The Impact of Green Intellectual Capital on Integrated Sustainability Performance in the Indian Auto-component Industry

***Anthony Thiagarajan **Dr. UtpalBaul**Dr. J. Sekkizhar**

ABSTRACT

T**Purpose -** The purpose of this study is to examine the impact of green intellectual capital (GIC) on integrated sustainability performance of organizations.This is done to respond to the call of Dumay and Cai (2014) for new ideas to enhance intellectual capital research (ICR) as a differentiation theory of innovation practice (Dumay et al. 2013) to coincide with the third stage of IC research (to build strong organizations)following Guthrie et al. (2013) and the fourth stage of IC research (to expand into ecosystem)following Edvinsson (2013). Scholars, thought leaders and business leaders are of the view that intellectual capital is perpetual capital to build businesses across economic cycles to strike gold by being True North. This study is undertaken to be in line with both the third stage of IC research which is a recent stream of literature that addresses the praxes of IC as they are implemented in organizations and the fourth stage of IC research that concentrates on building strong economic, social and environmental eco-systems, where healthy organizations can flourish (Dumay, 2013). The study alsoaddresses a current need because the 12 business models followed by organizations all over the world have a number of common categories and adequate conditions for a lean-green transformation for an organization and its supply chain (Duarte and Cruz-Machado, 2013). With IC being instrumental in the determination of national economic performance and enterprise value (Petty and Guthrie, 2000) in the knowledge economy or the next economy (Drucker, 2001 a, b), it is imperative to study its impact on organizational sustainability performance. Thus, this study drawsa conceptual bridge between green intellectual capital (GIC) and integrated sustainability literature to investigate as tohow firms mobilise their GIC in order to implement integrated sustainability performance in their business practices.

Design/Methodology/approach–Based on previous studies and a further literature review, a research model was developed for analysing the relationship between green IC and integrated sustainability. Using the survey data collected from 276 companies in the Indian auto-component industryfor the financial year 2015-16, structural equation modeling technique, namely partial least squares, was applied to test statistically the hypotheses. This study summarizes the concepts of green IC and integrated sustainability to develop an integral framework to enhance the efficacy of green intellectual capital in organizations.

* Research Scholar, Department of Management, Birla Institute of Technology,Mesra, Ranchi, India.

** Professor, Department of Management, Birla Institute of Technology, Mesra, Ranchi, India.

*** Asst. Professor, Decision Sciences, P.S.G. Institute of Management, Coimbatore, India..

Findings - This study utilizespartial least squares structural equation modeling (PLS-SEM_ to explore the inûuences of green IC that comprises green human capital (GHC), green structural capital (GSC) and green relational capital (GRC) on integrated sustainability performancethat includes operations, environment, society and governance (OESG) performance. The empirical results of this study demonstrate that green HC has a positive effect on operations, environment, society and governance. Green structural capital has a positive effect onoperations, environment, society and governance. Green relational capital hasa positive effect on society and not on operations, environment and governance. Although the importance of IC has already been highlighted in the management literature, few articles have focused on the importance of its green counterpart, greenIC. The empirical results show that green intellectual capital do play a key role in the sustainability performance of organizations.

Research limitation/implications–As a ûrst wave empirical investigation of the impact of green IC on integrated sustainability performance, the study is by necessity exploratory. Besides this, we see three limitations of this study. First, this study verifies the hypotheses by means of questionnaire survey which only includes cross-sectional data. Future studies should consider a longitudinal setting that would provide a deeper understanding of causal relationships. Second, since the study is quantitative using data emanating from the auto-component industry in India, further empirical study would be useful to verify and complement the results in other industries and other countries. Third, this study applies a "ten-point Likert scale" ranging from 1 to 10 to measure the constructs. Future research can apply a "five-point Likert scale" or "seven-point Likert scale" to measure the constructs and compare with this study to test the significance of the variability of the data.There are two implications emerging from the study. First, green HC has a positive effect on operations, environment, society and governance.Green SC has a positive effect on operations, environment, society and governance. Green relational capital has positive effect on society and not on operations, environment and governance. Second, with IC being instrumental in the determination of national economic performance and enterprise value (Petty and Guthrie, 2000), the insights provided in this study could be a food for thought for organizations wanting to deploy green IC to achieve integrated sustainability which is the heart of today's business and also to investors for whom ESG has clearly grown in importance (Boerner, 2008).

Practical implications - These ûndings have important theoretical as well as practical implications - for theory, research, education, business practice and policy-makers. The proposed model can be the basis for further research in IC and integrated sustainability paradigms thereby contributing to the understanding when an organization and its mission-critical business processes (OESG and others) can be pragmatic enough to leverage green IC. As accounting measures are 'lag indicators' and integrated sustainability performance impacts financial performance, sustainability measures are needed of the underlying processes and prior outcomes that lead to superior financial results (Eccles and Pyburn, 1992). Although the issue of intellectual capital has been widely discussed for the last two decades, the concept of green intellectual capital is recently proposed by Chen (2008). Thus this study establishes an imperative approach about green IC catalyzing integrated sustainability performance of firms in general and the ones in the Indian auto-component industry in particular.

Originality/value - This is the first paper to examine comprehensively the impact of green IC on integrated sustainability performance in the Indian auto-component industry by adopting a holistic approach by including operations uniquely along with the most popular environment, social and governance (ESG) measures. The study contributes to the body of knowledge relating to green IC-driven integrated sustainability performance. By investigating the interrelationships between green IC and the four endogenous constructs of integrated sustainability, the study identiûes and charts the casual chains that can be used to guide business decisions. Thus, this may serve as a reference for ûrms mapping out future green IC and integrated sustainability models, processes, practices and standards. This study differs from prior studies in that the authorsfor the first time focused on Indian automotive industry which is the 4th largest automotive market by volume in the world and that accounts for 7 per cent of the India's Gross Domestic Product (GDP).From the research perspective,it is an optimization model that for the first time includes with a logic operations into the traditional 'ESG' sustainability metrics. These are besides providing an input of various perspectives and arguments into the disciplines of green IC and integrated sustainability.

Introduction

Green intellectual capital (IC) would positively inûuence corporate competitive advantages. Hence, itisimportantto increase both corporate social responsibility (CSR) and environmental consciousness to enhance IC (Chen, 2008, p. 90). Little wonder, keen to be green organizations (Dwyer, 2009) in the green economy (Green and McCann, 2011) model green and lean business models (Durate and Cruz-Machado, 2013) and have on their payroll green-collar employees (Harvey et al. 2010). We call these employees greenhuman capital in this study. Research shows that green core competences of firms were positively correlated to their green innovation performance and green images (Chen, 2008). This could be inferred as structural capital in a firm. Green brand image, green satisfaction, and green trust are positively related to green brand equity (Chen, 2010).This is likened to relational capital. One can infer upfront how these capitals together could add and create value in organizations in terms of both non-financial (we call this integrated sustainability) and financial performance. This scope of this study is to find out how green IC impacts integrated sustainability performance in organizations. This in a nutshell is integrated thinkingwhich one of the four tools of doing business in the 21st century, the other three being, integrated reporting, good corporate governance and stakeholder relationship (King and Roberts, 2013).

Nowadays, when environmental concerns cannot be ignored by firms, it is time to explore the role of green IC in environmental improvement (Delgado-Verde et al. 2014) thanks to innovative practices like green design, green product efficiency and green packaging, among others (Chen, 2011). Green creativity is defined as the development of new ideas about green products, green services, green processes, or green practices that are judged to be original, novel, and useful (Chen and Chang, 2013).Green IC is innovative, enabling the firm to differentiate itself from its competitors. These unique characteristics are the foundation on which a firm builds its sustainable competitive advantage. Building green IC can create obstacles for competitors and ensure competitive advantage by securing

the market (Huang and Kung, 2011). It is imperative for lowly ethical companies to increase both their corporate social responsibility (CSR) and environmental consciousness to enhance three types of green intellectual capital (Chang and Chen, 2012), namely, green human capital, greenstructural capital andgreen structural capital. In a study of managers in environmental, human resource management and R&D departments and front-line employees in Taiwan's electronics companies, Chen et al. (2015) found that green shared vision positively influences green mindfulness, green self-efficacy and green creativity.This research is conductedin the auto component industry in India. According to Clarke et al. (2011), hard IC is IC which the ûrm can determine a value (e.g. patents), functional IC incorporates organizational processes (e.g. monitoring processes) and soft IC is IC which no value can be determined.

Organisation of this paper

This paper is organized as follows. *First,*the literature review and theoretical framework give a bird's eye view of green IC (green human capital, green structural capital and green relational capital) capital and integrated (operational sustainability, environmental sustainability, social sustainability and governance sustainability)sustainability. *Second,* the research model and hypotheses are delineated. Third, theresearch methodologyis decomposed in terms the research context, questionnaire design, sampling and data collection. Fourth, data analysis and empirical results using a combination of IBM SPSS Statistics 17 and IBM AMOS 16 software packages for analyses of (a) results of the measurement modeland (b) results of the structural model are provided. Fifth, the implications regarding theory, research, education, business practice and policy-makersare provided. Sixth, research limitations are identified. Seventh, future research opportunities are highlighted. Finally, the paper is concluded with the authors' outlook.

Literature Review and Theoretical Framework

Strong dynamic capabilities are (a) signature practices and business models (b) valuable, rare, inimitable, and non-substitutable (VRIN) resources and (c) Doing the right things (good strategy) (Teece, 2014, p. 21).As a VRIN resource, IC is a dynamic capability. (Barney, 1991; Teece, 2000; Teece, 2014, p. 16).The linear relation of IC to value is acknowledged in influential books that see IC as a stuff that you cannot see but makes you rich (Stewart, 1997). This weightless wealth (Andriessen and Tissen, 2000) or unseen wealth (Blair and Wallman, 2000) generally contributes to strategic debates in the board room and policy debates in government (Teece, 2000). That is why Mouritsen (2006) looks into how research into IC can happen in a more meaningful way. Because, there is a need to provide new answers to the big questions. Researchers have asked the following questions:

- What is IC composed of?
- How does IC work in firms?
- How is IC related to value? (ibid, p. 823).

Added to the above, Dumay (2016) calls upon researchers to concentrate on how an organisation discloses what "was previously secret or unknown", so that all stakeholders understand how an organization takes into consideration ethical, social and environmental impacts in keeping with an eco-systems approach to IC.

In this study we examinewhat green IC is composed of (section #2), how green IC works in firms(section #3) and how green IC is related to value in terms of integrated sustainability performance (section #5.2). Dumay's (2016) above empirical insight is also addressed by this study (section #6 and #9).

2.1. Green Intellectual Capital

Research literature on green IC is limited as it has been in vogue only since 2008. According to Chen (2008), green IC is the total stocks of all kinds of intangible assets, knowledge, capabilities and relationships, etc. about environmental protection or green innovation in the individual level and the organization level within a company (Dzinkowski, 2000; Edvinsson and Malone, 1997; Roos and Roos, 1997; Stewart, 1994). According to previous studies, green IC is classified into three types: green human capital, green structural capital, and green relational capital (Bontis, 1999; Johnson, 1999) that are treated as strong dynamic capabilities. A schematic diagram depicting Green IC framework is shown in Figure 1. The details of the three-dimensional IC typology (human capital, structural capital and relational capital) given from extant IC research literature should be viewed from the green IC perspective for the purpose of this study. Because, green IC largely stands to benefit from 20 years of mainstream IC research to be mindful and insightful of IC research literature available aplenty.

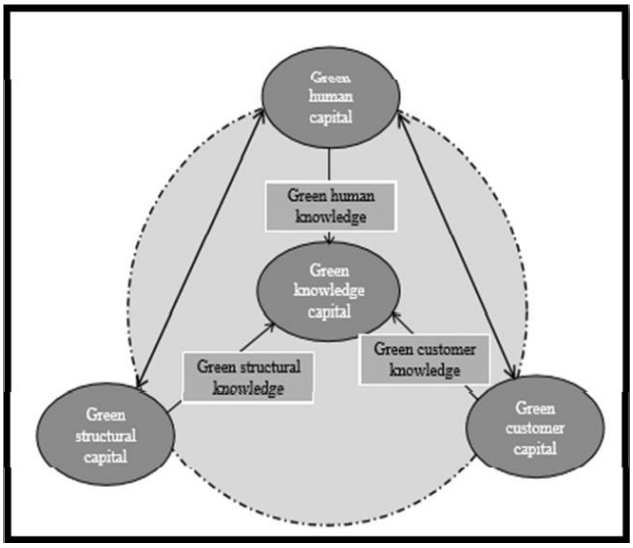


Figure 1.Green Intellectual Capital Framework (Adapted from *Pathirage et al.* (2008)

Strong dynamic capabilities will help organizations to stay relevant to marketplace needs and technological opportunities (Teece, 2014, p. 21). Teece (2007) by a more applied focus organized dynamic capabilities around sensing, seizing, and transforming to operationalize the dynamic capabilities framework. The sensing, seizing and transforming work both in terms of green IC and integrated sustainability processes are a work in progress (W-I-P) of the Indian auto-component industry. However, Research on IC is relatively a new phenomenon in India (Vishnu and Gupta, 2014) though progress is being continually made as could be made out from extant IC research literature. In today's hashtag world, IC is the core asset of the third millennium enterprise (Brooking, 1996) and are the crown jewels (Grant, 1991) that are strong predictors of competitive advantage (Kamukama, 2013) from a cause-effect perspective (Wang and Chang, 2005). Lev (2001) investigated the market-to-book value ratio for United States Standard & Poor's 500 (US S&P 500) companies from 1977 to 2001 and found that over 80 % of company market value was not included in the financial statements. This 80% is represented by IC (Edvinsson and Malone, 1997).So much for the world. As regards India, book value accounts for less than 10% of the market cap of India's top three IT companies with IC making up over 90% of their value according to Edvinsson, (2006), the uber-guru of the Intellectual Capital movement, according to The Economic Times, dated December 15, 2006. This scenario is in no way better in the Indian auto-component industryspearheading the technology-driven cyber age of the 'knowledge-based economy' in India. Human capital, structural capital, relational capital and physical and financial capital (read all four as green) are the four pillars of the industry. All these contemporary developments prove that the business imperative is to manage IC or die (Roos et al., 1997).

The three-dimensional typology of Green Intellectual Capital (IC)

Chang & Chen (2012, p. 77) based on Chen's (2008) insights, propose that green IC is the total stock of all kinds of intangible assets, knowledge, capabilities, and relationships, etc. about environmental protection at the individual and organizational levels of the company'. Green IC represents the intangible assets of a firm, including knowledge, wisdom, capabilities, experience, and innovation in the field of environmental protection' (Chen, 2008). Although the issue of IC has widely been discussed during the last decade, the concept of green IC is recently proposed by Chen (2008) because of the popular trend of the environmentalism nowadays. Companies' increased CSR and environmental consciousness could drive them to enhance IC. Furthermore, it is imperative for lowly ethical companies to increase both their CSR and environmental consciousness to enhance three types of green intellectual capital (Chang and Chen, 2012). In a study of managers in environmental, human resource management and R&D departments and front-line employees in Taiwan's electronics companies, Chen et al. (2015) found that green shared vision positively influences green mindfulness, green self-efficacy and green creativity. Green IC is innovative, enabling the firm to differentiate itself from its competitors. These unique characteristics are the foundation on which a firm builds its sustainable competitive advantage. Building green IC can create obstacles for competitors and ensure competitive advantage by securing the market (Huang and Kung, 2011).A brief account of the three categories of green IC are given below.

2.1.1. Green HumanCapital

Green human capital includes the employees' stocks of knowledge, skills, capabilities, experience, attitude, wisdom, creativities and commitments, etc., about environmental protection. Green innovation

can help companies obtain competitive advantages (Chen, 2008). It is established by the following third-order constructs: motivation, interpersonal skills, knowledge, skills and attitudes. Human capital is considered the most important asset (Bontis, 2002). It is the most critical element creating core competence (Leonard-Barton, 1992). The power of human capital in the IC scheme of things is such that it is called by Edvinsson (2002) the IC multiplier, i.e. multiplying the human capital potential with its surrounding structural capital. It is responsible for executing the other capitals. According to Inkinen (2015), human capital is the most important of the elements of IC, as it helps to generate relational and structural capital. In an era of plentiful capital, it will be skills, knowledge and creativity that will be in short supply (Pearlstein, 2014). IC are descriptors belonging to a paradigm where sustainable competitive advantage is tied to individual workers and organizational knowledge (Bontis, 2001). This information demonstrates the significance of human capital. Human capital management can be regarded as the umbrella term of three separate management disciplines: (i) human asset management that predominantly covers operations (ii) human potential management that corresponds with Human Development and (iii) human culture management that occupies a central place in empowering human asset and human potential. Organization's human capital can be regarded as a valuable resource and a key factor for sustainable competitive advantages (Huselid, 1995; Prahalad and Hamel, 1990). Transforming human resources into human capital and human assets is the focus of the Indian auto-component industry.According to the Ministry of Heavy Industries & Public Enterprises, Government of India, the contribution of the auto sector to the National GDP, rose from 2.77% in 1992-93 to about 7.1 now. It provides direct and indirect employment to over 19 million people. (http://dhi.nic.in/UserView/index?mid=1319 accessed on September 19, 2017). Thisdata projects the importance of human capital in the Indian automotive industry. Hence the inclusion of green human capital in this study is justified. The eight measurement items of green Human capital used in this study are given in Table Ibelow.

Table I. The measurement items of green human capital used in this study

Element No	Green Human Capital dimensions enabling integrated sustainability	Authors
GHC1	The productivity and contribution of employees regarding integrated sustainability in the company is better than those of its competitors	Chen, 2008; Chang and Chen (2012) and Appuhami, and Bhuyan (2015)
GHC2	The competence of employees in integrated sustainability efforts in the company is better than that of its competitors	
GHC3	The integrated sustainability-minded products and services provided by the company employees are better than that of its competitors	
GHC4	Team work pertaining to integrated sustainability efforts in the company is more than that of its competitors	
GHC5	Managers in the company can fully support their employees to achieve the goals of integrated sustainability	
GHC6	The company's top management supports and encourages intellectual capital	
GHC7	The company's Directors nourish intellectual capital	
GHC8	The company's Directors' expertise enable us in strategy execution	

2.1.2. Green Structural Capital

Green structural capital include the stocks of organizational capabilities, organizational commitments, knowledge management systems, reward systems, information technology systems, databases,

managerial institution, operation processes, managerial philosophies, organizational culture, company images, patents, copy rights, and trademarks, etc. about environmental protection or green innovation within a company that can help companies obtain competitive advantages (Chen, 2008). Green structural capital refers to the specification, empowerment, and support infrastructure associated with environmental protection or the development of sustainability strategies' (Huang & Kung, 2011, p. 1408). Structural capital is the stuff that is responsible for keeping the organization running (Marr, 2005). Unlike human capital, structural capital is everything left at the office at night when employees go home (Albertini, 2016). Structural capital belongs to the company while human capital does not belong to the company, as it is a direct consequence of the sum of the expertise and skills of its employees) and can be traded (at least theoretically). It is the actual environment built by the company to manage and generate its knowledge adequately. It is compounded by the internal structure or day-to-day operations of the company, encompassing its processes, databases, codes, culture, management style and internal networks (such as intranets), namely its internal capital. Finally, there is the innovation capital, a direct consequence of the company's culture and its ability to create new knowledge from the existing base.Hence the inclusion of green structural capital in this study is justified. The six measurement items of green structural capital used in this study are given in Table II below.

