AN INVESTIGATION TO THE CHALLENGES OF INSTITUTIONAL REPOSITORIES DEVELOPMENT IN SIX ACADEMIC INSTITUTIONS IN NIGERIA

By

Oghenetega Ivwighreghweta
Head of Readers Services
Western Delta University,
Oghara delta state, Nigeria
E-mail: anthonyoghenetega@yahoo.com

ABSTRACT
This study examines the challenges of institutional repositories development in some academic institutions in Nigeria. Five research questions were raised. The descriptive survey design was employed for this study. The population for the study consists of 300 researchers and policy makers randomly selected from the University of Benin, Western Delta University, Novena University, Benson Idahosa University Federal University of petroleum Resources and the Delta State University. The questionnaire was the instrument used for data collection. Frequency count and simple percentage was used to analyze the questionnaire. Major findings emanating from the study revealed that majority of the respondents have not deposited their work with their institutional repositories. The respondents indicated overwhelmingly that they were completely aware of open access institutional repository. It was found that the major obstacles to the development of open access institutional repositories are that of funding by government and the institution parent body. Meanwhile, the majority of the respondents indicated that the Provision of funds by government and international donor agencies is one of the strategies of overcoming the obstacles to the development of open access institutional repositories. Also majority of the respondents identified the university library as their preferred appropriate unit for managing institutional repository. The research concludes that the development of institutional repository in the selected universities in Nigeria requires much attention and financial assistances from the government and from the universities themselves.

INTRODUCTION
With the introduction of modern information and communication technology (ICT), access to information is a pre-condition for becoming a knowledge society. The right of access to information has become the dominant right in the information and knowledge era. Because of this, many researchers can now be allowed access to the ideas of others and also this presents an opportunity to participate in the global information-based socio-economic and political activities. (Musakali & Moli, 2011)

According to Christian (2011) the emergence of Open Access Initiatives as well as information and communication technologies provides a veritable medium to address the problem of poor visibility of academic research information emanating from developing countries like Nigeria. The shift from the conventional print publication to the use of digital sources and internet media have provided academic and research institutions in Nigeria with an opportunity to make their grey literature and research output accessible to the outside world. However, it may be surprising to observe that academic and
research institution in the country are yet to take advantage of the benefits provided by open access institutional repositories.

The open access movement emerged in response to increasing legal and economic barriers by commercial scholarly publishers which made access to research output and information difficult especially to people in developing countries of the world. Thus the movement seeks to promote free and open access to research output devoid of any permission barriers and unnecessary legal restraints. The open access movement therefore seeks to use the internet - a product of the ‘networked information economy’ to provide free access to research and scholarly output to people irrespective of their physical or geographical location, or their social and economic means. (Cetto, 2001)

Harnad, (2003) noted that institutional repository is a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside the institution, with few if any barrier to access. Lynch (2003) sees it as “a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members.” Hence the role of an institutional repository is basically to collect, preserved and disseminates the host institution’s research outputs.

The research outputs could include electronic copies of pre-prints as well as post-print articles, conference and working papers, committee papers, teaching materials, thesis and dissertations, monographs, multimedia, student projects etc. Although institutional repositories are usually associated with universities and research institutes, they could also apply to governmental, non-governmental and corporate organizations that generate intellectual output that could be digitized and disseminated. Chan and Costa (2005) noted that institutional repositories administered by universities or research institutes for members of their community, are the fastest growing form of open access archives. Institutional repository has emerged to revolutionize the methods of preservation as well as communication of research outputs in academic and research institutions.

An institutional repository (IR) aims at bundling the research output of an institution (E.g.a University or a research center) and makes it available to the public. In the majority of these cases these document servers are run by the libraries belonging to the institution. With regard to this form of self-archiving, the lack of willingness on behalf of scientists to upload their work on these servers is the major problem. Studying nine important IRs worldwide, Xia and Sun (2007) report that the archiving of the articles is mainly done by librarians or administrative staff – hence, the self-archiving rate of authors is rather small.

The situation is different when we look at subject-based repositories, which bundle research output of specific scientific disciplines. The prime example of an adoption of a subject-based repository is the pre-print server
arXiv (http://arxiv.org/), which is primarily used by physicists and mathematicians. Researchers in these communities self-archive pre-prints of their articles on the arXiv server (currently over 500,000 articles are stored in open access) and often additionally submit the papers to regular, peer-reviewed journals. The publishers in these disciplines thus renounce the claim that only unpublished work will be accepted. With this approach a fundamental problem of self-archiving, the lack of quality assurance can be avoided. If an article is finally accepted by a journal – in most disciplines it is rare for a final acceptance to come less than a year after submission – the pre-print version on the arXiv gets complemented by the information’ (Xia and Sun 2007).

**LITERATURE REVIEW**

Institutional repositories are been established in academic libraries. University based institutional repositories manage, disseminate and preserve where appropriate, digital materials created by the institution and its community members. They also organize and access these materials, (Lynch 2003). A survey conducted by the Coalition for Networked Information (CN1) found that research libraries have taken on a leadership role in both policy formulation and operational deployment roles for institutional repositories at research universities. In the Latter’s survey, 88% of the respondents indicated that the library had the sole responsibility. In Nigeria, an international workshop was held in Ahmadu Bello University Zaria, in 2008 on open access repositories. There-in, Nigerian universities and research libraries were encouraged to organize their scholarly output into institutional repositories in order to make their research works available both nationally and internationally through open access (Bozimo, 2008), Supporting the call for open access through institutional repositories, Okojie (2008) endorsed open access for all journals, dissertations and Conference proceedings in the library and information science (L.I.S.) sector in Nigeria. She promised to encourage members to archive their pre – prints and post prints in open access. She believed that the paradigm would make Nigerian researchers and librarians, gain leverage, leapfrog and become part of an international community of researchers (Okojie, 2008).

According to Moller (2006) Institutional Repositories enable institutions and faculty to offer long-term access to digital objects that have persistent value. They extend the core missions of libraries into the digital environment by providing reliable, scalable, comprehensible, and free access to libraries' holdings for the world as a whole. In some measure, repositories constitute a reaction against those publishers that create monopolies, charging for access to publications on research they have not conducted, funded, or supported. In the long run, many hope faculties will place the results of their scholarship into institutional repositories with open access to all. Libraries could then shift their business model away from paying publishers for exclusive access. When no one
has a monopoly on content, the free market should kick in, with commercial entities competing on their ability to provide better access to that freely available content.

