**Role of ICT in Knowledge Management: New Challenges in Fashion Education**

**Abstract**

The Information and Communication Technology is playing an important role in meeting the growing information demand of students in design colleges and it helps them to reach education beyond boundaries. The whole world is converting into a Global Electronic Village, as the traditional constraints of time and space of disappearing. The globalization of information is taking place and territorial boundaries are becoming meaningless due to developments in ICTs.

E-resources has set in motion an explosive information and knowledge movement in society where resources are available to anyone with interconnectivity, at minimum cost and time, cutting across geographical frontiers and time zones. Technology is the medium of daily modern societies. Electronic networks, hypertext and hypermedia and their co- convergence in the World Wide Web offer new challenges for research.

The scope and the purpose of the paper is to identify the use and impact of E-resources in design colleges in India and to evaluate use of e-resources and data bases available in the college library, and to identify the critical factors for the effective and efficient use of electronic resources.

An online and direct survey was conducted to investigate the use of electronic resources in Pearl Academy of Fashion (PAF) college libraries. A structured questionnaire was designed to collect data from students regarding the accessibility of e- resources etc. It is evident that students are dependent upon e-resources and the use of electronic resources to produce best collections in their course study. The focus of this paper is to understand the perception and experience of users in the libraries, on the use of electronic resources in a college library, it is essential for the continuous development of electronic resources in a higher education environment.

**Key words**: ICT; Digital Library; E-Resources; Higher Education.

**Introduction**

The popularity of electronic resources is mainly due to their tremendous benefits to organizations and individuals for their effective and efficient performance (Jacobs et al., 2005 in Deng, 2010). In contrast to the use of their printed counterparts, the benefits of using electronic resources include: accessibility in a multi-user manner without the constraint of time, stock, and space; richness and variety of resources available; and ease of search through various search engines (Appleton, 2006; Hollmann et al., 2007 in Deng, 2010). Libraries have been significantly transformed with the advent of Internet and the ability to provide resources to people who may never visit a physical building. Libraries are now called Knowledge Centres, and have become ever changing by adopting new means of technology in all activities from print to e- environment, to digital and to virtual.

Today online networking covers a range of technologies. In education and training, technologies that concentrate on computer mediated communication are most common. As defined by Santoro, 1995 in Salmon, 2003, Informatics, particularly involving electronic access via telecommunications to catalogues library resources, interactive remote databases and archives, including those on the World Wide Web. Librarians are engaging in new roles, such as helping to improve the discoverability and raise the impact of their researchers' academic publications. Tasks have increased, becoming more technical and specialized, and it's essential that we incorporate new knowledge to keep up-to-date (M. Luisa Álvarez-de-Toledo, Jefe del Servicio de, 2011). This has resulted in a growing collection of electronic resources and led to the establishment and development of digital libraries (Koh and Kim, 2004; Kahl and Williams, 2006)

With the rapid growth of the collection of electronic resources, organizations have developed various strategies and policies for encouraging and facilitating their effective and efficient use.

The organizational environment becomes more user friendly. Knowledge can be obtained and effectively utilized by anyone who needs it, by identifying and introducing new technology; capturing, pooling and utilization of knowledge by new technologies, to create an effective learning for problem solving in an organization.

**Information and Communication Technology (ICT) in Higher Education**

The whole world is converting into a Global Electronic Village, as the traditional constraints of time and space of disappearing. A globalization of information is taking place and territorial boundaries are becoming meaningless due to developments in ICTs. ICT is an umbrella term that includes a number of communication devices and e-resources. The first ladder to higher learning in all the fields is not only in arts and sciences but it reaches beyond these, to new areas like fashion education. ICT enables and provides entire infrastructure and tools to support teaching and learning process within an educational institution. The world wide users through the institutional collection can utilize these resources from remote locations through ICT.

**Functions of ICT**

Library software and applications make it possible to utilize the existing resources effectively and efficiently by the users.

