**EDUCATION MANAGEMENT SYSTEM**

**Introduction**

In a society based on information, the role of technology has become more and more important; consequently, also education research needs to focus on methods and tools which are able to combine the new available technology e.g. databases, cloud computing with analysis tools traditionally used.

Information technology has been associated with a shift in business strategy such as the shift in decision-making paradigms of the organization (Huber, 1990). The emerging computing model of Dynamic Data-Driven Applications Systems (DDDAS) fits well in crisis situations where rapid decision-making is essential (Mark Gaynor et al, 2005). Effective decision making in a crisis greatly depends upon immediate access and interpretation of local information within the context of the overall environment at any particular point in time. A key element of a crisis is its dynamic, turbulent, uncertain nature that creates both a sense of urgency and a need to reduce uncertainty in decision-making. The goal of these emerging technologies is to support decision-makers with relevant timely information that they can quickly interpret at the time and location that they must make a decision (Mark Gaynor et al, 2005).

Data sitting in files are of little use unless they are processed, converted and expressed in intelligent ways to present decision-makers with valuable information (Deniz and Ersan, 2002). In schools, pupil records form the basis for a wealth of information as well as operations. In many schools, pupil-related records are created and maintained by the teachers. The records of KCPE results data are maintained over the years. This data shows how a school has been performing over the years and the performance trend.

The recent development of the web generates further momentum to the design and implementation of an online portal. An online portal is to provide a way for storing, presenting, gathering, sharing, processing, and using information. The portal is also to provide a distributed infrastructure for information processing, interaction and tool with user-friendly interface. This allows users to access the system remotely and instantly at anytime, anywhere.

**Problem statement**

There are over 18,000 public primary schools in Kenya. With the introduction of free primary education programme in 2003, there has been a massive increase in enrolment by pupils. The government and non-state actors have invested in development of public primary education.

Information and Communication Technology (ICT) integration in our public primary schools has not been given a keen interest for a long time. However, with the government’s plan of providing laptops to pupils, there has to be a paradigm shift in the view and uptake of ICTs in public primary education sector. The government has applied the use of ICTs in administration of national examinations. However, in the general management of all aspects of public primary education, the use of ICTs isn’t evident to a greater extent.

Over the years standard eight pupils sit for the Kenya Certificate of Primary Education (KCPE) Examination. Each school stores this data in files that gather dust in the shelves. The same records are replicated in the government education offices. If one wanted to know how his former school in the village has been performing in KCPE over a period of time, one would be compelled to travel to the school to access that data. A definite challenge is that this data lies in its raw form and the lack of analysis poses difficulties in understanding how a school has been fairing over the years.

There is no ICT based system that a particular school would use to store its data: KCPE results, internal examinations results, pupils and teachers population at any given time, infrastructure and facilities, alumni records, projects.

With modern technology such as computers and the Internet, a school can store its data in a centralized database and analyzed, a school can communicate with parents, alumni and other interested persons and organizations. This calls for development of a web portal for primary schools to store and analyze data and communicate with all its stakeholders. The system should provide an efficient and effective way of management of public primary schools by the government.

**Purpose of the Project**

The purpose of the project is to develop an online data-driven portal where each public primary school shall create an account, upload and store KCPE and internal examinations’ data in a centralized database. The data will be analyzed to give information to various users on the state of education in a school and/or a group of schools in a given area. This data and information will be available to any interested party via the internet.

The portal will be a framework where a particular school can communicate to the parents, alumni and other development partners via emails, social media and bulk sms service.

The online database will be a back-up for schools’ data. In case a school loses its data, the data in the online database will be used to restore the data. This will serve as a security against data loss. The users will access the system using a computer connected to the internet, tablets and smart phones.

**Objectives of the Project**

The main goal of the project is to develop a web portal to store and analyze schools’ data to provide information to various users. The specific objectives of the project are:

1. Create an account for each public primary school in the online portal.
2. Identify and collect KCPE and other examination data from public primary schools for analysis and evaluation.
3. To carry out statistical analysis on the historical data to develop models. The models will help in decision support.
4. Provide a platform for communication between a school and the external environment.
5. Analyze, design and implement the system using appropriate tools.
6. Evaluate the system using appropriate techniques.

**System functions**

1. Create an account for a school with information:
2. Name
3. Location…ward, sub county, county
4. Capture the following information about a school:
5. Infrastructure and facilities
6. School projects
7. Number of pupils
8. Number of teachers
9. Number of pupils in classes 1 to 8.
10. Upload, storage and analysis of KCPE data.
11. Present KCPE reports in tables, graphs and pie charts.
12. Upload, storage and analysis of internal examination’s data.
13. Access by government officials –AEO, DEO, Minister- and communication with the schools.
14. Record pupils’ and teachers’ attendance in a given school.