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Intellectual Capital Disclosure and the IPO Prospectus: An Exploratory Study

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INTELLECTUAL CAPITAL DISCLOSURE AND THE IPO PROSPECTUS: AN EXPLORATORY STUDY

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ABSTRACT

ICD (Intellectual Capital Disclosure) was studied via content analysis of IPO (Initial Public Offering) filings by retailers versus software companies. Data were obtained from 106 firms' SEC S-1 filings between 2001 and 2011. Key findings were: (1) ICD increased over time, (2) significant differences in the type of IC disclosed, (3) Structural Capital was the type of IC most frequently disclosed, (4) consistency among firms regarding the frequency with which specific IC components (e.g. brands) were disclosed, and (5) no significant difference in ICD when comparing retailers and software companies.

Key Words: intellectual capital, intellectual capital disclosure, initial public offerings

I. BACKGROUND

Intellectual Capital (IC) is not as new a concept as often assumed. In a manner very similar to contemporary understanding of it, IC was recognized by scholars nearly two centuries ago. For example, Seamen (1852) spoke of IC in conjunction with experiences and skills that give labor "purpose." Menier (1880) is another example. He suggested that IC is "everywhere" among those who are artisans, manufacturers, merchants, and farmers. Similarly, Macleod (1896) argued that the IC of industry and all the professions is just as "pledged" for the payment of dividends as the income of those who have real property.

Over the past twenty-five years, the role and importance of IC has been explored in a variety of popular works in the business literature. Those works are represented by authors such as Brooking (1996), Edvinsson and Malone (1997), Sveiby (1997), Roos (1998), Stewart (1998), Sullivan (2000), Choo and Bontis (2002), Nermein (2003), Stewart (2003), Chaminade and Catasus (2007), and Moore and Craig (2008).

In 2000, the Journal of Intellectual Capital (JIC) became the first scholarly publication devoted solely to IC. The Journal of Knowledge Management (JKM) has been published since 1997 and provides scholarly discourse on IC and related topics. Likewise, KPM (Knowledge and Process Management), also published since 1997 provides scholarly discourse on IC and related topics. It is clear that IC is a topic of serious consideration among scholars.

Scholarly attention devoted to IC as well as numerous popular works on IC is no accident. Bukh (2003) for example builds the case that information on IC and its reporting (i.e. disclosure) is increasingly important given IC's role as a value-driver. Petty et al. (2009) support that premise by providing a detailed analysis of the need for and the ongoing development of IC reporting systems in light of the increasing gap between the accounting book value of organizations and their market value. Ballow et al., (2004) lend further support for the role and importance of IC as a value-driver by presenting evidence that IC accounts for almost sixty percent of the value of listed (publicly traded) firms. In sum, scholars recognize that IC is a topic of considerable practical import.

Cezair (2008) suggests that IC is "hiding in plain view." Cezair's observation is somewhat similar to the observation of Menier (*op. cit.*).

Recognition of IC and its pervasiveness and its importance has motivated a variety of scholars to propose and to test valuation models by which firms, regulators, and investors may quantify and may uniformly communicate dollar values related to IC. While a comprehensive discussion of IC valuation and reporting is beyond the scope of this paper, readers are encouraged to peruse works by scholars such as Borneman and Leitner, 2005; Beutel and Ray, 2004; Kossovsky et al., 2004; Leitner, *op. cit.* ; and Chiucchi, 2008. Logic dictates that the growing body of scholarly discourse clearly indicates that IC reporting and disclosure are concomitant and are worthy of scholarly attention.

A firm's disclosure of its IC indicates its intent to communicate that it possesses an asset that: (1) has inherent or recognized value, (2) functions as a value-driver, or (3) both (Ennsslin and Carvalho, 2005; Hidalgo et al., 2011; Lee and Whiting, 2011; Li et al., 2008; Vergauwen, et al., 2007). Formal ICD (Intellectual Capital Disclosure) most typically occurs in periodic reports, e.g. annual reports. For listed (publicly traded) firms ICD occurs in backward-looking reports like quarterly and annual reports. It also occurs in forward-looking reports, most notably in the U.S., in the form of the U.S. SEC (United States Securities and Exchange Commission, hereafter referred to as the SEC) Form "S-1" (hereafter referred to as the S-1). The S-1 is filed when a firm tenders an IPO (initial public offering) as a means to attract investment capital.

