The Value of Human Resources Measurement in Intellectual Capital and Knowledge sharing

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Abstract: It is recognised and accepted by business leaders and academic scholars alike that people (human resources) are an organisation's most critical assets in the contemporary knowledge economy. While this may be true, this rhetoric is often not matched by the reality of employment practices related to this important yet ambiguous resource. The purpose of this paper is to review the current situation with respect to the question of people as valuable resources in the intellectual capital and knowledge management paradigms. Our contention is that human resources pivotal to the success of modern business enterprises, irrespective of their sizes. This paper's empirical basis is achieved by presenting research data made by the authors on the relationship between psychosocial variables and human resource practices on behaviours associated with intellectual capital and knowledge sharing. A positive relationship has been found between attitudes, subjective norms, and self-efficacy on knowledge sharing behaviour. Besides this, a positive correlation was found between the concept of psychological capital and knowledge sharing. With respect to human resource practices, the paper includes a review of research undertaken on management's perception on the importance of measuring human resources, some organisations' attempts to achieve this, and the current barriers towards the measurement of value. Current research on the relationship of knowledge sharing and human resource practices is presented. The paper concludes with a discussion on the authors' observations of the value of human resources in the current state of the theoretical and practical considerations of intellectual capital and knowledge sharing, and their suggestions on a way forward in this developing area of ICKM.

Keywords: human capital, human resource value measurement, intangible assets, knowledge sharing, psychological capital

1. Introduction

Business leaders and academic scholars alike recognise and accept that people (human resources) are the most critical assets that organisations have in the contemporary knowledge economy. While this may be true, the rhetoric is often not matched by the reality of employment practices related to this important, yet ambiguous resource. This is manifested in times of financial pressure, when the human resource (HR) becomes the first resource to be marginalised because of the dominance of the cost as opposed to the value mentality of HR in conventional financial accounting measures. The central issue is that knowledge, ability, and motivation (the essential components of employee value) and their psycho-social interrelationships, through knowledge sharing with relational and structural components of intellectual capital are intangible. Therefore, they are difficult to measure in conventional business metric in terms that are readily understood and accepted by major external and internal business stakeholders. The purpose of this paper is to review the issue of people as valuable resources in the intellectual capital and knowledge management (ICKM) paradigms. Our contention is that HR are a pivot to the success or otherwise of modern business enterprises, irrespective of their size. To make our case, we will present research data on the relationship between psychosocial variables and human resource practices on behaviours associated with ICKM. We will be emphasising the value of knowledge sharing as a key means of leveraging the pools of human capital potential that are available in organisations, but are often not used to their maximum effect in achieving results. This is a very broad area and so we will be focusing specifically on particular aspects we have been involved in.

2. HR as value not cost

The global economy has witnessed a radical change in the way people work and in their employment relationships. This change has been from a psychological employment contract based on reciprocity to one that is based on continuous improvement and workplace innovation (Sharkie, 2005). The management issues of this century focus on customer loyalty and retention, increasing flexibility of employment, identifying and attracting talented people, and reducing costs (Board, 2001). While CEOs' roles are quite diverse, they still want: continued growth, increased profitability or productivity, and improved shareholder value (Xin, 2007). Pfeffer (1998) has suggested a disturbing disconnect in the management of people in contemporary organisations. While the evidence in terms of research, experience, and plain common sense suggests a direct

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relationship between the financial success of organisations, and the commitment to practices that treat HR as assets, the reality is that many management practice trends are moving away from this. This is disturbing considering the requirement of 21st Century enterprises to encourage continuous improvement and workplace innovation. This can only be achieved by maximising the potential of each organisation's human capital capability through practices and activities that encourage members of the human capital pools to build and share their knowledge. This we argue is much more effective than relying on employees competing with each other, which in the long term is quite an inefficient use of valuable resources, and may impede the building of long term capability.

