

CHAPTER 11

CONCLUSIONS

11.0 INTRODUCTION

This chapter summarises the empirical findings presented in Chapters 5-10 with respect to the research problems, questions and hypotheses stated in Chapter 1. The conclusions and interpretations are discussed in terms of the internal and external factors influencing intellectual capital (IC) disclosure practice, i.e. corporate governance mechanisms, company characteristics and market factors. Implications and recommendations are drawn based on the findings of this study. Limitations of the study are then identified and suggestions for further research are offered.

11.1 RESEARCH PROBLEM AND SCOPE

As reviewed in Chapter 2, a considerable number of previous studies have examined the state of IC disclosure practice in various countries. Most of these studies have focused on non-UK European countries. While the UK is a highly relevant context for IC disclosure research, relatively few UK studies have been published, and none uses large samples, restricting meaningful cross-sectional analysis. This study is therefore relevant and timely.

As suggested by Gibbins et al. (1990), variation in disclosure practices reflects the underlying internal and external stimuli that affect a firm's opportunistic or ritualistic disclosure position. Studies on IC disclosure should, therefore, also consider the possible determinants of such disclosure practice. However, IC disclosure studies to date have been largely silent about what determines such practice. In addition, many of the content analysis research methods applied in previous studies lack transparency,

specificity, uniformity and rigour in measuring IC disclosure (Beattie and Thomson, 2007).

This study had the primary aim of extending our understanding of IC disclosure activity in the annual reports of listed UK firms. The second aim was to consider the importance of both internal (corporate governance factors and company characteristics) and external (market factors) stimuli in explaining the level of IC disclosure, using a large sample. The third aim of the study was to explore and compare a variety of ways of measuring IC disclosure. The study also sought to explain the variations in the level of IC disclosure in terms of its possible theoretical underpinnings. Four main research questions were investigated:

1. To what extent do LSE-listed UK firms provide IC information in their annual reports?
2. How is IC information disclosed in the annual reports of the sampled firms?
3. What are the possible determinants of IC disclosure?
4. How can the level of IC disclosure be more rigorously measured?

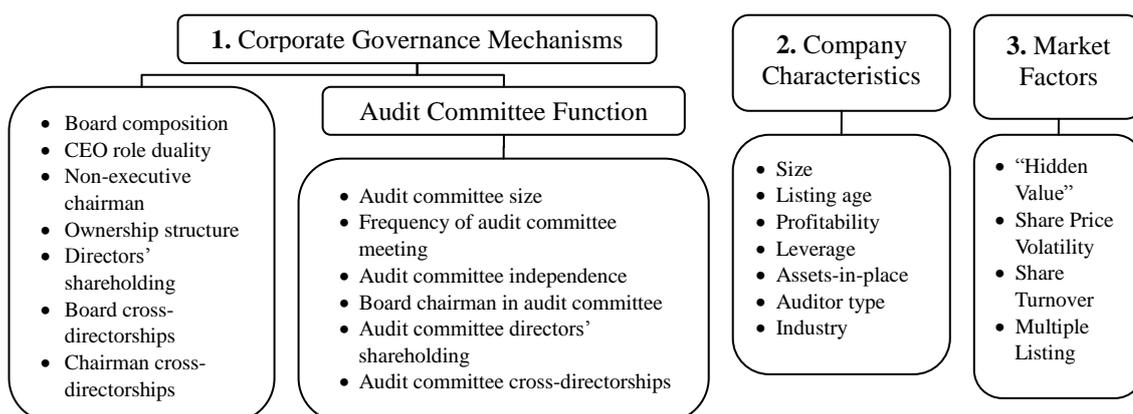
The study was restricted to IC disclosure provided in the annual reports of LSE-listed UK firms across seven industry sectors considered to be IC-intensive, covering financial year ends ranging between March 2004 and February 2005. A research instrument (183 format item checklist) comprising 61 IC items (22 human capital items, 18 structural capital items, and 21 relational capital items) in three presentational formats (i.e. text, number, and graph/picture) was constructed. Content analysis of 100 annual reports was conducted and appropriate reliability tests were performed.

Three measures of the level of IC disclosure were applied. The disclosure index was designed to identify the *variety* of IC disclosure; word count explores its *volume*; while the proportion of total word count in the annual report devoted to IC issues reflects the

focus in such reports. These three measures formed the dependent variables referred to as IC disclosure index (ICDI), word count (ICWC) and word count percentage (ICWC%). The level of disclosure was also measured for each of the three IC categories using the three measures, referred to as HICDI, HICWC and HICWC% for human capital; SICDI, SICWC and SICWC% for structural capital; and RICDI, RICWC and RICWC% for relational capital. These, in turn, were further analysed into text, number and graph/picture formats to give a total of 24 IC disclosure variables under investigation.

The literature review in Chapter 3 identifies three groups of explanatory variables as the possible determinants of IC disclosure practice, as shown in Figure 11.1:

Figure 11.1 Summary of Selected Explanatory Variables



The three main hypotheses proposed in this study are as follows:

H01: The level of IC disclosure is associated with a number of corporate governance factors, ceteris paribus.

H02: The level of IC disclosure is associated with a number of company characteristics, ceteris paribus.

H03: The level of IC disclosure is associated with a number of market factors, ceteris paribus.

