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New Paradigm New Practices and New Professionalism Needed to Meet Modern World Library Challenges

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Abstract

Since their existence libraries have been acquiring, organizing, disseminating and preserving recorded human knowledge only. However, inventions enforced through information and communication technologies have brought drastic changes in the medium of information storage, dissemination and use. There have been a number of studies in the developed world, which investigated and reported how they created, managed, adopted and reacted to the challenges and opportunities provided by the new information and communication technologies. Now the question is what type of systems, skills and services we need to establish and convert existing libraries into hybrid 21st Centry Libraries. This paper traces the shifts occurred in the developed world libraries and identifies the extent to which academic and other libraries in the developing world have adopted or should take a paradigm shift in improving the systems and services to meet the new challenges. This is first of its kind a study from this part of the world trace what has happened in the developed world in terms of information and communication technology applications in their libraries & their user expectations, and where we stand in this global phenomenon. Evidenced recommendations based coupled with more than three and half years of

field experience provide applicable solutions to be our own and in the forefront of the developed world in terms of library and information services.

Keywords

Paradigm shift in libraries, modern libraries, developing world libraries, Hybrid Libraries, challenges for libraries, collaborative learning, learning commons, library technologies, and smart libraries

1. Introduction

Libraries have now become an integral part of societies around the globe and in the developing world as well. The myth and misconception that reading habit has gone down and people find most of the information through internet, especially through the social media has been broken and the reality is that more and more libraries are being established in each country. Moreover, libraries used to close around 6:00 pm and now the timings have been extended to beyond midnight. At the same time everyone now looks to authentic and reliable information and knowledge rather than the quantity of the materials. However, the physical structure of libraries have been converted into smart libraries and learning spaces, ambience and aesthetics of the libraries have also improved a lot.

Realizing the importance of information and link between the economy, former Prime Minister of Malaysia, Datu Mahatir Bin Muhammad while addressing to business community in 1994 said (it is coincidence that there is a link between information richness and economic richness of the countries". The statement is still evidences while keeping in the state of libraries, access to internet

and the economies of different countries. The study of a paradigm shifts is significant because it provides an opportunity for the less developed or left over communities to catch the developed nations through adopting right strategies and innovative technologies and avoiding the mistakes they made during experimental stages of innovations. Disruptive changes have occurred in formats of collections, physical space, collaboration and instruction as the top four priorities of the libraries as these four areas covered three quarters of the strategic plan.

2. Impact of Information Revolution

The information explosion, technological innovation, globalization, rising user expectations, commercialization in scholarly publishing, access to electronic texts, the creation of knowledge & its management are changing the role and direction of libraries at an unprecedented speed. These changes are so swift and drastic that we find ourselves in a world of change. The advent of computer, Internet, World Wide Web, new storage devices and digital technologies have influenced every aspect of our life and libraries are no exception. The role of librarians as custodians of knowledge and intermediaries has little relevance in the emerging virtual world. The focus has changed from print to digital documents and from real to virtual. Users now have direct access to the source of knowledge through their laptops, iPods using Internet. This rapid transition from real to virtual have major effects on the libraries to remain relevant and effective (Singh 2008). One of the strengths of the libraries has been the direct and physical access to its readers, interactions on one-on-one basis and in groups. The potential of innovations enabled through the effective use of information and communication technologies have posed serious challenges for

the libraries to preserve their traditional strengths, while playing their new roles in the digital information era.

Libraries in many developed countries are also in a transition phase of organizing books to managing knowledge in electronic formats. Some libraries are performing both their traditional printed book regime role complemented with electronic formats. However, librarians' in developing countries like Pakistan, India and other countries are finding themselves in a more preliminary stage of just conversion of printed catalogs to computerized catalogs, and subscription of CDs and few electronic journals. They have not changed their book acquisition, organization and circulation practices, nor have they adopted new roles of knowledge managers (Ramzan 2004). The changes occurring due to technology applications are very swift and we quickly need to move forward to adopt our new roles with new perceptions. Otherwise, we will suffer further due to the already widening digital divide between information rich and information poor countries. The emergence of a new (digital information) paradigm is likely to happen within next decade or so. It offers an opportunity to the left over / developing countries to leaf forward to join the developed world in provision of quality education through effective and efficient libraries. This requires adoption of such strategies that lead to the emerging digital information paradigm. It also requires a complete shift from print to digital collections, remote access, new instructional methods, robust systems and innovative staff (Breeding 2005; Mutula 2007).

