

Assessing the Preparedness of Information Institutions

For the Knowledge-Based Economy

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Abstract

Organizations, companies, and workers are continuously urged to prepare for the new competitive era, called Knowledge-Based Economy. Effective exploitation of information in organizations appears to be a distinguishing characteristic of this new socioeconomic model. Case studies were carried out in two information institutions in Singapore to assess their preparedness for the Knowledge-Based Economy. Performance indicators were identified in six areas based on the innovative products and services designed and delivered by leading information institutions. The commonly identified new activities that appeared to have been initiated in response to the new economy were listed as parameters that can help assess the preparation of an information institution for its role in the KBE. The study found that the two information institutions used for case studies were quite conscious to play their role in the new economy. They introduced more flexible organizational structures and initiated new services and products to respond to the requirements of the new economy. They also took steps to expand the roles of their information workers and established strategic alliances to strengthen internal communication and external relations. They put in place mechanisms to seek user feedback and made a creative use of outsourcing to allow more time to information professionals to concentrate on value added services. Our experience suggests that once converted into a checklist, the proposed

performance indicators can be successfully used to assess preparedness of other information institutions.

1. Introduction

The concept of Knowledge-based Economy (KBE) has generated tremendous interest in recent years. Chase (1998) predicted the new Knowledge Economy as a period of rapid change – a paradigm shift for information institutions.

Organizations, companies, and workers are continuously urged to prepare for the new era of KBE. Effective exploitation of information in organizations appears to be a distinguishing characteristic of this new socioeconomic model. Since the formal provision of information and knowledge has been one crucial *raison d'etre* of information institutions, it is imperative that to stay relevant in the new environment they respond quickly and appropriately to the challenge of the KBE. Several writers have stressed that information institutions can find a role in the KBE by adopting new methods and tools, re-marketing and repositioning themselves, furthering their knowledge of customer needs, and embedding themselves in the organization they work for (Adam, 1999; Chase, 1998; Choate, 1997; and Neef 1998). Libraries and information centers have also been advised to focus more on evaluating, analyzing, synthesizing, qualifying, and delivering externally created contents (Stear, 1997; Butcher and Rowley, 1998; Skymore, 1997; and Abram, 1997). The information professionals in the Knowledge Economy are also expected to be politically aware of the changes in the organization in order to install themselves as an integral part of the new organization. They should also be willing to refine their roles to function as information managers, research analysts, and knowledge facilitators (SLA, 1997 and Matarazzo & Connolly, 1999).

In Singapore also, the KBE has become a popular topic of discussion in the media, and KBE-related concepts and terms have gained increasing recognition. The Singapore Government has been urging organizations to prepare for this new era. In a speech at the launch of the 1999 Productivity Campaign, Senior Minister Lee Kuan Yew put forth the call that “ as we move into the knowledge-

based economy, we have to change our old ways of thinking and working.” (Every Individual Must Count, 1999). A national lifelong learning system has been put in place in Singapore with a purpose to produce a globally competitive workforce that can drive a knowledge-base economy (Six Features of System Revealed, 1999). Considering the emphasis placed by the Singapore Government on KBE, a research project was undertaken at Nanyang Technological University of Singapore in early 1999 to investigate the implications of the Knowledge-Based Economy for libraries and information centers. This project is aimed at developing indicators that can help assess the preparation of information institutions in responding to the needs of the KBE. Performance indicators were identified in six areas based on the innovative products and services designed and delivered by selected information centers. These areas include organizational restructuring, expansion in roles and functions, new initiatives in products and services, strategic alliances and networking, proactive user liaison mechanisms, and creative use of outsourcing of operations. The commonly identified activities and features that were new in the selected information centers were listed as parameters that can help assess the preparation of an information center for its role in the KBE. Case studies were carried out using these indicators to assess the preparedness of two information institutions – The Information Resource Center (IRC) at the Singapore Productivity and Standards Board (PSB) and the National Library Board (NLB) of Singapore. This paper reports the results of these studies.

