The role of accounting in the knowledge economy

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The importance of intangible assets or intellectual capital (IC) has greatly increased in the last two decades. Unfortunately, financial accounting and traditional accounting instruments fail to capture these values and report them. As a result, there is a growing interest and study on knowledge assets or IC in this digital era or knowledge-based economy. Thus, there is a need to focus on the definition of intangible assets, the limitations of existing financial accounting framework in reporting these assets, the importance to measure and report intangibles, the problems encountered, the various methods used to measure intangibles and the role of accounting in the knowledge economy.

Key words: intellectual capital, knowledge economy, intangible assets.

INTRODUCTION

What is needed is an enhanced concept for corporate reporting and new management tools that will enable companies to manage these intangible assets in a systematic way. Companies like Skandia in Sweden have adopted the concept very early in the form of intellectual capital report, which is supplementary to the annual financial reports. This concept has become part of the disclosure and accounting rules in Denmark since January 01, 2002. Since then, companies are obliged to report on their IC if they own significant knowledge assets and their auditors have to certify the report. This practice would be able to enhance the ability of investors to better understand the value and the potential of the hidden intangible resources of an enterprise in order to make better informed judgement about its capabilities to perform in the future.

MATERIALS AND METHODS

Sullivan and Sullivan (2000) suggest two approaches to determine the value in which a company with intangible assets may be valued as a going concern or as a company which is to be acquired or merged with. The authors also describe two common circumstances where company value is desired, and discuss how value may be determined by using a non-traditional perspective on the company together with traditional methods for valuation. The authors did not identify a well-developed valuation method for IC and they did not mention the role of accounting in knowledge-based economy.

Seetharaman et al. (2002) state that the greatest challenge facing the accounting profession today is the difficulty in understanding the core value of the company which is its’ IC or in other words its’ intangible assets. IC, as defined by the authors is represented by brands, products, competitive advantage, patents, trademarks, customer relations, research and development (R and D), human capital, etc. As a result, there is a huge value gap between a business entity values as reported in the financial statements with the actual value invested. Further, it is argued that in the new knowledge economy, knowledge rather than physical assets drives innovation, revenue and profit growth. The authors look at the challenges faced by accounting and where it is heading in the knowledge economy environment.

They also explain the reasons why there is a slow progress in measuring and reporting IC. In the article, the authors mention some new theoretical and practical methods for measuring IC. However, no mention is made to identify the best accounting framework for reporting IC. They also did not mention in detail the role of accounting in the knowledge economy.

Crowther et al. (2003) argue that the role of accounting as a mechanism for knowledge creation is flawed due to the uncertainty of the external environment. If accounting is continued to be used as a tool for organisational decision-making, it needs to incorporate recognition of the uncontrolled and unpredictable external environment as the external factors of the environment can have significant implications for the future status of an organisation. The
authors have successfully pointed out various problems in the field of accounting but unfortunately they did not come out with a clear resolution to all those problems that have been identified.

Lambe (2003) explained the development of the accounting system in the Dutch East India Company, a knowledge-intensive business in the 17th and 18th century. The author then identifies three major accounting-related problems faced by knowledge intensive enterprises today which are partial exclusibility, inherent risk and non-tradability. Partial exclusibility refers to the ability to exclude other parties from the benefit of one's assets or investments specifically in the field of knowledge assets. Ownership of knowledge assets is always poorly defined, poorly recognised and almost impossible to protect. Inherent risk in knowledge-intensive enterprises is well recognised. The less tangible the knowledge activity, the higher the risk it will be. Non-tradability refers to the absence of transparent markets for knowledge assets.

Dzinkowski (2000) reviews the accountant's role in the process of measuring and managing IC in the new economy. However, there is still a great deal of room for experimentation in quantifying and reporting on the IC of the firm. At this point, developing IC measures and reporting practices that are comparable between firms remains one of the key challenges for the accounting profession. It is recognised that there is a long way to go for generally accepted and endorsed practices to evolve. So, the author has yet to identify a generally acceptable reporting practice for IC.