Table II. The measurement items of green structural capital used in this study

Element No	Green Structural Capital dimensions enabling integrated sustainability	Authors
GSC1	The management system of integrated sustainability in the company is better than that of its competitors	Chen, 2008; Chang and Chen (2012)
GSC2	The company's assets to achieve integrated sustainability efforts in the company is better than that of its competitors	
GSC3	The company's ratio of integrated sustainability investments in R&D to its sales is more than that of its competitors	
GSC4	Innovations about integrated sustainability in the company are more than those of its competitors	
GSC5	Investments in integrated sustainability facilities in the company are more than those of competitors	
GSC6	The integrated sustainability knowledge management system in the company is favourable for the accumulation and sharing of sustainability knowledge	

2.1.3. Green Relational Capital

Green relational capital includes the stocks of a company's interactive relationships with customers, suppliers, network members, and partners about corporate environmental management and green innovation, which enables it to create fortunes and obtain competitive advantages (Chen, 2008). Relational capital embodies all the organization¼s relationships with customers, suppliers and other critical stakeholders (Roos et al., 1997, 2001). Also called the external capital these are concerned

with the customers, suppliers, sub-contractors and other major players involved as metabusiness is now a reality (Keen, 1991). It is hard to define a company's precise boundary (Joia, 2000). The relational capital refers to the relationship an organization has with its environment and the value of this relationship (Bueno Campos, 1998). It also refers to the external structure of the IC (Sveiby, 1997a) and can be considered in terms of customer capital (Edvinsson and Malone, 1997) and supplier capital (Sveiby, 1997a). Relational capital comprises the third-order constructs: customer capital and business capital. According to Martin de Castro, et al. (2004), enough evidence can be found from literature review to claim the relevance of social capital in the development of relational capital within the organization. Reputation capital can be considered as a part of relational knowledge-based assets (Rodgers, 2003). All these go to make integrated sustainability a reality in an organization.Hence the inclusion of green relational capital in this study is justified. The four measurement items of green relational capital used in this study are given in Table III below.

Table III. The measurement items of green relational capital used in this study

Element No	Green Relational Capital dimensions enabling integrated sustainability	Authors
GRC1	The company designs its products and services in compliance with integrated sustainability desires of its customers	Chen, 2008; Chang and Chen (2012)
GRC2	The company's relationships about integrated sustainability with its upstream suppliers and downstream clients are stable	
GRC3	The company has stable and collaborative relationships about integrated sustainability with its strategic partners	
GRC4	The company provides safe and reliable new products and services to its customers	

2.2. Integrated sustainability

Sustainability are mechanisms to ensure that current actions do not limit the economic, social and environmental options for future generations (Elkington, 1998). According to UNEP (2014), integrated governance is a model that moves sustainability issues from the periphery of corporate strategy to the heart of it. In U.S. capital markets, survey results released in November 2014 determined that $1 in $6 of professionally managed assetsare under management (AUM) utilized sustainability approaches, totaling $6.57 trillion at the end of 2013, that is 18 percent of total AUM in the U.S (US SIF 2014). According to Boerner (2015), capital market players are increasingly considering the company's ESG in their investment decision-making. This approach is to consider a company's performance in environmental management, including energy issues, social or societal issues, and corporate governance practices and policies).

Integrated governance is the system by which companies are directed and controlled, in which sustainability issues are integrated in a way that ensures value creation for the company and beneficial results for all stakeholders in the long term (UNEP (2014, p. 35). Having included operations' into the ESG paradigm, the study calls it the Operational Environmental, social and governance (OESG) paradigm of integrated sustainability. The paradigm of this has all the ingredients and hallmark of an (a) integrated management system (Asif et al. 2011) (b) integrated sustainability (United Nations ESCAP, 2015) and (c) integrated governance (UNEP, 2014). Why was operation included along with ESG measures in this study. Researchers are beginning to link lean operations to sustainability,

promoting the mantra that lean is green (Corbett and Klassen, 2006). Dangayach and Deshmukh (2001) found 260 articles on operations strategy ininternational conferences and journals of high reputation. The authors found an absence of what they termed 'manufacturing strategy in the context of green manufacturing'. This shows that the current model of operations strategy in organizations does not include sustainability as a rule. The integrated report, the contemporary management practice promoted by the International Integrated Reporting Council (IIRC, 2013) advocates inclusion of a company's operational, technical, financial or sustainability matters (King and Robert, 2013, p. 117). The foregoing account of scholars and global institutions justifies our inclusion of operations with ESG metrics making it 'OESG' paradigm in our study. The four kinds of integrated sustainability are explained below.

2.2.1. Operational sustainability

The need for resources and capabilities for sustainable operations strategy (Gavronski, 2012) for the operations manager (Ferrer, 2008) and supply chain manager (Zailani et al., 2012) has brought environmental and social sustainability into the fold of integrated management system (Asif et al. 2011). The operational capability is the capability that an organization uses in an effort to earn a living in the present (Helfat, 2007). For this, operational IC generates the dynamic capabilities of the company (Bratianu and Orzea, 2013) and are the key value drivers (Jhunjhunwala, 2009).Business recipe forms the strategic context to operationalise IC (Abhayawansa, 2014). Jacobsen et al. (2005) argue that the three types of (green) capital together form the "operational effectiveness" of the firm, indicating whether the firm is good at what it does. Following Teece et al. (1997), this study argues that operational sustainability is a dynamic capability which is the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments. Firms have interdependent higher and lower level capabilities. Dynamic capabilities are considered higher level capabilities which can change themselves, other capabilities and resource configurations. The dynamic capability involved is the capacity of an organization to purposefully create, extend, or modify its resource base and the operational capability involved is tangible, intangible, or human assets (Helfat, et al. 2007).Hence, the inclusion of operational sustainability in this study is justified. The seven measurement items of operational sustainability used in this study are given in Table below:

Table IV. The measurement items of operational sustainability used in this study

Element No	Operational sustainability dimensions enabled by Green Intellectual Capital	Authors
OS1	The news ideas for products, services and processes are generated through internal, external and networking sources of information	Lev and Daum (2004); (Gavronski, 2012).
OS2	The company's products, services and processes are achieved through technological feasibility	
OS3	The company generates sales and earnings by speedily bringing its products and services to the market	
OS4	The company's intellectual capital enable us to achieve our cost performance (both unit manufacturing cost and ordering costs)	
OS5	The company's delivery speed and reliability are effectively catalysed by its intellectual capital	
OS6	The company's intellectual capital efficiently achieves flexibility performance (both volume and mix)	
OS7	Quality Performance (conformance quality and product quality and reliability) is effectively influenced by the company's intellectual capital	

2.2.2. Environmental sustainability

Elkington's (1994) 'triple bottom line' looks for an overlap between profit and social and environmental targets. The fundamentals of sustainability isalso called the three-dimensional triple bottom-line (TBL) sustainability. Presley and Meade (2010) among other researchers refer to this as the triple bottom line (that is, economic, social and environmental). This is a simple way of categorising sustainability into these three primary components. Among several proposals advanced by scholars within the accounting, management and governance domains (Nixon and Burns, 2012; Giovannoni and Maraghini, 2013), four frameworks that have emerged are: the Balanced Scorecard, the Triple Bottom Line, Sustainability Reporting and Integrated Reporting. Balanced Scorecard measures are nonfinancial and forward looking, these measures do not necessarily include social, environmental and sustainability issues. TBL suggested the need to also disclose information regarding environmental and social matters (Elkington, 1998). TBL is often expressed as People, Planet and Profit. The people-planet-profit(social, environmental and business) framework was developed by Elkington who argued that business cannot be sustained by profit aims alone but must also take into consideration and provide benefit to the environmental and socioeconomic systems in which it operates for its long-term success and survival. Savitz further advanced this theory by addressing the notion of overlap in these three areas, or the so-called 'sweet spot' in the intersection of people, planet and profits.

At the Indian Science Congress, Indian Prime Minister Narendra Modi suggested "5 Es" – Economy, Environment, Energy, Empathy and Equity as a talisman for scientists and technologists to ensure that their work had maximum societal impact (Mondal, 2016). Socially responsible investing (SRI) refers to investing in such companies that exhibit 'ethical' corporate behaviour towards all stakeholders, viz., shareholders, society, employees, customers, government and also the natural environment. The significance of this shows that there is a need for companies to appoint new board members with sustainability expertise, use an external sustainability advisory group and explicitly integrate sustainability into board duties (Bhattacharya and Polman, 2017). Environmental control is a crucial capability in which organizations should invest by optimizing choice through workspace, policies, and technology. Little wonder, Health, Safety, Environmnet (HSE) are dealt with in an integrated fashion under the HSE in today's organizations. In India, the Companies Act, 2013requires companies with a net worth of over Rs 500 crore ($US80million), turnover of over Rs 1,000 crore ($US160million), or net profit of more than Rs 5 crore ($0.8mn), to spend at least 2 per cent of the average net profit in the immediate three preceding years on CSR activity. All this justifies the inclusion of environmental sustainability in this. The four measurement items of environmental sustainability used in this study are given in Table V below.

Table V. The measurement items of environmental sustainability used in this study

Element No	Environmental sustainability dimensionsenabled by Green Intellectual Capital	Authors
ES1	The company has clear and concrete environmental policies	(Ahmed et al., 1998; Naffziger et al., 2003; Schlegelmilch et al., 1996).
ES2	The managers in the company are in charge of environmental policies	
ES3	The employees in the company understand its environmental policies and regulations	
ES4	The company implements environmental audits	

2.2.3. Social sustainability

The defining challenge of our era is to accelerate development that is economically sound, socially inclusive and environmentally sustainable. With the adoption by the United Nations in September 2015, of the Sustainable Development Goals with a time horizon of 2030, the social sector is being much emphasised in the Millennium Declaration. The goals are provided in Table VI below.

Table VI. The 17 UN sustainable development goals

SDG		SDG	
1	No poverty	9	Industry, innovation, and infrastructure
2	Zero hunger	10	Reduce inequality
3	Good health and well-being	11	Sustainable cities and communities
4	Quality education	12	Responsible consumption and production
5	Gender equality	13	Climate action
6	Clean water and sanitation	14	Life under water
7	Affordable and clean energy	15	Life on land;
8	Decent work and economic growth	16	Peace, justice, and strong institutions
17	**Partnership for the goals**		

The latest concept up for grabs is conscious capitalism of Mackey and Sisodia, (2013). "Conscious capitalism is a way of thinking about business that is more conscious of its higher purpose, its impact on the world, and the relationships it has with its various constituencies and stakeholders. It reflects a deeper consciousness about why businesses exist and how they can create more value" (ibid, pp. 32-33). Businesses that adopt this approach not only create multiple types of long-term wealth for society at large (including social, emotional, intellectual and even spiritual wealth), but they also dramatically outperform conventional firms on financial measures of performance (Sisodia, 2009).That is why organizations have graduated up from the era of corporate social responsibility to triple bottom line (TBL) sustainability, conscious capitalism and ultimately aspiring to create shared value.

Aligning operations with creating shared value: This is the contemporary school of thought vis-à-vis sustainability. According to Porter et al. (2011), there is a nascent integrated reporting movement that aims to add sustainability measures to financial statements. Still missing, however, is a framework to link social progress directly to business success, and vice versa. More and more companies are creating shared value by developing profitable business strategies that deliver tangible social benefits. This thinking is creating major new opportunities for profit and competitive advantage at the same time as it benefits society by unleashing the power of business to help solve fundamental global problems. As the Harvard Business Review article "Creating Shared Value" explains that companies can pursue shared value opportunities at three levels: (a) reconceiving products and markets, (b) redefining productivity in the value chain, and (c) enabling cluster development. The shared value opportunities at each level will differ by industry, company and geography, depending on how a company's particular business and strategy intersect with social issues. For each shared value opportunity, companies identify and track both social and business results; their parallel goals are to address a social problem and improve business performance. Barron (2010) highlighted that

organizations cannot understand sustainability as a mechanism only for external actions. It is important to obtain the necessary internal sustainability, by the right management of its processes and analysis of its performance. Hence the inclusion of social sustainability in this study is justified.The four measurement items of social sustainability used in this study are given in Table VII below.

Table VII. The measurement items of social sustainability used in this study

Element No	Social sustainability dimensions enabled by Green Intellectual Capital	Authors
SS1	The company provides fair job opportunities, suitable work environment and good welfare for its employees and their families	(Carroll, 1979; Clarkson, 1995; Ferrell et al., 1997; Lantos, 2001).
SS2	The company implements its social and economic mission to meet legal requirements	
SS3	The company's business operations have positive impact on the society and meet the legal, ethical and public expectations	
SS4	The company thinks improving the welfare of the society is its organisational mission	

2.2.4. Goverenance sustainability

According to Tricker (1984, p. 7), "management is about running the business" whereas "governance is about seeing that it is run properly'". Corporate governance is the system by which companies are directed and controlled (Cadbury Committee, (1992). Huse (2007, pp. 18-23), identifies four groupings of corporate governance perspectives: managerial, shareholder supremacy, stakeholder and firm.

According to Boerner (2015), while "G" (governance) has been the main driver for several decades in investor–shareholder engagements, the "E" and "S" have been steadily added to the governance portfolio by a rising number of asset managers. Professor N. Craig Smith has been studying the efforts of this. In a recent white paper, he stated that "creating a sustainable future takes more than good intention boards have an obligation to help drive a strategic approach to corporate sustainability." (Smith, 2015).According to UNEP (2014), corporate governance is the overarching structure under which everything else— competitiveness, strategy, performance, capital budgeting, and operations— occurs. Investors and other stakeholders interested in sustainability policies and performance of corporations expect to see the inclusion of sustainability in corporate governance. Yet more often than not, governance structures and operations still tend to either ignore sustainability or pigeonhole it Though many investors agree on what good governance looks like, companies that manifest all the attributes of good governance are in the minority (p.4).

Thus, sustainability definition has gone beyond boundaries and into the fold of integrated governance. According to UNEP (2014), integrated governance is the system by which companies are directed and controlled, in which sustainability issues are integrated in a way that ensures value creation for the company and beneficial results for all stakeholders in the long term. There are now well over 200 academic reports establishing positive and statistically significant relationships between sustainability

performance and financial performance, and an increasing volume of sell-side financial reports covering sustainability issues ranging from climate change and energy efficiency to gender diversity, safety and health. Sustainability is no longer a fringe issue in finance leading to the practice of green finance (Keerthi, 2013). Sustainability comes under the umbrella that shelters every other issue in corporate finance and performance: governance. Corporate governance is the overarching structure under which everything else— competitiveness, strategy, performance, capital budgeting, and operations—occurs. Investors and other stakeholders interested in sustainability policies and performance of corporations expect to see the inclusion of sustainability in corporate governance (ibid, p. 4). The integrated sustainability paradigm of this study that includes operations, environment, society and governance (OESG) as constructs of strong dynamic capabilities in organizations are in line with the UNEP (2014) report perspectives. The McKinsey Company found that investors in Asian countries were willing to pay a company share price premium of approximately 20% for good corporate governance (Charles et al. 2002). Roger et al. (2005) suggested considering corporate governance variables when evaluating firm value. Keenan and Aggestam (2001) argue that responsibility for the prudent investment of IC resides with corporate governance.

Corporate governance is responsible for creating, developing, and leveraging the IC residing in the people, structures, and processes of the firm" (Keenan and Aggestam, 2001, p. 259). Of late, we witness the responsibility for prudent development and the efficient use of IC resides with the corporate governance mechanisms (CEO duality, board size, board composition and the composition of the audit and remuneration subcommittees) of firms (Keenan and Aggestam, 2001; Dittmarand Mahrt-Smith's, 2007 and Appuhami and Bhuyan, 2015). Appuhami and Bhuyan (2015) investigated the influence of corporate governance on the IC of Australian service companies included in the top 200 companies (as measured by market capitalization) trading on the Australian Stock Exchange during the 10-year period from 2004 to 2013. Through the final sample of 300 firm-year observations (30 firms x 10 years) for the period 2004 to 2013, the authors drawing on the agency theory and previous studies on corporate governance, hypothesized the relationships between corporate governance mechanisms such as CEO duality, board size, board composition and the composition of subcommittees (audit and remuneration). The study of these authors show that boards with a majority of independent directors are more likely to minimize top management's exploitation of shareholders' wealth and use IC efficiently to add value to their firms. In a study by Nkundabanyanga et al. (2014) of 377 service firms in Kampala, Uganda, it was demonstrated that IC significantly fully mediates the connection between board governance and firm financial performance.

In India, the Companies Act, 2013 which came into force from April, 2014 stipulates many provisions aimed at improving corporate governance. The Indian Corporate Governance Code is incorporated in the Securities Exchange Board of India (SEBI) (Listing Obligations and Disclosure Requirements) Regulations, 2015. The latest in October 2017 is the 21-member panel under Uday Kotak that submitted its 178-page corporate governance standard report to the Securities and Exchange Board of India (Bhattacharyya, 2017). This thrust justified the inclusion of governance sustainability in this study.The seven measurement items of governance sustainability used in this study are given in Table VIII below.

Table VIII. The measurement items of governance sustainability used in this study

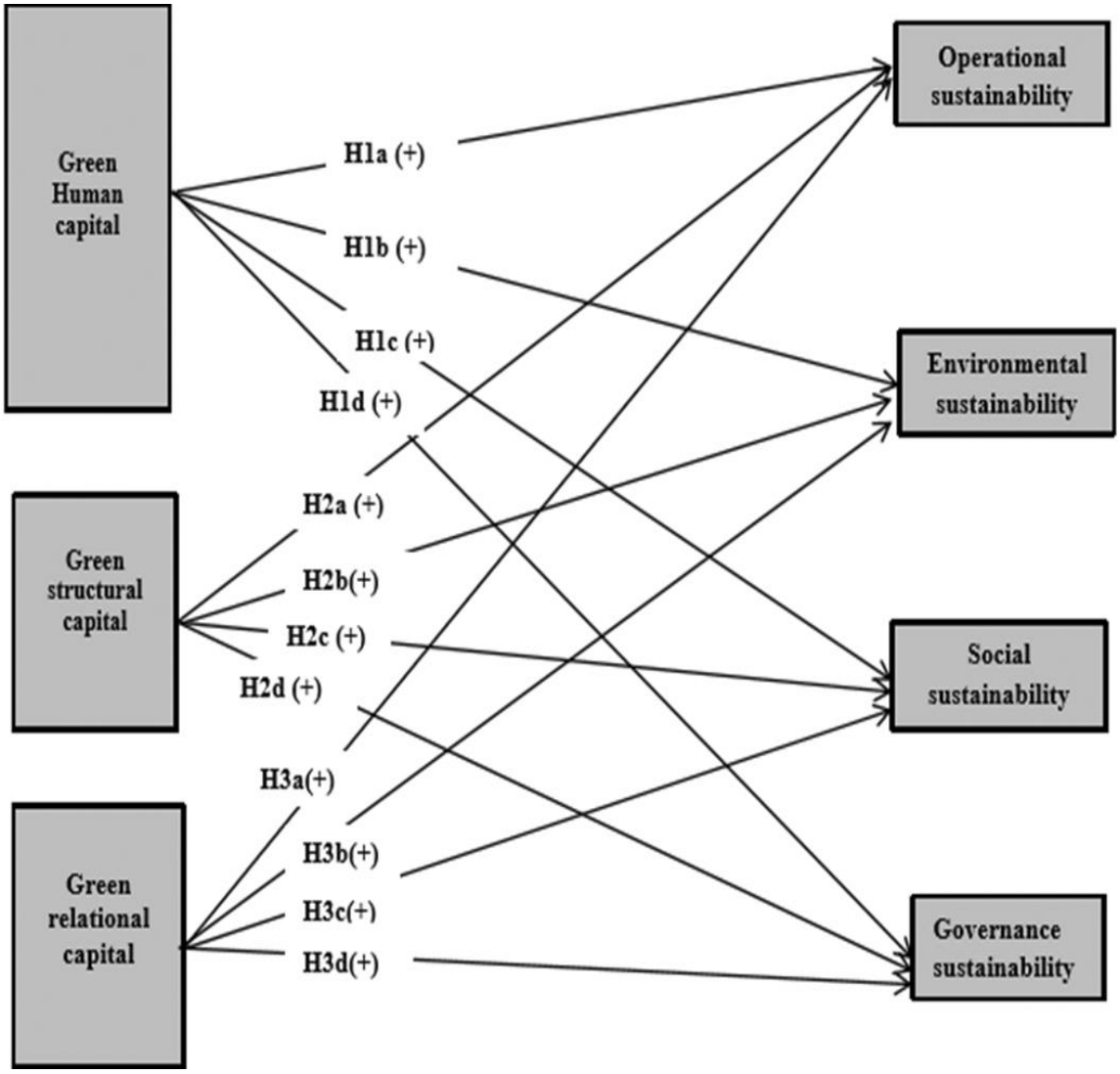
Element No	Governance sustainability dimensionsenabled by Intellectual Capital	Authors
GS1	The company's corporate governance mechanisms enable us in strategy execution	(Appuhami and Bhuyan, 2015 ; ICSI, 2013)
GS2	The company is well aware that CEO duality (one person being both CEO and chairperson of board) can hinder the efficient use and development of intellectual capital and thereby reduce the share holders value	
GS3	The company is mindful that a larger board size can be ineffective in controlling and monitoring managers' behaviour and, therefore, ineffective in using IC efficiently and making prudent investments in Intellectual Capital	
GS4	The company is cognisant of the fact that outside directors play a diverse range of roles and provide an array of resources – including IC – that aid in strategy execution	
GS5	The company is aware of the positive association between the level of independence of the audit committee and intellectual capital efficiency	
GS6	The company is aware of the positive association between the level of independence of the remuneration committee and intellectual capital efficiency	
GS7	The company participates in the Best Governance Award process instituted by the Institute of Companies Secretaries of India (ICSI)	

Summary of literature review and theoretical framework: Green IC is a sum total of three strong dynamic capabilities i.e. green human capital, green structural capital and green relational capital and their related measurement items. Bratianu and Orzea (2013) opine that organisational IC through a shift from the static, dynamic, and evolving IC paradigms transition to a strategic IC paradigm. The operational IC through integrators (processes, technology, organizational culture, management and leadership) generates the dynamic capabilities of the company (Britianu and Orzea, 2013).For the purpose of this study operational IC means green IC. Empirical ûndings suggest a signiûcant relationship between intellectual capital and company performance (Chen et al. 2010 and Liang and Yao, 2005). This is reason enough for this study to empirically examine the effect of green IC on integrated sustainability performance. Most research studies use the value added intellectual coefficient (VAIC) methodology to examine the effect of IC on financial performance in organizations. This is one of the very few studies that investigate the effect of green IC on integrated sustainability performance.