Each main hypothesis is comprised of a few sub-hypotheses developed in Chapters 6, 8 and 9 (i.e. 13 sub-hypotheses for H01, 7 sub-hypotheses for H02, and 4 sub-hypotheses for H03). To test the proposed hypotheses, both univariate (parametric and non-

parametric) and multivariate (multiple regression analysis) analyses were conducted. Univariate analysis serves primarily as a precursor to multivariate analysis, indicating the relationship between the dependent and each of the independent variables. Tests were conducted for the three measures of IC disclosure at both overall and subcategory levels. In addition, univariate analysis was used to test the relation between the explanatory variables and the presentational format of disclosure. A more detailed description of the data analysis process is provided in Chapter 4.

Empirical findings are presented in Chapters 5-10. Chapter 5 provides descriptive analysis of the 'shape' of IC disclosure and explanatory variables. Chapters 6-9 explore the relationship between the explanatory variables and the level of IC disclosure. As is discussed in Chapters 4, 6 and 8-10, such relationships are examined in separate regression models due to the limitation of the sample size. However, such an approach has been evidenced to be appropriate that the individual regression models investigated in Chapters 6, 8 and 9 are not subject to significant model misspecification problems. In addition, the results based on the two 'full' regression models examined in Chapter 10 (see Table 10.6) provide further evidence for the validity of the findings reported in Chapters 6-9. Chapter 10 also provides tests on the results by using a different IC framework and a weighted scoring approach in measuring IC disclosure. Such tests provide evidence of the rigour of IC disclosure measures applied in the current study.

The findings of this study have paved the way for future research to shed further light on the issues raised above. It provides information users, preparers, regulatory bodies and academics with a state-of-the-art understanding of IC disclosure practices in the annual reports of 100 listed UK firms. The findings will be able to be used in future studies to evaluate the differences in IC disclosure practice across countries or industries, or to establish, over time, changes in IC disclosure practice. The research employs more rigorous measurements of IC disclosure, greater specificity of disclosure in terms of the

location and presentational formats, and a more detailed IC research framework, which can be usefully applied in subsequent studies.

It contributes to the growing body of knowledge by extending previous in-depth studies (e.g., Gibbins et al., 1990), exploring the process of corporate disclosure, to IC disclosure. By examining the relationship between the explanatory factors and IC disclosure, it helps shareholders and other groups of information users, including regulatory bodies, identify factors that may encourage IC disclosure in the annual reports of firms. It is one of the first studies to investigate the link between corporate governance structures, and market factors, with IC disclosure practice. Many of the relationships between IC disclosure and company characteristics examined in this study have not been examined by previous studies.

Petty and Guthrie (2000) observed that ‘intellectual capital is a relatively new field to research’. It is therefore hoped that this research is able to make a valuable contribution to the body of knowledge in this important field.

11.2 SUMMARY OF FINDINGS

This section summarises the key findings of the study based on both the level of IC disclosure and factors that influence such disclosure practice, at both overall and subcategory levels. This section addresses research questions 1 and 2 on IC disclosure practice in the annual reports of the sampled listed UK firms, identifying the form, presentational format and locations of disclosure. Section 11.2.1 then addresses research question 3 by summarising findings on factors influencing IC disclosure practice of the sampled firms. Research question 4 is also addressed in section 11.2.1 where methodological findings are summarised.

This study found that a considerable amount of IC information was disclosed in the sampled annual reports of listed UK firms, highlighting both the importance of IC to

business enterprise and the desire by management and investors for it to be disclosed in annual reports. This reinforces the view of Parker (2007) who, in a review of the current state of financial and external reporting research, identified IC research as a major area for further study.

Descriptive statistics indicate that, on average, 36% of the 183 format items (61 IC items in 3 formats) in the research instrument were disclosed, while 70% of the 61 IC items (i.e. 43 IC items) were disclosed in any format. The mean aggregate word count is 10,488 words, accounting for 26% of the overall annual report word count. By any standard, therefore, IC disclosure forms a very significant part of the annual report. The high level of disclosure of many IC items and the extracts from annual reports confirm that, in general, UK firms are using the annual report to disseminate IC information to users. However, the level of IC disclosure varies considerably across firms.

The distribution of human, structural and relational capital disclosures changes according to the disclosure measure employed. Structural capital ranks highest for the *variety* of disclosure; relational capital ranks highest in terms of *volume*; while structural and relational capital are joint highest for *focus*. Human capital, although very important to firms, was the least disclosed for all three measures of disclosure.

Further, the results confirm that IC disclosures are still mainly in text form (70% of 61 IC items), in line with the findings of previous studies (e.g., Guthrie and Petty, 2000; Brennan, 2001; Guthrie et al., 2007), with popular use of quantitative information (29% of 61 IC items), and the use of graphs/pictures being the lowest of the three disclosure formats (8% of 61 IC items). The extensive use of numerical information in IC communication identified in this study is more encouraging than the findings of previous studies (e.g., Guthrie and Petty, 2000; Brennan, 2001). Sampled firms use numerical information more for the disclosure of relational capital than for human and

structural capital. One explanation for the lower level of IC disclosure in number form compared to text form is that most firms have yet to establish reliable IC measurement systems. For example, none of the sample firms mentioned, in their annual reports, the use of IC measurement frameworks, with the exception of one firm that referred to human capital reporting metrics. The use of graphs and pictures is particularly popular for relational capital items, but less common for other IC items. Authors (e.g., Beattie and Jones, 1992; Davison and Skerratt, 2007; Beattie et al., 2008) have called for greater attention to the use of graphs and pictures in annual report communication. It seems that preparers of the annual report need to develop greater sensitivity to the messages portrayed by graphs and pictures, and to the ways in which such visual material can enrich the communication of IC.