Allee (2000) observed that the most common IC framework was still operating within a traditional view of the enterprise that limits the type of business and economic analysis that might be possible with an expanded view of value. The author argues that most of the conversation around IC and intangibles only serves to reinforce existing thinking and mindsets rather than challenge them or offer feasible alternatives. The author realises the expanding impact of IC and intangible assets require expanding potential value domains to include: business relationships; human competence; internal structures; social citizenship; environmental health and corporate identity. This expanded view of IC allows us to begin redefining value and wealth both at the business level and at the macro-economic level. Redefining value allows us to understand knowledge and intangible benefits and to more fully appreciate intangible assets. IC and intangibles analysis helps us to fully understand our company or country in all its uniqueness but only if we continually move forward to emphasize the strengths and differences that these perspectives offer.

The author advises that we must be vigilant in our thinking and continually challenge our assumptions, be alert for the shortcomings and limitations in our models and be willing to experiment with very different ways of looking at the world.

Lev Baruch (1999) claims that intangibles can account for as much as 85% of a company's perceived value, which is something companies have to start managing like physical and financial assets. Studies show that knowledge assets such as brands and patents impact every sector of the economy.

When American Airlines sold 18% of its electronic flight reservation system in October 1996, Lev took the opportunity to value intangibles because the reservation system is basically a big knowledge asset. He computed that the value of the reservation system constituted 60% of American's assets, far above the value of its fleet of airplanes. He strongly suggested that companies should consider the value of knowledge assets before they do any analysis because the performance of knowledge assets is a better indicator of return and shareholder value, and a more meaningful measure of a company's performance than the concrete assets.

Wurzburg (1998) observes that the current financial accounting and reporting system provide too little information on the kinds of intellectual assets that would appear to be important in a knowledge economy. Moreover, there has been little progress in changing financial information, or improving non-financial information although there are observable changes in the methods of production, work organisation and qualification requirements in enterprises.

Olsen Curtiss (1999) observes that the traditional accounting based on periodic, historic, cost-basis and statement-based measurement is being replaced by comprehensive, forward-looking, real-time, value-based, actionable knowledge - all driven by technology, globalisation and the so-called new economy. The type of information provided by Certified Public Accountants and other financial reporters must have these characteristics:

1. Continuous and real-time information instead of periodic reports
2. Forward-looking reporting as opposed to historic reporting
3. Delivered on a value basis as opposed to a cost basis
4. Comprehensive instead of merely financial
5. Easy to obtain through databases as opposed to paper-based statements.

Ivey (2002) observes that in the modern economy the distinguishing factor between a successful company and an unsuccessful one can be its people when the technology of production is increasingly uniform.

Daum (2001) observes that the importance of intangible assets, and the value of companies such as relationships with business partners, brand awareness and new business ideas, but also know-how, corporate culture, and the ability to innovate, has greatly increased in the last two decades. One clear indication of the trend is that the portion of a company's total market value that exceeds its book value, and has increased from 40% in the early 1980s to over 80% at the end of the 1990s. Unfortunately traditional accounting and management instruments are not able to capture these new values and report on them.

Rodgers (2003) in his article 'Measurement and reporting of knowledge-based assets' gives a definition and classification for knowledge-based assets and provides a framework of classification and valuing knowledge-based assets. He further explains the reasons for including knowledge-based assets with historical-cost basis financial statements, and provides a three-way classification system for knowledge-based assets.

