

# Library service capital: the case for measuring and managing intangible assets

Sheila Corral

University of Pittsburgh, USA. Email: [scorral@pitt.edu](mailto:scorral@pitt.edu).

## Abstract

**Introduction.** Libraries are continually evolving their services and assessment methods, but need a new lens to understand their position. Library assessment has evolved from operational statistics to strategic management systems using quantitative and qualitative methods from business and social research. Literature suggests intellectual capital theory could assist libraries to develop new, improved measures of performance and value for the network world, particularly for staff capability and relationship management, as a gap in current systems.

**Purpose.** The study investigates intangible assets that academic libraries are exploiting to compete in the digital age and methods that libraries can use to assess intangible assets.

**Theoretical framework.** We use two paradigms: the resource-based view that recognizes organizational assets as strategic resources whose value, durability, rarity, inimitability, and non-substitutability represent competitive advantage; and the intellectual capital perspective, which regards human, structural, and customer/relational capital as long-term investments enabling value creation for stakeholders, similar to other capital assets.

**Methods.** The study re-used data from prior survey and case study research, supplemented by evidence from the literature. The Organization for Economic Co-operation and Development's categorization of intellectual assets was chosen as an analytical framework.

**Results.** Academic libraries have developed significant human, structural, and relational assets that are enabling them to respond to environmental challenges.

**Conclusions.** An intellectual capital lens can enable libraries to recognize their intangible assets as distinctive competencies with current relevance and enduring value. Libraries need to extend their assessment systems to evaluate their human, structural, and relational assets.

**Keywords:** intangible assets; intellectual capital; library assessment; performance measurement.

## Introduction

Library resources and services are continually evolving with social, technological, economic, and political developments in the information environment. Technology is a key driver of change for the profession that has transformed every area of library practice, from collections and cataloging to space and services (Dempsey, 2012; Latimer, 2011; Lewis, 2013; Mathews, 2014). Commentators stress the need for librarians to think and act differently, develop new skills, design new environments, deliver new services, and adopt new models. Mathews (2014, p. 22) concludes that librarians need to explore, develop, and implement "new models, new skills and attitudes, new metrics, new ways of looking at old problems, and new approaches for new problems." He asserts that the profession is arguably now in the *relationship business*; Town and Kyrillidou (2013, p. 12) similarly observe that "Libraries are fundamentally relationship organizations."

### *Library Service Developments*

The work of library and information professionals is becoming more specialized in the complex digital environment as they aim to integrate resources and services into the processes, workflows, and "lifeflows" of users (Brophy, 2008; Cox & Corral, 2013; Vaughan et al., 2013; Weaver, 2013). Existing roles are evolving and new hybrid, *blended*, and *embedded* roles are emerging on the boundaries of established positions and professions (Carlson & Neale, 2011; Sinclair, 2009), requiring expanded skill sets that overlap the core competencies of other domains, notably research, education, and technology (Cox & Corral, 2013; Iivonen & Huotari, 2007). Information literacy education has been a key focus of library service development that is now joined by research data management, as an example of boundary-spanning activity (Carlson & Neale, 2011; Cox & Corral, 2013; Vaughan et al., 2013; Weaver, 2013).

### *Library Assessment Trends*

Library assessment has evolved from an operational and service provider perspective on resource inputs, process throughputs, and product or service outputs as performance

metrics, to more strategic approaches aimed at identifying specific and general outcomes, and the higher-order effects or impacts of libraries, from the perspective of service users, in relation to the missions and goals of their parent organizations. The focus on outcomes and impacts is a significant trend, requiring fuller understanding of the context of library and information use (Town, 2011; Matthews, 2013). One indicator of strategic engagement with assessment is the growth in specialist “assessment librarian” positions (Oakleaf, 2013).

Libraries have adopted and adapted frameworks from the business arena, such as the PZB SERVQUAL gap model of service quality assessment (Parasuraman, Zeithaml & Berry, 1985), and the library version, LibQUAL+™, which was developed in the US, but has been taken up internationally, in Europe and farther afield (Kachoka & Hoskins, 2009; McCaffrey, 2013; Voorbij, 2012). Libraries in several countries have used Kaplan and Norton’s (1992; 1996) Balanced Scorecard, which combines traditional financial and internal process measures with customer and innovation/learning/growth indicators to promote a balanced view of organizational performance (Chew & Aspinall, 2011; Krarup, 2004; Mackenzie, 2012; Melo, Pires & Taveira, 2008; Pienaar & Penzhorn, 2000).

