

## Management issues for the virtual library

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### Abstract

This paper takes a superficial look at the technologies that are impacting society to create a series of discontinuous social changes. These impacts are affecting all social institutions and giving rise to a phenomenon called The New Economy. After discussing some of the New Economy thinking and the expectations people have of businesses and management, conclusions are drawn about the management issues that will increasingly determine the services and style of libraries in the Information Age.

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### Technical inventions and their impact

In the Introduction to their book *Unleashing the Killer App*, Larry Downes and Chunka Mui (1998) described a killer app as an invention or technology which has radical impacts that:

- change society;
- alter the balance of power;
- create discontinuous change;
- provide order of magnitude returns on investment.

They record that throughout history a number of inventions have had that effect including the invention of the Welsh longbow, which gave the English victory at Agincourt, “effectively bringing to an end the Feudal Age”. Downes and Mui observe further:

Change often occurs not slowly and incrementally but discontinuously and in big leaps. The arch, the pulley, the compass, eyeglasses, moveable type, the steam engine, the cotton gin, asphalt, the Model T, elevators, structural steel, the atomic bomb: these are inventions whose impact has extended far beyond the activities for which their creators built them . . . Ultimately, the havoc they visited on social, political, and economic systems has outweighed the impact of their intended usage. Killer apps can create fabulous wealth and breathe new life into a stale economic system. But like the Hindu god Shiva, they are both regenerative and destructive. It is not for nothing that they are called killer apps: our clients are often the companies most likely to be bumped off.

Librarians are particularly aware of the “killer-app” invented by Johann Gutenberg. The impact that the invention of paper and of moveable type printing has had on the world over the last 500 years is immeasurable. Without doubt it changed society, altered the balance of power, created discontinuous change, and even though Gutenberg did not get rich, other early printers did.

What has now been called the Information Age is a concatenation of inventions that meet the criteria of causing an alteration in the balance of power, of changing society, and resulting in discontinuous change. These technologies include the invention of radio and television, of transistors and the silicone chip. Together with digitalisation, printed circuits, packet switching, satellite communications and PCs, we have only part of the technology that has given rise to the

Information Age. Other inventions include object-orientated programming, XML, spreadsheets, client server architectures, the open systems movement, the Internet, and a long series of other “killer-apps” that have changed our world and the way we look at it.

### Changed expectations in the Information Age

Although technology is key to the factors that have given rise to the Information Age, it is not, in fact, all about technology. The Information Age has also given rise to what has been called The New Economy, resulting in changes in people’s expectations. Our understanding of six fundamental economic concepts have changed (MBWorksoft, 2000). These are:

- (1) Value – and what constitutes value.
- (2) Space – and the role of the intermediary.
- (3) Time – and the value and meaning of time.
- (4) People – their expectations and power.
- (5) Growth – adding value through growth.
- (6) Impulse – the key to the virtual world.

#### Value

Value and its measurement were originally based on mass. Gold, silver, steel, beef, chickens and corn were sold according to their mass. In addition to mass, the scarcity of a commodity could often change the value so that supply and demand are also factors in the derivation of value. In this way, the scarcity of diamonds or gold, fabrics or spices often determined the price that people were prepared to pay. Monopolising a scarce commodity was the way to riches (Meyer, 2000).

In the Information Age, especially in terms of electronic or Internet-based commerce, value is determined in a totally different way. Abundance, rather than scarcity of information, determines value. So does convenience. If you can save the customer time, if you can foster a sense of community, or if you can personalise services to the customer through your Web site, you are creating a commodity that people are prepared to pay for. And while scarcity still helps to determine value, in the Internet Age, abundance of information, and facilitating ease of access to it has value. (Meyer, 2000, Seybold, 2000).

#### Space

Space, and the way that we see space has also changed. Distance has vanished (Cairncross, 1997). With the Internet every Web site throughout the world is more conveniently located than your neighbourhood convenience store. It is in your home or office. This phenomenon has the effect of enabling customers to bypass the brokers and traditional intermediaries of conventional business. For example, stockbrokers are going out of business because customers can trade directly on international stock markets. One can buy one’s motor car directly from the factory without doing so through a conventional motor dealer. Travel agents, similarly, are finding their business eroded by people’s ability to book airline tickets, hotel accommodation and car rental anywhere in the world and schedule their own travel arrangements without the need to visit an agent.

This process is known as disintermediation and it often changes the nature of the work done by intermediaries. It creates a concept called an Infomediary who, through an Internet presence, provides a mechanism for aggregating customers and suppliers, thereby facilitating exchanges, creating and capturing value in the process (Mougayar, 2000; Sawhney, 2000).