Crane (2007) stated that repositories offer a model of a sustainable future for libraries, faculty, academic institutions and disciplines. In effect, they reverse the polarity of libraries. Rather than import and aggregate physical content from many sources for local use, as their libraries have traditionally done, universities can, by expanding access to the digital content of their own faculty through repositories, effectively export their faculty's scholarship. The centers of gravity in this new world remain unclear: each academic institution probably cannot maintain the specialized services needed to create digital objects for each academic discipline.

It is now obvious to the academic and scholarly community that the traditional model of scholarly communication via subscription-based journals serves to hinder rather than expand access to research output. In the light of emerging trends in digital scholarly communication, open access institutional repositories play an important role in the preservation and dissemination of institutional research outputs which in turn becomes a constituent part of a global research output (Ng’etich, 2004).

Altbach (1999) Although publication by faculty members in scholarly journals could add impact to the prestige of the institutions they are associated with, an institutional repository stands to generate greater impact by centralizing research outputs generated by the institution’s researchers, and thus serving as a much better and simpler metrics for gauging the quality of the institution’s academic scholarship, productivity and prestige. In the case of research and academic institutions in developing countries, development of institutional repository will not only boost the global visibility and utility of their research, but will also introduce a novel research culture focused on meeting international standard and values. Knowledge by a researcher that his research will be openly accessible by a global audience will have an impact on his focus and standard. (Egwunyenga 2010)

Pfister and Zimmermann (2008) also identified justifications for institutional repository to include increase in visibility and impact of research output, change in the scholarly publication paradigm and improvement of internal communication within the institution. A study by Stanger and McGregor (2006) revealed that an institutional repository could have a positive impact on the visibility and accessibility to an institution’s intellectual output. Their study was based on the School of Business of the University of Otago in New Zealand. The school was the first to develop a publicly accessible institutional repository which went into operation in mid-November 2005. By the end of January 2006 there was a record 9000 downloads from 60 different countries. Over two months later, the number of downloads doubled and
included visits from eighty countries. The statistics further showed a total of 18,744 downloads from 80 distinct countries since the repository went live.

Crow (2002) has argued that institutional repositories provide a compelling response to two strategic issues facing academic institutions. First, it expands access to research, reasserts control over scholarship by the academy, increases competition and reduces the monopoly power of journals, and brings economic relief and heightened relevance to the institutions and libraries that support them. Secondly, it serves as a tangible indicator of a university's quality and helps demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institution’s visibility, status, and public value. Additionally, institutional repositories could also be seen from two complementary perspectives, first as a natural extension of academic institutions' responsibility as generators of primary research seeking to preserve and leverage their constituents' intellectual assets; and secondly as one potentially major component in the evolving structure of scholarly communication. Institutional Repositories provide access to wealth of scientific and technological information and knowledge which are very essential for development (Crow 2002).

There are different arguments with regard to which unit within the institutional set up is appropriate to manage the institutional archive. A study by Pelizzari (2003) indicates over 70% of the respondents singled out the library as the structure to be given the mandate of managing an institutional archive. According to De Beer (2005) and Kaur and Ping (2009), the respondents in such studies were of the opinion that libraries should own and manage the institutional repositories. Other respondents preferred a pre-existing central structure such as a unit responsible with research coordination; a purpose-built central structure; and a structure with connections to their faculty to be responsible (De Beer, 2005). Based on the above studies, institutional libraries seem to be the most acceptable units within the university set up for the establishment and management of institutional repositories Christian (2011).

The opportunities presented by institutional repositories and Open Access archives to the development of Africa as well as the challenges hindering the development of digital information repositories on the continent has been examined by Chisenga (2006). He acknowledged the fact that several of the research output from the region exists in the form of grey literature i.e. unpublished information and knowledge resources such as research reports, theses and dissertations, seminar and conference papers. Very little research outputs find their way into the world’s well-established international scientific journals, due to various problems and among them because publication in mainstream journals faces the problems of over-subscription and recorded prejudice against submissions from developing country scientists. Additionally, local journals in general have poor distribution and visibility. This situation
results in research from developing countries not being indexed in major international databases which have the capacity to increases the visibility of these research outputs. He further noted that much of the research generated in research institutions are not being shared or developed further beyond field and laboratory research. Very useful and valuable technological and scientific information and knowledge remains unexploited and in some cases is lost.

The establishment of Institutional Repositories in academic and research institutions in Africa is a serious developmental issue that requires urgent attention. Chisenga (2006) rightly observed that they are valuable for research and development because they can offer instant access to information and knowledge resources being generated on the continent. The universities and research institutions in Africa are the major centres of research and consequently the major generators of research based data, information and knowledge. The scientific and technological information and knowledge which they are generating should be easily accessible, and the creation and use of institutional repositories could be the first step in this process (Houghton & Sheehan 2006).

Open access to scientific information can greatly benefit all players in the scientific communication system – scientists, authors, institutions, libraries, publishers, funders, and society as a whole, avoiding a duplication of scientific efforts, which saves time and money, is one of its main advantages. In the particular case of authors and institutions, it can help them reach a much bigger audience than that provided by subscription journals – even the most prestigious and popular ones. Various surveys have revealed an increase in the visibility and impact of papers, based on the amount of citations received (Swan and Brown 2007, Durrant, 2004).

The development of open access institutional repositories requires fast and reliable internet connection as well as deployment of adequate information and communication technology infrastructure. The major point of internet access to students and staff at Nigerian universities is through internet cafés (Christian, 2011). A study of internet usage in Nigerian universities by Jagboro (2003) shows that 45.2 percent of the respondents access the internet through internet cafés. The situation is not too different at the University of Lagos. There are about seven of such commercial internet café at the University each with an average of about 20 computers. The cafés are operated by private entrepreneurs on facilities or buildings leased from the University. The average cost for using the internet facility at the café is about $1 for an hour. Although this may appear cheap, the connectivity is so slow that it may take about 15 minutes to access a yahoo mail account. There is also a university local area network (LAN) that provides internet connections to the academic staff but the university’s LAN is so often plagued with technical issues that even the
academic staffs often do patronize the cafés for internet access (Christian, 2011).

