

## Practical Challenge of Content Analysis: An Illustrative Example from Recoding IC Information in the UK's Companies Annual Reports

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### ABSTRACT

Intellectual capital (IC) is believed to be more important resources to add the value of a company rather than physical assets. This gives rise to the increasing practice of reporting IC information in corporate annual report. Over the past fifteen years, considerable numbers of studies have employed content analysis to examine the extent and nature of IC information in several countries, but they presented different results. These results might partly contribute to different methods in counting information. In fact, the previous studies have been criticised for not explicitly clarifying how information was recoded and counted which led to incomparable findings. Therefore, this paper firstly seeks to discuss an illustrative example of 'sense-making' process in identifying, categorizing, and counting of IC information in annual reports of pilot sample company. Secondly, the method refined in the pilot study was applied over the final samples of six large companies in the UK from 1974 to 2008. The contribution of this paper is to primarily refine the previous method in recoding information, to send a message that transparency is crucial in content analysis and to facilitate method replication for future studies. Overall, this study demonstrates a marked increase in IC information disclosure was identified over the 35 years. The relational capital information disclosure was relatively more prominent over time, followed by human capital and structural capital.

## 1. Introduction

This paper seeks to discuss some conceptual and practical challenges pertaining to content analysis method gained from research experiences of analysing intellectual capital (IC) information disclosure in 1974 to 2008 annual reports of large UK companies. It is vital to understand some methodological issues of content analysis before proceeding its practical application (Beattie and Thomson, 2007). Krippendorff (2004, p.xxi) points out that "methodology is not a value in itself. The purpose of the methodology is to enable researchers to plan and examine critically the logic, composition and protocols of research methods; to evaluate the performance of individual techniques; and to estimate the likelihood of particular research design to contribute to the knowledge". In addition, the explicit clarification of content analysis allows reliability and validity of data analysis to be examined and also facilitates replication of the method in future studies (Beattie and Thomson, 2007). In this respect, this paper provides some conceptual discussion of content analysis followed by some illustrative examples to demonstrate the practical challenges of the pilot study in analysing the content of annual reports, Mark and Spencer Inc. (Campbell & Rahman, 2010). The method refined in the pilot sample was then employed in IC content analysis for over other six large companies. The findings of IC content analysis of final samples are presented and discussed.

## 2. A Research Note of Content Analysis

The term 'content analysis' is about sixty years old (Krippendorff, 2004, p. xvii) although its intellectual roots can be traced far back in human history where forms of analysis were used to examine symbols and voices of communication including the ancient disciplines of philosophy, rhetoric and cryptography. Today, content analysis, as an empirical method, has been institutionalised in arts, literature, education, mass media communication and the internet. In the wide range of studies that have employed content analysis, mass media communication studies (which include studies in corporate disclosure) are considered fairly new (Riffe et al.,

2005). Concurring with this belief, Holsti (1969, p.1) defines what mass media communication study is “The study of the process and product of communication is basic to the student of man’s history, behaviour, thought, art and institution. Often the surviving artefacts that may be used to study human activity are to be found in documents”.

The most commonly-cited definition is given by Krippendorff (2004, p.18) who describes content analysis as a research technique for making replicable and valid inferences from text (or other meaningful matter) to the context of its use. He further added that it is a scientific tool which involves very specialised and reliable procedures. The method is expected to use ‘normal’ narratives, and to provide replicable and valid findings. In order to achieve these two requirements, content analysis must be ‘objective’ and ‘systematic’ as both are important before interpretation of data findings takes place (Krippendorff, 2004).

### 2.1. Advantages of Content Analysis

Content analysis is capable of answering a variety of questions in many disciplines. As long as a text message is the central object under investigation, content analysis may prove to be a useful method to study that text message and its interaction between senders and receivers (Kassarjian, 1977; Weber, 1990; Riffe et al., 2005).

Content analysis is useful when there is a problem in the direct accessibility of data through questionnaires, direct interviews, etc., or data are limited to documentary, samples are not willing to participate or cannot be easily located or are no longer alive (Holsti, 1969; Kassarjian, 1977; Riffe et al., 2005). In such cases, messages must be then studied at a distance through the records of their activities either by setting down by contemporaries or in any written material left behind (Holsti, 1969).

Content analysis methods may reduce an obtrusive measure which creates some contaminated or biased observations (Weber, 1990; Kassarjian, 1997). As content analysis is conducted ‘at a distance’ and the researcher’s interest is concealed, the original producers and receivers of the communication are not aware of the message being analysed and they do not alter their behaviour accordingly. According to Holsti (1969), content analysis may act as a supplement to other methods such as surveys or interviews allowing the comparison of other results with those of content analysis. This combination of methods is capable of enhancing the reliability of findings.

Communication content may have a long life, and exceeding the life of its original producers and recipients. Various types of communication content that existed in the past time can be retrieved later for investigation (Weber, 1990; Riffe et al., 2005). These could lead to longitudinal analysis, for example in accounting studies such as social and environmental disclosure (Gray et al., 1995; Campbell, 2004; Tilling and Tilt, 2010), social disclosure (Slack and Shrivs, 2008); portrayal of women in annual reports (Tinker and Neimark, 1987). This genre of research cannot be carried out using other methods.

