

Measuring for Sustainability: A Multi-dimensional Measurement Framework for Library and Information Services

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Knowledge economy literature indicates that proof of an organization's sustainable future and growth lies in multi-dimensional evaluation rather than in the traditional one-dimensional monetary or financial capital perspective. This article attempts to provide a multi-dimensional framework within which a library and information service (L&IS) could measure its performance. As prerequisite, for implementation of the stated framework, the L&IS management (and staff) needed to understand that:

- measuring should be done for local development and progress using the L&IS's mission and a strategy for a sustainable future as the focal areas;
- sustainability requires more than providing proof of spending the stakeholder's money wisely; and

- adding value for the customer in isolation also does not ensure sustainability.

In order to be sustainable in the knowledge economy it is necessary to understand that the relationships between the human, structure, customer and stakeholder capitals are vital. The L&IS sector would therefore, in the first instance, be required to ensure that customers could trust that they are receiving the services and products that maximise their own productivity and asset utilization. Secondly L&IS stakeholders would need to be assured that they are receiving the best value for their investment. Lastly, but perhaps most importantly, L&IS staff would have to be assured that they have the necessary skills and resources to provide for a motivating environment and that the infrastructure created will ensure continuous improvement for all.

Introduction

To the uninformed the library as institution may appear to be the same as it was twenty or thirty years ago. The truth is that it will never be the same again and that the challenge to manage the modern library and information service (L&IS) is grossly underrated. New management challenges require new management philosophies and new management styles as well as new measuring tools and frameworks. This paper attempts to provide insight into an option for the latter.

The literature about knowledge economy indicates that a multi-dimensional evaluation (more than the traditional one-dimensional monetary evaluation) provides the key to an organization's sustainable future. Measuring an L&IS's success

only in terms of its contribution to the parent company's bottom line is therefore an out of date approach to managing any L&IS. The management philosophies that have led to the current approach in measurement are well defined and documented. At present there are three popular knowledge economy management philosophies. These are the philosophy of

- The 'Learning Organization'
- Knowledge management; and
- Intellectual capital management.

Although any of these three philosophies provide an improvement on the traditional approach, this article supports an opinion that intellectual

capital management provides the scope to marry the discipline of traditional management practices, where the bottom line determines success, with the requirements of the successful knowledge economy enterprise, where intellectual assets determine sustainability. Just as is the case with both the other philosophies, intellectual capital management advocates that the skills and abilities of each and every employee – the skills that are found in the enterprise's leadership (management team) but also those of the most junior member of staff, are key to success in the longer term.

All three philosophies advocate a change from management to leadership. Although the methodologies used are considerably different, leadership remains responsible for setting strategy and for guiding the enterprise in the set direction. In practice it appears that few of those in command, whether the enterprise is the L&IS or any other company, truly understand the difference between management and leadership – mainly because they do not understand that the requirements for sustainability have changed. It is therefore the intention to, in this article, assist in the identification of the elements that need attention and to provide a framework within which the library as enterprise could monitor its own progress. Before that can be done it is necessary to provide more information about the philosophy of intellectual capital management.

The concept of intellectual capital management

As is the case with knowledge management, the publications relating to intellectual capital management came to the fore during 1997. Early indications of the dawn of a new management philosophy are that *Long Range Planning* (30 (3), June 1997), known for its strategic focus, devoted an entire issue to intellectual capital management and that MCB University Press launched a new journal entitled *Journal of Intellectual Capital* during 2000. Since then there has been no shortage of intellectuals paying attention to and expressing their contributions to the topic. It does appear however, that most literature is generated in the economic and financial domains – which in itself is a very positive shift in the thinking in what is known as a rather conservative population.

