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# PERCEPTIONS OF INTELLECTUAL CAPITAL: IRISH EVIDENCE

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## ABSTRACT

Recent market volatility has provided a fundamental challenge to those arguing for the central role of intellectual capital as a source of company value. Using perceptual data relevant to the importance of intellectual capital as a source of enterprise value gathered in two studies conducted before and after the recent market 'downturn' respectively, this paper provides empirical evidence in support of the continuing and central importance of intellectual capital. The findings from these two studies also demonstrate consistency in the composition of the human, internal and external components of intellectual capital.

The Irish software/telecoms sector provides an ideal research framework for any such investigation. In recent years Ireland has established itself as the largest software exporter in the world and this sector has been one of the primary engines of growth in an economy that has experienced real growth of over 40 per cent in 6 years, a rate unparalleled in the developed world.



**Key Words:** accounting; intellectual capital; Ireland; software

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## INTRODUCTION

As well as becoming an increasingly important factor of production, knowledge may have become many organisations' chief resource (Danish Trade & Industry, 1998; IFAC, 1998; Lynn, 2000; Petty and Guthrie, 2000). It is now regularly argued that the ability to create, transform and capitalise on such knowledge is ultimately what delivers competitive advantage (Eustace, 2000; Arthur, 1996; Bontis, 1998, 1999,2001; Choo & Bontis, 2001; Edvinsson, 2002; Nonaka & Takeuchi, 1995; Roos et al., 1997; Spender & Grant, 1996; Stewart 2002; Sveiby, 1997; von Krogh et al., 2000). Those charged with the management of commercial resources concur. The International Federation of Accountants (IFAC, 1998), for instance, notes that knowledge is *the* primary source of competitive advantage; that it is a non-traditional intangible resource; and that the accumulation, transformation, creation and valuation of this resource lies at the heart of intellectual capital management. Preliminary work carried out under the auspices of the OECD Growth Project demonstrates a more-or-less robust correlation between intangible investment, GDP and productivity growth. Such evidence confirms the need to harness this increasingly critical source of organisational value in an attempt to ensure organisational survival and prosperity (Eustace, 2000).

In seeming to suggest that an economic paradigm that ascribes a high value to intangibles may be inherently flawed, or perhaps in need of further development, recent market volatility has provided a fundamental challenge to those arguing for the central role of intellectual capital as a source of company value. Using perceptual data relevant to the importance of intellectual capital gathered before and after the market 'downturn', this paper provides empirical evidence that intellectual capital remains a critical source of competitive advantage and value.

This paper proceeds in four sections as follows: Section 1 briefly summarises the emerging literature on the recognition and management of intellectual capital. Section 2 presents data collected in two studies into the intellectual capital component of corporate wealth and activity in indigenous Irish firms. Section 3 provides a discussion of these two studies and highlights some of the implications of the findings for disciplines such as accounting and management. Section 4 offers some concluding remarks.

## 1. CURRENT APPROACHES TO RECOGNISING, MANAGING AND MEASURING INTELLECTUAL CAPITAL

The identification, management and measurement of traditional tangible organisational resources have hitherto resided within the domain of functional departments such as accounting and finance. Consequently, highly sophisticated control, appraisal and decision-making models have been developed by such disciplines in an attempt to facilitate the exploitation of these resources by firms. However, with the rapidly changing dynamics of the 'new economy', it is increasingly recognised that the ability of firms to achieve sustainable competitive advantages derives mainly from their intangible resources (Lynn, 2000; Petty and

Guthrie, 2000). Terms such as 'knowledge economy', 'information society' and 'intellectual capital' may be subject to imprecision and ambiguity, but this cannot disguise the fact that the nature of economic activity has changed in ways that have transformed the fundamental nature of business (Arthur, 1996; Lev, 1997; Pilch, 2000).

This poses profound challenges to the traditional stewards of corporate resources. Disciplines such as managerial accounting have responded to the challenge with a research focus that has tended to concentrate primarily on the control aspects of both managerial decision-making and performance. This narrow 'responsibility accounting' orientation has been at the heart of the 'lost relevance' and 'evolution versus revolution' debates (Johnson & Kaplan, 1987; Lev, 1997; Bromwich and Bhimani, 1989, 1994). The balanced scorecard has emerged as one attempt to regain this lost relevance (Kaplan & Norton, 1992, 1996 a, b). However, little progress has been made in arriving at a 'standard' set of performance measures for the human asset and intellectual capital resources of the organisation (Bontis, 2001; Bontis et al., 1999; Brennan & Connell, 2000; Innes & Vedd, 1998).