None of the sampled firms included a section exclusively devoted to IC disclosure in the annual report, supporting Guthrie et al.'s (2007) finding. However, IC information is captured in virtually all sections of the annual report, although the extent of disclosure varies significantly, and is most concentrated in the Operating and Financial Review (OFR) section. This confirms the view of Marston and Shrides (1991) that the OFR is 'the main disclosure vehicle' (p.197). Relational and structural capital disclosures were most concentrated in the OFR and Chief Executive Review sections, while human capital disclosures were most concentrated in the Board of Directors and Corporate Governance sections. Such concentrations may suggest that structural and relational capital disclosures are more closely linked to each other than either is to human capital disclosure, with disclosures of the latter tending to be heavily management focused.

The content analysis findings support the observation of Roslender and Fincham (2004) that IC terms typically used in the academic literature do not feature in the annual reports of the sampled firms.

11.2.1 DETERMINANTS OF IC DISCLOSURE

The results of this study reveal that the level of IC disclosure by the sampled listed UK firms is related to various corporate governance factors, company characteristics and market factors, based on both univariate and multivariate analyses. Findings are consistent with the model of corporate disclosure processes proposed by Gibbins et al. (1990) that disclosure outputs are determined by both internal and external stimuli. The three main hypotheses (H01, H02 and H03) of this study are therefore accepted.

11.2.1.1 CORPORATE GOVERNANCE FACTORS

Regressing the three measures of IC disclosure on the explanatory variables, the study finds support for hypothesis H01 that the level of IC disclosure is associated with a number of corporate governance factors (see Chapters 6 and 8 and Chapter 10 Section 10.4).

Corporate governance variables that were associated with one or more of the disclosure measures include board composition, share concentration, audit committee size and frequency of meeting, audit committee directors' shareholding, directors' shareholding, and proportion of board directors with cross-directorships. Seven of the thirteen sub-hypotheses of H01 are therefore accepted (i.e. H01_a, H01_c, H01d, H01e_1, H01f_1, H01f_2, and H01f_5).

Board composition (H01_a) was positively related to IC disclosure, especially with structural and relational capital disclosures. There is evidence supporting the agency theory argument that independent non-executive directors enhance the independence of boards' decisions, and function as a monitoring mechanism to enhance the effectiveness of the board, and reduce both agency costs and IC information asymmetries between principals and agents. From a resource dependence theory perspective, their breadth of expertise and knowledge heighten the board's awareness of the importance of IC and its

disclosure.

Confirmation of the proposition for share concentration (H01_c), audit committee size (H01f_1) and frequency of meeting (H01f_2), and audit committee directors' shareholding (H01f_5), underpinned by agency theory arguments, was also found. Analysis at subcategory level reveals that the negative impact of block shareholders is mainly on the variety of structural capital disclosure and the volume and focus of relational capital disclosure. Audit committee size and frequency of meeting have significant positive impact on the disclosure volume of all three IC categories and the variety of relational capital disclosure. The two variables also have significant positive effects on the variety of human capital and structural capital disclosure respectively. The negative effect of audit committee directors' shareholding on IC disclosure practice supports the view that such shareholding compromises the independence of the committee members and influences their effectiveness (e.g., Forker, 1992; Carcello and Neal, 2003; Mangena and Pike, 2005). These findings suggest that where sufficient resources are committed, audit committees are effective in overseeing IC communication via annual reports.

Directors' shareholding (H01d) shows significant negative effects on IC disclosure practice, especially the volume of structural capital disclosure and the variety of relational capital disclosure, supporting management entrenchment arguments, while it is positively related to the focus on human capital disclosure. The positive effect of board directors with cross-directorships (H01e_1) is found to be mainly on the volume of structural and relational capital disclosures, supporting resource dependence theory.

Apart from board composition and share concentration, none of the corporate governance variables, including audit committee characteristics, showed significant impact on the focus devoted to IC in annual reports.

Other corporate governance variables examined in this study are not significant (i.e. role duality, non-executive chairman, chairman with cross-directorships, audit committee independence, board chairman on audit committee, and proportion of audit committee directors with cross-directorships), despite some associations with the disclosure of three IC sub-categories. The six sub-hypotheses of H01 (i.e. H01b_1, H01b_2, H01e_2, H01f_3, H01f_4 and H01f_6) are therefore rejected.

Regarding the presentational format of IC disclosure, text and numerical forms were found to be more significantly affected by corporate governance variables than graph/picture form. Corporate governance variables show greater impact on structural capital disclosure in numerical form than in text form. This may suggest the importance of numerical structural capital information over which the board of directors applies greater monitoring and control.

These findings indicate that effective corporate governance mechanisms impact positively on the variety, volume and focus of IC disclosure at both overall and subcategory levels. Such mechanisms also affect IC disclosure in its various presentational formats. The findings are consistent with Keenan and Aggestam's (2001) argument that corporate governance impacts on efficient IC management, including its communication to stakeholders. It also provides support for Gibbins et al.'s (1990) model of corporate disclosure processes that internal structure is the activating force of disclosure output.