Notwithstanding the method has been widely used in numerous studies of corporate disclosure practice, it is apparent that some methodological issues have been rarely discussed in research design. This paper found that three important issues which have to be resolved prior to the commencement of recoding information. These issues include limited mutual exclusiveness and exhaustiveness, units of recoding, and system of enumeration to measure content. These have all been sources of debate around the design of content analysis in corporate disclosure studies (e.g. Beattie and Thomson, 2007; Steenkamp and Northcott, 2007).

### 2.2. Mutual Exclusiveness and Exhaustiveness Issues in Recoding Information

It is important, prior to commencing a content analysis, to construct a valid and adequate number of information categories. Information categories is a set of ‘pigeon holes’ in which information units will be classified according to similar object, event or attribute (Holsti, 1969, Harwood and Garry, 2003). Furthermore, the information categories must be mutually exclusive. This means that each unit of information content should not be placed in more than one category (Riffe et al., 2005; Beattie and Thomson, 2007). Once the information has been assigned to a category, no other categories at a similar level of classification should be open to it.

However, problems of mutual exclusiveness exist when a piece of information unit may be too large such as paragraph or the whole text, which may mean a given piece of coded disclosure may belong to more than one category. Therefore, a coder sometimes needs to make semi-subjective judgements in deciding which information category fits into (Beattie and Thomson, 2007). Under these circumstances, Riffe et al. (2005) and Beattie and Thomson (2007) suggested to break down large units of information into smaller units since it can categorise and avoid some problems of contravention in the mutual exclusiveness rule.

The requirement of exhaustiveness is another important issue. It is important to ensure that the number of categories is sufficient so that no relevant information is excluded due to a lack of suitable categories. Holsti (1969) and Riffe et al. (2005) stressed that each relevant content unit must be capable of fitting into a category, so that none should be left behind. In other words, all information units must have equal chances of being included in the analysis (Wimmer and Dominick, 2003). Normally, as the popularity of a particular research field has grown, more relevant and valid categories have been devised, in which later studies have benefitted from these developments. The set of categories used in the present study is therefore not independent compared to

those that emerged in previous studies (Carley, 1993). In contrast, newer empirical areas are more likely to experience problems of category exhaustiveness.

### 2.3. *Unitising Issues in Recording Information*

In content analysis, a unit is a small part of the whole text that is subject to counting and analysis. It is an 'identifiable message or a message component which serves as a basis for identifying the population and drawing a sample, in which variables are measured as well as serve as a basis for reporting analyses (Neuendorf, 2001).

Unitising generally refers to the process of breaking down a whole text or narrative into smaller units, which in practice enables the content to be recordable, computable and presentable. The unit of text could be physically or symbolically identifiable and countable such as words, sentences, paragraphs, proportions of page, assertions, columns, minute of speeches, characters, subjects, images or even whole written documents (Kassarjian, 1977; Weber, 1990; Neuendorf, 2001; Krippendorff, 2004). As the approach to unitisation affects the analysis of data and findings, it must be handled with caution (Beattie and Thomson, 2007). Although some confusion is evident in the literature in terms of terminology and concept used for text unit, it can be broadly considered as comprising three distinct types namely sampling units, context units and recording units.

Krippendorff (2004) stated that a text may be too large to be examined as a whole, and thus it must be reduced accordingly to small bodies through a sampling process. The sampling units are defined as discrete elements of content that will be selected from the entire content of interest (Riffe et al., 2005, p.70). Those units may be drawn from a larger population, for example, newspapers (Krippendorff, 2004), political speeches, web URLs, episodes of television programmes or other similar media, (Riffe et al., 2005). Once the sampling unit has been determined, the next stage is to decide the unit of analysis. Recoding units are smaller segments of text which are separated from the sampling unit and they are then placed into appropriate categories, counted and described (Holsti, 1969; Krippendorff, 2004)<sup>1</sup>. For example, words or sentences could be treated as recording units from the entire text of written documents. Recording units range from small to large and physically or symbolically identifiable. They include words, sentences, paragraphs, pages, entire documents, images, times of speeches, themes, items, subjects, assertions, etc. (Unerman, 2000; Riffe et al., 2005).

The context unit has rarely been employed in studies of corporate voluntary disclosure although it is important to give clue in drawing accurate meanings of information contained in the recoding units. Holsti (1969, p. 118) defined the context unit as the largest body of content that may be searched to characterise the recoding unit. Similarly, Krippendorff (2004) suggests that the context unit is the limit of information in which the description of recoding units are described. Holsti (1969) argues that inferences cannot be made from references solely to specific words. Instead, the words must be considered in the larger context in which they appear to draw more accurate meaning, for example, through sentences or paragraphs.

Every choice of recording unit has advantages and disadvantages, and the limitations which have been identified in recoding units, suggestions for refinement are often self-suggesting (Unerman, 2000; Beattie and Thomson, 2007; Steenkamp and Northcott, 2007). Moreover, the volume of information mentioned in a text is influenced by the choice of recoding. As the quantity of disclosure is generally assumed to represent the importance of the information to the conveyor (Krippendorff, 2004), it is suggested that variations in unitising techniques are used to count information which can render findings and non-comparable conclusions across studies.