The author suggests that professional standard setters should develop a basis for the recognition and measurement of internally generated knowledge-based assets. Many problems such as higher capital cost, misallocation of capital, decreased incentives for entrepreneurs and knowledge workers will persist if there is no action taken by accountants in valuing knowledge assets. Meer-Kooistra and Zijlstra (2001) observe that IC is becoming a major part of companies' value in today's knowledge-based economy. Capability to identify measure and report IC helps companies to manage and control IC. Today, many companies are reluctant to provide full disclosure of IC in the annual report to the external stakeholders. This will lead to lack of information about companies' value, which may have more serious consequence that the stakeholders make wrong or bad decisions. To remedy this situation, new tools must be developed which enable managers to identify and measure a company's IC and to report it within a consistent framework. Reilly (1996) observes that the valuation of intangible assets has become an increasingly more essential and more complex process for the corporate bankruptcy and reorganisation environment. Analyses and appraisals of debtor intangible assets provide numerous information and strategic benefits to debtors, to creditors and to other parties-in-interest. Appraisers will typically try to use two or more valuation approaches and methodologies to analyse intangible assets. The author argues that accountants should be generally familiar with the valuation concepts and methodologies as they often involved in bankruptcy.
and reorganisation process. Three different categories of approaches in valuing intangible asset have been considered and discussed in the article. There are cost approach, market approach and the income approach.

Valentine (2002) states that, if organisations are to more effectively identify, measure and manage their IC, the responsibilities for initiating and executing these tasks will fall upon the managers of organisations.

Siegel et al. (1997) observe that the role of accountants in business and industry is changing. The emphasis today is more on information analysis and strategy setting rather than on the conventional task of data collection and history reporting.

Sharma (2000) claims that accountants and business managers can unravel the meaning of knowledge management by observing and categorising web-based information on knowledge management.

The author manages to give some insight on the knowledge management issue and a few methods in measuring knowledge assets but fails to provide a clear picture on what is knowledge management and how organisations actually measure and value their knowledge assets.

Bor-Yi (1992) states that, a fast-expanding element of the accounting profession is in the field of timely decision support. The subjects of just-in-time management, quality control cost systems, electronic data interchange, and expert systems are some examples of how accounting services have evolved quickly due to the changing nature of the tools used. The diversified specialisation and the common dependence on information technology (IT) lead to a strategic opportunity for the accounting profession.

Beck et al. (1996) states that, the role of management accountant is to provide dynamic information for making better decisions and developing blue-prints for business success. The authors suggest the use of knowledge ratio method to track the number of knowledge workers as a percentage of the total number of people employed in the company and industry. The higher the knowledge ratio, the more dependent the industry is on knowledge workers, and hence, IC. The authors argue that knowledge assets have replaced physical assets as the basis for a company’s growth and future prosperity in the new economy. Unfortunately, the authors fail to provide explanation on how to identify and classify knowledge assets in companies. Furthermore, the knowledge ratio method that has been suggested is too simplified and not adequate to measure the complicated and huge amount of knowledge assets.

Ito (2002) claims that, the specific benefits of intangibles usually come from human competence that is owned by people, and not the enterprise. The author suggests that intangibles can be measured in terms of inputs, or investments and efforts to add value to economic activities, or they can be measured in terms of output created by such investments and efforts. Input-based measures are not appropriate for the method of valuing intangibles, because intangible investments merely provide people an opportunity to create intangibles. Whether or not people can cultivate such opportunity depends greatly on their commitment and efforts.

RESULTS

The article is a descriptive study based on “secondary information” mainly from journal articles published in magazines and downloaded from the internet websites including Emerald-library, Google, Lycos, Altavista and ProQuest. More than 28 articles were surveyed; only 20 articles were selected for detailed discussions as shown in Figure 1.

DISCUSSION, ANALYSIS AND FINDINGS

Defining the knowledge economy and intangible assets

The source of economic value and wealth today lies less in the production of materials goods or tangible assets but more in the creation and manipulation of information, knowledge and ideas.

This new era which some call the knowledge economy is rewriting the rules of business and forcing a radical rethinking of corporate value. The industrial era enterprise models are no longer adequate to meet the dynamic conditions of an ever-changing world market in the information era. Knowledge intensive enterprises are calling forth a new approach to work, organisations, accounting and business. While there is little consensus as to what knowledge actually is, many do accept that
knowledge is a primary competitive factor in business today.