In the U.S., as in virtually all nations, disclosure of most IC items is voluntary (Petty, *op. cit.*). A firm thus has no regulatory-based incentive to engage in ICD over and above those relatively few IC items which must be reported (Petty, *op. cit.*). However a firm does have a strategic incentive and a financial incentive to engage in ICD (Nielsen, et al., 2006) because the S-1 is a formal document by which a firm may employ ICD as a means to signal investors regarding its market value (Hermans and Kauranen, 2005; Singh and Van der Zahn, 2008; Van der Wielen, 2007). The extent to which firms filing an S-1 engage in ICD forms the background for the present study and underlies its purpose and rationale.

II. PURPOSE AND RATIONALE

The purpose of the present study is to explore the extent to which firms engage in ICD in IPO filings. The purpose of the present study flows from the existence of a formal, structured, legally-required, document (the S-1) which firms may use to signal the IC they possess and subsequently signal their market value. Because the S-1 does not prohibit disclosure of IC items, the S-1 provides a fertile milieu in which to explore the extent to which firms voluntarily engage in ICD and subsequently to infer the extent to which firms perceive strategic and financial incentives to engage in ICD. ("What gets counted gets done." "The medium is the message.")

III. LIMITATIONS

The present study is exploratory. It employs a sample comprised of two "types" of firms: those classified by the SEC as "retailers" and those classified by the SEC as "software companies." Firms classified as "retailers" are considered to be representative of "old economy" firms. Firms classified as "software companies" are considered to be representative of "new economy" firms. The SEC uses a formal classification system (Standard Industrial Code, hereafter referred to as SIC Code) which albeit imperfect, is sufficient to provide a basis for differentiating types of firms. Readers seeking more information on SIC Codes are encouraged to peruse information from the Division of Corporate Finance, U.S. SEC via http://www.sec.gov/info/edgar/siccodes.htm.

The present study uses a time-frame (2001-2011) that is admittedly characterized by extreme market volatility with potentially significant impacts upon the nature and timing of IPO filings and ICD. But there exists no scholarly literature documenting a significant association between market conditions, IPO filings, and ICD. Additionally, logic dictates that in periods of market contraction firms able to file an IPO have incentives to enhance their perceived market value via ICD. Likewise during periods of market expansion firms filing an IPO have incentives to enhance their perceived market value via ICD. The sampling frame for the present study therefore,

while not probabilistically derived is based upon informed judgment and thus exceeds the lack of standards that characterize a sample of "mere," biased, convenience (Gravetter and Forzano, 2011; Weber, 1990).

The author of the present study recognizes that there exists no universally-recognized definition of IC or ICD, much less a universally-recognized typology of IC items or components. Logic dictates that the lack of those universally-recognized definitions serve as a reason for as opposed to a deterrence to exploratory research on IC and ICD.

IV. STUDY OBJECTIVES

The present study's objectives are informed by the study background, the need for exploratory research on ICD, and the relevant literature on ICD. The objectives of the present study are to:

1. Describe the total frequency of ICD during the study time-frame (2001-2011).
2. Compare the total frequency of types of IC disclosed.
3. Describe the total frequency of ICD by retailers.
4. Describe the total frequency of ICD by software companies.
5. Compare the total frequency of ICD accounted for by retailers versus software companies.
6. Describe the types of IC disclosed by retailers.
7. Describe the types of IC disclosed by software companies.

V. ORGANIZATION OF THE STUDY

The present study is organized in a manner consistent with its background, purpose and rationale, limitations, and objectives. Definition of key terms follows discussion of those items and precedes a review of the relevant literature. After the review of relevant literature, attention is given to the present study's method. Discussion of the present study's method is followed by discussion regarding the present study's tentative hypotheses. After the present study's hypotheses are addressed, the focus of the discussion is upon the present study's findings. Discussion of the present study's findings is followed by consideration of their implications. Concluding remarks round out the discussion.

VI. DEFINITION OF KEY TERMS

The present study uses four key terms which will be defined operationally based upon definitions of them in the literature: IC (Intellectual Capital), HC (Human Capital), RC (Relational Capital), and SC (Structural Capital). The latter three terms (HC, RC, and SC) comprise major categories of or types of IC.