3. Research Model and Hypotheses

This study investigates the research model shown in Figure 2. It shows the research model based on the literature reviewed and the hypotheses developed. It includes 12 hypotheses in green IC (3 independent variables) and integrated sustainability (4 dependent variables). It is reasonable to believe a correlated effect between them is not widely statistically conûrmed in the Indian auto-component industry or for that matter anywhere. We attempt to provide support for their relationship in the said industry. Such support including construct items are based on earlier studies as given in Table I, II, III, IV, V, VI and VII in this study. Consequently, each hypothesis is created as follows: H*x*: Green ICx will positively inûuence integrated sustainability; Green ICx is one of 12 Green ICx and H*x* the hypothesis.

Figure 2. Research Model



3.1. *Independent variables (IV):* The IVs of the study are green human capital, green structural capital and green relational capital as explained in sections 2.1.1, 2.1.2 and 2.1.3. The background research literature in support of the independent and depend variables are given below.

Integrated reporting of the International Integrated Reporting Council (2013a) makes the organisation accountable about its performance to stakeholders in reaching its long-term vision through the use of multi-dimensional (financial, non-financial, social, and environmental) resources (Abeysekera, 2013, p.229). Integrated reporting brings governance, financial capital, intellectual capital, social capital, and environmental capital onto a common platform (ibid, 232). Maniora (2017) says that an integrated

report tends to provide information on the following: (i) the external environment affecting the company, (ii) the resources and the relationships used and affected by the company (these are termed the capitals which are categorized as financial, manufactured, intellectual, human, social and relationship and natural capital), (iii) the company's interaction with the external environment and the capitals used to create value over the short, medium, and long term (IIRC, 2013b). The value creation process of a company is largely dependent on its business model, that is a system of transforming inputs, through its business activities, into outputs and outcomes" (IIRC 2013, p. 25). The inputs (various forms of capital) are converted by the company's business activities (e.g., planning, design, and manufacture of products or the deployment of specialized skills and knowledge in the provision of services) into outputs (e.g., products, services, by-products, and waste) (IIRC, 2013). The outcomes are, in turn, effects on the capitals, or in other words, internal and external consequences (positive and negative) for the capitals" (IIRC, 2013, p. 14). The authors of this study having reviewed extensive IC research literature for the period 2000 to 2016 are of the view that the most popular IIRC (2013a) model has enormous scope for improvement with mainstream IC research literature. For example, the clarity given on the elements of IC.This goes to prove that the future of business is to be driven by human capital, structural capital, relational capital, of course, ably supported by physical and financial capital. In view of this, we hypothesized that green human capital, green structural capital and green relational capital would singularly, significantly and positively effect operational sustainability, environmental sustainability, social sustainability and governance sustainability.

In this section, we will carry out a quick scan literature review that will enable us to establish the links between green human capital, green structural capital and green relational capital and integrated sustainability that includes the four OESG endogenous variables. We will also formalize them in the form of twelve distinct research hypotheses under each of the three green IC capitals.

3.1.1. Thepositive effect of green Human Capital on integrated sustainability

The authors of this study are familiar with the Indian automotive industry having both work experience, knowledge and ringside view about it. The industry's credo is: "the largest room in the world is the room for improvement". The Indian auto-component industry is reputed for best-in-class manufacturing and management practices. They use the PQCDSM (productivity, quality, cost, delivery, safety and morale of employees) metrics in their daily work management (DWM). Most of them are certified for integrated management systems (IMS) which involves ISO 9001:2015 quality management systems, ISO 14001:2015 environmental management system and OHSAS 18001:2007 occupational health and safety management systems. Quality circles, self-directed work teams (SDWTs), lean six-sigma projects are a part of their work culture. For example, in the TVS group of companies, five companies have won the coveted Deming Award instituted by the Union of Japanese Scientists and Engineers (JUSE). Enterprise Resource Planning (ERP), Japanese TQM policy deployment and the Balanced Scorecard are other strategic practices the Indian auto-component industry leverages. The industry also spends a fortune on continual improvements in organization building and by employing Japanese management gurus like Prof. Tsuda and Prof. Yamaguchi.

Environmental practices, several authors suggest, that companies can use lean manufacturing as a catalyst for improving environmental practices (e.g. pollution prevention practices)because lean and green have overlapping practices and elements (Dues et al., 2013). They are Just-in-time (JIT), total quality management (TQM), total productive maintenance (TPM) and HRM with specific focus on total employee involvement (TEI) initiatives, learning and development for junior management, high potentials development for middle management, leadership development for succession planning for senior management and enterprise leadership. All the foregoing account goes to prove that human capital is central to make continual improvements and achievement of the metrics in operational, environmental, social and governance (OESG) a way of life. According to Marianne (2013), during the past few decades, individuals, business organizations, and governments have increasingly recognized that sustainable practices are extremely important to the wellbeing of current and future generations. The concepts and practices of socially responsible investing (SRI), corporate social responsibility (CSR) and environmental, social and governance (ESG) reporting have brought to the fore the importance of employees who need to be sustainability-conscious in their daily routine management while providing products, processes, services or solutions. So, this study asserts that human capital of the ûrm in the auto-component industry significantly and positively affects its operational, environmental, social and governance sustainability. Therefore we hypothesized that:

H1a. Organisations with high awareness of *green Human capital* have a significant and positive association with *operational sustainability* performance

H1b. Organisations with high awareness of *green Human capital* have a significant and positive association with *environmental sustainability* performance.

H1c. Organisations with high awareness of *green Human capital* have a significant and positive association with *social sustainability* performance.

H1d. Organisations with high awareness of *green Human capital* have a significant and positive association with *governance sustainability* performance

3.1.2. The positive effect of green Structural Capital on integrated sustainability

According to Fankhauser et al. (2013), empirical discussion of green competitiveness warrants three success factors. They are: (i) the speed at which sectors convert to green products and processes (measured by green innovation), (ii) the ability of firms to gain and maintain market share (measured by existing comparative advantages) and (iii) a favourable starting point (measured by current output). All these three need the convergent deployment and focus of green structural capital by firms to survive and thrive in a sustainable world. Awareness of the significance of relational capital and the endeavor to nourish it is crucial. The irony of example is the the application of a multiple capitals approach to assess the impact of a "value added growth" strategy. Curiously enough, it has economic capital, human capital, social capital and natural capital (UN ESCAP, 2015). But it does not directly refer to structural capital which consists of an organization strategies, internal networks, systems, databases and files, as well as its legal rights to technology, processes, inventions, copyrights, trademarks, trade secrets, brands and licenses.

Firms should remember that structural capital consists of innovation capital, the capability of an organization to innovate and to create new products and services, and process capital, an organization's processes, techniques, systems and tools. These directly or indirectly affect the integrated sustainability (OESG) processes of organizations. Structural capital includes non-physical infrastructure, processes and databases of the organization that enable human capital to function; generally, it includes: processes, patents, trademarks, organization's image, organization's information system, software and databases) (Morariu, 2014). How structural capital acts as a fulcrum amongst individual value added factors (IVDF) to enable human capital to achieve value add decides as to what extend a firm is sustainable. It is structural capital that is directly rooted in sustainability resources in form of infrastructure, structure, management culture, technology etc., Structural capital risks might be caused if the components of green IC are poorly understood and managed (Zhou and Fink, 2003) leading to sustainability risks . Green structural capital risks might be related to poor workplace organization or an insufficient information infrastructure (Harvey and Lusch, 1999) that would affect environment and society in which the firm operates aggravating governance issues. To foolproof these vulnerabilities, Soomro and Lai (2017) propose the integrated Enterprise Sustainability Risk Management (ESRM) framework to guide companies to execute the necessary elements to manage sustainability (environment and societal issues) and enterprise risks facing the organizations while pursuing its economic goals. Based on the above discussion, we argue that structural capital would significantly and positively affect operational, environmental, social and governance sustainability of a firm in the Indian auto-component industry. Therefore we hypothesized that:

H2a. Organisations with high awareness of *green structural capital* have a significant and positive association with *operational sustainability* performance.

H2b. Organisations with high awareness of *green structural capital* have a significant and positive association with *environmental sustainability* performance.

H2c. Organisations with high awareness of *green structural capital* have a significant and positive association with *social sustainability* performance.

H2d. Organisations with high awareness of *greenstructural capital* have a significant and positive association with *governance sustainability* performance.

3.1.3. The positive effect of green Relational Capital on integrated sustainability

Relational capital is the ability to build quality relationships with external stakeholders: customers, suppliers, investors, state and society in general. It is a sum total of (i) Business capital (ii) social responsibility and (iii) reputation capital (Martin de Castro et al. 2004, p. 583).Scholars like Pujari et al (2004) include in innovation category activities like polluting and dangerous materials replacement, resource consumption and waste generation reduction, and end-of-life product removal all of which consciously build relational capital for a firm. Kammerer (2009) defines environmental product innovations that reduce the environmental impact throughout the product life cycle (e.g. toxic materials

reductions during the production phase, more efficient energy consumption and biodegradable packaging for better disposal). Even if managers do not know what social interest is, many (should) know what social damage is, such as polluting a river, for example (van Dijken, 2007). Organizations like General Electric (GE) are good examples. GE intends to double investment in green research and development while doubling revenues from products that provide significant and measurable environmental performance advantages to customers" (BrandChannel.com, 2006). According to Markeset and Kumar (2005), the long-term profit for both user and manufacturer will depend upon product's designed in life cycle costs and RAMS (reliability, availability, maintainability and supportability). To optimize product performance, the RAMS characteristics must be considered in the early design phases based on customer requirements (Blanchard, 1998; Dhillon, 1999; Osteras, 1998). This activity in the order fulfillment process (OFP) strengthens both the backward supply chain process (BSCP) and forward supply chain process (FSCP) besides building social and political capital that will aid the firm to flourish.

Corporate image, customer loyalty, customer satisfaction, links with suppliers, commercial power, negotiating capacity with financial entities, environmental activities, etc. (Meritum, 2002, p. 11) all go to make relational capital of a firm a monolith. The knowledge embedded in customers, suppliers and governmental or related industry associations (Bontis, 1999) is more difficult to develop and to codify than the knowledge rooted in human and structural capital (Bontis, 1999). This calls for high degree of risk mitigation by a firm through a SWOT analysis, scenario planning, and talent and leadership development to strengthen business continuity management. Because, having strong relationships with customers, suppliers, banks, institutions and other stakeholders represents a valuable source for competitive advantage for a company (Dyer and Singh, 1998).

Evangelinos and Skouloudis (2014, p. 41) studied the nonfinancial disclosures in the top 100 companies in Greece and provided a list of stakeholders as identified by the companies: employees, customers, suppliers, business partners/contractors, government, local communities, non-governmental organizations, media, academic community, competitors/peer companies, providers of capitals, wider society and other. The list shows what goes into relational capital and how critical it is for a firm to do proactive and socially responsible business with an eye on strategic differentiation by nourishing its relational capital. Accordingly, this study argues that if the relational capital of an organization is healthy, building and sustaining an organization which turns out to be good corporate citizen by significantly and positively effecting OESG performance becomes a foregone conclusion. Therefore we hypothesized that:

H3a. Organizations with high awareness of *green relational capital* have a significant and positive association with *operational sustainability* performance.

H3b. Organizations with high awareness of *green relational capital* have a significant and positive association with *environmental sustainability* performance.

H3c. Organizations with high awareness of *greenrelational capital* have a significant and positive association with *social sustainability* performance.

H3d. Organizations with high awareness of *green relational capital* have a significant and positive association with *governance sustainability* performance.

3.2. *Dependent variables (DV):* The DVs in this studyof integrated sustainability framework are operational sustainability, environmental sustainability, social sustainabilityand governance sustainability.We call them 'OESG integrated sustainability'. This concept used in this study is strongly supported by the frameworks of integrated governance (UNEP, 2014) and integrated sustainability (UN ESCAP, 2015) of the United Nations, IIRC (2013) and King and Roberts (2013). The study introduces a new perspective to understand and analyse the organization thereby to enable senior executives to (i) gain a better understanding of the strategic significance of the green IC and (b) appreciate sustainable operations strategy that is central to organisations (Gavronski, 2012; Zailani et al. 2012; PwC, 2013; Eccles and Krzus, 2010). This study touches upon organisations that expand its boundaries into the wider eco-system (Edvinsson, 2013) thanks to their integrated OESG processes making large foot falls in the wider community in which they operate. For example, the omnipresent power of corporations is such that the market value of some companies exceed the GDP of many nations. For example, Fortune 500 companies represent two-thirds of the U.S. GDP with $12 trillion in revenues, $890 billion in profits, $19 trillion in market value, and employ 28.2 million people worldwide (http://fortune.com/fortune500/list/ accessed on 15th June 2017). In this scenario, firms leveraging the power of green IC to achieve integrated sustainability (OESG) performance is not only indispensable but imperative, to say the least.These theoretical discussions and proposed hypothesized relationships are operationalized in the following sections.

4. Research Methodology

4.1. Research Context

According to EY (2016), the Indian auto sector accounts for 7% of India's GDP, 45% of manufacturing GDP and employs about 19 million people both directly and indirectly. Further, the sector contributes around 4.3% to India's total exports and 13% to the country's excise revenues. It is the world's largest truck manufacturer, world's second largest two-wheeler manufactuer, world's fifth largest heavy truck manufacturer, world's sixth largest passenger vehicle manufacturer and the world 7th largest commercial vehicle manufacturer during the financial year 2015. India's low vehicle penetration (32 vehicles per 1000 people in 2015) makes it one of the world's most attractive auto markets. The Society of Indian Automobile and Manufacturers (SIAM) is the apex body representing the Indian automobile industry. SIAM organizes the biennial Auto Expo series – the motor show of trade fairs in co-operation with Confederation of Indian Industry (CII) and Automotive Component Manufacturers Assoication of India (ACMA)

ACMA is the apex body representing the interest of the Indian Auto Component Industry. ACMA has played a pivotal role in growth and development of the auto component industry in India.During 2016-17, the Indian auto-component industry registered a turnover of Rs. 2,55,635 (USD 39 billion) growing by 8.8 per cent surpassing the Automotive Mission Plan 2006-16 target. Its exports included USD

10.90 billion. Its share in India's exports was 4%. Its contribution to India's GDP was 2.3%.It directly employed 1.5 million employees and provided employment to 1.5million people indirectly (https://www.acma.in/industry-statistics.php accessed on 21st September 2017). According to EY (2016), the entry of global OEMs through exposure to global standards and technology by forming tie-ups with foreign suppliers. As a result, many global OEMs have also managed to achieve a fairly high level of localization in India. All this warrants the auto component industry in India to resort to mission-critical farming and hunting of green human capital, green structural capital and green relational capital to maximize operational, environmental, social and governance (OESG) sustainability to achieve sustainable competitive advantage (SCA). Hence, we deemed it importantto choose the companies in the Indian auto-component industry as our respondents thereby responding to the call of Anderson et al., (2001) who advocates practicing a 'pragmatic science' that requires both academic rigor and practical relevance.

4.2. Questionnaire Design

Literature search and Item generation: At this stage, questionnaires reflect the designer's view of the world (Gray, 2009). According to Hesamamiri et al. (2013), the process of research instrument development has two major steps (i) instrument identification and (ii) instrument confirmation.

*Instrument identification:*Item generation involved deductive (logical partitioning) and inductive (grouping). Deductive involves a thorough review of literature to gain a clear understanding of the constructs under scrutiny. The scale development was founded on the review of the most relevant green IC and integrated sustainability literature (*Carroll,* 1979; *Clarkson,* 1995; *Schlegelmilch et al.,* 1996; *Ferrell et al.,* 1997; *Ahmed et al.,* 1998; *Lantos,* 2001; *Naffziger et al.,* 2003; *Lev and Daum*, 2004; *Chen,* 2008; *Chang and Chen*, 2012; *Gavronski,* 2012; *ICSI,* 2013 and *Appuhami and Bhuyan,* 2015). This resulted in an extensive list of 60 green IC and integrated sustainability items. As regards inductive method, we adopted Underhill et al's (2007) hybrid Delphi methodology (focus group, Nominal Group and Delphi) from a three-dimensional perspective that focuses on qualitative investigation with professional experts (10 focus group experts and 13 Delphi panelists) who work in real contexts. This resulted in 7 constructs and 40 measurement items enriching the extant 'theory of indicators' (Giuliani et al. 2016) confirmed by a consensual validity index (CVI) of both the focus group (0.88) and Delphi group (0.93).

Face and content validity: Face validity means whether the questionnaire appears to make sense (Saunders et al. 2009). Content validity indicates that the adequacy with a specified domain of a construct is captured by the measure (Churchill, 1979). A qualified panel of 3 experts confirmed that the questionnaire is appropriate for the purpose for which it was designed (Cassity, 2007). All this fulfilled Dillman et al's (2014) requirement to obtain feedback on draft questionnaire from content, questionnaire and analysis experts. We also ensured that the questionnaire fulfilled external validity (comparability and transferability).

Instrument confirmation: This was done by following Das and Mukherjee (2016) through (i) a 'purification study' that involved a pretest. This was followed by a pilot test to ensure reliability and clarity of the

questionnaire with 70 sampled companies and 10 companies who were not a part of the sampled companies but who belonged to the automotive industry. Results show that cronbach's alpha reliability coefficients of human capital is 0.95, structural capital is 0.90, relational is capital 0.86, operational sustainability is 0.92, environmental sustainability is 0.91, social sustainability is 0.90 and governance sustainability is 0.93. As regards the 'validation study', we followed a modified procedure that was in line with *Sarstedt and Schloderer* (2010, p. 280). Having completed the model development (step 1 of the authors) we performed Step 2, that is model refinement using calibration sample (n=276)inthe final survey that included the measurement of the outer model in our PLS path modeling. Results of this validation study are found in Table IX, X and XI.

*Measures:*The questionnaire contained 40 statements to which respondents indicated the extent of their agreement on a 10-point Likert (staple) scale (Chor and Freeman, 2005). 10 or 9 excellent, 8 or 7 very good, 6 o 5 good, 4 or 3 fair and 2 or 1 poor.The larger the scale, e.g. 10-point Likert scale, this will provide the following benefits (a) offers more variance than a smaller Likert scale e.g. 7-point or 5-point Likert scales (b) offers higher degree of measurement precision (Wittink and Bayer, 2003) and (c) provides better opportunity to detect changes and more power to explain a point of view.