What is the knowledge economy? A knowledge-driven economy is one in which the generation and exploitation of knowledge play the predominant part in the creation of wealth. A knowledge economy is not just the digital economy, which incorporates the production and use of computers and telecommunication equipment. It is not quite the networked economy, which incorporates the telecommunication and networking growth during the last decades and its impact on human progress. The knowledge-based economy is a much complex and broader phenomenon. The knowledge economy is the "new economy" which differs from the traditional economy in several key respects:

1. The economics is not of scarcity, but rather of abundance. Unlike most resources that deplete when used, information and knowledge can be shared, and actually grow through application.
2. The effect of location is diminished. Using appropriate technology and methods, virtual marketplaces can be created that offer benefits of speed and agility.
3. Laws, barriers and taxes are difficult to apply solely on national basis. Knowledge and information 'leak' to where demand is highest and the barriers are lowest.
4. Pricing and value depends heavily on context. The same information or knowledge can have vastly different value to different people at different times.
5. Knowledge when locked into systems or processes has higher inherent values than when it 'walk out of the door' in people's heads.
6. Human capital-competences- is a key component of value in the knowledge-based economy.

The new economy is based exclusively on knowledge and intangible assets instead of financial capital, and the management focus is long term value creation such as increase in market share.

When we talk about the knowledge economy we are talking about a world in which people work with their intellect instead of their hands. It is a world in which innovation is more important than mass production, a world in which investment buys new concepts rather than new machines.

New kinds of businesses, based on knowledge, were created in recent years.

In this knowledge economy, companies become more flexible, more adaptive, and more fluid in their structures, producing "smart" products and services that featured mass customisation, customer participation in product design and manufacture, and the linking of suppliers, distributors, and strategic partners into chains of common destiny. Many companies have emerged, like Microsoft, Google, Facebook and other social networking media which have created more intangible assets and value creating potential than traditional businesses.

The Brookings Institution defines intangibles as non-physical factors that contribute to or are used in producing goods or providing services.

They are expected to generate future productive benefits for the individual or firms that control their use. We can think of intangibles in three ways:

1. Intangibles are assets that accumulate as a result of deliberate, manageable business activity. Most innovators in the field categorised it into three major groups:
   a. Human resources / capital, such as know how, educational level of workers, etc;
   b. Customer capital, such as brands, franchises, customer loyalty, etc;
   c. Structural capital, such as processes and system of doing things;
   d. This is the fastest-growing group of intangibles.

2. Intangibles are currencies of value that can be exchanged for other types of value, both tangible and intangible.

3. We can exchange knowledge for money, knowledge for knowledge or even knowledge for another intangible such as customer loyalty.

4. Intangibles are deliverables that we actively manage to create or gain value.

5. As tangible deliverables, intangible deliverables incur costs and accrue benefits.

The Society of Management Accountants of Canada (SMAC) defines intellectual assets as follows: In balance sheet terms, intellectual assets are those knowledge-based items, which the company owns which will produce a future stream of benefits for the company. The more recent descriptions of intangible assets are consistent with the following model definition.

That part of total organisational wealth represented by its intellectual assets or codified organisational resources of knowledge that can enhance organisational performance and increase organisational wealth, through their skilful and continuous transformation.

A noted scholar, Leif Edvinsson, et all developed the IC Framework into three main components, namely, human capital, customer (relational) capital and organisational (structural) capital (Appendix 1).

However, some innovators like Allee Verna also include social capital, environmental capital or leadership capital into the components of intangibles as illustrated Figure 2.

It is obvious that, there are different arguments on the components of intangibles and its definition.

As a result, problems and difficulties in valuing and measuring intangible assets emerge, as it has no universal standard and definition.