A key feature of the Balanced Scorecard is that it balances internal and external perspectives, and also combines retrospective with prospective views of the organization, supplementing traditional evaluation of past performance with assessment of future potential through the learning and growth component as a measure of capacity for innovation and development. Libraries have also used Kaplan and Norton’s (2000; 2001a) more comprehensive strategy map tool, which enables managers to articulate cause-and-effect relationships between goals associated with the four perspectives of the balanced scorecard. Examples have been reported worldwide (Cribb, 2005; Düren, 2010; Hammes, 2010; Kettunen, 2007; Kim, 2010; Leong, 2005; Lewis, Hiller, Mengel & Tolson, 2013; Taylor, 2012).

In addition to these holistic frameworks, libraries have been exploring more specific methods of evaluating their contributions to their communities. Return on investment (ROI) studies, using contingent valuation method and other quantitative techniques have become a notable trend in academic, public and national libraries around the world (Grzeschik, 2010; Hider, 2008; Ko, Shim, Pyo & Chang, 2012; Kwak & Yoo, 2012; McIntosh, 2013; Tenopir, King, Mays, Wu & Baer, 2010). At the other end of the methodological spectrum, there has also been a surge of interest in qualitative methods, including narrative techniques and ethnographical/ethnological studies. Usherwood (2002, p. 120) argues that “qualitative assessments of outcomes are often a more meaningful way of demonstrating, the value and impact of a service and its achievements”, showing how quality audits, social auditing

and social accounting techniques can be used to examine the success or failure of services, and identify qualities that are *intangible* or indirect.

Brophy (2007; 2008) argues that narrative-based methods are particularly appropriate for assessing the contribution of services embedded in user communities, and communicating service outcomes and impacts in a richer, more meaningful way than quantitative data can do alone, providing needed context and interpretation. Khoo, Rozaklis, and Hall (2012) confirm substantial growth in library use of ethnography, with more than 40 studies published in the period 2006-2011. An interesting related trend is the appointment of “library anthropologists” to conduct such studies (Carlson, 2007; Wu & Lanclous, 2011).

One specific theme in the academic and practitioner discussion of evaluation methodologies is a resurgence of interest in examining the *intangible assets* (IAs) of library and information services (LIS), especially to prove the worth of library and information workers (an area of investment that is particularly vulnerable as a result of the global economic downturn). Several commentators propose that assessment of library value in the knowledge economy should include consideration of intangible (knowledge-based) assets to give a fuller picture of value for stakeholders (Corrall & Sriborisutsakul; 2010; Kostagiolas & Asonitis, 2009; 2011; Town, 2011; Van Deventer & Snyman, 2004; White; 2007a). Town (2011, p. 123) asserts:

“The assessment of intangible value added will be key to developing a compelling story around our overall value proposition. The established threefold approach to the measurement of knowledge/ intangible assets is likely to be a good starting point for recognizing areas for developing new measures or, in some cases, revitalizing older ones”.

White (2007a, pp. 81-82) identifies three potential benefits for libraries engaging in IA assessment and management:

- increased scope and capability to report effectiveness to stakeholders
- better alignment of library resources and efforts with strategic responses required by stakeholders
- more effective utilization of IAs to achieve tangible and intangible strategic responses and impacts.

White (2007b; 2007c) emphasizes the importance of *human capital* valuation, noting the massive investment represented by library expenditure on staffing, which typically accounts for 50-70 percent of library budgets; the 50 percent figure is confirmed by Town and Kyrillidou (2013). White (2007b) argues that traditional activity-based quantitative metrics for library staff need to be complemented by assessment of performance quality and value. Town (2011, p. 119) similarly observes that there is value in “what has been built by the library in terms of its

staff capability and capacity” that is generally not measured by current frameworks. Town and Kyrrlidou (2013, p. 13) also observe that “Libraries have a large body of corporate knowledge tied up in their organisation and its processes and methods.” The importance of professional networks and relationships with users, suppliers and others also points in this direction (Kostagiolas & Asonitis, 2009; Town & Kyrrlidou, 2013; Van Deventer & Snyman, 2004; White, 2007a).

### Research Questions and Purpose

The purpose of the study is to explore intangible asset evaluation as a library assessment strategy for the digital age, by identifying IAs that libraries are exploiting to compete in the digital world and investigating methods to articulate their value. The research questions are:

- What intangible assets are academic libraries exploiting to compete in the digital age?
- What methods can academic libraries use to evaluate their intangible assets?