Authors, such as Bontis (1998, 64), claim that the ascendancy of intellectual capital is that it has developed as a result of powerful forces such as global competition. This is in all probability the case but Edvinsson's (1997, 366) very simple metaphor, to explain the significance of intellectual capital within a company, makes the concept more concrete. In his article he equated a company to a fruit-bearing tree. He pointed out that the long-term sustainability of an organization requires that focus be placed on nurturing the roots (intellectual capital) rather than on harvesting the fruit (financial capital). In the final analysis, he claims, it shows that intellectual capital becomes at least as important as financial capital in providing truly sustainable earnings. To further illustrate his point of view Edvinsson then continued as follows:

In the industrial society, investment used to go into plant, equipment and capital tools. Today, a major proportion of the investment goes into knowledge upgrading or competence development leading to human capital. Another major investment stream goes into the development of information technologies leading to value added networks, global area networks. This is something that is invisible on the corporate balance sheet. (1997, 366)

Stewart (1997, 60) confirmed this by providing an example relating to American Airlines. At that time the airline listed all its jetliners as assets yet its reservation information system, which was more profitable, is intangible and therefore was not listed as an asset.

To illustrate the dilemma of demonstrating the value of intellectual capital, Roos and Roos (1997, 413–14) make the reader aware that if the top 50 programmers suddenly left a company such as Microsoft, the share price of the company would be likely to drop dramatically. This is due to the fact that knowledgeable investors would understand that even though the reduction in salaries would show a huge increase in bottom line profit (on the balance sheet) the company would have gone into 'intellectual bankruptcy' and would therefore not be sustainable in the longer term. This would also be true for any other knowledge-based company – a warning not to be disregarded!

The examples provided above serve as illustration that although intellectual capital's intangible value, both real and potential, is greater than that of the enterprise's financial capital, the management emphasis and attention given to intellectual

capital management is often far less than what the more tangible assets are receiving – an issue which authors, such as Bontis (1998), Edvinsson (1997), Stewart (1997), Sveiby (2000) and Wiig (1997), have been addressing for many years. A debatable assumption is that this is most probably due to a lack of suitable measuring instruments. Traditionally, the only way in which a company is able to demonstrate its success in tangible terms is through the instrument known as a ‘balance sheet’. As a result, unfortunately, what is not reflected on the balance sheet does not count. Edvinsson (1997, 367) expressed the opinion that in a society where a major proportion of a company’s investment stream goes into intangibles, there is a need for another mapping (measuring) system. Yet, seven years later, other mapping or measuring tools are not commonly known. Bontis, et al. (1999, 400) identified four tools that could serve as alternative measuring systems while Sveiby (2001) listed several more. They came to the conclusion that there is no single universal best tool but that the situation and the company to a large extent determined which tool would be best. From their evaluation it did seem that intellectual capital growth monitoring could be an appropriate alternative tool in the L&IS environment.

Measuring requires that the object of measurement is clearly understood. While a variety of definitions for intellectual capital were traced, it appears that there are three schools of thought. Authors such as Brooking (1997), Edvinsson (1997), Stewart (1997) and Sveiby (1998) see it as both the tangible and the intangible aspects of intellectual labour. Authors such as Bontis (1998), Jordan and Jones (1997) and Roos and Roos (1997) acknowledge the tangible but concentrate on the intangible (or human capital aspects). Lastly, there are also those like Rivette and Kline (2000a, 2000b) who mainly refer to the tangible aspects of intellectual capital, namely financial gain from intellectual property. This article was written from the perspective that the tangible and intangible are inseparable components of intellectual capital.

In terms of the actual terminology used to refer to components of intellectual capital, there are also three variations. Sveiby (1998) created the following table to compare the conceptual frameworks. The table was adapted to include the activities associated with the terms used:

Table 1: Conceptual frameworks for intangible assets (Sveiby 1998)

	Contributing authors			To refer to activities and processes relating to
	Sveiby	Kaplan and Norton	Edvinsson	
Concepts	Internal structure	Internal process perspective	Structural or organizational capital	Operations management: Infrastructure, policies, procedures and plans.
	External structure	Customer perspective	Customer capital	Customer relationship management
	Competence of personnel	Learning and growth perspective	Human capital	Human resource management

As is already evident this article makes use of the terminology popularised by Edvinsson.