4.3. Sampling and Data collection

Profile of respondents and variables: Data used in the current study are drawn from companies affiliated to the Automotive Components Manufacturers Association (ACMA) of India (N=725, according to Buyers Guide, ACMA Directory, 2015). The questionnaire respondentsto this cross-sectional questionnaire survey to collect green IC and integrated sustainability performance data for the year 2015-16 were the CEO/COO/CFO or any of his representatives like Manager from finance, or HR or supply chain or manufacturing, business development, legal or R&D. In order to empirically test our hypotheses, data were collected through a self-administered survey questionnaire following Dillman et al's (2014) tailored design method (TDM). The reûned questionnaire comprised closed-ended survey questionnaire that consisted of 40 forced-choice, 10-point likert scale statements divided into seven sections in the order of (a) human capital dimensions: 8 items, (b) structural capital dimensions: 6 items, (c) relational capital dimensions : 4 items, (d) operational dimensions: 7 items (e) environmental dimensions: 5 items (f) social dimensions: 4 items and (g) governance dimensions: 7 items. To reduce non-response error (Wagner, 2008), the study adopted a mixed mode of survey involving postal mail, email in three waves, a web survey, by telephone and collecting questionnaire in person from respondents by hand. All questions have approximately a one-percent non-response, low enough that reliability is not in question (Trespalacios and Perkins, 2016). Because of the multimode survey approach, 38.06% (n=276) response rate was achieved. According to Rowley (2014), 20% can be regarded a good response rate. This proves Evangelista et al. (1999) that research response rate will improve if a survey is relevant and of interest to the target population.

5. Data Analysis and Empirical Results

Data analysis in this study consisted of ûve steps. First, exploratory factor analysis (EFA) using IBM SPSS version 17.0 was conducted to explore the underlying factors of the measuring items.

Second, underlying variables were calculated according to the EFA results. Third, descriptive statistics and results of reliability test of the underlying variables and the correlations among them were presented. Fourth, measurement model using AMOS 16.0 was used to conûrm the factor structure and model ût. Finally, structural equation model using AMOS 16.0 was used to test the hypotheses.

5.1. Results of the measurement model

5.1.1. Exploratory Factor Analysisof reliability and dimensionality

The validation process started with an initial exploratory analysis of reliability and dimensionality (Anderson and Gerbing, 1988). As suggested by Fabrigar et al. *(1999),* EFA is generally conducted

Table IX. EFA measurement model results

Second order Construct	First order construct (Items)	Cronbach Alpha	Factor Loadings of EFA	Communality	Corrected item-total correlation	KMO
Green Human Capital	GHC1	0.962	0.8575	.889	.655	0.932
	GHC2		0.9303	.871	.924	
	GHC3		0.9486	.897	.939	
	GHC4		0.9668	.934	.953	
	GHC5		0.9662	.954	.945	
	GHC6		0.9482	.929	.920	
	GHC7		0.9227	.891	.880	
	GHC8		0.8972	.824	.851	
Green Structural Capital	GSC1	0.926	0.8676	.864	.764	
	GSC2		0.9004	.837	.825	
	GSC3		0.9179	.892	.885	
	GSC4		0.8999	.930	.866	
	GSC5		0.8735	.919	.837	
	GSC6		0.8112	.838	.766	
Relational capital	GRC1	0.8724	0.8362	.815	.627	
	GRC2		0.9179	.895	.838	
	GRC3		0.8486	.858	.809	
	GRC4		0.7891	.893	.743	
Operational sustainability	OS1	0.9386	0.7716	.819	.621	
	OS2		0.9237	.886	.893	
	OS3		0.9444	.920	.932	
	OS4		0.9469	.922	.937	
	OS5		0.9144	.854	.897	
	OS6		0.8477	.750	.813	
	OS7		0.7703	.881	.731	
Environmental sustainability	ES1	0.9352	0.8463	.942	.673	
	ES2		0.9574	.949	.938	
	ES3		0.9419	.915	.922	
	ES4		0.9285	.864	.900	
Social sustainability	SS1	0.914	0.8413	.921	.638	
	SS2		0.9496	.932	.919	
	SS3		0.9311	.889	.905	
	SS4		0.8905	.818	.850	
Governance sustainability	GS1	0.9426	0.7611	.878	.618	
	GS2		0.9474	.911	.922	
	GS3		0.9609	.918	.946	
	GS4		0.9451	.911	.930	
	GS5		0.9147	.890	.894	
	GS6		0.8752	.787	.852	
	GS7		0.7908	.997	.757	

in the initial part of the study so as to provide basis for specifying confirmatory factor analysis (CFA) model in the subsequent part of the study. EFA was conducted on the sample (n=276) to access the unidimensionality of the constructs and identify hidden dimensions (Ahire and Devraj, 2001. Loadings and Cronbach alpha scores are shown in Table IX. Principal component analysis (PCA) with varimax

Table X. Measurement model results

Construct & Items	Cronbach Alpha	Mean	Standard Deviation	Standardized regression weights	Standard error	Critical Ratios (T)	Composite reliability	Avg. variance extracted	Max. shared variance	Avg.shared variance
Green Human Capital	0.962067						0.969721	0.589	0.022801	0.0124386
GHC1		7.4275	1.67500	0.658	0.032	15.234				
GHC2		5.2138	1.56599	0.647	0.042	17.678				
GHC3		4.9638	1.45182	0.652	0.086	21.987				
GHC4		4.7246	1.31159	0.629	0.053	20.671				
GHC5		4.5181	1.17072	0.657	0.036	12.987				
GHC6		4.3659	1.08885	0.724	0.022	14.678				
GHC7		4.1920	.98132	0.613	0.064	11.342				
GHC8		4.0616	.87792	0.697	0.062	23.786				
Green Structural Capital	0.926381						0.953163	0.637	0.021083	0.0105684
GSC1		6.8986	1.72380	0.676	0.053	12.342				
GSC2		6.1413	1.61075	0.715	0.065	14.567				
GSC3		4.3659	1.28776	0.643	0.033	18.347				
GSC4		4.0109	1.11676	0.834	0.016	21.953				
GSC5		3.7754	.97248	0.789	0.068	14.269				
GSC6		3.5906	.83717	0.764	0.049	14.449				
Green Relational capital	0.872370						0.916123	0.656	0.048929	0.0396843
GRC1		7.3732	1.75039	0.651	0.073	18.908				
GRC2		5.1848	1.74936	0.755	0.755	15.621				
GRC3		3.7210	1.27852	0.615	0.034	19.828				
GRC4		3.4529	1.11255	0.616	0.026	14.529				
Operational sustainability	0.938597						0.958655	0.646	0.025091	0.019972
OS1		7.8768	1.63797	0.821	0.045	19.089				
OS2		5.5290	1.60541	0.798	0.141	21.832				
OS3		4.9891	1.44092	0.731	0.051	19.726				
OS4		4.5725	1.26714	0.657	0.037	16.239				
OS5		4.1884	1.07230	0.921	0.067	18.931				
OS6		3.8986	.93256	0.861	0.046	18.361				
OS7		3.6594	.79997	0.631	0.055	12.258				
Environmental sustainability	0.935163						0.956237	0.682	0.432124	0.0479366
ES1		7.4130	1.63253	0.696	0.021	15.417				
ES2		5.0290	1.66217	0.789	0.028	20.874				
ES3		4.5761	1.47143	0.752	0.081	14.872				
ES4		4.1993	1.31016	0.691	0.078	16.519				
Social sustainability	0.913952						0.946984	0.598	0.036214	0.0194894
SS1		6.8986	1.66805	0.706	0.098	18.921				
SS2		4.8841	1.47252	0.642	0.019	14.917				
SS3		4.4565	1.27133	0.812	0.056	18.926				
SS4		4.1304	1.11078	0.689	0.068	13.423				
Governance sustainability	0.942620						0.962867	0.622	0.053084	0.0382762
GS1		7.3478	1.67615	0.686	0.017	15.435				
GS2		5.1667	1.60492	0.763	0.075	17.378				
GS3		4.7717	1.40210	0.876	0.087	18.921				
GS4		4.3986	1.23606	0.751	0.092	19.825				
GS5		4.0688	1.11142	0.661	0.021	21.931				
GS6		3.8370	.93743	0.652	0.023	24.231				
GS7		3.6304	.79614	0.697	0.049	16.753				

rotation was used to extract factors. Factor analysis conûrms the existence of seven factors, with each item loading (higher than 0.5 points) (*Hair et al.,* 2006) on its respective factor in support of unidimensionality (Anderson and Gerbing, 1988). Communality is more relevant to EFA than PCA (Hatcher, 1994). Communality is the variance in observed variables accounted for by a common factors. If the communalities and the factor loadings are the same on the analysis, we have evidence that the findings are generalizable and valid. When we examine the communalities and factor loadings, we are matching up overall patterns, not exact results The communalities must all be greater than 0.50 and the pattern of the factor loadings should be the same (Table IX)

The Cronbach's alpha indicator was used to assess the initial reliability of the scales, considering a minimum value of 0.7 (Nunnally, 1978). The item-total correlation was used to improve the levels of the Cronbach's alpha, considering a minimum value of 0.3 (Nurosis, 1994). Without exception, Cronbach alphas for each construct exceed the commonly used norm for acceptable psychometrics (.0.70). The PCA revealed the presence of seven factors which cumulatively explained 89.91 per cent of variance. All items were loaded to their respective constructs. Factor extraction was based on the existence of eigenvalues higher than 1 with green human capital having a eigenvalue of 2.2; green structural capital 2.7; green relational capital 2.6; operational sustainability 1.8; environmental sustainability 1.5; operational sustainability 2.0 and operational sustainability 1.8.The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) statistic of the measuring scales was 0.932 (Table IX), well above the acceptable limit of 0.8 (Kaiser and Rice, 1974; Kaiser, 1970). Overall, itis likely that the results from our analysis based on the principal components analysis (PCA) have sufûcient explanatory power.

The measurement model results, shown in Table X indicate that the standardized regression weights are greater than 0.58 and all are statistically signiûcant (p< 0.001), indicating convergent validity (Bagozzi, 1994). We establish convergent validity of the measures by examining whether each construct has an average variance extracted (AVE) of at least 0.50 (Fornell and Larcker, 1981). Therefore, there was no need to remove any item from group (Hair, et al. 2016). Hence, no item was deleted from the dataset for further analysis. Without exception, the composite reliability (CR) for our constructs exceeds the commonly used norm for acceptable psychometrics (0.70). Moreover, AVE exceeds the average shared variance (ASV) and maximum shared variance (MSV) in all cases providing evidence of discriminant validity. All these are provided in Table X.In Table XI, we present the correlation matrix for the seven constructs.

Table XI. Correlation matrix for the constructs

Constructs	Mean	SD	A	B	C	D	E	F	G
A.Green Human capital	4.9359	1.14938	1						
B.Green Structural capital	4.7967	1.11063	0.553	1					
C.Green Relational capital	4.933	1.2753	0.521	0.73	1				
D. Operational sustainability	4.9597	1.10009	0.481	0.612	0.552	1			
E. Environmental sustainability	5.3043	1.39585	0.53	0.643	0.614	0.647	1		
F. Social sustainability	5.0924	1.24502	0.444	0.582	0.591	0.606	0.668	1	
G. Goverenance sustainability	4.7459	1.11152	0.479	0.515	0.471	0.53	0.599	0.58	1

5.1.2. Conûrmatory analysis of dimensionality

CFA is a multivariate analysis technique for assessing the model further which is pre-specified by EFA in the last section.CFA was carried on the data using Analysis of Moment Structures (AMOS 16.0) statistical tool. It is performed to establish construct validity (Hair et al., 2006). By this, we examined the uni-dimensionality to ensure the theoretical relationships among the observed variables (drivers) with their respective factors (driver categories). Uni-dimensionality means the existence of one unobserved latent variable underlying a set of observed variables. This is important because weak associations between theoretical factors and observed variables may lead to incorrect inferences and misleading conclusions about relationships among the underlying theoretical factors of interest (Koufteros, 1999).

Model fit: According to Hensler, et al. (2016), the overall goodness-of-fit (GoF) of the model should be the starting point of model assessment. If the model does not fit the data, the data contains more information than the model conveys. The obtained estimates may be meaningless and the conclusions drawn from them become questionable. The global model fit can be assessed in two non-exclusive ways: by means of inference statistics, i.e. so-called tests of model fit, or through the use of fit indices, i.e. an assessment of approximate model fit. In order to have some frame of reference, it has become customary to determine the model fit both for the estimated model and for the saturated model. Saturation refers to the structural model which means that in the saturated model all constructs correlate freely.Fit Statistics indicate that our theoretical model ûts the data well. The hypothesized CFA model of seven correlated latent factors ûts the data well using conventional ût indices are: GFI = 0.401; AGFI = 0.919; RMR = 0.576.

5.1.3. Composite reliability

Although the Cronbach's alpha indicator is the most frequent test to assess reliability, some authors consider that it underestimates reliability (Smith, 1974). Consequently, the use of composite reliability has been suggested (Joreskog, 1971), using a cut-off value of 0.65 (Steenkamp and Geyskens, 2006). The results which are shown in Table Xfor all the seven constructs are way beyond 0.65 and are considered satisfactory.

5.1.4. Construct validity

Construct validity is "the degree to which a measure assesses the construct it is purported to assess" (Peter, 1981). Construct validity was assessed by considering two types of criteria: convergent and discriminatory validity:

5.1.4.1. Convergent validity

This shows if themeasurement items that compose a determined scale converge on only one construct. We tested by checking that the factor loadings of the conûrmatory model were statistically signiûcant and higher than 0.5 points (Sanzo et al., 2003). Results showed that all the indicators loaded signiûcantly ($p < 0.001$) and substantively (all factor loadings went beyond 0.5) on their proposed constructs (Table IX) providing evidence of convergent validity of the measures (Steenkamp and Geyskens, 2006). In addition, we used the average variance extracted (AVE) to contrast convergent

validity (Real et al., 2006). To be precise, Fornell and Larcker (1981) have suggested that the AVE should be greater than 0.5, meaning that 50 per cent or more variance of the indicators should be accounted for (Real et al., 2006). Results were satisfactory, as can be seen in Table X.

5.1.4.2. Discriminant validity.

We veriûed it to know if a determined construct is signiûcantly distinct from other constructs that are not theoretically related to it. We tested discriminant validity in a couple of ways: First, we checked that the correlations between the variables in the conûrmatory model were not higher than 0.8 points (Bagozzi, 1994). Second, we checked that the value 1 did not appear in the conûdence interval of the correlations between the different variables.In addition, the composite reliability of all the constructs was more than 0.91(Table X) which is above minimum cut-off criteria of 0.7 (Nunnally, 1978).

The criteria for the assessment of the measurement and structural models are given in Table XII.

Table XII. Criteria for assessment of measurement and structural models

Types of	Criteria	Guideline	Source
Measurement model	*Convergent validity*		
	Item loading	≥ 0.4	Hair et al. (2006)
	Composite reliability	≥ 0.5	Fornell and Larcker (1981)
	AVE	≥ 0.5	Fornell and Larcker (1981)
	Cronbach's alpha coefficient	≥ 0.7	Gefen and Straub (2005)
	t-value of outer loading	≥ 1.96	Gefen and Straub (2005)
	Discriminant validity		
	Item cross loadings to correlations	≥ to other constructs	Gefen and Straub (2005)
	Square root of AVE of each construct with others	≥ to other constructs	Gefen and Straub (2005), Fornell and Larcker (1981)
	Mulicollinearity (VIF / tolerance)	≤ 0.5	Hair, et al. 2011
Structural model	*Variance* (R^2)		
	Endogenous constructs' explained variance	0.75, 0.50, or 0.25 as substantial, moderate or weak respectively	Hair, et al.(2011).
	Effect size (f^2)	0.02, 0.15, 0.35 for weak, moderate, strong effects	Cohen (1988).
	Predictive relevance (Q^2): Cross-validated redundancy	larger than zero indicate that the exogenous constructs have predictive relevance for the endogenous construct under consideration	Hair, et al. (2011).
	Relative predicted relevance (q^2)	0.02, 0.15, 0.35 for weak, moderate, strong	Hair, et al. (2013).
	Path coefficients' significance		
	Path coefficients	≥0.1 small, ≥0.3 moderate, ≥0.5 strong	Cohen (1988)
	Significance of path coefficients (*t*-value)	≥ 1.96 (0.05), ≥ 2.58 (0.001)	Hair et al. (1995)

Note: R^2 is the central criterion for judging the quality of PLS-SEM. f^2 is the second most important criterion for the evaluation of a model (*Nitzl,* 2016). Researchers must use a greater number of measures to assess the inner model's quality (*Hair et al.* 2012).

5.2. Results of the structural model

The factor analyses (EFA and CFA) have limitations of examining only one relationship at a time. But pragmatism warrants the study of all relationships at the same time. This created a need for further analysis using SEM. Hence, our next step is to conduct a structural analysis on the hypothesized causal model, using the constructs and items from the CFA analyses. Partial least squares structural equation modeling (PLS-SEM) was used to investigate the causal relationships between the dependent and independent variables. The advantage of PLS-SEM are: first, while modeling formative latent constructs is limited in CB-SEM, PLS-SEM can unrestrictedly handle both reflective and formative latentvconstructs(Hairetal.,2012).Second,PLS-SEMrelaxesthemultivariatenormality assumption which is essential for CB-SEM (Hair et al., 2011). Third, when obtaining a sufficient sample size required for CB-SEM is troublesome in empirical research, PLS-SEM is capable of estimating models with small sample sizes (Hair et al., 2012). Fourth, its capability to handle non-normallydistributeddatasuchasfinancial data. Fifth, thecomplexityofthemodelandits superiority in producing accurate estimates with relatively small sample size. Given these advantages, PLS-SEM is receiving increasing attention in many fields including operations management (e.g. Blomea et al., 2014; Calvo-Mora et al., 2014). Structural equation modeling (SEM) is particularly appropriate because it allows estimation of multiple associations, simultaneously incorporates observed and latent constructs in these associations, and accounts for the biasing effects of random measurement error in the latent constructs (Medsker et al., 1994). We use AMOS for two reasons. First, AMOS is useful in studying models with latent variables and measurement errors. Second, AMOS is an effective tool for testing complex simultaneous equations.

In Table XIV and Figure 3, we summarize and show the result of the structural equation model (hypotheses testing) that tests the relationship between human capital, structural capital, relational capital and operational sustainability, environmental sustainability, social sustainability and governance sustainability.