Two strategic management paradigms are used to frame the study: the resource-based view and intellectual capital theory. Emergent library practice in research data management services is used as a case study.

### Theoretical Framework and Literature

The resource-based view (RBV) of the firm recognizes tangible and intangible assets as strategic resources whose value in terms of durability, rarity, inimitability, and non-substitutability represent competitive advantage (Barney, 1991; Grant, 1991; Meso & Smith, 2000). Grant (1991, p. 119) identifies financial, physical, human, technological, reputational, and organizational resources as six major categories. A key tenet of RBV is that resources exist as bundles and are interdependent (Marr, 2005). The theory has its origins in economics and has been hugely influential in strategic management research since the 1990s. Its focus on internal resources is often contrasted with external environmental or market-based explanations of superior performance, although the two approaches are often brought together in strengths-weaknesses-opportunities-threats (SWOT) analysis. Other terms often used interchangeably with “resources” include “capabilities,” “competencies,” and “knowledge” (Barney, 1991; Barney & Clark, 2007), though these terms can also be used more precisely, e.g., Grant (1991, p. 120) explains that a firm’s *capabilities* are “what it can do as a result of teams of resources working together.”

Within the RBV paradigm, the intellectual capital (IC) perspective regards human, structural, and customer/relational capital as long-term investments enabling value creation for stakeholders, alongside other forms of capital, such as physical and monetary assets

(Marr, 2005; Stewart, 1997). The economist John Kenneth Galbraith is generally recognized as introducing the term “intellectual capital” in 1969 (Snyder & Pierce, 2002; Stewart, 1997), and business and management thinker Thomas A. Stewart is frequently credited with establishing the concept in the business world through his 1997 book and series of related articles in *Fortune* magazine (Koenig, 1997; Snyder & Pierce, 2002). Stewart’s (1997, pp. ix-x) definition of IC is widely quoted, in which he defines the concept as the “sum of everything everybody in a company knows that gives it a competitive edge” and “intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth.”

As explained by Snyder and Pierce (2002, p. 475), IC can be both the *means* (or input) and the *end* (or output) of organizational activity: “IC can be both the end result of a knowledge transformation process and the knowledge itself that is transformed into intellectual property or assets”. An “asset” here “can be thought of as a prior cost that has a future benefit” (Snyder & Pierce, 2002, p. 469).

#### The Intellectual Capital Concept

The thinking behind the IC concept extends beyond economics to both the accounting and strategy domains of business and management. Figure 1 shows how Roos, Roos, Dragonetti and Edvinsson (1997, p. 15) have depicted the conceptual origins of IC as evolving from a range of related ideas and practices, including the learning organization, knowledge management, core competencies, invisible assets and balanced scorecards.

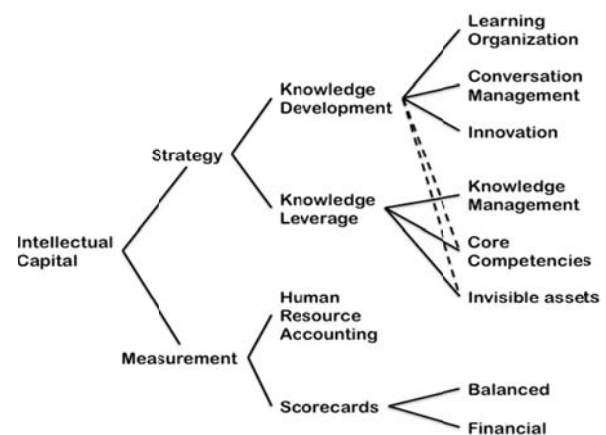


Figure 1. Conceptual roots of intellectual capital (Roos et al., 1997)

The terms “intangible assets” and “invisible assets” are often used interchangeably with IC – along with “intellectual assets,” “knowledge assets,” “knowledge-based resources” and “knowledge capital” – although some scholars define these terms more precisely and put them in a hierarchy. The Organisation for Economic Co-operation and Development (OECD, 2006, p. 9), has noted the

“proliferation of definitions, classifications and measurement techniques” in the field, but has adopted the term *intellectual assets* “to maintain symmetry with the term “physical” or “tangible” assets” without making a distinction between intellectual and intangible assets, recognizing their synonymous use within the field of IC and knowledge management. OECD (2006, p. 9) asserts that despite the multiplicity of definitions, “they refer to the same reality: “a non-physical asset with a potential stream of future benefits,” which the report then identifies with “three core characteristics:

- i) they are sources of probable future economic profits;
- ii) lack physical substance; and
- iii) to some extent, they can be retained and traded by a firm.”