Electricity supply is a major problem in developing countries like Nigeria. This problem has made the development of projects like an institutional repository in Nigeria much difficult and expensive. Fatunde (2008) has observed that poor electricity supply is a major impediment to the operation and growth of information and communication technology in Nigerian universities. According to him only a trickle of daily electricity production dribbles erratically into the country's 93 institutions, rendering ICT systems dysfunctional. Universities resort to diesel-propelled generators, but they are expensive and environmentally unfriendly. Nigeria produces about 2,500 megawatts a day of electricity – ten times less than its daily need. The extent to which this problem affects ICT projects in the Nigerian educational sector is self-evident. For example, in 2001 the National University Commission (NUC) in Nigeria commenced development of the virtual library project. The need for the project was to create a central digital repository that will assist the Nigerian university system in terms of acquisition of electronic resources to supplement the resources available in the individual university libraries. In order to deal with the problem of constant shortage of electricity power supply, the server for the project had to be located in far away United Kingdom thus resulting in much higher cost of operation (Christian, 2011)

Another institution that has had to deal with this problem in its effort to develop an institutional repository is the International Institute of Tropical Agriculture (IITA). The Institution which is at the final stage of developing an open access institutional repository also had to locate its server in the United Kingdom due mainly to the incessant problem of power supply in Nigeria. While 27.4% of the respondents at the University of Lagos ‘strongly agree’ that inadequate information and communication technology infrastructure is a problem to the development of institutional repository at the university, 46.8% ‘agree’ to that proposition. Various other researches has also confirmed that many institutions in developing countries face an unreliable electricity supply, poor Internet connections, as well as a lack adequate computer equipment, appropriate software, and even technological expertise. (Arunachalam, 2003)

Lack of funding is another major problem experienced by developing country institutions in their effort to establish digital repositories. As has been stated above, the state of ICT infrastructure in academic and research institutions in developing countries like Nigeria is so low to sustain the development of institutional repositories. Hence a viable digital repository project will first require serious upgrading of the current state of ICT facilities in many academic and research institutions in Nigeria (Durrant, 2004).

Development of institutional repository in developing countries is much a capital intensive project than in developed countries. This is because academic
and research institutions in developed country already have in place a well-established state-of-the-art ICT infrastructure to build on. But in developing countries, this infrastructure or foundation is not in place and will require huge financial resources to put them in place (Arunachalam, 2003).

One of the best ways to promote the development of open access institutional repository in developing countries is through advocacy. For such advocacy to be really effective, it must be undertaken by the stakeholders in the region. These stakeholders include lecturers, researchers, librarian as well as students. Effective advocacy presupposes that the advocates or stakeholders are very familiar with the concept. Unfortunately, as we have seen in the course of this discuss especially from the research data presented above, knowledge of open access institutional repository is very low among the major stakeholders in the developing region.

According to Chan and Costa (2005:151-2) the benefits of open access particularly open access repositories in Nigerian Universities will include: improved access to institutional research output; improved citation and research impact; and cost effectiveness in information dissemination on the part of the institutions. The increased research impact of open access articles due to citations has also been acknowledged by many scholars (Harnad, 2003). In the current system of scholarly communication, developing countries may be considered to have low research impact due to limited visibility of research output from such countries. Despite the promising potential of open access to improve scholarly communication in developing countries, the new form of scholarly communication is little exploited in such countries when compared to developed countries (Durrant, 2004)

Another issue that may affect the development of institutional repository is intellectual property. The International Institute of Tropical Agriculture (IITA) in Nigeria institutional repository could not go public due to some copyright issues that needed to be resolved. It happened that copyright in research works conducted by the researchers at the Institute was signed away to the journal publishers when the papers where submitted to commercial journal publishers for publication. Curiously, the Institute lost the right to make public research works it has funded and now have to negotiate the right from the journal publishers (Christian, 2011).

Intellectual property right is an aspect of law that covers diverse legal rights that exists in creative work. Intellectual property law embraces such exclusive rights in copyright, patent, trademark, industrial designs, trade secret, trade name etc. Copyright law determines how a person can deal with a written work such as a journal article or a research paper. Generally, a copyright holder has the exclusive right to authorize the copying, recopying or distribution of the written work. In other words, she/he has the right to determine whether the work shall be available in a closed or open access format. (Christian, 2011)
Some of the issues identified by existing literatures as being responsible for the slow uptake of Institutional repositories in Africa include lack of knowledge or awareness of open access institutional repository, poor state of information and communication technology, inadequate advocacy for open access repositories, poor or inadequate funding, and copyright and intellectual property rights (Christian 2011). The most commonly reported problems affecting the use of scholarly communication in Universities have been outlined and discussed in several studies (Durrant, 2004). Based on the cited studies, the following are the highly reported scholarly communication problems facing the Nigeria University:

i. Low funding for research and higher education;
ii. Low staff morale due to low salaries and unrewarding research system;
iii. Brain drain;
iv. Overburdening of researchers with teaching and administrative loads;
v. Low exploitation of information and communication technologies (ICTs);
vi. The serial crisis

**Research Questions**

This study sought answers to the following questions

- Have you deposited your research work to your institution’s repository?
- What is the level of awareness of open access institutional repository by researchers in selected universities in Nigeria?
- What are the obstacles to the development and use of open access institutional repositories researchers in academic institutions in Nigeria?
- What are the strategies to overcome the problems of open access institutional repositories in academic institutions in Nigeria?
- What are the proposed units for institutional repository management in Nigeria Universities?

**Methodology**

The study employed a descriptive survey design utilizing the questionnaire to collect data. The population for the study consists of 300 researchers and policy makers randomly selected from the University of Benin, Western Delta University, Delta State University, Benson Idahosa University, and Federal University of Petroleum Resources. Frequency count and simple percentage was used to analyze the questionnaire. Copies of the questionnaire were administered to (300) hundred respondents and all the copies were retrieved.

**Findings of the Study**

The findings of the study are presented in the following tables with a brief summary.
Table 1: Distribution of Respondents by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>No of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>210</td>
<td>70</td>
</tr>
<tr>
<td>Female</td>
<td>90</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1 shows that 210 (70%) of the respondents are male while 90 (30%) are female. This shows that there are more male researchers and policy makers than female in the universities investigated.

Table 2: Distribution of Respondents by Age

<table>
<thead>
<tr>
<th>Age Range</th>
<th>No of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-35yrs</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>36-45yrs</td>
<td>50</td>
<td>17</td>
</tr>
<tr>
<td>46-55yrs</td>
<td>120</td>
<td>40</td>
</tr>
<tr>
<td>56 and above</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2 shows that majority 120 (40%) of the respondents are within the age range of 46-55yrs, followed by 100 (33%) who are in the age range of 56yrs and above respectively.