Table XIII. Structural Model Path Analysis

Path	Path Description		Beta	SE	VIF	f^2	Q^2	R^2	*t*-values	*p*-values	Decision with level of significance
	From	To									
H1a	Green HC	Operations	0.24	0.06	1.72	0.72	0.43	0.42	3.74	***	Supported at 1%
H1b	Green HC	Environment	0.33	0.07	1.95	0.95	0.50	0.49	4.31	***	Supported at 1%
H1c	Green HC	Society	0.14	0.06	1.69	0.69	0.42	0.41	2.27	0.023**	Supported at 5%
H1d	Green HC	Governance	0.13	0.04	1.49	0.49	0.34	0.33	3.57	***	Supported at 1%
H2a	Green SC	Operations	0.21	0.09	1.72	0.72	0.43	0.42	3.57	***	Supported at 1%
H2b	Green SC	Environment	0.25	0.10	1.95	0.95	0.50	0.49	3.61	***	Supported at 1%
H2c	Green SC	Society	0.15	0.09	1.69	0.69	0.42	0.41	2.52	0.012**	Supported at 5%
H2d	Green SC	Governance	0.11	0.06	1.49	0.49	0.34	0.33	3.15	***	Supported at 1%
H3a	Green RC	Operations	0.08	0.06	1.72	0.72	0.43	0.42	1.31	0.191	Not Supported
H3b	Green RC	Environment	0.12	0.07	1.95	0.95	0.50	0.49	1.58	0.115	Not Supported
H3c	Green RC	Society	0.19	0.07	1.69	0.69	0.42	0.41	2.87	***	Supported at 1%
H3d	Green RC	Governance	0.05	0.04	1.49	0.49	0.34	0.33	1.27	0.203	Not Supported

Notes: Path coefûcient strength :<0.1 small, <0.3 moderate, <0.5 strong**(**Cohen, 1988). **<0.05; *** <0.01

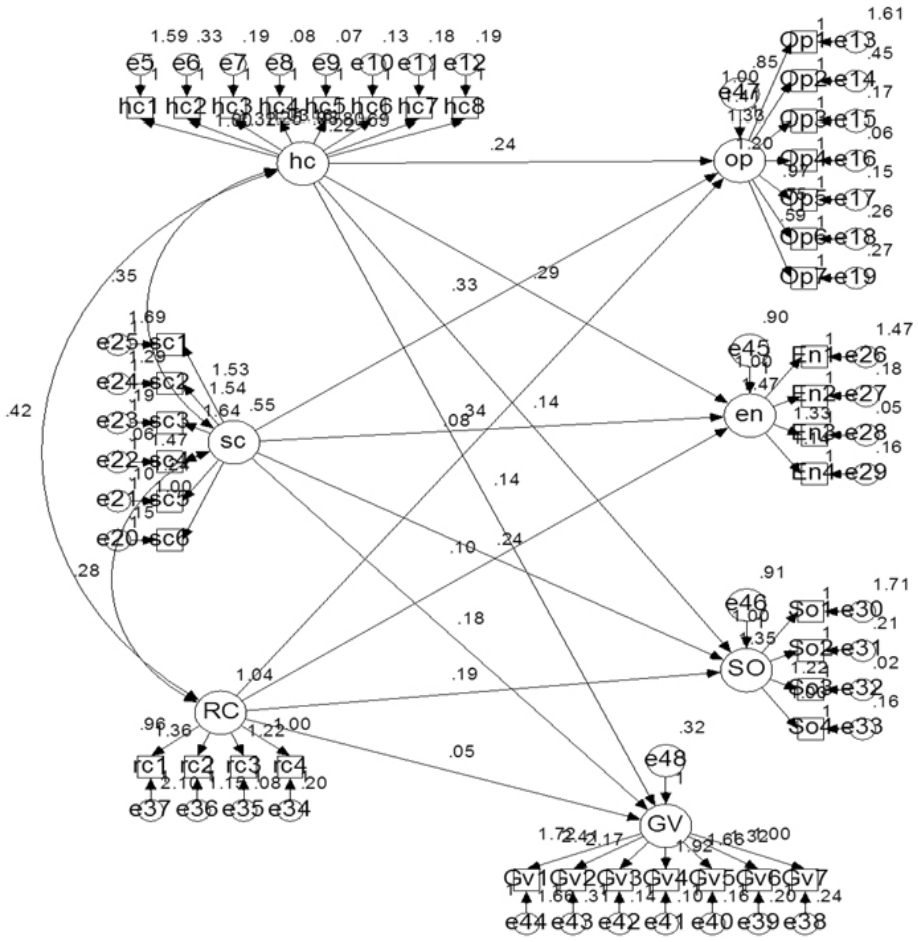


Figure 3.The structural equation model: estimated causal relationships

As far as the structural relationships are concerned, based on the results obtained from the model given in Table XIV, it is concluded that:

H1a: The results allow H1a to be accepted. Because,there is enough statistical evidence to state that green *human capital* has a direct and positive impact on*operational sustainability* performance. We found evidence for this relationship (standardized coefûcient = 0.24; p <0.01).This result is consistent with prior empirical evidence by Ferrary (2015) that a ûrm that specializes in human capital can optimize its investment through greater scale of operations to be more cost-efûcient. Yet another evidence is that Wang et al. (2014) say human, structural and relational capital together enhance both operational and ûnancial performance of ûrms. The importance to firms of their employees (human capital) that impact positively upon both their structural capital and their relational capital may in turnimpactuponbusinessperformance(Bontis,1998; Wang and Chang, 2005). It goes without saying that it is human capital that is behind structural and relational capital, not to speak of financial capital. Because, even to optimize finance we need human capital that should have in its

DNA what the HR guru Ulrich (1998) calls competence and character in the business world in which today's booms and tomorrow's busts are turning out to be like day and night cycles.

H1b: The results allow H1b to be accepted. Because, there is enough statistical evidence to state that *green human capital* has a direct and positive impact on*environmental sustainability* performance . We found evidence for this relationship (standardized coefûcient= 0.33; p <0.01).This supports Wasiluk's (2013) viewpoint that a system sees the creation of human competence, cultural diversity and/or environmental capital by a firm as equal to the creation of financial capital. Though this is considered utopian, such a school of thought is a good food for thought. Merrett (2005) is of the view that current purpose of human resource management approaches is to exploit human resources to serve economic purposes. However, Dahlgaard-Park (2012, p. 137) argues that existing theories or frameworks for managing people have "ignored" the spiritual and ethical dimension of satisfying human needs. The study argues that we need a spiritual approach to managing people, to support a sustainable economy by rolling out workplace spirituality processes.

H1c:The results allow H1c to be accepted. Because, there is enough statistical evidence to state that *green human capital* has a direct and positive impact on *social sustainability* performance . We found evidence for this relationship (standardized coefûcient = 0.14; p<0.05). Pedrini (2007) examined the point of convergence between IC and corporate social responsibility reports with a focus on human capital issues as well as the opportunity to combine the two reports into a global one. When one can think of human capital convergences in intellectual capital and sustainability reports, the significance of human capital cannot be overemphasized, to say the least.

H1d: The results allow H1d to be accepted. Because there is enough statistical evidence to state that *green human capital* has a direct and positive impact on*governance sustainability* performance. We found evidence for this relationship (standardized coefûcient = 0.13; *p*<0.01). The result of this hypothesis is no surprise. Because, Lajili(2012) argues that a governance-based approach where human capital investment and capability building are at its core elements should be followed to explicitly and systematically recognize and leverage this critical asset in the future.Because, corporate collapses of the past decade have affected all stakeholders through a loss of public confidence, loss of jobs and loss of shareholders' funds.Employees are primarily seen as constituents of legal and regulatory frameworks (Young and Thyil, 2008). It goes without saying that the culture, character and behavior of human capital makes or breaks today's organizations. A long list of collapses of corporations from Medici bank in 1494 to Dick Smith in 2016 are sad examples of human greed that bled the poor, helpless and hapless common investors. Little wonder, a governance system in a firm without a conscientious human capital would tantamount to playing the Hamlet without the Prince of Denmark.

H2a: The results allow H2a to be accepted. Because, there is enough statistical evidence to state that *green structural capital* has a direct and positive impact on*operational sustainability* performance**.** We found evidence for this relationship (standardized coefûcient = 0.21; p <0.01).Novas et al. (2012), Jardon and Martos (2009) and Ordonez de Pablos (2002) reported that structural capital alone had a

positive and significant relationship with firm performance. Structural capital encompasses all forms of knowledge deposit which is not supported by the human being such as organisational routines, strategies, process handbooks and databases and many more (Boisot, 2002; Walsch and Ungson, 1991; Weick, 1979). With high attrition of employees in organizations, employee loyalty getting precarious with the millennials and digital natives and high employee cost in knowledge industry today, strengthening structural capital for operational sustainability and business continuity gets a new thrust in today's organizations.When structural capital is zero (or negative), Value added intellectual coefficient (VAIC) may take zero (or negative) values (Stahle et al. 2011). Such is the significance of structural capital in a firm's operations.

H2b: The results allow H2b to be accepted. Because, there is enough statistical evidence to state that *green structural capital* has a direct and positive impact on*environmental sustainability* performance. We found evidence for this relationship (standardized coefûcient = 0.25; p <0.01). This supports the fact that firms that leverage their structural capital and pioneer in green innovation will enjoy the first mover advantage. This allows them to ask for a higher price for green products and, at the same time, improve their corporate image, develop new markets and gain competitive advantages (Hart, 1995; Peattie, 1992).Organizations, environmentalists, economists and legislators should use structural capital and develop creative options to answer people's needs, interests, concerns and expectations to reduce the social-environmental costs associated with mass consumption. Firms should realize that by designing and manufacturing green products, they avoid, limit and decrease the environmental impacts that are harmful to water, air and soil; solve problems related to residual waste, noise and other elements detrimental to the ecology and, they are a path to the conscious consumption of beneficial products and services (Rex and Baumann, 2007). In a nutshell, environmental policies provide a basis for orientation and staff development, simplify work and increase productivity.

H2c: The results allow H2c to be accepted. Because,there is enough statistical evidence to state that *green structural capital* has a direct and positive impact on *social sustainability* performance. We found evidence for this relationship (standardized coefûcient =0.15 ;p<0.05). Our ûndings echo the proposition that companies are often clear about their sustainability and climate goals (Winston, 2014) which in the form corporate social responsibilityprovide positive, public relations information (Holder-Webb et al., 2009). To put it briefly, the Indian auto-componentmanufacturing firms that are aware of conscious capitalism should make it a way of life."Conscious capitalism is a way of thinking about business that is more conscious of its higher purpose, its impact on the world, and the relationships it has with its various constituencies and stakeholders. It reflects a deeper consciousness about why businesses exist and how they can create more value" (Mackey and Sisodia, 2013). This is essence of social sustainability.

H2d: The results allow H2c to be accepted. Because, there is enough statistical evidence to state that *green structural capital* has a direct and positive impact on *governance sustainability* performance. We found evidence for this relationship (standardized coefûcient = 0.11; p <0.01).Corporate governance is responsible for creating, developing, and leveraging IC residing in the people, structures, and

processes of the firm" (Keenan and Aggestam, 2001). Huse's (2007) foursome perspective summarises the essence of governance sustainability. They are (i) What is best for the shareholders (ii) What is the best for the stakeholders (iii) What is best for the firm (iv)What is best for the management. Firms should procure, maintain and update their structure to address the requirements of these four integrated players whose progress is interdependent. Governance supported by all the three categories of green IC is a catalyst for reputation management. Because, the McKinsey Company found that investors in Asian countries were willing to pay a company share price premium of approximately 20% for good corporate governance (Charles et al. 2002).

H3a: Itsuggests a positive relationship between *green relational capital* and *operational sustainability*performance. However, the results of the analysis do not support H3a.Because, relationship is non-significant (standardized coefûcient =0.08; p=0.191). This finding is a writing on the wall to motivate the Indian auto-component companies to work on improving this aspect. Because, green relational capital that includes all the firm's external relationships (Bontis, 1996) brings in competitive advantage. The main internal activities in the relational capital especially in multinational firms include work teams, socialisation, information and communication technology (ICT), communities of practice (CoPs), centres of excellence, transnational teams, expatriates, and internal communications and publications (Zaragoza-Saez1 and Claver-Cortesl, 2011). The needs, interests, concerns and expectations of today's shareholders and stakeholders who build and operationalize the relational capital are myriad. Firms led by the Board would do well if they operate with their ear to the ground to make governance a top-of-the-mind recall to all stakeholders. A typical example is a lurking doubt misplace corporate governance in the mind of one of the founders of the Infosys Technologies in India that led saw the exit of the CEO and Managing Director of the company.

H3b: Itsuggests a positive relationship between *green relational capital*and *environmental sustainability* performance. However, the results of the analysis do not support H3b.Because, relationship is non-significant(standardized coefûcient =0.12; p=0.115). Because of multiple social and environmental impacts of a ûrm's operations, rich information must ûow and be exchanged through face-to-face contact (Daft and Lengel, 1986) for joint troubleshooting by firms managers to facilitate the transfer of sticky knowledge (Sharma, 2009).This is true of the Indian auto-component industry that has environmental sustainability challenges like emission norms, environmental management system adherence, compliance with the Factories Act, 1948 and local pollution control board protocols, etc.,The Indian auto-component industry manufactures 31% engine parts, 19% equipment & elec trical parts, 19% transmission & steering parts, 12% Body and chassis, 10%suspension & braking parts and 9% others. Making these products green from design to disposal calls for collaboration with the industry's relational capital.

H3c: There is enough statistical evidence to state that *greenrelational capital* has a direct and positive impact on *social sustainability* performance. We found evidence for this relationship (standardized coefûcient =0.10 ;p<0.01).As the only hypothesis that has shown significant relationship in the relational capital cluster, the social dimension of sustainability concerns ''impacts on the social systems within which it operates'' (GRI, 2002, p. 51) or its stakeholders.– employees, shareholders,

society, customers, suppliers and government (Neely et al., 2002) that have a significant impact on an organization's long-term sustainability (Elkington, 1999) Because, they provide its license to operate (Neely, 1998). Relational capital links the ûrm with both its stakeholders and the market in which it operates through green or ecological brands, ecological labels and certiûcations (Claver-Cortés et al., 2007). In this equation, the ûrm–environment link is very important. Rightfully enough, Roos and Roos (1997) see the relational capital as a part of a company's strategy for obtaining competitive advantages.

H3d: Itsuggests a positive relationship between *green relationalcapital* and*governance sustainability* performance. However, the results of the analysis do not support H3d. Because, relationship is non-significant (standardized coefûcient =0.08; p=0.203). Indian auto-component companies stand to benefit by the thought of Saûeddine, et al. (2009) that corporate governance has a signiûcant impact on attracting, retaining, and exploiting (green) intellectual capital effectively. The role of organizational governance is twofold: to demonstrate accountability for the organization's actions enacted through senior management, and to enhance organizational performance (Short et al. 1999). With the exceptions of outliers like the Satyam computer, Indian companies are wedded to corporate governance. The statement of the Chairman and Managing Directors of TVS Motor Company Ltd is a case in point: "I believe in creating value for my shareholders over the long-term; even if it means some short-term sacrifices. How you establish the link with your shareholders is very important" (Shah, 2011).'ESG' adherence is a religion in today's organizations. For example, the 21-member committee under Uday Kotak submitted its 178-page corporate governance standard report to the Securities and Exchange Board of India (SEBI) on October 5, 2017 to improve standards of corporate governance at listed firms. The SEBI panel said well-governed companies could command a premium between 10 and 40 percent over not-so-well-governed companies (Choudhary et al. 2017). The expert panel did a detailed study of two board room battles: (i) between Ratan Tata and Cyrus Mistry, who was outsted as chairman of Tata sons and (ii) between the management at Infosys and its founders and promoters (Choudhary, 2017). Governance is at the heart of India today. Hence the Indian auto-component industry could view this throughthe prism of green IC in the light of the results of this study. The non-significant relationship between relational capital and three (operational, environmental and governance) of the four endogenous factors of integrated sustainability remind us of the comment of US Defence Secretary Donald Rumsfeld: "There are known knowns. These are things that we know...there are things that we know [that] we don't know. But, there are also unknown unknowns...things we don't know that we don't know..." (Boerner, 2014). It is the unknown unknowns that bring in its train a tsunami of strategic inflection points (Grove, 1996) driving organization the way of the dinosaur. Organizations are living organisms that need to be on guard against entropy. Goebel (2015, p. 689) has come out with a list of 41 items of relational capital. Firms can do a VED (vital, essential and desirable) analysis and implement them to suit their business context and challenges. Indian auto-component companies would do well to take a dispassionate look at the 40 measurement items used in this study in the true spirit of continual improvement.

With three exceptions, all of our nine direct-effect hypothesized relationships are supported. To conclude, (i) all our values of Q^2 are greater than zero that show the predictive relevance of the model

(ii) in PLS, our R^2 results represent the amount of variance in the construct in question that is explained by the model. According to the guideline by Cohen (1988), an R^2 value between 0.02 and 0.12 is weak,0.13 and 0.25 is moderate, and 0.26 and above is substantial. Our R^2 values exceed 0.26. Collectively, the R^2 and the path coefficients (â and significance) indicate how well the data support the hypothesized model (Chin,1998) (iii) all values of f^2 greater than 0.25 show that they have strong effects (iv) According to multicollinearity test, every variance inflation factor (VIF) value (rangedfrom1.49 to 1.95) was less than 10. This showed that multicollinearity did not pose a threat as they do not exceed 10.

To conclude our statistical analysis, we aver that all through this study, we were guided by Robert Abelson's MAGIC (Magnitude, articulation, generality, interestingness and credibility) criteria whose book "*Statistics as Principled Argument*" says that the goal of statistical analysis is to make compelling claims about the world. For us, it was the world of green IC and integrated sustainability. Our claims are compelling but our efforts would be rewarding only if and when our results have utility value fortheconstituency it is intended for.

6.Implications

The results and conclusions from this study contribute to the body of knowledge in IC and integrated sustainability. Our study has the potential to extend the literature and provide implications to the ûrms in India, as well as those in other emerging economies. This study will be particularly helpful to the Indian auto-component manufacturers who are desperate to make 'Make in India' 'Incredible India' and 'Startup India' a reality, retain and leverage human capital when the global automobile industry have set up giant manufacturing plants (read structural capital) in India, address concerns raised over Goods and Services Tax (GST) which is an indirect, unified tax regime, implemented on July 1 2017 and extend their market into countries (read relational capital) with rigorous regulations like Euro VI emissions.All these are not to speak of the financial capital without which green human capital, green structural capital and green relational capital would be futile. Overall, the result implications for theory, research, education, business practice and policy-makers are discussed below.

6.1. Theory implications

We contribute to the literature of green IC and integrated sustainability. *Firstly,* this study is based on differentiation theory of innovation practice. This is vital because a research gap is based onLlewelyn's(2003, p. 672) argument that more differentiation theories of practice are needed, therefore researchers need to establish the meaning and significance about innovation through setting up contrasts and categories. If IC and non-financial disclosures contained in an integrated report are forward-looking and reduce information asymmetry then, integrated reporting may have value relevance to a firm (Garanina and Dumay, 2017) bringing about differentiation.Our conceptual and research models provide a good guidance for future researchers to build more complex and advanced models for other industries. *Secondly*, This study provides a concrete experience through empirical knowledge to gain a better conceptual and operational appreciation of what it means to strategically manage IC

knowledge for sustained competitive advantage (MaCann and Buckner, 2004, p. 61). Thirdly, This study enables stakeholders to visualize the organization's green IC and how these contribute to or subtract from organizational value creation. This is done in a unique way by bringing in the concept of integrated sustainability.It is environmental, society and governance (ESG) aspects that are by and large included in sustainability literature. However, by applying the extended concept of extended supply chain, operations of an organization, we widened the scope of sustainability framework into operations, environment, society and governance (OESG).

6.2. Research implications

Firstly, the performative research approach (Mouritsen, 2006) leveraged by this study is a preferred methodology to investigate the how and why something happens, and in order to develop such an analysis a review of existing theories is usually suggested (Yin, 1994). Research based on a critical and performative analysis of IC practices in action is what Guthrie et al. (2012, p. 69) identify as the third stage of IC research, which builds on the ¯ stage one and stage two research. In keeping with the performative third-stage IC research agenda, interventionist research makes it possible for academic researchers to act as a catalyst for strategically implementing IC frameworks and models in practice (Dumay, 2011).*Secondly*, not only does the benefit of disclosing IC need to be investigated, also ¯ research is required to investigate how IC measurement, management and reporting (ICMMR) are actually embedded in the organisation (Guthrie et al., 2009b, p. 517) and, as Tull and Dumay (2007, p. 515) argue, how this makes a difference. This study through the questionnaire survey collected green IC-driven integrated sustainability performance data (n=276) inside the organizations to get a ringside view of their performance. *Thirdly,*academy presidents and journal editors alike are calling for research that is scientifically valid and practical (Cummings, 2007). This culminates in the reporting of effect sizes that are ¯ simultaneously helpful to academics, educators, and practitioners. Research of this nature aids future research and facilitate real-world applications. This study addressed this need.*Fourthly and lastly,* future research can be made more robust by what the authors call the four pillars of social science research – theory, data (from financial markets), laboratory experiements (organization and the local community) and surveys. This is the approach of Richard Thaler, the American economist at the University of Chicago, who was given the Nobel Prize in Economic Sciences in 2017 for his work in behavioural economics (Patnaik, 2017).