11.2.1.2 COMPANY CHARACTERISTICS

This study finds support for hypothesis H02 that the level of IC disclosure is associated with a number of company characteristics. Statistical results shown in Chapters 6, 8 and 9, as well as in Chapter 10 Section 10.4 indicate that the company characteristics of firm size, listing age and profitability are associated with one or more of the IC disclosure

measures. Three of seven sub-hypotheses of H02 are therefore accepted, i.e. H02a, H02b, and H02c, respectively.

Significant size effects (H02a) on the variety and volume of disclosure of all three IC categories are found. However, the focus on IC disclosure in annual reports, at both the overall and subcategory levels, is not size dependent. The negative effect of listing age (H02b) is mainly related to the variety and volume of human and relational capital disclosures, supporting signaling theory and decision-usefulness argument. However, given the different effects of listing age on the disclosure volume of IC items, the variable showed no significant effect on the overall volume of IC disclosure. Financially healthy firms (H02c) disclose greater variety of IC, especially relational capital, disclosure, supporting signalling theory.

Leverage, assets-in-place and auditor type failed to show any significant influence on IC disclosure at the aggregated level. Hence, the sub-hypotheses of H02d, H02e and H02f are rejected. Despite the insignificant results, leverage is positively related to the variety and volume of human capital disclosure, and assets-in-place shows significant positive association with the variety of structural capital disclosure. Industry differences were identified at both overall and subcategory levels, lending support toward the sub-hypothesis H02g, but not in a systematic manner.

For the format of disclosure, profitability is significantly related to IC disclosure, especially relational capital disclosure in numerical form. This suggests that financially healthy firms are more likely to communicate relational capital information in quantitative form, to signal their good performance and efficient management, where numerical disclosures provide measurable evidence. Variations in IC disclosure in graph/picture form are largely due to firm size effects. The weak positive association between listing age and IC disclosure in numerical form is mainly due to the significant

positive effect of listing age on structural capital disclosure in numerical form. This implies that, although younger listed firms are more enthusiastic to disclose IC information, the lack of established management and accounting routines and track records makes it more difficult to quantify structural capital information. Firms with longer listing histories are usually larger in size and have a broader set of management and accounting routines (Chaminade and Roberts, 2003), giving greater capability in providing structural capital information in numerical form. Industry differences in IC disclosure in numerical form were also identified.

These findings indicate that company characteristics influence the variety, volume, focus and presentational format of IC disclosure at both overall and subcategory levels. It provides evidence for Gibbins et al.'s (1990) model of corporate disclosure processes that various company characteristics (i.e. internal factors) form part of the antecedents influencing a firm's disclosure position.

11.2.1.3 MARKET FACTORS

Multiple regression results shown in Chapter 9 and Chapter 10 Section 10.4 provide support for hypothesis H03 that the level of IC disclosure is associated with a number of market factors. 'Hidden value', share price volatility, share turnover and multiple listing are associated with one or more of the IC disclosure measures, at both overall and subcategory levels, supporting the sub-hypotheses of H03a, H03b, H03c and H03d.¹

It finds that the variety, volume and focus of IC disclosure at both overall and subcategory levels increase with firms' 'hidden value' (H03a), suggesting that asymmetric information and decision usefulness are important determinants of a firm's IC disclosure behaviour. Firms with greater information asymmetries, reflected by the greater gap between market and book values, look to reduce agency costs impeded by

¹ The relationships between share turnover, multiple listing and IC disclosure measures are only evidenced in the separate regression model with market factors and company characteristics as independent variables. The 'full' regression models excluded the two variables due to potential multicollinearity problems.

such asymmetries, by providing greater decision useful information disclosure.

Positive relationships between share price volatility (H03b) and the variety and focus of IC disclosure, especially for relational capital, were identified. The finding suggests that firms with more volatile share prices have greater IC intensity and information asymmetry and, hence, higher levels of IC disclosure to signal to the market the firm's intrinsic value and growth potential. However, the variable failed to show any impact on the volume of such disclosure. Firms with volatile share prices tend to be smaller in size and produce relatively smaller annual reports, and consequently have less capacity available for IC disclosure.

The results also indicate that market forces are efficient in promoting firms with actively traded shares (H03c) to disclose more value-relevant, decision useful information, especially the variety of relational capital information and the volume of IC disclosure in all three categories.

Multiple listing (H03d) is found to have significant positive effects on the level of IC disclosure, especially structural and relational capital disclosures, in all three measures. This suggests that firms with multiple listings experience international market pressures for greater IC disclosure. Analysis of disclosure format indicates that firms with multiple listings provide greater IC disclosures in all three formats than single listing firms.

IC disclosures in text and numerical forms (although not graph/picture form) are significantly associated with 'hidden value'. This implies that disclosures made in text and numerical forms are perceived as more value-relevant and decision-useful than those in graph/picture form. However, firms with more volatile share prices provide greater relational capital disclosure in graphs/pictures.

The findings presented above provide support for the model of corporate disclosure processes developed in Gibbins et al. (1990) that market factors, representing external

norms and opportunities, form part of the antecedents that determine a firm's disclosure position as being opportunistic or ritualistic.