Intellectual Capital (IC)

Scholarly consensus on a definition of IC is slowly emerging. Petty et al., *op cit.* draws on a variety of sources in the literature and suggests that IC "…can be characterized as a tripartite model comprising human capital, external capital, and internal capital components." (p. 98). Similarly, Bozzolan et al., 2006 propose that IC is composed of human capital, relational capital, and external capital. Those scholars' definitions of IC's components mirror those developed by Guthrie et al., 2004.

Brooking *op. cit.* provides the conceptual foundation for the operational definition that will be used for the present study. IC is defined herein as all intangible assets that combined with tangible assets enable a company to function, to maximize profits, and to subsequently enhance company value and shareholder wealth in a socially responsible manner. This operational definition makes explicit and builds upon Brooking's "first concept" of IC: Enterprise = Tangible Assets + Intellectual Capital.

Human Capital (HC)

Edvinsson and Malone *op. cit.* define human capital as the combined knowledge, skill, innovativeness, and ability of the company's individual employees to perform their individual and collective tasks (work). This definition is consonant with later definitions presented by Bozzolan et al., *op. sit.*; Brooking, *op. sit.*; and Petty et al. *op. sit*. It will serve as the operational definition of HC for the present study.

Relational Capital (RC)

Bozzolan et al. *op cit.* defines external (relational capital) as composed of the resources linked to the external relationships of the firm with parties (key stakeholders) such as customers, competitors, investors, partners, regulators, and suppliers. This definition will serve as the operational definition of RC for the present study.

Structural Capital (SC)

Internal (structural) capital consists of the knowledge that stays with the firm even if the employees who contributed to it leave (Bozzolan et al. *op cit.*). It includes knowledge captured in components such as databases, formal organizational procedures, corporate culture, manuals, training programs, written plans, and intellectual property. This definition will serve as the operational definition of SC for the present study.

IC Components

The term "IC Components" refers to sub-categories or components of each the three types of IC (HC, RC, and SC). The present study used 134 unique terms drawn from seven prior studies: Bozzolan et al. *op cit.*; Cerbioni and Parbonetti, 2007; Garcia-Meca et al., 2005; Johnson, 1999; Joshi and Ubha, 2005; Li et al. *op. cit.*; and Sonnier et al., 2009 (see Appendix A).

VII. REVIEW OF RELEVANT LITERATURE

The review of relevant literature flows from the study's objectives. This provides an opportunity to put later discussion (method, hypotheses, findings, and implications) into the fullest possible context.

Frequency of ICD

Five recent studies provide insights regarding the frequency of ICD: Bukh, *op. cit.* 2003; Abdolmohammadi, 2005; Abeysektra and Guthrie, 2005; Bukh et al., 2005; and Singh and Van der Zahn, *op. cit.* The five studies are highly similar in method, context, and reported findings.

As regards method, three studies involved content analysis of the IPOs of 569 traded firms (Bukh, *op. cit.*, 2003; Bukh, et al. *op. cit.*, 2005; Singh and Van der Zahn, *op. cit.*). Two studies involved content analysis of the annual reports of 258 traded firms (Abdolmohammadi, *op. cit.*; Abeysektra and Guthrie, *op. cit.*). In sum, the five studies examined the contents of formal, publicly available reports of over 800 firms in Denmark, Singapore, Sri Lanka, and the U.S.

As regards long-term changes in ICD, the five studies were uniform in their findings despite the variety of settings they represent and despite their analysis of two different types of formal reports (two studies scrutinized annual reports and three studies scrutinized IPOs). The five studies reported that ICD was increasing over time (the five studies reported findings derived from data generated during a time period encompassing 1990 to 2006).

Frequency of Type of IC Disclosed

As regards the type of IC most frequently disclosed, reported findings are mixed. Those findings are drawn from seven recent studies involving nearly 1,000 firms representing a variety of contexts.