6.3. Education implications

Creating intangible assets is at the core of the mission of education and research organizations. The identiûcation and measurement of IC are thus an operational priority to evaluate the alignment between strategic orientation and performance within such institutions (Secundo, et al. 2010). Firstly, universities have a three-fold mission which is commonly associated with the entrepreneurial university: (a) the development of an existing knowledge and competence system (the teaching mission); (b) the development of a technology and innovation system (the research mission); and (c) the development of a regional and economic system (the third mission) (Etzkowitz, 2004).The third mission refers to activities whereby universities address social welfare needs and private or public economic objectives

(Molas-Gallart, 2005). This research would aid in (a) and (b). Secondly, the third stageof IC research, that is working in and with organizations by Universities is promoted in Europe through a six-stage Intellectual capital maturity model (ICMM) for universities (Secundo et al. 2015). The ones in the education and research domain and aspiring to build world-class global research universities (Marginson, 2011), their business model based on IC strategy and planning in a context of growing competition and conflicting perceptions of value among various stakeholders (Tian and Martin, 2014) is based on how a business model describes the rationale for how an organization creates, delivers and captures value (Osterwalder and Pigneur, 2009). The study says IC is the key in this venture of the universities. The conceptual and research models (Christis, 2005, p. 16) of this study could be an input for the universities. Thirdly and lastly, According to Ramirez and Gordillo (2014), in recent years, the idea of reporting IC in universities has been acquiring progressive importance worldwide. This is mainly due to fact that universities' main objectives are the production and diffusion of knowledge and their most important investments are in research and human resources. Higher education institutions have to elaborate models especially designed to identify, measure, manage and provide information on their intangible elements. The intention of these models is to contribute to the progressive recognition of IC as a key strategic factor to confront the competitive challenges currently facing universities. Our study would be a blueprint to universities to improvise upon.

6.4. Business practice implications

According to Marta (2017), academic literature on the IC-innovation relationship shows a disconnection between academia and both business practice and policy-making. This needs to be avoided. Managers and practitioners must know how IC concepts may be applied in enabling the desired outcomes. Firstly, managers should take into consideration that IC seems to be a strategic enabler even in periods of financial crisis and, thus, decisions regarding IC investments should not be abandoned. Secondly, companies like the SMEs tend to follow different than the recommended by literature executive decisions for each component of their IC portfolio. This might reduce the potential returns on IC investment. Therefore randomly investing in IC will not result in the expected benefits.This study provides a list of greenIC categories and their elements (Goebel, 2015; Ferenhof, 2015) which is a consolidation of the IC literature till 2015.Business managers should understand that it is not just about what sort of knowledge or IC a firm possesses, but it is equally important to know what to do with it (Inkinen, 2015). Thirdly, The conceptual and hypothesised model of this study are a good framework for sustainable business practices. Drawn from a wide and deep study of 16 years of extant IC, sustainability and accounting research literature since 2000 and books of thought leaders like Edvinsson and Malone, Baruch Lev, David Teece and Thomas Stewart, this real-time model could be a launch pad for those managers to set in motion their IC processes and practices. Managers should know that by utilising tangible assets, a company can reach only an average level of earnings – the premium is generated by IC (Kujansivu and Lonnqvist, 2007). Fourthly,this study also could an eye-opener for investors because business performance is the product of how effectively an organization leverages its IC and achieve non-financial (integrated sustainability performance) that results in financial performance. Fifthly, a company can contemplate IC-oriented management system which could be amalgamated with existing mandatory certification like ISO 9001:2015, or integrated management

systems (IMS) or at the higher level anchored in Capability Maturity Model (CMM) approach to suit life stages of organizations. Sixthly and lastly, this study could be an input to the stakeholders in India. Industry bodies in India - Confederation of Indian Industry (CII), Federation of Indian Chambers of Commerce and Industry (FICCI) and Associated Chamber of Commerce and Industry of India (ASSOCHAM) - can and should educate and guide its member companies in IC-driven business in domains like intellectual assets and intellectual property for which IC is the foundation (Williams and Bukowitz, 2001), transfer pricing and capital gains. This is not to speak of nourishing the human capitalfull of millenials and digital natives who make the strategic differentiation of organizational sustainable competitive advantage (SCA) to steer clear of strategic inflection points (Burgelman and Grove, 1996) in the new, flat world (Friedman, 2005).And also enable companies to adopt Holistic IC business models. Accounting bodies in India, like the premier accounting body Institute of Chartered Accountants of India (ICAI) could work the with Big 4 Audit Firms. The Institute of Company Secretaries of India (ICSI) and Institute of Cost Accountants of India have to be other pillars in this odyssey. The Securities Exchange Board of India (SEBI) can oversee Companies Act, 2013 and International Financial Reporting Standards (IFRS) complianceand work closely with Ministry of Corporate Affairs and Ministry of Industry and Commerce, Government of India for policymaking and effectivegovernance with focus on both financial and non-financial performance anchored by IC. The authors are of the view that all stakeholders should look at business through the prisms of conscious capitalism and creating shared value. A classic example in India is Patanjali Ayurved, a consumer goods company that grew by an astounding 98.7 percent compound annual growth rate (CAGR) between 2014-15 and 2016-17, compared to 10 per cent for the sector as a whole (Dutta, 2017).

6.5. Policymakers implications

The only product sold in law is intellectual capital (Chatzkel, 1999). Research shows that technological capability and the governmental policy oriented to business are both key factors in mapping the position of the nation in the IC ranking and both are mainly responsible for the levels of countries' IC (Hervas-Oliver and Dalmau-Porta, 2007). Firstly, this study is of the view that policymakers need to introduce minimal uniform IC disclosure requirements to prevent a speculative initial public offering (IPO) market from developing as the signiûcance of IC increases (Singh et al. 2007). Because, we consider IC disclosures to be imperative to (and of interest to) investors in the Information Age when valuing an IPO given scholars, practitioners and policy makers alike recognize IC as the pivotal driver of a ûrm's value creation in this new economic era (Bontis, 2001). Secondly, policymakers with the ability to prescribe reporting standards could assist in protecting investors by introducing a basic set of practices to enhance consistency and comparability in the disclosure of IC information (Singh et al. 2007). Thirdly, a possible policy implication of the findings from this study may be that policymakers may have to adjust or intensify initiatives to encourage greater acceptance and understand of the IC concept and the development of related assets (Firer and Williams, 2003). Fourthly, policymakers may need to introduce (some) uniform intellectual capital disclosure requirements to reduce speculative market conditions (Singh et al. 2009). As Mention (2011) outlines both policy-makers and regulators could support the development of a generally accepted framework for this reporting that would address the issues of comparability over time, relevance and reliability of the information disclosed.

7.Research limitations

The three limitations of the study have been given in the abstract of this study paper. Besides these, we subsequently identified some more limitations. Firstly, this study is undertaken in the context of a developing country, India. Hence, the results in this paper may not probably apply to other developing countries or developed countries thereby limiting the generalizability of our ûndings. Secondly, Hair et al. (2011) show that even though researchers have made a significantly (pd"0.05) greater use of model evaluation criteria (i.e., R^2, f^2, Q^2, and GoF) in recent years, they apply few of the criteria available for inner model assessment. Hair et al. (2011) urge researchers to use a greater number of measures to assess the inner model's quality. This research uses R^2, f^2, and Q^2, but not in depth so far as GoF measures are concerned. Our future research will pay heed to Hair et al., (2011). Thirdly, the information obtained by the survey method may not be fully reliable. This problem may be resolved by obtaining information from more than one source for each unit of analysis (that is, from more than one respondent) but this was not done in this research as it would have had important negative effects on the response rate. Single respondent bias may, therefore, be considered a limitation in empirical research. Fourthly, in spite of the statistical robustness of our modeling and although the results of our covariance structure analysis strongly suggest that we were successful in minimizing any common-response bias, the findings and inferences that can be drawn must be viewed with due caution. Because, whereas the theoretical hypotheses about the structural paths proposed in our model are intended to be broadly generalizable, the empirical estimates themselves face certain typical limitations (3 of the 12 hypotheses had non-significant effects) which minimize their generalizability. However, 9 of the 12 are generalizable. Fifthly, with a view to minimizing methodological differences, the model was designed to replicate widely used constructs, while accounting for some local idiosyncrasies.Future research validitymustcorroborate the validity of our ûndings in other developing and developed economies. Sixthly and lastly, even though we attempt to minimize common method bias, we cannot exclude it since we lack multiple respondents from each respondent company.

It is our belief that the primary contribution of this study lies in the comprehensive nature of the model as opposed to assessing and parsing aspects of the model. Rather than adopt the traditional path analysis methodology indicated by the large number of constructs compared to the small sample size, we have chosen to push the limits of structural equation modeling in an effort to assess the ût of the entire model to the data. It was necessary to reduce the number of measurement scale items from 60 to 40 to ensure that the degrees of freedom exceed the number of parameters estimated.

8.Future research opportunities

This research study, in addition to obtaining important results provides a path for future research. As this is the first study that examines the impact of green IC on integrated sustainability, further research studies elucidating our findings are called for.There are many directions that future research can take based on this study. Beyond the improvement of the methodological limitations highlighted above, future research directions can be taken into consideration by IC and sustainability management scholars. This study proposes four future research opportunitieswith respect to this study. First, we

focus on the auto-component industry. Future research can focus on other industries and compare with this study. Second, we focus on Indian companies. Future research can focus on companies of other countries with this study. Third, we test the hypotheses by means of a questionnaire survey which only provides cross-sectional data so that we cannot demonstrate the dynamic change of green human capital, green structural capital,green relational capital and the operational, environmental, social and governance (OESG) and their associated processes, practices, technology, business eco-system impacted by the political economy, global impacts like recession and realignment of trade blocks like G20 and BRICS (Brazil, Russia, India, China and South Africa). Therefore, future research can focus on the longitudinal study to investigate the differences of the empirical results in the different stages. Fourth, measurement items in future research can have more variables and more chains of relationships to increase the explanatory quality of the modelto facilitate a comprehensive approach to the subject to suit the maturity levels of the organizations and industry studied. Future researchers would do well to refer the works of (a) Goebel (2015, p. 689)who after review of 22 IC research frameworks has identified 39 Human capital items,43 structural capital items and 41 relational capital items and (b) Ferenhof et al., (2015, p. 89) who studied 83 IC models developed between 1996 and 2014 and came out with a meta model of IC that included Human capital, structural capital, relational capital and social capital (p. 91). These two studies are the latest in the extant IC research literature on IC typology and IC elements future IC researchers can lay their hands on.Future research must further develop and test the propositions uncovered in this research and the causal links specified in the model by optimizing extant IC research.

9. Conclusion and Outlook

Contemporary organizations are on an incessant journey to navigate from being good to great (Collins, 2001) aspiring to build institutions built to last (Collins and Porras, 2002) knowing in their of heart of hearts that only the paranoid survive (Grove, 1996) to compete for the future (Hamel and Prahalad, 1994). In this context, we must substantially demonstrate the relevance of green intellectual capital as a working discipline that is useful to organizations to gauge and generate significant value and to effectively discover and navigate blue oceans (Kim and Mauborgne, 2005) to achieve long-term strategic goals. (Chatzkel, 2004, p. 337).IC researchers can be transformational in two ways. First, IC researchers need to work more closely with practitioners and managers in real time, implementing IC and then share these experiences. Secondly, the purpose of scholarly research is not just to report on the facts, but to develop insights into how the field might be advanced through improving understanding of IC as a concept and of the methods employed (Dumay, 2014, p. 20).Because, extending the boundaries of IC scholarship into transdisciplinary scholarship should be beneficial as it has the potential to reignite the “passionate scholarship” (Courpasson, 2013).

We sign off by donning the thinking hat of the strategist (Ohmae, 1982) by saying that top managers ought to focus their attention on developing a “strategic capability” – the ability of an organization to think and act strategically – in a changing competitive environment rather than expend the energies of the organization in pursuing current fads (Prahalad, 1986).By this we mean focusing on green IC and OESG processes, practices and standards. Intellectual Capital comprises human capital,

structural capital, relational capital (Andreeva and Garanina (2016) and physical and financial capital (Sveiby, 1997b) that are the movers and shakers in a hashtag world. To what effect we leverage them for business success and build a sustainable, stakeholder world is up to us. The choice is there for all to see!

The world is entering a green era. We hope thatour research resultson green IC and integrated sustainability areusefulforregulators, analysts, technologists, accountants and accounting firms, individual investors, institutional investors, all other stakeholders, board of directors, corporate executives, everyone (Eccles et al.,2001). We hope that this paper will contribute to further interest and advancement in the knowledge and practice of deploying green ICstrong dynamic capabilities as hard IC (Clarke, et al. 2011) and integrated sustainability in business organizations. This is to sense the business ecosystem, seize the opportunities and transform all that matters, as Teece (2014) exhorts.

References

1. Abeysekera, I. (2013), "A template for integrated reporting", Journal of Intellectual Capital, Vol. 14, No. 2, pp. 227-245.
2. Abhayawansa, S. A. (2014), A review of guidelines and frameworks on external reporting of intellectual capital, Journal of Intellectual Capital Vol. 15 No. 1, pp. 100-141
3. Ahire, S. L., and S. Devaraj. 2001. An empirical comparison of statistical construct validation approaches. IEEE Transactions on Engineering Management, 48 (3): 319- 329.
4. Ahmed, N. U., Motagno, R. V., & Firenze, R. J. (1998). Organizational performance and environmental consciousness: An empirical study. Management Decision, 36(2), 57-62.
5. Albertini, E. (2016) "An inductive typology of the interrelations between different components of intellectual capital", Management Decision, Vol. 54 Issue: 4, pp.887-901
6. Anderson, J. and Gerbing, D. (1988), "Structural modeling in practice: a review and recommended two-step approach", Psychological Bulletin, Vol. 103 No. 3, pp. 411-23.
7. Anderson, N., Herriot, P. and Hodgkinson, G.P. (2001), "The practitioner-researcher divide in Industrial, Work and Organizational (IWO) psychology: where are we now, and where do go from here? Journal of Occupational and Organizational Psychology (2001), 74, 391-411
8. Andriessen, D., and Tissen, R., (2000), Weightless Wealth:Find Your Real Value in a Future of intangible Assets, FinancialTimes/Prentice-Hall, London
9. Appuhami and Bhuyan (2015), Examining the influence of corporate governance on intellectual capital efficiency Evidence from top service firms in Australia. Managerial Auditing Journal, Vol. 30 No. 4/5, pp. 347-372
10. Asif , M., Searcy, C.,Zutshi, A. and Ahmad, N. (2011), An integrated management systems approach to corporate sustainability, European Business Review Vol. 23 No. 4, pp. 353-367

11. Bagozzi, R.P. (1994), “Structural equation model in marketing research. Basic principles”, in Bagozzi, R.P. (Ed.), Principles of Marketing Research, Blackwell Publishers, Oxford, pp. 317-85.

12. Barney, J. (1991), “Firm resources and sustained competitive advantage”, Journal ofManagement, Vol. 17 No. 1, pp. 99-120.

13. Barron n(2010), “How standards contribute to sustainable development”, BSI White Paper, available at: www.bsigroup.co.uk/en/Forms/Document-Downloads/How-standards-contribute-to-sustainable-development (accessed March 20, 2011).

14. Bhattacharya, C.B and Polman, P. (2017) Sustainability Lessons From the Front Lines, MIT Sloan Management Review,58.2, Winter, 71-78.

15. Bhattacharyya, A.K. (2017), Corporate governance – Do we required new rules? Business Standard, October 9, p. 12.

16. Blair, M. and Wallman, S. (2000), Unseen Wealth, SEI-Brookings Joint Center for Regulatory Studies, Washington, DC

17. Blanchard, B.S. (1998), Logistics Engineering and Management, 5th ed., Prentice-Hall, Upper Saddle River, NJ.

18. Blomea, C., Hollosb, D. and Paulrajc, A. (2014), “Green procurement and green supplier development: antecedents and effects on supplier performance”, International Journal of Production Research, Vol. 25 No. 1, pp. 32-49.

19. Boerner, H. (2008), ENVIRONMENTAL, SOCIAL, AND GOVERNANCE CONCERNS CONVERGING ON THE CORPORATE WORLD, Corporate Finance Review; Jul/Aug; 13, 1, pg. 30

20. Boerner, H. (2014), 2014 GOVERNANCE AND SOCIETALISSUES IN FOCUS FOR CORPORATE MANAGERS ARE FOUNDATIONS FOR 2015 INVESTOR ENGAGEMENT AND CAMPAIGNS, Corporate Finance Review, November/December

21. Boerner, H. (2015), IMPORTANCE OF INTANGIBLES REFLECTED IN ESG PERFORMANCE METRICS FOR A GROWING NUMBER OF INVESTORS, Corporate Finance Review, March/ April

22. Boisot, M. (2002), “The creation and sharing of knowledge”, in Choo, C.W. and Bontis, N. (Eds), The Strategic Management of Intellectual Capital and Organizational Learning, Oxford University Press, Oxford.

23. Bontis, N (1996) There’s a price on your head: managing intellectual capital strategically. Business Quarterly 60(4), 41–47.

24. Bontis, N. (1998), “Intellectual capital: an exploratory study that develops measures and models”,Management Decision, Vol. 36 No. 2, pp. 63-76.

25. Bontis, N. (1999), “Managing organizational knowledge by diagnosing intellectual capital: framing and advancing the state of the field, Int. J. Technology Management, Vol. 18, Nos. 5/6/7/8,

26. Bontis, N. (2001), “Assessing knowledge assets: a review of the models used to measure intellectual capital”, International Journal of Management Reviews, Vol. 3 No. 1, pp. 41-60.

27. Bontis, N. (2002), “Managing organizational knowledge by diagnosing intellectual capitl: framing and advancing the state of the field”, in Bontis, N. (Ed.), World Congress on Intellectual Capital Readings, Butterworth Heinemann, Boston, MA, pp. 621042.

28. Bratianu, C., and Orzea, I., (2013)The entropic intellectual capital model, Knowledge Management Research & Practice, 11, 133–141

29. Brooking, A. (1996), Intellectual Capital: Core Asset for the Third Millennium Enterprise International Thomson Business Press, London

30. Bueno-Campos, E. (1998), “El capital intangible como clave estrate´gica en la competencia actual”, Boletý´n de Estudios Econo´micos, Vol. 53, pp. 207-29.

31. Burgelman R.A., and Grove A.S., (1996), “Strategic Dissonance”, California Management Review Vol. 38, No.2, Winter

32. Byrne, B. M. (1994). Structural equation modeling with EQS and EQS/Windows. Thousand Oaks, CA: Sage Publications.

33. Cadbury Committee (1992), Committee on the Financial Aspects of Corporate Governance, The Report of the Committee on the Financial Aspects of Corporate Governance, London,

34. Calvo-Mora, A., Picón, A., Ruiz, C. and Cauzo, L. (2014), “The relationships between soft-hard TQM factors and key business results”, International Journal of Operations and Production Management, Vol. 34 No. 1, pp. 115-143.

35. Camilleri, M.A. (2015), Environmental, social and governance disclosures in Europe, Sustainability Accounting, Management and Policy Journal Vol.6No.2, pp.224-242

36. Carroll, A.B. (1979), A Three-Dimensional Conceptual Model of Corporate Performance, The Academy of Management Review, Vol. 4, No. 4 (Oct), pp. 497-505

37. Cassity, M.D. (2007), Psychiatric Music Therapy in 2016: A Delphi Poll of the Future, Music Therapy Perspectivves; 25, 2; pg. 86

38. Chang, C. and Chen, Y. (2012) “The determinants of green intellectual capital”, Management Decision, Vol. 50 Issue: 1, pp.74-94

39. Chang, C., and Chen, Y., (2012), The determinants of green intellectual capital, Management Decision, Vol. 50 No. 1, pp. 74-94

40. Charles Y., Joseph L., Dean K. (2002) Corporate Governance and Rating System. Sun Bright Co, Taipei.

41. Chatzkel, J. (1999), ‘‘20th anniversary McMaster Business Conference: 3rdWorld Conference on the Management of Intellectual Capital and Innovation’’, available at: www.progressivepractices.com/articles/mint_conf_review_2.pdf (accessed 8 February 2004).

