Reporting intellectual capital in annual reports: evidence from Ireland

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Abstract *Examines the extent to which 11 knowledge-based Irish listed companies are adopting methodologies for reporting of intellectual capital in their annual reports. Their market and book values were compared and a content analysis of the annual reports of the 11 listed companies was conducted. With the exception of two of the 11 listed companies, significant differences in market and book values were found, suggesting that knowledge-based Irish listed companies have a substantial level of non-physical, intangible, intellectual capital assets. The level of disclosure of intellectual capital attributes by the 11 listed companies studied was low.*

Introduction

Organisations have been described as using three types of capital: physical capital (plant, equipment, stock, etc.), financial capital (e.g. cash, investments, receivables) and intellectual capital (Lynn, 1998). Intellectual capital encompasses intangibles such as patents, intellectual property rights, copyrights and franchises. It also includes intellectual material that has been formalized, captured and leveraged to produce a higher valued asset (Klein and Prusak, 1994). It represents knowledge transformed to something of value to an organisation (Lynn, 1998).

Measuring intellectual capital

Putting a value on intellectual capital intangibles is widely acknowledged as being problematic. As Drucker (1998) has pointed out, "The next step could be a comparable statement of the investment flow and productivity of knowledge ... There are problems putting numerical values on it. I think it would be the first statement to use ranges, not precise figures".

Broadly speaking, three approaches to measuring intellectual capital have been suggested. One approach is to employ existing value-based measures. It is suggested that the value of intellectual assets is the difference between the market value of the firm and its book value. There are a number of problems with this measure. The difference between market and book value cannot be wholly ascribed to intellectual assets. Part may relate to unrealistic tangible

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asset values in firm balance sheets. A second problem is that share prices may fluctuate from day to day and may prove unreliable in measuring intellectual assets over the short term. Bornemann *et al.* (1999) argue that market prices are not a good proxy of a firm's intellectual capital. The value-based approach only provides an overall measure of intellectual assets – separate elements are not measured.

A second approach to measuring "hidden" intellectual assets was put forward by a Swedish firm, Skandia. In its 1994 annual report, the Skandia Navigator was presented which identified and quantified critical success factors in four key dimensions of the business.

The third approach is to use an intellectual capital index to provide a measure of the efficiency off intellectual assets (Roos *et al.*, 1997). Key measures of success of an individual firm must first be identified and weighted (according to importance) to provide a single summary index. Some would argue that a single aggregate measure is unhelpful (Booth, 1998, p. 28).

The Skandia Navigator and the Intellectual Capital Index require information not generally publicly available and are more suitable for management use, whereas market-to-book value ratios are more suitable to external users of accounts.

Booth (1998) points out that measuring intellectual capital *per se* is not the main difficulty – more problematic is measuring changes in, and transfers between, the various intellectual capital assets and measuring the link between intellectual capital assets and financial performance.

Irish context

The Republic of Ireland is a small country with a population of approximately 3.5 million – approximately 5 per cent of that of the UK. It has few (if any) world-size, indigenous companies. Gross national product is relatively small in global terms.

Ireland is one of the fastest growing economies in the European Union (EU) and is currently one of the biggest exporters of high-tech goods in the EU. In discussing the importance of intellectual capital, Booth (1998) observes (in the context of poor gross domestic product (GDP) growth in the UK) that countries that have placed a high premium on improvement of education, such as Ireland, have now overtaken the UK in GDP per capita.

One of the main drivers of economic growth in Ireland is multinational manufacturing industry. However, the services sector employs four times the number in the manufacturing sector (100,000 directly employed). Nonetheless, the manufacturing sector is the one with the most value-added and with the greatest multiplier effect on the economy as a whole (Kinsella and McBrierty, 1998, p. 26).

Expenditure on research and development (R&D) in Ireland. Kinsella and McBrierty (1998) have examined the impact of "knowledge equity" on Ireland's economy (particularly with reference to the higher education sector). They examine the role of the rapidly evolving interface between the higher education

sector and knowledge-driven industry as a central dynamic of economic growth in Ireland.

Irish firms are, in the main, small and characterised by a low spend on R&D, despite national and EU initiatives. Expenditure by business in Ireland lags behind Organisation for Economic Co-operation and Development (OECD) and EU averages, but is increasing annually at one of the highest rates of all OECD countries (Breathnach, 1995). Multinationals, mostly in the electronics, computers, chemicals, pharmaceutical and healthcare fields, account for two-thirds of the overall expenditure.