Therefore, it is crucial to have a universally acceptable definition to better and accurately identify and measure the intangible assets.
Problems and difficulties in valuing and measuring intangibles assets

The success of companies no longer depends upon production facilities, financial capital and ownership, but more and more upon immaterial values, known as intangible assets. As illustrated earlier, such assets include not only relationship with business partners, brand awareness and new business ideas, but also know-how, corporate culture and many more. Today, identifying, valuing and measuring intangible assets is becoming increasingly important for companies as the value of intangibles have greatly increased especially in the last decade. One clear indication of the trend is that, according to Jurgen (2002), the portion of a company’s total market value that exceeds its book value has increased from 40% in the early 1980s to over 80% at the end of 1990s. That means today only about 20% of a company’s market value is reflected in its accounting system. For knowledge-based companies, such as SAP, it is often less than 10% of its market value is reported in its financial statements. This is exactly the problem encountered by knowledge-based companies today. The accounting, controlling and management instruments or tools have not kept pace with the economic realities of the last few decades. Therefore, it is impossible to value and measure the actual value of intangibles through the use of traditional accounting model. As a result, the largest portion of companies’ economic activities is no longer captured systematically. One of the major problems with today’s accounting system is that they are still based on transactions, such as sales. In the current, knowledge-based economy much of the value creation or destruction precedes the occurrence of transactions. For example, the successful development of a drug creates considerable value, but its actual transactions, such as sales, may take years to materialise. This is the reason why companies find it difficult to account for their intangible assets, as there is no market for intangibles, and a market is what provides a value. The intangible assets such as new discoveries like drugs, software programmes, brands or unique organisational design and processes that provide a competitive advantage are not traded in organised markets, and the property rights over these assets are often not fully secured by the company. This makes the intangible assets more difficult to be valued and measured.

Another difficulty in measuring intangible assets is that it is lack of “scarcity”. In contrary, scarcity is a typical characteristic of tangible assets. In a typical tangible asset based business the return will increase if you invest further into this business, but only to a certain level, then it will decrease. For example, if a farmer, who owns a piece of land (tangible assets), he can increase his return, by employing more workers or by investing into better agricultural machinery. But at a certain point in time, the return of his investment will decrease due to the scarce asset called “land”. With knowledge-based assets, for example a book or software, this is totally different as it can be copied limitless and can be used and read by as much people who like to read it. This is applied to human’s knowledge which has unlimited usage. Thus, companies have less control over intangibles like knowledge, which causes higher risk. It is therefore very difficult to capture and measure the value or the worth of the intangible assets.
Moreover, the nature of intangible assets makes it difficult to be measured. As we all know, there is no direct relationship between an intangible asset and a financial outcome. If we invest into R&D for an example, it does not mean that we will increase revenue and return. Only if our R&D investments lead to leading edge competitive products and only if we are able to sell those products on a larger scale, we can cover our R&D investments and make money. Therefore, only through activities and initiatives, which combine different intangible assets (for example by combining R&D effort with marketing expertise to ensure a development of right products, and by combining the development efforts with the distribution and sales capabilities of the organisation), financial value will be created. Thus, the value of intangible assets is very much dependent on external influences such as market perception and changes in customer preferences, technology changes, etc. In addition to that, if a company fails, its intangible assets cannot be sold off easily like tangible assets. For instance, the human resources of the company cannot be sold off, and it will sometimes incur compensation cost for dismissing them. This is why valuation of intangibles is difficult. Nevertheless, to become knowledge driven, companies must learn how to recognise changes in intangible assets in the worth of their business and ultimately in their balance sheets.

Methods of measuring intangible assets

How do we measure a firm's intangible assets? How can a firm tell whether its knowledge assets have increased or diminished over a certain period of time? As mentioned earlier, the traditional transaction-based accounting model fails to capture the difference between the book and market values of companies. Currently, there are a few approaches used by different companies to measure intangible assets. One method that is now widely used by U.S. companies is Kaplan and Norton’s Balance Scorecard (BSC). This method combines financial with non-financial measures, such as internal business processes, learning and growth and various customer-related measures (Kaplan and Norton, 1996). The scorecard can be represented in diagrammatical form as in Figure 3.