The notion of intellectual capital/assets has evolved from a narrow focus on intellectual property, such as patents, trademarks, and software, to a broader conception that typically includes “human resources and capabilities, organisational competencies (databases, technology, routines and culture) and “relational” capital including organisational designs and processes, and customer and supplier networks” (OECD, 2006, p. 9). Significantly from a library and information science viewpoint, descriptions of intellectual/intangible assets now tend to include “dynamic business attributes such as knowledge-creating capability, rights of access to technology, the ability to use information, operating procedures and processes, management capability to execute strategy, and innovativeness” – which OECD (2006, p. 9) perceives as confusing the assets themselves with their “value drivers”, represented by management ability to generate value from the assets.

#### *Classifications of Intellectual Capital*

There are many different conceptualizations of IAs: Choong (2008, pp. 618-619) lists 36 attempts by researchers, professions and other organizations to categorize IC, and suggests that lack of consensus on the precise definition and systematic classification of IAs encourages development of broad categorizations. Despite variation in the terminology and complexity of the models, from the outset there has been a striking convergence of thinking on the broad categories or main components of IC. Table 1 shows the breakdowns used by prominent American, British, and Swedish writers from the early period of IC research and development.

Table 1. Early classifications of intellectual capital

<b>Brooking (1996)</b>	<b>Roos &amp; Roos (1997)</b>	<b>Stewart (1997)</b>	<b>Sveiby (1997)</b>
Market assets	Customer and relationship capital	Customer capital	External structure
Infrastructure assets	Organizational capital: Business process	Structural capital	Internal structure

	capital; Business renewal and development capital		
Intellectual property assets			
Human centred assets	Human capital	Human capital	Employee competence

The examples illustrated confirm the basic tripartite model described by OECD (2006) of human, organizational (or structural), and relational (or customer/market) capital, but with an element of divergence in the subdivision of structural/organizational capital in two cases into its *process* and *product* dimensions, in effect acknowledging the OECD (2006) distinction between valuable assets and their value drivers. There have also been significant developments in thinking around the relational component of IC, with scholars arguing for broader and more nuanced interpretations incorporating *social capital*, reflecting renewed interest in the concept from the 1990s, in the context of economic development, corporate responsibility, and civic engagement (Bueno, Salmador & Rodríguez, 2004; Putnam, 1995).

#### *Evaluation of Intangible Assets*

There is similar proliferation in the methods proposed for measuring and reporting IAs, but again some convergence, in that “Most reporting frameworks developed to date favour a qualitative approach where intangibles are reported in a narrative format, to complement financial reporting” (OECD, 2012, p. 7). The key point here is that IAs are *strategic resources*, so evaluation must be directly linked to the strategic objectives of the organization, as explained by Roos et al. (1997, p. vi):

“A comprehensive system of capturing and measuring intellectual capital must be deeply rooted in the strategy or the mission of the company. Strategy has to guide the search for the appropriate indicators simply because it is the goals and direction of the company set out in the strategy, that signify which intellectual capital forms are important”.

OECD (2012, pp. 25-28) lists 39 different approaches developed between 1989 and 2009, but notes that despite “active interest” in evaluating intangibles, only five of the 34 member countries have introduced national recommendations or guidelines for reporting, with limited adoption of intangible asset disclosure frameworks by companies. The various methods have been broadly categorized as direct (monetary) valuation, market capitalization, return-on-assets, and scorecards (OECD, 2012; Tan, Plowman & Hancock, 2008).

Despite continuing research and development in the field, the four best known measurement models all come from the late 1990s: Brooking’s (1996) Technology Broker IC Audit, Edvinsson’s (1997) Skandia Navigator, Roos et al.’s (1997) IC-Index, and Sveiby’s (1997) Intangible

Assets Monitor (IAM), with the Skandia Navigator and IAM the most prominent examples (Pierce & Snyder, 2003; Tan et al., 2008). The IAM has similarities with the Balanced Scorecard in its strategic focus and advice on limiting the number of indicators selected to a manageable quantity – “one or at most two indicators” for each of the nine subheadings/cells (Sveiby, 1997, p. 78). Table 2 shows the basic model.