It is our contention that HR practices have a vital role in selecting and training knowledge workers and winning their self-discipline and commitment. Given the drivers for CEOs to demonstrate increased productivity and improved shareholder value, a major development in HR focus is to demonstrate its added value to organisations as human capital in the ICKM paradigm (Ployhart, Iddekinge and Mackenzie, 2011, Fitz-enz, 1990, Bontis, Dragonetti, Jacobsen and Roos, 1999, Davenport, 1999, Sveiby 1997, Edvinsson and Malone, 1997). Thus the central issue is of having appropriate measures of HR in terms useful to stakeholders (Becker, Huselid and Ulrich, 2001, Toulson and Dewe, 2004). If human capital is crucial for success and a key source of competitive advantage in the information era, simply stating that people are an organisation's most important assets is no longer sufficient. Instead, human capital needs to be measured and accounted for as are other capital (i.e.,valuable) assets. Increasing competitiveness demands that the HR function must analyse both the costs and benefits of its practices. This has challenged the traditional operational HR practices. Critics like Fitz-enz (1984, 1990) stress the importance of HRM being able to demonstrate the value it adds in terms of business metric.

The genesis of the concept of human capital to connect the workforce contribution to the output of organisations is well documented (Mincer, 1958, Shultz, 1961, Becker, 1975). In the HR management literature this has appeared as intangibles, as part of intellectual capital (Edvinsson and Malone, 1997, Stewart, 1997, Fitz-enz, 2000). Essentially this means that people at work (human capital and their knowledge sharing capability) are items of value, rather than expenses (in accounting theory and practice). While there is little theoretical debate on the importance of human capability in organisations to innovation and sustained competitive advantage, putting this into practical and useful business metric terms is still problematic. So the utility of human capital is focussed on developing practical applications useable in organisational life. It is not the lack of theory that is hindering further development, but rather the lack of alignment of the concepts of human capital with current measures that are used to measure asset value.

As any accountant will tell you, it is not possible to measure the substance of intangible assets directly; when they are measured they are called goodwill. Therefore, there are no measures in common use that addresses, in accounting terms, the substance of an individual's human capital. If the value of each individual's contribution can be made visible as a measure clearly aligned with organisational success indicators, then this should enable further grounded research on human capital and subsequent theory development. This has profound implications for the measurement of individual employees' added value in organisations. Measuring people as valuable resources rather than as costs is a paradigm shift from the industrial to knowledge economy (Sveiby, 1997). This is opposite to the current financial reporting paradigm that has been with us since the industrial revolution, and is a new way of thinking about the labour resource.

3. Human capital theory

The limitations in the theoretical basis for the practitioner concepts of human capital and intellectual capital are often cited (Bontis, Dragonetti, Jacobsen, and Roos, 1999, Grasenick and Low, 2004). While economic theory of human capital (Schultz 1961, Becker 1975, Mincer 1958) fails to explain current human capital value and measurement practice in today's organisations at the individual employee level (Uziene, 2010, Koning, 1994, Asplund, 1994, Blaug, 1976, Chapman 1993), it still provides a basis for the most widely used macroeconomic measurement of human capital. This is the 'number of years of schooling' (OECD, 1999, Johnston, 1998). The popularity of this macroeconomic human capital measure is its credibility, objectivity, and simplicity. It requires little calculation, is readily available from existing national data, and is suitable for comparisons and benchmarking. It is also very crude!

There have been various attempts to address the substance of human capital. For instance human resource accounting (HRA) specifically provided a comprehensive model of the micro-economic value of individuals in a specific organisation (Flamholtz, 1985 based on the pioneering work of Hermanson, 1964). HRA attempts to measure HR in financial terms, through the application of accounting principles to people in terms of their asset values. HRA in the 1990s, due to the turbulent business environment compelled HR practitioners to focus on their functional accountabilities in financial metric. However the idea of reducing HR to financial metric is not without its critics (Bueno, Salmador and Merino, 2008, Pfeffer, 1997).