Table I shows that the total spend in Ireland on R&D is below OECD and EU averages.

There is only 2 per cent direct expenditure on R&D in Ireland by the state, compared with an EU average of 7 per cent and as much as 30 per cent in countries such as The Netherlands and Denmark (Kinsella and McBrierty, 1998, p. 27). Ireland's strong economic performance in the knowledge-driven sectors is based on major indirect, non-state expenditure on R&D, specifically by business which, as shown in Table II, accounts for 68 per cent of the total – the second highest in the EU next to Sweden. Ireland obtains further support for R&D from EU-funded programmes.

It would be reasonable to expect some correlation between R&D expenditure by the business sector and intellectual capital creation and, following from this,

Country	Total expenditure (% GDP)
Finland	2.32
OECD average	2.16
The Netherlands	2.14
EU average	1.84
Denmark	1.82
Norway	1.65
Ireland	1.40
New Zealand	1.03
Portugal	0.60

Source: Kinsella and McBrierty (1998, p. 156)

Table I. Gross expenditure on R&D as a percentage of gross domestic product (GDP)

Country	Total R&D expenditure (% GDP)	Business : Public
Denmark	1.83	59 : 41
Sweden	3.04	71 : 29
Finland	2.30	63 : 37
Norway	1.59	54 : 46
Ireland	1.54	68 : 32

Source: Kinsella and McBrierty (1998, p. 158)

Table II. Public versus business spend on R&D

to conjecture that Irish knowledge-driven companies will have significant intellectual capital assets.

Structure and contribution of the paper

The next section of the paper examines the prior literature which is limited to a consideration of studies on reporting of intellectual capital in annual reports. Research questions and research methodology are set out in the following section, while the next section contains the results of the analysis. The paper concludes by drawings attention to limitations of the research.

This paper makes a contribution to the literature in two ways. Although it replicates the content analysis methodology of Guthrie *et al.* (1999), this is applied to a different sample composition and in a different continent. In addition, it supplements the content analysis methodology by reproducing extracts from annual reports, illustrating intellectual capital disclosures found therein.

Prior literature

There is a growing literature on managing, measuring and reporting intellectual capital (see, for example, Brennan and Connell, 2001; Guthrie, 2001; Lev, 2001). This paper, however, is concerned with only one of these three, that of reporting intellectual capital in annual reports. Lev (2001) discusses information deficiencies arising from shortcomings of the traditional accounting system to reflect the value of intangible assets. Bassi and McMurrer (1999) point out that when human capital investments are recognised in the financial accounts is it usually in the form of expenditure rather than as an asset on the balance sheet.

Much of the discussion on reporting of intellectual capital deals with difficulties in, and methods of, measuring intellectual capital. Developments in reporting intellectual capital have occurred on an *ad hoc* basis. A number of individual researchers have spearheaded developments in reporting intellectual capital in individual companies. In 1993 Leif Edvinsson, in a supplement to Skandia's Annual Report, used for the first time the words "intellectual capital" instead of the accounting term "intangible assets" (Edvinsson and Malone, 1997). Skandia AFS, a Swedish financial services company, was one of the first companies to report the "hidden" intellectual capital assets of the business. Skandia went on to develop one of the most important models for managing intellectual capital, the Skandia Navigator. The Value Platform or the Intellectual Capital Model, as it is known, was developed in a collaborative effort which includes Edvinsson (Skandia), Onge (The Mutual Group) and Petrash (Dow Chemical) (Petrash, 1996).

Few researchers have examined in a systematic way how intellectual capital is currently being reported in annual reports, in the absence of accepted measurement methods and guidance from standard setters. An exception is a team of Australian researchers who have studied the reporting practices of the top 20 (by market capitalisation) Australian public companies from six

industry groups (Guthrie *et al.*, 1999; Guthrie and Petty, 2000). They find little reporting of intellectual capital, rather "a lot of empty rhetoric" (Guthrie and Petty, 2000, p. 246). Guthrie and Petty (2000) also cite a similar study on reporting intellectual capital in Sri Lanka by Abeysekera (2000).

Study of current reporting practices is relevant, as a debate is beginning on whether there should be an accounting standard on this topic, and whether such a standard would be mandatory. Sveiby (1998) proposes the first possible standard for measuring and presenting intellectual capital, involving the following steps:

(1) Organisations monitor and present themselves using a scorecard approach with indicators.