*Knowledge Sharing:* Knowledge is often defined as internalized information and understood as a blend of explicit and tacit elements (Nonaka, 1994; Polanyi, 1958 in Gunilla and Suomi, 2007) This means that there are many types of knowledge at different levels of the firm. Knowledge lies in human minds and exists only if there is a human mind to do the knowing. This means that knowledge management is about managing the knowledge that the individuals have. Organizational knowledge management means supporting people so that they can use what they know. Furthermore, information and knowledge for the organization is highly specific and every organization must define information and knowledge in the light of their activities and goals (Orna, 2004 in Gunilla and Suomi, 2007). However, a holistic viewpoint is important and knowledge management activities cannot be isolated processes. Information and knowledge management should consider both human and system factors to develop individual knowledge into a collective organizational resource (Jeng, 2005).

*Digital library* development, since its inception in the1990s, has made significant progress thus far. Although there is still a long way to go before reaching their full potential, digital libraries are maturing (Fox, 2002). However, the evaluation of digital libraries has not kept pace. As Saracevic, 2000 in Chowdhury & Gibb, 2006 has outlined, fundamental concepts remain to be clarified, such as, what is a digital library? What is there to evaluate? What are the criteria? How to apply them in evaluation? Why evaluate digital libraries in the first place? Borgman, 2002 has also stated that digital libraries research community needs large test beds, including collections and testing mechanisms, as a means to evaluate new concepts. There is also a need of benchmarks for comparison between systems and services.

This research is to develop and evaluate methods and instruments for assessing the usability of digital libraries. Compared to other areas in digital library research, as Theng, Mohd-Nasir, and Thimbleby (2000, 238) point out, "Little work is being done to understand the purpose and usability of digital libraries." Borgman et al. (2000, 229) also states, "Relatively little work has been done on evaluating the usability of digital libraries in any context." The same observations are also made by Bryan-Kinns, 2001 in Jeng, 2005 call for a need for further work on methods for analyzing usability, including an understanding of how to balance rigor, appropriateness of techniques, and practical limitations.

*Institutional repositories:* All publications and documents of an institution or organization can be stored in a digital form at one place. Academic libraries (in fact often themselves institutional repositories, although not always of the electronic or web based kind) have long filled the role of acting as a research tool by providing researchers with access to previous research in publications of various kinds through various different processes (Kennan, 2006).

*Web portals:* A web portal or links page is a web site that functions as a point of access to information in the World Wide Web. It presents information from diverse sources in a unified way. Today libraries are creating their own portals and providing online services to user community, online services (Image gallery, video gallery, etc) through digital format. Users; researches; scholars; students access through intranet services.

*Blogs:* Web Blogs are popular nowadays and organizations have utilized this tool to create awareness and evolve opinions on different issues. Blogs can be hosted in the institutions/companies/libraries intranet or popular Blog sites like blogspot.com can be used to give a platform to the users/employees to post their views (Javeed & Zahid, 2010)

**E-resources in Higher Education**

Electronic resources are vital to the study, work, and research in the higher education because of the location for access to electronic resources is of great interest to a library. A good understanding of where electronic resources are accessed can help library to develop proper strategies and policies on the establishment and development of technology infrastructure for storing and distributing electronic resources in an effective manner.

As quoted by Ellis and Oldman in Ani & Ahiauzu 2008, The Follett report envisaged that research (or academic) libraries should move from 'holdings to access and store the majority of information in electronic form, and that research libraries should also evolve into virtual or electronic libraries for global integration of academic and research information.

**E-resources in Fashion Design Education**

Fashion is an international language and a global business. To meet the global context, world class design education is required. Designers have to play many parts artist, scientist, psychologist, politician, mathematician, economists, salesman combined with the stamina of a long distance runner. Designer Helen quotes in Jones, (2011) that fashion forecasts use their research and observation skills, their extensive fashion industry experience and education to predict one to two years ahead of the time. Their research on which fashion design details will look “hot” in the future, and which colors will be “in” to make decision about the products they will produce two years from now.

Fashion forecast services play very important role in fashion education by providing information about trend developments and impact of social and cultural movements on fashion. Fashion forecast looks at previous trends, as well as current trends, information from a wide professional trade, wide geographical area, and trade/forecast publications (Vogt, 2002). Once they have completed the research and analysis phase of their work, fashion students make their final ramp collections to market the products. Fashion Trends analysis and forecasting is designed to help students understand how trend forecasts are created and employed by various professionals in the fashion industry to improve the firms. In the fashion industry, a constant flow of ideas and inspiration is necessary for creating design collections each season.