It is our contention that the financial reporting system itself is limited in reporting HR as assets, because as assets people do not behave as do other assets in organisations. Flamholtz's (1985) HRA treatise highlights some of the major difficulties in trying to account for people as assets. For instance, if people are assets, how are people depreciated? Assets are consumed over their useful lives. Does this happen to people? Here is a glimpse of the accountants' nightmare in trying to treat people as assets in financial terms. While the models discussed may be theoretically justified, they have never been adopted due to their subjectivity, the complexity of the associated component measurements, and the focus on individuals' firm-specific human capital. Thus benchmarking and generalising to other contexts has been limited (Fitz-enz, 2000, Sheedy-Gohil, 1996). Similarly, decision theory provided the basis for the various models of utility analysis, which measured the value of different staff management approaches (Cascio, 1998). However, these measures of human capital require complex formulae with components that include subjective measures, which often make assumptions that stretch senior managers' credibility, and are therefore unattractive in practice (Lees 2003).

Bontis, Dragonetti, Jacobsen, and Roos (1999) suggest a range of tools available in the metrics of managing intangible resources, each based on the recognition that the value-creating capacities of enterprises are based on the knowledge and capabilities of their people. The use of costing and utility models provides some basic tools for demonstrating how HRM can add value to the organisation in business metric (Cascio,1991, Cascio and Boudreau, 2008). The recognition that the level of knowledge-based assets is critical for the future success of an organisation has raised awareness of the importance of human capital, enabling HR practitioners to be recognised as strategic business partners (Ulrich, 1997). One of the problems in using financial metric, like HRA, encourages managers to focus on short-term, bottom-line results - not the long-term drivers of business success.

The resource-based view of the firm theory (Becker and Huselid, 1998, Becker and Huselid, 1999, Barney and Wright, 1998) emphasises the competitive capabilities of an organisation and its work processes. Human capital is not separated out from work processes, rather there is an interactional relationship between people and their work processes. Consequently the use the term 'competency' accompanied by different descriptors has resulted in confusion and a proliferation of terminology. Bontis (1999) proposes that the resource-based view theory of the firm can be adapted to a knowledge-based view of the firm to provide a basis for intellectual capital measures.

There is a number of business reporting practitioner models (Starovic and Marr, 2004). The two most common models are the balanced scorecard (Kaplan and Norton, 1996) and its derivatives, and intellectual capital (or intangible assets) reporting (Sveiby 1997, Roos et al, 1997; Edvinsson and Malone, 1997, Stewart, 1997). Of these two models, the latter emphasises the measurement of human capital. In practice the balanced scorecard and intellectual capital/intangible assets reporting tend to draw on the same human capital measures (VanBuren, 1999, Edvinsson and Malone, 1997, Sveiby, 1997). In common usage are quantitative objective measures that are simple to calculate and interpret, which can be sourced from readily available data and can be compared between organisations; and, are therefore appropriate through benchmarking. Examples of these measures are: 'percentage of payroll spent on training and development', 'number of employees with degrees', 'number of training days', and 'economic value added' (EVA). Any qualitative measures used tend to be standardised and normed. For example, climate surveys based on psychological paradigms of motivation, or the influences of the context on work performance. Essentially we are saying that the inclusion of the valuable contribution of individual employees in human capital terms is hindered by the lack of development and progress in such measures that enable organisations to include in their decision-making the stocks and flows of human capital.

There has been considerable work undertaken to align the efforts of people with organisational success through competencies that describe the valuable content of what people do in the workplace (in terms of

knowledge, ability, and motivation). Competencies are considered in the major HR practices of acquisition, development, appraisal, remuneration, and utilisation of people in organisations. Various disciplines including psychology (Spencer and Spencer, 1993), education (McLagan, 1997), management science (Taylor, 1967, Campbell, Gasser, and Oswald, 1996), and training and development (Zemke and Zemke, 1999), define employees' workplace competencies, performance and their measurement. Each discipline's approach to competencies, however, has its critics (Barrett and Depinet, 1991, Barnett, 1994, Lawler, 1994, Arvey and Murphy, 1998).

In New Zealand, Lees (2003) attempted to measure the substance of human capital to develop a generic way of measuring the value of HR across different organisations. Lees developed a human capital index (HCI), based on Nordhaug's (1993) competence typology. The HCI framework was derived from performance ratings of competencies that were correlated with productivity measures. Because the value of people lies in their knowledge, ability and motivation, performance scores for competencies were gathered through 360-degree feedback. The HCI was developed with and applied to seven samples in five quite diverse organisations. Productivity measures were specific to each organisation. Reasonable correlations between the HCIs and organisational productivity results for some of the samples were reported. Against these same productivity measures, the OECD measure of human capital (equivalent years of tertiary education) correlated weakly. This suggests that under certain conditions an HCI based on competences is possible as a human capital measure. Yet the search for an all-encompassing measure of human capital that can be used across different organisations and different sectors remains elusive. Also the perceptions of HR value of managerial stakeholders, and of the employees themselves, may vary.