Table 3: Distribution of Respondents by Educational Qualification

<table>
<thead>
<tr>
<th>Academic Degree</th>
<th>No of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA/MSC</td>
<td>90</td>
<td>30</td>
</tr>
<tr>
<td>BSC/BA</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>PhD</td>
<td>200</td>
<td>66</td>
</tr>
</tbody>
</table>

Table 3 shows that majority 200 (66%) of the respondents possess PhD degrees, this is followed by MA/MSC degrees 90 (30) respectively.

Table 4: Distribution of Respondents by institutions

<table>
<thead>
<tr>
<th>Institutions</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Delta University</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>University of Benin</td>
<td>80</td>
<td>27</td>
</tr>
<tr>
<td>Benson Idaho University</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>Novena University</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>Delta State University</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Federal University of Petroleum resources</td>
<td>40</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 4 shows that majority 80 (27%) of the respondents are from the University of Benin followed by Delta State University 60 (20%).
Research Question 1
Have you deposited your research work to your institution’s repository?
Table 5: Works deposited in institutional repository

<table>
<thead>
<tr>
<th>Institutional repository</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>20</td>
<td>7%</td>
</tr>
<tr>
<td>No</td>
<td>280</td>
<td>93%</td>
</tr>
</tbody>
</table>

Table 5 shows that majority of the respondents 280 (93%) have not deposited their work with their institutional repositories. This may be due to fact that most of the selected universities in Nigeria used in this study have not or are in the process of establishing their institutional repositories.

Research Question 2
What is the level of awareness of open access institutional repository by researchers and policy makers in Nigerian institutions?
Table 6: Level of awareness of open access institutional repository

<table>
<thead>
<tr>
<th>Awareness of open access IRs</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completely aware</td>
<td>180</td>
<td>60</td>
</tr>
<tr>
<td>Know very little</td>
<td>100</td>
<td>33</td>
</tr>
<tr>
<td>Completely unaware</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6 shows that majority of the respondent 180 (60%) were completely aware of open access institutional repository, 100 (33%) know very little about it while 20(7%) were completely unaware.

Research Question 2
What are the obstacles to the development and use of open access institutional repositories by researchers and policy makers in Nigeria institutions?
Table 7: Obstacles to the development and use of open access institutional repositories

<table>
<thead>
<tr>
<th>S/N</th>
<th>Obstacles to IRs</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>1.</td>
<td>Power supply</td>
<td>250</td>
<td>83</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Lack of knowledge of Open Access I</td>
<td>180</td>
<td>60</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Inadequate ICT connectivity and infrastructure</td>
<td>230</td>
<td>77</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>inadequate bandwidth to host digital repositories</td>
<td>150</td>
<td>50</td>
<td>80</td>
<td>27</td>
</tr>
<tr>
<td>5.</td>
<td>Inadequate funding</td>
<td>150</td>
<td>50</td>
<td>140</td>
<td>47</td>
</tr>
</tbody>
</table>
Table 7 shows that majority of the respondents 150 (50%) and 140 (47%) agree and strongly agree that the major obstacles to the development of open access institutional repositories is that of funding. Similarly all the other responses had positive responses towards the obstacles.

**Research Question 3**

What are the strategies to overcome the problems of open access institutional repositories in academic institutions in Nigeria?

Table 8: Strategies to overcome the obstacles to the development of open access institutional repositories

<table>
<thead>
<tr>
<th>Strategies</th>
<th>SA No</th>
<th>A No</th>
<th>D No</th>
<th>SD No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academia’s should float more open access journals in IRs</td>
<td>120</td>
<td>40</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>Internet connectivity needs to be improved</td>
<td>200</td>
<td>67</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Provision of constant power supply</td>
<td>230</td>
<td>77</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Provision of funds by government and international donor agencies</td>
<td>250</td>
<td>83</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>Inadequate advocacy of IRs</td>
<td>230</td>
<td>77</td>
<td>40</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 8 shows that majority of the respondents strongly agreed and agreed 250 (83%) and 40 (13%) that the Provision of funds by international donor agencies and government is one of the strategies of overcoming the obstacles to the development of open access institutional repositories. Similarly all the other had positive responses towards the strategies.

**Research Question 4**

What are the proposed units for institutional repository management in the selected Nigeria Universities?

Table 9: Proposed units for institutional repository management

<table>
<thead>
<tr>
<th>Proposed units</th>
<th>No of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>University library</td>
<td>230</td>
<td>77</td>
</tr>
<tr>
<td>University-wide unit responsible with research administration</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Each faculty/Institute /Directorate</td>
<td>50</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>300</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Table 9 shows that majority of the respondents 230 (77%) preferred the university library as the most appropriate unit for managing institutional repository, this is followed by 50 (16%) that preferred faculty/institute and directorate.

**Discussion of findings**

The study revealed that majority of the respondents has not deposited their work with their institutional repositories. This may be due to fact that most of the selected universities in Nigeria used in this study have not or are in the process of establishing their institutional repositories. This finding is in agreement Bozimo, (2008), who stated that in Nigeria, an international workshop was held in Ahmadu Bello University Zaria, There-in, Nigerian universities and libraries were encouraged to organize their scholarly output into institutional repositories in order to make their research works available both nationally and internationally through open access.

The respondents indicated overwhelmingly that they were completely aware of open access institutional repository. This is in agreement to the study of Xia and Sun (2007) who reported that prime example of an adoption of a subject-based repository is the pre-print server arXiv (http://arxiv.org/), which is primarily used by physicists and mathematicians.

It was found that the major obstacles to the development of open access institutional repositories are that of funding. This finding is in conformity to that of Arunachalam, (2003) who stated that lack of funding is a major problem experienced by developing country institutions in their effort to establish digital repositories.

Meanwhile, the majority of the respondents indicated that that the Provision of funds by government and institution’s parent body is one of the strategies of overcoming the obstacles to the development of open access institutional repositories. This finding is in agreement to the findings of Arunachalam, (2003) who noted that development of institutional repository in developing countries is much a capital intensive project than in developed countries. This is so because academic institutions in developed country already have in place a well-established state-of-the-art ICT infrastructure to build on. But in developing countries, this infrastructure or foundation is not in place and will require huge financial resources by government to put them in place (Arunachalam, 2003)

Majority of the respondents identified the university library as their preferred appropriate unit for managing institutional repository. This finding is in agreement to Pelizzari (2003) who indicated that over 70% of the respondents in his studies singled out the library as the structure to be given the mandate of managing an institutional archive.
Recommendation

- Organizing series of conferences and capacity building workshops to educate and train stakeholders in academic and research institutions in Nigeria. In this way their knowledge of open access will be enriched and they will be in a better position to advocate for change in policies within their institution and at national level.
- As regards copyright issues, it is highly recommended that authors within the region should be educated on their rights in relation to their intellectual output.
- There is need for increased funding from international donor agencies to help academic and research institutions in Nigeria to uplift the state of their ICT infrastructure. Other alternative sources of funding that could be researched into includes corporate entities like telecommunication companies operating in the country.

