Higher Education in the 21st Century: Relevance, Sufficiency, Challenges and Remedies from Graduates' Perspective

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Authors' contributions

Both authors designed the proposal, carried out data collection, analysis and report writing together. Both authors read and approved the final manuscript.

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ABSTRACT

Changes in life are ever bound to take place and as a result, what was important yesterday may be obsolete tomorrow, and education is not an exception. Prior to the 21st century, necessity of changes in education had been identified by many researchers and international organizations concerned with education. This had been brought about by the fact that things were changing and education had to keep the pace. In light to this fact, this study was carried out in Eldoret town, Kenya, in order to investigate whether education was up-to-date in the 21st century. It targeted university and college graduates. It was guided by four objectives namely: the relevance of education in this century, the sufficiency, the challenges facing the education in the century and the solutions to the challenges. 300 graduates from 28 different higher learning institutions were considered and data collected using questionnaires. Purposive sampling method was employed. Data analysis was performed in R software and Microsoft Excel for both descriptive and inferential statistics. The results show that, the rate of unemployment among graduates in Eldoret stands at 56.3% (p=0.0163) and 83.4% (p<0.0001) of these unemployed graduates are seeking employment. Among the employed, 59.5% (p=0.0180) are in non-self-employment. At higher learning institutions, majority (74.3%) of the graduates feel that they only gained knowledge while only 3.7% gained both skills and knowledge. Those who don't find higher education in the 21st century useful in preparing

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graduates for 21st century's life are 93.0% ($p<0.0001$), which is the same as those who don't find what they gained from higher education useful in their life. The need for reforms in higher education in 21st century for the sake of meeting modern expectations and realization of developments was supported by 98.7% ($p<0.0001$). 99.7% ($p<0.0001$) admitted to have faced challenges when studying, which is the same as those with remedies to the challenges. The conclusions are: the higher education in the 21st is not useful, sufficient and relevant for modern life, it is full of challenges and reforms are necessary to help realize developments and modern expectations, and graduates can be useful in finding solutions to the challenges. Recommendations are: the stakeholders should embrace these findings and make necessary reforms to ensure that higher education in 21st century meets the 21st century's expectations in transforming the modern society, and more research to be done involving wider scope.

1. INTRODUCTION

The role of higher education in any given country in terms of development, enlightening societies, setting political sanity, raising the consciousness of individuals, providing skills and knowledge, driving economic growth, nurturing creativity and innovation, mushrooming technology and providing platform for problem solving among others, has been evident since time immemorial [1,2]. It has become an integral part of not only an individual's life and existence but also of a nation, in which, it cannot be treated as a superfluity or comfort but an essential [3]. Educated people become assets in a society and this means that they become true wealth of that nation [4]. Therefore, education must come at a cost for long-term/life-long gains. According to [1], the society should benefit from educated individuals but when the nation commercializes education, the student is forced to buy education, knowledge and skills as commodities and hence the buyer has no obligation to the society, nation and any other individual. He views higher education as 'an attitude to life' that should neither be treated as a commodity nor commercialized in any way.

Higher education in 21st century has made significant growth and can in no doubt be compared with the systems that existed during independence in any country [5]. The modern diversity, complexity and globalization of higher education are clear indicators of the growth it has made since its establishment in any given nation. One of the reasons for the improvements and changes witnessed in higher education has been accelerated by the need for accommodating societal needs at different eras in life. As the saying goes, 'necessity is the mother of invention', various needs and expectations in communities have been forcing the stakeholders

in higher education sector to call for essential reforms with the aim of meeting the societal needs. Some of the inevitabilities that have demanded reforms in higher education are diminishing/scarce resources, growing students' populations, societal encounters such as climate change and global warming, modern complexity of diseases, natural calamities, need for skills, creativity and innovations among others, globalization, different ideologies from stakeholders/authorities in power in a given era, etc. Some reforms are done in accordance with the targeted quantity without jeopardizing the quality of education. Therefore, in order to overcome emerging issues and various obstacles encountered along the way, reforms become unavoidable in higher education.

In the 21st century, higher education is still in need of restructurings that can help cope with 21st century's demands. The 21st century's needs require the higher education in the same century to be directed towards transforming the modern societies. The societies call for sustainable development and their improvement as a whole through catalysing, boosting and enhancement of cultural, social, economic and political advancement/development. It is in light to these that [6] has been emphasizing on the importance of upholding, reinforcing, enhancing and expanding the core missions and visions of higher education as the world moves deep into 21st century. The main aim has been to produce highly qualified, skilled, trained and responsible graduates as citizens for the sake of creating stable, active, thinking, innovative, creative and independent individuals and societies. It is also of paramount importance that the relevance of higher education be maintained for the sake of meeting the societal expectations and aims through frequent reforms and use of innovative and creative teaching and learning methods in

the 21st century. It is the aim of the societies to be ever transformed and be aligned with dynamics of the whole world and higher education in the 21st century can be used as a tool in achieving these. The societies are interested in living without poverty, violence, diseases, degraded environment, injustices and intolerance, illiteracy and ignorance, underdevelopment and backwardness, and hence the 21st century's higher education must be at the fore-front in meeting these societal needs. Higher education that cannot help the society in achieving its goals has no place in 21st century.