The failure of those disciplines traditionally charged with the stewardship of the resource base to develop models that recognise and measure intellectual capital has resulted in various templates being developed by others. Despite considerable variation as to how each is conceptualised, theorised or measured, and a glaring dearth of good empirical studies, a taxonomy is emerging in which intellectual capital models adopt a tripartite distinction between People, Internal, and External dimensions (Bontis, 1998, 1999, 2001; Edvinsson & Sullivan, 1996; O'Donnell, 2000; O'Donnell et al., 2000, 2001; O'Regan and O'Donnell, 2000; Roos et al., 1997; von Krogh & Roos, 1996; St. Onge, 1996; Stewart, 1997; Sveiby, 1997; Kaplan and Norton, 1992). Throughout the emerging literature, therefore, company value is regarded as a combination of financial capital on the one hand, and intellectual capital, as constituted by these three parts, on the other. This template can be represented by the following basic equation:

Total Value = Financial Capital * Intellectual Capital [People * Internal * External]

or

$$V = f\$*P*I*E$$

In addition, various measures or indicators of the presence of these dimensions continue to be identified and developed (see Sveiby 2001 for a recent review). In these templates the 'People' dimension incorporates human competencies, knowledge, know-how and experience. The 'Internal' incorporates the set of inner organisational structures, routines, processes and management systems found within enterprises. The 'External', also referred to as 'customer capital', incorporates external constituencies and structures such as links to customers, suppliers, and other stakeholders and networks. These templates are complemented by various techniques such as market-to-book ratios, Tobin's 'q' and other industry-specific models which, while yet to be fully tested, provide common bases that allow firm performance to be benchmarked, thus enabling comparative measures of intellectual capital to be established (Dzinkowski, 2000; O'Regan et al., 2000).

## 2. RESEARCH

A lack of empirical data has been a primary constraint in attempting to further comprehend this increasingly important organisational resource. However, two recent

research programmes focusing on indigenous Irish firms have sought to redress this. Ireland's suitability as a research site in which to investigate the importance of intellectual capital as a significant resource is confirmed by its emergence in recent years as the leading exporter of software in the world. Relatively devoid of many of the resources that allowed others to benefit fully from the industrial revolution, this success has been based in large measure on a combination of financial and human capital, a success captured in the appellation 'Celtic Tiger' applied recently to the Irish economy. In the period from 1995 to 1998, for example, Ireland's economy grew at an average rate of 8.9 per cent in real terms (compared to an EU average of 2.4 per cent). In the last six years the economy has grown by over 40 per cent in real terms. Much of this growth is attributable to the emergence of a vital high-technology sector.

The first study involved a joint project with researchers at the University of Limerick, University of Maryland and the Irish Management Institute (hereafter CEO-PreK) in which data were collected in high technology firms in both Ireland and the United States. For the purposes of this paper it is significant that this data was collected at a time of confidence and rising market values within the technology sector. This two-year study examined issues such as the role of top management teams, strategic leadership and intellectual capital. The results presented here are for intellectual capital in indigenous Irish firms. The principal criteria for selecting these companies was that they be predominantly Irish-owned, operate in the high-technology (telecoms, media, software) sector, and employ over 40 employees. Data was collected by means of interviews with the Chief Executive Officer (CEO) of each company. The perceptions of intellectual capital presented here were collected during 1999 and 2000 from 47 companies operating in this sector. As one part of their interview, each CEO was asked to provide perceptual data with regard to the percentage of corporate wealth deriving from intellectual capital (see O'Donnell & O'Regan, 2000; O'Donnell et al., 2001). In line with the emerging typologies outlined above, intellectual capital was presented as consisting of 'People', 'Internal Structures' and 'External Structures'. On this basis CEOs were also asked to indicate the degree to which the drivers of this wealth could be traced to these factors by distributing 100 points between them. These 'CEO-PreK' results are presented in Table 1:

[take in Table 1 about here]

Source: O'Donnell, et al., 2001

The second study, undertaken by researchers at the University of Limerick, The Intellectual Capital Research Institute of Ireland and the Institute for Intellectual Capital Research in Canada (hereafter CFO-PostK) involved the collection of detailed and extensive perceptual and financial data from Chief Financial Officers (CFOs) of both indigenous and foreign-owned firms operating within the Irish software/telecoms sector. Utilising a variety of publicly available information sources, over six hundred firms were identified as belonging to the software/telecommunications sector in Ireland. These information repositories included the Irish Software Association, Enterprise Ireland, Industrial Development Authority, National Software Directorate databases, company web sites, newspapers and periodicals. Prior to mailing the questionnaire, telephone calls were made to each of these identified companies confirming the name of the Chief Financial Officer, the current number of permanent employees and the correct postal address. This task was undertaken to ensure that the

appropriate senior financial executive within each firm was correctly identified and that the questionnaire was sent to the right address.