REFERENCE


USE OF INDEST AICTE CONSORTIUM BY THE USERS OF PANJAB UNIVERSITY, CHANDIGARH, INDIA

Dr. Parveen Kumar
Librarian, S. A. Jain College, Ambala City-134003 Haryana
E-mail: drparveenkumar@rediffmail.com

Abstract

INDEST AICTE e-journals consortium is one of the biggest and ambitious programmes in the history of higher education in India. The main objective of this programme is to facilitate the research and academic community of the country by providing them nascent, authentic and scholarly literature from all parts of the world with the help of state-of-the-art technology. The study is an attempt to know the users’ need of e-journals in general and to identify the use of e-journals that are available through INDEST AICTE Consortium in particular. A questionnaire survey was conducted among 120 users of university. The study reveals the users' awareness regarding the consortium resources available in the respective fields, information about important databases and e-journals. 86.66% users were aware about the AICTE consortia.

Keywords: INDEST; AICTE, E-Journals; Consortia, Panjab University

INTRODUCTION

INDEST- AICTE Consortium the “Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium” was set-up in 2003 by The Ministry of Human Resources Development (MHRD). 38 centrally funded Govt. institutions including IITs, Sc, NITs and some other institutions are the core members of the INDESTAICTE Consortium. The Ministry provides funds required for providing access to electronic resources to the core members through the consortium headquarters set-up at the IIT Delhi. The consortium subscribes to over 6500 electronic journals from a number of publishers and aggregators. All electronic resources being subscribed are available from the publisher’s Website. The Consortium has an active mailing list and a Web site hosted at the IIT Delhi. The INDEST-AICTE Consortium is the most ambitious initiative taken so far in the country. The benefit of consortia-based subscription to electronic resources is not confined to 38 major technological institutions in the country but is also extended to all AICTE-accredited and UGC-affiliated institutions. (1233) engineering colleges and institutions have already joined the consortium on their own.1

Panjab University has a long tradition of pursuing excellence in teaching and research in science and technology, humanities, social sciences, performing arts and sports. For more than a century, it has served various societal needs with distinction. The glorious traditions of the University established during the period of more than 129 years of its long service to the nation and since its inception in 1882 at Lahore (now in Pakistan), are a source of inspiration for the present generation of faculty members and students. Panjab University, with its
65 teaching and research departments besides 15 centres/chairs for the teaching and research on the main campus located at Chandigarh, has more than 192 affiliated/constituent colleges spread over Punjab and Chandigarh, Regional Centres at Muktsar, Ludhiana, Hoshiarpur, Kauni. Vishveshwaranand Vishva Bandhu Institute of Sanskrit and Indological Studies (VVBIS&IS) at Hoshiarpur.

The Panjab University Library, named officially as "A. C. Joshi Library", subscribes to about 600 current periodicals. Its holdings of back volumes of periodicals go back to nineteenth century. Library subscribes to MathSciNet online comprising of current Mathematical publications & Mathematical Reviews, and has access to 225 Online fulltext journals as part of print journals subscription. Also access to approximately 5000 online fulltext journals, is available through INDEST- Consortium and UGC- INFONET.2

REVIEW OF LITERATURE

(Manoj, 2011)3 discussed that the traditional functions of libraries had undergone various changes in present century and e-Resources have great importance in libraries and amongst the library users. The study has been undertaken with an attempt to evaluate the usage pattern of electronic resources made available in the Assam University Library under the UGC- INFONET E-Journals / Digital Library Consortium of UGC/INFLIBNET amongst the research scholars and teachers of North Eastern Region of India with special reference to Assam University, Silchar. The faculty, research scholars and students are mainly drawn from different parts of North Eastern States and few from other parts of the country which represent truly cosmopolitan population. For that purpose, survey method has been adopted by the investigators, which comprises of administration of questionnaire, observation of the participants, and interview of some of the participants for knowing the opinion of the respondents in respect of usage of electronic resources (e-journals/ e-books/databases) for their academic and research activities. (Walmiki, 2010)4 found that 39.79 percent of the faculty members are aware of and use the UGC-Infonet Digital Library Consortium resources whereas 35.99 percent are aware but do not use and 24.22 percent are not at all aware of the availability of the consortium resources. Majority of the non-users belong to social sciences and humanities and those who have not undergone formal computer training. Comparatively the science faculty uses the consortium resources more frequently than those belonging to social sciences and humanities. Lack of knowledge to use, insufficient internet nodes, slow bandwidth and lack of relevant information sources are found to be the major problems faced. Only 5.22 percent of the faculty members have indicated that they have necessary expertise to use the digital resources. About 37 percent of the faculty members were aware of and participated in user education programmes conducted by their university
libraries. (Ahmad, 2012)\textsuperscript{5} found in his study that the majority of the Research scholars (93.68\%) are aware of the UGC-INFONET consortia. The study also indicates that (35.78\%) of Research scholars get information about UGC-INFONET e-journal consortium through University library. Majority of Research scholars in DU (81.05\%) use UGC-INFONET E-journals for their research works. Taylor & Francis most accessed journal as substantial number (38.94\%) of Research scholars using it. Most of the Research scholars (42.10\%) use field search techniques to search in the database of the consortium. 85.27\% of Research scholars feel the need of training on how to exploit these e-resources in efficient and effective way. Majority (86.32\%) of Research scholars prefer to take print format of journal articles in addition to E-journals. UGC-INFONET consortia have an influence on the study and research of 62.10\% of research scholars by the way of expedition of research process. A substantial number of research scholars are satisfied with the services provided by UGCINFONET consortia.

OBJECTIVES

- To know the users knowledge about INDEST AICTE Consortium.
- To know the sources of information about consortium.
- To know the location of journal access.
- To know the purpose of using the consortium.
- To know the frequency of using consortium.
- To know the problems faced by the users.

