

# A Vision for a Knowledge Society and Learning Nation: The Role of a National Library System

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*This paper reflects on the evolution of a knowledge society—a key ingredient of economic competitiveness. More specifically, it reviews the relevant literature on the subject in order to perform a grounded theory case analysis on the policies of the National Library System (NLS) in Singapore. The research methodology comprises three stages—formulating a model for communal knowledge sharing, an environmental scan of news and policy releases about the national library, and in-depth interviews with senior library professionals about the impact of national libraries. The findings of the field study indicate that most information and knowledge professionals depend on an effective NLS to promote learning and knowledge sharing by cultivating social and relational capital as well as the well-understood structural repositories. The article concludes that effective policies inexorably lead to a culture for learning and development.*

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## Introduction

The increasing importance of knowledge and learning is an international trend as rapid technological advances have resulted in a highly integrated global marketplace. Economies which are versatile and adapt rapidly to the changing environment by exploiting the opportunities offered by knowledge capital will prosper while those which lag behind, may lose their competitive edge (APEC, 2000; and UNESCO, 2005). The central role of knowledge and learning has been embraced universally (Fahey and Prusak, 1998; Houghton and Sheehan, 2000; Conceicao *et al.*, 2003; Rodrigues, 2003; Powell and Snellman, 2004; Dolfsma, 2006; and Soete, 2006) and has raised challenges for countries in the formulation of public and economic policies.

The OECD coined the term Knowledge-Based Economy (KBE) and defined it as an economy which is “directly based on the production, distribution and use of knowledge and information” (OECD, 1996). This idea was later expanded by the Asia Pacific Economic Cooperation (APEC) which stated that in a KBE, the “production, distribution, and use of

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knowledge is the main driver of growth, wealth creation and employment across all industries” (APEC, 2000). Hence, by the APEC definition, not only does a KBE rely solely on high technology industries for growth and wealth production, it also requires industries in the economy to be knowledge-intensive. Asia Pacific Economic Cooperation (APEC) further expanded the notion that the knowledge required by a KBE is wider than purely technological knowledge; also including, for example, cultural, social and managerial knowledge. Implicit in this definition is the capability of an economy to learn and share such instances of explicit as well as tacit knowledge.

The speed of change in the typical KBE cannot easily be matched by the speed of change in the educational levels of a workforce. The prevailing trend in KBEs is that the pool of low-skilled jobs steadily becomes smaller (mostly off-shored and outsourced) and newer jobs require more knowledge and new competencies through investments in research, development and innovation. There is hence, a need to formulate special policies to support the large sector of the population to continuously learn and upgrade their skills and compete globally (Mansell, 2002; Olssen and Peters, 2005; and Soete, 2006). This is a phenomenon that is sometimes euphemistically termed as life-long learning, workforce enrichment or skills development. Whereas it was previously thought that these programs be administered through higher education and vocational training institutes for working adults (Rodrigues, 2003; and Olssen and Peters, 2005), it is now acknowledged that the quest for knowledge and learning, in order to be effective, must be inherent within the community at large and that this could be effectively delivered through knowledge channels such as libraries, public broadcasting and national information services (Miao, 2001; Cheng *et al.*, 2004; Dvir and Pasher, 2004; Paganetto, 2004; and Kahin, 2006).

Singapore appears to be a KBE in a perennial hurry. Its lack of natural resources and small domestic market exposes it to the fiercest global competitive pressures. Singapore’s need to become knowledge-based has accelerated over the past five years in the face of competition on price with the lower-cost economies such as Thailand, Vietnam, India and China and on innovation with the advanced economies such as Japan, Australia and Switzerland. Singapore attempts to compete on talent and knowledge and deliver higher value-added activities. In less than a generation (20 years), Singapore has transformed itself from mostly manufacturing and trading activities to services and innovation. This phenomenon has been helped by geo-politics and a free flow of capital and talent. However, one aspect of this transformation has received insufficient scholarly attention—the role of the national information-communication technology plan and information agencies such as the National Library Board (NLB) and the Media Development Authority.

In this article, we distill the key impact of the still evolving role that is played by the National Library in creating a knowledge society and learning nation. The Singapore story, while unique in the sense that it is a city-state with a population of 4.59 million and an area of 697.1 sq km, is nonetheless applicable to other aspiring knowledge societies in some of the public policy initiatives being undertaken. In the realm of the National Library System (NLS)—the focus of this article—the central message is how one of the systems has gone

beyond 'books and storytelling' into 'new media and knowledge sharing' and more specifically, how knowledge strategies contributed to the National Library's mission. Following next is a review of the literature on developing knowledge and learning societies followed by the case background of the NLS in Singapore. After which, we describe an action research methodology that was used to investigate the policy impact of creating a knowledge society and learning nation. We then analyze our findings and conclude with some generalizations that may be carried over to other societies.

## Literature Review

Here, we review the research literature in knowledge strategies and building structural, human and relational capital at the community level. Al-Hawamdeh and Hart (2002) had pointed out that a KBE is one with the "capacity to absorb, process and apply knowledge or intellectual property and translate it into a key source of competitive advantage." They have pointed out that one of the characteristics of the KBE is the emergence of Knowledge Management (KM) as a strategic imperative. Knowledge Management is defined as the identification, optimization and active management of intellectual assets, either in the form of explicit knowledge held in artefacts or tacit knowledge possessed by individuals and communities (Snowden, 1999).

Sveiby (1996) cites Polanyi's three main concepts of knowledge: (1) true discovery cannot be accounted for by a set of articulated rules or algorithms; (2) knowledge is public but also to a very great extent personal; and (3) the knowledge that underlies the explicit knowledge is more fundamental since all knowledge is either tacit or rooted in tacit knowledge. According to Davenport and Prusak (2000), "knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knower. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms." Hence, such collective knowledge encompasses many perspectives, from technology-based information systems to structural issues such as policies, procedures and processes, to softer issues such as people and culture, essentially managing the dynamic and continuous cycle of creating, codifying, transferring and sharing of knowledge.

Other researchers have classified knowledge as the stock or flow of tacit or explicit knowledge. As a stock, knowledge is conceived as a resource that can be captured (explicit knowledge) and stored in a central repository such as an organizational database or a corporate library. On the other hand, knowledge flow connotes that knowledge is not static and that it requires the continuous effort of individuals to create, develop, transmit and put the knowledge to greater use. Fahey and Prusak (1998) have suggested that emphasizing knowledge stock to the detriment of knowledge flow is one of the 'deadliest sins of KM'. Hence, getting knowledge to flow smoothly throughout an organization or society is a key objective of any knowledge policy.