4. The valuing human resources (VHR) project

To get some baseline data on managerial perceptions about HR value, and what measurements were being used in New Zealand a national baseline survey was conducted (Toulson and Dewe, 2004) to identify what is being used in organisations to measure HR results, and how such HR measurements are viewed as critical to management and success? This included information managerial executives' awareness of HR measurement concepts; the current usage of measurement techniques; and, the location of support to introduce such concepts in the organisation. Random samples of 1,000 members of each of three professional business groups: accounting and finance managers of the Institute of Chartered Accountants NZ, HR managers of the Human Resources Institute NZ, and senior line managers of the NZ Institute of Directors were surveyed. A small focus group of persons drawn from the three Institutes generated the questionnaire items that were pilot tested on a group of 40 HR managers. A glossary of definitions of capital measures used in the survey was supplied in each questionnaire.

538 useable returns gave a response rate of 18 %. Almost half (47.6%) believed that the measuring of HR is very important to their organisations. Two principal reasons that reflected this thinking on the importance of HR measurement were that measurement reflects the strategic and competitive importance of HR, and that HR must be expressed in financial terms to achieve credibility. However, those surveyed also agreed that current HR measures: lack precision (58.8%) and are not widely accepted (50.6%). The six most frequently used measures were: accident frequency rates (60.3%), client satisfaction surveys (60.1%), absenteeism rates (56.3%), training and education costs (56.3%), cost of people (53.9%) and competencies (53.2%). Most of the respondents' organisations did not measure factors like ROI in human capital, value added per employee, time to fill jobs, return on training and seniority. These results reflect some of the difficulties associated with developing an appropriate valuation methodology for use in organisations. Comparisons across the three groups of professional managers suggested that HR managers were significantly more likely to believe in the importance of such measures and less likely to perceive barriers to measurement than did accounting/finance managers. Senior line managers were also more positive in their attitudes towards measuring HR than were accounting/finance managers (Toulson and Dewe, 2004). We suspect this is still pretty reflective of the current situation in 2013, with respect to the issue of HR measures.

To provide further insights from these results, a second study to explore in depth the approaches to the measurement of HR in six selected New Zealand organisations was undertaken to investigate how organisations are measuring the value of human capital (Tootell, Blackler, Toulson, and Dewe, 2009). The findings suggested that there are no generally accepted HR measurement principles for organisations. This has important consequences relating to theoretical arguments for a generic human capital index capturing the

essence of human capital, and also supports Lees (2003) work. The analysis also reported several barriers to HR measurement. First are difficulties in developing measures (both conceptually & practically) due to limited knowledge and poor analytical skill in measurement design. Second, are difficulties in the acceptance by organisational members due to organisational history and the perceived role of HRM. Third, are difficulties in the application of measures due to inadequate technology, time, and financial resources, and poor dissemination or inappropriate use of information. Nonetheless, factors that contributed to success of a measurement system are: a strong organisation' commitment, especially by senior management; familiarity with, and use of, a single theoretical model; clearly defined communication pathways in the organisational structure; the involvement of multiple stakeholders in the design & development of measures; and, the allocation of resources (time, money, & technology) to support the measurement application and development.