RESEARCH METHODOLOGY

The study used questionnaire-based survey method, as many similar studies conducted earlier, have also used this method for data collection. The population of the study consisted of all faculty members and students of Panjab University. Number of questionnaire distributed 120 out of which 90(75\%) responded consider for analysis. Personal interviews were also conducted with some of the simple to get clear picture of data. Data collected were analyzed and calculated with percentage method.

DATA ANALYSIS

<table>
<thead>
<tr>
<th>Knowledge about INDEST AICTE Consortium</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>78</td>
<td>86.66</td>
</tr>
<tr>
<td>Do not know</td>
<td>12</td>
<td>13.33</td>
</tr>
</tbody>
</table>
Users were asked whether they have knowledge about INDEST AICTE Consortium or not. Table-1 and Figure shows that 86.66% of users were aware about the same and only 13.33% of users were not aware of it. Hence it is observed that maximum users were aware about the consortium.

Table-2

<table>
<thead>
<tr>
<th>Sources of Knowledge of INDEST AICTE Consortium</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Staff</td>
<td>17</td>
<td>18.88</td>
</tr>
<tr>
<td>Faculty Members</td>
<td>19</td>
<td>21.11</td>
</tr>
<tr>
<td>Friends</td>
<td>15</td>
<td>16.66</td>
</tr>
<tr>
<td>University Website</td>
<td>10</td>
<td>11.11</td>
</tr>
<tr>
<td>University Library</td>
<td>61</td>
<td>67.77</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>13.33</td>
</tr>
</tbody>
</table>

Table-2 depicts that maximum users i.e. 67.77% said they know the INDEST AICTE Consortium through university library followed by 21.11% users know the same by faculty members, 18.88% know through library staff. It is interesting to know that 16.66% users know about the consortium through their friends. 11.11% know the consortium by searching the university website.

Table-3

<table>
<thead>
<tr>
<th>Place of Journal Access</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Library</td>
<td>69</td>
<td>76.66</td>
</tr>
<tr>
<td>Hostels</td>
<td>7</td>
<td>7.77</td>
</tr>
<tr>
<td>Computer Lab</td>
<td>12</td>
<td>13.33</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2.22</td>
</tr>
</tbody>
</table>
Table-3 discusses where users access e-journals. Maximum users were accessing the e-journals at university library followed by computer lab with 13.33% users. 7.77% users were using the e-journals in their hostels also.

Table-4

<table>
<thead>
<tr>
<th>Frequency of using INDEST AICTE Consortium E-Journals</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>21</td>
<td>23.33</td>
</tr>
<tr>
<td>3-4 times in a week</td>
<td>49</td>
<td>54.44</td>
</tr>
<tr>
<td>Once in a week</td>
<td>16</td>
<td>17.77</td>
</tr>
<tr>
<td>Occasionally</td>
<td>4</td>
<td>4.44</td>
</tr>
</tbody>
</table>

Table-4 and figure reveals that most of the users used the e-journals 3-4 times in a week i.e. 54.44% followed by 23.33% users used the same on daily basis. 17.77% users used it once time in a week. 4.44% users were rarely used them.

Table-5

<table>
<thead>
<tr>
<th>Purpose of using INDEST AICTE Consortium E-Journals</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Research</td>
<td>63</td>
<td>70</td>
</tr>
<tr>
<td>For knowledge updating</td>
<td>15</td>
<td>16.66</td>
</tr>
<tr>
<td>To find specific material</td>
<td>17</td>
<td>18.88</td>
</tr>
<tr>
<td>Other</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>
Maximum users were using the INDEST AICTE e-journals for their research work whereas 18.88% used it to find the specific material. 16.66% users used them for updating their knowledge.

Table-6

<table>
<thead>
<tr>
<th>Satisfaction with existing Internet facilities</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>72</td>
<td>80</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

It is clear from table-6 and figure that most of the users i.e. 80% were satisfied with the existing internet facilities in the university whereas only 20% users responded negative for the same.

Table-7

<table>
<thead>
<tr>
<th>Access Problem</th>
<th>No. of Users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth</td>
<td>24</td>
<td>26.66</td>
</tr>
<tr>
<td>Limited access terminals</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>Lack of time</td>
<td>20</td>
<td>22.22</td>
</tr>
<tr>
<td>Not comfortable on computer reading</td>
<td>12</td>
<td>13.33</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>7.77</td>
</tr>
</tbody>
</table>

Table-7 depicts the problems faced by users during accessing the INDEST AICTE Consortium e-journals. 30% users demanded more access terminals, 26.66% users responded lack of internet bandwidth. 22.22% users said that they have no sufficient time for using them. It is also interesting to note that 13.33% users responded that they do not feel comfortable on computer reading.
**FINDINGS**

1. The study reveals that majority of the users were aware about the INDEST AICTE Consortium.
2. University library was the main source to know about the consortium.
3. 76.66% users prefer the university library to access the e-journals.
4. 54.44% users accessed the e-journals 3-4 times in a week.
5. 18.88 used the INDEST AICTE Consortium to find particular information.
6. 20% users were not satisfied with the existing internet facilities in the university.
7. 13.33% users not comfortable with reading on computer.

**CONCLUSION**

The effort of INDEST–AICTE Consortium is appreciable and will definitely strengthen higher education system in India free and or highly subsidized access to scholarly e-resources will help educational institutions in fullfill their mission in to reality to enhance the use of e resources, more awareness programmes should be organized to acquaint them about the facilities and benefits obtainable from electronic format as compared to print. A well defined and proper infrastructure remains to be an encouraging factor for the use of e-resources. The university library should make every attempt to convert the non-users into actual users of INDEST AICTE digital resources in order to bring them to the mainstream with an aim to achieve academic excellence.

**REFERENCES**

1. http://paniit.iitd.ac.in/indest/
2. http://puchd.ac.in/
PROS AND CONS OF SIX SIGMA: A LIBRARY PERSPECTIVE

Pardeep Rattan
Librarian,
Govt. College, Phase-vi,
Sahibzada Ajit Singh Nagar
(Punjab, India.)
&
Dr. Payare Lal
University Assistant Librarian,
Assistant Coordinator (Lib. & Inf. Sc.),
USOL, PU,
Panjab University Library,
Chandigarh

ABSTRACT
Six-Sigma aims to maximize user/customer satisfaction and minimize defects in products and services being offered by an organization. The present paper is an attempt to critically evaluate the relevance of six sigma statistical thinking with a focus on library and information services. The theoretical framework in attaining the quality services through the methodologies of DMAIC and DMDAV or DFSS of Six-sigma, tools used within Six-Sigma, pros and cons of Six-Sigma for library and information services’ management has been discussed at a length. The paper also presents its reservations on the benefits of Six-Sigma for renovating library and information services in the information acquisition, processing, circulation, and utilization and user satisfaction.