#### Time

Time is another concept that has changed in our perceptions as a result of the Internet. We have long known that time is money, but now more than ever people are beginning to measure cost in terms of both price as well as time. Time factors dominate Internet success. If it takes too long to download the information from a Web site people will move to another site. The power of a search engine can be measured in terms of the speed at which it finds the Web sites or the information that the customer requires. AMAZON.COM recognises the value of saving people time. Their business is based on being able to supply books anywhere in the world to a person’s door – the delivery mechanism being chosen by the customer personally. And, of course, on the Internet, opening hours are irrelevant. Your electronic business can be open 24 hours a day, seven days a week and 52 weeks a year. In that way, one provides convenience to save people time. Customers are prepared to pay for that convenience (Spulber, 2000).

Very often people think that the Information Age is all about technology, about the Internet, about Web sites and computers and data communications. In fact, it is not about technology. It is all about people and the way they react to or use the technology (Applegate *et al.* (1999), Keen (1985). More so than ever before information technology and the Information Age have forced us to give thought to how staff influence businesses, how customers affect e-commerce, how children are being studied for the way they interrelate with commercial Web sites, simply because children are the most intuitive of computer users. Businessmen are asking what happened to the competition and how this changes the way that managers manage. People factors are changing our expectations in different ways.

#### **Staff and knowledge workers**

Staff and knowledge workers in the information business are the true assets of a company. They are the ones that generate the smart ideas that lead onto success. And yet those assets walk out of the door every evening and are very volatile in terms of their requirements and expectations. They know their value and they demand it. No longer do young people expect to qualify for a career, enter employment, and grow their career through one institution. The modern knowledge worker is in demand and is highly mobile. Unless that is the case, they know they are not worth having. Similarly they are motivated and compensated differently. They demand to share in both the wealth they help create and as well as its management (Tapscott, 2000):

- *Customers* also are aware of the power that they exert on the business. They drive the business and they know it. Furthermore, they expect to share in the wealth that they help to create in that they expect the company to have a corporate responsibility policy and to contribute to the community or to the environment. In the same vein, they expect companies to abide by ethical values and if they do not customers can become the competition or make it difficult for a business to operate. If properly handled, customers can become a

company's best sales force (Jurvetson, 2000).

- *Suppliers*, similarly, can become either the competition or the sales force for an Internet company. Very often suppliers become partners of an Internet company as part of the disintermediation process. Like customers, they too expect to share in the success that they helped to create and they also expect to bargain prices with their customers. They too are vulnerable to competitors (Singh, 2000).

All these concepts have flowed from Stakeholder Relationship Management in business activities, but so far do not seem to have hit libraries in terms of management practices. But they will!

#### **Growth**

Growth is another conceptual area where people's expectations and understandings have changed. For example, Hotmail.com started in 1995 and within 18 months had 12 million subscribers. Although the company only spent half a million US dollars on advertising – which is trivial for an Internet company – its growth has been remarkable to say the least. Part of the success is that Hotmail exemplifies a number of Internet business concepts. First of all it uses its subscribers for viral marketing by leaving a message advertising Hotmail at the end of each e-mail message sent by a customer. At the same time, the site is inherently “sticky”, in that customers have a strong incentive to keep returning to that site. Furthermore, because all subscribers need to fill out a demographic profile, Hot mail can market its Web site to advertisers on the basis of the customer profiles given. Hotmail has been such a successful e-commerce concept that Microsoft bought it (Jurvetson, 2000).

#### **Impulse**

Impulse is the final concept to be discussed as it relates to the essence of electronic commerce. As any shopkeeper knows, the most valuable shelf space is that closest to the checkout till. Why is it the most valuable? Simply because people notoriously purchase on impulse. And why is electronic commerce so successful in this regard? Because the World Wide Web has unlimited amounts of shelf space right next to the till. The Internet breaks the disconnect between off-line media

such as television or print and the demand that advertising in those media creates. The Internet enables instant gratification for a purchase in place of the common demand-leak that flows from conventional advertising and a subsequent purchase (Reid, 2000).

### Implications for virtual libraries

How does this all affect virtual libraries on virtual campuses? With time, in all spheres of life, we can expect the following changes to occur:

- Changes in user expectations.
- Changes in relationships between suppliers, colleagues and consortial partners.
- Changes in the services that businesses (including libraries) deliver and how they are delivered.
- Changes in management attitudes to technology and the way it is used.
- Empowerment of businesses (including libraries) to be more successful in what they do.