Words, terms or phrases are the smallest recording units which have been widely employed to count occurrences of information (Bontis, 2003; Oliveras et al., 2008). The use of words as recording units is deemed to be more reliable and robust than sentences or paragraphs, as it assists reliability among coders (Campbell, 2004). This is because words are more precise (Holsti, 1969) and simpler to code which reduces the need to make subjective judgements about meanings (Smith and Taffler, 2000).

However, the use of words as recording units also poses some challenges. Carney (1972) listed three characteristics of words that may confuse coders in recording information. Firstly, a word may carry a number of meanings simultaneously. Secondly, words can be ambiguous and their meanings can shift in the course of time. Thirdly, there is no ideal reality, basic essence, or inner picture for which a word is labeled. Sonnier et al. (2006) also recommends that the use of words as recording units is problematic, particularly in studies of using computer-aided searches. This is because some specific words used by disclosers and words listed in computer dictionaries can be different. Furthermore, the words are usually inferred based purely on form without the context unit in which the words appear. This likely contributes to the inaccuracy of intended meaning of the words (Milne and Adler, 1999; Linsley and Shrivs, 2006).

The choice of words problem as recording units can be partly resolved by using sentences. This can be justified on the basis that sentences allow more precise meanings to be inferred than words (Linsley and Shrivs, 2006). Milne and Adler (1999) and Hackston and Milne (1996) suggested that sentences provide complete, reliable and meaningful units of data for further analysis. However, a problem with the use of sentences as recording units is the presence of multiple categories of information in a single sentence (Holsti,

<sup>1</sup> The term 'unit of analysis' and 'unit of recording' have been used interchangeably (e.g. Beattie et al., 2004; Beattie and Thomson, 2007).

1969; Weber, 1990; Beattie and Thomson, 2007; Steenkamp and Northcott, 2007). To code information in a single sentence to more than one category would be a contradiction to the principle of mutual exclusiveness. In these circumstances, difficult and semi-subjective judgements have to be made to find out the category which dominates the sentence and this may eventually distort the reliability of data captured. Additionally, sentences vary in length, depending on grammatical choice and stylistic variation (Unerman, 2000). A sentence made of three words should not be equally weighted as a sentence which consists of twenty words because the different number of words may indicate the difference of importance attached to the information.

Paragraphs may be the preferred recording units whenever effort and time are significant constraints (Weber, 1990). Guthrie and Abeysekera (2006) suggested that the use of paragraphs as recording units is more appropriate for drawing inferences about information contained in text than words or sentences. This is because meaning is commonly established at the level of paragraphs.

However, taking paragraphs as recording units also poses some problems. Firstly, the presence of lists of points violates the typographical conventions of paragraphs (Steenkamp and Northcott, 2007). Secondly, as with sentences, the paragraphs sometimes do not lend themselves to classification into single categories (Holsti, 1969). Since multiple categories of information may be more commonly found in larger units of text, the use of paragraphs as recording units could potentially exacerbate the problems of mutual exclusiveness (Holsti, 1969; Beattie and Thomson, 2007).

#### 2.4. *Issue in Counting Unit of Recoding*

Quantitative content analysis requires recording units to be appropriately counted (Riffe et al., 2005). In corporate disclosure studies, two main forms of counting information can be found. The first involves a check to establish whether a certain category of information is available or not (Carney, 1972). This approach, which is also characterised as the 'virginity principle' or 'appearance approach' of counting information is based on information presence or absence in the text (Carney, 1972; Riffe et al., 2005). This approach has largely been employed in studies of using disclosure indices (e.g. Coy et al., 1993; Boesso and Kumar, 2007). At this point, the count stops as soon as the information items are found. In other words, information items are counted only once although they may appear more often. Since the examination and counting for similar items of information is not repeated, the total amount of information items recorded must be equal to or less than the total number of pre-defined information items.

Beattie and Thomson (2007) oppose with the use of the appearance approach to evaluate disclosure performance, arguing that it goes against the fundamental premises of content analysis. Krippendorff (2004) and Riffe et al. (2005) argued that the importance of information is reflected by the volume disclosed. If information is deemed to be important to senders and receivers, it tends to be repeated in the text. Hence, a failure to record and count repeated information would consequently create a failure in facilitating an analysis of the importance of information categories to the discloser (Beattie and Thomson, 2007). Similarly, Hackston and Milne (1996) evoked that applying the appearance approach could be misleading because companies which disclose one piece of information are weighted equally to those which disclose fifty pieces of information (p.89). Instead, this method may be appropriate in detecting the range or variety of information only, but not its level of importance (Beattie and Thomson, 2007).