3. Paradigm Shifts in Librarianship

A **paradigm shift** is a change in the existing model, which creates a shift in the existing truth. A worldview that has been accepted as a truth, trend or change in a typical pattern or model. The

term paradigm shift was first discussed and popularized in 1962, by Thomas Kuhn, through his book entitled 'The Structure of Scientific Revolutions.' A **paradigm** is defined as "a set of assumptions about the nature of things that underlie the questions we ask and the kind of answers we arrive at. A **book paradigm** is defined as "an archetype that identifies knowledge as existing in a physical object of the printed text in a book format, which can be catalogued, and its access controlled by the librarian, as it occupies a particular space in the library model." A **digital information paradigm** that is likely to occur, where text, audio, video and all other types of information will be available only in digital format through the Internet. The information here will not exist in one tangible place and cannot be owned or controlled like a physical book or journal. From historical perspective, the librarianship can be divided into four periods of transition from book to the modern era. In the first period of evolution, the focus of librarianship was on the process of production, acquisition, preservation, and storage of books. It was the age of the library and librarian as bookkeeper. In the second period, the focus was on bibliographic organization of records and advancements in reprography created to fulfill educational need of the libraries. The issues of the management of library resources provided a basis for the formulation of the theory of the library science. The third period with growing demands of for library services, awareness of librarians' social responsibility for their work and their mediating role encouraged the emergence of library standards. This was the phase of the library as a community builder, linking sources of information with people, and it eventually led to the emergence of the global village of library readers. The next phase started with the introduction of computers, which significantly increased the library's ability to manipulate information records and to expand its services through networking (Nitecki 1993; Hillenbrand 2005).

These changing library paradigms require new repurposed library physical spaces as well as administrative changes reflecting new innovative services, roles, staff skillset and organizational structures. Emerging role of librarians is of the nature of liaison work and taking on new roles as specialists and facilitators of research and creativity. New emergent approaches in dealing with users must be devised through increased self-service and user-driven programs and processes; more focused towards professional development, and new positions and job categories (Mathews 2014). Library users needs for study space is diversified as they need both individual and collaborative study spaces "traditional" library vs. fun informal space, "private or semi-private" vs. open space, and areas for quiet or talking (Andrews, Wright et al. 2016)(Andrews, Wright et al. 2016).

Library as a place is changing as the nature of information is being transformed through the shift from text-based information environments to the networked hyperlinked environment of the Internet. This transformation is demonstrated by an evolutionary shift within the discipline from library science to information science to knowledge management. A number of factors including globalization of information, the information explosion, the revolution in computer technology and the speed of technological changes are responsible for changes in the libraries. Academic libraries are experiencing a rapid transition for print to digital environment. (Holmström 2004; Ross and Sennyey 2008) mentioned that the revolution in the scholarly publishing industry provides direct access to the end-user by passing the librarians and other intermediaries, so we are experiencing a paradigm shift from a user perspective to a client perspective.

Libraries are working on adopting social media tools to communicate with and engage patrons online in interactive mode. Although the popularity of social media platforms often changes, the importance of the communicative role of social media platform remains the same. Although there are so many social media platforms available now days such as Facebook, Twitter, Instagram, Pinterest, Flickr, Snapchat, and blogging platforms, the two most popular for users are Facebook and Twitter (McCallum 2015).

4. Technology Enabled Paradigm Shift in Libraries

Significant changes in the publishing, storage, dissemination, organization and access to information and knowledge are greatly impacted by the use of information and communication technologies. The technology-influenced shifts in the libraries have occurred in three phases. The first is computerization library catalogues, followed by circulation and other library activities. It started in 1960 and was completed by the end of 1980s in the developed world. Libraries in the top academic institutions are using integrated library information management systems to provide one-window access to bibliographic and full-text collections to their on-campus and remote users (Nitecki 1993).

Second major shift was influenced by the communication technologies. The establishment of communication networks was started in 1970s, which allowed transformation of printed resources into digital format. By the mid of 1980 a radical change in the information landscape occurred due to widespread use of the telegraph, telephone, radio and TV in the libraries. In 1985, the optical disc appeared as storage and distribution medium came. Satellite TV was another disruptive

technology in communications systems that enabled global dissemination of knowledge. Finally, the tremendous invention of the Internet arrived providing excellent storage, and retrieval (Hillenbrand 2005).