Regardless of the terminology used the goal of intellectual capital management is to improve the company’s value generating capabilities through identifying, capturing, leveraging and recycling knowledge effectively and also efficiently. This would include putting in place structures and procedures to capture and make available intellectual property that came about due to the deployment of a company’s intellectual capital development strategy. It also requires that intangible assets are monitored (and measured) for growth and that appropriate actions are taken to ensure that the intangible assets are valued and protected. Fortunately it does appear that since 1998 more and more organizations are recognizing the importance of correctly identifying, managing and measuring their intellectual capital. The predicament for the L&IS lies in the following questions: is the average L&IS measuring for bottom line performance, is it measuring for sustainability, or is it not really measuring at all? The opinion expressed here is that the L&IS needs to measure growth in a multi-dimensional framework if it wants to ensure its own sustainability.

Measuring – as required in the knowledge economy

Most of those currently in L&IS managerial positions would have started their careers while businesses were still solidly entrenched in industrial age ways of measuring success. Industrial age measuring required a financial balancing act usually at the end of a set period known as the fi-

nancial year. It is therefore predictable that many managers would still see measuring and success as the end of a process.

Knowledge economy measuring requires the mind shift and understanding that measuring is part of a process and that the year's end is just one reference point in that process. Knowledge economy measuring systems provide continuous feedback so that progress could be determined whenever appropriate. Traditional measuring provides an opportunity to reflect past occurrences. Now, past occurrences should be utilized as learning material.

Fortunately knowledge economy technology is contributing to the efficiency of the measurement of these 'past occurrences'. In the L&IS environment, the automation of processes and the use of technology to complete standard procedures ensure that effective measuring can be assumed when measuring any of the standardized tasks. This frees time and intellectual effort to deal with the more complex knowledge related tasks of analysing the trends reflected in and by the measured results.

Because the targets or goals of knowledge tasks (against which the individual should be measured) are more diverse it is much more important than ever before that each and every employee understands exactly what the organization's growth targets are. They should also understand how these targets impact on each and every individual. In the end that understanding is the factor that determines the quality of the success of the organization. Therefore, should staff not be able to grasp the importance of making a mind shift it is doubtful that it would be possible to implement intellectual capital development effectively or that it would be possible to measure growth accurately.

An intellectual capital focussed management strategy for L&ISs

To allow staff to grow with an intellectual capital management strategy it is necessary to involve them in setting that strategy. A way to start formulating the strategy is to ask a number of appropriate questions that would provide leaders, staff and other role players with guidance for strategic goal setting. De Gooijer (2000, 306) started off by asking the following three questions in her research:

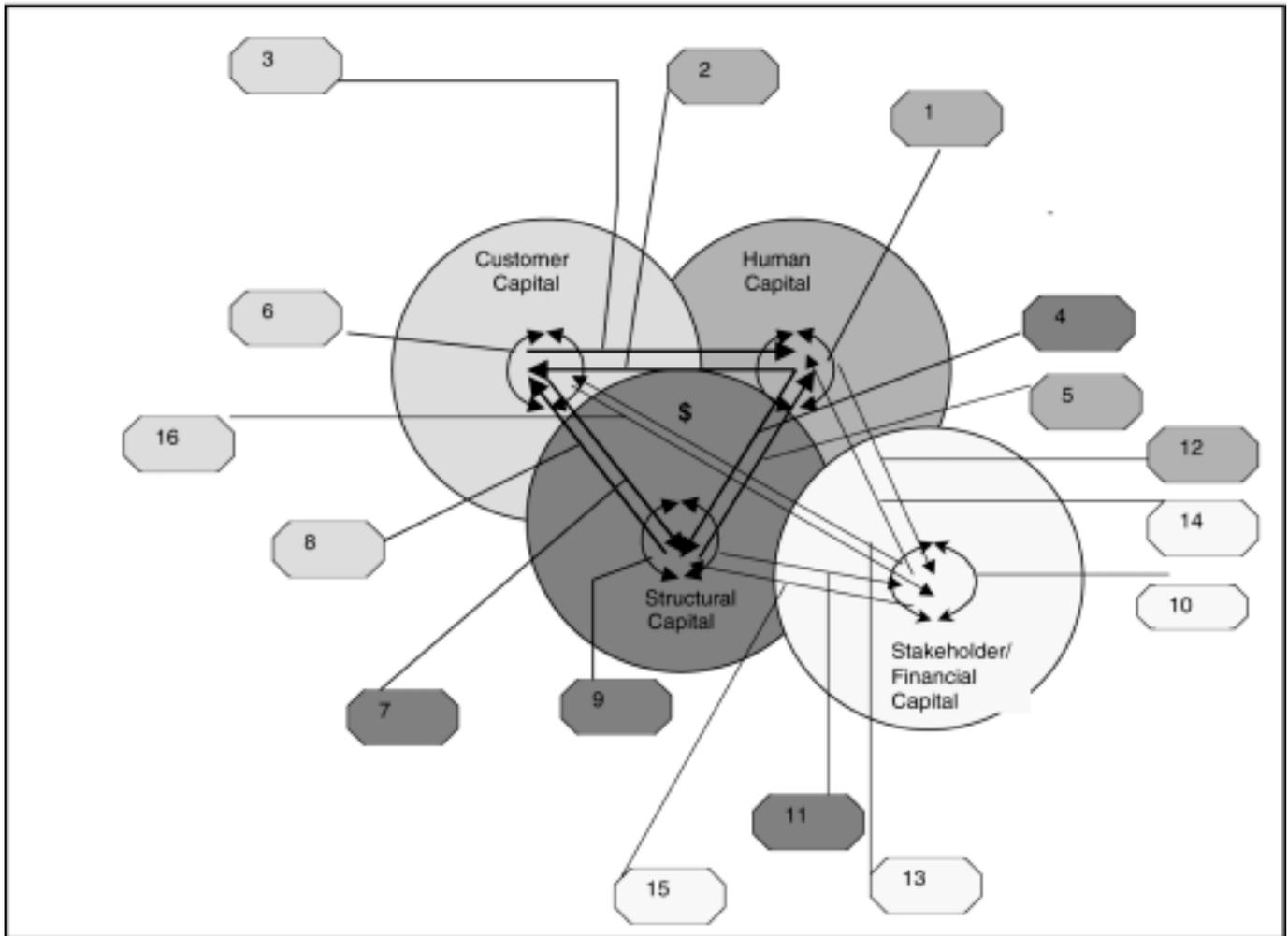
- What business processes do we need to excel at?
- How should we appear to our stakeholders?
- How will we sustain our ability to learn and develop?

Although this was seen as a good start it was soon realised that the average L&IS mission is far too complex to only attend to these three questions. Complexity is also brought about by the fact that the L&IS stakeholders and customers are as a rule not the same set of people. As a result it was decided to look for a tool that provided for a larger set of questions to ask. A relationship model or guideline developed by Sveiby (2000) and adapted by Van Deventer (2002, 3.17) was found to be very useful. Sveiby's original guideline suggests that nine relationships exist between human, customer and structural capital. He therefore developed nine questions to address when implementing and growing intellectual capital development initiatives. Figure 1 depicts Van Deventer's augmentation of Sveiby's model to allow for the relationship with stakeholders (who usually are the suppliers of financial capital within the L&IS context). The associated questions are identified numerically and are provided separately.

The questions to ask (adapted to make provision for L&IS and numbered as indicated in Figure 1) are the following:

1. What should we be doing (as L&IS) to improve the transfer of competencies among the people in our L&IS?
2. How should the L&IS's employees be improving the competence of customers and suppliers?
3. How should the L&IS's customers and suppliers be improving the competence of the L&IS employees?
4. How should the L&IS be improving the conversion of individually held competence to its systems, tools and templates?
5. How should the L&IS be improving an individuals' competence by using the available systems, tools and templates?
6. How should the customers and suppliers be improving the conversations amongst themselves so that they could improve their competence?
7. How should the competence of the customers and suppliers be improving the L&IS's systems, tools, processes and products?
8. How should the L&IS's systems, tools, processes and products be improving the competence of the customers and suppliers?