The second form of counting information is volumetric analysis, which has also been widely used to measure information (Holsti, 1969). Volumetric analysis not only captures the appearance of information but also measures the frequency of appearance. Meanwhile, Krippendorff (2004) stated that volumetric analysis can refer to the number of times. In this case, some components are mentioned such as a particular phenomenon, the number of chapters, pages and paragraphs, and the number of sentences devoted to it. Marston and Shrivies (1991) criticised volumetric analysis because it could capture a simple repetition of the same information if disclosed more than once in the sampling unit. However, that repetition may also signify the importance attached to it (Krippendorff, 2004; Beattie and Thomson, 2007). In the similar vein, Abhayawansa and Abeysekera (2009, p.302) mention that the importance of a particular item which is relative to others is interpreted by its total frequency count in the whole sample. Hence, counting the repeated information is considered a valid method which can demonstrate the relative importance on particular information by the discloser.

### 3. **Content Analysis in Previous Studies of IC Information Disclosure**

The shift from traditional to knowledge-based economy has caused intangible assets to have more values to companies than tangible ones. In this regards, traditional financial accounting report fails to reflect the true value of companies, thus makes it less relevant to capital market (Lev, 2001; Guthrie et al., 2006). Many studies reported the book value of company as presented in traditional financial reporting was often far lower than its market value (Brennan, 2001; Whiting and Miler, 2008). The disparity between the two values is assumed to be partly due to unaccounted IC information in traditional financial reporting (Cordazzo, 2005). Hence, it was thought that reporting IC information may explain this disparity and in turn, more accurately reflect the true value of companies, reduce cost of capital and enhance the efficiency in capital allocation (Edvinsson and Malone,

1997; Lev and Daum, 2004; Vergauwen and van Alem, 2005). The inclusion of IC information would also give rise to better management and control of knowledge activities in company (Mouritsen et al., 2004; Guimon, 2005).

IC information disclosure is defined as value drivers that transform productive resources into value added assets (Hall, 1992; p.136). From accounting perspective, IC can be seen as 'hidden value', that is the excess of the company market value over its book value of equity in the balance sheet (de Pablos, 2005; Whiting and Miller, 2008). The two values are different, it is argued, due to IC unaccounted for in the balance sheet. In general IC information can be divided into three categories namely structural capital, relational capital and human capital and several sub-categories as depicted in Table 1 (Guthrie and Petty, 2000; Beattie and Thomson, 2007).

The fact that reporting IC information within accounting standard is almost impossible on the ground of reliability, many companies tend to voluntary report it on narrative manners (Kaufman and Schneider, 2004; Yi and Davey, 2010). As such, over fifteen years a considerable number of investigations have sought to analyse the nature of IC information disclosure in various corporate media using content analysis method (Guthrie and Petty, 2000; Bozzolan et al., 2003; Abeysekera, 2007; Campbell and Rahman, 2010 etc). However, in the growing literatures of IC disclosure studies, less attention has been paid on how information is captured and counted. Unerman (2000) and Beattie and Thomson (2007) criticised the previous studies that employed content analysis for not publishing the detailed aspects of the method used, which in turn, made it impossible to understand exactly how the studies were conducted. Hence the contribution of this paper is to report the issues surrounding content analysis and eventually proposes its possible resolution on the basis of longitudinal examination of IC disclosure in seven large UK companies. Being explicit in the methodology, it would permit the reliability and validity of the study to be examined and it also facilitates replication of the method in future studies.

Table 1  
IC Disclosure Categories and Sub-Categories

Structural capital	Relational capital	Human capital
<ul style="list-style-type: none"> <li>• Intellectual property</li> <li>• Corporate culture</li> <li>• Management philosophy</li> <li>• Management process</li> <li>• Technology</li> <li>• Product innovation</li> <li>• Information systems</li> <li>• Knowledge-based infrastructure</li> <li>• Research and development (R&amp;D)</li> </ul>	<ul style="list-style-type: none"> <li>• Financial relationship</li> <li>• Brands</li> <li>• Market presence</li> <li>• Customers</li> <li>• Distribution channels</li> <li>• Business partners/alliances</li> <li>• Suppliers</li> <li>• Licence/contract/agreement</li> <li>• Communities</li> <li>• Environmental</li> <li>• Other stakeholders</li> <li>• Corporate reputation/images</li> </ul>	<ul style="list-style-type: none"> <li>• Employees</li> <li>• Training and development</li> <li>• Work related knowledge and competences (employees)</li> <li>• Work related knowledge and competences (board of directors)</li> <li>• Entrepreneurship</li> </ul>

#### 4. Practical Challenges: Illustrative Examples from Pilot Sample Company

This study investigates IC information disclosed in 30 annual reports of Marks and Spencer's from 1978 to 2008 as a pilot study (for complete results see Campbell and Rahman, 2010). The method refined in this pilot study was furthermore employed in the final sample i.e. 210 annual reports of six companies such as Tesco, Sainsbury, Shell, British Petroleum, Lloyds Bank and Barclays Bank from 1974 to 2008. This paper however only demonstrates the results of IC reporting from the final sample. This study employed volumetric analysis to count the occurrence of IC information appearing in the annual reports. Information was recorded and counted for the entire sections of the whole documents. The volumetric method was chosen as a valid method for reflecting the concern, importance, attention or emphasis placed on the IC information.

The primary concern of this section is to establish the practical recoding units in this study. More specifically, the disadvantages of using words, sentences and paragraphs for capturing IC information are reviewed. The practicality of themes/clause and the role of context units are also addressed.