These findings have practitioner' implications. First it can be argued theoretically that knowledge and the consequential HR measurement of intangibles is equally valid for traditional agricultural and industrial organisations; i.e. knowledge itself as a source of competitive advantage underscores the different paradigms. Yet the question remains: Is this reflected in the actual workplaces of contemporary organisations? Our limited data suggest that this appears more relevant and acceptable for knowledge based scientific or high tech organisations than for traditional organisations. Second, the question must be asked of how well the HR practitioners are equipped to do this work? The suggestions from both the literature (Fitz-enz, 1984, 1990, Cascio, 1991, Cleland, Pajo and Toulson, 2000) raises the question of the competence of those HR practitioners to do this, particularly those who have trained and developed on HR models emphasising process and best practice. Note that in the baseline study (Toulson and Dewe, 2004), questions relating to the competence of HR practitioners to undertake this work were raised by more tangible and numerate managers like accounting professionals. Our conclusion is that HR metrics as the Holy Grail of HR management remain elusive. Not only is the objective elusive but there are a number of barriers on the trail. The important factor is that the metrics adopted in an organisation are meaningful, even if there is variation from industry to industry and organisation to organisation. What this research indicates is the importance of developing relevant HR measurement models accepting that the metrics used (unlike accounting measures) may vary from organisation to organisation.

The third study in this project, currently at the data analysis stage, is an investigation of employees' perceptions in a knowledge intensive and high technology sector in New Zealand, namely health. A national sample of registered nurses (RNs) was surveyed using a modified version of the Toulson and Dewe (2004) questionnaire. Some items were modified to reflect RNs perceptions of HR measurement of value, rather than of professional managers, but in essence the structure was the same. RNs were selected because they are pivotal in patient care, highly trained, and have been undervalued in terms of pay equity to other professional groups (e.g. police). A total of 900 useable responses from a sample of 6000 RNs were obtained. A preliminary analysis of the results suggests that nurses' perceptions of agreement on the importance of HR measurement are very similar to those perceptions of the earlier survey of the three managerial groups (RNs (2011) = 70%; Managers (2004) = 69%). A second preliminary finding shows that the factor structure of the questionnaire used was very similar to that obtained in the earlier managers' survey. Principal component analysis with varimax rotation of the important reasons for measuring human resources was conducted. While some changes in terms of wording had been made from the original version of items, the results showed that there is a consistency in terms of underlying components for measuring the importance of human resources. These two components were named according to the previously published work (the first phase of VHRP) as follows:

- **Component 1.** Measurement reflects strategic and competitive importance of human resources (9 items); Managers: 44% of variance explained; RNs 51% of variance explained.
- **Component 2**. To ensure credibility, HR must be expressed in financial terms (4 items); Managers 12% of variance explained; RNs 13% of variance explained.

At the time of writing this paper, the data analysis, including the qualitative analysis results, is not yet complete. However, it is interesting to note the similarities with respect the HR measurement from two different samples at two time sequences, separated by some seven years. The finding that the importance of expressing HR measurements in financial terms (component 2) is interesting, but quite understandable. One may speculate that to both employers and managers alike, the importance of measuring in financial terms,

given the current business metric, that we are all used to makes sense. It certainly is not our intention to marginalise the importance of financial measures in the value of human capital, but to rely totally on financial measures at the expense of other psycho-social variables can often result in short-termism, as discussed earlier. Such variables that are essentially non-financial in origin are very important in improving the capability of the human capital pool. Therefore, perhaps the greatest contribution to the development of capability is that of HR and knowledge sharing. This is the subject of the next section.

5. Human resources and knowledge sharing

Knowledge sharing is the most representative behaviour of knowledge management and intellectual capital. Knowledge sharing is strongly related to the collective creation and use of key knowledge in organisations based on HR. This behaviour is crucial for an organisation to be competitive (Liao, 2008). However, knowledge sharing is not an automatic behaviour, but highly dependent on human will and motivation (Dougherty, 1999; Scarbrough and Carter, 2000). This is why HR practitioners cannot be foreigners to the issue. Therefore, it is relevant to comprehend how psychosocial variables and organisational conditions impact knowledge sharing. In this direction, HR practices have been recognized as essential for the promotion of knowledge sharing within an organisation (Liu and Liu, 2011). Despite the great research interest involved in knowledge sharing, there are not many studies that link this behaviour with psychosocial variables in organisations (Carbó and Osca, 2011; Steward, 2008). The studies that connect HR practices and knowledge sharing are still few.