From the results of these telephone calls, it was decided to target those companies having at least ten full-time permanent employees. This threshold was met by 503 firms and each was subsequently posted a copy of the questionnaire along with supporting documentation, including a covering letter setting forth the aims of the research project along with a prepaid business reply envelope for completed questionnaires. The questionnaire and accompanying documentation was also piloted with a number of financial executives to ensure ease of understanding and clarity for all potential respondents. To date 200 responses have been received, representing a response rate of 39.7 per cent. Of these, 77 indicated either that they did not fulfil the parameters or were unwilling to take part. Of the remaining 123 returned questionnaires, 90 were for indigenous Irish firms. The data presented here relates to that collected from these CFOs in the aftermath of the dot.com and technology crash, hence 'CFO-PostK'.

As one component of this research study, the same format utilised by the CEO-PreK research team (see O'Donnell & O'Regan, 2000) was adopted in attempting to elicit CFO perceptions of the extent of intellectual capital as a source of corporate wealth. Consistent with the first study, CFOs were asked to indicate the percentage of company value deemed to derive from intellectual capital as well as distributing 100 points between the constituent parts of 'People', 'Internal Structures' and 'External Structures'. Complete responses to this section of the questionnaire were provided by 81 of the 90 indigenous Irish companies that responded. These CFO-PostK results are presented in Table 2.

[take in Table 2 about here]

## 3. DISCUSSION

The most striking finding is that both CEOs and CFOs in the fastest growing sector of the fastest growing economy in Europe believe that the largest source of corporate value derives from intellectual capital. The second study (CFO-PostK) reinforces the findings of the earlier study (CEO-PreK), and broadly supports the baseline equation presented in earlier work (O'Donnell 1999, 2000; O'Donnell et al., 2000, 2001; O'Regan et al., 2000). The average figure suggested by CEOs in the first study was 64 per cent; that suggested by CFOs in the second was 59 per cent. Two aspects of these figures are significant: the first that the figure is so high; the second that, despite a severe downturn in the global technology sector during the period between the two studies, the percentage of corporate value attributable to intellectual capital remains robust. This augurs well for further work on this insightful equation.

The continuing robustness of the intellectual capital element disclosed by CFOs is significant in that, by the very nature of their training, which is firmly entrenched in the tangible, CFOs, unlike CEOs, might be expected to experience some difficulty in formulating an objective opinion as to the 'true' value of a firm's stock of intellectual resources. The fact that accounting practice is framed by an overarching metaphor encouraging an objectivist, numerical view of reality results in a partial and incomplete representation of the reality to which the numbers relate. While the numerical view highlights those aspects of organisational reality that are quantifiable and built into the accounting framework, it ignores those aspects of organisational reality that are not quantifiable in this way (Morgan, 1988). In

ontological terms, intellectual capital encompasses aspects of the objective, social and subjective worlds (O'Donnell, 1999, 2000; O'Donnell et al., 2000, 2001).

These results are also highly significant in confirming that the greater part of this intellectual capital can be traced to the 'People' element in these businesses. Both CEOs and CFOs perceive that approximately half of this intangible value derives directly from the people employed in these knowledge-intensive firms. This confirms the growing realisation that people are now regarded as the most important resource in knowledge intensive organisations, and finding them, developing them and holding on to them has become of strategic concern. This links to the fact that in a knowledge economy employees are assets whose primary function is to generate revenue by converting knowledge into marketable forms. This suggests that investment appraisal and other control and decision-making techniques must revisit the traditional view of employees as costs. Apart from identifying a return to Human Asset Accounting (Brummet et al., 1968; Flamholtz, 1985; Gröjer & Johanson, 1998; Johanson, 1999; Hermansson, 1964; Olsson, 1999) as one means by which this might be addressed, there is an urgent need to develop new tools to better assist in the management of, and investment in, people (Bontis, 1998, 1999, 2001; O'Donnell et al, 2000,2001; O'Regan and O'Donnell, 2000).

The percentage of intellectual capital attributable to both Internal and External Structures is more difficult to interpret. In the CEO-PreK study, CEOs allotted 21 per cent of intellectual capital internally and 32 per cent externally. In contrast, in the CFO-PostK study, CFOs suggested figures of 22 per cent and 23 per cent respectively. Further research is required to unpack the seeming difference attributed externally and the somewhat higher figure attributed to the people element by these CFOs.