HC was reported as the type of IC most frequently disclosed in two studies (Bukh, et al., *op. cit.;* Singh and Van der Zahn, *op. cit.*) which analyzed the contents of the IPOs of 500 traded firms in Denmark and Singapore between 1991 and 2006. However RC was reported as the most frequently disclosed type of IC in two studies (Abdolmohammadi, *op. cit.* and Abeysektra and Guthrie, *op. cit.*) which analyzed contents of the annual reports of 250 traded firms in Sri Lanka and the U.S. between 1993 and 2000. Additionally, SC was reported as the most frequently disclosed type of IC in three studies (Hidalgo et al., *op. cit.*; Li et al., *op. cit.*; Vergauwen, *op. cit.*) which examined the annual reports of over 200 traded firms in Mexico, Sweden, and the U.K. between 2004 and 2007.

The mixed results are not surprising, given the lack of a universally-accepted typology of IC. It is also plausible to argue that the three sets of studies would be expected to display variation given differences in the time periods from which they draw data and the types of documents from which they draw data – in short differences in sampling frames.

It is worth noting that the literature may hint at a progression or refinement in scholars' and practitioners' perspectives on IC. For example the set of three studies that report SC as the most frequently disclosed type of IC use the most recent sample data (2004 to 2007). Yet the set of two studies that report HC as the most frequently disclosed type of IC use sample data as early as 1991. Likewise the set of two studies that report RC as the most frequently disclosed type of IC use sample data that begin in 1993 (two years after the HC studies' data) and end in 2000 (four years earlier than the SC studies' data).

Further, it is important to note that an IPO and an annual report are two different types of documents although both ultimately offer a venue by which firms may signal their value and their value-drivers to investors. Disclosure of IC is essentially voluntary so firms have incentives to strategize ICD by including (disclosing) or not including (not disclosing) IC in general or of a specific type. And those incentives are likely to differ when disclosure in an IPO is compared with disclosure in an annual report.

Consider the set of studies which reported SC as the type of IC most frequently disclosed. Those "SC studies" obtained data from annual reports *and* from IPOs. This contrasts with the set of studies which reported HC as the type of IC most frequently disclosed, and, the set of studies which reported RC as the type of IC most frequently reported. The "HC studies" obtained data from exclusively from IPOs but the "RC studies" obtained data exclusively from annual reports.

Frequency of ICD by Retailers

Three recent studies involving 32 firms shed light on ICD among retailers: Bontis, 2003; Olsson, 2004; and Singh and Van der Zahn, *op cit.*). One study (Singh and Van der Zahn, *op cit.*) examined the contents of 15 IPOs filed by firms in Singapore between 1997 and 2006. The other two studies (Bontis, *op. cit.* and Olsson, *op. cit.*) examined the contents of annual reports filed by two Canadian firms and 15 Swedish firms between 1998 and 2002, respectively.

All three studies reported an increasing level of ICD. HC was the type of IC most frequently disclosed. ICD among retailers thus fits the general pattern of increased frequency of ICD over time.

Frequency of ICD by Software Companies

Five recent studies involving 177 software companies shed light on ICD among those types of companies: Bontis, *op. cit.*; Bukh, et al., *op. cit.*; Bozzolan, et al., *op. cit.*; Sonnier et al., *op. cit.*; and Lee and Whiting, 2011. The five studies obtained data from annual reports and IPOs filed between 1990 and 2009. The five studies included data obtained from firms in Australia, Canada, Denmark, Italy, the U.K., and the U.S.

During the period 1990 to 2009, ICD among software companies increased. ICD among software companies thus fits the general pattern of increased frequency of ICD over time.

HC was the type of IC most frequently disclosed per Lee and Whiting, *op. cit.* But Bukh et al., *op. cit.* reported data indicating that RC and SC were most frequently disclosed. Further, Bozzolan et al., *op. cit.* reported that RC was the type of IC most frequently disclosed. Two studies (Bontis, *op. cit.* and Sonnier et al., *op. cit.*) did not report which type of IC was most frequently disclosed. These mixed results fit a general pattern in the literature (compare with earlier discussion of type of IC most frequently disclosed).

Frequency of ICD: Retailers versus Software Companies

There is a dearth of literature regarding retailers' frequency of ICD versus software companies' frequency of ICD. The present study will extend the literature by providing such a comparison.

It is possible to perform a "meta-analysis" of sorts by comparing findings previously cited in this paper. As regards ICD in general, the literature indicates that both types of firms increasingly engage in ICD. As regards the type of IC most frequently disclosed, the two types of firms differ. HC was the type of IC most frequently disclosed by retailers whereas results were mixed as regards software companies.