42. Chatzkel, J. (2004), “Moving through the crossroads”, Journal of Intellectual Capital, Vol. 5 No. 2,pp. 337-339.

43. CHEN Y.S (2011) Green organizational identity: sources and consequence. Management Decision 49(3), 384–404.

44. Chen, M.Y., Lin, J.Y., Hsiao, T.Y. and Lin, T.W. (2010), “Invested resource, competitive intellectual capital, and corporate performance”, Journal of Intellectual Capital, Vol. 11 No. 4, pp. 433-450.

45. Chen, Y. (2010), The Drivers of Green Brand Equity: Green Brand Image, Green Satisfaction, and Green Trust, Journal of Business Ethics (2010) 93:307–319

46. Chen, Y., Chang, C., Yeh,S. and Cheng, H. (2015), Green shared vision and green creativity: the mediation roles of green mindfulness and green self-efûcacy, Qual Quant, 49:1169–1184

47. Chen, Y.S (2008) The positive effect of green intellectual capital on competitive advantages of firms, Journal of Business Ethics 77(3), 271–286.

48. Chen, Y.S and Chang, C. (2013), The Determinants of Green Product Development Performance: Green Dynamic Capabilities, Green Transformational Leadership, and Green Creativity, Journal of Business Ethics, 116:107–119

49. Chin, W.W. (1998), “The partial least squares approach for structural equation modeling”, in Marcoulides, G.A. (Ed.), Modern Methods for Business Research, Lawrence Erlbaum, Mahwah, NJ, pp. 295-336. Chin, W.W. and Newsted, P.R. (1999), “Structural equation modeling analysis with small samples using partial least squares”, in Hoyle, R. (Ed.), Statistical Strategies for Small Sample Research, Sage, Thousand Oaks, CA, pp. 307-41.

50. Chor, D. and Freeman, R.B., (2005), The 2004 Global Laour Survey: Workplace Institutions and Practices Around the World, Department of Economics, Harvard University, National Bureau of Economic Research and Centre forEconomic Performance, LSE

51. Choudhary, S. (2017), Sebi panel on governance may suggest sweeping change, Business Standard, October 3, p. 10.

52. Choudhary, S., Modak, S. and Burugula, P. (2017), Sebi panel pushes for corp governance overhaul, Business Standard, October 7, p.1

53. Christis, J. (2005), Theory and practice of soft systems methodology: a performative contradiction, Systems Research and Behavioral Science, Jan/Feb, 22, 1, p. 11.

54. Churchill,G.A. (1979), “A paradigm for developing better measures of marketing constructs”, Journal of Marketing Research, Vol. 16 No. 1, pp. 64-73.

55. Clarkson, M.B.E. (1995), A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance, The Academy of Management Review, Vol. 20, No. 1 (Jan), pp. 92-117

56. Claver-Cortés E, López-Gamero MD, Molina-Azorín JF, Zaragoza-Sáez PC. 2007. Intellectual and environmental capital. Journal of Intellectual Capital 8(1): 171–182.

57. Cohen, J. (1988), Statistical Power Analysis for the Behavioral Sciencies, Lawrence Erlbaum Associates Inc., New York, NY.

58. Cohen, J. (1988), Statistical Power Analysis for the Behavioural Sciences, 2nd ed., Lawrence-Erlbaum, Hillsdale, NJ

59. Cohen,J.(1988),StatisticalPowerAnalysisfortheBehavioralSciences,2nded.,LawrenceErlbaum Associates

60. Collins, J. (2001), "Good to Great: Why Some Companies Make the Leap and Others Don't", Random House, New York, NY.

61. Collins, J.C., & Porras, J.I. (2002), "Built to last:Successful habits of visionary companies", New York: HarperCollins Publishers

62. Corbett, C.J. and Klassen, R.D. (2006), "Extending the Horizons: Environmental Excellence as Key to Improving Operations", Manufacturing & Services Operations Management, Vol. 8, No. 1, pp. 5-22.

63. Courpasson, D. (2013), "On the erosion of 'passionate scholarship'", Organization Studies, Vol. 34No. 9, pp. 1243-1249.

64. Cummings, T. G. 2007. 2006 presidential address: Quest for an engaged academy. Academy of Management Review, 32(2): 355–360

65. Daft RL, Lengel RH. 1986. Organizational information requirements, media richness and structural design. Management Science 32: 554– 571

66. Daft, R.L. and Lengel, R.H. (1986), Organizational Information Requirements, Media Richness and Structural Design, Management Science, Volume 32, Issue 5, May, 554-571

67. Dahlgaard-Park, S. (2012), "Core values – the entrance to human satisfaction and commitment", Total Quality Management, Vol. 23 No. 2, pp. 125-40.

68. Dangayach G.S. and Deshmukh, S.G. (2001) "Manufacturing strategy: Literature review and some issues", International Journal of Operations & Production Management, Vol. 21 Issue: 7, pp. 884-932

69. Das, G. and Mukherjee, S. (2016), A measure of medical tourism destination brand equity, International Journal of Pharmaceutical and Healthcare Marketing Vol.10No.1,2016

70. Delgado-Verde, M., Amores-Salvadó, J., Martín-de Castro, G. and Navas-López, J.E. (2014), Green intellectual capital and environmental product innovation: the mediating role of green social capital, Knowledge Management Research & Practice, 12, 261–275

71. Dhillon, B.S. (1999), Design Reliability – Fundamentals and Applications, CRC Press, Boca Raton, FL.

72. Dillman, D.A., Smyth, J.D., and Christian, L.M., (2014), Internet, Phone, Mail, and Mixed-Mode Surveys. The Tailored Design Method, John Wiley & Sons, Inc.

73. Dittmar, A. and Mahrt-Smith, J. (2007), "Corporate governance and the value of cash holdings", Journal of Financial Economics, Vol. 83 No. 3, pp. 599-634.

74. Drucker, P. (2001a), "The next society", Economist, November 1, London, available at: www.economist.com

75. Drucker, P. (2001b), "The new workforce: knowledge workers are the new capitalists'', Economist, November 1, London, available at: www.economist.com

76. Duarte, S. and Cruz-Machado, V. (2013), Modelling lean and green: a review from business models, International Journal of Lean Six Sigma Vol. 4 No. 3, pp. 228-250

77. Duarte, S. and Cruz Machado,V. (2013) "Modelling lean and green: a review from business models", International Journal of Lean Six Sigma, Vol. 4 Issue: 3, pp.228-250

78. Dues, C.M., Tan, K.H., Lim, M., 2013. Green as the new lean: how to use lean practices as a catalyst to greening your supply chain. J. Clean. Prod. 40, 93-100.

79. Dumay, J. (2011), "Intellectual capital and strategy development: an interventionist approach",VINE, Vol. 41 No. 4, pp. 449-465.

80. Dumay, J. (2013), "The third stage of IC: towards a new IC future and beyond", Journal ofIntellectual Capital, Vol. 14 No. 1, pp. 5-9.

81. Dumay, J. (2016), A critical reflection on the future of intellectual capital: from reporting to disclosure, Journal of Intellectual Capital Vol. 17 No. 1, pp. 168-184

82. Dumay, J. and Cai, L. (2014), "A review and critique of content analysis as a methodology for inquiring into IC disclosure", Journal of Intellectual Capital, Vol. 15 No. 2, pp. 264-290.

83. Dumay, J., (2014), 15 years of the Journal ofIntellectual Capital and counting: A manifesto for transformational IC research, Journal of Intellectual Capital, Vol. 15 No. 1,pp. 2-37

84. Dumay, J., Rooney, J. and Marini, L. (2013), An intellectual capital-based differentiation theory of innovation practice, Journal of Intellectual Capital Vol. 14 No. 4, pp. 608-633

85. Dutta, A. (2017), Swadeshi Mogul, Business Standard, 29th September.

86. Dyer, J.H. and Singh, H. (1998) The Relational View: Cooperative Strategy and Sources of Inter-Organizational Competitive Advantage. Academy of Management Review, 23, 660-679.

87. Dzinkowski, R.: (2000) The Value of Intellectual Capital. The Journal of Business Strategy 2(4), 3–4

88. Eccles, R.G. and Krzus, M.P. (2010), One Report: Integrated Reporting for a Sustainable Strategy, John Wiley & Sons, Hoboken, NJ.

89. Eccles, R.G. and Pyburn, P.J. (1992), Creating a Comprehensive System to Measure Performance. Financial results should not generate the most rewards. Management Accounting; Montvale74.4 (Oct) 41.

90. Edvinsson, L. (2002) Corporate Longitude: What you Need to Know to Navigate the Knowledge Economy. Prentice Hall.

91. Edvinsson, L. (2006), Mind over Matter, The Economic times, December 15.

92. Edvinsson, L. and Malone, M. (1997) Intellectual Capital: Realising your Company's True Value by Finding its Hidden Brainpower. New York: Harper Collins.

93. Edvinsson, L., (2013), IC 21: reflections from 21 years of IC practice and theory, Journal of Intellectual Capital, Vol. 14 No. 1, pp. 163-172

94. Elkington J. (1999), Triple bottom-line reporting: looking for balance, Australian CPA, Vol.69 No.2, pp.18-21

95. Elkington, J. (1994) Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development. California Management Review, 36, 90-100.

96. Elkington, J. (1998) "ACCOUNTING FOR THE TRIPLE BOTTOM LINE", Measuring Business Excellence, Vol. 2 Issue: 3, pp.18-22

97. Elkington, J. et al. (1999), ''Triple bottom line revolution: reporting for the third millennium'', Australian CPA, Vol. 69 No. 11, pp. 75-7.

98. Etzkowitz, H. (2004), "The evolution of the entrepreneurial university", International Journal of Technology and Globalization, Vol. 1 No. 1, pp. 64-77.

99. European Commission (2014),Improving Corporate Governance: Europe's Largest Companies will Have to be More Transparent About How They Operate, EuropeanCommission,Brussels.

100. Evangelinos, K.I.and Skouloudis, A. (2014), European perspectives on corporate non-financial disclosure: Evidence from the Southeast, International Journal of Disclosure and Governance, Volume 11, Number 1,

101. Evangelista, F., Albaum, G. and Poon, P. (1999), "An Empirical Test of Altenrative Theories of Survey Response," Journal of the Market Research Society, 31 (3), 227-244

102. EY (2016), Making India a world class automotive manufacturing hub. Februrary 6.

103. Fabrigar, L.R., Wegener, D.T., MacCallum, R.C. and Strahan, E.J. (1999), Evaluating the Use of Exploratory Factor Analysis in Psychological Research, Psychological Methods, Vol.4. No. 3.272-299

104. Fankhauser, S.,Bowen, A.,Calel, R.,Dechezleprêtre, A.,Grover, D., Rydge, J. and Sato, M. (2013), Who will win the green race? In search of environmental competitiveness and innovation Global Environmental Change, Volume 23, Issue 5, October, pp. 902-913

105. Ferenhof, H.A., Durst, S., Bialecki, M.Z. and Selig, P.M. (2015), Intellectual capital dimensions: state of the art in 2014, Journal of Intellectual Capital Vol. 16 No. 1, pp. 58-100

106. Ferrary, M. (2015), Investing in transferable strategic human capital through alliances in the luxury hotel industry, JOURNAL OF KNOWLEDGE MANAGEMENT, VOL. 19 NO. 5, pp. 1007-1028

107. Ferrell, O.C., LeClair, D.T. and Ferrell, L. (1997), “Environmental activities related to social figures: can we predict firm profitability?”, European Management Journal, Vol. 32 No. 2,

108. Ferrer, G.(2008), Sustainability: What Does it Mean for the Operations Manager? The Flagship Research Journal of International Conference of the Production and Operations Management Society Volume 1, Number 2 , July – December.

109. Firer, S. and Williams, S.M. (2003), “Intellectual capital and traditional measures of corporate performance”, Journal of Intellectual Capital, Vol. 4 No. 3, pp. 348-60.

110. Fornell, C. and Larcker, D. (1981), “Structural equation models with unobservable variables and measurement error”, Journal of Marketing Research, Vol. 18 No. 1, pp. 39-50.

111. Friedman, L.T., (2005), The world is flat: A brief history of the 21st century, New York: Farrar, Straus and Giroux.

112. Garanina, T. and Dumay, J. (2017), Forward-looking intellectual capital disclosure in IPOs: Implications for intellectual capital and integrated reporting, Journal of Intellectual Capital; Volume 18 No. 1, pp. 128-148

113. Gavronski, I. (2012), Resources and Capabilities for Sustainable Operations StrategySpecial Issue on Sustainability, Journal of Operations and Supply Chain Management Special Issue pp 1 - 20 December

114. Gefen, D. and Straub, D. (2005), “A practical guide to factorial validity using PLS-graph: tutorial and annotated example”, Communications of the AIS, Vol. 16 No. 25, pp. 91-109.

115. Giovannoni, E & Maraghini, MP 2013, ‘The challenges of integrated performance measurement systems: Integrating mechanisms for integrated measures’ Accounting, Auditing and Accountability Journal, vol 26, no. 6, pp. 978-1008

116. Giuliani, M. (2016), Sensemaking, sensegiving and sensebreaking The case of intellectual capital measurements, Journal of Intellectual Capital, Vol. 17 No. 2, pp. 218-237

117. Goebel, V., (2015), Estimating a measure of intellectual capital value to test its determinants, Journal of Intellectual Capital, Vol. 16 No. 1, pp. 101-120

118. Grant, R. (1991), “The resource-based theory of competitive advantage: implication for strategicformulation”, California Management Review, Vol. 33, pp. 114-35.

119. Gray, D.E. (2009), Doing Research in the Real World, 2nd ed., Sage, London.

120. Green, D.D. and McCann, J. (2011) “Benchmarking a leadership model for the green economy”, Benchmarking: An International Journal, Vol. 18 Issue: 3, pp.445-465

121. GRI (2002) Sustainability Reporting Guidelines.

122. Grove, A., (1996), “Only the paranoid survive, how to exploit the crisis points that challenge every company and career”, Harper Collins Business, London

123. Guthrie, J., Ricceri, F. and Dumay, J. (2012), “Reflections and projections: a decade of intellectual capital accounting research”, British Accounting Review, Vol. 44 No. 2, pp. 68-92.

124. Guthrie, J., Steane, P. and Farneti, F. (2009), "IC reporting in the Australian Red Cross blood service", Journal of Intellectual Capital, Vol. 10 No. 4, pp. 504-519

125. Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). SAGE Publications. Retrieved from https://www.amazon.com/PartialSquares-Structural-Equation-Modeling/dp/1452217440

126. Hair, J., Ringle, C. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", Journal of Marketing Theory and Practice, Vol. 19 No. 2, pp. 137-149.

127. Hair, J.F. Jr, Anderson, R., Tatham, R. and Black, W. (1995), Multivariate Data Analysis, Prentice-Hall, Upper Saddle River, NJ.

128. Hair, J.F. Jr, Black, W., Babin, B., Anderson, R. and Tatham, R. (2006), Multivariate Data Analysis, 6th ed., Prentice-Hall, Upper Saddle River, NJ.

129. Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", Journal of Marketing Theory and Practice, Vol. 19 No. 2, pp. 139-151.

130. Hair, J.F., Sarstedt, M. and Ringle, C.M. (2012), "An assessment of the use of partial least squares structural equation modeling inmarketing research",Journal of theAcademy of Marketing Science, Vol. 40 No. 3, pp. 414-433.

131. Hamel, G. and Prahalad, C.K. (1994), Competing for the Future, Boston, M.A. Harvard Business School.

132. Hart, S.L. (1995), "A natural-resource-based view of the firm", Academy of Management Review,

133. Harvey, M. G. and Lusch, R. F. (1999) Balancing the intellectual capital books: Intangible liabilities. European Management Journal, 17, 1, 85-92

134. Harvey, D.M., Bosco, S.M. and Emanuele, G.(2010) "The impact of "green collar workers" on organizations", Management Research Review, Vol. 33 Issue: 5, pp.499-51

135. Hatcher, L. (1994). A step-by-step approach to using the SAS System for factor analysis and structural equation modeling. Cary, NC: SAS Institute Inc.

136. Helfat, C., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D. and Winter, S. (2007) Dynamic Capabilities: Understanding Strategic Change in Organizations. Malden, MA: Blackwell

137. Henseler, J., Hubona, G. and Ray, P.A. (2016), Using PLS path modeling in new technology research: updated guidelines, Industrial Management & Data Systems Vol. 116 No. 1, pp. 2-20

138. Hervas-Oliver, J.S. and Dalmau-Porta, J.I. (2007),Which IC components explain national IC stocks? Journal of Intellectual Capital Vol. 8 No. 3, pp. 444-469

139. Hesamamiri, R., Mazdeh, M.H and Jafari, M. (2013), Measuring the reliability of knowledge management Instrument development and validation, Aslib Proceedings: New Information Perspectives Vol. 65 No. 5, pp. 484-502

140. Holder-Webb, L., Cohen, J., Nath, L. and Wood, D. (2009), "The supply of corporate social responsibility disclosures among US firms", Journal of Business Ethics, Vol. 84 No. 4, pp. 497-527, doi: 10.2139/ssrn.970330.

141. Holder-Webb, L., J. Cohen, L. Nath, and D. Wood. 2009. The supply of corporate social responsibilitydisclosure among U. S. firms. Journal of Business Ethics (February): 497–527.

142. Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. Psychological Methods, 3(4), 424-453. doi:10.1037/1082-989X.3.4.424

143. Huang, C.L. and Kung, F.H. (2011) Environmental consciousness and intellectual capital management. Management Decision 49(9), 1405–1425.

144. Huse, M. (2007), Boards, Governance and Value Creation, Cambridge University Press, Cambridge

145. Huselid, M.A. (1995), The impact of human resource management practices on turnover, productivity and corporate financial performance, Academy of Management Journal, Vol. 38 No. 3, 635-672

146. IIRC (2013b), BUSINESS MODEL BACKGROUND PAPER FOR <IR>, March, ISSN: 2052-1723

147. Inkinen, H. (2015), Review of empirical research on intellectual capital and firm performance, Journal of Intellectual Capital Vol. 16 No. 3, 2015 pp. 518-565

148. International Integrated Reporting Council (2013a), "Consultation draft of the international <IR>framework", available at: www.theiirc.org/wp-content/uploads/Consultation-Draft/Consultation-Draft-of-the-InternationalIRFramework.pdf (accessed 17 April 2013).

149. Jacobsen, K., Hofman-Bang, P. and Nordby, R. Jr (2005), "The IC ratingt model", Journal of Intellectual Capital, Vol. 6 No. 4, pp. 570-587.

150. Jardon, C. and Martos, M. (2009), "Intellectual capital and performance in wood industries of Argentine", Journal of Intellectual Capital, Vol. 10 No. 4, pp. 600-16.

151. Jardon,C.M.F.andMartos,M.S.(2012),"Intellectualcapitalascompetitiveadvantageinemerging clusters in Latin America", Journal of Intellectual Capital, Vol. 13 No. 4, pp. 462-481.

152. Jhunjhunwala, S., (2009), Monitoring and measuringintangibles using value maps:some examples, Journal of Intellectual CapitalVol. 10 No. 2, pp. 211-223

153. Johansson, J. (2007), Sell-side analysts' creation of value – key roles and relational capital, Journal of Human Resource Costing & Accounting Vol. 11 No. 1, 2007 pp. 30-52

154. Johnson, W.H.A. (1999), An integrative taxonomy of intellectual capital: measuring the stock and flow of intellectual capital components in the firm, International Journal of Technology Management , Volume 18 Issue 5/6/7/8.

155. Joia, L. A. (2000). Measuring intangible corporate assets: Linking business strategy withintellectual capital. Journal of Intellectual Capital, 1, 68-84.

156. Joreskog, K.G. (1971), "Statistical analysis of sets of congeneric tests", Psychometrika, Vol. 36, pp. 109-33.

157. Kaiser, H.F. (1970), “A second generation little jiffy”, Psychometrika, Vol. 35 No. 4, pp. 401-415.

158. Kaiser, H.F. and Rice, J. (1974), “Little jiffy mark IV”, Educational and Psychological Measurement, Vol. 34 No. 1, pp. 111-117.

159. Kammerer, D. (2009), The Effects of Customer Benefit and Regulation on Environmental Product Innovation: Empirical Evidence from Appliance Manufacturers in Germany, Ecological Economics, 68:8, 2285-2295.