The third major shift started with the conversion of printed abstracts and indexed into digital formats with the advent of CD-ROMs and web technologies in 1980s and 1990s. Encyclopedias and other large reference works moved to electronic formats in the late 1990s and in the early 2000s. The indexes and abstracts of the journals moved to the Web in the mid-1990s, followed by full text content of journals available online. The first major database of archive of journals was launched in 1999. By the early 2000s in most disciplines, almost all major journals were available in electronic format. (Rhyno 2003; Frey 2006; Ross and Sennyey 2008). Google and OCLC have signed an agreement on 19 May 2008 to exchange data with the OCLC participating libraries and through Google search services including the one million full textbooks. (Bell, Borek et al. 2006)

3D printing is an emerging technology based on the creation of physical objects from digital files. There has been a decrease in the cost of 3D printing technology which has made it feasible for libraries to begin providing this technology This service has provided libraries with an opportunity to engage with users in a way that has direct positive impact of library among community of learning. It has helped the library to become a liaison place between the technology, the users, and the skillset required to be relevant in the rapidly changing technology world (Finley 2016). Although library leaders are eager to introduce 3D printing services to their users but there is very little work done about the legal issues and creating best practices in the community to make this

service a success. Training and instruction is needed to run the 3D printer and understand how to develop 3D objects that will print successfully (Nowlan 2015).

Libraries have been using various mobile apps including apps for mobile library websites. Online Public Access Catalog, mobile collections, mobile library instruction, mobile databases, mobile library tours, mobile learning, library SMS notifications, mobile library circulation, and QR codes based applications (Margam and Dar 2017).

5. Emergence of Information Commons

The rapid rise of the Information Commons has been driven by a dramatic decline in the use of the traditional library over the past ten years. Students, undergraduates in particular, turned to other sources of information, and they found other places to study. Simultaneous with declining use was the growing appreciation throughout academe that much learning takes place in social settings outside the lecture hall. In response to these trends, libraries have sought to bring students back by defining themselves as the place of choice for learning beyond the classroom.

Although there is no standard definition of learning common it is usually defined as a place in the library spaces that provide computer and library resources as well as a range of academic services that support learners and learning. An analysis of 103 research papers have pointed out massive increase in the popularity of learning commons in libraries. The studies have emphasized the need for organized planning, better collaboration, staffing, and assessment in the development and maintenance of learning commons. These studies also described the critical role of staff competencies to support students, faculty, and staff in these next generation learning spaces.

Important skills among these include traditional skills but specific skills related to IT use and familiarity with web 2.0 were described critical (Blummer and Kenton 2017).

The Information Commons would become a privileged destination, the place outside the classroom where students would complete every phase of an academic project, aided by individuals with a range of appropriate technological and professional expertise. It would be a main floor library attraction intended for high-volume use. It would be aesthetically pleasing, a setting that one might regard as an extension of the residence hall or living room. Many who have created such a place have conceived of it as an intellectual community center, as a learning commons, or as a contemporary version of the Library of Alexandria. The contours of an emerging model for the undergraduate library are embedded in the Information Commons experience but go far beyond a simple listing of individual services. The new model is about perspectives on services rather than about services themselves, and it involves the following:

·   Re-defining collaboration

·   Promoting social learning

·   Encouraging students to create their own content

·   Nurturing community

·   Challenging traditional academic structures

6. The Growth of Digital Resources

Earliest iterations of the Information Commons at the University of Southern California and the Information Arcade at the University of Iowa involved displacing printed materials with computer workstations. As mark-up languages evolved, universities also established electronic text centers,

expanding access and research capacities especially in literary and historical disciplines. The rapid growth of the Internet with billions of pages of content, presented through graphical interfaces, created a new setting for students retrieving academic information. Access from remote locations became commonplace; and students began to retrieve bibliographic, numeric, graphic, and full-text information from homes, residence halls, airports, Internet cafés, and countless other locations. Distance education enjoyed a new era of robust growth and some local governments began to install wireless networks throughout entire municipalities.