Hansen *et al.* (1999) recommend that developing an effective electronic document management system, investing heavily in IT to connect people to reuseable codified knowledge, recruiting technology savvy people and rewarding staff for contributing to document databases presents a 'reuse economics' model. On the other hand, a personalization strategy calls for

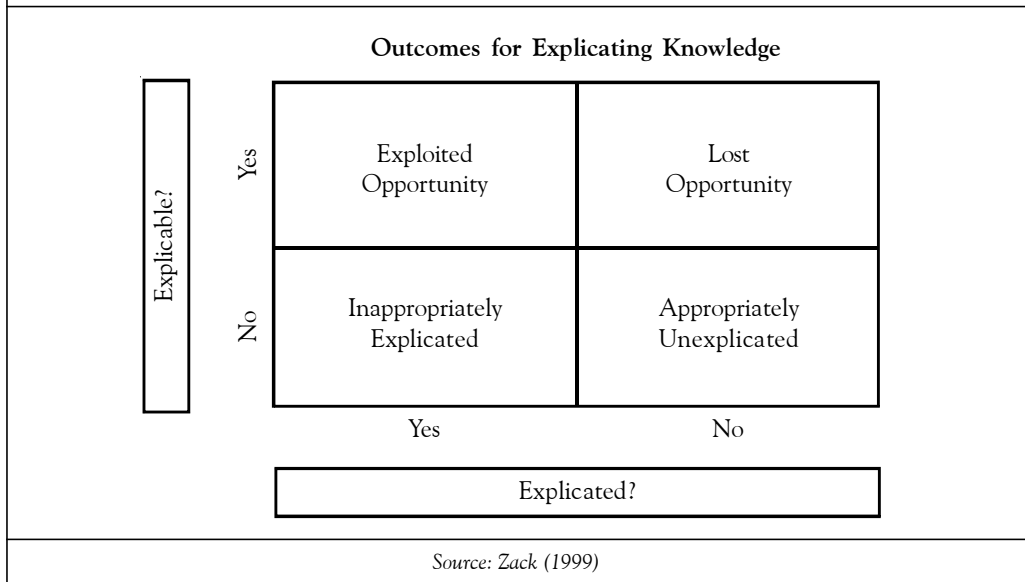
the development of networks and expert databases to link people up so that tacit knowledge can be exchanged, rewarding staff for direct knowledge sharing and recruiting people who enjoy problem solving and are ambiguity-tolerant. This 'expert economics' model is suitable when an enterprise (or society) offers highly customized and value-added services to its customers. It would seem that manufacturing KBEs should focus on codification and innovative KBEs should focus on personalization—but this is yet to be ascertained empirically.

However, Hansen *et al.* (1999) caution that it is futile to straddle both strategies. For an organization which relies on codification strategy, 80% of its resources should be committed to codification and the remaining 20% on personalization. In this scenario, excessive investment on personalization (at the expense of codification) will create an expensive and unwieldy system which fails to tap on codified knowledge to deliver high quality information quickly to the customers. This idea is refined further in Haas and Hansen (2005). One surprising finding is that people are not always better off obtaining and using more knowledge. In certain situations, it undermines performance. The two mediating factors are the level of team experience and task competitiveness. Obtaining and using electronic documents (codified knowledge) is more likely to hurt a team's chances of winning a competitive bid when the team is experienced and competition is high. This failure of codification strategy could be attributed to several factors: (1) knowledge in the databases is out-of-date; (2) codified knowledge cannot be easily tailored for the current situation; (3) codified knowledge are more likely to be 'common knowledge' and does not deliver sufficient value-added services in a competitive market; and (4) people with expertise are therefore better off tapping on their tacit knowledge instead of spending time in locating and reusing codified knowledge.

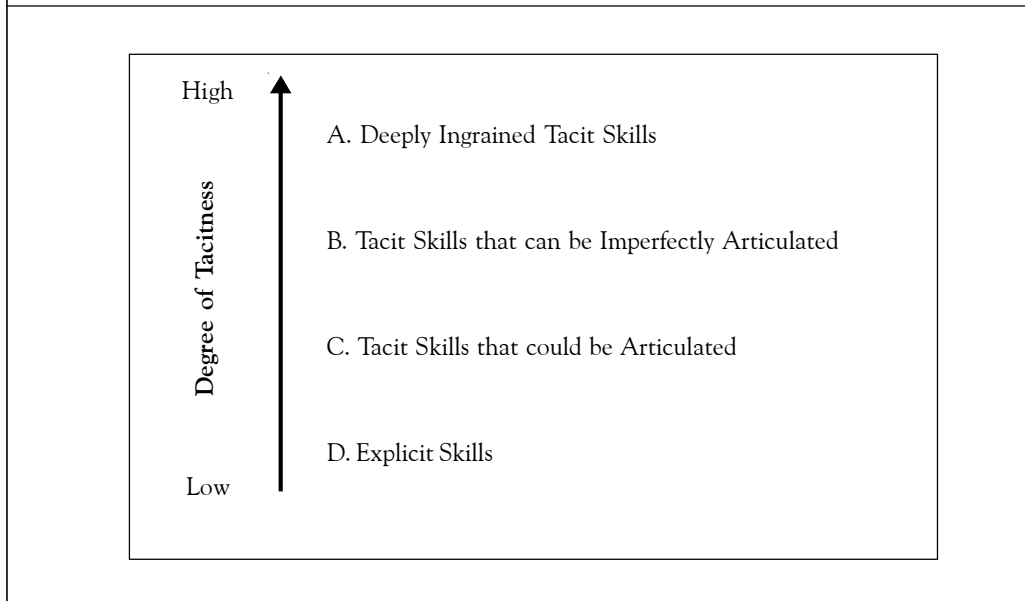
It is interesting to note that even explicit knowledge is seen to be based on tacit knowledge. Zack (1999) adds that it is important to know what knowledge should be explicated and what should be left tacit. In a 2x2 matrix on explicating knowledge, he illustrates the four possible outcomes in attempting to do so (Figure 1). When potentially explicable knowledge is not harnessed, it represents a lost opportunity. The ideal scenario is to leverage on all explicable knowledge to exploit available opportunities and maintain one's competitive edge. However, he also cautions that attempts to capture the most tacit knowledge may be counterproductive. This is because the knowledge codified may not adequately capture the context and thus loses the very essence of the tacit knowledge. Applying inappropriately explicated knowledge could lead to disastrous consequences as staff do not have a proper understanding of the strategy.