Trend analysis and forecasting is the first stage in the product development process. According to O’Berien as quoted in Kim, Fiore and Kim (2011) that “Fashion trends and forecasting do not happen overnight, nor are they created by a small number of people who have a special ability to see the future. Rather, they involve various professionals in the fashion industry which engage in a continual, systematic, and analytical process that explains changes in society and in behavior”. One of the major phenomenon in the area of fashion forecasting today is the growth of online forecasting which is more popular among students than printed versions.

Using new technology, audio visuals, videos, and internet sites, creative fashion presentations introduce new concept collections that affect markets for fibers, fabrics, apparel, accessories beauty products etc. Emphasis is placed on the role of fashion forecasting and the vital part it plays in the initial research (Guerin, 2005).

The need for effective development of libraries is desirable as the result of comparative advantages of electronic resources over traditional print sources. A study by Ellis and Oldman, (2005) as cited in Ani (2008) has shown that electronic resources would ease access to holdings, save time and financial resources and would solve problems connected with a lack of space in research (university) libraries. For the "virtual libraries " and other electronic resources to be developed and provide students and researchers with access to relevant information, "it is necessary to have the printed materials in the electronic (digital) form, and it will also be necessary to have in place the electronic infrastructure for delivery of the digitized materials in the library.

*Electronic resources are available in two different forms; free and subscribed.*

*Free electronic resources* are those that are available on the web, from various sources, including the outputs of funded research projects. As yet, there are not well-established procedures for the evaluation of the quality and usefulness of these electronic resources.

*Paid/Subscribed electronic resources* are those that are provided by the Libraries which are cost effective to the single users by analyzing few paid online / trend website, survey carried out from design students and faculty members, annexure enclosed. The WGSN is one of the major forecast trend online (paid) services: “WGSN is dedicated to providing its clients with the most all-encompassing connection to style. Staying ahead and tracking the style curve is what defines us. WGSN stimulates, informs, enriches and enables successful business development and growth. WGSN provides an instantaneous global view; authority is incomparable, it provides comprehensive design and style perspective; WGSN’s trend analysis is innovative and unique. It empowers all style-related industries; it gives subscribers a competitive edge ([www.wgsn.com](http://www.wgsn.com)).

**Evaluation of E-resources**

The number of users entering into higher education has risen, so the demand for libraries is increasing among users. Application of ICT helps libraries to meet the increasing demand by creating a library portal, blogs, etc, to provide rich, complex and techni­cally refined information. This type of support is often generic, common to several related disciplines and students in different institutions.

Some of the important *features of e resources*, are time saving, easy access and simultaneous usage; more than one user can access at a time; availability of the journal before print publication to so as to get latest information, and finally, no limitation of physical space.

*Criteria* that are taken into consideration while evaluating and selecting e resources for a library include–suitability for audience, content, presentation, ease of usage, appropriateness for digital/web-based format and other special characteristics of web-based resources.

*Weakness/drawbacks:*Even though ICT is playing a major role in different sections, it still has some limitations. Some of the drawbacks encountered have been difficulty of searching different specific e-journals, speed of host website, software required for downloading journals in pdf, cost factor and poor internet connectivity.

E-resources are not fully utilized, or shared by people due to lack of awareness about the technology and resources available. The library has to keep pace with the challenges to increase their operational efficiency within the limited budgets allotted; Lack of time to find out and absorb the best practices recommended, also is a significant drawback. User orientation will facilitate greater usage of the available resources to overcome discussed barriers. This can be done in the form of direct interaction, workshops and training program.

***Usability Evaluation Model:***

**Effectiveness**

**Audience**

**Content**

**Presentation**

**Ease of Use**

**Efficiency**

**Usability**

**Satisfaction**

**Appropriateness for digital/web based**

Learnability

**Diagram: Usability Evaluation Model (Jeng, J, 2005)**

The above is an evaluation model for assessing the usability of digital libraries/e-resources. This usability model is illustrated in figure 4,6,8 and 9 An online and direct survey was conducted to investigate the use of electronic resources in Pearl Academy of Fashion (PAF) college libraries in Delhi, Jaipur and Chennai.