7. Research Data Services

Research Data Services RDS is concerned with the management archival of data about all phases of the research lifecycle. Although currently libraries' part in these services is limited and focused especially on advisory and consultancy rather than technical services (Cox, Kennan et al. 2017). Majority of library leaders agree on the importance of RDS and they are supporting their staff to improve their technical skills to provide these services. Almost all libraries are collaborating with other departments within organizations or outside institutions to device polices and framework for these services (Tenopir, Talja et al. 2016).

8. Student Response to the Internet Context

These trends created an environment where students began staying away from the library building in droves. Indicators such as gate counts, books circulated, books and journals used in-house, requests for research assistance, and related indicators have been declining for more than a decade. Even excellent students often said, "I go to the library only when I absolutely have to." The model of the library building that had emerged in the post-World War II construction boom did not attract

the GenNext student, currently in the age bracket 16 to 21, but rather had appealed to the independent learner of an earlier age. GenNext students have found the book-lined facility with many individual study carrels to be ill suited for the multiple ways they access, process, and interpret information of all kinds, including academic information for their undergraduate studies. Thus the model for library space use now required adaptation to the underlying cultural and social assumptions of 21st century undergraduates.

9. Collaboration and the Academic Enterprise

To understand why the IC has become not only a new way to provide library service but also and, more importantly, an incubator of a new model of the undergraduate library, one must first kill a sacred cow then examine broad contours of academic culture. "The library is the heart of the university" is an oft-repeated phrase that we must relegate to the dustbin of academic refuse. We persist in this myth to our peril. Instead, the core work of the university resides in the professor-student relationship, in the knowledge, skills, and perspectives that can be transmitted, inculcated, and nourished in the minds of rising generations. Academic authority resides in the disciplinary expertise of teaching faculty, the cultural norms of the disciplines themselves, and in the credentialed rituals of professional schools. Students grow intellectually and academically as professors teach, mentor, and assess them with a system of grades, the academic "coin of the realm." Libraries, librarians, and information and research sources stand apart from but alongside this process. This dynamic explains that, while a fine library may be essential to success in many disciplines, it can often fall into the budget category of things that are important rather than things that are urgent. By extension, the librarian is seldom seen as an equal partner with the classroom professor in the educational enterprise.

Since the library stands apart from the university's central intellectual relationship, it must forge partnerships in order to achieve academic relevance. More than sixty years ago Duke University Librarian (and later Vanderbilt University Chancellor) B. Harvie Branscomb defined the structure for effective collaboration. In 1940 he published Teaching with Books: A Study of College Libraries, the result of site visits to sixty liberal arts colleges and interviews with scores of professors, administrators, and librarians. He focused his study on the effectiveness of the library as an educational instrument rather than the efficiency of the library as an administrative unit. Historian David Kaser credited Branscomb's book for stimulating more improvement in college libraries than any other single publication in the 20th century. Branscomb's classic makes one powerful assertion that still resonates and informs contemporary dialogue. Branscomb envisioned that in the classroom the librarian would assist the professor and that in the library the professor would assist the librarian. He thus promoted a vastly enlarged instructional role for the librarian and he established librarian-professor collaboration as the central relationship in effective library practice.

10. Re-defining Collaboration

With professor and student at the center of academe and the librarian-professor relationship as the foundational partnership, the emerging model embraces the establishment of additional partnerships such as those involved in creating an Information Commons: writing center, copy center, cafe, research assistance, tutorial assistance or adaptive services, and others. But the work of collaboration, in order to yield a new product, takes on a new definition.

The deep collaboration and cross pollination necessary to create a new undergraduate library have yet to characterize academe generally since they must operate on the foundation of a flattened structure, but the university terrain, long encased in silos, is in the process of becoming flatter. The undergraduate library is changing rapidly and early indicators from the Information Commons experience are yielding some suggestive observations. Partners who collaborate to build something new must develop a common language; they must appreciate the expertise of another; they must yield, re-purpose, and gladly share academic real estate. They must operate over and beyond—or perhaps outside—the disciplinary and departmental structures that dominate the university. The results should improve the learning experience for students, making the library relevant and functional in new ways, some of them unexpected perhaps, but certainly making it the intellectual and social hub of student and faculty activity.

