Disruptive Technology in Higher Education with Special Reference to Library and Information Science

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I. INTRODUCTION

According to Christensen's theory of Disruptive Innovation, these disruptive technologies are not designed explicitly to support learning and teaching in higher education, but have educational potential.

A disruptive technology is one that displaces an established technology and shakes up the industry or a ground-breaking product that creates a completely new industry.

Harvard Business School professor Clayton M. Christensen coined the term disruptive technology. In his 1997 best-selling book, "The Innovator's Dilemma," Christensen separates new technology into two categories: sustaining and disruptive.

Sustaining technology relies on incremental improvements to an already established technology. Disruptive technology lacks refinement, often has performance problems because it is new, appeals to a limited audience and may not yet have a proven practical application.
(Such was the case with Alexander Graham Bell's "electrical speech machine," which we now call the telephone)

1.1 Clayton M. Christensen (1952 – 2020)

In his book, Christensen points out that large corporations are designed to work with sustaining technologies. They excel at knowing their market, staying close to their customers, and having a mechanism in place to develop existing technology. Conversely, they have trouble capitalizing on the potential efficiencies, cost-savings, or new marketing opportunities created by low-margin disruptive technologies. Using real-world examples to illustrate his point, Christensen demonstrates how it is not unusual for a big corporation to dismiss the value of a disruptive technology because it does not reinforce current company goals, only to be blindsided as the technology matures, gains a larger audience and market share and threatens the status quo.

II. DISRUPTIVE TECHNOLOGY IN LIBRARY AND INFORMATION SCIENCE

2.1 New Technology in Library and Information Science

Given that the main mission of libraries is to offer equality of access to information for every citizen, then why not be a trendsetter in digital use and implement more emerging technologies? As Mogens Vewtergaard, Manager of Library and Citizen Service at Roskilde Libraries in Denmark emphasizes in our interview, "it is the library's obligation to be at the edge of different uses of culture and uses of technology"

This article presents a range of relevant and useful innovative technologies to implement at the library. We focus on the technology applicability and the benefits it could bring to the library. Want to also know what are the current technology trends in libraries?

From digital storytelling, VR to kinetic bikes and RFID technology, John Garland helps us look at how libraries are using technology to improve services for customers today.

2.2 Non-Disruptive Innovative Services

Not all innovations are disruptive. Take the example of the internet search engines and library databases. According to Choudhury (2002) personalised services are just the same as reference services, and reference services are not necessarily services provided through human agents or librarians. Though librarians still provide references in the form of Ranganathan's (1961) time, the services have diversified to incorporated services without the human agents. With or

without the librarians in between, Chowdhury (2002) finds that provision of a reference or personalised services are important even in the digital library environment.
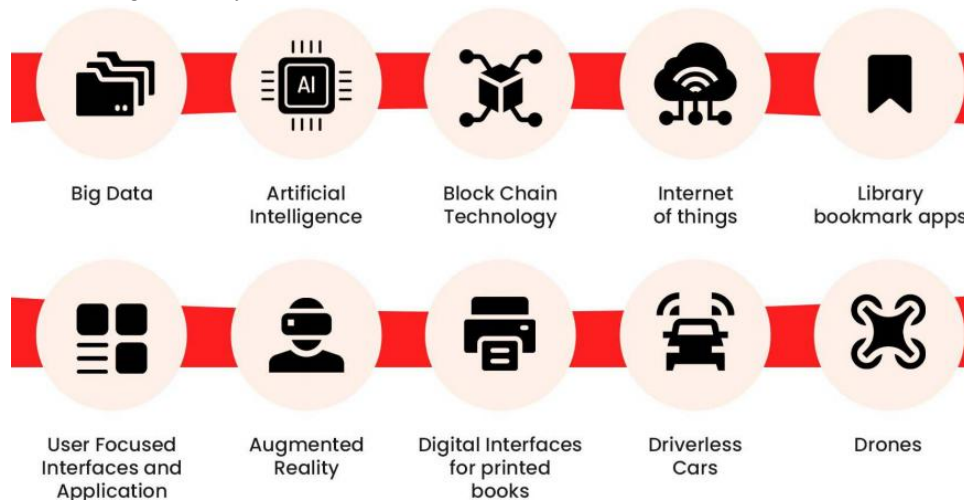
The innovations of reference service without the librarian did not disrupt the reference service rather it adds to the services already in place from the dawn of the libraries.

Bawden (2005) made a comparative study of internet search engine, google and some selected library databases. In terms of result, the hits from the library systems are found to be superior to the google hits. What the library databases seems to lack is the searchers skills.

If the skill of the searchers were to improve library databases are likely to give better result while google results will remain the same with or without the improvement of the searchers skills. These studies have shown that not all the innovations are disruptive.

The very fact that search engines have been incorporated in the library databases means that some innovations compliments the existing services.

2.3 Non-Users to Users

According to Casey and Savastinuk (2006), besides the users, libraries have non users and shy users (or potential users). The traditional libraries continues to focus all the library resources and infrastructures on serving the users they have been serving. In the process the non-users and potential users remain neglected. Potential disruption of the existing services will emerge from services catering the nonusers or potential-users. Unless the non-users and potential users are converted into users there is every possibility of the existing services being disrupted, no matter how sophisticated the technologies are. Disruptive services serve the market or users not served by the mainstream services. Looking for new market from the library perspective is looking for new users. Libraries are not likely to be disrupted as long as the present and future generations continue to be library users. Keeping pace with the new generations' changing nature of looking up for authoritative information whether current or archival is a non-negotiable terms librarian had to accept and put into service in order to keep the library and librarians undisrupted.

III. CONCLUSION

Sustaining technologies foster improved performance of existing services. Similarly, sustaining technologies will improve the library services to the existing set of users but even the most radical sustaining technologies will not ensure non-disruption. On the other hand, disruptive technologies will emerge to end the existing services. One of these two types of technologies could not be put away for the sake of the other.

To serve the existing users, libraries need sustaining technologies. But for libraries to remain undisrupted, adaptation to disruptive technologies is necessary. The majority of libraries in India are still struggling with incorporation of

sustaining technologies. Known impediments such as funds, infrastructure, human resources etc. in various forms are reported. One of such impediment is attitude towards information technology adoption, which was studied by Temjen (2003).

Anxiety, efficiency, performance, confidence and acceptance are found to be the factors associated technological adoption. Among these factors anxiety associated highest with information technology. Anxiety is a mental state born out of inability or unfamiliarity. If these findings are to be generalized, the library professionals in India are likely to fail due to the inability to adopt sustaining technologies and the inability to anticipate disruptive technologies. Though the whole discussions are based on the assumption of the applicability of disruptive innovations, in conclusion, one may be cautioned that library being a service oriented non-profit making institution, it is necessary to study if Christensen (1997) theoretical framework of disruptive innovation is truly applicable to library services.

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