Finally, this study identifies that a more detailed IC framework, despite its increased potential for coding errors, produces more rigorous statistical results than a less detailed framework. Moreover, the weighted scoring approach (on the presentational format of disclosure) produces similar results to an unweighted coding scheme, suggesting that the extra complexity by assigning different weights to formats of disclosure is unnecessary.

11.3 IMPLICATIONS AND RECOMMENDATIONS

Based on the findings of this study, some implications and recommendations for firms, information users, regulatory bodies, and academics are discussed in this section.

Given that much of the IC information captured is voluntary in nature, the high level of IC disclosure identified in this study indicates that the sample of listed UK firms generally provide information exceeding the minimum statutory requirements, which reflects the opportunistic disclosure positions taken by these firms.

The substantial use of text compared to the use of numbers may suggest the lack of an established IC measurement system among the sampled firms. Hence, one of the most important tasks in IC reporting is to develop a uniform IC measurement framework that can be used by firms in different industries. A set of guidelines for firms in measuring and reporting IC is therefore a pressing need. Development of corporate accounting information systems to accommodate IC is called for. This might include developing practical and reliable internal procedures and guidance for collecting data on an ongoing basis. Such practices would enhance the consistency of IC disclosure. However, there are various problems with setting industry-specific uniform IC measurement frameworks. For instance, 1) businesses are increasingly globalised and diversified, which makes it more and more difficult to classify companies clearly into certain

industry sectors; 2) given the number of industry sectors, it will be very costly and time-consuming for any researcher(s) or regulatory bodies to devise industry-specific IC measurement frameworks; 3) there may be structural changes in businesses over time; and 4) in some cases, company-specific framework may be required. Therefore, it is highly difficult to devise industry-specific IC measurement frameworks in a meaningful way. It may be a more achievable approach to develop a general and uniform IC measurement framework for all companies to adopt/adapt.

IC disclosures in graph/picture form are still at a rudimentary stage, primarily used by large firms or those with significant relational capital. Regulatory bodies should devote more attention to the role of graphs and pictures in annual reports, and demonstrate how they could be used for IC communication by both information preparers and users.

The evidence suggests that the vocabulary used by management and stakeholders is very different to that employed within the academic community. This suggests the need for greater agreement on the terminology and definitions of IC among firms and researchers. Managers appear reluctant to use the terms ‘intellectual capital’ and ‘intellectual assets’, possibly because capital and assets are sensitive terms when related to employees, managers and other stakeholders. In order to achieve IC communication in a common language, the awareness and understanding of the IC concept needs to be raised further, both within the boardroom and in the wider marketplace.

Firms first need to understand IC internally, before it becomes useful externally. Based on the significant results found for corporate governance variables, it is essential to engage management teams and gain board-level sponsorship in this regard. This helps to ensure a firm is approaching the IC measurement and reporting task with the right levels of motivation and technical skills. Therefore, senior management needs to have a clear grasp of the concept of IC and its critical importance to the firm. This understanding

needs then to be extended to: (1) the measurement and reporting of IC, (2) integrating IC into management reporting frameworks, (3) educating employees with respect to the concept and importance of IC within the organisation, and (4) explaining to investors and other stakeholders the approach taken and communication channels to be used for disseminating IC information.

By engaging in a disclosure exercise, the firm is discovering for itself what IC means and how it can be put to use and turned into specific managerial action (see Johanson et al., 2001a, b; Chaminade and Roberts, 2003). Therefore, IC disclosure practice at the various stages of IC implementation in firms should be encouraged.

The great concentration of IC information identified in the OFR demonstrates that it is an obvious location for the bulk of IC disclosure. Readers of annual reports need to know where IC, or its various subcategories, is located rather than necessitate the laborious task of reading hundreds of annual report pages. It might be feasible to have sections in the annual report exclusively or primarily devoted to various IC elements. For example, the OFR could include such a section for structural and relational capital, and the Board of Directors could incorporate a section for human capital. Guidelines on what and where to disclose IC information would be beneficial to both information preparers and users. These approaches would help standardise IC disclosure practice, help information users in screening and understanding the IC information disclosed, and help information preparers in making disclosure decisions.

However, having a separate section for IC in the annual report will potentially result in duplication of information. This is because some of the issues overlap with each other, such as information about employees can be classified as both corporate social responsibility reporting and human capital reporting. Corporate social responsibility and IC both warrant for individual sections. The problem of where and how much to

disclose employee information arises. Also, relocating information from other sections to the IC section may interrupt the coherent flow of the annual report. Further, if there are overlaps between topics and the information is considered important to be reported in all related topics, it may result in excessive duplication. Another problem with having a separate IC section in the annual report may be that it puts restraint on reporting activities. Management may be handicapped with where and how they can report certain information, and consequently discourage innovative practices. Overall, it is not an easy task to develop a separate section for IC. It needs careful consideration about its potential impact on other sections of the annual report and the annual report as a whole, before any action could be taken.

Significant effects of firm size and stock listing history on IC disclosure practice were evidenced, which may be because smaller, younger listed firms are inexperienced with little track record and management and accounting routines for IC disclosure. Chaminade and Roberts (2003) suggest that it is more a matter of demonstrating by example than by design *per se*. It is expected that best practices by leading firms will encourage others to 'jump on the bandwagon' (Jorritsma-Lebbink, 1999). Hence, it may be best for the development in IC disclosure to be voluntary with policy makers encouraging significant players within each sector to lead by example.