(2) Intangible assets are classified under three headings: external to the organisation; internal to the organisation; and individual.

(3) Indicators of financial or tangible assets are presented in a fourth category.

(4) Indicators both financial and non-financial.

(5) Indicators are presented together in a separate section or supplement to the annual report.

(6) The traditional accounting system and the rest of the annual report remains unchanged.

Gröjer and Johanson (1999) advocate voluntary standardised disclosure for intellectual capital to increase knowledge about the subject. Gröjer and Johanson (1999) suggest that a compulsory standard could potentially be more harmful, when intellectual capital is undergoing a period of rapid change. A voluntary standard would be more appropriate, which can be changed/abandoned when necessary.

Research questions and research methodology

Research questions

This paper examines two research questions, for a sample of Irish listed companies. First, the paper tests whether in Ireland book values and market values are materially different. Second, the extent to which companies address these differences by voluntarily disclosing intellectual capital assets in their annual reports is analysed.

Population and sample

There are 97 public companies quoted on the Irish Stock Exchange (as recorded on the daily official list on 7 May 1999). The sample of Irish listed companies chosen for further study in this paper comprises the knowledge-based companies, i.e. technology and people-orientated companies[1]. There are 11 such companies. The sample is summarised in Table III.

Listed companies	Business
1. BCO Technologies Group plc	Manufacture and research of integrated circuits
2. Bioglan Pharma plc	Pharmaceutical manufacturer
3. Elan Corporation plc	Pharmaceutical manufacturer
4. ICON plc	Clinic research and development
5. IONA Technologies plc	Software development
6. Marlborough International plc	Recruitment
7. Rapid Technology Group plc	Manufacture of computer input and display devices
8. Reflex Group plc	Supply of data-processing facilities
9. Sherry Fitzgerald Group plc	Auctioneers
10. SupaRule plc	Manufacturer of advanced measurement instruments
11. United Drug plc	Wholesaler and distributor of pharmaceutical products

Table III.
Sample companies

Manufacturing, financial, investment, property and exploration companies were excluded. As was illustrated in the section headed "Irish context", the Irish manufacturing sector is the one with the most value added and with the greatest multiplier effect on the Irish economy as a whole. In this preliminary study of reporting of intellectual capital by Irish listed companies, this sector was omitted from study as it was expected that a lower proportion of manufacturing company assets would be in the form of intangible assets. Consequently it was expected that such companies have less motivation to voluntarily report intellectual capital assets in their annual reports. Financial companies were excluded for similar reasons, notwithstanding that Sveiby (1997, pp. 13-18) has found such companies to have a relatively high market price to book value.

Comparison of book values and market values

The section entitled "Measuring intellectual capital" in this paper identified three ways of measuring intellectual capital. When only information publicly disclosed is available, the most practical of the three approaches is a comparison of book to market values. Roos *et al.* (1997) compare the market value and book value of the top five US companies ranked by market value. The difference between the two (called "hidden value") ranges from 66 per cent to 94 per cent. A similar exercise was carried out on the 11 listed companies in this study.

Book values were taken from the latest available annual report of each listed company. Market values were obtained from the Irish Stock Exchange Web site (http://www.ise.ie). In some cases (for example, because the company only recently obtained a listing) market value could not be obtained corresponding to the year-end date of the company. In such cases, market value at the nearest available date was used.

Content analysis of annual reports

A content analysis of the annual reports of the 11 listed companies was carried out, adopting the methodology of Guthrie *et al.* (1999). Their intellectual capital

framework involves 24 variables across three intellectual capital categories. These are listed in Table IV. Guthrie *et al.* (1999) used a four-way numerical coding system as follows:

- 0 = Item did not appear in the annual report;
- 1 = Item appeared in annual report in narrative form;
- 2 = Item was given a numerical value in the annual report;
- 3 = Item was given a monetary value in the annual report.

As Guthrie *et al.* (1999) found that intellectual capital items were reported in discursive form in nearly every instance, this study applied a 0:1 coding system only.

