

HRD's Role in Identifying, Measuring, and Managing Knowledge Assets in the Intangible Economy

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The problem and the solution. HRD's role in identifying, measuring, and managing knowledge assets in organizations is critical. Knowledge management refers to the ability of an organization to generate data, refine the data into information, and strategically use the information to make decisions. This article reviews relevant literature and demonstrates the role of HRD in identifying, measuring, and managing intangible knowledge assets in organizations. The article argues that in the 21st century, organizations are faced with tremendous challenges including financial meltdown, uncertain economy, cut-throat competition, globalized markets, economic marginalization, privatization and outsourcing of services, mergers, takeovers, rapidly advancing technology, rapid change, and generation of new knowledge. This article defines knowledge assets and examines the various forms of intellectual capital. The relevance of knowledge ratios to identifying, measuring, and managing knowledge assets in organizations is discussed. The success of tomorrow's organizations will lie in their capacity to learn, generate new knowledge, and successfully manage knowledge assets using new tools such as the balanced scorecard and the human resource scorecard. The article concludes by showing that knowledge is a new intangible asset most critical to the survival and thriving of both profit and nonprofit organizations.

Keywords: *intellectual capital; knowledge assets; measuring knowledge management; change*

As we begin the 21st century, we are witnessing the emergence of knowledge revolution in organizations. Knowledge has been identified as being an important issue for business organizations (Gao, Li, & Clarke, 2008). The survival

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of organizations in the 21st century will depend on the organizations' ability to identify, measure, and manage their knowledge assets (Dubrin, 2007; Sveiby, 1997). The need to identify and measure knowledge assets by human resource development (HRD) professionals is crucial. As noted, "Globalization, pressure for speed and innovation and growing competition for talented worker have given organizations added incentives to review their employee relations strategies in order to attract, motivate and retain the workforce that will help them be successful" (Joo & McLean, 2005, p. 473). The main focus of this article is to identify knowledge assets existing in organizations and explain how these assets are measured using the knowledge ratios and how they are managed. The article further discusses the advantages of using knowledge ratios to measure knowledge assets in organizations and why there is need for knowledge-based organizations to manage knowledge assets efficiently and successfully. It is argued in the article that the management of knowledge assets such as intellectual capital should lie at the heart of the value system of an organization. Thus, organizations that choose to identify, measure, and manage intellectual capital resources will have an advantage over their competitors, especially in this intangible economy.

Definition of Knowledge Assets

Intellectual capital is one of the major knowledge assets, which has been defined as "the intellectual material that has been formalized, captured and leveraged to produce a higher valued asset" (Bontis, 1996, p. 1). Intellectual capital includes intangible assets such as expertise, knowledge, and a firm's organizational learning ability. Thus, intellectual capital is a very new area of study and its definition by Bontis acted as a catalyst and brought the concept into the forefront of managerial thought. According to Ulrich and Smallwood (2005), an organization's intangible assets are critical to its success because intangibles open the way for HRD professionals to more readily link their work to shareholder value. Currently, major accounting firms in the United States and Canada realize that the conventional accounting standards applied in companies do not capture intangible knowledge assets such as intellectual capital accurately. This raises an important issue not only to the accounting firms but to all knowledge-based organizations employing many knowledge workers engaged in knowledge work (Drucker, 1993). HRD professionals like accounting professionals are challenged to think of new ways of measuring knowledge assets in organizations (Sveiby, 1997).

Forms of Intellectual Capital

Intellectual capital can be looked at in three main forms: human capital, structural capital, and relational capital (Edvinsson & Malone, 1997). The human capital theory can be defined as the idea that individuals are motivated

to spend on themselves in diverse ways by purchasing education and training, which is a form of investment. The spending on education and training by individuals, organizations, and governments is not for the sake of current consumption but for the sake of future pecuniary and nonpecuniary returns (Blaug, 1976). Thus, the theory of human capital sees people as a resource that can be invested in now and yield returns in the future. It includes spending on education, training, health, job search, and migration all aimed at improving individuals' earning (Nafukho, Hairston, & Brooks, 2004). Kaplan and Norton (2004) observed that human capital refers to the skills, talent, and knowledge or know-how of the organization's employees or strategic competencies that cannot be easily imitated or copied. In the organization, when employees are trained, their earnings increase based on employee productivity and the organization hopes to gain by obtaining higher profits. Bontis (1996) noted that human capital is the firm's collective capability to extract the best solutions from the knowledge of its people. Human capital is important because it is a source of innovation and strategic renewal as reengineering research, transforming, developing new products, and new sales. This is one major asset that organizations need to identify and manage if they have to compete globally.