In creating new partnerships librarians can operate on a principle that economists have long understood. Certain complementary goods and services become much more valuable in combination with other goods and services than when standing alone. This principle of value creation means that the quality and productivity of a given service will rise with the quality and productivity of a naturally complementary service. Undergraduate librarians, for example, can increase the demand for traditional services such as books circulated and research questions answered by adding into the mix a writing center and an Internet café. As they enter partnerships with the library, the café and the writing center likewise attract higher demand for their own services. The three entities in combination shed light on what an emerging model for the library might look like. Their new purpose now expands from their original purpose into something more

dynamic, something that re-envisions the overall experience for the student in settings where the partners fully collaborate.

11. Promoting Social Learning

GenNext students continue to surprise and enlighten those of us who matured in an earlier era. These students work together and play together constantly; they seem always to be connected with cell phones, iPods, Blackberries, laptops, and related devices. They learn in groups in contrast to previous generations who learned as individuals. Increasingly their professors make team-based assignments. Early examples of such assignments involved case studies that simulated industry; more recently group study has branched into many disciplines beyond that of Business Management. "We must design hospitable places where the ebb and flow of social interaction is the norm, and where food and drink and intellectual and social discourse are invited, nurtured, and honored." Group projects result in multimedia presentations that require a wide range of skill sets and that span disciplinary boundaries.

12. Encouraging Students and Researchers to Create their Own Content

While authority in academic cultures continues to reside in the disciplines, the ability and the opportunity to create new content are becoming more widely distributed throughout the entire institution. Blogs and sites like FaceBook, MySpace, and YouTube encourage students to produce and distribute texts and images and, while much of the content reflects youthful indiscretion, the entire process elicits the sort of candid observation and diary-writing that had long ago disappeared as part of the general culture. Purely academic versions of such free flowing content have yet to

be implemented, although listservs have proliferated and courseware such as WebCT and Blackboard has become routinized.

13. Nurturing Community

The concept of community deserves a high priority in higher education; its importance has been often assumed but too seldom articulated. Community is the social context of people with shared values, engaged in pursuing a common purpose and seeking common goals. People in a community agree to communicate with one another on increasingly authentic levels. They set standards and create a sense of expectancy. An ethos of this nature has become essential for student success in college.

With the idea of research community deeply embedded in their DNA, universities established centers for the research and dissemination of information about specialized subjects; they created learning communities and research communities; they established first-year programs and, more recently, their libraries designed and implemented the IC. These developments suggest that universities hold an innate grasp of the power and significance of learning in groups and a relentless pursuit of ways to make it a reality.

14. Challenging Traditional Academic Structures

Although discipline-based departmental structures have served for centuries to promote innovation and to train countless individuals for participation in a profession, the structures themselves are less than well-equipped to respond to the sweeping technological changes that are democratizing knowledge. Academic silos fail to account for the multiple ways that a campus is interconnected.

New technology drives social learning arrangements and is building an ethos for collaborative work that barely existed before the 1990s and, in fact, did not exist at all for millions of undergraduates.

The deep collaboration that is becoming increasingly possible should afford librarians the opportunity to create in the college library—or the undergraduate library on the university campus—the somewhat meaningful, life-changing library experience that we have long envisioned. The wide acceptance of flattened, collaborative ways of working is changing the academic terrain, giving new power to older stakeholders including the undergraduate librarian.

What is going on today is not simply about how governments, business, and people communicate, not just about how organizations interact, but is about the emergence of completely new social, political, and business models. "It is about things that impact some of the deepest, most ingrained aspects of society right down to the nature of the social contract."

With assessments from Information-Commons installations, librarians can continue to improve and to make more mature the new model for the undergraduate library. Success, as determined by student popularity and measurable outcomes, has given the library unprecedented visibility. That visibility can translate into on-campus credibility, making the library a more highly valued partner in collaborative learning.

15. Hybrid Academic Libraries

The recent increase in digitization of information has been the greatest catalyst for change in the profession from book paradigm to the emerging digital information paradigm. Academic libraries being at the forefront of the institutions knowledge, scholarship and research mission are continually confronting the innovation challenges. Faculty, students and researchers expectations of remote, instant, relevant, authenticated information from global resources accessible 24/7 remotely is on the rise. The innovations in the formats of information, especially the digitization, and World Wide Web and other information access technologies are important factors that are changing the shape of libraries at an unprecedented rate (Rhyno 2003; Frey 2006). The emergence of a new paradigm is visible now. (Lewis 2004) mentioned that academic libraries will confront a variety of disruptive technologies and these technologies will disrupt libraries. The current structures and practices of libraries will no more withstand the technological changes we are facing than the changes we faced with the invention of the printing press. To take the most obvious example, Google aims to digitize and index all of the world's printed literature. It means all books will be available full text, searchable and available to everyone with an Internet connection, which requires a real change beyond incremental adjustments.