Ambrosini and Bowman (2001) suggest that tacitness may be viewed as a continuum which is shown in Figure 2, ranging from explicit (point D where ideas can be easily codified and shared) to deeply ingrained tacit knowledge (point A) where it is impossible to articulate and will always remain tacit. At a lower degree of tacitness (point C), unarticulated knowledge could be shared readily by probing or asking the right questions. As the degree of tacitness increases (point B), knowledge can be transferred only indirectly by using methods such as metaphors or storytelling.

**Figure 1: Explicating Knowledge into the Community**



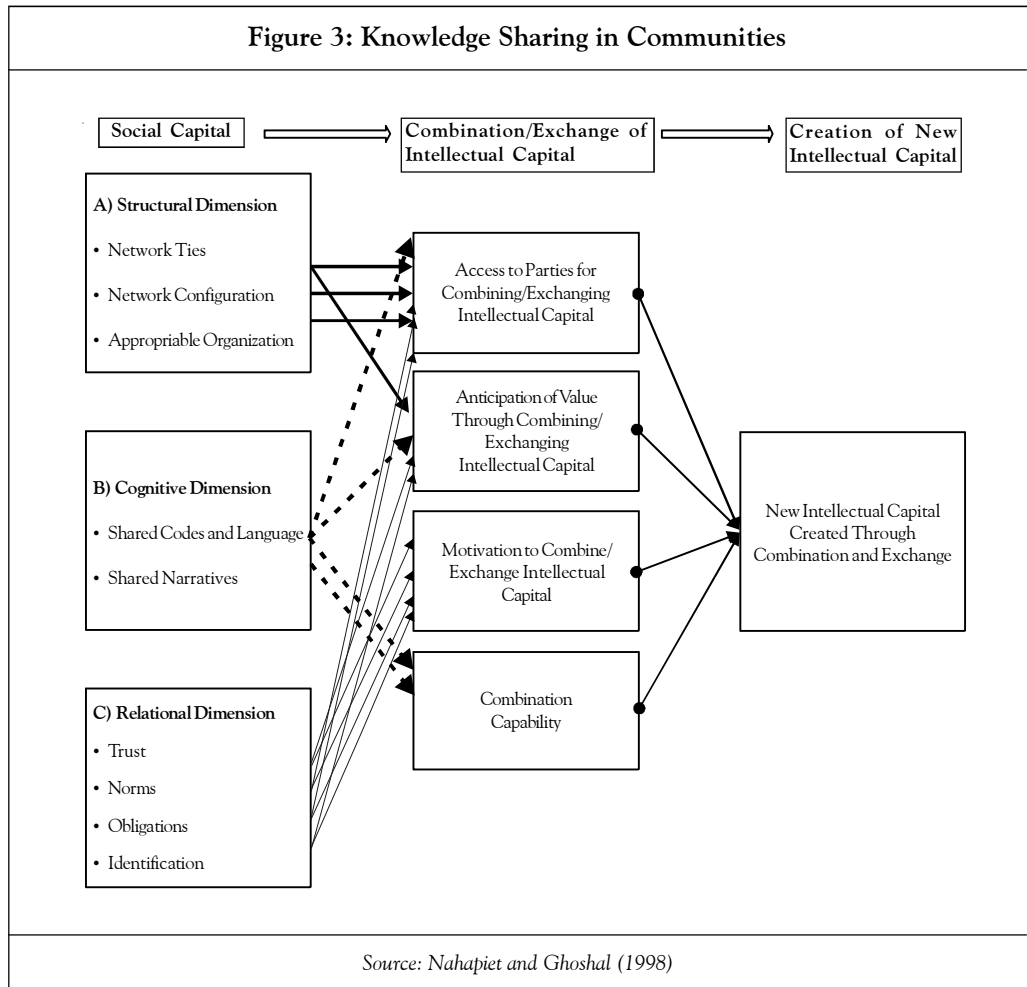
**Figure 2: Moving up the Tacit Chain**



Both Zack (1999) as well as Ambrosini and Bowman (2001) treat tacitness as a variable, with the degree of tacitness being a function of the extent to which the knowledge can be codified. Visualizing tacit knowledge as a 2x2 matrix or a continuum provide new ways of thinking about a KM strategy. It makes it easier to systematically consider tacit knowledge gaps and opportunities and recommend appropriate follow up actions.

Ambrosini and Bowman (2001) have hence pointed out that the degree of tacitness is personal and context specific. Adopting a social constructivism approach, they argue that people construct their understanding of the world based on their experiences. For instance, it is easier for two staff with similar educational background and experience to exchange knowledge. Hinds (1999) discovered that experts tend to underestimate the difficulty non-experts will face in performing a task. When experts give feedback or instruction, it is important that it is provided from the perspective of a non-expert. Thus, knowledge transfer is unlikely to be successful unless it is communicated in a manner which is accessible and comprehensible to the non-expert recipients. Compared to the non-experts, experts have different mental models due to their experience.

Nahapiet and Ghoshal (1998) call this lack of common language the cognitive dimension of social capital. Attributes of the cognitive dimension include a shared paradigm and a common understanding of organizational goals. Though, strictly speaking, not social but intellectual, the cognitive dimension strides between social and human capital. The two



other dimensions are structural and relational. Structural dimension refers to the formation of both formal and informal networks that enable individuals to identify others with potential resources while relational dimension addresses issues around trust, shared norms and values, obligations and identification among members of a group.

Figure 3 shows a schematic of the model proposed by Nahapiet and Ghoshal (1998). The structural, cognitive and relational dimensions are shown to lead to the creation of new knowledge via intervening (and interactive) variables such as access, exchange, motivation and combination. These three dimensions of social capital are not mutually exclusive. For instance, strong interaction ties among staff from different departments (social dimension) improve intradepartmental communication, enable information to be shared more freely and create a trusting working environment (relationship dimension). In turn, such a relationship helps to create common values and a shared vision (cognitive dimension).