##### 4.1. Problem with Words

One of the reasons why words are less capable of inferring meaning is that words are assumed to only capture interpretation without context. As a word is usually taken as it is, the actual meaning of the word may not be captured (Milne and Adler, 1999; Beattie and Thomson, 2007). This problem is identified in the following information.

Why ask two manufactures to make nearly identical sweaters? Now we use one and avoid duplication. Why buy t-shirt cotton separately for ladies, mens and childrens wear? Now we use one fabric supplier and save millions of pounds a year. Why have ten managers approve a collection and why maintain five layers of interface with a supplier? Now we've cut overheads to make swifter decisions. (Marks and Spencer's annual report, 2006)

At a glance, the information in this excerpt is likely to convey a message about relational capital because of instances of the word 'supplier'. If words were taken as the recording unit, two pieces of information in the 'relations with suppliers' sub-category would be recorded. Nonetheless, the context in a paragraph where the words appear does not permit the message to be interpreted as conveying about 'relationship with suppliers'. Rather, when reading within context, the word of supplier is more accurately understood as conveying a message about the 'management processes' (this being another sub-category) of buying from suppliers in order to enhance efficiency and cut costs. It is evident that words are less reliable in capturing the meaning of a message since their significance can be inferred out of context.

#### 4.2. Problem with Sentence

Some have argued that the problem of using words as recording units can be addressed by using sentences instead (Gray et al., 1995; Milne and Adler, 1999). Employing sentences as recording units can, however, lead to a problem of double-recording because many categories of information may exist in a single sentence, as exemplified below.

We will continue to expand our franchise operation overseas, where the XX brand is well known and popular. (Marks and Spencer's annual report, 2006)

In this excerpt, two different categories of IC information can be identified in the sentence. Franchise operations fall under the 'business partner' sub-category but the 'brand' sub-category is also mentioned. If this sentence was taken as a single recording unit, it could be classified either into a business partner or brand categories. A subjective judgment could have to be made to select the dominant category (Beattie et al., 2004; Beattie and Thomson, 2007). Furthermore, it would violate the principle of mutual exclusiveness by allowing the sentence to be broken down into two separate categories.

#### 4.3. Problems with Paragraph

Due to these problems with words, sentences and paragraphs, it was decided that themes or clauses would be used as the recording unit in this study. The recording by themes/clauses resolves problems of mutual exclusiveness and at the same time allows for the accurate inference of meaning. A theme does not exist in a word, sentence or paragraph but its existence rather lies between the beginning and the end of a discussion without being restricted to punctuation. Themes may exist across several words, in one or more sentences or even in a whole paragraph. If a theme is presented in small number of words, it is recorded as effectively as if it were an entire paragraph (Beck et al., 2010).

By ignoring punctuation, the existence of multiple categories can be solved by clustering the information into some different pieces, and recording them into the most relevant sub-categories. The words, 'We will continue to expand our franchise operation overseas' (the first theme in the example given above), were classified in the business partnering category, while the words 'where the XX brand is well known and popular' were classified into the 'brand' sub-category. Although this method poses practical challenges and is more difficult to administer, it has clear rules for dealing with ambiguities as well as adequate training of the coder can minimise the risk of unreliable recording.

Despite their significance (Unerman, 2000; Beattie and Thomson, 2007; Hooks et al., 2010), non-narrative items such as charts, tables and photos were excluded from the present analysis due to the complexity of their interpretation (Wilmshurst and Frost, 2000; Guthrie et al., 2004). Moreover, Li et al. (2008) found that most IC disclosure in the UK was presented in the form of text rather than visual images. The study, however, included the analysis of textual captions attached to photograph/pictures.

#### 4.4. The Advantage of Theme

As one of the Indonesia's oldest banks, BBNI tried to take a long-term view on growth. This means that they consider the environment and social development in their business. They encourage their customers to do the same goal because their customers' success in the long run is important for them. They have set up a separate organization to focus on environmental and social sustainability and community development. As a response to international voices and customers' demand for sustainable development, they have made fulfilling environmental and social corporate responsibility as part of their mission.

BBNI published corporate report that concentrates on: (1) sustainable product portfolio, (2) driving economic growth, (3) sustainable governance, and (4) environmental conservation effort. BBNI needs to disclose its significant dependencies, business model, strategy and resource allocation. BBNI should also give more attention in reporting its stakeholders relationship, especially for supplier and business partner. Moreover, it should give more focus on materiality.