2. Methodology

2.1 Selection of Organizations

To draw out the indicators that characterize the contribution of information institutions in the Knowledge-based Economy, ten leading information centers were selected on the basis of their demonstrated move towards preparation for the KBE. These information centers have sought to facilitate their role by managing knowledge within their organizations, moving from traditional repositories of information materials to a place for mediated searches and

centers of proactive information delivery. Based on a review of the latest articles in the professional literature, initially a list of 26 organizations was compiled. Basic data on the information facilities in these organizations was collected from the relevant web sites. It was found that detailed information about the activities of most corporate information centers was not available on the web sites. One possible reason could be that this type of information was intended mainly for internal users and therefore was available through organizational Intranets, most of the time with restricted access. We thus depended on secondary literature and used specialized magazines and journals such as *Information Outlook*, *Online*, and *ASLIB Information*. From this review, we concluded that we could use the information centers of the following organizations for a detailed review of their information support activities to identify indicators of preparation for KBE:

1. United Technologies Corporation
2. Digital Equipment Corporation
3. AT&T Corporation
4. Lockheed Martin
5. Bank of Montreal
6. Owens Corning
7. MCI Corporation
8. Los Alamos National Laboratory
9. The Atlanta Journal-Constitution News Research
10. Ford Motor Company

2.2 Compilation of Performance Indicators

Detailed information was collected on various functions and operations of information centers mentioned in the preceding section to see how their information support activities had changed in response to the KBE. A number of

new activities were noted that demonstrated several common characteristics and consistent patterns. These were considered good indicators of the response of these information centers toward the requirements of the KBE. We grouped these activities in six categories that we thought could be used as parameters to assess the preparation of an information institution to play its role more effectively in the KBE. Only those activities which were reported to have been performed in at least 50 % of the selected centers were considered to be used as indicators. The performance indicators and related parameters are listed below:

- **Organizational restructuring**

- Reorienting the structures according to markets, products or processes
- Becoming flatter and more flexible
- Relying more on informal communication
- Creating flexible work groups and teams

- **Expansion in roles and functions**

- IT specialists
- Trainers/educators
- Negotiators
- Filters
- Navigators
- Knowledge managers

- **New initiatives in products and services**

- Development and/or involvement in the intranet

- Customization and development of databases
- Design of web sites, web pages, and interfaces

- Introduction of push technology-based services and products
- Creating and launching of knowledge products
- **Strategic alliances and networking**
 - Enhancing internal communication
 - Strengthening networking
 - Building new partnerships
 - Expanding external relations
- **Effective user liaison mechanisms**
 - Redefining the user groups
 - User consulting and defining information needs
 - Refocusing newsletters
 - Initiating briefing and online delivery of hot news
- **Creative use of outsourcing of operations**
 - Procurement of information materials
 - Processing operations and services
 - Automated delivery of documents
 - Portals

2.3 Data Collection

For the first phase of the project, the Information Resource Center of the Singapore Productivity and Standards Board (PSB) was chosen as a case study. Among other things, a main reason to select this center was the familiarity and experience of the co-researcher with this organization. PSB is considered one of the leading institutions to take initiatives in response to the KBE in Singapore.

For the second phase, the National Library Board (NLB) of Singapore was used as the case study site. Again, one of the reasons of its selection was the affiliation of one of the researchers with this organization. Nonetheless, NLB also happened to be an organization that is known for its innovative services and creativity and as such was an appropriate organization to be studied for this purpose. These two organizations have ventured into several innovative projects to introduce new services and products. Their initiatives to facilitate the KBE are expected to be important because of their influence on other organizations. In addition to the intimate knowledge of researchers about the programs and activities of these organizations, the following sources were use to identify, verify, and validate information in the six areas chosen as performance indicators:

- Interanets and web sites
- Annual and ad hoc reports
- Planning documents and proposal for development schemes
- Informal interviews with the administration and professional staff

3. Findings

The performance indicators and relevant parameters were used as a checklist to review the activities of the organizations selected as case studies. An organization was considered responsive to the KBE if there were activities either being performed currently or planned in the near future in at least 50% of the listed parameters. Table1 shows a summary of initiatives taken by the information institutions under study.