The mixed results regarding the type of IC disclosed has been addressed on a limited fashion. Bozzolan et al., *op. cit.* and Abdolmohammadi, *op. cit.* found differences in ICD when comparing companies representing "old economy" firms versus companies representing "new economy" firms.

Summary

The review of related literature provides key insights regarding ICD. First, there is a consensus that the frequency of ICD is increasing, even though ICD in an IPO is essentially voluntary as is the case regarding an annual report. Second, there is no consensus on the type of IC most likely to be disclosed but there does appear to be a progression towards more disclosure of all three types of IC. Third, ICD by retailers and by software companies is increasing but there are differences in the type of IC disclosed.

These insights inform the present study especially as regards the development of tentative hypotheses. But before the present study's tentative hypotheses are presented and discussed, it is necessary to consider the method used by the present study.

VIII. METHOD

Discussion of the method used in the present study will revolve around data collection and data analysis. Discussion on data collection will include three elements: collection method, sampling, and unit of measure. Discussion related to data analysis will focus upon three elements: primary, secondary, and tertiary data analysis. Limitations connected to the study method have been presented in an earlier section of this paper.

Data Collection

The present study uses content analysis of documents (SEC S-1s). Tropes V8.0 software was used to extract terms from the documents that comprise the study sample. More information on Tropes V8.0 may be obtained at the developers' web site (http://www.semantic-knowledge.com).

Content analysis is the typical manner in which data indicative of ICD are collected (Sonnier et al., *op. cit.*) so content analysis was used to collect data for the present study. In addition, the present study uses terms and categories that are derived from terms and categories identified in the literature on ICD.

Sampling

S-1 filings of 106 firms comprise the study sample. The 106 S-1s were filed between the second quarter of 2001 and the second quarter of 2011 by 59 retailers ("old economy" firms) and 47 software companies ("new economy" firms).

SIC codes were used to identify retailers and to identify software companies. SIC codes 5600, 5810, 5812, 7011, and 7382 were the most prevalent retailer codes. SIC codes 7371, 7372, 7373, and 7389 were the most prevalent software company codes.

Using SIC codes to identify sample groups is appropriate because those codes represent widely-accepted means of categorizing firms. Additionally, previous studies on ICD have used SIC codes to identify types or categories of firms. Two examples are Guo et al., 2005 and Sonnier et al. *op. cit.*

Unit of Measure

In content analysis, selection of the appropriate unit of measure is critical. In some cases it is appropriate to use measures such as column inches or length of a communication such as an advertisement or movie. In other cases it is appropriate to focus upon semantic entities, i.e. words, terms, or phrases. The unit of measure selected is driven by the study objectives and previous literature related to the study as is any categorization scheme or typology used to organize units of measure (Gravetter, et al., *op cit.* and Weber, *op. cit.*). Consequently, the present study will focus upon semantic entities; specifically 134 unique terms derived from the literature on ICD as well as three categories derived from the literature on ICD (see Appendix A).

Data Analysis

Preliminary data analysis consisted of three steps. First, total frequency counts were compiled per item and per year as well as per type of IC. Second, totals were compiled for retailers and for software firms. Third, sample statistics were computed per type of IC and type of firm.

Secondary data analysis involved the use of two inferential statistics: the Chi-Square Statistic and the Cramer's V Statistic. The two procedures were used to identify differences in the frequency with which various types of IC were disclosed and differences in ICD when comparing retailers versus software companies.

Chi-Square lends itself to comparison of categorical data. Cramer's V provides a measure of association for categorical data and provides a way to put a Chi-Square value into context. An in-depth discussion of the Chi-Square Statistic and Cramer's V is beyond the scope of this paper. Readers desiring more details are encouraged to peruse the resources available at the Vassar Stats: Statistical Computation Web Site (Lowry, 2011b) and the textbook companion site (Lowry, 2011a).

Regarding tertiary data analysis, it is typical to use the Bonferroni Correction or the Holm-Bonferroni Method when multiple significance tests are conducted. Those measures are appropriate when a researcher deems it efficacious to decrease Type I Error while increasing Type II Error (Perneger, 1998). However the author of the present study holds the opinion that reducing false positives at the expense of increasing false negatives is not a worthy trade-off because the present study is exploratory. Logic dictates eschewing directional hypotheses.