Replicating Guthrie *et al.* (1999), only voluntary disclosures are taken into account in the content analysis. Items that are required disclosures under

			Guthrie *et al.* (1999)	
Total	No. 11	(%) (100%)	No. 20	(%) (100%)
Internal structures (organisation capital)				
Intellectual property				
Patents	3	27	3	15
Copyrights	1	9	1	5
Trademarks	1	9	2	10
Infrastructure assets				
Management philosophy	1	9	12	60
Corporate culture		0	6	30
Management processes	3	27	15	75
Information systems	3	27	10	50
Networking systems		0	3	15
Financial relations		0	1	5
External structures (customer/relational capital)				
Brands		0	9	45
Customers	5	45	16	80
Customer loyalty	1	9	7	35
Company names		0	5	25
Distribution channels	4	36	10	50
Business collaborations	5	45	13	65
Licensing agreements	3	27	8	40
Favourable contracts	2	18	1	5
Franchising agreements		0	1	5
Employee competence (human capital)				
Know-how	4	36	6	30
Education	1	9	6	30
Vocational qualification		0	1	5
Work-related knowledge	2	18	12	60
Work-related competencies		0	9	45
Entrepreneurial spirit	2	18	19	95

Table IV.
Frequency of reporting specific intellectual capital attributes

legislation or accounting standards are ignored. (Regulations require the disclosures shown in Table V.)

Annual reports used were for the year-end dates specified in Table VI. ICON plc and IONA Technologies plc are quoted in the USA and did not supply an annual report. Instead, they provided a Form 20F, as required by the Securities and Exchange Commission. The content of Form 20Fs is more extensive than Irish company annual reports and this may have influenced the results of the content analysis. Sherry Fitzgerald Group plc and SupaRule plc only recently obtained a listing and the content analysis is based on their placing documents.

Finally, examples illustrating approaches to reporting intellectual capital were reproduced from the annual reports studied.

Results

Comparison of market and book values

McCarthy (1998) compared the book values and market values of 15 of the top 40 Irish publicly quoted companies (ranked by market capitalisation) over a nine-year period 1989 to 1997. The market-to-book ratio of the sample only increased by 0.49 in the nine-year period. Of this increase, 0.31 occurred in 1996/1997. The author concludes that the gap between book and market value had not increased significantly in the period, for the sample examined. This

	Company law	Accounting standards
Patents, trademarks, copyrights	Disclosure amount in balance sheet	
Research	Indication of research and development activities	Charge for year in P/L
Employees	Numbers analysed by segment Staff costs	

Table V.
Disclosures required by regulations

Company	Year end	Book value IR£M	Market value IR£M	"Hidden value" (%)
1. BCO Technologies Group plc	31/12/97	6[a]	14	57
2. Bioglan Pharma plc	31/1/99	49[a]	295 At 31/3/99	83
3. Elan Corporation plc	31/12/98	2,332[b]	8,706	73
4. ICON plc	31/5/98	63[b]	156 At 30/4/99	60
5. IONA Technologies plc	31/12/98	82[b]	739	89
6. Marlborough International plc	28/2/98	8	47	83
7. Rapid Technology Group plc	30/6/98	2	23	91
8. Reflex Group plc	31/12/98	2	2	0
9. Sherry Fitzgerald Group plc	31/12/98	2	28	93
10. SupaRule plc	31/3/98	(126)	O/S	0
11. United Drug plc	30/9/98	49	139	65

Notes: [a] £Ms; [b] $Ms

Table VI.
Comparison of market and book values of a selection of knowledge-based Irish listed companies

may be because his sample did not contain knowledge-based types of companies. There was only one company in his sample, Elan Corporation, common to this study.

Table VI compares the market and book values of the 11 listed companies in the study. In two cases, market value did not exceed book value. In the remaining nine cases the "hidden value" ranged from 57 per cent to 93 per cent, similar to Roos *et al.* (1997). This finding would suggest that intangible assets represent a significant part of the value of nine of the 11 listed companies in the sample. Consequently, one would expect that those nine companies would address this "hidden" value by voluntarily disclosing information on intellectual capital in their annual reports.

Intellectual capital disclosures in Irish annual reports

Disclosures of intellectual capital in Irish annual reports are examined from two perspectives. Initially, the frequency of disclosure of particular intellectual capital items is assessed. Thereafter, examples of disclosures are reproduced from annual reports.

Disclosure frequencies. Intellectual capital items identified in Guthrie *et al.* (1999) were examined in sample company annual reports. Table IV shows the frequencies found in the content analysis of the annual reports (or available equivalent) of the 11 listed companies in the sample.