According to [6,7], there are numerous challenges that are facing the higher education in the 21st century and to overcome them, necessary measures must be taken without delays. The four main challenges highlighted have to do with attainment and maintenance of relevance, quality, management and co-operation globally. Ensuring relevance of higher education in 21st century is not a simple task and requires frequent re-visiting and re-alignment of the education with ever changing world. Relevance is attached to importance and hence the higher education in the 21st century must play its roles in any era. Quality of higher education is usually at risk whenever quantity increases. An example is the rising demand of higher education that is attributed to increasing populations, increasing intake of students into universities and colleges, lowering of entry grades into higher institutions, introduction of free education in various countries, thirst for higher education among citizens, world-wide campaigns for attainment of universal education and so on. It is the task of stakeholders in higher education in 21st century to campaign for quality despite the rising demands for quantities of education. Managing of higher education in the 21st century calls for competent managers and good management comes at a cost. Good managers are capable of giving prudent ideas and directions and moulding people into good managers is costly. Therefore, financing the higher education in the 21st century is crucial to having good management. Finances are also necessary for equipping the higher institutions in the 21st century with 21st century's technology, equipment, teaching staff, expansion and other requirements. Globalization of higher education in the 21st century is inevitable. The world is a global village and hence, international partnership and co-operation is key to higher education's development [6,7]. Isolated nations cannot know what the larger world is doing and therefore, cannot grow.

Aguilera-Barchet B. [8] points out that higher education can be different from one country to another depending on goals and hence the way it is offered and what is offered. An example is the higher education in United States of America (USA) where it is treated as a private matter, focuses mostly on applied research and directed towards specialized practical teachings for development of skills needed in job markets while that in Europe is treated as a public service, focuses on instructions and directed towards broad-based theoretical teaching for the development of intellectual capabilities. The risk in directing higher education towards a given direction lies in the fact that it is usually disconnected with realities of ever-dynamic world. [9] points out on the need for a new higher education that is suitable for 21st century. The work points out how the ancient higher education's goals have been changing from production of perfect citizens up to today's goal of developing creative people. The study also revealed that, the current higher education is likely to generate more problems than solutions and equip people to become more of vandals of the earth. It is necessary for the nations to finance higher education and develop policies/laws towards the same.

Orr D. [10] has shown that the world needs higher education that should be of a certain kind (not just education), capable of saving the world and its worth should be compared with the standards of survival of humans and decency. According to the European Union, the higher education in 21st century must change and be different from other past forms of higher education [11]. It should cope with social needs as well as economic wants. The teaching and learning process should be dominated with ICT (information and communication technologies) while creating, strengthening and maintaining international co-operations among institutions for sharing of knowledge and collaboration in all aspects of higher education. [12] stresses the need to have higher education in 21st century that can help the world to walk in paths of sustainable development despite the ever-escalating challenges that are increasing in complexity. There is need for relations that can help identify from others what works, what fails and practical remedies to challenges. The potentials of higher education in igniting and driving growth through imparting technical skills

for labour markets that can lead to innovation, productivity and entrepreneurship should be realized.

Altbach PG, Davis TM and Barack L., [13,14] emphasize the need for international dialogues that can assist in sharing ideas and knowledge because the higher education is facing common challenges worldwide. Some of the challenges in 21st century' higher education includes the pressures of increasing students and funding and points out that reconsideration of the social and economic roles of higher education is important. Technology is really changing and this has an effect on higher education. The 21st century higher education is grossly underfunded while students' fees are on the increase. The emphasize is that higher education in the 21st century should be aligned with the society/customers' needs.

The role of higher education in the 21st century in any country's development and in the realization of the targeted sustainable development goals (SDGs) is unavoidable [15] because it is usually the products of higher educational institutions that drive the nation in making decisions and laying strategies for development. This is realized through production of skilled, knowledgeable and thinking graduates from higher educational institutions who are creative, innovative and problem-solvers. According to [15], there are many obstacles facing the higher education in the 21st century and one of them is lack of research and development, yet it is research that helps equip students with life skills and experience. Some of the suggested solutions include making efforts in improving and changing existing out-dated curriculum and teaching methods for the sake of transforming higher education in this era to suit modern societies.

Information creation and dissemination that involves teachings and research may include interaction of a wide variety of knowledge producers. However, higher educational institutions in the 21st century are facing the challenge of ensuring that the knowledge they impart into the graduates finds the right environment for its effective use in solving problems. If higher education focuses on creativity and the right environment, this can help achieve development at both national and regional levels [16]. Higher education in the 21st century is not meeting the learners' expectations, leave alone the expectations of the societies [17].

This has been attributed to the modes of delivery, especially for online learning classes, in which the mode of delivery is not a choice of the learner but that of the instructors and institutions, as well as continuing cuts in budgets that are directed towards education and decreasing development opportunities. For active transformation of higher education in 21st century that is essential for individual's well-being, education for sustainability and community development, then enlightened leadership and governance structures reforms are needed [18].