A structured questionnaire was designed to collect data from students regarding the frequency and purpose of using library, time spent for using e-resources, etc. In total, 200 questionnaires were distributed, and approximate 150 were received as mentioned in Table1:

|  |  |  |
| --- | --- | --- |
| Course | No. of students | Percentage (%) |
| Under Graduate |  |  |
| Fashion Design | 60 | 40 |
| Textile Design | 8 | 5.33 |
| Other design courses:  Communication Design, Fashion Styling & Image Designing, and Interior & Architecture Design | 8 | 5.33 |
| Fashion Retail Management /Fashion Merchandising | 12 | 8 |
| Post Graduate |  |  |
| Fashion Design | 10 | 6.67 |
| Fashion Retail/Fashion Merchandising | 16 | 10.67 |
| Miscellaneous | 11 | 7.33 |
| Online | 25 | 16.67 |

**Table: 1 Categories of Respondents**

A detailed analysis of results received is given in below figures.

***Frequency and purpose of visiting the library***

**Figure1: Students visiting the library**

**Figure 1** shows that more than 60% of the respondents visit their college library every day.

***Purpose(s) of visiting the Library***

**Figure 2: Purpose(s) of visiting the Library**

***Note: Respondents were permitted multiple answers***

**Figure 2** summarizes that more than 50% of users visit the library to access subscribed electronic resources, followed by “borrow books”. Though there are other services provided by the library that are also being utilized by the students, their main purpose to visit the library as per the survey was to access internet/electronic resources.

***Electronic resources Vs Print resources***

**Figure 3: Electronic resources being used primarily.**

**Figure 3** indicate most of the students are visiting the library to access electronic resources primarily followed by print resources.

***Time spent for accessing electronic resources***

**Figure 4: Time spent for accessing electronic resources.**

**Figure 4** shows that students spent 06-12 hours per week for accessing the e-resources for their assignments.

***Problems faced in accessing electronic resources***

**Figure 5: Problems faced in accessing e-resources**

**Figure 5** illustrates that students faced problems in accessing electronic – resources due to unavailability of the appropriate software in the system or most of the time the Host Site was very slow and searching instructions were very complicated.

***Usage of electronic resources***

**Figure 6: Usage of electronic resources**

**Figure 6** illustrates that students use e- resources for enhancing their knowledge for self study, home work/assignments and for their research work.

***Trend forecasts consulted***

**Figure 7: Trend forecasts consulted**

**Figure 7** shows that students at PAF WGSN forecast services over others, as this e- resource provides final year fashion show information of various institutes and trend forecasts for ensuing years. It is important to note here that WGSN is the first forecast service introduced to ‘Student Package’ for the educational institutes which was easy to understand and included basic understanding on what is forecast and how essential it is for fashion collections.

***Frequently used e-resources rating***

**Figure 8: Frequently used e-resources rating**

***Note: Respondents were permitted multiple answers***

***Figure 8*** *graph shows WGSN leads in the most frequently used e – resources followed by Fibre2Fashion; Clothing and Textile Research Journal is also taking top preferences, while WWD. Com; JustStyle.com; Proquest data base and Asian Journals of Management Cases taking equal position in the number slot*. The outline survey obtained from the Pearl Academy of Fashion (PAF) shows that the online and database e-services play very important role in helping the students in their course study and also in their career progression.

**Impact of E-resources:**

The majority of users were quite satisfied with using e-resources. Especially WGSN services provide them the awareness of fashion trends; consumer attitudes prevalent; ideas for silhouette & material exploration; life style products. This forecast service is helping the students to view their contemporary work. Sitting in India they are able to visit the Retail market of Milan; Paris; New York etc and able to view the street style, that is helping to analysis the trends forecast and where fashion is moving. Constant viewing of this site has encouraged developing their own design strengths.