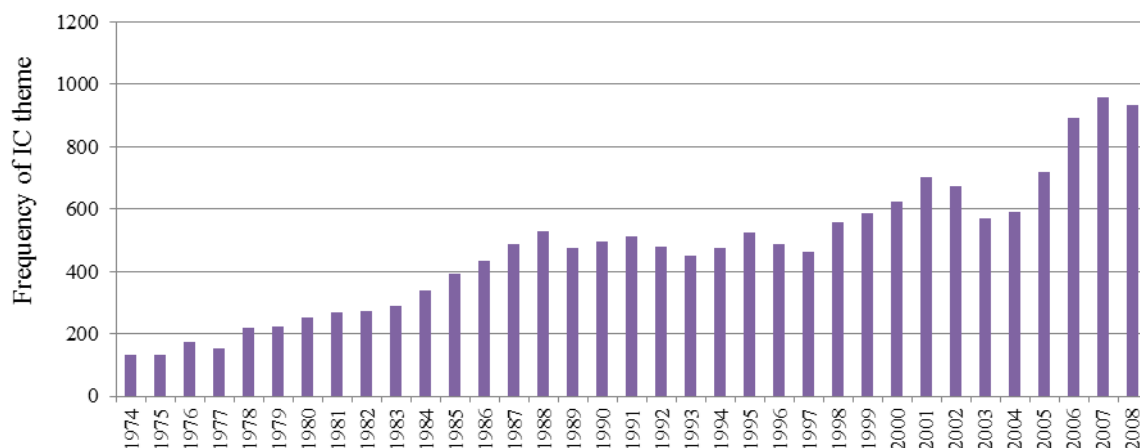
The main theme of BBNI's SR is "Enrich, Ensure and Sustain". BBNI believes that through banking, they can enrich lives, ensure value growth and sustain development. BBNI banking services have been expanded to meet the time development and its people have been encouraged to seek new challenges. With these efforts, BBNI has maintained a strong sustainability performance and ensured its widely respected national image.

BBNI's commitment to sustainability is partly reflected in enriching the content of their reporting and ensuring their impacts on society, through their operations and lending which lead to sustainable benefits.

## 5. Descriptive Findings of Final Sample Companies

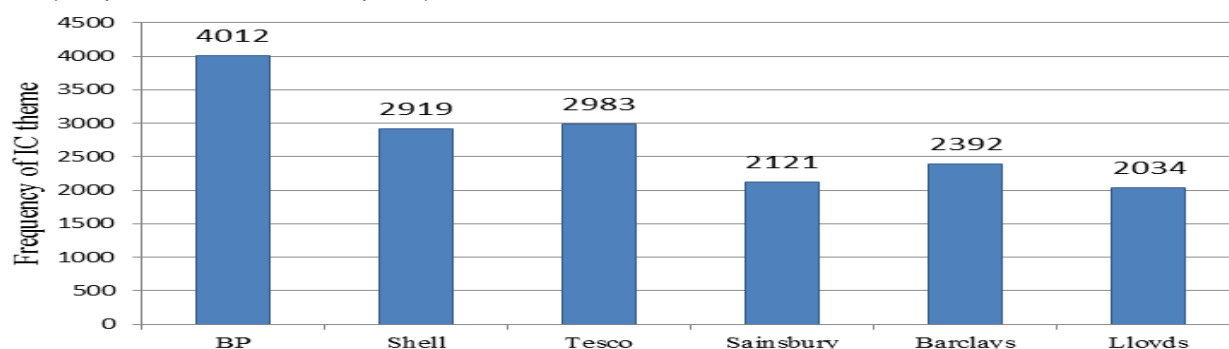
This section reports some descriptive findings of this study in order to provide an overview of IC practice of six large UK companies over 1974-2008. Figure 1 shows the total frequency incidence of recorded IC themes for all companies which indicates a significant upward trend from 1974 to 2008. From 132 themes found respectively in 1974 and 1975, the frequency of IC themes steadily increased each year, reaching 530 themes in 1988. However, there were temporary slight declines in the frequencies of themes between 1988 and 1997 and in 2003. From 1998, the frequency increased in most years has been reaching 702 themes in 2001 and 934 themes in 2008. Broadly speaking, IC themes revealed in 2008 were found to be more than six times higher than in 1974 which indicate a significant longitudinal increase of IC themes disclosed over the 35 year period.

Figure 1  
Trend of IC Disclosure Themes Disclosed, 1974-2008: All Companies



At company level, Figure 2 suggests that the highest frequency of IC information for all years was found for BP, accounting for 4,012 themes or 24.8% of the total of all companies. Tesco was ranked second highest, disclosing 2,983 themes or 18.12% of the total and then Shell, with 2,919 themes or 17.73% of the total. Barclays was ranked fourth with a disclosure frequency of 2,392 themes (14.53% of the total). Sainsbury only recorded 2,121 themes (14.53%) and the lowest frequency was recorded for Lloyds which disclosed 2,034 theme (12.36% of total).

Figure 2  
Total Frequency of IC Disclosure Theme by Companies



Meanwhile, Figure 3 presents the frequencies of IC themes in respect of SC, RC and HC categories from 1974 to 2008. IC information concerning with RC was the most reported over the 35 years, followed by HC and SC categories. Even though the frequency of RC themes was higher than that of SC and HC in all years, this difference was insignificant between 1974 and 1993. In these periods, the theme units identified for all three categories arose with only minor variations (except in 1988, 1989 and 1990 where the frequencies of RC themes were significantly higher than those of SC and HC). However, a switch point clearly occurred in 1994 when the frequency of RC information increased more sharply, from 208 themes in 1994 to 380 in 2001. Meanwhile, the frequencies of SC and HC information remained at the same level of between 100 and 200 themes. A temporary decline in RC information can be observed in 2002 and 2003, after which a pronounced increase can be clearly observed, reaching 506 themes in 2008. In the same period, the frequencies of SC and

HC information also increased but at lower rates. It can be concluded that the trends have clearly signified the increasing prominence of RC information disclosure over the past 35 years.

