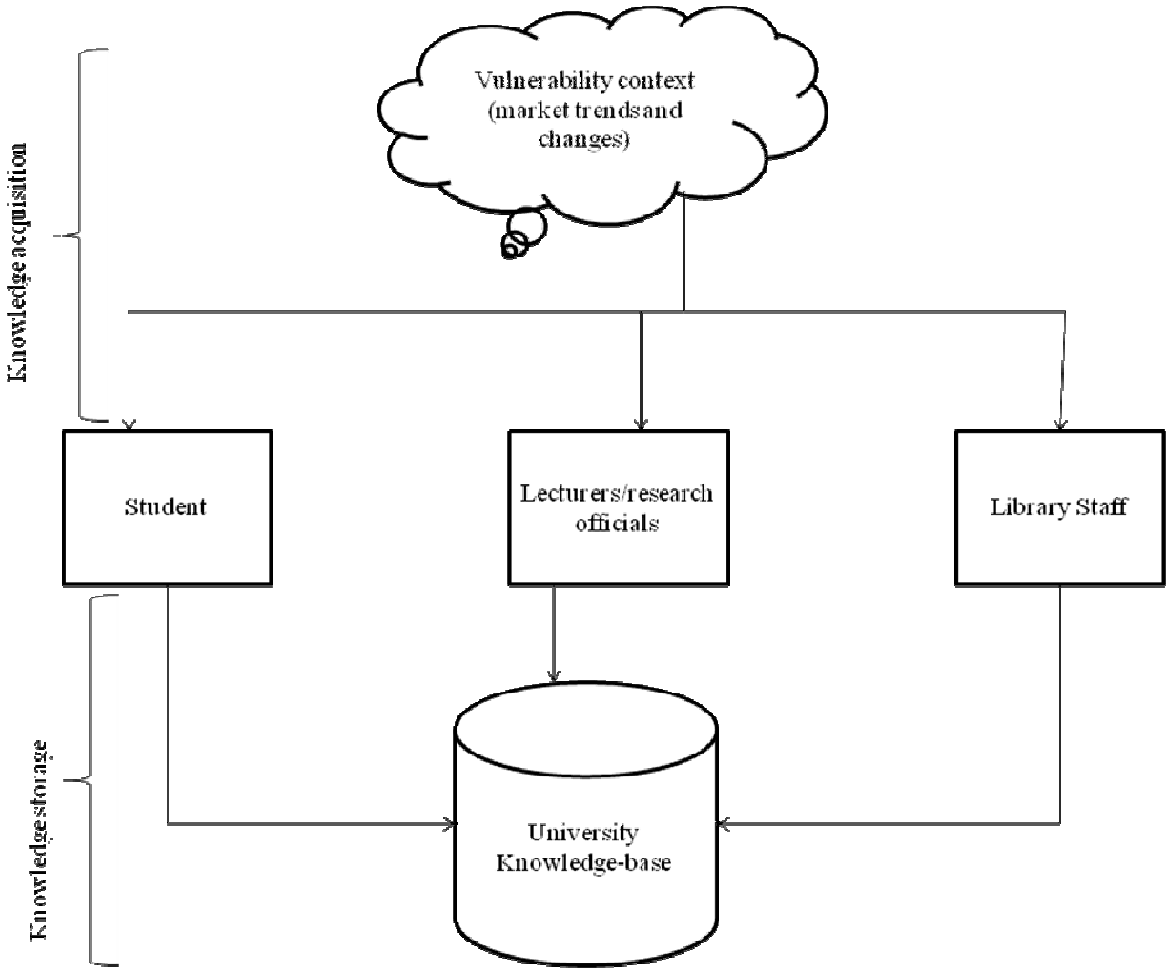

Figure 4: Determination of the vulnerability context with participation from university stakeholders

Collaboration with industry will also be important in determining the vulnerability context. This includes formation of partnerships with top industry players who are constantly updating their infrastructure and technology.

ii) Phase two: Application and monitoring of the student livelihood assets using the extended livelihoods framework

The livelihoods assets of the student include the human capital, the social capital, the physical capital and the financial capital.

In the case of human capital for the student will involve use of the dynamic curriculum development platform proposed by the Career Space Consortium. The

platform attempts to align the skills sets required by industry with the university's courses. One of the ideas that can be used in the process curriculum development the university will need to involve top companies and top universities internationally. This should not be a onetime process but a continual and dynamic process in tune with market changes.

In the case of social capital, the university can set out to belong to the best professional organizations in the region and internationally. This will be done through the identification of the best societies and organizations that the university can enlist in and then developing a grass-root network per class. The university will also encourage and subsidize students to join the clubs and societies.

For physical capital, collaboration with industry will be necessary to determine the latest in technology and infrastructure and tools in the market at the time.
It will also be necessary for the university Collaboration with top tertiary institutions to find which technologies have been implemented into their education system. As well as which technologies most apply to the courses offered at the university. Training of teaching staff on the use of this new infrastructure will also be necessary so that they are better able to impart this knowledge to the students.

Finally, for financial capital, The University can facilitate this by offering scholarships, bursaries and loan offers to students as well as monitoring their financial performance throughout and after completion of the course through regular surveys. Figure 5 below illustrates how this implementation strategy takes place.

