EFFICIENCY OF MEDICAL RECORDS AUTOMATION IN KENYATTA NATIONAL HOSPITAL

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Abstract
This paper investigates the efficiency of medical records automation in Kenyatta National Hospital (KNH), Nairobi, Kenya. Specifically, the study determines the level of computer-related staff training, the level of association between records related policy and automation, and the cost and time effectiveness as a result of automation. Efficiency of post-automation processes is used as a composite variable of Training, Policy-relation and time and cost effectiveness. This was a descriptive cross sectional study, conducted at Kenyatta National hospitals, with a sample size of 140 respondents, all of whom were participants in handling health records at some stage in service delivery. Surveys were administered through face-to-face interviews and form filling. Analysis was done using SPSS version 16.2 and presentations in form of tables and graphs, to deduce relationships. The study established that most KNH sections that are served by the Health Information Department have been automated. 60% of the staff felt that automation improved the efficiency both in terms of time and financial resources. 60 was the modal level of professional training as contributed by those with either a certificate or diploma. Institutional policies and standards of operations were all supportive and in line with international automation standards. Less than 3% of the respondents indicated that they do not know any automation-related policies, while also indicating their dissatisfaction at the impact of Automation of medical records. The study recommends institution-wide training on computer application and courses relating to the same; and an elaborate presentation to the management indicating to them how useful automation could be to them, the hospital as well as the Ministry of Health in Kenya at large.
Introduction

Automation is defined as the use of control systems and information technologies to reduce the need for human work in the production of goods and services (Collins et. al, 2012). There is need to automate record system to enhance quick retrieval of information. Automation refers to the use of computers to manage information processing in record centers archives and registries. Automation also refers to variety of application using computer technology which facilitates quick processing, storage and transmission of information and data (Musembi, 2002).

Computers can be used to automate the records management system itself. This will eventually promote the target required of a good records management programme of increasing efficiency, economy and effectiveness in performance in a record center such as File and document management, File and document tracking, Searching and retrieval, Records disposal and retention schedule, Compiling report and, Security of information through the usage of passwords and other codes for the sensitive records (Jha et. al, 2009).

Better information and better access to information gives health care provider and managers a powerful tool. Automated medical records for patients improve upon paper medical records through better organization, presentation and better accessibility to data. Such records are less likely to be misplaced or misread of illegibility, and are easily accessed by many health providers simultaneously. Health care providers can easily retrieve past clinical data for diagnosis and treatment. Automated records with their large databases of patient information also support outcome research in efforts that measure the quality of care and effectiveness of treatment. Institutions which have automated their medical records report increased staff productivity and reduction in operation cost (Mwangi, 2005). Staffs spend less time maintaining records, which allows more time for other duties. Automation of records has grown in diverse sectors, and the health sector has not been left behind. Many health facilities and organizations are investing in automated systems in order to minimize and prevent defects whilst increasing effectiveness in quality of services delivered. The results indicated positive agile practices to be considered when adopting automation strategies, such as team collaboration, task distribution, testing tools, knowledge managements. The challenges, results, lessons and recommendations are also discussed (Collins et. al, 2012).

Using automation to replace manually intensive tasks that are better done by machine can be a big time saver. It doesn’t have to eliminate employees, but rather elevate them into higher-functioning roles that make use of the clinical expertise they have been trained for (Raghupathi & Kesh, 2007).

Automation tools are not subject to human error or fatigue, so they can help provide a consistent basis of care activities. A Texas hospital study in the US found that greater automation in the areas of medical records, order entry, and decision support appeared to result in a reduction in deaths, complications and cost (McVeigh et. al, 2008). Use of paper and spreadsheets and other workarounds needed for an overfull workload can lead to a lot of waste. For example, rather than playing phone tag with a discharged patient in the free minutes between hospital nursing duties, automation can help get nurses and patients connected more efficiently (Goo et. al., 2015).