According to Nahapiet and Ghoshal (1998), “the extent that people share a common language facilitates their ability to gain access to people and their information. To the extent that their language and codes are different, this keeps people apart and restricts their access.” Increasing society’s social capital will positively impact four intermediate variables and subsequently foster the creation and sharing of organizational knowledge. The four intervening variables are: (1) access to parties for combining or exchanging intellectual capital; (2) the anticipation of value through combining or exchanging intellectual capital; (3) the motivation of individuals to combine or share intellectual capital; and (4) the ability of society to change according to the needs of its outside environment.

Under the social capital approach, the primary function of KM is hence to encourage the sharing and synthesis of knowledge among different groups by building a culture of trust and collaboration. These cultural values are usually deep-rooted and strongly influence the behavior of its citizens. A culture that promotes sharing and relationship building could lead to greater knowledge transfer and promote innovations.

At a macro level, a learning nation must make a conscious effort to manage the flow of new and existing knowledge and ensure that knowledge is easily accessible to all. According to Senge (2006), it is skilled at creating, acquiring and transferring knowledge throughout the institution, and modifying its behavior to reflect new knowledge and insights. Nahapiet and Ghoshal’s (1998) emphasis on creating the social capital to enable individuals from different backgrounds to build trust, inculcate shared values and develop valuable networks could be an effective way to build a knowledge society.

Hence, the choice of knowledge strategies (Table 1) is necessarily critical as is the public policy instruments that make a knowledge sharing culture and a learning nation possible. It is also abundantly clear that high value lies in the sharing of tacit knowledge within a society. This therefore goes beyond the classical view of libraries as repositories of explicit or codified knowledge. Next, the article examines the plausibility of such a proposition with a case study of the NLS of Singapore.

**Table 1: Choice of Knowledge Sharing Strategies**

<b>Theory</b>	Hansen <i>et al.</i> (1999)	Zack (1999)/Ambrosini and Bowman (2001)	Nahapiet and Ghoshal (1998)
<b>Approach</b>	Relative importance of tacit and explicit knowledge in creating value for customers	Tacitness as a variable	Social capital
<b>Focus</b>	Codification vs. personalization strategy	Explicable vs. explicated knowledge	Social relationship and cognitive dimensions
<b>Policy Recommendations</b>	Choose a predominant codification or personalization strategy for structural and relational knowledge respectively	Use NLS to seize exploitable opportunity and identify lost opportunity	Use NLS to build trust, shared values and the social knowledge network

### Case Background and Context

The NLB ([www.nlb.gov.sg](http://www.nlb.gov.sg)) was established on September 1, 1995 as an agency of the government to spearhead the transformation of library services in Singapore in the information age, where digital resources are key to national intellectual capital. As a Statutory Board, the NLB with its own Board of Governors, is allowed flexibility in operational decisions and policy formulation, which ministries would not enjoy.

The NLB's stated mission is to provide a trusted, accessible and globally connected library and information service so as to promote a knowledgeable and engaged society. This will fulfill its vision of creating an inspiring beacon of lifelong learning, bringing knowledge alive, sparking imagination and creating possibility for a vibrant and creative Singapore.

The NLS in Singapore comprises the National Reference Library, three regional libraries, 19 community libraries, two community children's libraries, and houses collections in the four official languages—English, Chinese, Malay and Tamil. The NLB traces its history back to the establishment of the first public library in the 1820s, as a result of suggestions by Sir Stamford Raffles, the founder of modern Singapore. Launched as a school library, it grew into a public library under the name of the National Library of Singapore.

As Singapore gained independence in 1965, and as the population spread into the suburbs known as 'new towns', the library, in collaboration with the city's urban planners, established a presence in the heartlands, by building a branch library in most of these new towns built by the Housing and Development Board (HDB)—another Statutory Board. These branch libraries are physical extensions of the main library, rather than distinct institutions in their own right, bringing libraries closer to Singaporeans and connecting them with the outside world of letters and pictures.

In 2005, the main library moved from its old premises at Stamford Road to its new home at Victoria street in the city's civic district. Located on a 11,304 sq m site, the new building is a

16-storey, two-block development which comprises space for the explicit and structural as well as *ba* (Nonaka *et al.*, 2000) for the exchange of tacit and human capital.

The current building houses the Lee Kong Chian Reference Library, Central Region Lending Library, a performing arts center managed by the National Arts Council, two outdoor gardens for a touch of tranquility, two cafes and a penthouse lounge area with a panoramic view of the island of Singapore. Other facilities at the library include free 100 Mbps wireless access to the Internet, use of reading, meeting and seminar rooms and a sheltered open space that hosts regular events. Not only does the flagship building provide library services and products, it serves as a civic center, where people meet to interact socially, entertain themselves at events hosted at the premises, and hence create a social learning space to acquire and share knowledge.

The Governing Board of the NLB is appointed by the Government. The Chief Executive Officer (CEO) heads the organization, with a team of senior directors overseeing the six operational groups, each of which is a logical grouping of divisions supporting the organization's objectives. The CEO's office plans, coordinates and manages the organization's corporate development initiatives, providing overall leadership and strategic directions to the entire NLS. Emphasizing the importance of corporate governance and professional ethics, an internal audit function and ethics committee reports directly to the CEO.

The group headed by a deputy CEO functions to plan, administer and manage the National Library functions, collections and services, including the National Reference Library, promote and enhance the reference resources and products both on-site and off-site. Target customers include researchers, government bodies, college students, working professionals, the general public and other libraries both in and outside Singapore. As the National Library office, it administers legal deposits, a statutory provision requiring Singapore publishers to provide two copies of every publication to the Board, regardless of form or medium.

The Organizational Resources and Systems group, made up of corporate services and KM divisions, supports the board's corporate resources needs in achieving organizational excellence. The board places strong emphasis in providing a collaborative working environment and cultivating a quality conscious and knowledge-enabled workforce.

The Technology and Innovation Group, the technology arm of the organization, through research and innovative application of technologies, provides service innovation, library products and services that create new possibilities for knowledge acquisition and sharing for library users.

The Public Library Services group manages the network of public libraries sprawl across the island state. It serves in providing, promoting and enhancing the use of public library resources and services.

The library and professional services group supports NLB in collections development, procurement, cataloguing, processing, and the distribution of all library and heritage materials.

In short, the NLS of Singapore is constituted to be a logically central but geographically distributed repository of explicit as well as tacit knowledge sharing. Its governance, structure and resources are aligned to support the mission of propelling Singapore through the knowledge era.