Structural capital refers to the firm's organizational capabilities to meet the set goals (Edvinsson & Malone, 1997). Employees may have a high level of intellect, but if the organization has poor systems and procedures, the overall intellectual capital may not be used optimally to benefit both the individual and the organization. Organizations need to put in place structures that provide a conducive working environment if they are to tap the talent inherent in their employees. Organizations with silo cultures and bureaucratic structures are disadvantaged when it comes to the management of knowledge assets. Regarding the meaning of structural capital, Edvinsson and Malone (1997, p. 11) noted, "The hardware, software, databases, organizational structure, patents, trademarks, and everything else of organizational capability that supports those employees' productivity. . . . Structural capital also includes customer capital, the relationships developed with key customers."

Relational capital, also known as social capital, on the other hand refers to the organization's relations and network of associates and their satisfaction with the loyalty to the organization. It is concerned with establishing strong ties between the organization and its customers (Brooks & Nafukho, 2006). Therefore, human capital, structural capital, and relational capital combine to form intellectual capital (Sveiby, 1997). Stuart (1996) noted that the world's most important wealth creator is intellectual capital. It is the resource that defines the essential character of an organization and its underlying ability to carve out its particular niche in the market and discover growth opportunities well matched to its resources and included in the global economy. This therefore calls for HRD scholars to research on how to quantify and measure knowledge assets in organizations, as noted "HRD academicians have virtually ignored human capital theory and intangible assets allocation in view of

the fact that human capital originated in economics and was thrust upon education and human resource development” (Zula & Chermack, 2007, p. 2). For organizations to achieve their missions and ensure sustained growth, especially in this period of global financial instability and financial meltdown, identification, measurement, and managing of knowledge assets is not only a necessary but an essential condition.

Measuring Knowledge Assets in Organizations

In the new economic era that organizations find themselves, there is need for organizations to understand the economic developments taking place and to develop new tools for assessing economic conditions that are suitable for the current knowledge era (Beck & Connolly, 1996). However, “little academic work has been completed regarding human capital management systems. Practitioners are relatively years ahead of the academic work in progress or already completed” (Huselid & Barnes, 2002, p. 10). Since the early 1990s, most pioneering companies embarked on efforts to measure knowledge assets. These firms believed that the traditional accounting ratios did not take into consideration much of what makes an organization successful (Eiley, 1996). Thus, any attempt to measure knowledge assets must be viewed as measuring Return on Intangibles (ROI) as opposed to the traditional measure of Return on Investments. Regarding the measurement of intangibles, Ulrich and Smallwood (2005) developed a formula to be used in calculating return to intangible assets in organizations. Thus, Ulrich and Smallwood derived a four-level framework that HRD practitioners and professionals can use to demonstrate the value of intangible assets to their organizations. According to Ulrich and Smallwood’s ROI formula, Level 1 involves the need for leaders to keep promises made to employees and stakeholders, which in turn builds trust and credibility. Level 2 focuses on the need for every organization to have a compelling strategy, which builds confidence in the future and gives action today to the visions of tomorrow. Level 3 focuses on the need for every organization to recruit, develop through lifelong learning programs, and retain individuals with technical and human competencies. And Level 4 focuses on building value through organization and people; thus, different capabilities are developed throughout the organization. Regarding the building of capabilities, this is the area where HRD professionals should be fully involved. According to Ulrich and Smallwood (2005), empirical evidence shows that from the years 1960 to 1990, shareholder value in the United States averaged to 75% to 90%. But since 1990 this percentage has dropped to about 50% in both up and down markets. This difference in the percentage has been attributed to the effect of intangibles on organizational performance.

One of the tools used to measure intellectual capital is known as the knowledge ratio, which is determined by finding out the percentage of knowledge workers employed in the organization. The second ratio is the Return on

Knowledge Assets (ROKA), which is calculated by dividing the organization's revenues by the number of knowledge workers employed by the organization and comparing the dollar figures on a rate-of-change basis. This ratio will show whether the organization's return on knowledge workers is rising or falling on a monthly, quarterly, or annual basis.