Indicator/Parameter

-Initiatives/Activities

-PSB-NLB

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Organizational restructuring--

Reorienting to markets, products or processes-x-x

Becoming flatter and more flexible-x-x

Relying more on informal communication----

Creating flexible work groups and teams----

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Expansion in roles of information professionals--

IT specialists-x-x

Trainers/educators---x

Negotiators---x

Filters----

Navigators-x-x

Knowledge managers-x--

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Creating and launching new products--

Involvement in Intranet developments-x-x

Customization and development of databases-x--

Design of web sites, web pages, and interfaces-x-x

Use of push technology -x--

Building knowledge bases----

Creating links to key sites-x-x

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Initiating strategic alliances--

Enhancing internal communication-x--

Strengthening networking---x

Building new partnerships--x

Expanding external relations---x

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Putting in place user liaison mechanisms--

Redefining the user groups-x-x

User consulting and defining information needs----

Refocusing newsletters-x-x

Initiating briefing and online delivery of hot news----

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Creative use of outsourcing of operations--

Procurement of information materials ---x

Processing operations and services---x

Automated delivery of documents----

Portals---

Table 1: Initiatives Taken by Singapore Information Institutions

As shown in the table, both the information institutions seem to have made good progress in initiating activities that can be considered a good response toward the KBE. Specific examples of their initiatives are stated in the section on analysis.

4. Analysis

4.1 Organizational Restructuring

An analysis of organizational charts indicated that the IRC at PSB has been reorganized recently to include the Information Management (IM) section and Research Department (RD) in the information support facilities. IM focuses on the information architecture, responsible to develop and acquire the technology required to store and transmit knowledge; while RD is responsible for conducting research and analyses for senior management to develop repository of knowledge and push information to users through its Library section. By raising its place in the organizational structure, the IRC has been projected as the driver for knowledge management in PSB. While the restructuring of IRC was considered a step forward in managing information in accordance with the requirements of the Knowledge-based Economy, senior professional staff at PSB expressed concerns about the traditional hierarchies of reporting relationships that remain even in the new structure.

Judging from the changes made in the organizational structure, NLB can be considered to be more responsive to the KBE. Since its establishment in 1995, it has reorganized its structure three times to change its look from a government department to that of a corporate body. The latest structure shows new departments like Policy Integration & Research, Corporate & International Relations, Corporate Development, Process Development Professional Services. A closer look at the functions of these departments did indicate the reorientation to new markets and products. However, the reporting relationships and communication patterns did show the traces of old economy in the form of emphasis on formal hierarchies and lack of flexible workgroups.

4.2 Expansion in Roles and Functions

At IRC-PSB, while staff members are quite IT-proficient and are involved in developing Intranet applications and using web technologies, they do not seem to have been able to play an effective role as trainers and filters. A basic user education program was introduced and ad hoc sessions were arranged for users who wished to learn to navigate certain electronic products. But, these cannot be considered adequate to be responsive to the needs of the Knowledge Economy. The negotiating role remained limited to site licenses for databases. A number of instances were reported where services got cancelled for lack of effective negotiations. Filtering role also remained confined to the supply of current awareness service called *Productivity Alerts* (a basic service provided through articles scanned from newspapers and an online news service). Development of IRIS – Intellectual Resource Information System was a good indicator of the recognition of importance of internal knowledge and the intellectual capital of the organization and a good start to play the knowledge management role. It was stated in several planning documents that knowledge management would be the single most important activity of the IRC within the next couple of years. Concrete steps, however, are needed to formalize the process of knowledge management in order for the process to gain acceptance in the organization and IRC to be accepted as a knowledge center.

NLB was found more aggressive in expanding the role of its information professionals. A workforce of more than a hundred ‘ new breed’ of information professionals has been prepared during the last three years. These professionals have been assigned the role of IT specialists, negotiators, trainers, and navigators. Corresponding changes in the scheme of service have been introduced to provide incentives. No noteworthy initiatives, however, were reported for knowledge management and filtering roles.