Given that the IC focus measure is not size dependent, and that investors with smaller shareholdings often devote little time to reading annual reports, it is argued that the focus measure applied in this study may play an important role in influencing resource allocation decisions. Other studies might usefully employ this measure.

It is also recommended in this study that, in order to produce more rigorous results, future studies apply a detailed research framework, such as the research instrument

designed in this study. Further, this study suggests that the dichotomous coding scheme is a simple and useful method for conducting content analysis.

The results of this study have implications for shareholders and regulatory bodies regarding establishing a board structure that enhances IC disclosure practice. For instance, the size and frequency of meeting of audit committees were found to be positively associated with IC disclosure practice. Hence, smaller firms with fewer audit committee members could compensate by increasing the level of the audit committee's activity. In addition, help should be provided to audit committee members to better enable them to adapt their evolving role. The Audit Committee Institute (ACI), sponsored by KPMG, is such an institution designed to provide knowledge to audit committee members. In addition, regulators may help in developing procedures for audit committee directors to follow in order to improve their effectiveness in overseeing IC disclosure processes. Such procedures could help firms enhance the committee's effectiveness and efficiency, especially smaller ones that typically do not have the resources available to design their own.

With the exception of board composition and share concentration, none of the corporate governance variables, including audit committee characteristics, has any effect on the focus devoted to IC in the annual report. The implication is that apart from the independent non-executive directors and the big-block shareholders, other corporate governance mechanisms examined in the study, such as audit committees, do not have editorial control over the content of the annual report when demands for various types of information by users exist. One way to improve IC disclosure practice and the board's editorial control over the content of the annual report is to establish disclosure committees, which will consequently reduce the responsibilities of audit committees and improve the monitoring of disclosure processes. However, it is important to note that the proliferation of committees will be very costly and may not be achievable in a short- to

medium-term. The costs to companies could involve, for instance, the cost to take on more directors to form the disclosure committee; the cost of developing the structure, policies and procedures for the committee; and the cost of reporting on the activities of the committee in the annual report. The regulatory bodies could also incur costs of developing guidelines, issuing consultation papers and examining the effectiveness of the committee, etc. Further, it took over two decades for audit committees to gain widespread adoptions by major UK companies,² and similarly, it may take time for disclosure committees to be pioneered and tested before reaching wide acceptance. The applicability and practicability still need to be discussed and examined. Nevertheless, if the long-term benefits in establishing disclosure committees outweigh the potential costs, it may be worthwhile for the regulatory bodies to look into the issue.

The results imply that the interests of smaller shareholders of firms with concentrated share ownership need to be protected via corporate governance mechanisms, such as greater independence of the board and larger and more active audit committees for better IC communication.

The effect of the chairman being a member of the audit committee was insignificant. The finding supports the FRC consultation on proposed changes to the Combined Code (2007) that for listed firms outside the FTSE 350 the board chairman can be a member of, but not chair, the audit committee provided s/he was considered independent when appointed.³

The study questions the notion that directors' shareholdings act as an effective monitoring mechanism. Significant directors' shareholdings tend to create a management entrenchment effect resulting in less IC disclosure. Thus, it has implications for management incentive plans and the desirability of encouraging

² As is observed by Collier (1996), survey results (Tricker, 1978; Chambers and Snook, 1979; Marrian, 1988; and AISG, 1977) show that virtually no UK companies had an audit committee prior to 1970, few formed audit committees between 1970 and 1975, and 1992 to 1993 was a peak period for audit committee formation.

³ On 30 May 2008, FRC announced the amendment to the Combined Code, URL: <http://www.frc.org.uk/press/pub1628.html>.

managers to have significant participation in the firm's equity.

Recommendations are also made based on the findings on the relationship of market factors with IC disclosure practice. Policy-makers are recommended to focus more closely on the needs of information users of those firms with 1) less actively traded shares; 2) a single listing; 3) low share price volatility; and 4) a small gap between market and book values. There may or may not be an information problem for users of information of these firms. However, policies and procedures or guidelines need to be in place for such needs to be fulfilled.

The evidence provided by the empirical literature, including this study, clearly puts standard setting bodies in a position to undertake efforts aimed at enhancing the usefulness of financial reports by including relevant information on the intangible determinants of a firm's financial position, i.e. IC. Despite the broad agreement that the treatment of intangibles in current accounting systems is not appropriate, there is a controversy over the way in which this problem should be solved (Cañibano et al., 2000; Skinner, 2007). Cañibano et al. (2000) argue that the cost associated with a radical change in the accounting system to make it more value relevant for IC-intensive firms is unaffordable and that the sensible approach towards the enhancement of financial reports is to encourage voluntary disclosure of IC information. Skinner (2007) argues for guidance on intangible asset disclosures rather than mandated reporting rules because any reporting standard would have to be written at a high level of generality, where there is likely to be a problem of whether they would be effective in encouraging disclosure. In addition, legislation will impose minimum requirements which will encourage compliance within the letter rather than the spirit of regulation (MacDonald and Beattie, 1993; Boyd, 1996). Moreover, Gröjer and Johanson (1999) suggest that a compulsory standard could potentially be more harmful, when IC is undergoing a period of rapid change. Thus, it is recommended that large accounting firms along with

accounting and securities regulators jointly develop a disclosure framework for IC that would help standardise IC disclosure practice and encourage greater voluntary IC disclosure.