Libraries are required to reposition their strategy to accommodate emerging nontraditional competing models of education to keep themselves relevant to their patrons. These emerging models of education include but not limited to boot camps, targeted online courses, micro degrees, competency-based education and other models which have made it easier to improve knowledge and learning without the traditional model of credit-based education (Fernandez 2017).

Horizon Report Library Edition 2017 has described 6 major challenges for the libraries through series of Delphi-based cycles of discussion. These challenges include issues in accessibility to library resources and services in the changing technological landscape, the challenge of improving the digital literacy to make technological use more common and useful for the community. Other challenges include organizational structure of academic and research libraries to better meet the challenges of 21st century needs, challenges of partnership and collaboration between research institutions to increase their visibility and standing. Meeting the increasing economic and political pressures and embracing the need for fundamental shift were the last two challenges for the modern libraries (Adams Becker, Cummins et al. 2017).

16. Recommendations

There are workable strategies suggested by scholars (Rosa, Cantrell et al. 2006; Greenstein, Smith et al. 2007; Lewis 2007; SUBER 2007) to cope with the emerging digital paradigm challenges and opportunities. First, is the complete migration from print journals, reference works, books and other collections to electronic collections? This also requires dislocation and preservation of print collections to the less used areas so that access is made as and when required. Second is reshaping the library as informal learning space allowing use of cell phones, tea, snakes and group discussions, integrating the library with rest of the campus units, such as, language labs, writing learning center multimedia services and similar common academic activities. Next is repositioning resources, services and systems of the libraries to embed these into the teaching, learning, and research enterprises. The use of general search engines have taken away the leadership position of libraries as starting point for information search. A number of surveys results have indicated that he library is no more the starting point for information seekers. Users of information prefer to

search through various online search engines and google is the most common choice of these internet users.(Schonfeld and Guthrie 2007; Ross and Sennyey 2008). Library tools, must be aligned with the changing information search and use preferences of their users. The last but not the least is to migrate from purchasing materials to getting access to contents. The Transition from purchased to open access content is an emerging phenomena. This shift will have impacts on the future shapes of the library resources and systems. There is an active movement for provision of open-access (OA) and free access to online literature that need to be considered seriously.

17. Conclusions

New technologies are changing the information landscape of at a fast rate. This creates opportunities and challenges for libraries to re-visit their missions, reform their policies, change their roles and bring innovations in their collections and access and management infrastructures to remain relevant and competitive in the contemporarily society. The emerging digital information paradigm provides another excellent opportunity for library community to stay relevant and transform themselves into value-adding knowledge professionals. This will require a radical change in how we view ourselves, our roles within the knowledge-based economy in a world of rapid change, instantaneous communications, and the transformation in our work environment. In other words, we need to have a vision; we need to define the future.

The situation regarding response to ICT enabled paradigm in developing world libraries is slow compared to the developed world. However, this is a timely alert for the library professionals and other stakeholders in Pakistan, India and otyher countries to leverage the benefit of the new paradigm and start promoting the use of online journals, books, reference works and data sets in

our libraries. This is also a good time to start conversion of our print collections into digital format. Faculty, students and researchers also need to be taken on board for these initiatives through information literacy programs, as they are the end-users of our resources. Drastic changes and innovations are deem to happen if we are to compete the develop world in provision of high quality education positively impacted through effective academic libraries. To ensure that we librarians continue to stay relevant, we must also need to adopt innovative attitude and culture so that we not only manage to keep pace with, but also are always ahead of the competition, as the bar level of competition is continuously raised.

It is imperative to address the barriers to Internet use, such as lack of physical access, lack of skills to use and supports, negative attitudes, and lack of relevant contents to reduce the digital divide. It is equally important to provide IT Support to the users and ask to list in priority the problems they are facing so that common problems hindering the wider use of information technology are identified and strategy is made to resolve them

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