According to [1], some of the challenges that the higher education in 21st century, and previous century, is facing are to a large extent due to commercialization of the education. This way, the stakeholders are concerned with profits and actually view education as a commodity to be purchased or sold for gains, with the receivers (students) being treated as customers. Organizations such as International Monetary Fund (IMF) and World Bank have been encouraging nations, both developed and developing, to trade education as a way of mitigating some of the crisis the higher education faces, which has led to privatization of education with the support of the concerned governments. This notion has led to generation of 'inorganic' intellectuals who are only dependent and have only parasitic form of thoughts. [19] noted from World Bank perspective that the underdeveloped countries are not in a position to expand the perimeters and quality of higher learning institutions in 21st century due to lack of enough funds. The inadequate funds hinder the institutions from contributing adequately in the world knowledge-based economy. It also limits the capacity of higher education to focus on research-based knowledge that can be visible in world economy and development. [20] on the other hand note that higher education in 21st century can be improved through setting up of enough scientific facilities and modern laboratories as well as making transformations as required.

In general, higher education in 21st century should be viewed as a platform for gaining skills and knowledge (technical know-how). It should be an avenue for transforming individuals into intellectuals who are ready to serve the society. It should be an industry for moulding people into educated products, people who are dependable in societies, critical thinkers and problem solvers who are creative and innovative. They should come out of higher educational institutions as

drivers of change and societal transformation. They should be real assets in the society and not liabilities that act like parasites and part and parcel of problems. In order to achieve all these, essential reforms are needed for higher education in 21st century and beyond to really meet and match the needs of 21st century life and challenges.

This paper has several sections. The first part is the introductory part that shows what international educational organizations such as UNESCO, individual and collaborative researchers as well as financial institutions like World Bank have to say about higher education in the 21st century. This is followed by a brief literature review that highlights what other researchers have done and found. The statement of the problem follows, together with objectives, justification of the study, methods used in the study, results of the study, discussions, conclusions and recommendations in that order. The list of references closes the work.

2. LITERATURE REVIEW

Indeed, a lot has been done in regard to higher education research. Some research is as old as before 21st century while recent researchers have focussed on time within 21st century. [5] has studied the issues and challenges hampering higher education in India in this century. The work has identified grave issues affecting India's education including those touching management, finances, infrastructure, research, technology adoption, classes, among others. The suggestions made on how the higher education can be improved include: assessing the learners' ability and interest to help focus in the directions of their interests, creation of conducive climate for investors, to increase the number and sizes of higher learning institutions for more citizens to access the higher education, adoption of modern technology suitable for research, e-learning and management, updating libraries among others.

Nyakito C, Allida V., [21] reviewed the existing literature to evaluate the developments influencing education in schools in this century. They have discussed the direction taken by the Kenyan new system of education (from primary schools to university levels). The work points out that the challenges facing education and needs to be addressed by new education system include increasing unemployment rate, illiteracy

in digital sector, lack of skills, among others. Caution has been raised that all stakeholders in Kenyan education should analyze the new education curriculum to ascertain that it meets modern requirements in objectives, methods, contents and so on.

Beattie JW., [22] have focused on issues relating to unintentional consequences due to changes in policies directed towards the higher education. They have pointed out that the countless new policies in higher education sector are necessitated by the expectations of the stakeholders as well as the ways of funding and managing finances. Some unintentional consequences are: malpractices in tests due to high cutoff set by administration in higher educational institutions, reduced access to higher education by low income students when differential tuition policies are implemented based on instructional programs' costs, among others. As a result, leaders in higher educational institutions should come up with interventions, be able to identify unintentional consequences and plan as it would be necessary. The failure to consider and plan for unforeseeable outcomes leads to the deception that the outcomes are random, lack of addressing the causes and lack of intended changes.

Irvine V., [17] conducted a pilot survey on a selected type of multi-access courses. They purposed to study how the perception of the learners, in terms of quality training, choice in modes of access and opting for delivery options, is affected when face-to-face learning is blended with online teachings. First, they have identified that the learners' expectations in the 21st century are not met with the model of higher education in place. Secondly, online teaching can help meet the needs of learners but the problem is that, the choice of modes of delivery is at the discretion of the teaching institutions and the instructors of various courses. Thirdly, learners were interested in choosing learning and delivery modes based on factors such as social, personal and environmental factors. Lastly, 21st century students are not just interested in anytime teaching methods and anywhere learning techniques but want to be part and parcel of, as well as to connect 'any way'.

Howard P., [18] reviews the efforts put in shifting education to 21st century demands, both at national and international levels. They have also discussed a concept called 'Living School' that is viewed as an integrative transformative concept

in education sector. The concept should incorporate the societal attributes such as community needs in development and sustainability, connection of schools with communities, well-being of the learners, developing skilled leaders responsible for transformative changes in education, among others. They have noted that transformation requires leadership that is enlightened, scalable structures in governance as well as system-wide reforms.

A research found at [23] shows that about 27 years prior to the 21st century, the United States (US) experienced an increase in percentage of the educated workers. The workforce with higher education for the said period changed from 28% to 59% while the holders of bachelor's degrees grew from 9% to 20%. The changes in the figures were as a result of demands in industries. The paper notes that the requirements for workers in the 21st century (in economy, jobs and businesses) would be a different package of skills including high levels of education, creativity, innovation, tangible skills like language proficiency, less tangible skills, open mindedness, resiliency, nimbleness, competency in all hierarchical levels of employment. All these not only demand for literacy in education but also creativity in 21st century higher education. Life in 21st century would require students and citizens whose higher education nurtures and enables imaginations among the recipients of the education.