Castaneda and Fernandez (2011) studied the relationship between some psychosocial variables (beliefs, attitudes, subjective norms, self-efficacy and perceived value of knowledge), some perceived organisational conditions (organisational learning culture, training, strategic clarity and organisational support) and the knowledge sharing behaviour, with 1057 knowledge workers in Colombia. All these relations were found significant from data. In another study in Colombia, the relationship between psychological capital (optimism, hope, resiliency and self-efficacy) and the knowledge sharing behaviour was investigated. Results confirmed the relationship. In addition, it was found that the psychological capital construct has greater potential for explanation of knowledge sharing behaviour than its four components separately (Delgado and Castaneda, 2011).

The literature on the relationship between human resources variables and knowledge sharing although limited, it is growing. Camelo, García, Sousa and Valle (2011) found that human resources practices do not influence knowledge sharing in a direct way, but when affective commitment mediates the relationship. In the same direction, Liu and Liu (2011) concluded that human resources practices foster knowledge sharing through the mediation of perceived self-efficacy and willingness of knowledge sharing. Wang (2011) suggested that incorporating a knowledge sharing socialization mechanism with talent development programs has a nurturing and supporting effect on learning and development. Jalal, Toulson and Tweed (2011) found that the perceived cultural values of involvement, formal recognition and trustworthiness are related to knowledge sharing success.

In some topics, results of research on the relationship between HR practices, psychosocial variables and knowledge sharing are unclear. The role of incentives on attitude to knowledge sharing, for instance, needs a deeper understanding. Traditionally, there is a positive relation between incentives, attitude and knowledge sharing behaviour (Cabrera, Collins and Salgado, 2006; Huber, 2001). However, Kwok and Gao (2005) did not find the influence of extrinsic motivation on knowledge sharing attitude. On the other side, Bock, Zmud, Kim and Lee (2005) found that incentives made a negative impact on attitude to share knowledge. Osterloh and Frey (2000) stated that economic incentives adversely affected knowledge sharing motivation. Lin (2007) did not find a relationship between incentives and knowledge sharing intention. Iqbal, Toulson and Tweed (2011) found in Pakistan, a low income country, that employees prefer financial rewards and compensation than recognition alone. Chennamaneni (2006) gives some light on the issue, by suggesting that perception of organisational incentives has a positive effect on knowledge sharing attitudes, but when in a model some other variables are included, then the effect of incentives becomes weak. Minbaeva, Makela and Rabbiosi (2012) sustained that individual perceptions of organizational commitment to knowledge sharing and extrinsic motivation influence knowledge sharing. They also found that intrinsic motivation and engagement in social interaction mediate the relationship between perceived organizational commitment and knowledge exchange. Foss, Minbaeva, Pedersen and Reinholt (2009) suggested that job characteristics such as autonomy, task

identity and feedback determine different motivations to share knowledge, which in turn predict employees` knowledge sharing behaviour.

This is just an example of the necessity of additional research on the relationship between HR practices and knowledge sharing, a central behaviour in intellectual capital and knowledge management. If how and why people share knowledge in an organization is understood, successful HR practices may be more targeted to achieving organizational goals based on knowledge, which is a goal of intellectual capital.The challenge now is to develop theoretical models that can identify the cause and effect relationships that HR practices have on knowledge sharing and the impact of other psycho-social constructs through the development of appropriate measurement models. These models, then empirically validated, and tested to identify the significant pathways that will provide robust recommendations for HRM practices. Such empirical work will do much to demystify some of the complexity encountered when putting theories into practice to build organisational capability.

6. Conclusion

There is no disagreement that people (HR) in organisations are critical in a knowledge economy. However putting rhetoric into practice often becomes problematic. The paper provides theoretical support, empirical evidence and the authors' observations, of the value of human resources in the development of intellectual capital. It also discusses the role of knowledge sharing in building intellectual capital through HR. It reviews work that has been undertaken in two countries, Columbia and New Zealand, to identify the perceptions of employees about the value of HR measurement. This research indicated that both managers and employees alike agree that measuring HR is important. Finally, it is concluded that HR practices are central to enhance knowledge sharing, a fundamental behaviour associated to the fulfilment of organisational objectives based on knowledge. Further research on the relationship between HR practices and knowledge sharing behaviour is suggested, for the purpose of achieving a greater understanding of the role of HR in the fields of intellectual capital and knowledge sharing.

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