VIV. HYPOTHESES

Given its exploratory nature, the present study posits two tentative hypotheses. The hypotheses will be non-directional.

Hypothesis I

It is hypothesized that there is no significant difference between the total frequencies of ICD accounted for when comparing the three types or categories of IC (HC, RC, and SC).

Hypothesis II

It is hypothesized that there is no significant difference between the total frequencies of ICD accounted for when comparing retailers versus software companies.

X. FINDINGS

The present study's findings flow directly from its background, purpose and rationale, limitations, and objectives. Findings for the present study therefore will cover: (1) total frequency of ICD during 2001 to 2011, (2) total frequency accounted for by the three categories of IC (HC, RC, and SC), (3) frequency of ICD by retailers, (4) frequency of ICD by software companies, (5) ICD by retailers versus software companies, (6) the types (categories) of IC disclosed by retailers, and (7) the types (categories) of IC disclosed by software companies. Those findings will incorporate the results of the two hypotheses tested in the present study.

Total Frequency of ICD 2001 to 2011

Table 1 presents total ICD frequency. ICD increased over time with 70% of ICD occurring between 2005 and 2011. The increase mirrors findings reported by five studies (Bukh, *op. cit.* 2003; Abdolmohammadi, *op. cit.*; Abeysektra and Guthrie, *op. cit.*; Bukh et al., *op. cit.*; and Singh and Van der Zahn, *op. cit.*).

Table 1
IC Disclosure, All Firms 2001 to 2011

Period	HC (Human Capital)	RC (Relational Capital)	SC (Structural capital)	Total Frequency	Cumulative Total Frequency	Cumulative Percentage
2001	2	7	14	23	23	1%
2002	10	34	76	120	143	9%
2003	0	0	0	0	143	9%
2004	22	68	95	185	328	20%
2005	18	53	90	161	489	30%
2006	14	62	99	175	664	40%
2007	35	112	171	318	982	60%
2008	0	0	0	0	982	60%
2009	18	40	64	122	1104	67%
2010	55	84	195	334	1438	87%
2011	35	65	106	206	1644	100%
Total	209	525	910	1644		

Type of IC Disclosed

The data in Table 1 also shed light on the type of IC disclosed. Table 1 shows that SC (Structural Capital) accounted for the highest frequency (910/1644 or 55%) followed by RC (Relational Capital) and HC (Human Capital) which accounted for 32% (525/1644) and 13% (209/1644) of IC disclosure respectively. The present study's findings regarding SC as the most frequently disclosed type of IC is similar to findings reported in three studies (Hidalgo et al., *op cit.*; Li et al., *op. cit.*; Vergauwen, *op. cit.*). But four other studies reported different findings (Bukh, et al., *op. cit.*; Singh and Van der Zahn, op. cit.; Abdolmohammadi, op. cit.; and Abeysektra and Guthrie, op. cit.).

Table 2 presents the top ten IC components disclosed, per type of firm. Be it a retailer or software company, SC components accounted for seven of the top ten IC components disclosed. The only HC component to make the list was "Employee Expertise" while three RC components ("Brands," "Customers" and "Customer Relations") made the list. Seven components ("Brands," "Efficiency," "Employee Expertise," "Intellectual Property," "Licensing Agreements," "Products," and "Strategy") made the top ten lists for both types of firms. Of those seven components five were SC components, while one ("Brands") was an RC component and one ("Employee Expertise") was an HC component. Retailers' top ten components equaled 41% (317/779) of their total ICD. Top ten components for software companies equaled 37% (320/865) of those companies' total ICD.

The findings reported in Table 2 are similar to findings reported in earlier studies. Bontis, *op. cit.* reported that "Employees" and "Intellectual Property" were frequently cited. Abdolmohammadi, op. cit. reported that "Brands" was frequently cited. Bukh, et al., *op. cit.* reported that "Customers" and "Strategy" were frequently cited. Garcia-Meca, et al. *op. cit.* also reported that "Customers" and "Strategy" were frequently cited. Sonnier et al. *op. cit.* reported that "Customers" and "Intellectual Property" were frequently cited. Abdul-Hamlin and Baxter (2010) reported that "Customers" was frequently cited.