Frequencies found compare poorly with those of Guthrie *et al.* (1999). This is to be expected, as Guthrie *et al.*'s sample is quite different to the one in this paper. Sample differences may, in part, be due to the different sizes of companies. Companies on the Australian stock exchange are likely to be significantly larger than those quoted on the Irish stock exchange. Compounding the size effect, Guthrie *et al.*'s sample is taken (with one exception) from the top end (by market capitalisation) of Australian listed companies. A further difference is that Guthrie *et al.*'s sample comprises six industry groups, whereas a narrow grouping of companies is selected for study in this research.

Examples from annual reports. Some examples from annual reports are reproduced below to illustrate the nature of intellectual capital disclosures:

- *Intellectual capital.* Only one company expressly referred to intellectual capital in the annual report.

  > The funds raised have allowed the company to strengthen its balance sheet and remove debt whilst investing the group with capital, both financial and intellectual, with which to drive the business forward into profitability (BCO Technologies plc, 1997 annual report, p. 1).
  >
  > During 1997 we acquired ownership of the intellectual rights relating to our technology . . . (BCO Technologies plc, 1997 annual report, p. 2).

- *Internal structural capital.* ICON plc provided interesting information on management processes underpinning the success of the company.

  > The Company has developed a unique operating model based on a "dedicated team approach" in which a team of full time professionals, operating out of centralized

> offices, is assigned exclusively to each project . . . The Company believes that its operating model offers the following advantages:. . . (ICON plc 1998 annual report, p. 4).
>
> The Company believes its operating model, based on dedicated teams, differentiates it from its competition in the CRO industry and enables it to deliver high quality services to its clients (ICON plc, 1998 annual report, p. 5).

ICON plc and Marlborough International plc provided a considerable amount of information on information systems.

> The Company's information technology strategy is to build its systems around open standards and leading commercial software. The Company is developing proprietary software utilizing a modular applications development process. This process . . . (ICON plc, 1998 annual report, p. 7).
>
> The Company is continuing to invest in information technology to support its high-quality service to clients and to increase efficiency. All offices are linked through E-mail/Workflow Systems, each office has a local area network and all but two offices are connected through permanent WAN (ICON plc, 1998 annual report, p. 7).
>
> Technology has played a vital role in the Group's success. This year, as in previous years, resources have been allocated and used to ensure that the Group remains constantly up-to-date with technological advances (Marlborough International plc, 1998 annual report, p. 8).
>
> Marlborough's regional offices are all on-line to its real-time database system, which allows a high speed integrated response to client requests. Video-conferencing facilities are also in widespread use. MGL and PPG have both installed ISDN telephone networks in their Dublin offices which include direct dial extension and voice-mail facilities. The use of advanced technology allows the Group to expand and develop rapidly within the growing Irish economy (Marlborough International plc, 1998 annual report, p. 8).

- *External (customer/relational) capital.* Some companies refer to relationships with customers.

  > Bioglan has also entered into a long-term marketing, sales and development partnership with Allergan to commercialise Allergan's novel proprietary psoriasis compound . . . (Bioglan Pharma Plc, 1999 annual report, p. 6).

  SupaRule plc names its major customers.

  > The Group's ultrasonic products have been manufactured and sold since 1990, and have been approved for use with major companies such as Electricité France, (EDF), ComEd (Illinois, US), Tokyo Electric Power (Japan), New South Wales Railways (Australia) and British Telecom (SupaRule plc Placing and Admission to AIM and the DCM (SupaRule plc, 1998 annual report, p. 6).

  ICON plc emphasises the importance of customers and customer loyalty in the following way:

  > The Company sales and marketing strategy is to focus on large pharmaceutical and biotechnology companies whose clinical development projects are large and complex and to develop close relationships with key decision-makers throughout such companies. By maintaining close working relationships with its clients, the Company gains repeat business and achieves lateral penetration into other therapeutic divisions (ICON plc, 1998 annual report, p. 8).

> ... project team leaders share responsibility for the maintenance of key client relationships and business development activities (ICON plc, 1998 annual report, p. 8).

- *Employee competence (human capital)*. Marlborough's mission statement is:

> Our mission is to deliver an outstanding quality service to our clients and candidates through the growth and development of our most important asset; OUR PEOPLE (Marlborough International plc, 1998 annual report, inside front cover).

The company expands on this in the chief executive's review which refers to training of staff.