Kaplan and Norton suggest measuring organisational performance in four key areas: Financial, customer, internal business process as well as learning and growth. These areas can be split into two sections. The first section includes current financial measures, which consist of revenue growth, cost management and asset utilisation. The second section is the operational issues. It can be addressed in the customer, internal business and learning and growth areas. This method has been used by many organisations including The Royal Bank of Scotland, at the strategic level, and Hewlett Packard, to measure the effectiveness of the product development cycle.

The Intangible Assets Monitor (IAM) is another method developed by Karl-Eric Sveiby in 1997 for measuring intangible assets. It has a presentation format, which displays a number of relevant indicators for measuring intangible assets in a simple way. This method has been implemented in several companies (for example, Celemi,
Table 1. Intangible assets monitor.

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<thead>
<tr>
<th>Market Value</th>
<th>Indicators for:</th>
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<tr>
<td></td>
<td>Tangible assets</td>
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<td>External structure</td>
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<td>Growth</td>
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<td>Stability</td>
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Figure 4. The Skandia navigator. Source: Skandia (1994).

WM data). The choice of indicators depends on the company strategy. The format is particularly relevant for companies with large intangible assets. The IAM is a Stock-Flow Theory, same as traditional accounting theory. According to the IAM, what people do is transformed into either tangible or intangible knowledge structures. These are then 'directed' outside or inside the organisation. From this premise Sveiby has developed a matrix that includes three areas: external structure (customers), internal structure (organisational system) and competence (employees). Each area can be analysed by the indicators: growth and renewal, efficiency and stability. This is illustrated in Table 1. This method does not give a comprehensive picture of all intangibles but rather an indication of these three areas.

The Skandia Navigator is another method, developed by a Swedish financial service company. This method places special emphasis on the 'human focus', which is seen to interact with all major areas of concern. For Skandia, major areas of focus include 'financial', 'customer', 'human', 'process' and 'renewal and development'. These categories are illustrated in Figure 4. This approach does not focus merely on accounting but tries to improve shareholder relations through increased transparency of its IC stock. The main idea of the Skandia Navigator is very similar to balanced scorecard; to define five key areas for the future success of the company: financial, human, customer, process, renewal and development focus, where the first represents past achievements, the next three present results, and the renewal focus stands for the future (Figure 4).

There are several similarities between the IAM and the BSC. Both concepts argue that non-financial measures must complement with financial indicators. Both authors argue that the non-financial measures must be lifted from the operational to the strategic level of the firm. Both concepts categorise the intangible areas into three categories as shown Table 2. In addition, both the BSC and the IAM have a fourth category, which is 'Tangible Assets' for IAM and 'Financial perspective' for BSC. In addition, we can find similarities between the Skandia Navigator and the two other methods, like IAM and BSC. The Skandia Navigator focuses on a few similar key areas for the future success of the company. In 1993, Leif Edvinsson combined the two theories, IAM and BSC and published it in a supplement to Skandia's Annual Report, using for the first time the word, "IC", instead of the accounting term "Intangible assets". His category of IC is divided into three: areas, namely, organisational, customer and human capital.

Other than the above methods mentioned there are many other techniques used by companies. Montague Institute Review (1997) states that, there are at least 11
techniques that are used to value intangible assets which includes:

1. Relative value: The ultimate goal is to measure the progress, not a quantitative target
2. Competency models: By observing and classifying the behaviours of "successful" employees and calculating the market value of their output
3. Subsystem Performance: To quantify success or progress in one IC component such as revenue from licensing or sales from patent assets
4. Benchmarking: Involves identifying companies that are recognised leaders in leveraging their intellectual assets, determining how well they score on relevant criteria, and then comparing one's own company performance against that of the leaders.
5. Business worth: This approach centres on three questions: what would happen if the information we now use disappeared altogether? What would happen if we doubled the amount of key information available? How does the value of this information change after a day, a week or a year? The evaluation focuses on the cost of missing or under-utilising a business opportunity, or avoiding or minimising a threat.
6. Business process auditing: Measures how information enhances value in a given business process, such as accounting, production, marketing or purchasing
7. "Knowledge Bank": Treats capital spending as an expense, rather than an asset, and treats a portion of salaries as an asset, since it creates future cash flows
8. Brand equity valuation: Methodology that measures the economic impact of a brand (or other intangible assets) on such things as pricing power, distribution reach, ability to launch new products as "line extensions"
9. "Calculated Intangible Value": Compares a company's ROA with a published average ROA for the industry
10. "Colorized" Reporting: Supplements traditional financial statements (which give a "black and white" picture) with additional information (which add "colour") such as brand value, customer satisfaction measures, value of a trained work force.

### Role of accounting in the knowledge economy

The role of finance and the accounting profession has changed dramatically because of the rapid evolution of technology, the inadequacy of financial instruments, the globalisation of the economy and the emergence of the knowledge economy. To keep pace with these changes, the accounting profession is expected to provide accurate and timely financial information that can be accessed and analysed quickly and easily. Furthermore, financial professionals are leaving transaction processing and data input behind and are becoming more involved in tactical management at the middle management level and strategic management at the senior and board level. They provide useful information for decision-makers who are responsible for planning, executing, or evaluating activities of an organisation. They help implement information processes into business processes and assist management define business rules or policies that shape the nature of its business processes.

The nature of intangible assets is that there is no direct relationship between them and financial outcome. Only through activities and initiatives, which combine different intangible assets, can financial value be created. This is the role of accounting to provide such a strategic recipe for value creation. Thus, there is a need for the accounting profession to revise accounting standards. The accounting reporting system must now provide:

1. Continuous and real-time information instead of periodic reports;
2. Forward-looking reporting as opposed to historic reporting;
3. Delivered on a value basis as opposed to a cost basis; Comprehensive instead of merely financial;
4. Easy to obtain through databases as opposed to paper-based statements.

The accounting profession needs to be more sensitive to the critical business requirements relating to intangible assets. The accounting standards and conventions need to reflect the dynamic nature of the business environment. There is an urgent and pressing need for the accounting profession to accept new changes and to institute proactive measures to stay relevant and to shed its conventional and traditional approach and to be bold.
enough to adopt a more contemporary and up to date practices.

DISCUSSION

As the research on intangible assets lead to application in practice, it is important for researchers to concentrate on the similarities between the various ideas so that this can bring about a generally accepted definition of intangible assets and its components. As a result, this can bring about a broad reporting framework.

The various intangible asset components are closely related and are also intertwined with other resources a company has. This interrelationship should be further investigated in order to get a comprehensive insight into the cause and effect relationship of the intangible assets value-creation capacity. Even in a mild recession, what will distinguish winners from losers are intangible values like innovation and productivity, which give rise to new ideas, products and processes. An understanding of these assets and coming up with ways of valuing them will be very important and crucial from a reporting and business perspective. Some progress has been made, but much more work remains to be done.

Companies are afraid of disclosing too much of intangible assets information to the outside world as the information gives an insight into their competitive advantage. Moreover, the intangible information can easily be manipulated. Therefore, companies prefer to start with improving their internal reporting on intangibles. The external users of intangible reports demand standardised and reliable information. The financial analysts have other accounting priorities than external reports on intangibles. Many studies show, that at the moment both the providers and the users of intangible information are not willing to put much effort into reporting intangibles externally.

Intangibles are still a new discipline and not much is known about it at the moment. There are still ongoing debates on its definition, classification, components, value, linkage with strategy and revenue, best valuation framework and methods.

About 200 years ago, scientists have grappled to explain things for which they had no model yet such as energy, and gravity, but they nevertheless succeeded. We may have to look how they did it and apply similar methods and procedures to the problem of identifying and measuring intangible assets in a knowledge economy.

REFERENCES

## APPENDIX

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