In India, [24] has found that the level of literacy is about 74% and this is below the world's mean level of literacy. The research notes that India has the largest population that is illiterate in spite of the programmes put in place by the government and that the level of literacy grew slightly prior to 21st century. 10 years into the 21st century, the literacy level increased by about 9%. Some of the challenges facing higher education in 21st century in India include the gender disparity, quality and quantity of higher education, non-all rounded form of education in training students, degraded moral, social, and cultural sentiments, inadequate higher education in terms of meeting 21st century students' demands, invaluable and undervalued skills, costs of education, indiscipline, corruption and poverty among others. The 21st century should focus on achieving trainer and trainee ratio, eliminating physical punishments, adoption of technology, government and schools mutual support, use of flexible curriculum,

creativity and innovation among trainees and so on.

Knepp KAF. [25], has reviewed literature on student and schools' incivility in higher education. The work has discussed both less serious and more serious incivility behaviours that students in higher learning institutions practice. Incivility has several causes including student related factors (like inaccurate expectations about college work and life), faculty related issues (like instructor's personal traits), institution related causes (like campuses' diversity that has brought about wide package of attitudes from students) and other factors like nuisance talking in class that takes place near the end of lessons, consumerism and modern technology. It highlights on how instructors at higher learning institutions can handle incivility in class including the use of verbal reminders, teaching behaviour related rules in class, learning students' names and calling them often in class, embarrassing students in class and so on.

Lawrie G., [26] have researched on inclusive teaching and learning (at all levels of institutions of learning) based on the recent literature review (from year 2010). They have noted that the idea of inclusive and equitable learning and teaching is elusive, and that it might not be possible to fully realize it. Collaboration among various stakeholders such as learners, faculty, administrators, instructors and others can be useful in achieving effective inclusive teaching and learning. It was found that inclusive idea rotates around the pedagogies that meet diversity of needs of learners and that enable accessibility, flexible and multimodal assessment, as well as support of learning and teaching by institutional managements.

Online teaching and learning, as an effective way of overcoming some unavoidable challenges such as the current issues of Covid-19 disease facing the whole world, can be adopted in higher learning institutions although it has its own bottlenecks. [27] have performed a study involving reviewing of recent published works on online teaching in higher learning institutions. They have focused on applicability of theories, tests/assessments and practical to online learning atmosphere. The results show that the development and adoption of effective online teaching methods depend of many factors including designing of subject contents, relationship between trainers and trainees, support accorded to instructors, mindset of the

online learning community, technology advancements among others.

Based on the foregoing literature review, it is evident that most of the works are not based on primary data collection from subjects such as learners, teachers and so on, but relies on literature review, experience and ideas meant to help improve higher education as the world moves deeper into the 21st century. In most cases, data is not available. Also, the research on higher education that is graduate-centered has not been mentioned. So, this research aimed to use graduates' ideas as they are part of stakeholders in higher education as well as rely on raw/primary data from the subjects.

2.1 Statement of the Problem

There is high rate of unemployment among youths in Kenya and other countries of Africa. The rate of unemployment has been increasing in Kenya even though the number of the learned people have been increasing tremendously due to introduction of free education. The international organizations such as International Monetary Funds (IMF), United Nations (UN), World Bank (WB) among others have described Kenyan graduates as learned people without skills necessary for real-life requirements. The Kenyan government has been forming commissions to review the education system once it is realized that the system in place is not fully addressing the requirements at hand. Therefore, it is not true that the education in place is serving the needs of the society. Furthermore, many graduates from higher learning institutions seem to seek employment from already established companies, factories, institutions, etc. and not actually seek self-employment and exercise the skills and knowledge gained from higher institutions. This shows lack of power to be creative and innovative, inability to be problem-solvers and great thinkers as well as lack of self-reliance after graduations. In the light of these shortcomings, this research sought to study the relevance, challenges and remedies of 21st century higher education in Kenya from the point of view of graduates.

2.2 Objectives

2.2.1 General objective

This research aimed at investigating the relevance and sufficiency of higher education in 21st century to 21st century's expectations, the challenges faced and possible solutions to the challenges.

2.2.2 Specific objectives

1. To investigate the relevance of higher education in 21st century in meeting the 21st century's expectations/needs from university/college graduates' perspective.

2. To investigate the sufficiency of the higher education in 21st century in realizing essential developments for the 21st century from graduates' point-of-view.

3. To investigate the challenges facing higher education in 21st century from university/college graduates' perspective.

4. To investigate the remedies to challenges facing higher education in 21st century from university/college graduates' perspective.

2.3 Hypotheses

1. H_0: The higher education in the 21st century is relevant in meeting the 21st century's expectations/needs from university/college graduates' perspective. Versus
   H_1: The higher education in the 21st century is not relevant in meeting the 21st century's expectations/needs from university/college graduates' perspective.

2. H_0: The higher education in the 21st century is sufficient in realizing essential developments for the 21st century from graduates' point-of-view. Versus
   H_1: The higher education in the 21st century is insufficient in realizing essential developments for the 21st century from graduates' point-of-view.

3. H_0: There are no challenges facing higher education in 21st century from university/college graduates' perspective. Versus
   H_1: There are challenges facing higher education in 21st century from university/college graduates' perspective.

4. H_0: There are no remedies to challenges facing higher education in 21st century from university/college graduates' perspective. Versus
   H_1: There are remedies to challenges facing higher education in 21st century from university/college graduates' perspective.