Figure 1: Required interactions for an intellectual capital focussed management strategy (adaptation of Sveiby's (2000) model)



9. How should the L&IS's systems, tools, processes and products be effectively integrated?

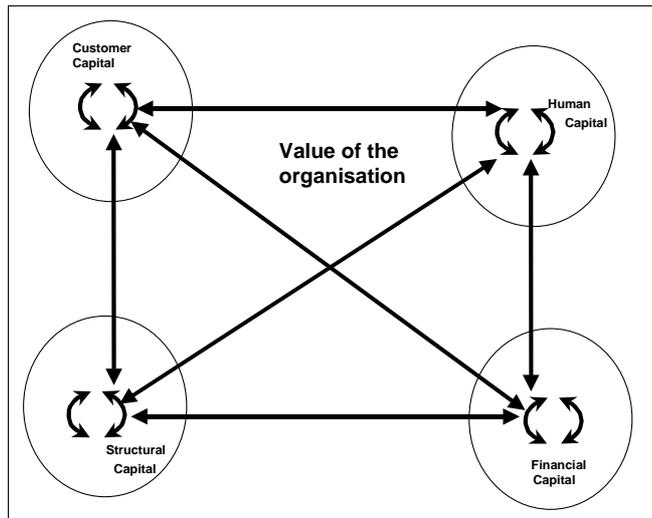
Questions one, two and five refer to the development of human capital, questions four, eight and nine point to developing structural capital and questions three, six and seven deal with the development of customer capital. The intention with these questions is to focus on development or growth efforts but also to ensure that the three core aspects of intellectual capital development (structural, human and customer capitals) are addressed.

Van Deventer's (2002, 3.17) augmentation of Sveiby's model relates to the stakeholder section. She claimed that in practice, just as Kaplan and Norton (2001, 99-101) established through their work with many public sector companies, it has become increasingly clear that the divide between

the customers and stakeholders of the L&IS needs to be bridged. It is also clear that, if it wants to be sustainable, the L&IS leadership should take on the responsibility to build that bridge. The realistic focus area where such a bridge should be facilitated is in the area of financial investment in the service as the average L&IS relies on stakeholders for financial investment. To test the workability of this idea, seven more relationships were identified and added to Sveiby's model. The associated questions to ask were identified as the following:

- 10. How should stakeholders be measuring success and investing strategically to ensure that the organization as a whole is able to ensure access to important information?
- 11. What should the L&IS be communicating to assist stakeholders in making decisions with regard to continuous development of the required infrastructure

Figure 2: Identifying the value created by an intellectual capital management strategy



and finding alternative funding models? (This is where the traditional balance sheet information would fit into the picture.)

12. What should the L&IS be communicating to assist stakeholders in making the right decisions with regard to L&IS human capital development?
13. What should the stakeholders be doing to address their responsibility with regard to setting standards, participating in workgroups and utilizing infrastructure for the L&IS's customers?
14. What should stakeholders be doing to ensure that L&IS human capital development is possible?
15. What should the stakeholders be doing to address their responsibility with regard to investigating technology alternatives, financial support and technical expertise to ensure the development of an effective L&IS infrastructure?
16. How should the L&IS's customers be assisting stakeholders in making the right decisions in terms of their need to gain access to reliable global information?

The fact that the questions are equally distributed alludes to the most important principle for effective intellectual capital management: there must be balance amongst the capitals. Although it is possible to add more initiatives in a developmental area, that one capital is not more important than the others. All four capitals have to be addressed to ensure sustainability. This becomes more apparent when the focus on the model is shifted from the individual components to the intersection amongst the four components.

It is then possible to see that this is where the true value of the organisation would be. Figure 2 gives an indication of what is meant by shifting the focus.

When 'making financial profits' is the goal, the value of the organization would obviously focus on growing its financial profits to the benefit of stakeholders, customers and staff. Because the L&IS's value is not normally determined by money generated there were still uncertainties. The context and perspectives of each of the capitals would have a dividing impact on both the initiatives and the interpretation of the value created. This led to the incorporation of an idea traced through the work of Kaplan and Norton (2001), which will be discussed in the next section.

What is clear at this stage is that in order to be sustainable in the knowledge economy it is necessary to understand that the relationships between human, structure, customer and stakeholder capitals are vital. The L&IS sector would therefore, in the first instance, be required to ensure that customers could trust that they are receiving the services and products that maximise their own productivity and asset utilization. Secondly L&IS stakeholders would need to be assured that they are receiving the best value for their investment. Lastly, but perhaps most importantly, L&IS staff would have to be assured that they have the necessary skills and resources to provide for a motivating environment and that the infrastructure created will ensure continuous improvement.