Ershova and Hohlov (2000) suggest that the library has to play an anchoring role in the emerging knowledge-based economy. Libraries should ensure that the information is properly preserved and make it usable for everyone in need of it. In addition, libraries are in a unique position to be both a catalyst and a participant in the intellectual process that transforms information into knowledge, and knowledge into wisdom. The library, being a place for all users and communities, must impart and disseminate information to the people, empowering them to access the wealth of knowledge available electronically from diverse sources (Miao, 2001). Such notions are fast becoming *passé*.

The Government of Singapore has strongly acknowledged the crucial role played by national libraries in a KBE. As the Minister for Education remarked, the library should continue its role as a repository of knowledge and point of access for information resources as it is a venue that is accessible by the public through its geographical outreach. More importantly, it functions as a knowledge guide to classify, organize and index this knowledge, to help users know what is out there and to help them find it (Teo, 2000). Such a commitment cannot be understated and the NLB has over the years been able to deliver on this aspiration.

In its own view (NLB, 2005), the NLS makes it possible for members of the public to have access to information and knowledge resources and contribute to a knowledge-based economy in the following ways:

- Supporting research and development, through providing an access framework for Singapore's research community by developing a single reference gateway to resources on intellectual property, patents and designs, technology management, commercialization and new value creation.
- Coordinating resource sharing among Singapore's applied research collections and build strengths in areas designated as high priority for Singapore's economy, e.g., life sciences and biotechnology.
- Supporting inventors, innovators and entrepreneurs in knowledge creation by coordinating access to national and international databases of patents, trademarks and designs by compiling a national directory of expertise and making available a national research registry.
- Helping Singapore organizations exporting their knowledge by acting as a gateway to Singapore's knowledge resources and assets, which are represented in its published content, current research, home-grown brands and experts in different fields.
- Helping individuals and organizations acquire new knowledge by providing commercial and business intelligence services, thereby giving Singapore entrepreneurs and

Small Medium Enterprises (SMEs) access to information on overseas markets and new developments in science, technology and business process innovation.

- Supporting the productive application of knowledge in Singapore's economy by promoting life-long learning, gearing libraries services and content to support specific skills upgrading programs and providing information services that support industry productivity improvements. To promote the love of reading, knowledge acquisition and sharing among Singaporeans, Nationwide reading initiative, 'READ! Singapore', was introduced. Outcome is various reading clubs formed at respective branch libraries to let Singaporeans discover and deepen joy of reading by discussing and sharing personal perspectives and social experiences through books.

In its Library 2000 (L2000) Plan, the NLB had set in motion a plan for the reinvention of Singapore's public library system to support the transformation of Singapore into a knowledge-based economy. This has, by and large, been delivered using internal auditing and public survey figures as key performance indicators. In the next phase, it has set for itself the target of a more innovative approach in delivering public library services.

The Library 2010 (L2010) strategic plan sets out NLB's direction for the next five years, following the success of the L2000 Plan. In this next phase of development, the NLB will move from process reengineering and infrastructure development to a repurposing of the library system in Singapore. In this phase, the NLB will be positioned to deliver the world's knowledge to Singapore to create a positive social and economic impact for Singapore and Singaporeans. The NLB will tackle changes brought about by Singapore's move into a knowledge society and support the society's aspirations—'Singapore Is Opportunity', 'Best Homes' and 'Engaged Citizens'—more holistically.

Libraries must reinvent and reposition themselves to better contribute to a learning society and provide more knowledge-based services. In so doing, the NLB will help to nurture a society of life-long learners who can accelerate the creation of intellectual capital and stimulate new cycles of national innovation to aid our citizens in adapting to a competitive knowledge-based economy. The NLB will bridge the growing divide between the knowledge-rich and knowledge-poor in the society by delivering programs and initiatives that serve the diverse needs of the communities, including economic, social and self-development needs. Specifically, libraries will extend their outreach and deepen their services to the communities that are currently underserved, e.g., minority communities, unemployed adults, lower educated workers, people with disabilities and retirees. In addition to enhancing the learning capacity of the nation, NLB will also strive to create the collaborative space and environment that build social capital and deliver knowledge dividends for Singapore.

Hence, in 1995, when the L2000 Plan was formulated, Singapore was at the cusp of the knowledge economy. Today, Singapore is in the thick of it, and needs to move to an even higher order of intellectual activity. The key components of this approach are the development of digital content, search and delivery mechanisms, enabling the NLB to play the role of 'knowledge concierge' for businesses, professionals, SMEs and government agencies.

Therefore, the follow-up L2010 Action Plans aim to deliver the following outcomes:

- As a first stop for Asian content and collection services—the gateway for the world’s knowledge on Asia;
- A vibrant network of public libraries transformed into social learning spaces;
- Self-sustaining and self-renewing learning communities—nurturing learning communities or communities of practice in neighborhoods and workplaces;
- Information and knowledge services that power a competitive economy, supporting professionals, entrepreneurs, companies and the Government; and
- Improve efficiency in its back end supply chain operations so that library materials are released to the public more quickly and at lower cost.

To achieve the above outcomes, specific L2010 action programs will:

- Build a network of knowledge assets and make them accessible;
- Leverage on technology especially to support collaboration;
- Organize around customer communities;
- Expand professional competencies of staff to deliver the objectives; and
- Measure the impact to ensure continuing value and relevance.

It has not been a loss to the NLB that macro KM is one of the key enablers to achieve the L2010 outcomes. Following next is the formulation of a field research methodology that investigates the effectiveness of the NLB’s strategies.

## **Methodology**

The L2010 report describes the contributions of the NLB to the KBE thus:

Libraries help in nurturing a society of lifelong learners who can accelerate the creation of intellectual capital and create a new cycle of national innovation. This is an important factor of competition, much needed for success in a competitive knowledge-based economy. In the coming years, knowledge will take on an even more critical role as a social differentiator between communities and between nations. The NLB will have to therefore ensure that it continues to deliver learning and knowledge easily and affordably to level up user communities and help maintain social cohesion. At the same time we will provide individuals, companies and government agencies with the real-time knowledge access that is necessary to succeed in a globally competitive environment.