Table 2. The Intangible Assets Monitor (Sveiby, 1997)

Intangible Assets Monitor		
External Structure	Internal Structure	Competence
Indicators of Growth/Renewal	Indicators of Growth/Renewal	Indicators of Growth/Renewal
Indicators of Efficiency	Indicators of Efficiency	Indicators of Efficiency
Indicators of Stability	Indicators of Stability	Indicators of Stability

### Data Sources and Methods

The study re-used data from prior work (Corrall, 2012; Corrall, Kennan & Afzal, 2013; Cox & Corrall, 2013), which was supplemented with additional evidence from the literature.

Library literature on IC was reviewed to establish thinking and practice in the field. Survey and case study data on library engagement with research data management were analyzed to identify factors helping or hindering service development. The OECD’s (2006; 2008) categorization of IAs was chosen as an analytical framework on the basis of its international standing and its evident applicability to LIS. Table 3 shows the three broad categories specified with the brief descriptions and examples/keywords set out in the OECD (2008) synthesis report.

Table 3. OECD classification of intellectual assets

IC Category	Brief description	Examples/keywords
Human capital	Knowledge, skills, and know-how that staff “take with them when they leave at night”	Innovation capacity, creativity, know-how, previous experience, teamwork capacity, employee flexibility, tolerance for ambiguity, motivation, satisfaction, learning capacity, loyalty, formal training, education.
Relational capital	External relationships	Stakeholder relations: image, customer loyalty,

	with customers, suppliers, and R&D partners	customer satisfaction, links with suppliers, commercial power, negotiating capacity with financial entities.
Structural capital	Knowledge that stays with the firm “after the staff leaves at night”	Organizational routines, procedures, systems, cultures, databases: organizational flexibility, documentation service, knowledge center, information technologies, organizational learning capacities.

### Findings and Discussion

Library engagement with IC has progressed from theoretical discussion to real-world application and the development of frameworks that can support professional practice in identifying, measuring, and managing library service assets and liabilities for strategic advantage. In the context of research services in the digital world, analysis of the evidence indicates that libraries have important structural and relational assets that should be taken into account alongside their widely recognized human assets when evaluating their capacity to manage research data. The IC/IA models developed within the LIS community also contribute to our understanding of significant interactions among different classes of IAs.

#### *Library applications of intellectual capital*

Library interest in IAs and IC can be traced back to the period when the concepts gained prominence in the management literature during the late 1990s (Barron, 1995; Corrall, 1998; Dakers, 1998; Koenig, 1997; 1998a; 1998b). Early discussion in the library and information science literature was mostly about the potential involvement of library and information professionals in managing and measuring IC as knowledge resources on behalf of their parent organizations (Corrall, 1998; Koenig, 1997; 1998a; 1998b; Snyder & Pierce, 2002) and not concerned specifically with managing the knowledge capital of libraries, or only in the context of its impact on organizational IC (Huotari & Iivonen, 2005; Iivonen & Huorai, 2007). However, Barron (1995) used the concept of IC to argue for investment in the education of library workers and creation of learning communities for rural public libraries in the US, and Dakers (1998, p. 235) used the term “living intellectual capital” to distinguish the human-centred IC produced by library staff from the capital represented in its stock of books and other materials in her report of a skills audit conducted for the British Library’s consultancy service.

More substantive empirical investigations of IA evaluation were conducted in LIS during the following

decade (Asonitis & Kostagiolas, 2010; Corral & Sriborisutsakul, 2010; Van Deventer, 2002), along with some smaller-scale studies dealing with particular components of IC (Cribb, 2005; Mushi, 2009), and a continuing flow of contributions to the development of conceptual understanding in the LIS sector (Huotari & Iivonen, 2005; Iivonen & Huotari, 2007; Kostagiolas, 2012; 2013; Kostagiolas & Asonitis, 2009; 2011; Pierce & Snyder, 2003; Town & Kyrillidou, 2013; White 2007a; 2007b; 2007c). There is also a growing strand of work investigating the related area of *social* capital in public libraries (see, for example, Ferguson, 2012; Griffis & Johnson, 2014; Svendsen, 2013; and Vårheim, 2011).

The literature demonstrates global interest in the topic among the academic and practitioner communities, but with significantly more contributions from Europe than America: empirical work includes case studies of university libraries in Tanzania and Thailand; surveys of public libraries in Denmark and Greece; and a case study of a specialist LIS in South Africa; there are also conceptual contributions from Finland, Greece, the UK and US.