2.4 Research Questions

1. Is the higher education in the 21st century relevant in meeting modern expectations?

2. Is the higher education in 21st century sufficient for essential developments?

3. Are there challenges facing the higher education in the 21st century?

4. Are there solutions to the challenges facing the higher education in the 21st century?

2.5 Justification of the Study

This research can be used by other researchers as a stepping stone in more advanced researches that can involve larger groups of participants, wider study area, more objectives and so on. Policy makers such as universities/colleges, both county and national governments can use the findings in policy making in order to make necessary reforms to meet modern requirements. The current students pursuing higher education can benefit from the findings by getting knowledgeable on challenges they expect to face in learning institutions from already experienced stakeholders (graduates). Stakeholders such as funding groups, well-wishers and international communities can use the developed document in identifying the funding projects in higher learning institutions such as modern workshops, modern laboratories, industrial attachment and teaching practice expenses to students in order to cope with modern requirements.

Fig. 1 gives the theoretical framework in a summarized manner. When all the necessary tools are in place, the objectives of higher education can be realized in any country.

3. STUDY DESIGN AND METHODS

Random sampling method was applied during the pilot survey exercise in which both graduates and non-graduates were selected. Purposive sampling technique was employed during the actual survey in which only university/college graduates were considered for the research and only the willing graduates were sampled and issued with questionnaires. Both quantitative and qualitative data were collected.

3.1 Pilot Survey

A pre-survey was conducted in Eldoret town in order to test the data collecting tool (questionnaire), be familiar with the possible challenges to be encountered, estimate cost of sampling as well as sampling time. 20 individuals were randomly sampled in the streets of the town. Data analysis from the pilot survey study showed that 35% (0.35) of the sampled individuals were university/college graduates.

3.2 Sample Size

The number of participants was determined using the Cochran's formula [28] as follows:

$$n = \frac{Z^2{}_{\alpha/2}*P*Q}{d^2} \dots \qquad (1)$$

Where

$\alpha = 5\%$ is the level of significance, P = proportion of university/college graduates in Eldoret town, Q = 1- P (proportion of non-graduates in Eldoret town) because proportions/probabilities must sum up to 1, Z is the value from standard normal distribution statistical table that corresponds to the specified α- value, d = the margin error and n is the sample size or the number of the university/college graduates sampled. The P value was taken to be 0.35, from pilot survey. The d value was fixed to be 0.054 in order to control sample size due to time and cost of sampling. The formula yielded

$$n = \frac{1.96^2*0.35*0.65}{0.054^2} = 299.7133 \cong 300 \text{ graduates.}$$

The beauty with this formula is that it doesn't depend on the population size hence the researcher doesn't have to know the population size prior to actual research, and can be applied in populations of all sizes. Again, the researcher is able to control some of the terms in the formula to suit the resources available at hand for research such as time, manpower, funds among others.

3.3 Procedures

Well-structured questionnaire was issued to 20 participants during the pilot survey randomly and 300 individuals during the actual survey purposively. Each participant was guided by the data collecting team to ensure full covering of all the questions. Data coding, entry and cleaning in Microsoft-Excel (Ms-Excel) followed data collection exercise. Analysis was then done in R statistical software and Ms-Excel and this was followed by interpretation, inferences and reporting.
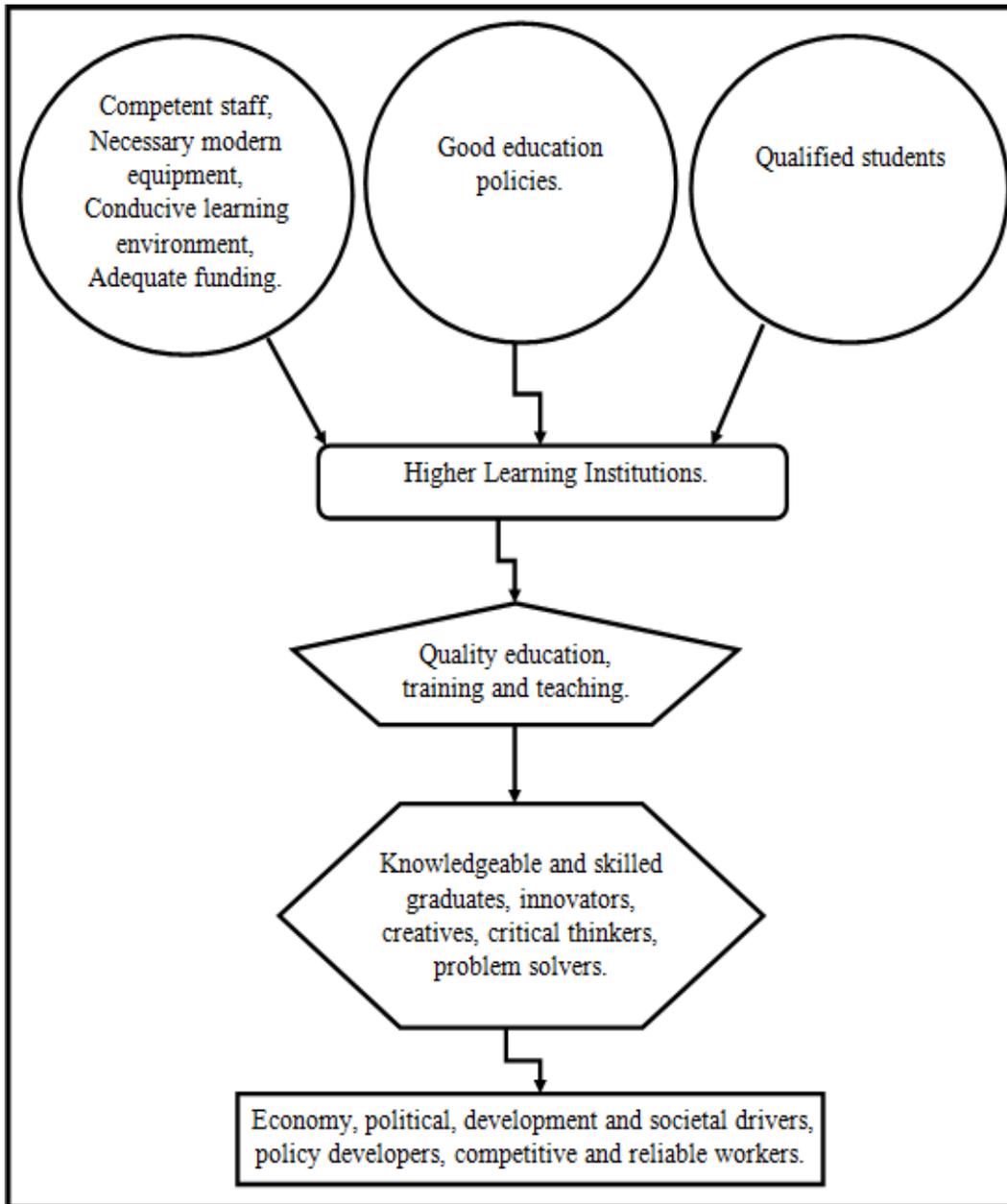
Fig. 1. Theoretical framework in a flowchart diagram