Skandia, a Swedish financial services organization based in Canada, claims to have been one of the first organizations to measure and use intellectual capital ratios. The firm measures human capital by using indices such as an empowerment index that taps into its employees' motivation, support, awareness, and competence. In the case of the contemporary organizations operating in the 21st century, HRD practitioners should be concerned with how motivated their employees are and whether they have a voice to challenge the convention and reinvent the organization. Organizational CEOs should be encouraged to provide employees with a supportive work and learning environment as well as useful information to ensure employee awareness and continued development. The other knowledge-measuring ratios include training expenses per employee, employee turnover, average years of service per employee, and the levels of education and training of employees in the firm. As a proxy for knowledge flow in the organization, human resource professionals should be interested in examining measures of information technology literacy, change in information technology capacity (measured in gigabytes), and output-processing time (Bontis, 2002).

One of the pioneering studies on knowledge assets in the United States of America was conducted by Aley (1995), which examined 290 industries and used knowledge ratios by comparing the percentage of employees in the industry who were professionals, technicians, or other workers. The study showed that in the overall U.S. economy, 39% of the workforce was made up of knowledge workers. Industries were classified as high knowledge (40% of knowledge workers), moderate knowledge (20% to 40%), and low knowledge (below 20%). The study showed industries in high-knowledge category such as health and computer software created more jobs during the year of investigation and concluded that these were industries "that haven't just seen the future, they are the future" (Aley, 1995, p. 1).

Although the tools used to measure intellectual capital look rather abstract, they make economic sense. Thus, besides the current assets and fixed assets organizations have that are measured by the traditional accounting ratios, the new ratios focus on knowledge assets, which had never been used in the past to measure knowledge assets in organizations. Real assets that organizations have are the people, their expertise, competency, work attitude, work habits, creativity, innovation, resilience, and the knowledge they bring to the job.

Challenges of Measuring Knowledge Assets in Organizations

The notion of measuring intellectual capital sounds elusive, but if well exploited, it may give organizations a new tool from which to compete and

win. The main challenge of measuring intangible assets such as intellectual capital has to do with their abstract nature. In addition, measuring intangible knowledge assets can be time consuming. It is a process without any rigorous theoretical model or widely accepted guidelines as of now (Sveiby, 1996). This difficulty has however been solved by Kaplan and Norton (1992), who developed a balanced scorecard, which is discussed later in this article. Because the concept is new, there is no time-honored correlation between measures of intellectual capital and organizational performance. Given the financial crisis facing the U.S. economy and indeed other world economies, organizations may be discouraged from reporting on intangibles because it may be a double-edged sword. Organizations faced with limited financial resources, cash liquidity problems, and huge payrolls may not want to expose themselves to the world—that they lack knowledge workers, who are the thinkers and creators of goods and services that add value to the organization. In addition, very few organizations may want to admit and share data and information freely regarding the number of people who have been fired because people are the most valuable resources the organizations have. The other problem with using knowledge ratios is that if they are to be considered as assets then they have to be reflected by the organizations' end-of-year financial statements. This means that organizations with more knowledge workers may have to pay more tax on their knowledge assets. Thus, paying taxes on knowledge assets is a debatable point and one that needs to be addressed by the current complicated U.S. tax code. This is one critical issue that will make many organizations hesitant to start using knowledge ratios, especially during this recession period when the government is considering providing huge tax cuts, stimulus packages, and investment incentive packages to individuals and business organizations.

Why Knowledge Ratios?

In the previous section of this article, we have seen how knowledge ratios are measured and what they are. At this stage, looking at the advantages of these new ratios is crucial. Skandia—the financial services firm that first came up with the intellectual ratios measure, such as training expenses per employees, average years of service per employee, employee turnover, and employee education level—uses these ratios constantly to track the development of human capital within the firm. Over the years, the longitudinal effects of these ratios have been monitored and used for the allocation of resources (Bontis, 1996; Bontis, 2002; Eiley, 1996). According to Sveiby (1996), Skandia uses two tracks in measuring knowledge assets, namely, the human resource cost accounting and the Konrad track, which focuses on the measurement of intangible assets. The company was the first one to appoint a Director of Intellectual Capital in 1991. Since then, many organizations including universities have created the post of the Chief Learning Officer (CLO) in recognition of the important need of managing knowledge assets in their organizations.

Knowledge ratios are important to organizations because knowledge base is the key source of competitive advantage that organizations have today. By calculating knowledge ratios, organizations can determine how they are currently positioned within the industry's knowledge base and its rate of return on investment in human capital. Beck and Connolly (1996) observed that knowledge ratios need to be the tool kit for HRD professionals especially. Knowledge ratios can also be used to track the number of knowledge workers as a percentage of the total number of people employed in the company and industry. Thus, knowledge workers are the people in the organization who are creative and innovative. They may include professionals, engineers, scientific staff, senior management, and technical staff. The ratios also provide a critical insight into how dependent an organization or industry is on thinking assets.