The empirical research typically uses mixed methods, with interviews, questionnaires and documents as the primary data sources; two studies used the Delphi technique, but only one used only quantitative techniques. Scorecard approaches have emerged as a common strategy for assessing library intangibles (Corral & Sriborisutsakul, 2010; Cribb, 2005; Town & Kyrillidou, 2013; Van Deventer & Snyman, 2004).

Findings from some studies of organizational learning and knowledge sharing within particular communities are mostly of local interest (e.g., Dakers, 1998; Mushi, 2009). However, other empirical investigations of the application of IC concepts and techniques in particular LIS have produced frameworks, maps, and models of value beyond the immediate context that contribute to our conceptual understanding and/or offer process guidelines; notably the public library investigations by Asonitis and Kostagiolas (2010) and Svendsen, 2013, and especially the doctoral studies by Sriborisutsakul (2010) in academic libraries and Van Deventer (2002) in a special LIS. Conceptual papers and review articles have made useful contributions in identifying and categorizing library examples of knowledge processes/IAs (Huotari & Iivonen, 2005; Iivonen & Huotari, 2007; Kostagiolas & Asonitis, 2009; 2011) and have also offered purpose-designed frameworks for managing and measuring library IAs (Kostagiolas, 2013; Kostagiolas & Asonitis, 2009), or proposed adaptations of business tools for LIS (Pierce & Snyder, 2003; Town & Kyrillidou, 2013).

#### *Library classifications of intangible assets*

Library literature usually adopts the standard threefold categorization of IC into human, structural or organizational, and relational capital, but with some

variations in terminology; in a few cases scholars propose new or significantly expanded elements, notably for relationship assets. Kostagiolas (2012; 2013) suggests the Intellectus public sector IC model (Ramírez, 2010, p. 254), which subdivides the structural component into Organizational, Technological, and Social capital, to aid understanding of the social value created by (public) libraries.

Svendsen (2013, pp. 58, 67) draws on the work of Putnam (2000) to define different forms of *micro-* and *meso-level* social capital (Bonding, Bridging, Institutional) created by public libraries in Denmark; his classification of different types of networks/relationships has potential application in other LIS settings, particularly academic libraries (e.g., supporting interdisciplinary research communities). Figure 2 displays the different types of social/network assets identified by Svendsen (2013, p. 67).

Town and Kyrillidou (2013, pp. 12-14) suggest several novel intangible elements, to be used alongside the standard balanced scorecard: they subdivide Relational capital into Relational and *Competitive Position* capital (reputation); add a *Meta-Assets* element to define *intangible* value added to *tangible* assets; and introduce a *social* capital component with their Library Virtue dimension (in which “proofs of library impact will be delivered”) and a Library Momentum dimension, to track the *pace* of innovation, as a final “critical organizational asset”. Their framework is not yet a working tool, but is an interesting attempt to broaden and elevate the scope of library assessment to measure “the full value of academic research libraries” (Town & Kyrillidou, 2013, p. 7).

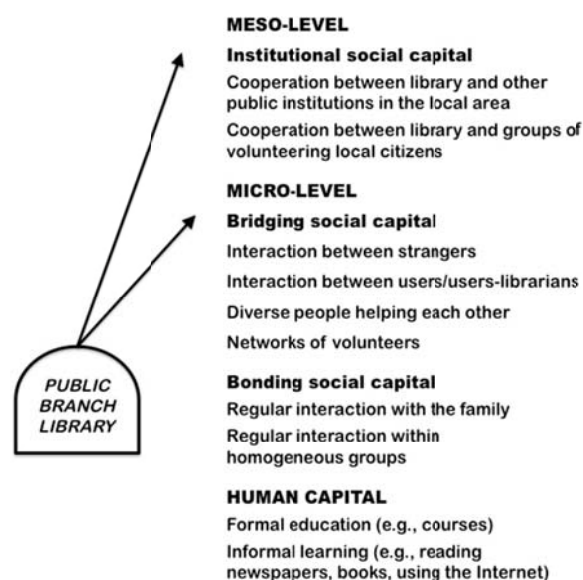


Figure 2. Intangible assets for rural public libraries (Svendsen, 2013)



Research in academic libraries in Thailand produced a taxonomy of IAs that proposes a library-specific fourth category of *Collection and Service assets*, as “the end-products of core knowledge-based processes in libraries”, which are “derived from a combination of human, structural and relationship assets” (Corrall & Sriborisutsakul, 2010, p. 283). Figure 3 shows Sriborisutsakul’s (2010, p. 213) categorization of library IAs (with examples found in Thai university libraries).