Results from the study are encouraging and it is hoped that the findings will provide meaning and a useful platform for further research as well as usability among design academics will also be improved. The teaching methodology is also utilizing e-resources and the students' ability was also affected in a positive manner. Involving the collection of high-quality resources in a trusted repository, large-scale evaluation of available resources, and evaluation by end-users (Bhatt, 2011). Design college students are able to produce new, innovative designs in their final year collection viz; fashion shows; display in the exhibitions etc.

**Conclusion:**

Research findings show that the traditional library is slowly being replaced by e-resources, and useful for design students. This paper explores the degree to which specific electronic resources are significant. Databases and e-journals are ranked first followed by print resources. It was also found that users with different purposes differed significantly in their access and use of electronic resources. The awareness and the quality of the information available are important factors affecting the use of electronic resources.

The survey showed the importance of the academic process in exploring the best of e- resources and also recognized the role that librarians play in their knowledge development by helping them in exploring the resources and using tools and technology that facilitates modern students and researchers. It was also found in the study that students were visiting the college library for accessing electronic resources which were utilized more in comparison to print resources by design students for their research work and final portfolio submission. Research findings show that the traditional library is slowly being replaced by e-resources, and useful for design students. The study shows that undergraduate students seeking to find information to fulfill their course requirements found easiest and most convenient method of getting information from electronic resources. Graduate students were more into data base–e-resources.

Critical factors that will improve implementation and usage of ICT by faculty and students community include subscription to more e-resources, accessibility and availability of latest software and host sites should provide simple and user friendly search tools. The current and future of e- resources is directly related to the usage from the student point of view. This paper explores the degree to which specific electronic resources are significant. It is evident that students are dependent upon e-resources and the use of electronic resources to produce best collections in their course study.

ICT plays a very important role. However, in India we need more advanced technology to access e-resources with the increase in effective links between e- learning, performance, and knowledge management, an improved systemic approaches have been achieved. The use of information and communications technologies to provide and improve education sector services, have enabled the student and organizations to deliver better performance and improve effectiveness and efficiency. Further research is needed to investigate how the faculty members actually interact with information, what specific electronic sources they visit more than others, what search strategies they use, as well as the extent to which their information needs are satisfied.

The past fashion provides designers with inspiration, but the present fashion is updated to meet the sensibilities of today’s consumer. Thus e-resources are very useful and informative to the user. Overall e-resources are extremely useful for study and research work, keeping pace with the changing technology and providing a knowledge resource usage that excites the student community. ICT forms a significant step in taking forward Knowledge Centers to meet the ever changing demands of the student community. This study will continue as a research, and the results will be shared with academic and professional communities.

-----------------------------------------------------

**References:**

Ani, O., & Ahiauzu, B, 2008. Towards effective development of electronic information resources in Nigerian university libraries. *Library Management, 29*(6), 504-514. doi:10.1108/01435120810894527 [Accessed 29 October 2011].

Bhatt, S, 2011. E-information usage among engineering academics in India with special reference to rajasthan state. *Library Hi Tech, 29*(3), 496-511. doi:10.1108/07378831111174440) [Accessed 2 November 2011]

Borgman, Christine L., Gilliland-Swetland, A.J., Leazer, G.L., Mayer, R., Gwynn, D., Gazan, R. and Mautone, P, 2000. Evaluating digital libraries for teaching and learning in undergraduate education: A case study of the Alexandria Digital Earth Proto Type (ADEPT). LibraryTrends, 49 (2), 228-50. Available at http://www.ideals.illinois.edu/bitstream/handle/2142/8333/librarytrendsv49i2c\_opt.pdf [Accessed on 15 Oct 2011]

Chowdhury, S., Landoni, M., & Gibb, F, 2006. Usability and impact of digital libraries: A review. *Online Information Review, 30*(6), 656-680. doi:10.1108/14684520610716153. [Accessed 20 October 2011]

Deng, H, 2010. Emerging patterns and trends in utilizing electronic resources in a higher education environment. *New Library World, 111*(3), 87-103. doi:10.1108/03074801011027600 [Accessed 20 October 2011]

Fox, Edward A., and Shalini R. Urs, 2002. Digital libraries. Vol. 36 of Annual review of information science and technology, ed. Biaise Cronin, 503-89. Medford, N.J.: Information Today.