Before we explore these changes there are certain key principles of the Information Age that are relevant to an understanding of the forces at play and need to be borne in mind. They are:

- If you own information you can sell it or give it away and still have it.
- You can also know which of your customers has it.
- You can manipulate information to make more information of higher value, sell it or trade it for other information.
- The value of information depends simply on what someone else is prepared to pay for it.

### Comparing traditional and virtual libraries

Traditional libraries used to offer information or services not available elsewhere.

Furthermore, they organised that information uniquely with the librarians providing the services of an Infomediary, as expounded by Mougayar (2000), by interpreting the system and its products for the customer. The libraries completed, transferred and tracked

transactions in the same way that electronic Infomediaries do today (Mougayar, 2000).

These features of traditional libraries are common to virtual libraries. However, virtual libraries add to them the use of the Internet as the delivery vehicle for services. Through their electronic services they are able to rethink their profitability and the return on investment made by their parent bodies. Furthermore, with the convenience of the Internet there is a significant increase in the efficiency and availability of traditional library services.

Whereas traditional libraries were located as close to users as possible by being situated in the centre of the community, virtual libraries have no location because their users can be anywhere in the world. In traditional libraries staff developed and interpreted the library systems, and the information they contained, to the customers. In virtual libraries Infomediary Web functions become the new intermediaries. Users are encouraged to help themselves and the systems by which they do so are customised to make that as easy as possible and as intuitive as possible. In traditional libraries, while business was done in normal or even extended working hours, virtual libraries are accessible 24 hours a day, seven days a week and 52 weeks a year. Convenience becomes the main competitive factor in the virtual library.

### Management issues that will impact on the virtual library

#### Technology adoption

Most libraries today find themselves straddling the traditional and electronic library streams. Their main challenge is to plan their conversion from conventional to electronic formats. To some extent they are driven by the technology adoption of publishers and other suppliers as well as by technological developments among library system vendors. Librarians are not alone in having to live with outdated legacy systems operating alongside the newest technology. Over the years, as an outcome of the evolution of Information Technology, incompatible systems architectures have developed, often managed by separate departments within the organisation. In the process, "islands of excellence" emerge from a sea of obsolete technology. In the networked computing era,



the Internet has begun to break down these islands, blurring the boundaries and creating pressure for the adoption of international computing and telecommunications standards and open systems technologies. Librarians need to be aware of this phenomenon and exploit islands of excellence in order to present to their customers an image that is as advanced, efficient, and effective as possible.

### User interfaces

At the same time, librarians, as always, need to create systems with the user in mind. The user is, after all, the whole purpose for the existence of the library. Library systems and their interface with the user must be intuitively understandable and responsive to the way in which users will seek to interrogate them. The problem of creating systems that reconfigure themselves to user requirements is not a trivial one. The study of human computer interfaces is a recently developed area of academic enquiry that has come to prominence. Too often in the past interfaces have been programmed by people with an incomplete understanding of the way that users might wish to interface with the computer system concerned. Researchers are postulating various ways of improving computer responsiveness to humans. Libraries should use technology to interface with their users so that the information retrieval mechanism is more intuitive than it has been traditionally. There are a number of initiatives taking place to create intuitive user-friendly interfaces. These should be exploited to develop systems that can store and retrieve "owned" information in order to customise the response to users' search needs. Library Web pages can be turned into "learning portals" in order to harness the power of the new economy.

### Future technological directions

Another management issue for the virtual library is that of selecting appropriate technology. Not only is it extremely difficult to keep up to date with technological and software developments in the field, but the situation is complicated by rapid technological innovation, which leads to technological dead-ends. Many information databases available to libraries make use of compact discs (CDs). With the increased emphasis on multi-media communications as

a feature of Internet technology, the emphasis is shifting to that of digital video discs (DVDs). We do not know how long CD-based databases will be with us and what will take their place. Yet it is important to be hospitable to the idea of embracing and exploiting new technologies and new directions. One new concept worth watching carefully is that of the .Net (dot Net) Application Service Provider (ASP) from which one can obtain all the latest software applications needed across the Internet. The .Net ASPs provide the software on subscription as well as all the storage and computing capacity. Access to one's files and software is possible from any Internet-linked workstation, anywhere in the world. Imagine what that would do for libraries wanting to provide a one-stop shop for their users?

