Network, Sustainability, and Security of Libraries on Smartphones

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INTRODUCTION

Sustainability has become the need of the hour, as the economic status of the libraries are showing downward curve. Shrinking of Library budget and the evolutionary change in library infrastructure, services, and resources according to the technological developments in information and communication technology has forced library to practice sustainability. Invention of internet and social network keeping people connected virtually and share across the globe. Smart phones can be considered technically as desk top computers in the size of a handy mobile with few limitations like minimum storage capacity, small display etc. Applications are now made compatible with smart phones as many users are now handling smart phones as desktops and utilize connectivity to work on virtual presence. With same technology library management applications can also be made compatible. Virtual communication and usage has been experimented and implemented in many Universities worldwide with mobile compatible library management and digital library software. This article focuses on how technological changes helped to sustain library by evolutionary change of format and services of libraries.

BACKGROUND

According to the survey done by Mr. Alan Aldrich he pointed out the usage pattern, popular functions, resources seek for etc. How smart phones has changed the way of access by users dramatically through web applications compatible with smart phones. Compatibility is not just for the change in visual window but also with operating system. Many universities have evolutes their services from print to electronic format, and now from desktops to handy phones. Any technological improvement will have both pros and cons. Primary disadvantage in libraries moving to mobile is adaptability and security. With planned institutional implementation issues on Security can be easily avoided. Finally how smart phones helps libraries to sustain shrinking budgets (Aldrich, 2010).

According to Geoffrey Little from his survey pointed out that number of users of smart phones and libraries increase drastically on introduction of mobile applications for library access, with broad applications like reference, access, collection development, reservation, consultation, referral service etc. (Little, 2011).

Smart Phone

Smartphone built on mobile operating system, with more advanced computing capability and connectivity than a feature phone, combined the functions of a personal digital assistant (PDA), email, browsing, media players, digital cameras, gps navigation etc. making it multitasking device. ("Smart Phone," 2010) Many modern smart phones also include high-resolution touch screens and web browsers that display standard web pages as well as mobile-optimized sites. High-speed data access is provided in different modes like wi-fi, mobile broadband, Near Field Communicationand Bluetooth. In recent years, the rapid development of mobile applications in E-commerce have been drivers of smart phone adoption. ("Smart Phone," 2010). Using this internet and communication technology, library management applications can also be made compatible. This helps the user to access library virtually at his own convienience but under strict security access procedures. As far as library is concerned, only Online Public Access Catalogue that can be used for account

settings, search, renewal, reservation etc. When digital library is concerned, resources that are in digital format can also be accessed from the servers directly as in desktops. (Washburn, 2011)

Security breach is the main concern in implementing mobile applications and if access to library administration software under restricted access model and many other security measures it helps in fund, energy, environment, storage (FEES) sustainability.

Smartphone as a Sustainable Infrastructure

In an average, universities with 1000 users need to have at least 50 desktops for accessing, that can occupy around 500 sq.ft of carpet area with minimum of 2 ton air conditioner that consumes approximately 3 units of power per day. These desktops should be installed with computer tables, chairs, space for mobility, a technician to maintain, etc……but when it comes to smart phones it is purchased by the user (mostly), no need of local area network cables, tables and other infrastructures mentioned above. It even reduces the recurring handling, manpower and maintenance costs. The user himself uses and has the sole responsibility in purchase, upgradation, maintenance etc.

NEED FOR STORAGE MANAGEMENT

Scientific research information are doubling every 2 years. Information explosion will lead to excess information, storage and retrieval hitch. Cloud computing and virtualization can be implemented to make library well managed collection of resources with modern technological implementations that help users at ease. Many benefits like disaster recovery, security, multiple access, sharing etc are made easy with cloud and virtualization.

Smart Phones Usage Has Made Libraries Sustainable through Fees

- **Fund Sustainability:**
  - ◦ Every year library computers should be either updated, replaced, maintained etc. for which funds should be allocated in library budget.

- ◦ Infrastructure upgradation like more number of computers need to be installed to cater increasing strength of library users, space requirements, facility management like additional furnitures, airconditioners, infrastructure maintenance staff etc.

- **Energy sustainability:**
  - ◦ Energy requirement will be increased by new installations of computers and its perpherals, airconditioners, additional modems, signal boosters etc.
  - ◦ To make this energy sustainability more efficient, renewable sources of energy can be incorporated as it is followed in many libraries. Energy sources from solar power panels, wind power mills, biofuels etc are making library more environment friendly and many more libraries are in queue in implementing energy efficient infrastructures, green technologies, green computing, with natural lighting.
  - ◦ Energy efficiency pays back investment in around 8years and recurring expenditure spent on energy is saved from 9th year of investment till its life around minimum of 35 years.

- **Environment sustainability:**
  - ◦ During installations lots of electrical wiring, connectivity wiring etc are required with furnitures forcing library to occupy more space.
  - ◦ Environment of library is covered with fittings and fixtures covering atmosphere inside library with gases and emissions from building, painting and fixture materials.
  - ◦ To sustain the chemical emissions, odour, dust many indoor plants are arranged that helps to absorb such gaseous chemicals and provide a good, healthy air and atmosphere to breathe.

- **Storage sustainability:**
  - ◦ If all the shareable resources are stored in virtualized cloud storage rather than on personalised storage servers, installation of servers, space, funds, additional infra-

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