KEY WORDS: - Six-sigma, Information services, TQM.

INTRODUCTION
Six-Sigma is a business marketing strategy which aims to maximize the user satisfaction by minimizing the defects. It was developed by Motorola, U.S.A. in 1980’s but has its roots in Statistical Process Control (SPC) which first appeared in 1920’s.

Six-sigma is a technique which advocates the attainment and improvement of quality of processed output by identifying and removing the root causes of defects and minimizing variability in the manufacturing and business strategy. It uses a set of quality management and statistical methods to get the maximum user satisfaction. It is a process in which 99.99966% of the products manufactured are statistically perfect to be delivered which comes out to be 3.4 defects per million.
OBJECTIVE

The prime objective of this article is to spread awareness among the library science professionals about the concept of six-sigma and to make their opinion about achieving the maximum user satisfaction through enhancing quality in their services by implementing methodologies of six-sigma.

DEFINITIONS

Bob Galvin of Motorola, Larry Bossidy of Allied Signal and Jack Welch of General Electric developed a framework to make Six-sigma happen. “Six-sigma in Motorola” is considered at three different levels:

1. As a Metric,
2. As a Methodology, and
3. As a Management System.

Essentially Six-sigma is All Three at the Same Time.”

General Electric defines Six-sigma as “highly disciplined process that focuses on developing and delivering near perfect products and services. Sigma is a statistical term that measures how far, a given performance deviates from perfection…At its core Six-sigma revolves around a few following key concepts:

- Critical to Quality: Attributes most important to customer,
- Defect: Failing to deliver what the customer wants,
- Process Capability: What your process can deliver,
- Variation: What the customer sees and feels,
- Stable Operations: Ensuring consistent, predictable processes to improve what the customer sees and feels,
- Design for Six-sigma: Designing to meet customer needs and process capability…”

The U.K. Department of Trade and Industry defines Six-sigma as “A data driven method for achieving near perfect quality. Six-sigma analysis can focus on any element of production or service and has a strong emphasis on statistical analysis in design, manufacturing and customer oriented activities.” (June 2005)

Isixsigma Organization founded in 2000 view “Six-sigma as a rigorous and disciplined methodology that uses data and statistical analysis to improve a company’s operational performance by identifying and eliminating the ‘defects’ in manufacturing and service related process. Commonly defined as 3.4 defects per million of opportunities. It can be defined and understood at three distinct levels – metric, methodology and philosophy…” (July 2005).

Following common elements emerge out of all the above definitions of Six-sigma:-
• Data driven method based on statistical analysis
• A method for achieving near perfect quality/Quality management in production and services
• Improvement of operational performance by minimizing the root causes of defects
• User/Customer centric- User satisfaction

Six-sigma is a cleverly packaged tool compiled by organizing basic tenets of previous quality management techniques and one of them is Total Quality Management (TQM). The TQM is the end product of different methodologies undertaken by an organization with the help of certain defined techniques and variables keeping into consideration the objectives of parent organization during the course of its operations so as to achieve the maximum user satisfaction.

The development approach to TQM involves following steps:-

Historical Background of Quality Control Techniques

“The Principles of Scientific Management” published in 1911 by Frederic W Taylor provided a framework for effective use of people in industrial organizations. New department of defect prevention emerged out of this theory which led to quality control. Quality control was introduced to detect and fix problems along the production lines to prevent production of faulty products. It involved inspection which led to measurement, examination and listing of products, processes and services against specified requirements to determine conformity.

In 1920 Dr. W Shewhart for the first time introduced Modern Control chart to manage quality which was later developed by Deming, Dodge and Roming. In 1950’s Quality Control (QC) and Management was figured at the centre stage in Japan and for the first Quality Circles were introduced in 1960’s where workers met and discussed the issues for improvement of all work
aspects which they shared with the management for the benefit of the organization.

The term Total Quality (TQ) was first used in a paper by Feigenbaum at first International Conference on Quality Control in Tokyo in 1969. A ‘Company Wide Quality Control’ model involving top management to workers was introduced by Ishiawa.

In 1980-1990’s term TQM gained ground in western world taking a clue from Japan’s model of Quality control. It involved all employees with a focus on customers. Quality and excellence awards were started in 1980’s and International Standard Organization (ISO 9000) became the benchmark for achieving quality. The 1990’s witnessed the concept of SIX-SIGMA which was an extension of TQM encompassing cleverly major attributes of it. It demands continuous improvement and integration of management in totality involving whole of organization. In 1991 Motorola in U.S.A., Allied Signal, General Electric in 1995, Raytheon Tuscan at Arizona plant, Bombardier Aerospace in Canada adopted and implemented the Six-sigma methodologies and earned huge profits. In April 2002 Robin Mann and Steve Welch started Business Performance Improvement Resource (BPIR.com) through the Centre for Organizational Excellence Research (COER).

LITERATURE SURVEY

Rath and Strong after conducting a survey in 1992 on 500 Fortune companies concluded that only 20% of the Fortune companies are satisfied with the result of TQM processes.4

“Is TQM dead” by Scott Madison Patson5, in his paper published in Quality Digest in 1994 opined that of the many companies that adopted TQM methods to attain more profits for their organizations, majority of them failed to achieved the fixed targets. In another survey of 300 electronics companies by the American Electronics Association found that 73% had quality programmes in place but 63% said that they had failed to improve quality by even as much as 10%.

George (2001)6 marked various methods step wise step to achieve the quality targets by showcasing the case of General Electric in his book “ The six-sigma revolution : how General Electric and others turned process into profits”. Burns(2006)7 in “Sick Sigma” raised serious question about the process of six-sigma as it is a specification driven methodology which means with a change in specifications defects are controlled or eliminated. Specifications are set as per the needs or requirements of the customer and not the processes. Kim(2006)8 in his work “A study on introducing six sigma theory in the library for service competitiveness enhancement” advocated the application of six-sigma as a solution for efficient knowledge management and better user
satisfaction but only a theoretical framework has been provided and no real life solutions have been suggested or illustrated.