3.4 Study Area

Eldoret town is within the Uasin-Gishu county, Rift-Valley region, in Kenya, as a cosmopolitan.

3.5 Data Analysis

Both Ms-Excel and R software were involved in data analysis. Descriptive statistics using contingency tables and histograms were performed while the inferential statistics using proportion and chi-square tests were carried out. R software, as a free language and environment, is a statistical software for computations and graphics. It is a powerful tool in statistical modelling and performing tests, in simulations, in time-series analysis and other uses, that was developed by Ross Ihaka and Robert Gentleman in 1993. More about R and how to use it in various analysis can be found at [29].

4. RESULTS

4.1 Descriptive Statistics

Both male and female university/college graduates were sampled for the research in which 63.7% were males and 36.3% were females. 28 different higher learning institutions were represented in the research, of which 28.6% were colleges and 71.4% were universities. The highest percentage (6.7%) of the participants were from Moi University, followed by Kabarak University with 5.7% and the least represented institution was Kenyatta University with 1.0%. The unemployed graduates comprise of 56.3% of the participants while those in employment are 43.7%. For the employed graduates, 40.5% have employed themselves while 59.5% are not in self-employment. For the unemployed group, 83.4% are currently looking for employment while 16.6% are pursuing further studies. 83.3% of the graduates have been required to pursue other qualifications after their 1st higher education qualifications in order to widen their job market by boosting their competitiveness and visibility in the job markets, 93% feel that their 1st higher education qualification has not enabled them achieve development at personal levels while 98.7% recommend for reforms in higher education in 21st century in order to help realize essential developments for 21st century.

Table 1 shows summarized data on age (in years) of the participants. From the table, the mean age of the graduates is about 40 years with standard deviation of about 8.9 years while the youngest and oldest graduate are aged 24 and 56 years respectively.

Fig. 2 shows the age of graduates in a histogram. From the histogram, the participants are aged between 20 and 60 years. Very few are aged below 25 and above 55 years.

Table 1. Summary of the age of the participants

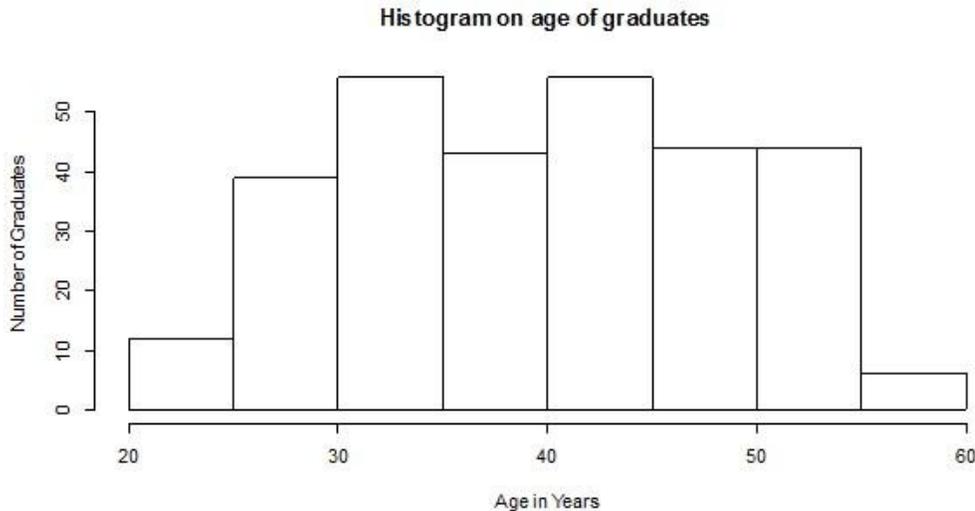|	Average	Std. Deviation	Minimum	Maximum
Years	40.1	8.8997	24.0	56.0