Fust, W, 2003. Knowledge Society, Knowledge Management and ICT. Community Development Library, Available at: http://www.sdc.admin.ch/ressources/resource\_en\_23628.pdf [Accessed 19 October 2011].

Gao, F., Li, M., & Clarke, S, 2008. Knowledge, management, and knowledge management in business operations. *Journal of Knowledge Management, 12*(2), 3-17. doi:10.1108/13673270810859479 [Accessed 2 November 2011]

Guerin, Polly, 2005. *Creative fashion presentations*, 2nd ed. New York: Fairchild books.

Gunilla Widén-Wulff and Suomi, Reima, 2007. Utilization of Information Resources for Business Success: The Knowledge Sharing Modelfalse. *Information Resources Management Journal, 20(1).* 46-67. http://search.proquest.com/docview/215886133/fulltext/133974B51BA28E51014/1?accountid=29895[Accessed 2 November 2011]

Javeed, A. R., Gul, S., & Zahid, A. W, 2010. University libraries: Step towards a web based knowledge management system. *VINE, 40*(1), 24-38. doi:10.1108/03055721011024900 [Accessed 20 October 2011].

Jeng, J. (2005). What is usability in the context of the digital library and how can it be measured? *Information Technology and Libraries*, 24(2), 47-56. Retrieved from http://search.proquest.com/docview/215828323?accountid=29895

Jones, Sue Jenkyn, 2011. *Fashion design*, 3rd ed. London: Laurence King.

Kahl, C.M. and Williams, S.C. (2006), "Accessing digital libraries: a study of ARL members' digital projects", The Journal of Academic Librarianship, Vol. 32 No. 4, pp. 364-9.

Kennan, M. A, 2006. Institutional repositories: Review and an information systems perspective. *Library Management, 27*(4), 236-248. doi:10.1108/01435120610668179 [Accessed 20 October 2011]

Kim, Eundeok, Ann Marie Fiore and Hyejeong Kim (2011). *Fashion Trends: Analysis and Forecasting*. Oxford: Berg.

Koh, J. and Kim, Y.G. (2004), "Knowledge sharing in virtual communities: an e-business perspective", Expert Systems with Applications, Vol. 26 No. 2, pp. 155-66.

Kovacs, D., & Elkordy, A, 2000. Collection development in cyberspace: Building an electronic library collection. *Library Hi Tech, 18*(4), 335-359. Available at: http://search.proquest.com/docview/200614753?accountid=29895 [Accessed 20 October 2011].

M. Luisa Álvarez-de-Toledo, Jefe del Servicio de, 2011. Librarians are engaging in new roles, such as helping to improve the discoverability and raise the impact of their researchers *Library Connect* , 9 (3).

Salmon, Gilly, 2003, *E-moderating,* 2nd ed. London: Taylor & Francis.

Sampath Kumar, B., & Biradar, B, 2010. Use of ICT in college libraries in Karnataka, India:

A survey. *Program, 44*(3), 271-282. doi:10.1108/00330331011064267. [Accessed 20 October 2011]

Sood, A.D. and Chandrasekharan, Uma (2004) Digital Libraries in India: a base line study. Educational Development Center for Knowledge Societies. CKS Working Draft Paper. Available at http://www.cks.in/html/cks\_pdfs/digital\_library\_cks-edc.pdf [Accessed 20 October 2011].

Tain, Linda, 2010. *Portfolio Presentation for fashion designers,* 3rd ed. New York: Fairchild books.

Theng, Yin Leng, Norliza Mohd-Nasir, and Harold Thimbleby. 2000a. Purpose and usability of digital libraries. Proceedings of the fifth ACM Conference on Digital Libraries. New York: ACM Press, 238-39.

Worth Global Style Network, available online at: http://www.wgsn.com [Accessed 20 October 2011]

Vogt, Peter, 2002, *Career opportunities in the fashion industry*, New York: CWL Publishing Enterprises

Yaacob, R., Jamaluddin, A., & Jusoff, K, 2010. Knowledge management and challenging roles of academic librarians. *Management Science and Engineering, 4*(4), 14-23. Available at: http://search.proquest.com/docview/853758003?accountid=29895 [Accessed 20 October 2011]

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_