Overall, the extensive disclosure of IC information, despite the use of different vocabularies by managers and researchers, suggests that the prospects for IC disclosure are perhaps brighter than is commonly thought. However, whether these seemingly hopeful prospects will be actualised depends on critical factors, such as the current and future mechanism for setting and enforcing guidelines to improve the standardisation of the practice, the continuation of the current trend towards voluntary IC disclosure and good corporate governance, and the increased openness of markets.

11.4 LIMITATIONS OF THE STUDY

Nine limitations of the study are identified. The objective of presenting the limitations is to raise the awareness of some restrictions to interpreting the results of the study. However, the limitations listed below do not impair the results of the study.

First, this study focused on IC disclosure in annual reports only, and as such the findings of this study cannot claim to represent all IC disclosures provided by the sampled firms during the period of study. However, among the various media channels firms could use for IC communication, annual reports represent the concerns and interests of individual corporations in a comprehensive and compact manner (Abeysekera and Guthrie, 2005) and have widespread distributions (Adams and Harte, 1998), which suit a wide group of users. Using annual reports as the research object facilitates comparison across firms and industries, given they are regularly produced and are mandatory (Gray et al., 1995a).

Second, the study is limited to annual reports in a single year, and as such it does not reflect a firm's IC disclosure practice over time.

Third, the study focuses on seven industry sectors considered as IC-intensive. Such a focus is viewed as both a design strength and limitation; as a strength, it enables greater focus on IC disclosure in IC-intensive sectors, as a limitation, it prevents wider generalisation to the whole population.

Fourth, the disclosure scoring sheet of this study is self-developed, which causes difficulty for comparison with prior studies. Care should be taken when comparing the results of this study with others that use different frameworks. On the other hand, one of the contributions of this study is that it proposes a more detailed framework that can be used by future studies.

Fifth, throughout the main analyses of the study, an unweighted approach was adopted for measuring IC disclosure. As the degrees of importance of different IC items and formats of disclosure may vary according to various groups of information users, a weighted procedure would add some robustness to the empirical analyses of the relationship between IC disclosure and the identified variables. Given that the purpose of the study is to examine IC disclosure in the annual reports only, which is considered suitable for a variety of users, the unweighted approach was considered suitable. In addition, the test of results by assigning different weights to the format of disclosure produced similar results to the unweighted approach, suggesting that the additional complexity added by applying a weighted scoring approach may be unnecessary.

The sixth limitation relates to the difficulty of ascertaining whether non-disclosure on any particular issue was due to non-applicability or failure to disclose. For instance, for those firms failing to disclose their team-working ability, even after carefully reading through the annual report, it was difficult to establish whether they actually had team-working but failed to disclose it. This drawback could possibly be overcome by sending questionnaires or by interviewing firms to ensure that each IC item in the research

instrument is applicable to the particular firm. However, this is time and resource consuming, and there is always a problem of low response rates.

Seventh, while this study examines the effects of corporate governance, company characteristics and market factors, there will be other factors that affect firms' IC disclosure practices that have not been examined in this study.

The eighth limitation of the study is the sample size. Due to the labour intensive nature of the study, content analysis was conducted on the annual report of 100 UK listed firms. This limits the number of independent variables to be included in one regression model. Hence, the 'general-to-specific' approach of multiple linear regression analysis (Thomas, 1997) is not applicable in this study. However, the separate investigation of the explanatory variables in three models is not subject to model misspecification problem as is discussed in Chapters 4, 6 and 8-10. The findings in Chapters 6, 8 and 9 are not subject to significant omitted variables error. This is further evidenced by the results shown under the 'full' regression models examined in Chapter 10 Section 10.4.

Finally, as is argued by Core (2001) that corporate governance and voluntary disclosure are interlinked, the problem of endogeneity may exist. The problem of endogeneity occurs when the independent variable is correlated with the error term in a regression model. This implies that the regression coefficient in an OLS regression may be biased. For studies with endogeneity problems, one of the effective ways to solve such problems is to use simultaneous equation models (Bollen, et al., 1995; Moody 2001).⁴

11.5 SUGGESTIONS FOR FUTURE RESEARCH

There are several promising areas for future research on IC disclosure, which are presented as follows:

⁴ When the significant endogeneity problem is ignored, the estimated coefficients are biased and inconsistent (Stone and Zissu, 1993: 42). Biased estimators might over- or underestimate the true effect of the variable of interest. Given that a simultaneous equation model is a special form of structural equation models (Bollen, 1989), the model enables one to obtain the unbiased estimate of the coefficients of the variables of interest through permitting a possible correlation in the error terms of the variables that are considered endogenous.