Fig. 2. Age of the graduates in a histogram

Table 2. Time graduates have taken since graduation, duration in employment and job-securing period

Time taken since 1st graduation (years)	<3 (19.3%)	3-6 (38.3%)	6-9 (28.0%)	>9 (14.3%)
Time taken in employment (years)	<3 (15.3%)	3-6 (34.4%)	6-9 (33.6%)	>9 (16.8%)
Time taken to secure employment (years)	<2 (13.0%)	2-4 (31.3%)	4-6 (40.5%)	>6 (15.3%)

Table 2 gives the duration of graduates since they graduated for the first time, the time they have taken serving in employment as well as the time taken to be job-secure. Majority of the graduates (38.3%) have taken between 3 and 6 years since they attained their 1st qualification from institutions of higher learning while the least percentage (14.3%) have taken more than 9 years. As can be seen, not less than 85.6% of the respondents have graduated within the 21st century. About 34% of the graduates have been in employment for a period between 3 and 9 years. Only about 15% have been working for less than 3 years. The highest percentage (40.5%) took between 4 and 6 years to secure employment while only 13.0% took less than 2 years.

Table 3 shows the graduates' gain at university/college during their schooling period. Majority of the graduates gained knowledge only (74.3%) while only 3.7% gained both skills and knowledge. Those who admitted to have gained nothing out of higher learning institutions are 15.7% which is second to those who gained knowledge.

Concerning the usefulness of what graduates gained at higher learning institutions, 93.0% do not find the gains useful while only 7.0% find the gains useful. Again, 93.0% of the graduates do not find education at higher leaning institutions useful in preparing graduates for modern real-life encounters while 7.0% find otherwise. About 98.7% of the participants feel that the 21st century's system of higher education need reforms to help meet the 21st century's expectations/needs. For the challenges at higher learning institutions, 99.7% faced various challenges while only 0.3% didn't experience any challenge. Also, 99.7% of the graduates feel they have ideas that can serve as remedies to current higher education challenges that can assist in overcoming the 21st societal needs while 0.3% have no ideas.

Table 4 gives the challenges the graduates think are facing the 21st century's higher education (SA- strongly agree, A- agree, N- neutral, D- disagree and SD- strongly disagree). From the table, higher percentage of graduates agreed with the first five challenges (88.9%) but all the graduates disagreed with the sixth one (100%).

Table 3. Benefits graduates scooped from higher learning institutions

Gain at university/college	Skills	Knowledge	Knowledge and Skills	Nothing
Percentage (%)	6.3	74.3	3.7	15.7

Table 4. Challenges facing modern higher education

Challenge	SA (%)	A (%)	N (%)	D (%)	SD (%)
i. Financial constraints.	96.3	3.0	0.0	0.3	0.3
ii. Inadequate/lack of practical teachings.	99.7	0.0	0.0	0.3	0
iii. More of almost irrelevant theoretical teaching.	99.3	0.3	0.0	0.0	0.3
iv. Less competent teaching staff.	77.7	11.0	0.0	5.3	6.3
v. Bloating students' population that is almost unmanageable.	33.7	23.3	0.0	31.3	11.7
vi. Unconducive learning environment.	0.0	0.0	0.0	32.3	67.7

Table 5. Remedies to challenges facing modern higher education

Remedy	SA (%)	A (%)	N (%)	D (%)	SD (%)
i. Focus on skills for longer period of time at the university/college.	96.0	4.0	0.0	0.0	0.0
ii. Focus on relevant course-specific theoretical part of education.	99.7	0.3	0.0	0.0	0.0
iii. Focus on industrial attachment/teaching practice for more semesters than the classroom teaching.	100.0	0.0	0.0	0.0	0.0
iv. Involve highly competent and not just highly educated stakeholders.	100.0	0.0	0.0	0.0	0.0
v. Intake of students into universities/colleges to be restricted to a few that can be manageable and government can fully support for full training.	91.7	4.7	0.0	3.3	0.3
vi. Improve learning environment.	0.0	0.0	0.0	52.7	47.3

Table 5 shows the remedies to the challenges (SA- strongly agree, A- agree, N- neutral, D- disagree and SD- strongly disagree). From the table, higher percentage of respondents agreed with the first five idea as remedies to challenges facing higher education in the 21st century (99.3%) but all disagreed with the sixth remedy (100%). This is due to the fact that, learning environment had been dismissed by all as a problem faced during their studies hence improvement towards learning environment is not necessary.

4.2 Inferential Statistics

All the tests were performed at $\alpha = 5\%$ level of significance. Table 6 gives the Chi-square test results for selected cases of response. From Table 6, all the p-values are less than the 5% level of significance. NB: df- degrees of freedom.

Based on p-values in Table 6, all the null hypotheses are rejected in favour of the alternative hypotheses.

5. DISCUSSION

The results show that there are more male graduates in Eldoret town compared female graduates. The rate of unemployment is higher than the rate of employment in the town among graduates. Among the unemployed graduates, a higher proportion are seeking jobs compared to the percentage pursuing further studies, while among the employed graduates, more graduates are not self-employed compared to those in self-employment.