To what extent was this even possible? Can the structural, social and relational dimensions of knowledge sharing be co-promoted? And what could the NLB do towards this lofty end? The primary objective of the field research was to obtain a first level understanding of the

organizational and KM initiatives at the NLB and their effectiveness in fulfilling the promised impact of the L2010 vision in creating a knowledge society and learning nation. More specifically, we wished to determine the extent to which the NLB promoted knowledge creation through a combination of structural, cognitive and relational dimensions. This was in order to distil lessons that could be put to use in other KBEs. In short, the field research methodology sought to triangulate within the NLB's stated mission, media and public perceptions and the informed view of professional librarians.

Based on our literature review, we have synthesized a framework which considered the structural, social and relational dimensions of knowledge sharing and learning. We also noted the desirability of maintaining the tacitness of a society's knowledge and the potential for explicability. Hence we posit that a NLS exists to promote both aspects of knowledge sharing and learning—maintaining a structural repository as well as strengthening social and relational links within society. We investigate this in our field study of the NLB. In the first part of the field research, we scanned the mass media (broadcast and print) for newsworthy reports about the NLB—flattering as well as otherwise. We also noted public feedback and criticisms in the same channels. Such an environmental scan represents third party reports of highlights of the NLB's achievements as well as failures. Some of these are excerpted below.

## **Failures**

One of the key thrusts of the L2000 Report is to bring the library closer to the people by creating a network of regional, community and children libraries. User experience has also been significantly enhanced by the use of self-check machines, introduction of free internet services and NLB business process re-engineering to improve customer service and logistics issues.

However, we are also reminded that a lot needs to be done to “bring knowledge alive to the entire spectrum of the Singapore population.” Users have written to Singapore's major daily, *The Straits Times*, to urge the NLB to adopt a more open approach, calling for an increase in loan quota and the abolishment of fees imposed for book renewals and reservations (“Ease Library Rules to Promote Reading”, *ST Forum*, August 14, 2007; and “National Library is Inflexible. It Sticks to Policy Without Thinking”, *ST Forum*, November 23, 2006). Noise in the library seems to be perceived as a perennial problem (“Children Treat National Library Like a Playground”, *ST Forum*, May 22, 2006). The NLB has explored and implemented strategies such as demarcating quiet zones, relocating the children's section to the basement, making library announcements and getting library volunteers and security guard to patrol the reading areas. However, it has yet to succeed in the daunting task of maintaining quiet in the library.

## **Achievements**

The NLB has contributed greatly to community building and supported knowledge creation in various ways. By creating a broadly dispersed system of three regional libraries, 19 community libraries and 10 children community libraries in an area less than 690 sq m (as of March 31, 2008), it provides a highly accessible social learning space, drawing people of different ethnic

groups and ages. Many students have congregated in the libraries to work on research assignments and to prepare for examinations. It is also a common sight to see parents with young children attending regular storytelling sessions and holiday programs. Books on topics such as personal development, travels and information technology are especially popular with working professionals. By accommodating and addressing these diverse needs, NLB has transformed libraries into 'lifestyle products' and cultivates greater social interaction and trust among people. In FY07, NLB has 1.97 million registered users and loaned out 28.6 million items.

It is interesting to note that for the last five years, the cumulative loan statistics ranges from S\$27 mn to S\$29 mn while visitorship has risen steadily from 31.2 million in FY03 to 37.8 in FY07. This growth can be attributed to NLB's proactive attempts to expand its role from an information provider to a knowledge hub. For instance, it has participated in community projects to identify and codify potentially explicable knowledge embedded in newspapers archives and historical clan documents. Through book talks, exhibitions, seminars and conferences, NLB facilitates the creation of new social networks and bolsters the transfer of tacit knowledge among people. More specifically, NLB has contributed to societal knowledge creation in four main ways.

1. Nurturing knowledge communities:

- The National Library and the Asia Competitiveness Institute of the Lee Kuan Yew School of Public Policy organized Colloquia on understanding the role of Singapore in a larger Asia" (Press release date: May 17, 2007).
- NLB launches exhibition on local music from 1960s to the present day (Press release date: April 5, 2007).

2. Developing future intellectual capital potential:

- NLB and Ministry of Community Development, Youth and Sports (MCYS) reach out to new target groups to promote reading as a learning and family-bonding activity (Press release date: February 9, 2007). Launched in 2001, till now more than 250,000 families have participated in this program.
- NLB Launches Prototype Mobile Library Service to offer a taste of what its libraries can offer to underserved groups (Press release date: April 3, 2008). The prototype mobile library comes in the form of a bus named 'Molly, the Mobile Library'. Institutions and organizations such as children's homes, orphanages, special education schools and selected primary schools are some of the places Molly will visit to promote reading and lifelong learning.

3. Providing leadership in digitization and preservation:

- Singapore Press Holdings (SPH) and the National Library Board (NLB) sign agreement for digitization of the *Straits Times* archives dating back to 1845 (Press release date: July 31, 2007).

- Heritage preservation of documentary records of Singapore Chinese Clan Associations for future generations (Press release date: November 4, 2006).
- Large Scale Archiving of Singapore Websites (Press release date: October 18, 2006). The 1,200 local websites that has been archived in the first phase of this new initiative are those of government bodies, government-linked companies, schools, art groups, registered associations and societies, places of interests, and others which are deemed by NLB to be of an authentic source, and are of national and social significance. Web Archive Singapore will also proactively archive web content of selected nationwide events.

#### 4. Supporting enterprise and innovation:

- The NLB and the European Commission to form a partnership in setting up a European Union Information Centre (EU*i*) at the National Library in Singapore (Press release date: January 17, 2008).
- Launch of EnterpriseOne Business Information Services (Press release date: August 2, 2007). The EnterpriseOne Business Information Services (EBIS), a joint project spearheaded by Singapore Business Federation in collaboration with SPRING Singapore, National Library Board Singapore and International Enterprise Singapore, aims to empower small and medium-sized businesses by offering Customized Business Intelligence and Leads, Business Learning and Networking Opportunities and Business Information Resources to equip them with the knowledge and skills to compete effectively both in the local and global marketplace.

These snapshots of public interest activities (as defined by the press and broadcast coverage of the said events) enabled NLB to further its charter of creating a knowledge society and learning nation. Taken together, these initiatives contribute to the building of structural, cognitive and relational dimensions of social capital. More importantly, NLB creates the necessary social and collaborative space to engage people across Singapore and facilitates the exchange and combination of intellectual capital, resulting in new knowledge production (Nahapiet and Ghoshal, 1998).