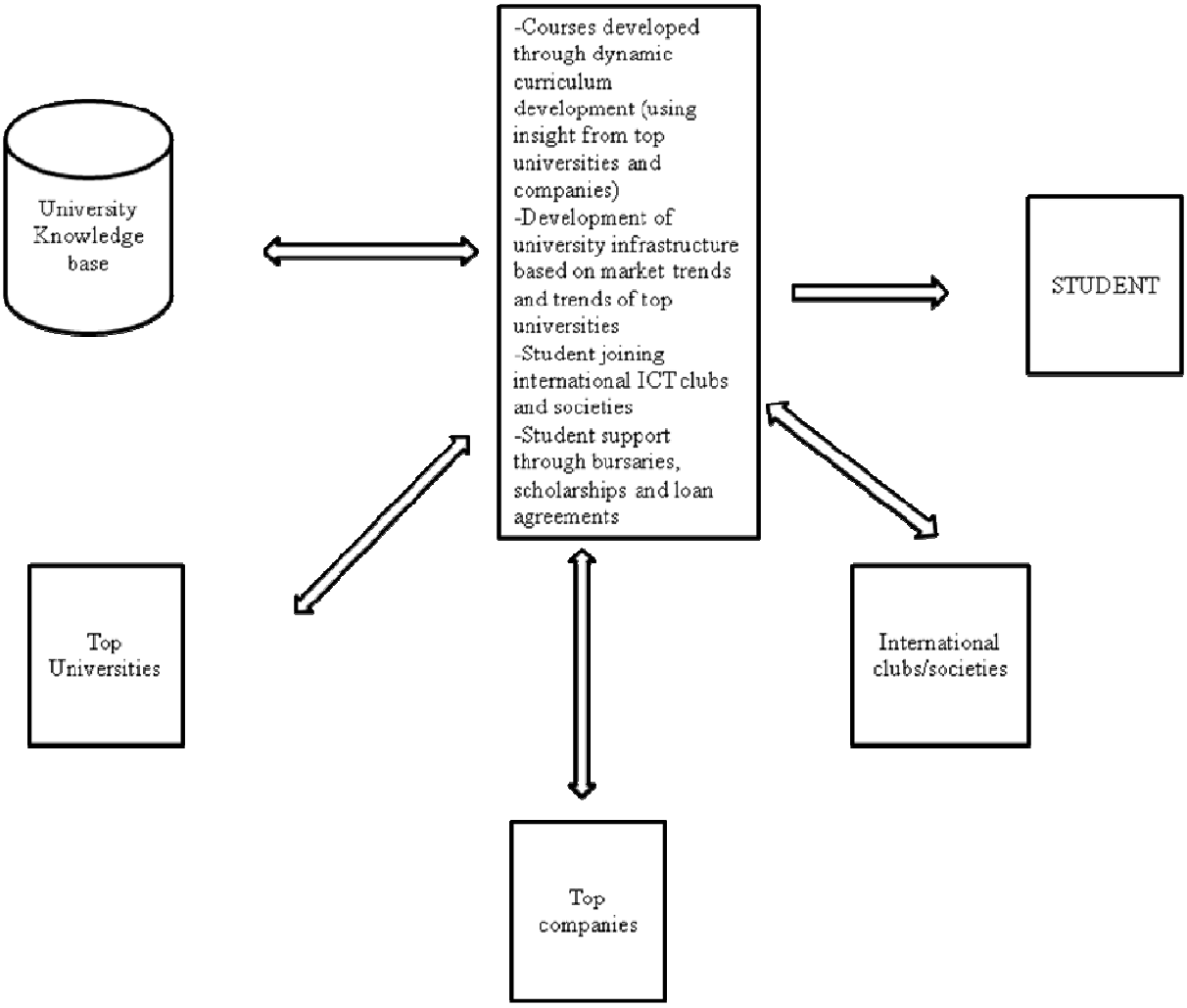

Figure 5: Application and monitoring of the student livelihood assets

iii) Phase three: Adjustment of the institution's policies and processes within the extended framework

The university, through collaborating with industry and other universities, both students and teaching staff as well as university policy makers spend time in industry and visiting top universities to see which policies and process are the best practices or "what works", "what has helped these top universities become world class".

Lessons learnt from industry into the university's policies and processes. The framework can then be adjusted to encompass the existing policies and processes to meet the market demands.

iv) Phase four: Incorporation of the livelihood strategies

The components of this phase include Implementation of regular feedback mechanism for both current and past students and Framework adjustment. The feedback mechanism will involve preparation a regular (yearly) audit of the framework with industry and industry experts. During the audit the students will be invited to participate in discussions with industry experts to test students' knowledge of ICT concepts and especially in the area of current or new technologies. The process will also include regularly inviting alumni or past students to conferences and seminars where they can present their experiences with the market provide pointers on any new requirements in the industry at the time.

In the case of framework adjustment this involves adjustment of the framework to fit changes in the market and to incorporate any new developments prescribed by the industry. This is especially necessary in the area of Information Technology where requirements for skills of graduates are constantly changing.

v) Outcomes expected from the developed framework

It is anticipated that once the framework is implemented, the University will have better quality students and teaching staff together with strengthened relationships with industry and with other higher education institutions. It is also anticipated that the university will also become more accountable to stakeholders including the government through vision 2030. Accountability is generated as the University develops graduates and teaching staff that fit into the needs of the industry

Conclusions and Recommendations

The study has shown, through literature and data obtained, that there is a need for universities to focus more on the particular skills for their students based on discoveries made within the current market and best practices.

With increased competition in the field of academics, universities must now align their curriculum and education process to meet the demands of the industry. It is also necessary to expose the students and teaching staff to online journal resources. Universities can sign up to these repositories so that university staff and students are able to access the journals for free.

The study suggests that after streamlining the above processes, it is then critical for the university to find means to monitor the performance of their students as they enter the job market.

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