In hypotheses testing, almost everyone was of the opinion that what they had gained in higher educations' learning institutions (colleges/universities) was useless in life. Most felt that the higher education they received is not useful in preparing graduates for life's expectations. The graduates also feel the need for reforms in higher education in 21st century in order to mould them for 21st century's needs/expectations. It is also evident that the higher education in the 21st century is facing challenges and the graduates have ideas that can help solve the problems. From the analysis, majority felt that the higher educational learning institutions equipped them with knowledge only and still some felt they had gained nothing at the end of their studies. Knowledge alone is not enough for 21st century's needs but skills are necessary too for completeness of a graduate. Since majority leave the higher learning institutions with knowledge, they find it hard to cope with 21st century's life that demands skills in creativity, innovation and jobs. There is a significant difference between those who want reforms in higher education in 21st century for realization of 21st century's essential developments and those who do not feel like the reforms are necessary. The graduates who have managed to realize some personal developments from their 1st higher education qualifications are significantly fewer than those who haven't realized the same. Those who have sought other qualifications to help reinforce their survival and visibility in job markets are significantly more those whose who have not pursued anything else. These are logical and in agreement with other responses from the graduates because if

Table 3. Output of chi-square tests on selected variables

	Chi-square value	df	p-value
Usefulness of gain in life	220.16	1	<0.0001
Usefulness of education in preparing graduates	220.16	1	<0.0001
Need for reforms in education	282.27	1	<0.0001
There are challenges facing higher education	294.03	1	<0.0001
There are remedies to challenges	294.03	1	<0.0001
Need for reforms in education for developments	282.27	1	<0.0001
Males are more than female graduates	21.870	1	<0.0001
Unemployed are more than employed graduates	4.5633	1	0.01633
Non-self-employed are more than self-employed graduates	4.3969	1	0.01800
Job seekers are more than further studies seekers	74.225	1	<0.0001
More have pursued something else to boost competitiveness	132.00	1	<0.0001
Less have achieved personal developments with 1st qualifications	282.27	1	<0.0001

one feels that they gained only knowledge from higher institutions of learning and the market requires skills and experience, then one is forced to look for further qualifications to help make them useful and visible in the society. Also, if one feels like they are half-baked at the time of graduation, they would strongly recommend for reforms in higher education.

The main challenges the higher education in the 21st century is facing are financial constraints among students, lack of adequate practical teachings, incompetent staff, irrelevant teachings in theory forms and students' populations that are too large to manage. However, all the graduates agreed that the learning environment in higher learning institutions in the 21st century is conducive and not a problem. The main remedies to the challenges facing higher education in 21st century include focussing on providing skills for longer duration as well as on teaching relevant theoretical education for specific courses, engaging students in industrial attachment or teaching practices for more semesters compared to classroom teachings, involving highly competent staff and not just focus on highly educated staff, and admission of manageable groups of students.

Challenges: the findings are in agreement with what [5,6,7,9,13,14,15,19,21,24] have highlighted that there are so many challenges facing higher education in this century including those touching on the relevance of higher education, finances, technology, research, infrastructure and class management, illiteracy, lack of skills, as well as those affecting the nations and can be solved through higher education such as high unemployment rate, corruption and poverty.

Reforms: on necessity of reforms, [9,10,11,12,18,21] agree with what this research found, that there is need for reforms if at all the modern higher education is to cope with current life and demands. All, together with this research, find that current higher education doesn't have to be rigid when life is ever changing and gaining new forms of complexities. It should be in a position to armour people with skills in jobs, creativity and innovation.

Remedies: [15,20] and the findings from this research are in harmony that solutions do exist that can solve the bottlenecks hampering the higher education in 21st century. Some of these solutions are directed towards reforming/changing the out-dated curriculum, revisiting the ways of teaching, adoption of technologies and modern scientific facilities for quality research.

Irrelevance and adequacy: this research concur with [17] that current higher education is irrelevant and inadequate in meeting the graduates' expectations, hence need for reforms.

6. CONCLUSIONS

The research shows that the higher education in 21st century is not relevant for 21st century's life and expectations. The education is useless and does not equip graduates with relevant tools for life. It is not preparing people for modern challenges and hence is not applicable for current era. The current higher education is not fit for current developments or changes and hence need for reforms. There are challenges facing the higher education in 21st century like finances, inadequate practical and others, and remedies are there that can help overcome them including involvement of highly competent staff. The institutions have conducive learning environment, hence learning environment in the 21st century is not an issue in higher institutions of learning. Most people gain only knowledge from higher learning institutions which is not enough for combating modern challenges and this can contribute to the long-time taken by graduates to secure jobs, both self- employment and non-self- employment. Reforms are needed to improve the situation in higher learning institutions in 21st century to help match the 21st century's expectations. Further, there is a high rate of unemployment among graduates and high rate of job-seekers among unemployed graduates, that can be reversed by equipping graduates with relevant skills and experience through higher education (they become thinkers, problem solvers, creative and innovative).

7. RECOMMENDATIONS

1. The stakeholders in higher education are urged to use these findings in order to implement the necessary changes, policies and reforms to help realize the goals set in producing competent graduates that are useful to themselves and to the entire society.

2. More research to be conducted based on a wider area, more objectives, more stakeholders, different perspectives and so

on, to compare the findings with these results.

CONSENT

Informed and written participant consent have been collected and preserved by the author. The identification of the respondents was not to be revealed.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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