Kaushik, et.al\(^9\), (2007) in their paper “Six sigma applications for library services” viewed six sigma applications still limited to enhance library services and have pointed out a number of critical points regarding qualification and key performance indicators. In their pilot study they have suggested that a tailored six sigma can work for library services.

No concrete method has been provide to evaluate standard deviation by Al Zubi and Basha (2010)\(^10\) in their paper “Six sigma in libraries: A management perspective”, however for quality control the authors have suggested plan-do-check and act methodology.

SIX SIGMA METHODOLOGIES AND LIBRARY PERSPECTIVE

Six sigma methodologies is a highly controlled management approach that promises the companies’ such yardsticks which would enable them to deliver their best products and services and also to achieve higher profits with an increase in satisfied customers. Two types methodologies are followed in all Six Sigma projects—DMAIC and DMADV or DFSS methodologies\(^11\).

DMAIC

DMAIC stands for D- Define; M- Measure; A- Analyze; I- Improve; C- Control. DMAIC is targeted to improve existing business processes.

Define:

It involves defining or finding project goals and sub goals, establishing an infrastructure to meet these set goals and planning to improve present functioning.

Library Perspective

Library Perspective of Define may involve the identification of target group of library users and the attributes of their age, gender, qualifications or present area of interest and their information needs. The goals can be the kind of services to be provided, method of providing those services, training to users, users’ survey, availability of infrastructure for the utilization of information sources etc.

Measure:

It is the measurement of current processes by collecting different kinds of data and by preparing matrices.
Library Perspective

Library Perspective of Measurement can be the making out of number of users and kind of collection in any library. Data can also be of information use behavior of the library users, how and from where the information is gathered and what ways are adopted to process it so as to make that information accessible. What are the different formats of information available and what storage media is used for information products are other dimensions of measurement.

Analyze:

The analysis involves the determination of root cause in the present process by establishing cause and effect relationship.

Library Perspective

Library Perspective of the analysis can be the establishment of what resources are more exploited or are more in demand and why. What are the reasons for underutilization of other information sources and services? Feedback can be taken about present library set up and regarding what new services should be introduced or how the status of existing library products and services can be enhanced in terms of collection, timings, staff etc.

Improve:

Using data, matrices and analysis of above phases, better techniques are opted in the organization for eliminating root causes of defects.

Library Perspective

Library Perspective under this phase can be orientation of users towards the library services and resources. User education for improvement through seminars, exhibitions, lectures, library portal, and library website are the best options. User friendly library management software shall be installed and for providing better library services periodic training programmes for library staff and users should also be conducted.

Control:

It demands continuous monitoring of the process/techniques of all the stakeholders. Regular feedback from customers and people within the organization for improvements are asked for.
Library Perspective:

The role of top management in compilation and implementation of above phases, especially the feedbacks form library users and people within the organization are necessitated under control. The change in policies for improvements, budgetary provisions and involving librarian in policy decisions are some of the dimensions of control mechanism.

DMADV
DMADV Stands for D- Define; M-Measure; A-Analyze; D-Design and V-Verify. DMADV aims to create those products and services that best suits and match the customer needs. It is also called DFSS- Design for Six-Sigma.

Define:
This phase of six-sigma identifies, determines and sets the organization’s goals in accordance with the customer needs.

Measure:
At this stage the organization identifies and measures those factors that are critical to quality, exactly determines the customer needs and specifications, product capabilities and risk factors.
Analyze:

Alternative processes are designed and analyzed to meet customer needs along with the existing processes.

Design:

The best design or model implied from above phases is selected and customized for the organization.

Verify:

Performance and ability of the selected design to meet customer need is verified.

Library Perspective

Library Perspective of all the above stages is that the library user is all important and while formulating library objectives and designing library services s/he is to be kept into consideration. Users’ feedback and user awareness about the library products and services should be given utmost importance.

Limitations of Six-sigma

Six-sigma has many advantages to its credit and it has been proved by Motorola and General Electricals and the like companies but when this process is implemented in service agencies like libraries many shortcomings may be confronted.

- **Collection of quality data**: The data collection is a tedious job and that too of highest quality. It largely depends upon the willingness of the user and on availability of data. It also has financial implications for any organization. Sometimes the desired result is far from expectations. The gap between costs and results may adversely affect the results.

- **Non application of 3.4 defects/million opportunities**: It sounds improper as far as libraries are concerned because defects may be anything that does not suit or match users’ demands and needs. Moreover behavior of library staff, working hours, unwillingness of users to put forward constructive suggestions or needs to be introduced within the existing library system, non-co-operation from library staff to solve the users problems pose a serious question regarding relevance of six sigma in libraries.
Dynamism of users’ demands and needs: The advancements in technologies, needs and information seeking behavior of different age groups, races, cultures, groups, working professionals and researchers etc. are never same and similar. The critical total quality of today may not be applicable in true sense tomorrow.

Theoretical and subjective in nature: There is no specific tool to ascertain the exact and real goals of any organization and there is no provision for any pin pointed procedures that may be adopted to achieve the set goals.

Lack of linkage between six sigma and organizational work culture: Six-sigma has combined methodologies for production and service sectors whereas it needs to be separated because the organizational culture is different in for both the set-ups. The training and learning needs a redressal as per organization’s culture.

Merely a specification driven methodology: Counting of defects in six sigma relates to specifications. Defects are controlled with the change in specification and these specifications are again changed as per customer needs and it does not talk about processes to be altered or followed with a change in specification.

Lack of originality: Since six-sigma is a quality management technique which measures standard deviation from the standards/ specifications set to achieve quality with regard to products and services, it has imbibed the entire theoretical framework from earlier quality management methodologies, such as TQM. It is the summation of all earlier techniques.

Basis of human nature and perception: Six sigma advocates the achievement of user satisfaction which is related to human behaviour and there are no set standards to measure the human perception at a given time. It differs from situation to situation and from time to time.

CONCLUSION

Six sigma statistical principles are a series of inter-connected processes, identifying, controlling and reducing variation which ultimately provides an opportunity for further improvements in the performance of an organization. There is an urgent need to bridge the gap between theoretical assumptions and its practical implementation in service agencies, especially the library and information centres. The tailored made six-sigma methodology as per the needs and requirements of library and information services may be beneficial but the library and information science professionals are required to be educated at least in Indian scenario if the benefits of Six-sigma are to be reaped.
REFERENCES

4. www.isixsigma.com (Accessed on 22-1-12)