Table 2

IC Disclosure: Ten Most Frequently Disclosed IC Components by Type of Firm

Retailers					Software Companies				
	Rank	Type of IC	Component (word or phrase)	Frequency		Rank	Type of IC	Component (word or phrase)	Frequency
	1	SC	Products	48		1	SC	Technology	45
	2	RC	Brands	43		2	SC	Intellectual Property	44
	3	RC	Customers	42		3	SC	Products	40
	4	SC	Efficiency	34		4	SC	R&D	36
	5	SC	Information Systems	33		5	RC	Customer Relations	30
	6	SC	Strategy	32		6	SC	Efficiency	27
	7	SC	Licensing Agreements	22		7	SC	Licensing Agreements	26
	8 (tie)	HC	Employee Expertise	21		8 (tie)	HC	Employee Expertise	25
		SC	Intellectual Property	21			SC	Strategy	25
		SC	Process	21		10	RC	Brands	22
			Total	317				Total	320

Hypothesis I: No significant differences between the types of IC disclosed

Table 3 presents a Chi-Square contingency table used to determine if there were significant differences between the types of IC disclosed. The test was performed at the .05 level with two degrees of freedom. As Table 2 indicates, a null hypothesis was tested. The Chi-Square obtained (449.81) far exceeded the critical Chi-Square value (5.991). *Consequently, the present study failed to confirm Hypothesis I (no significant differences between the types of IC disclosed).*

Differences between the types of IC disclosed have been reported in the literature (Bozzolan et al., *op. cit.* 2006; Ennsslin and Carvalho, *op. cit.*; Hermans and Kauranen, *op. cit.*; Hidalgo et al. *op. cit.*; Li et al., *op. cit.*; and White et al., 2010). However those differences have been reported within the context of comparisons between types of firms based on firm characteristics or performance. The comparison reported in Table 3 therefore needs to be put into context.

Table 3

ICD per Type of IC

	Human Capital (HC)	Relational Capital (RC)	Structural Capital (SC)	Total
Expected Frequency	548	548	548	1644
Actual Frequency	209	525	910	1644

ICD by Type of Firm

Table 4 presents a comparison of ICD by retailers versus software companies. As Table 4 shows, software companies accounted for a higher percentage (865/1644 or 53%) of ICD. Both types of firms had similar patterns in the types of IC disclosed with SC being the largest (55%) followed by RC (32%) and then by HC (13%).

Table 4
ICD by Retailers versus Software Companies

	HC	RC	SC	Total
Type of Firm				
Retailers	100	265	414	779
Software Companies	109	260	496	865
Total	209	525	910	1644

Hypothesis II: No significant difference between the total frequencies of ICD accounted for when comparing retailers versus software companies.

Chi-Square analysis was conducted on the data reported in Table 4 using a 2 X 3 contingency table with two degrees of freedom and an alpha at the .05 level with an appropriate critical value of Chi-Square (5.99). The obtained Chi-Square value of 3.33 did not equal or exceed the critical value of Chi-Square. In addition, Cramer's V was calculated and the obtained value of 0.045 further underscored the absence of a significant difference between ICD by retailers versus ICD by software companies. Cramer's V may be viewed as the association between two variables as a percentage of their maximum possible variation. A maximum possible variation of 4.5% confirms the low variation inferred by the obtained Chi-Square value that is below the critical Chi-Square value. *Consequently, the present study confirmed Hypothesis II (no significant difference between the total frequencies of ICD accounted for when comparing retailers versus software companies).*

The present study findings on comparisons of types of firms may be compared with findings reported in earlier studies. Mixed results have been reported in four earlier studies. Two studies (Bozzolan et al. op. cit. and Abdolmohammadi, op. cit.) reported differences in ICD based on industrial sector. But two studies (Bontis, op. cit. and Singh and Van der Zahn, op. cit.) found no differences based on type of firm.

XI. IMPLICATIONS

The present study's findings imply firms' increasing understanding of IC and its role as a value-driver and a store of value. The present study findings also imply investors' understanding of IC and its role as a value-driver and a store of value. Three findings underscore these implications.

First, the growing frequency of IC disclosure in IPO prospectuses indicates firms' assumption that investors want information about firms' possession of and deployment of IC. IPO prospectuses are documents intended to signal firms' potential to generate and to maximize shareholder wealth. Firms would not disclose IC in IPO prospectuses unless firms thought it in their best interests to do so, i.e. that this was favorable or positive information sought by investors.   This is especially important because disclosure of IC is essentially voluntary.