In addition to confirming the emergence of a broadly robust heuristic model of the value of intellectual capital and its component parts within such businesses, these figures confirm the extent of the challenge for functions such as accounting. Currently these resources are largely absent from both external reporting and internal management control processes intended to facilitate resource allocation, decision-making and investment appraisal (Roslender, 2000). The principal problem with intangible resources in general is that, to a large extent, they remain unrecognised by the traditional accounting paradigm and, because they are not objectively verifiable, they remain un-auditable. As Allen (2001) puts it, 'If you can't kick it, your auditor can't tick it'. Unless the traditional guardians of corporate control and management develop techniques and conceptual frameworks within which intellectual capital can be both theorised and identified, the capacity of firms to manage these resources will be compromised. In the long term the consequence will be the emergence of others, such as risk-managers and knowledge officers, as the new arbiters of resource control, allocation and measurement (O'Regan and O'Donnell, 2000; Dzinkowsky, 2000).

Much of the difficulty for accountants lies in the fact that, traditionally, accounting views practically every expenditure related to the improvement and intellectual development of an entity's human resources as an expense. Capital markets, however, recognise that the people employed by businesses are valuable assets (Newman, 1999; Lynn, 2000). The accounting challenge is to invent better tools for managing investment in people skills, information bases and knowledge relationships. Deriving from this is a need for some form of accounting measurement that can differentiate between those entities in which intellectual capital is appreciating and those in which it is depreciating (IFAC, 1998).

As enterprising and innovative people become increasingly central to the creation of value, changes in corporate governance structures that currently favour employers and shareholders are likely to accelerate considerably in favour of other stakeholders. While existing forms of corporate structure have developed in a manner that favours financial capital, the initiative has now moved to the providers of intellectual capital, that is, smart people. Because the key constituent of capital now resides in the knowledge possessed by employees, firms may have to reinvent themselves as vehicles for mobilising and developing people, thereby potentially undermining the distinction between employers and employees, in favour of new forms of partnership (Pilch, 2000). Ultimately it would appear that if employees are to be motivated to invest in firm-specific human capital, they must have a greater stake in ownership and governance (Roberts & Van den Steen, 2000).

In professional service firms, where arguably only human capital and relationships matter, ownership and control is typically vested solely in the human capitalists, while employee stock-ownership is a significant element in large numbers of knowledge-intensive firms, such as software companies (Roberts & Van den Steen, 2000). Control of such knowledge has become a source of managerial concern and worry (Salzer-Morling & Yakhlef, 1999). It is likely that as part of this process the attempts of financial capitalists to capture and establish ownership by means of patents or its physical expression in the form of recipes and manuals will be resisted by employees (O'Regan & O'Donnell 2000).

## 4. CONCLUSION

There is much to support the assertion that intellectual capital is becoming the key determinant of enterprise value and national economic performance (Choo & Bontis 2001; von Krogh et al., 2000). The perceptions presented here of Irish CEOs, during an economic boom (Table 1), and Irish CFOs, as the economy enters a downturn (Table 2), support this assertion. However, the emerging acceptance of intangible assets as key resources and sources of competitive advantage poses enormous challenges for accountants and managers in that they are not recognised by either external or many internal reporting systems. For this strategic resource to be properly integrated and managed, information and managerial accounting systems appropriate to intangible resources and to the needs of an increasing range of users and stakeholders will need to be developed. Unless processes and procedures are put in place to capture and leverage this increasingly strategic resource, firms are likely to jeopardise their future prospects for survival, prosperity and growth. Internal organisational divisions are already beginning to manifest themselves between the traditional gatekeepers of corporate control and management and those seeking to further their status by acquiring responsibility for the information management strategy of the firm (Curran, 1998).

Comment:

Although financial statements have never purported to fully represent organisational market values (Tollington, 2000), there is no doubt that based upon the increasing prominence of intellectual resources as the primary source of corporate wealth, their usefulness to investors is diminishing at an accelerating pace (Wallman, 1998). If efforts are not made to incorporate the value of intangibles such as internal structures, external structures and employee competencies into a formalised reporting framework then there exists a significant risk that management reporting and financial statements will become irrelevant (Guthrie, 2000). We must make this "darkness visible" (O'Donnell, 1999). The inadequacy of the present model has the potential to result in the following social ramifications: an increased risk of insider trading; higher

costs of capital; misallocation of capital; and increased capital market volatility (Leadbeater, 2000). Unless the accountancy profession responds proactively to this challenge, it risks losing its current privileged and traditional position in the organisational order.

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**Table 1: Perceptions of Irish CEOs on Intellectual Capital (1999-2000)**

| | Firm value attributable to Intellectual Capital | Intellectual Capital attributable to | | |
|---|---|---|---|---|
| n=47 | | People | Internal Structures | External Structures |
| Mean | **64%** | **47%** | **21%** | **32%** |

Source: O'Donnell et al., 2001

**Table 2: Perceptions of Irish CFOs on Intellectual Capital (2001)**

| | Firm value attributable to Intellectual Capital | Intellectual Capital attributable to | | |
|---|---|---|---|---|
| n=81 | | People | Internal Structures | External Structures |
| Mean | **59%** | **55%** | **22%** | **23%** |