Figure 3  
Frequencies of IC Disclosure Themes by Categories, 1974-2008 (All Companies)

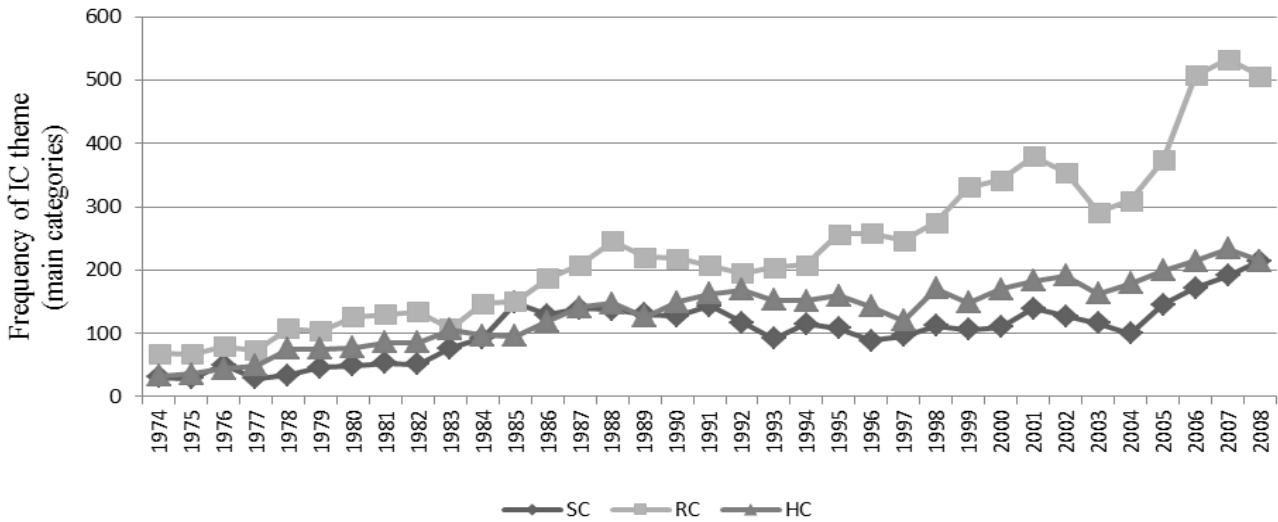
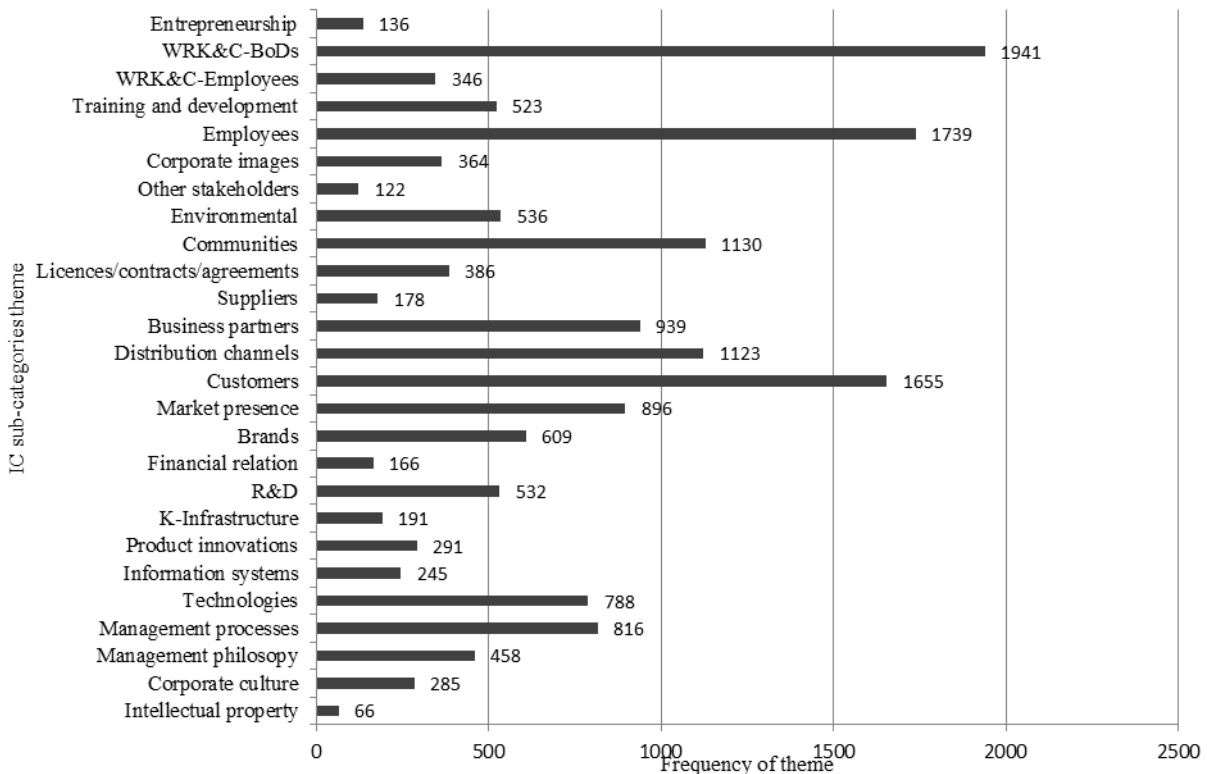