MATERIALS AND METHODS

The study was carried at Kenyatta National Hospital (KNH) in Nairobi. KNH is the biggest referral hospital in Kenya. The sample size was 140 out of total population of 4646 KNH staff and was randomly selected from each department of the hospital. Data was collected using self -administered questionnaire containing both closed and open-ended questions (De vaus, 2013). The research adopted both quantitative and qualitative techniques using questionnaires, focus group discussions and in-depth individual discussions for key informants (Moskal & Leydens, 2000). Data was analyzed using descriptive statistics. The chi-square test of independence was used to test for association between dependent variable: Disaster preparedness and
independent variables: age, training on Disaster management Preparedness, years of worked in KNH, and level of awareness. Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 16.2 and Microsoft office excel (Madaras-Kelly et. al, 2015).

RESULTS
Policy
According to the data collection from the field, the research survey revealed that there is a policy governing automation of records keeping systems at the KNH. Further investigations revealed that there was a procedure used for computerizations of the file movement system. Automation will interlink automated information from other sections of the records department to the central records office. According to the researcher who is a witness in this confirms there is a policy that exists in the medical records department, and one which is in adherence with the international standard for electronic records management.

The researcher compiled the information about automation of records in medical records regards to data gathered from the interview conducted with the records users. There was a 40 questionnaires distributed to different persons in the medical records. 80% were of the opinion that there was a clear policy governing automation of records, 20% had accepted that there was no clear policy.

<table>
<thead>
<tr>
<th>Response</th>
<th>No. of response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>126</td>
<td>90</td>
</tr>
<tr>
<td>NO</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>140</td>
<td>100</td>
</tr>
</tbody>
</table>

90% of the respondents agreed that there is an existing policy on records automation, whereas only 10% denied existence of the same

Table 1: Policy Knowledge and Efficiency Frequencies

<table>
<thead>
<tr>
<th>Number of Policies Known, n (%)</th>
<th>No Policy</th>
<th>1-3 Policies</th>
<th>4-7 Policies</th>
<th>All Policies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient</td>
<td>2(2.3%)</td>
<td>23(27.4%)</td>
<td>23(27.4%)</td>
<td>36(42.9%)</td>
<td>84</td>
</tr>
<tr>
<td>Non efficient</td>
<td>25(44.6%)</td>
<td>15(26.8%)</td>
<td>12(21.4%)</td>
<td>4 (7.2%)</td>
<td>56</td>
</tr>
</tbody>
</table>

2 (2.3%) of the respondents do not have knowledge on records automation-related policies, yet also least perceive the efficiency of the automation process. In stark contrast, only 4 (7.2%) are aware of all the records automation policies yet also feel that the automation has been inefficient.
Knowledge of policy and judgment on Automation efficiency have a positive association, whereas policy knowledge and non-efficiency are inversely related.

**Types of Records**

The research survey revealed that there were various types of records which were generated in medical records department. Irrespective of the type and nature of records received or produced in medical records department the point to be considered is that automation has assisted the record department personnel in managing records better to ensure their continued value as evidence and as corporate memory of the Kenyatta National Hospital under discussion.

**Staffing level**

The researcher revealed that among the respondents from the KNH Health Information Department, 30 had no proper qualification as expected of records managers. 10 officers have masters degree, 30 officers were found to be having degrees, 60 officers have either higher national diploma, a diploma and or have some sort of certificate of training. The foregoing reveals that there is a high competence in professional Records management skills in the medical records department.

One can agree with me that records are very important to human beings, just like basic needs, and had it been that the records are not preserved and stored properly from the ancient times, no one at the present would have known or traced the history of our ancestors despite the ethical theories, that is why we have to automate records to save space and keep them for a longer time.

The researcher also established that every employee should be a computer literate by conducting in-house computer training and others to have knowledge in information communication and technology in order to know more about automation of records.
Equipment and facilities
The survey showed that the equipment available for automation systems included computers desktop models, computer printers, scanners, computers, onto microfilm systems and photocopiers. The systems are automation and reprographic systems that assist in rapid and it data capture, quick and easy retrieval of information and local area networking. The researcher also revealed that other automation systemized facilities are the computer such as compact disks read only memory (CD-ROM), Multimedia, floppy disks, flash disks and hard disks, all geared towards promotion and improvement of automation of records keeping in Kenyatta National Hospital medical records department.