There were anecdotal evidence that NLB's initiatives have been effective. For instance, Singapore has topped the Most Admired Knowledge City (2007) ranking. Created by Teleos and the World Capital Institute, the award recognizes cities that "are successfully engaging in formal and systematic knowledge-based development processes." Rounding up the top five knowledge cities were Boston, Barcelona, Ottawa and Bilbao. In recognition of NLB's pivotal role in societal knowledge acquisition, creation and dissemination, the NLB represented Singapore in collecting the award at the first Knowledge City Summit held in Mexico in 2007.

In the second part of the field research, we conducted structured interviews with seven key people, drawn from NLB top management, professional librarians both inside and outside

the NLS, and an executive of the professional society for librarians in Singapore. We sought to delve deeper into the issues unearthed by the mass media by interviewing key professionals both within and outside of the NLB who were in a vantage view to offer praise as well as criticisms of NLB's efforts and impact. These key persons were interviewed using a combination of face-to-face, telephone and e-mail interviewing techniques. These questions attempted to verify some of the strategic and tactical issues, outcomes of the programs and services put in place in support of the L2010 objectives. They were essentially an inquiry of the structural, cognitive and relational dimensions of knowledge creation promoted by the NLB. The semi-structured interview (template shown in Table 2) took place in an iterative manner, with the template e-mailed at least a day in advance, so as to allow for thought, reflection, clarification and testing for consistency. Respondents were probed to both re-state as well as clarify their comments and the recorded interview transcripts were also checked across respondents.

**Table 2: Research Interview Template**

**The Role of an NLS in Creating and Sustaining a Learning Nation**

During this 30 minute interview, we wish to ascertain and confirm some of our preliminary findings on how public libraries (and librarians) play a central role in helping develop people (human capital), repositories (structural capital) and learning communities (relational capital).

1. What are some critical success factors that create a learning nation? Are current KPIs and opinion surveys aligned to these?
2. What is the role of public libraries in promoting information literacy and lifelong learning? Is this best done within the public school system?
3. What has been the outcome of programs that emphasize knowledge sharing from an early age through reading and storytelling? Has it led to the formation of positive habits that contribute to a learning nation?
4. What has been the impact of specialist and reference library services on the promotion of trade and industry? Has it led to greater competitiveness or exports?
5. What are the other action areas of an NLS in promoting attributes of a successful knowledge society such as: the sharing of fundamental knowledge assets, the promotion of innovation, the supply of up-to-date market intelligence, and lifelong learning?

Hence, the tactical objective of our research methodology was to triangulate within three points of reference—the NLB's view, the comments of the mass media, and the perspectives of senior library professionals—in order to determine the best practices of providing public library services in Singapore. Following is a discussion of the results of the environmental scan and follow-on structured interviews with key people within and outside of the NLS.

**Discussion**

It is clear that the financial support and leadership from the government and the participation of the citizenry have combined to make the NLS of Singapore an integral part of its bid to stay competitive among KBEs. There is a zeal within the NLB to serve the public in their knowledge

development almost from cradle to grave. These services range from storytelling for children to collections (including databases) for business, technology and culture, to activities in the shared *ba* for senior citizens. It was also readily apparent from the field research that a combination of three other major factors have allowed the NLB to deliver on its promise: (1) focus on specific, targeted services and programs; (2) an alignment of the NLB's mandate and key performance indicators; and (3) effective solicitation of feedback and benchmarking.

A KBE's consumers of library services are IT savvy, highly educated, and often overloaded with information. Their primary object for using a library is to be effectively and efficiently better informed. With the need to provide new services to meet the demands of the public, the NLB has to constantly assess its systems and processes so as to stay relevant and responsive in the delivery of library services. The NLB constantly seeks out the gaps and improvement points in information and knowledge flows for new coordination needs.

Besides the application of technology in assisting business process improvement and facilitating KM, NLB leverages on technology in many ways:

- Provide enterprise storage space for NLB's digital content (text, audio, moving images, still images, software and data) so as to facilitate transactional and archival purposes;
- Establish a world-class and internationally compliant digital library platform with full metadata and indexing capability so as to acquire, develop and preserve digital content;
- Provide services for end-to-end processes to manage the entire supply chain from sourcing through acquisition, to delivery, processing, shelving, circulating and archiving knowledge assets, e.g., books and publications;
- New systems or technology refresh and upgrade for library management and corporate systems such as Radio Frequency Identification Technology (RFID), SMS library users to remind them their due dates and the digitization of library resources; and
- Develop information literacy programs and deliver them via e-learning mode through the NLB's digital library. In short, a one-stop-shop for increasingly expensive e-resources. The intent is to enable learners to be savvy in locating, evaluating and using effectively the information required for various purposes.

Ultimately, the NLB objective is for an intelligent Information Portal with the KM capabilities, with search, personalization, collaboration, single sign-on (authentication) and meta-tagging, to support knowledge acquisition, organization, search, retrieval, use, creation and sharing.

In order to benchmark itself on customer service, a set of Balanced Score Card (BSC) indicators have been developed to track the work and progress. The NLB BSC introduces accountability results to customers and stakeholders. Our BSC translates strategies into objectives, measures, targets into the five perspectives of—content, customer, community, culture and capability. Measurements have moved beyond initial capacity and transaction

measures such as membership, loans and visits. Rather, the focus now is in adopting a framework that quantify the value contributed by the NLB to their various constituencies. The NLB is also in the preliminarily stage of working on a Knowledge Competitive Index (KCI) to explore how to move beyond information dissemination and into promoting knowledge sharing.

The consensus among senior library professions we interviewed suggested that there was much work to be done, yet. In the five generic categories, the following emerged as the considered perspective of these thought leaders.