According to Plott and Humphrey (1996), bankers and other financial investors are realizing that smart companies outperform. Given the fast rate at which new knowledge is being generated, knowledge ratios are not static and are ever changing. The ability of intellectual capital to attract hard capital for investment and development will influence the future of many industries, hence the need for knowledge ratios to be part of accounting ratios. Thus, knowledge ratios like accounting ratios keep on changing according to the organization's ability to learn from both the internal and external environment. Despite the changing nature of knowledge ratios, they can be benchmarked on a monthly, quarterly, and annual basis. Knowledge ratios should provide HRD professional useful information regarding the organization's performance in the industry. For example, if the knowledge ratio is increasing rapidly above its industry benchmark, like the Google company when compared with other search engine companies, this is an indicator of good financial performance. The value of fixed assets such as houses have been on the decline, which means financial institutions may no longer rely on fixed assets as security to advance loans but will instead look at the knowledge assets that an organization has before granting credit. Knowledge assets as a form of security may include the quality of staff that the organization has and not necessarily the physical assets. In this knowledge era, there is increased competition among organizations. The organizations that are willing to adapt to changes are the only ones that can manage to compete profitably. By identifying knowledge gaps between an organization and its competitors in the same industry, knowledge ratios can provide a powerful early warning signal of potential new entrants in the market. This will assist the organization in designing strategic plans aimed at managing the competitive environment. Knowledge ratios can help companies to keep a watchful eye on the knowledge gap between the organization and its customers. The ratios could be used to decide whether the knowledge gap is widening or narrowing on a monthly, quarterly, or annual basis. Usually, customers will turn to suppliers who are smarter than they and shun suppliers who fall behind in knowledge.

The major advantage of knowledge ratios to organizations in this intangible economy is in determining when company failures have gone too far and threatens to make the U.S. economy and indeed the entire world economy collapse. As early as in the 1990s, it was noted that organizations while firing employees because of poor economic performance may go beyond cutting the fat to cutting into the muscle and bone (Beck, 1996). By calculating knowledge ratios on a monthly basis and using these ratios in the business plans and business strategies, companies form a powerful tool that can be used to determine when a rightsizing has become a wrong sizing (Fitz-Enz, 1997). Stakeholders such as customers, shared holders, government agencies, financial institutions, and investors can rely on knowledge ratios to determine the health of an organization. The ratios can help in quantifying the intangible asset, the intellectual capital which an organization owns.

Managing Knowledge Assets

Having looked at the identification and measurement of knowledge assets in organizations, in this section of the article we look at the management of intangible assets. The most current and relevant empirical work conducted on the management of intangible assets in organizations is the work done by Kaplan and Norton (1992) in the balanced scorecard (BSC) approach to management of intangible assets. This was extended to the field of HRD by Becker, Huselid, and Ulrich (2001) with their human resource scorecard (HRSC). According to Brush and Ruse (2005), the scored approach of management of intangible assets in organizations begins with human capital planning and a sound management strategy. Hitt, Ireland, and Hoskisson (2005) defined strategy as “an integrated and coordinated set of commitments and actions designed to exploit core competencies and gain competitive advantage” (p. 7). The strategic planning process in the management of intangible assets in organizations begins with the alignment to organizational vision, mission, goals, and objectives (Zula & Chermack, 2007).

Balanced Scorecard and Human Resource Scorecard as a Knowledge Assets Management Tools

Kaplan and Norton (1992) developed the BSC tool, which has proved very useful to organizations interested in managing knowledge assets. Thus, the BSC refers to “a set of measures that provides a fast but comprehensive view of the company” (p. 71). The tool provides a clearer image of the health of the organization when compared to the balance sheets and profit-and-loss accounts—the traditional accounting tools that have been found inaccurate and inadequate in reporting the health of organizations. Besides reporting on the financial health of an organization, the BSC also reports on operational measures such as customer satisfaction, internal processes, and the organization’s innovative and improvement

activities. The BSC tool is holistic in nature and has four main perspectives of measuring and managing intangible assets in an organization, which include the financial perspective, internal business perspective, customer perspective, and the learning and growth perspective (Kaplan & Norton, 2004). (For a detailed discussion on how the BSC tool works, see Kaplan & Norton, 1992.) On the importance of the learning and growth perspectives it is noted:

[The BSC tool] identifies the intangible assets that are most important to strategy. The objectives in this perspective identify which jobs (the human capital), which systems (the information capital), and what kind of climate (the organization capital) are required to support the value-creating internal processes. These intangible assets must be integrated and aligned with the critical internal processes. (Kaplan & Norton, 2004, p. 54)

To demonstrate the important role that HRD scholars and practitioners should play regarding the management of intangible assets, Becker et al. (2001) developed the HRSC, a tool that aligns human resources management and measurement with the strategy of the organization and the people working in the organization. On the importance of doing this, it was observed by Becker et al. (2001, p. 7): "The benefits of HR as an asset are usually only recognized once aligned with another intangible asset such as the organization's strategy implementation." Thus, the human resource scorecard is an important tool that helps to clarify how intangible assets create value for the organization.

Managing Change in the Intangible Economy

The global environment in which organizations are operating is characterized by change. The only way organizations can survive in this changing environment is to use the learning organization paradigm (Senge, 1990). The notion of knowledge assets sounds quite abstract, and only learning organizations may be prepared to identify, measure, manage, and make use of this new, valuable tool kit and therefore lead the way. Once organizations identify the value of intellectual capital and what it is, then there is need to manage this intangible asset properly.

Stuart (1996) noted that organizations' challenge is to shape and build intellectual capital skillfully. Thus, organizations need to "grow" their intellectual capital. All organizations learn, but not always for the better. A learning organization has been defined "as one that is able to learn, to adjust and change in response to new realities. It can alter functions and departments when demanded by changes in the work environment or by poor performance" (Gephart, Marsick, Buren, Spiro, & Senge, 1996, p. 1). Although Senge (1990) defined a learning organization as an organization that is continually expanding its capacity to create its future. Hitt (1995) linked Senge's concept to the goal of excellence and defines a learning organization as an organization that is striving for excellence through continual renewal. From these definitions, a learning organization is one that is continually getting smarter and is able to steadily increase its IQ.

Two main reasons have been advanced for organizational learning. Survival, which stresses that learning must be equal to or greater than the environment change. If this is not so, then the organism or organization will die. The second reason is excellence, which means striving for superior performance. Given the rapid technological advances that we are witnessing, survival is not sufficient for organizations; sights must be raised to excellence or else the organization will not be allowed on the playing field. To survive, the learning organization must use its intellectual capital optimally and achieve excellence. By achieving excellence, the organization will enhance its chances of surviving.

Conclusion

This article has tried to identify what the intangible knowledge asset called intellectual capital is, how it is measured, its advantages, and how it is managed using the BSC and HRSC. The HRD professionals interested in measuring this valuable asset have a difficult task to make organizations realize its importance to organizational survival and excellence. Even among learning organizations that recognize the importance of intangible assets such as intellectual capital, HRD professionals will still face an arduous task of convincing the leadership to see the need to use knowledge ratios as a new tool kit for evaluating organizational performance. Of great import is for HRD professionals to conduct research on individual knowledge acquisition processes in organizations, sense making and reflection, dialogue, network utility, and individual development, especially in this new era of intangible economy (Fenwick, 2008). The most challenging obstacle will be to overcome the resistance of those managers and leaders who have fully embraced the traditional paradigm in this intangible economy and are successful. It has been shown in this article why organizations must now rely on knowledge ratios to improve their performance given the financial meltdown being felt by companies as well as governments. What lessons can we learn from some of those very successful companies that are now caught up in the financial meltdown and cannot operate without some form of government financial assistance? Learning organizations must properly manage their most valuable asset, the intellectual capital, if they have to remain at the top, especially in this competitive and global economy. As noted, "Organizations that encourage employees to learn, question precepts, and explore curiosities will be best prepared to address the future. The key components of brain-based organizations include: broad based information dissemination, challenging and renewing goals, breaking down adversarial relationships, infusing the organization with a spirit of curiosity and fostering long-term learning" (Harari, 1996, p. 47).

The new measurement and management tools for intangible assets in organizations, such as balanced scorecards and human resource scorecards, "must align with the critical business initiatives to be valued by the organization" (Zula & Chermack, 2007, p. 258). Indeed, the "field of human resource development could benefit from a greater understanding of how human capital

scholars have clearly defined methods of quantifying returns of investment in education and training” (Nafukho et al., 2004, p. 549). As correctly observed by Zula and Chermack (2007, p. 259), “in order for HRD to continue to develop credibility among other fields, HRD must develop systematic and uniform approaches to determining ROI through the utilization of instruments and standardized human capital planning.”

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