Figure 4 illustrates the frequencies and its percentages of IC information disclosure in the twenty six sub-categories for all companies (percentage figures are omitted). Based on the total of 16,461 IC themes by the six companies for all years, the most popular information was concerned with the board of directors' work-related knowledge and competencies (WRK&C-BoDs) which made up 11.8% (1,941 themes) of total IC themes. General information about employees was ranked second (1,739 themes or 10.6% of the total) followed by customer information (10.1%; 1,655 themes). The information on communities and distribution channels from the RC category received showed very similar shares of 6.9% (1,130) and 6.8% (1,123) of total themes respectively. The fifth and sixth highest ranking sub-categories of disclosure were also from the RC category; business partners (5.7%; 939 themes) and market presence (5.4%; 896 themes). Within the SC category, information about management processes and technologies received more attention, with frequencies of 816 (5%) and 788 (4.8%) respectively of total themes.

Figure 4  
Frequencies of IC Themes Disclosed (sub-categories) for All Companies in All Years



Moderately the popular sub-categories concerned with brand (3.7%; 609 themes), environment (3.3%; 536 themes), R&D (3.2%; 532 themes), training and development (2.2%; 523 themes), management philosophy (2.8%; 458 themes) and contracts (2.3%; 386 themes). Meanwhile, the lowest frequencies of IC sub-categories recorded accounted for less than 2%, such as information about intellectual property (0.4%; 66 themes), other stakeholders (0.7%, 122 themes), financial relationships (1%, 166 themes), entrepreneurship (0.8%; 136 themes), corporate culture (1.7%; 285 themes), IT/IS (1.5%; 245), suppliers (1.1%; 178 themes) and k-infrastructure (1.2%; 191 themes).

## 6. Discussion and Concluding Remarks

This paper discusses the issues and resolution of content analysis particularly in the aspect of unitising that emerged during the investigation of IC information disclosure in annual report of seven large UK companies. Providing resolution to infer meaning could be done in the levels of words, sentences and paragraphs. It was determined that themes were used as recording units, whereas paragraphs as context units. The use of themes was preferred due to its capability of allowing the inference of meaning beyond the limits of punctuation as well as resolving problems of double categories. The contributions of this methodology-based paper are three-fold. First lies on refining the method of content analysis for making sense of recoding information content. Second, it is to suggest researchers to be transparent in methodology which in turn would permit the reliability and validity of study, and third to facilitate replication of the method in future studies.

Several conclusions can be made from descriptive statistic of this study. In term of the overall increase of IC disclosure over time, the results demonstrate consistency in a general increment internationally of IC disclosure as evident in many longitudinal previous studies (William, 2001; Bukh et al., 2005; Vandemaele et al., 2005; Abdolmohammadi, 2005, Kang and Gray, 2011). The findings of this study thus challenge the presumption that the IC disclosure is a new phenomenon emerged during or after 1990s (William, 2001; Abdolmohammadi, 2005). Rather, this study has discovered that IC information has been disclosed in annual reports over the 35-year period. The early years (1970s, 1980s) were assumed to be somewhat contrasted to the later years (1990s and 2000s) in the way whilst IC was disclosed in each year, the volumes substantially increased against time. Most of the year, it records an increase against the previous year and the findings as shown in Figure 1 comprehensively rebut the assertion that IC is a recent phenomenon.

In respect of IC main categories, the findings of this study have corroborated with some previous studies where IC information disclosure is often dominated by relational capital (RC) information, reflecting its predominant value and relevance to shareholders. Most studies conducted in the UK (e.g. Striukova et al., 2008; Li et al., 2008; Bozzolan et al., 2006) and various parts of the world (e.g. Yi and Davey, 2010; Whiting and Miler, 2008; Oliveras et al., 2008) have found, with some consistency, that RC information was the most frequently disclosed by companies in comparison to SC and HC. The comparable percentages of RC information disclosure across studies are evident, showing that companies across the world have a convergent view that RC information is strategically more important compared to HC and SC. Some prominent categories of IC which may reflect the importance in adding values to companies are information about customers, employees, community, directors' skill, distribution channels, and business partners .

Guthrie et al. (2004, p.290) pointed out that 'content analysis... is a method in need of further refinement and development if research advances are to be made in the field of IC [reporting]'. With this in mind, the development of method in measuring qualitative characteristics of IC disclosure in this study may pave the way to more ways of refining this method to further investigations. Researchers might envisage a better method to capture information content rather than relying on traditional content analysis based on quantity counting of text. This could enhance the relevance and power of content analysis in investigating a richer context of disclosure behaviours. More specifically, future studies could expand the analysis of qualitative characteristics of information content, for instance investigating pictures and photographs in annual reports as well as chairman speeches in general meeting.

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