> The key to our rapid development and expansion has been the quality and strength of our management team, which has grown with the business through continuous training and development programmes. Our acquisition policy is only to look at target companies with strong management operating in specialist niche markets with strong organic growth potential, capable of integrating with our existing management culture. We regard the management and motivation of people as paramount to the success of our business (Marlborough International plc, 1998 annual report, p. 9).

BCO Technologies plc is similarly conscious of staff as an important asset of the company.

> People continue to be our principal asset (BCO Technologies plc, 1997 annual report, p. 5).

> The group's policy is to consult and discuss with employees, through meetings, matters likely to affect employees' interests (BCO Technologies plc, 1997 annual report, p. 10).

> Information on matters of concern to employees is given through information bulletins and reports which seek to achieve a common awareness on the part of all employees of the financial and economic factors affecting the group's performance (BCO Technologies plc, 1997 annual report, p. 7).

> The group also recognises that the training and development of its employees is fundamental to its continuing success. Through implementation of its "Training Policy", a systematic approach will be taken to address the training needs of its employees. Through training, the group aims to ensure that individual employees reach a satisfactory level of performance in their current jobs. Employees are also encouraged to undertake training which may assist them to take advantage of any opportunities for promotion which may arise (BCO Technologies plc, 1997 annual report, p. 7).

Very little reference was found of employee know-how, education, vocational qualifications, work-related knowledge and competencies. Experience of staff is sometimes referred to, as in:

> Mary Goulding brings considerable experience of the computer industry together with a successful track record of management within rapidly growing technology orientated companies (Rapid Technology Group 1998 annual report, p. 3).

Sherry Fitzgerald clearly recognises the importance of staff by providing a short biography (age, previous experience, qualifications, period with the firm,

responsibilities) of 22 senior staff (in addition to biographies of the eight company directors).

Unlike the findings of Guthrie *et al.* (1999), there were very few (if any) references to employees and entrepreneurial spirit. The only candidate for such classification is:

> The hard work and commitment of our staff, a significant number of whom are shareholders in the enterprise . . . (Bioglan Pharma Plc, 1999 annual report, p. 5).
>
> Bioglan encourages employees to participate in the growth of the Group and welcomes employee involvement at all levels. Most of the Group's employees may participate in the Company's share schemes whereby they have the opportunity to benefit from the performance and progress of the Group (Bioglan Pharma Plc, 1999 annual report, p. 20).

Some companies were notable for the lack of information provided about employees. Elan's annual report for 1998 (p. 13) states, "Elan has over 200 scientists engaged in important pharmaceutical drug discovery efforts", yet no further information is provided about employees (other than the minimum requirements of legislation).

The difficulty in accounting for intellectual capital assets is who controls/owns the asset at any particular point in time. In the risk factors section of its placing document, SupaRule plc raises issues which have important implications for the likely progress to be made in accounting for intellectual assets – that of ownership.

> The Company is dependent on members of its senior technical and management team. The retention of their services cannot be guaranteed. The departure from the Company of any of the Executive Directors or certain senior employees could, in the short term, materially adversely affect the Company. While the Group has service agreements with each of these Directors and has entered into contracts of employment with its senior employees, the retention of their services cannot be guaranteed (SupaRule plc Placing and Admission to AIM and the DCM, 1998, p. 20).

Conclusions

This preliminary research indicates that, similar to findings worldwide, Irish companies have substantial intangible, intellectual capital assets. However, Irish companies are currently making little progress in measuring these assets. Such assets are rarely referred to in annual reports and, when referred to, it is in the most qualitative terms. Judging by the disclosures in the Irish annual reports studied in this paper, there seems to be little interest in, and demand for, improvements in measuring and accounting for intellectual capital assets.

Limitations of the research

The findings in this study are based on a small, non-random sample of companies and therefore cannot be generalised for Irish companies. Size can be an important variable in relation to intellectual capital and an examination of the largest Irish companies might have provided different results to the sample selected for study in this paper. However, it is more likely that replication of the study using a different sample would yield a similar finding to this paper of

little of no reporting of intellectual capital in Irish company annual reports. For example, based on a sample of all Irish public companies and 27 semi-state companies, Brennan *et al.* (1992, ch. 24) found very few voluntary disclosures of any type (let alone intellectual capital disclosures) by Irish companies.

Note

1. Decisions on whether companies were technology – or people-orientated companies was made by the author based on a personal knowledge of companies, which, with such a small number of publicly listed companies, is not difficult.

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