- 1) Future research could usefully explore the relationships identified in this study in greater depth through organisational case studies;
- 2) IC items in the research instrument could be weighted by surveying the perceived importance of each item from the information users' point of view. The influence of weighted disclosure checklist might not be critical for a disclosure study from the perspective of general information users, but would constitute an important specification for specific users' study of value-relevance and quality of disclosure. It would also be interesting to compare the results with those of the current study. The problem with such a study is that of the potentially low response rate. But if this obstacle is surmounted, it would be a very promising area of research;
- 3) This study examines three groups of explanatory variables, though there are other factors that could affect firms' IC disclosure practice, such as corporate culture. For example, firms that choose to have good disclosure policies may also choose to operate good corporate governance practices and vice versa; and firms that operate a knowledge-sharing culture can be expected to have fewer barriers to leveraging IC (see DeLong and Fahey, 2000) and provide greater IC disclosure. In addition, it is still unclear at the moment whether audit committees should be composed primarily of accounting experts or of members with a mix of finance, accounting, and auditing competence, and what the best mix of knowledge to encourage IC disclosure might be (DeZoort et al., 2002);
- 4) This study has focused on the determinants of IC disclosure practice based on cost-benefit arguments. It can be taken forward by examining whether IC disclosure has any effect on, for example, the cost of capital, share price, analyst followings, and analyst forecast errors. Take the effect on cost of capital as an example, one of the benefits of IC reporting is that it reduces information asymmetry in the capital markets and lowers the

cost of capital (Lev, 2001). The extent to which corporate disclosure is related to the cost of capital has been examined both theoretically (Barry and Brown, 1985; Diamond and Verrecchia, 1991) and empirically (Botosan, 1997; Botosan and Plumlee, 2002; Plumlee and Botosan, 2007). However, such effects have yet to be explored for IC disclosure practice, with the exception of two recent studies, i.e. Singh and Van der Zahn (2007) and Kristandl and Bontis (2007). Singh and Van der Zahn (2007) examined the relationship between IC disclosure in Singapore IPOs and firms' cost of capital, and found a positive association between cost of capital and the extent of IC disclosure, contradicting the theoretical predictions. However, Kristandl and Bontis (2007), by examining the effect of IC disclosure in the annual reports of listed companies (from four countries) on the cost of capital, document a negative relationship. The inconclusive results suggest that the relationship between IC disclosure and the cost of capital is unclear and requires further examination;

5) Guthrie et al. (2007) posit that a balance needs to be reached between relying solely on the annual report and investigating every public disclosure made by an organisation. Future studies could expand the study by examining communication media other than annual reports, such as interim reports, corporate websites (e.g., Striukova et al., 2008), webcasts, presentations to analysts (e.g., Garía-Meca and Martínez, 2005), IPOs (e.g., Bukh et al., 2005), and public announcements. The results will form an interesting comparison with those found in the annual reports. The information content in analysts' reports can also be analysed (e.g., Garía-Meca and Martínez, 2007), which could help to understand what IC information is perceived as important by analysts. The results could form a useful comparison with the analyst rating on the importance of IC items;

6) Future studies could include listed firms from a wider cross-section of industries, such as real estate and utility firms;

7) In addition to the private sector, institutions in the public sector could also be actively involved in creating and managing IC and externally communicating related information. Parker (2007) calls for research attention on public sector organisation developments in developing and reporting key performance indicators. It would be interesting to examine the IC disclosure practice of, for example, universities, hospitals and government agencies. Research has been conducted in various Austrian universities (e.g., Leitner, K-H, 2004; Sánchez and Elena, 2006; Sánchez et al., 2006);

8) A longitudinal approach encompassing several years may indicate the trend of IC disclosure practice within firms over time;

9) There is still a great deal of potential for international comparative studies, such as a study that focuses on the financial services sector;

10) Future study could examine the visibility of IC information in the annual reports, e.g., font style and size, and colour of text. One of the disclosure outputs perceived by information preparers identified in Gibbins et al. (1990) is the management of disclosure visibility, such as burying sensitive information in verbiage or highlighting good news;

11) By reviewing the annual reports, there is evidence that photographs and flowcharts of key parts of the operations are increasingly built into a firm's value-creation stories. Therefore, future studies could examine IC disclosure in graphs/pictures in greater detail, such as their type, size or space allocated (Beattie et al. in 2008 use sum of pages as the measurement approach). Factors that affect such disclosures could be further explored;

12) We know very little about the linkage between the level of IC disclosure in annual reports and how much a firm values its IC, the availability of resources and capabilities for measuring and reporting IC, and the perceived costs and benefits of external communication of IC elements by firms. We can describe the linkage as the link

between ‘reality’ of IC in firms and IC disclosure ‘practice’. Questionnaires could be sent to managers from various functions (e.g., financial, human resources, operations and marketing directors) regarding, for example, (a) the perceived importance of IC elements; (b) the use of ‘contemporary’ performance measures including for instance, non-financial measures, qualitative measures, Balanced Scorecards, and customer surveys; (c) the perceived importance and costs and benefits of external communication of various IC elements; (d) the perceived importance in using the annual report as a vehicle for disclosing various IC elements in comparison to other communication channels; and (e) perceived feasibility in using the annual report or the OFR as an exclusive medium for IC communication. Views on these questions could also be obtained via interviews with various managers. The weighted view across departments of each firm forms an interesting picture of a firm’s ‘reality’ in IC. The implication may be that a firm’s IC disclosure practice can be affected by its perceived importance and the existence of various management accounting practices (see Tayles et al., 2007). Moreover, such a study may highlight new factors that influence IC disclosure practice.