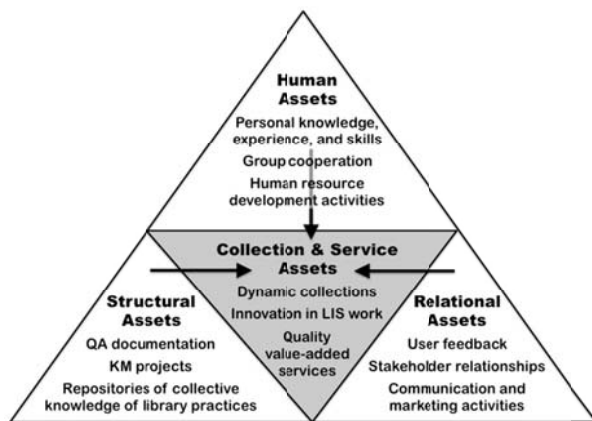


Figure 3. Classification of library intellectual assets (Sborisutsakul, 2010)

Resource-based theories of the firm emphasize that organizations gain advantage from distinctive complex *bundles* of resources, whose use in combination is hard to imitate and replace. The value of such “super-assets” is thus more than the sum of their components, and therefore worth assessing and reporting. These combinations of assets in use are also more visible and more meaningful to library stakeholders than individual assets used to create them. Libraries consequently need to define their distinctive collection and service assets, and then expose and explain the hidden assets on which they depend to their stakeholders.

#### Library Examples of Intangible Assets

Library competence to manage research data has been questioned in the literature and studies have identified skills gaps and shortages, notably technical knowledge for data curation, advanced information technology skills, subject domain knowledge, research processes and methods, and metadata schemas for specific disciplines (Corrall et al., 2013; Cox & Corrall, 2013). However, the literature also highlights previous library experience and know-how; existing collaborations and partnerships; and organizational structures, systems and procedures, which constitute intangible assets that are enabling academic libraries to initiate research data services (Corrall, 2012).

#### Human assets include:

- expertise in collection development and external datasets that can be transferred to data collections

- experience in repository development and management that can be extended to data repositories
- skills in conducting reference interviews that can be applied to data interviews.

Practitioner case studies also report creative use of their literature search know-how by library professionals to select the most appropriate metadata schema for projects (Bracke, 2011; Hasman, Berryman & McIntosh, 2013).

#### Relational assets include:

- library-faculty partnerships for information literacy that can be exploited to promote data literacy, data curation, data management planning, etc.
- library-technology collaborations on digital services that can facilitate development of data storage and infrastructure services
- library professional networks that enable sharing of best practices via conferences, email, social media, etc.

Bracke (2011, p. 67) explains how librarians can exploit their *reputation* as trusted professionals to engage with data curation, noting they have “established themselves as trusted stewards and educators.” She describes how a data repository task force at Purdue University partnered with subject librarians “to leverage their relationships with researchers,” and then mentions the positive *image* of the subject librarian and the opportunities arising:

“Faculty viewed the librarian as a go-to resource for many of their research and teaching needs. The librarian received many word-of-mouth recommendations and took advantage of her social capital to develop more and deeper relationships.”

#### Structural assets include:

- organizational structures facilitating service development and innovation
- proven systems and procedures with potential for extension or repurposing
- tools available within the professional community.

The value of the subject liaison librarian structure used in many libraries is evident (Bracke, 2011). Such systems enable the discipline-sensitive approach to services needed for RDM, but are now often complemented by teams of functional specialists in RDM and other areas, who provide coordination, guidance and support to frontline liaisons in a hybrid model of specialization (Covert-Vail & Collard, 2012; Jaguszewski & Williams, 2013). Specialist committees and task forces at library and institutional levels are another structural device used to develop services and promote involvement of the library in new areas, which also creates relational capital.

Established systems and processes facilitating RDM service development include institutional repositories, reference interviews, and LibGuides, which have been used to provide advice on data management planning, digital curation, scientific data repositories, etc. Community tools

that libraries can exploit in research data services include the data management planning tools produced by the Digital Curation Centre and California Digital Library, and the Data Curation Profiles Toolkit produced by Purdue (Bracke, 2011; Corral, 2012).

#### Library Models for Asset Evaluation

Scorecards have emerged as the approach most often used by libraries for evaluation of IAs, but the specific methods and particular tools deployed vary within this general framework. Methods frequently used in LIS to identify IAs are document analysis (e.g., strategy documents, organization charts); interviews (e.g., library managers, information specialists, service stakeholders); and questionnaires (e.g., staff skills audits and user experience/satisfaction surveys).