Second, regardless of their industrial sector, firms share highly similar perceptions regarding specific IC components that investors seek information about. Seven of the top ten most frequently disclosed IC components were the same for retailers and for software companies. This uniformity is striking, especially in a document (an IPO prospectus) designed to signal firms' capacity and likelihood to generate and to maximize shareholder wealth.

Third, regardless of their industrial sector, firms share similar perceptions regarding the type of IC that investors seek information about. Structural IC was by far the most frequently disclosed type of IC and this pattern did not differ when comparing retailers versus software companies. This pattern is not surprising given that Structural IC consists of knowledge that stays with a firm even if the employees who created it leave, e.g. intellectual property, company strategy, or products. Knowledge "that stays" and can create and store wealth implies stability or at least reduced or tolerable variability that is desired by investors (i.e. reduced risk of unfavorable or unexpected negative variability of future cash flows and income).

XII. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The present study findings lead to three key, tentative conclusions. First, ICD is a means by which firms signal investors regarding firms' capacity to maximize shareholder wealth. Second, the use of ICD as a means to signal investors is not limited to firms of a specific type or industrial sector, e.g. "old economy" firms versus "new economy" firms. Third, disclosures of Structural IC are used by firms to signal investors regarding the extent to which firm-specific risks are at a level that is tolerable and manageable.

Recommendations for Further Research

Flowing from the present study's conclusions are recommendations for further research. Four recommendations are offered.

First, there is a need to conduct longitudinal studies to assess the extent and manner of ICD by firms at various points in their lifecycles. Second, there is a need for more studies that compare firms from different industrial sectors. Third, there is a need for comparative, longitudinal studies that compare firms from different industrial sectors regarding the extent and manner with which they engage in ICD at various points in their lifecycles. And four, there is a need to assess and compare ICD by type of IC disclosed and IC component disclosed.

APPENDIX A

HC (Human Capital) Components (n = 30)
employee age, employee attitudes, employee capabilities, employee development, employee diversity, employee education, employee efficiency, employee expertise, employee flexibility, employee know how, employee knowledge, employee productivity, employee relationships, employee retention rate, employee skill, employee value, entrepreneurial spirit, expert teams, human assets, human capital, human value, know how, leadership, number of employees, skills, staff turnover, teamwork, vocational qualifications, work related competencies, work related knowledge

RC (Relational Capital) Components (n = 38)

alliances, backlog, brands, business agreements, business collaboration, community involvement, company awards, company image, company name, company reputation, customer acquisition, customer capital, customer education, customer involvement, customer loyalty, customer relationships, customer retention, customer support, customer tracking, customer training, customer turnover, customers, diffusion, distribution channels, expert networks, internet traffic, knowledge sharing, market leadership, market presence, market share, new customers, public relations, relational capital, relations with stakeholders, research collaboration, supplier knowledge, supplier relations, web transactions.

SC (Structural Capital) Components (n = 66)

accreditation, administrative systems, best practices, board structure, business knowledge, business model, certification, company culture, competitive intelligence, copyright, corporate learning, corporate mission, corporate university, corporate vision, customer database, customer knowledge, customer tracking, design rights, economic value added, efficiency, employee equality, financial contracts, financial relations, firm capacity, franchises, franchising agreements, improvement, information systems, innovation, intellectual assets, intellectual capital, intellectual material, intellectual property, intellectual resources, intranet resources, knowledge assets, knowledge management, knowledge stock, knowledge based infrastructure, licensing agreements, management philosophy, management processes, management quality, manuals, networking, networking systems, new investments, organizational flexibility, organization learning, organization routines, organizational structure, patents, process, products, project libraries, quality control, quality management, research and development (R&D), research projects, service marks, strategy, structural capital, technological systems, technology, trade secrets, trademarks

Note: These components are drawn from these recent studies: Bozzolan et al. *op cit.*; Cerbioni and Parbonetti, *op. cit.*; Garcia-Meca et al., *op. cit.*; Johnson, *op cit.*; Joshi and Ubha, *op cit.*; Li et al. *op. cit.*; and Sonnier et al., *op cit.*

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