### Stakeholder relationship management

This gets us back to the very necessary focus of the library on its users. The principles of the New Economy are forcing businesses, including libraries, to become more sensitive to Stakeholder Relationship Management issues. This means that librarians are coming under increasing pressure to ensure that their institutions fit in with the strategic direction determined by their employers or parent bodies. They need to give clear evidence to employers of the value of the library and the return on investment that the library provides. Similarly, to create the most positive impression of the library's competence and efficiency, librarians are creating strategic partnerships with "islands of excellence" both within the institution and with associated bodies. How can one recognise appropriate strategic partners? In the knowledge industry people are the primary asset and stakeholders can be mobilised in many ways to support the organisational mission. These stakeholders may be staff, vendors, competitors, or indeed any person or group of persons in the value chain, including one's customers (Porter and Millar, 1985).

### Collaboration with consortial partners

Among the stakeholders, of course, are consortial partners. Here the emphasis lies on collaboration, and electronic technologies lend themselves particularly to that activity. Not only do consortia provide opportunities for leveraging the negotiating power of numbers, but they also provide opportunities

for co-operation in service delivery. Within any consortial arrangement, "islands of excellence" should be exploited in order to enhance service and to convey a combined image that is greater than the sum of the component parts.

### Retaining customers

The lessons of e-commerce show that "the winners and losers in this new era will be determined by whether they harness digital technology and Internet access into a pipeline of two-way interaction and information flow between individuals and organisations . . .

Offer unprecedented levels of information exchange between individuals and the organisations that are key in their lives. Hard-wire that relationship with all the trappings such intimacy can provide – for both parties" (Mott, 2000). Stakeholder Relationship Management in the Internet Age applies particularly to relationships with customers. Library management should find ways to create "stickiness" through encouraging a sense of ownership of the library by its customers. There are many ways of doing this. One would be to create systems that require the customers to leave a part of themselves behind. Registering on line, being able to renew books on line, undertaking information and database searches on line are ways in which users interact directly with the library system. If one can exploit technology to personalise the library service in response to that interaction the customer will develop a sense of ownership and belonging that can only enhance the stature and the service of the library concerned. Ways of doing this would be to show each user:

- which books are currently out in their name;
- which items they have borrowed in the past;
- which database searches were recently undertaken and what was found;
- which services the library can offer that have not yet been used but could enhance their use and enjoyment of it.

The idea is to find ways to personalise services in order to delight one's users.

### Relationships with suppliers

Librarians in the Internet Age also have enhanced opportunities for developing and exploiting relationships with their suppliers.

Suppliers should be encouraged to provide expertise and influence in terms of enhancing information service provision to library customers. This can be done by creating partnerships with suppliers through whom information is exchanged and influence and expertise are shared. The library can benefit from endorsements through hyperlinks and suppliers can enhance their own business by similar links to library Web pages. Librarians can therefore negotiate concessions or discounts with suppliers or affiliations that may generate income for the library. One example is the affiliation programme of AMAZON.COM. Many specialist Web sites have affiliation links with AMAZON.COM. Purchases from AMAZON made through a hyperlink connection will result in a 10 per cent commission being paid to the affiliated organisation. There are many such affiliation programmes in the world of electronic commerce that are open to exploitation by libraries.

### Conclusion

Downes and Mui (1998) have identified numerous killer-apps with strategic implications for our society. The killer-apps of the Information Age are driving a new way of thinking about business and business relationships. This is because the vast information-handling capability of contemporary Information Technology creates opportunities to personalise products and services around information itself. These opportunities are of strategic importance for businesses in the Information Era. They are of equal, if not more, importance to libraries.

Among the concepts that are driving electronic commerce today is that in the Information Age information itself is the product. Very often information about a product is more important than the product itself. Libraries own information. They therefore have an inside track in the Information Age, yet often appear not to realise how to use the opportunity.

Second, it must be remembered that value is digital value in the Information Age. Digital information can be manipulated, created or traded. The creation and trading of information is the foundation of electronic commerce. Not only is this because information is a tradable commodity, but

because even when sold, it remains the property of the seller. And the seller knows who bought it. It is also a commodity with a price that depends on how much the buyer is willing to pay. It is highly negotiable and easily distributed.

In electronic commerce, buyers are sellers. Buyers sell information about themselves to sellers, and those sellers buy that information. The result is that traditional roles change and it becomes unclear who is a buyer and who is a seller. This creates an opportunity to be exploited by any business that analyses its value chain.

In the context of the New Economy, libraries are businesses, and need to harness their assets – stakeholders, information and technology – to compete and survive. But killer-apps can be both regenerative and destructive. If librarians do not do this, others will and will put libraries out of business.

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