Table 2: Frequency, Efficiency and Automation

<table>
<thead>
<tr>
<th></th>
<th>Time (%)</th>
<th>Cost (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient</td>
<td>39(55%)</td>
<td>65</td>
<td>84(60%)</td>
</tr>
<tr>
<td>Non Efficient</td>
<td>45</td>
<td>35</td>
<td>56(40%)</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>100</td>
</tr>
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Figure 3: Efficiency and Records Automation Chart
The inner circle represents Time efficiency. Based on that, 55% of the respondents felt that automation had resulted in time efficiency. The outer ring presents the Cost-efficiency brought about by automation, where 65% saw Automation as a cost efficient process

DISCUSSION
The study found out that the main reason for automation of the medical records department of KNH was to manage information in the best way possible. And this was being fairly met from the 60% who had agreed that the automation of health records in the institution has been effective. Efficiency in service delivery was necessitated by increased demand in service delivery brought about by the high turnover of clients. Accuracy in retrieval of records due to the high volumes of data being handled on daily basis there was need to ensure this data is correctly compiled and collated to give accurate information. From a general perspective the researcher also made personal observation that the top management, records staff and users of records including stakeholders benefited from automated records systems through better utilization of resources material, human and time; Quicker retrieval of information; increased accuracy of information and calculation; easy accessibility of information; instantaneous updating of records and information; increased reliability of information once input and Multiple simultaneous access to information. And this agrees with Marshall et.al (2003) who also observed an advantage in automation in terms of speed and networking. Still on efficiency, the study having majored on two forms: time and cost, went on to find that majority 84(60%) believed that automation was both helpful in terms of time and cost-wise. This finding was very much in congruence with the Massaccesi et al. (2015) who indicated that even in radiotherapy, which is one of the toughest areas to implement computing services, automation would easily result in cost reduction. During the research survey it was established that there is lack of adequate computer training among some of the staff working in the records department. 76% indicated that they had not undergone any computer training through the hospital. And those who indicated that they had done so only went out of their own volition and not through the hospital sponsorship. The main computer-related challenges realized were Importation of spare parts has caused delays in the computer applications; there is inadequate funding of the automation system in the records department, less than sufficient management support. From the study, it was found out that there are a number of policies governing the automation of records at the hospital. It was striking to note that the level of staff knowledge of these policies was related to their judgment on efficiency of automation. This is consistent with Carter (2015) who claimed that quality improvement is based on one’s perception which is built by acquisition of knowledge. The research also revealed that not everyone working in the medical records office is computer literate dealing with automation of records. The equipments used in the automation system, it was found out, are inadequate and up to date. It was also found that among the reasons that led to the automation of records in medical records were security of information materials, space saving, retrieval and dissemination of information. It also emerged that there is disaster preparedness and recovery plan in place in the medical records. This is based on the needs identified by Moacdieh (2015) who suggested preparation for recovery in case of automation or technical frailty so that there is some cushion.

CONCLUSION
From the findings, the researcher concluded that at the KNH Medical Records Department there is a clear cut and documented policy governing the automation of records. There is in house training course organized by the department to its staff working in the medical records department. The study revealed that the records
department receives and generates some very important and highly classified records whose protection and security measures are of paramount importance. The types of records include bio-data (personal details), medical, insurance and health information of patients which are confidential. Automation was understood to have made work easier in many ways, some of which included security of records, easy and speedy retrieval of records, updating of records, efficiency and cost effectiveness in terms of time, materials and human resources. The researcher learnt that although not all records staffs are professionally trained in Records Management, they undergo training in various colleges like Kenya Polytechnic University College. The study further revealed that the department needed urgent supplementation of the technology in use since many were observed to be having obsolete software. This calls for installation of modern technology and a constant update of those devices.

**RECOMMENDATION**

The hospital should institute a wide ranging training on computer application and courses relating to the same to all of its employees.

The importance of automation should be emphasized and its importance to the hospital and the entire Ministry of health and the country at large.

**REFERENCES**