A framework for measuring library and information services

Kaplan and Norton realised that their measuring tools as a rule, even when they are adapted, do not make provision for service organizations. They therefore developed a model through which public sector agencies could develop their strategic objectives. This model (Kaplan and Norton 2001, 101) was utilized to create the framework reflected in Figure 3. The model makes provision for the development of objectives and measures in terms of the four items identified previously (stakeholder, customer, structure and people development). It brings in the notion of value created and then indicates that value should always be measured against the mission of the service. It

also caused a reshuffle in the relative position of each of the capitals.

As in the original model the adapted model again places customers and stakeholders on a par. Traditionally L&IS customers do not always realize that they are co-responsible for the services and products that are financially supported by the stakeholders. This framework (together with the strategy setting questions generated through Sveiby's model) should ensure that the co-responsibility relationship could be developed.

The original Kaplan and Norton model places human capital growth as a prerequisite for the development of structural capital. There is value in such an argument but when it was taken into consideration that many information products are deliberately developed and deployed in such a way that customers can both benefit from and contribute to this 'capital' without any direct intervention by information staff, it was relatively easy to decide to put these two capitals at the same level but with a definite direct relationship.

The model also makes provision for the fact that not all human capital can and should be transferred to structural capital and, similarly, customers are then able to add value by engaging in interaction without involving an information intermediary. Obviously the L&IS human capital would benefit from the development of structural capital. What is important is that there is balance in the relationship and development of all capitals. The one is not more or less important than the other. They therefore need equal attention during strategy setting.

Figure 3 further indicates that the development of both human and structural capital is seen as a prerequisite for value creation. Stakeholders may not benefit directly from the value provided by the service but, by ensuring that the mission of the service is in line with stakeholder strategy, stakeholders ensure alignment with their own focus and therefore benefits indirectly. Customers benefit from the value created with stakeholder's financial support but need to be in contact with stakeholders as well. As was mentioned earlier such contact ensures that stakeholders are aware of the real needs of the customer when providing input to the development of the service mission. All of the above gives rise to the three fundamental questions to use for measurement and goal setting for sustainability:

Figure 3: Framework for the measurement of intellectual capital growth in the L&IS (adapted from Kaplan and Norton (2001, p 101)



1. What is the value of the service to the stakeholder(s)?
2. What value is the customer deriving from the service?
3. What value is there to a staff member?

It is implicit that success in terms of the development of structural capital would underpin and contribute to the satisfaction or perception of value in staff and clients, as well as stakeholders. Growth in structural capital would also indicate an increase in the L&IS's ability to add value in the process of fulfilling its mission, as it would provide evidence that the L&IS has the infrastructure and resources to be sustainable over the longer-term.

Conclusion

Measuring for sustainability is definitely not about showing financial value to the mother company or about only demonstrating added value to the customer. L&IS managers need to accept that the knowledge economy requires that all enterprises, also libraries and information services (even knowledge centres) adopt new ways to measure their growth in the drive to ensure long-term sustainability. What is measured gets done and therefore the only way to ensure sustainability is

to develop and measure growth over an applicable and wider spectrum of attributes than just the bottom line (financial capital).

Measuring for sustainability is about feedback for local development and progress against a strategy for a sustainable future. It is to, with the assistance from three strategic partners – staff members, customers and stakeholders, ensure that the L&IS as institution stays relevant and that it produces appropriate value. Value is of course a very subjective concept; besides satisfaction surveys, it would be necessary to identify a number of unprejudiced identifiers that could be utilized to collect objective data about the growth in L&IS value. Work completed by Kaplan & Norton (2001) provides essential guidance in terms of selecting such attributes. Both the attributes as well as the lessons learnt from implementing the strategy and framework will be discussed in a subsequent article.

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Editorial history:

paper received 24 June 2003;

final version received 18 February 2004;

accepted 23 February 2004.