1. Critical success factors—accessibility (visibility), awareness (publicity) and collection (interest) were cited as the key critical success factors of a good public library; it must work to complement a sound education system, a vibrant arts scene, diverse special interest groups, continuous or life-long learning and ultimately promote a culture of knowledge acquisition and innovation. Hence, critical success factors relate to both the infrastructural (e.g., facilities, collections) as well as the mindset changes (e.g., sharing, creativity).
2. Literacy and lifelong learning—there was strong convergence in the views of the experts that these were indeed desirable and needed objectives of a NLS. The foremost role of public libraries were expected to be the promotion of reading and learning in order to improve and sustain high levels of literacy. Hence, programs in support of these objectives could leverage the existing public education system and develop other initiatives in support of adult education. Given the proliferation of digital resources, there was also a need to convert migrants to a native way of using new media. A little noticed but much appreciated initiative by the NLB is to review well-regarded literature and share these observations in the major sunday newspaper.
3. Early-age knowledge sharing—notwithstanding the literacy initiatives, it was felt that most early-age knowledge sharing takes place in schools. This was in part attributable to Singapore's competitive and exam-based system of education. Emerging new media social networks were another major forum for knowledge sharing, particularly among teenagers. There is a strong belief within and without the NLB that early reading is a precursor to academic success. And (often bilingual) literacy seen as a great equalizer. Hence, the various NLB programs such as storytelling sessions in the community libraries, touring schools with mobile libraries on wheels, hosting various reading and literacy competitions, and generally showing a presence to school children inculcated the idea that the NLB was a constant companion to learning and development.
4. Specialist and reference services—here was a key differentiator between good public libraries and great ones. It was felt that public libraries were used for both leisure-recreational as well as vocational-specialist purposes. A good public library caters to one or the other, but a great one caters to both as its mission. The NLB's stated

purpose was to help Singaporeans connect to the global knowledge economy of opportunities. Hence, in both the short and long-terms, its programs and resources were geared towards such a cosmopolitan user community comprising both the arts and sciences, new and old media, across age groups and professional interests, and above all seeking constant feedback in order to fine-tune or re-prioritize the delivery of such services.

5. Other action areas—any library has a finite budget with which to operate what it perceives as community requirements. One rather lofty goal suggested by a senior library professional was to repurpose a public library as the custodian of collective wisdom (both tacit and explicit). This lies in strongly with what the literature suggests as transcending codified knowledge transfer within a society. Sharing, co-creating and developing tacit knowledge is a challenge the NLB is only beginning to promote and catalyze through the hosting of expert talks, panel discussions, public meetings, and an online portal for e-communities. Here, Singapore’s utilitarian form of government prevents turf wars among various arms of the public sector trying to duplicate such services.

## Conclusion

For the last 10 years, the transformation of the NLS in Singapore has been spectacular and this was captured in a Harvard Business School case study (Hallowell *et al.*, 2001). From FY 1995 to FY 2000, physical loans and total membership have risen, and increased dramatically by 74.8% and 73.8% respectively, reflecting the success of the library expansion program. In the case study, Dr. Chia, the former CE of NLB, summed up its achievements:

In six years we quadrupled the visitorship, tripled the collection and doubled the membership and the physical space. We increased our loan rate from 10 to 25 million books without a corresponding increase in staff and generally reduced queues from 60 to 15 min.

The attendant problems of noise, insufficient seats and usage fees imposed to discourage hogging of resources are indirect testimonials of its success in attracting large segments of the population to view the library as a ‘lifestyle product’. For instance, the opening of the National Library and Orchard Library were hailed as media events.

Libraries in the KBE must be able to integrate the services they deliver into the lives of the people, to provide services to simulate lifelong learning, to serve the social and self-development needs as well as economic needs of their customers. The L2010 strategic plan sets out NLB’s direction for the next five years, following the fulfillment of the L2000 Plan. In the next phase of development, the NLB, in moving from “process reengineering and infrastructure development to a repurposing of the library system,” will be in a position itself to deliver the world’s knowledge to Singapore and to create a positive social and economic impact for Singapore and Singaporeans.

Can this be done—in Singapore or anywhere in the world? To achieve the outcomes of L2010, the NLB had to build up content, expand services and continue to exploit technologies in order to realize its vision for the next five years. The emphasis evolved from building up the explicit repositories to cultivating the sharing tacit knowledge, from seeking opportunities for reuse to creating conditions for innovation; and hence from structural initiatives to social and relational outcomes. Due to the rapid growth of visitors and members over the past 10 years, and the shift in focus of the NLB's strategic direction to deliver knowledge and learning, there exists a strong need to internally further develop content expertise and enhance current infrastructure to provide the required foundation to achieve its L2010 plans. This implies that the NLS must promote the fostering of structural, cognitive as well as relational exchanges among civic society. Knowledge is derived from information and created when information is used in context and results in action. So, for instance, the new NLB facility has set aside much space (particularly a top floor auditorium overlooking the city) as platforms for professional and community knowledge intercourses.

Zack (1999) suggests that a knowledge strategy that is not aligned (i.e., consistent) with an organization's business strategy is ineffective. NLB has aligned its KM vision to help it achieve the L2010 outcomes. Central to the KM strategy is knowledge sharing and collaboration, both are crucial to enable NLB to be continually adaptive to change and becoming a learning organization—for itself and the community it serves.

By sharing knowledge about technologies and developments in the library and other sectors, as well as sharing knowledge from prototyping experiences, for example, the NLB would be able to turn out more innovative products and services. This could enable it to achieve global thought leadership—being the first of its kind. By sharing best practices, lessons learnt from past experiences (be they project outcomes or KPIs), the NLB would be able to improve operational processes to make them faster, better and cheaper. This would enable it to keep costs low and be the preferred service provider in the information management arena. A holistic approach to achieve its KM vision, is to put in place the right KM enablers, an organizational infrastructure, to facilitate the transfer of knowledge. The infrastructure elements are senior management support, a knowledge sharing culture, organizational structures, technological infrastructure, communications and measurement indicators.

In the near future, it must be noted with cautious optimism that the digital collections and state of the art facilities for knowledge sharing and dissemination that the NLB provides to Singapore's human and corporate residents, may not be directly transferable to societies where information literacy and the access to ICT is a fundamental challenge (Sharma and Azura, 2005). Nevertheless, the role of an effective NLS goes a long way in supporting a knowledge strategy that is aligned with good governance. The implication for policymakers and library professionals alike is that a NLS in a KBE is a far cry from the Alexandrian notions of comprehensive repositories and has evolved to distributed centres of knowledge exchange and learning. The platforms, processes, people and strategies of an NLS must therefore provide and monitor such opportunities. As a senior member of the library community (external to the NLB) reflected during our interview:

The main role of a national library is to be the custodian and promoter of the written heritage of the nation. Perhaps the word written may be changed to recorded to cover new media as well. A National Library must hence ensure that all recorded knowledge generated by and about a nation should be available to all from now and into the future. It can play an important role in sharing knowledge assets, promoting innovation, applying market intelligence and promoting life-long learning, but this may depend on which organ of the public service or private sector can perform these functions most effectively. ■

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