Library IC investigations typically use multiple sources of data, including data primarily collected for other purposes; for example, Cribb (2005, p. 11) notes that “The staff perception survey conducted every two years helps library management understand the cultural readiness of the staff”. LIS researchers have also used ready-made instruments from the business world: Van Deventer (2002) adapted Sveiby’s (2001, p. 353) knowledge strategy questions for the LIS context, expanding the question set from nine to 16. Dakers (1998, pp. 239-242) designed her own questionnaire tool, “tell us about your talents”, for “auditing the people assets” at The British Library, and appended her draft instrument, offering potential for re-use by other LIS.

Several researchers have developed (and later refined) frameworks to guide the process of evaluating and managing IAs in academic, public and special LIS (Kostagiolas & Asonitis, 2009; Kostagiolas, 2013; Sriborisutsakul, 2010; Van Deventer & Snyman, 2004). Some are high-level models, which include financial/tangible assets alongside intangibles for completeness (e.g., Kostagiolas, 2013; Van Deventer & Snyman, 2004). Sriborisutsakul (2010, p. 220) provides a process model based on real-world experience of developing performance indicators and operational measures at university libraries in Thailand. It is not context-specific and could be used in other sectors and in other countries. Figures 4 shows the basic steps of the process from identifying IAs to implementing performance indicators.

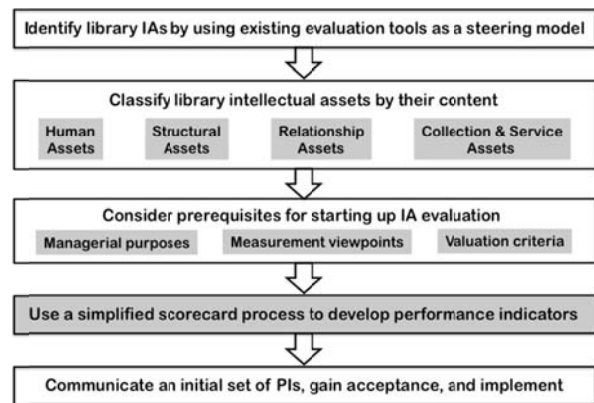


Figure 4. Systematic indicator development process (Sborisutsakul, 2010)

Figure 5 shows Sriborisutsakul’s (2010) adaptation of the scorecard approach to develop performance indicators for IAs, which starts by identifying IAs supporting the strategic priorities for the library.

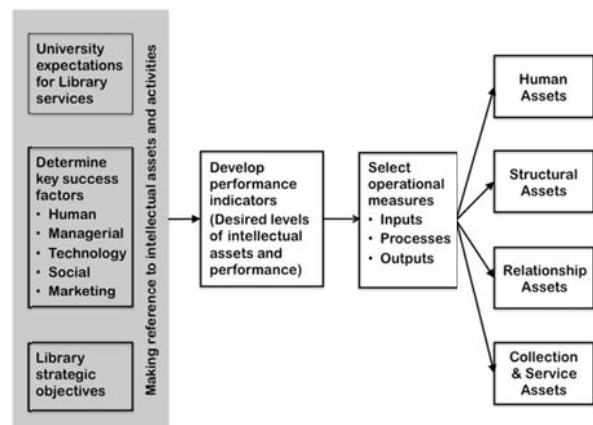


Figure 5. Simplified scorecard approach (Sborisutsakul, 2010)

## Conclusions

Libraries need to extend their measurement and assessment systems to provide a fuller picture of their contribution and impact on individuals and communities. An IC perspective can enable library practitioners to evaluate their human, structural, and relational assets, and recognize their IAs as distinctive competencies with current relevance and enduring value. The RBV enables us to understand more fully how particular combinations of diverse assets enable libraries to create dynamic knowledge resources and create value for their members and stakeholders. Future research could explore and test the applicability of additional evaluation frameworks, including public sector models of social capital.



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## Curriculum Vitae

Sheila Corral is Professor and Chair of the Library & Information Science Program at the University of Pittsburgh, USA. She moved to the USA in 2012 after eight years at the University of Sheffield, UK, where she was Head of the Information School for four years. Her professional experience includes serving as director of library and information services at three UK universities and ten years as a manager at The British Library. Corral teaches courses on Academic Libraries and Research Methods. Her research areas include strategic management of information services, collection development in the digital world, and the evolving roles and skillsets of librarians and information specialists.