4.3 New Initiatives in Products and Services

IRC-PSB has taken steps to exploit the Intranet as a promotional and knowledge tool, advertising IRC’ s presence to management, and making available repositories of knowledge to staff. In addition to the internal IRIS database

mentioned earlier, IRS initiated a “ Best Practices” database. This database contains both internal and external sources of information and seeks to fulfill the needs of PSB staff and the industry. Because of the sheer number of departments and centers in PSB, design and development of web resources is left to the individual departments. IRC has taken a leading role in finding a single user interface for cross searching of web resources. The Center also placed its publications online to create a culture of "knowledge online".

Even though NLB's role is different from that of a corporate information center like IRC-PSB because of its focus on public library services, it encouraged innovation and creativity in the delivery of services. New services like *learning center*, *student virtual communities*, *radio-frequency control information material tracking system* are excellent examples of initiatives of services and products that can be considered responsive to the knowledge-based economy. NLB was also active in using the web and Intranet technologies by introducing PANS, Library @Orchard, Internet @ Library, and Video-on-demand, a broad-band-base service.

4.4 Strategic Alliances and Networking

Good opportunities of leading the knowledge management efforts and strengthening internal networking became available to IRC as a result of its new place in the organizational structure. While ad hoc collaborations did occur with the Product and Process Development Center and System and Automation Center, IRC could not pursue organization-wide systematic collaboration that could have resulted in improved internal communications. IRC at PSB took steps to improve its relations with other partners in the delivery of information. Two noteworthy alliances are with InfBiz and TiARA. InfBiz aims at providing comprehensive business information to Singapore companies through a network of seven leading information centers. TiARA is a multi-agency collaborative project to serve as one-stop information provider. Considering its place in the industry, however, one would expect IRC to have initiated better alliances with information providers and vendors.

While no noteworthy initiatives could be identified for enhancing the internal communication at NLB, several multi-agency projects in the country and outside were reported to be in place for creating better external relations. NLB took a leading role in establishing a forum for national libraries of ASEAN countries and initiated collaboration with the National Computer Board and several other information institutions in the country.

4.5 User Liaison Mechanisms

Both the institutions took steps to redefine their user groups. IRS-PSB regrouped the services for industry standards and patents while NLB identified new groups of young adults, which were earlier neglected. The study, however, did not indicate a regular and formal mechanism to obtain feedback from users. It is desirable that an effective mechanism is established to seek input from users for various services provided. Methods used by other information institutions, such as online surveys, on-site surveys, and focus groups, can provide good models in this regard. Despite the fact that NLB has several forums to seek input from users, no noteworthy effort was made to promote active user liaison.

4.6 Outsourcing of Operations

It was quite surprising that IRC did not engage in outsourcing at all. The main reason given by staff interviewed for this study included the influence of culture of the organization where bureaucracy insists on carrying out most of the activities in-house. A concerted effort needs to be made to change this aspect as the staff at IRC has limitations and excellent opportunities of outsourcing several activities do exist in the country. On the other hand, NLB was found to be on the extreme side of using outsourcing for its operations and services. There was resentment from the professional staff against NLB's policy of outsourcing selection function.

5. Conclusion

The two information institutions were found quite conscious about their role in the knowledge-based economy. They introduced organizational restructuring to bring their activities in line with the new requirements and ventured into several innovative projects to introduce new services and products. Web-based

resources and Intranet technologies were used to share information and enable collaboration. The information professionals seem to be quite active in their role of IT-specialists. However, steps need to be taken to expand their roles as negotiators, filters, and knowledge managers. The information institutions used as case studies were not found very active in introducing systematic methods of obtaining user feedback. The study revealed that while one institution did not use outsourcing effectively, the other was on the extreme side causing resentment among the professional staff for outsourcing work that was supposed to be performed by information professionals. The case studies did demonstrate that the proposed performance measures could be successfully used for assessing the preparedness of information institutions for the KBE. Their use was found more appropriate for assessment in information centers in the corporate sector. The indicators can be further refined and put in the form of a detailed checklist that can be used more conveniently as a tool for objective assessment of information activities.

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