160. Kamukama, N., (2013), Intellectual capital: company’sinvisible source ofcompetitive advantage, Competitiveness Review: An International Business Journal, Vol. 23 No. 3, pp. 260-283

161. Keen, M.J. (1991), Corporation tax, foreign direct investment and the single market, in L.A. Winters and A.J. Venables (eds.), The Impact of 1992 on European Trade and Industry, Cambridge University Press, Cambridge.

162. Keenan, J. and Aggestam, M. (2001), “Corporate governance and intellectual capital: some conceptualisations”, Corporate Governance: An International Review, Vol. 9 No. 4, pp.259-275.

163. Keenan, J., and Aggestam, M. (2001). Corporate Governance and Intellectual Capital: Some Conceptualisations. Corporate Governance, 9(4), pp.259-275.

164. Keerthi, B.S. (2013), A Study on Emerging Green Finance in India: Its Challeges and Oppurtunities, International Journal of Management and Social Sciences Research (IJMSSR) Volume 2, No. 2, February.

165. Kim, W.C. and Mauborgne, R. (2005b), “Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant”, Harvard Business School Press, Boston, MA

166. King, M. and Roberts, L. (2013), Integrate. Doing Business in the 21st Century, Juta and Company Ltd.

167. Koufteros, X.A. (1999), “Testing a model of pull production: a paradigm for manufacturing research using structural equation modeling”, Journal of Operations Management, Vol. 17 No. 4, pp. 467-488.

168. Kujansivu, P. and Lonnqvist, A. (2007), “Investigating the value and efficiency of intellectual capital”, Journal of Intellectual Capital, Vol. 8 No. 2, pp. 272-87.

169. Lajili, K. (2012), Towards Building a Human-Capital Based Governance Framework Journal of Management Policy and Practice vol. 13(3)

170. Lantos, G.P. (2001) The Boundaries of Strategic Corporate Social Responsibility. Journal of Consumer Marketing, 18, 595-632.

171. Leonard-Barton, D. (1992), “Core capabilities and core rigidities: a paradox in managing newproduct development”, Strategic Management Journal, Vol. 13 No. S1, pp. 111-125.

172. Lev and Daum (2004), The dominance of intangible assets: consequences of enterprise management and corporate reporting, Measuring Business Excellence; 8, 1; pg. 6

173. Lev, B. (2001), Intangibles: Management, Measuring and Reporting, The Brookings Institution Press,Washington, DC.

174. Liang, C., and Yao, M., (2005), The Value-Relevance of Financial and Nonfinancial Information—Evidence from Taiwan's Information Electronics Industry, Review of Quantitative Finance and Accounting, 24: 135–157,

175. Llewelyn, S. (2003), "What counts as 'theory' in qualitative management and accounting research? Introducing five levels of theorizing", Accounting, Auditing & Accountability Journal, Vol. 16 No. 4, pp. 662-708.

176. Mackey, J. and Sisodia, R.S. (2013) Conscious Capitalism: Liberating the Heroic Spirit of Business, Harvard Business Review Press

177. Maniora, J. (2017), Is Integrated Reporting Really the Superior Mechanism for the Integration of Ethics into the Core Business Model? An Empirical AnalysisJ Bus Ethics, 140:755–786

178. Marginson, S. (2011). Global perspectives and strategies of Asia–Paciûc research universities. In N. C. Liu, Q. Wang, & Y. Cheng (Eds.), Paths to a world-class university: Lessons from practices and experiences (pp. 3–27). Rotterdam: Sense Publishers.

179. Marianne L. J. (2013), SUSTAINABILITY AND INTEGRATED REPORTING: OPPORTUNITIES AND STRATEGIES FOR SMALLAND MIDSIZE COMPANIES, Entrepreneurial Executive, Volume 18

180. Markeset, T. and Kumar, U. (2005), Product support strategy: conventional versus functional products, Journal of Quality in Maintenance Engineering Vol. 11 No. 1, pp. 53-67.

181. Marr, B. (2005), Perspectives on Intellectual Capital, Elsevier Butterworth-Heinemann, Oxford.

182. Marta, B. (2017), Structured literature review about intellectual capital and innovation, Journal of Intellectual Capital, Volume 8 No. 2, pp. 262-285.

183. Martin de Castro, G., Lopez Saez, P. and Navas Lopez, E.N. (2004), The role of corporate reputation in developing relational capital, Journal of Intellectual Capital, 5,4, pg. 575

184. McCann, J.E. III and Buckner, M. (2004),"Strategically integrating knowledge management initiatives", Journal of Knowledge Management, Vol .8 No. 1, pp. 47-63

185. Medsker, G., Williams, L. and Holahan, P. (1994), "A review of current practices for evaluating causal models in organizational behavior and human resources management research", Journal of Management, Vol. 20 No. 2, pp. 439-464

186. Mention, A.L. (2011), "Exploring voluntary reporting of intellectual capital in the banking sector", Journal of Management Control, Vol. 22 No. 3, pp. 279-309.

187. Meritum Project. (2002). Guidelines for managing and reporting on intangibles. Madrid

188. Merrett, D. (2005), "Review of Australia's first bank: fifty years from the Wales to Westpac", available at: www.hbs.edu/bhr/archives/bookreviews/79/dmerrett.pdf (accessed 17 October 2008).

189. Molas-Gallart, J. (2005), "Deûning, measuring and funding the third mission: a debate on the future of the university", Coneixement i Societat, Vol. 7, pp. 6-27.

190. Mondal, S. (2016), PM Modi gives scientific community five 'E's of enquiry and engineering, Hindustan Times, 3rd January.

191. Morariu, C.M. (2014) "Intellectual capital performance in the case of Romanian public companies", Journal of Intellectual Capital, Vol. 15 Issue: 3, pp.392-410.

192. Mouritsen, J. (2006), "Problematising intellectual capital research: ostensive versus performative IC", Accounting, Auditing & Accountability Journal, Vol. 19 No. 6, pp. 820-41.

193. Naffziger D W, Ahmed N U, Montagno R V, 2003, "Perceptions of environmental consciousness in U.S. small business: an empirical study" SAM Advanced Management Journal 68 (2) 23-32

194. Neely, A. (1998), Measuring Business Performance, Economist Books, London.

195. Neely, A. (1998), Measuring Business Performance: Why, What and How, The Economist Books, London.

196. Neely, A., Adams, C. and Kennerley, M. (2002), The Performance Prism: The Scorecard for Measuring and Managing Business Success, Pearson Education, London.

197. Nitzl,C. (2016), The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: Directions for future theory development, Journal of Accounting Literature 37 (2016) 19–35

198. Nixon, B & Burns, J 2012, 'The paradox of strategic management accounting' Management Accounting Research, vol 23, no. 4, pp. 229-244.

199. Nkundabanyanga, S. K., Ntayi, J. M., Ahiauzu, A., & Sejjaaka, S. K. (2014). Intellectual capital in Ugandan service firms as mediator of board governance and firm performance. African Journal of Economic and Management Studies, 5, 300–340

200. Novas, J.C., Sousa, A. and Alves, M.C. (2012), "On the relations between management accounting systems and intellectual capital. Evidence for Portugese companies", CEFAGE-UE working paper series, available at: www.cefage.uevora.pt/en/producao_cientifica/working_papers_serie_cefage_ue/on_the_relations_between_management_accounting_systems_and_intellectual_capital_evidence_for_portuguese_companies (accessed 15 June 2014).

201. Nunnally, J.C. (1978), Psychometric Theory, 2nd ed., McGraw-Hill, New York, NY.

202. Nurosis, M. (1994), Statistical Data Analysis, SPSS, Chicago, IL

203. Ohmae, K (1982), The Mind of the Strategist: The Art of Japanese Business, Tata McGraw-Hill Publishing Company Limited

204. Ordonez de Pablos, P. (2002), "Direct and indirect effects of intellectual capital on organizational competitive advantage: empirical evidence", paper presented at The Transparent Enterprise. The Value of Intangibles Conference, Madrid, 25-26 November.

205. Ordonez de Pablos, P., (2002), “Evidence of Intellectual Capital Measurement from Asia, Europe and the Middle East”, Journal of IntellectualCapital 3, 3: 287-302

206. OsteraÚs, T. (1998), “Design for reliability, maintainability, and safety – procedures and methods for conceptual design”, doctoral thesis, No. 1998:106NTNU, Norwegian University of Science and Technology, Trondheim.

207. Osterwalder, A. and Pigneur, Y. (2009), Business Model Generation, Self-Published, Amsterdam.

208. Patnaik, M. (2017), ‘Nudging’ people to make better choices, Business Standard, October 11, p. 8.

209. Pearlstein, S. (2014), Social Capital, Corporate Purpose and the Revival of American Capitalism,Centre for Effective Public Management at Brookings, January.

210. Peattie, K. (1992), Green Marketing, Pitman Publishing Corp, London.

211. Pedrini, M. (2007), “Human capital convergences in intellectual capital and sustainability reports”, Journal of Intellectual Capital, Vol. 8 No. 2, pp. 346-366.

212. Pedrini, M. (2007), “Human capital convergences in intellectual capital and sustainability reports”, Journal of Intellectual Capital, Vol. 8 No. 2, pp. 346-66.

213. Perrott, B (2014), The sustainable organisation: blueprint for an integrated model, JOURNAL OF BUSINESS STRATEGY, VOL. 35 NO. 3, 2014, pp. 26-37

214. Peter, J.P. (1981), “Construct validity: a review of basic issues and marketing practices”, Journal of Marketing Research, Vol. 18 No. 2, pp. 133-145.

215. Petty, R. and Guthrie, J., (2000),”Intellectual capital literature overview: measurement, reporting and management”, Journal of Intellectual Capital, Vol. 1 No. 2, pp. 155-176

216. Prahalad, C.K. and Hamel, G. (1990), “The core knowledge of the corporation”, Harvard Business. Review, Vol. 68, pp. 79-91

217. Presley, A & Meade, L 2010, “Benchmarking for sustainability: an application to the sustainable construction industry”, Benchmarking: An International Journal, vol. 17, no. 3, pp. 435-451.

218. Pujari, D., Peattie,K. and Wright, G. (2004), Organizational antecedents of nvironmental responsiveness in industrial new product development, Industrial Marketing Management, Volume 33, Issue 5, July,pp. 381-391

219. PwC (2013), Measuring and managing total impact: A new languagefor business decisions, www.pwc.com/totalimpact (accessed on 22-December-2013)

220. Ramýrez, Y. and Gordillo, S. (2014), Recognition and measurement of intellectual capital in Spanish universities, Journal of Intellectual Capital Vol. 15 No. 1, pp. 173-188

221. Real, J.C., Leal, A. and Rolda ´n, J.L. (2006), “Information technology as a determinant of organizational learning and technological distinctive competencies”, Industrial Marketing Management, Vol. 35 No. 4, pp. 505-21.

222. Rex E and Baumann H (2007) Beyond ecolabels: what Green marketing can learn from conventional marketing. J. Clean. Prod. 15: 567-576.

223. Rodgers, W. (2003) “Measurement and reporting of knowledge based assets”, Journal of Intellectual Capital, Vol. 4 Issue: 2, pp.181-190

224. Rogers, E.M. (2003). Diffusion of innovations (5th ed.). New York: Free Press.

225. Roos, G. and J. Roos: 1997, Measuring Your Company_s Intellectual Performance_, Long Range Planning, 30(3), 413–426.

226. Roos, J., Roos, G., Dragonetti, N. and Edvinsson, L. (2001), Capital Intelectual, Buenos Aires, Paidos.

227. Roos, J., Roos, G., Dragonetti, N.C. and Edvinsson, L. (1997), Intellectual Capital: Navigating the New Business Landscape, Macmillan Press, London.

228. Rowley, J., (2014), Designing and using research questionnaires Management Research Review, Vol. 37 No. 3, pp. 308-330

229. Safieddine, A., Jamali, D. and Noureddine, S. (2009), Corporate governance and intellectual capital: evidence from an academic institution, CORPORATE GOVERNANCE, VOL. 9 NO. 2 , pp. 146-157

230. Sanzo, M.J., Santos, M.L., Va ´zquez, R. and A ´ lvarez, L.I. (2003), “The effect of market orientation on buyer-seller relationship satisfaction”, Industrial Marketing Management, Vol. 32 No. 4, pp. 327-45.

231. Sarstedt, M. and Schloderer, M.P. (2010), “Developing a measurement approach for reputation of non-proût organizations”, International Journal Nonproût Voluntary Sector Marketing, Vol. 15 No. 3, pp. 276-299.

232. Saunders, M. N. K., Lefgiuwis, P., & Thornhill, A. (2009). Research methods for business students (5th Edition.) Harlow, England: Pearson Education

233. Schlegelmilch, B.B., Bohlen, Gfchen.M.,& Diamantopoulos, A. (1996). The Link between Green Purchasing Decisions and Measures of Environmental Consciousness. European Journal of Marketing, 30(5), 35-55.

234. Schumacker, R. E., & Lomax, R. G. (2004). A beginner’s guide to structural equation modeling, Second edition. Mahwah, NJ: Lawrence Erlbaum Associates.

235. Secundo, G., Elena-Perez, S., Martinaitis, S. and Leitner, K. (2015), An intellectual capital maturity model (ICMM) to improve strategic management in European universities A dynamic approach, Journal of Intellectual Capital Vol. 16 No. 2, pp. 419-442.

236. Secundo, G., Margherita, A., Elia, G. and Passiante, G. (2010), “Intangible assets in higher education and research: mission, performance or both?”, Journal of Intellectual Capital, Vol. 11 No. 2,pp. 140-57.

237. Shah, S. (2011), Corporate Governance in Family-Owned Corporate Organization in India: A Case Study of TVS Motor Company Ltd. South Asian Journal of Management, Jul-Sep, 18, 3, pg. 150

238. Sharma S. (2009). The mediating effect of information availability between organization design variables and environmental practices in the Canadian hotel industry. Business Strategy and the Environment 18: 266–276.

239. Short, H., Keasey, K.,Wright, M. and Hull, A. (1999), "Corporate governance: from accountabilityto enterprise", Accounting and Business Research, Vol. 29 No. 4, pp. 337-352.

240. Short, H., Keasey, K.,Wright, M. and Hull, A. (1999), ¯ Corporate governance: from accountability to enterprise , Accounting and Business Research, Vol. 29 No. 4, pp. 337-352.

241. Singh, I., and Van der Zahn, M, J.-L.W. (2007), Does intellectual capital disclosure reduce an IPO's cost of capaital,: The case of underpricing, Journal of Intellectual capital, Vol. 8 No. 3, pp. 494-516

242. Singh, I., and Van der Zahn, M, J.-L.W. (2009), Intellectual capital prospectus disclosure and post-issue stock performance Journal of Intellectual Capital Vol. 10 No. 3, 2009 pp. 425-450

243. Sisodia, R.S., (2009), Doing business in the age of conscious capitalism, Journal of Indian Business Research, Vol. 1 Nos 2/3, pp. 188-192

244. Smith, K.W. (1974), "On estimating the reliability of composite indexes through factor analysis", Sociological Methods & Research, Vol. 2, pp. 485-510.

245. Smith, N.C. (2015), "Sustainability: From the back room to the board room," INSEAD (Feb 19). Available at: http://knowledge.insead.edu/corporategovernance/sustainability-from-the-back-room-tothe-board-room-3852.

246. Soh, D.S.B.and Martinov-Bennie, N (2015), Internal auditors' perceptions of their role in environmental, social and governance assurance and consulting, ManagerialAuditingJournal Vol.30No.1, pp.80-111

247. Soomro,M.A. and Lai, F.(2017), Examining A New Paradigm of Enterprise Sustainability Risk Management Global Business and Management Research: An International Journal Vol. 9, No. 1 (Special Issue)

248. Steenkamp, J.B.E.M. and Geyskens, I. (2006), "How country characteristics affect the perceived value of a website", Journal of Marketing, Vol. 70 No. 3, pp. 136-50.

249. Stewart, T. A.: 1994, _Your Company's Most ValuableAsset: Intellectual Capital_, Fortune 130(7), 68–74.

250. Stewart, T.A. (1997), Intellectual Capital: The New Wealth of Organisations, Doubleday Dell, NewYork, NY.

251. Sveiby, K.E. (1997a), The New Organizational Wealth: Managing and Measuring Knowledge-based Assets, Berrett-Kohler Publishers, San Francisco, CA

252. Sveiby, K.E. (1997b), "Intangible assets monitor", Journal of Human Resources Costing andAccounting, Vol. 2 No. 1, pp. 71-73.

253. Sveiby, K.E. (1997b), "The intangible assets monitor", Journal of Human Resource Costing and Accounting, Vol. 2 No. 1, pp. 73-97.

254. Teece, D. J. (2000). Strategies for knowledge assets: the role of the firm structure and industrial context. Long Range Planning, 33(1), 35–54.

255. Teece, D.J. (2014), A dynamic capabilities-based entrepreneurial theory of the multinational enterprise, Journal of International Business Studies, 45, 8–37

256. Teece, D.J. (2000), Strategies for Managing Knowledge Assets: the Role of Firm Structureand Industrial Context, Long Range Planning, Volume 33, Issue 1,] 2000, Pages 35–54

257. Teece, D.J. (2007), EXPLICATING DYNAMIC CAPABILITIES: THE NATURE AND MICROFOUNDATIONS OF (SUSTAINABLE) ENTERPRISE PERFORMANCE Strategic Management Journal, 28, 1319–1350.

258. Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management",Strategic Management Journal, Vol. 18 No. 7, pp. 509-533.

259. The Institute of Company Secretaries of India (ICSI) (2015), ICSI NATIONAL AWARDS FOR EXCELLENCE IN CORPORATE GOVERNANCE, Awards questionnaire brochure.

260. Tian, X. and Martin, B. (2014), Business models for higher education: an Australian perspective, Journal of Management Development Vol. 33 No. 10, 2014 pp. 932-948

261. Trespalacios, J.H. and Perkins, R.A. (2016), Effects of Personalization and Invitation Email Length on Web-Based Survey Response Rates, TechTrends (2016) 60:330–335

262. Tricker, R.I. (1984), Corporate Governance: Practices, Procedures and Powers in British Companies and Their Board of Directors, Gower Publishing.

263. Tull, J. and Dumay, J. (2007), "Does IC management 'make a difference'? A critical case study application of structuration theory", Electronic Journal of Knowledge Management, Vol. 5 No. 4, pp. 515-526.

264. Ulrich,D., (1998), Intellectual capital = competence x commitment", Sloan Management Review, Vol. 39, pp. 15-30

265. United National Environment Programme (UNEP) (2014), Integrated Governance. A NEW MODEL OF GOVERNANCE FOR SUSTAINABILITY, A report by the Asset Management Working Group of the United Nations Environment Programme Finance Initiative, June

266. United Nations Economic and Social Commission for Asia and Pacific (UNESCAP) (2015), Integrating the three dimensions of sustainable development: A framework and tools, Green of Economic Growth Series

267. United Nations Environment Programme (UNEP), KPMG, Global Reporting Initiative (GRI)and Unit for Corporate Governance in Africa (UCGA) (2010), Carrots and Sticks – Promoting Transparency and Sustainability, available at: www.kpmg.com/za/en/issuesandinsights/articlespublications/advisory-publications/pages/carrots-and-sticks-2010.aspx (accessed 15December2013).

268. US SIF (2014), Report on sustainable, responsible, and impact investing trends," (Nov). Available at: http://www.ussif.org/trends.

269. *van Dijken*, F. (*2007*) "Corporate social responsibility: market regulation and the evidence", Managerial Law , Vol. 49 Issue: 4, pp.141-184

270. Vishnu, S. and Gupta,V.K. (2014), Intellectual capital and performance of pharmaceutical firms in India, Journal of Intellectual Capital Vol. 15 No. 1, pp. 83-99.

271. Wagner, J. (2008), Adaptive survey design to reduce nonresponse bias. Unpublished doctoral thesis, University of Michigan, Ann Arobor.

272. Walsch, J.P., and Ungson, G.R., (1991), "Organizational memory", Academy of Management Review,Vol. 16, pp. 57-91.

273. Wang, W. and Chang, C. (2005), "Intellectual capital and performance in causal models: evidence from the information technology industry in Taiwan", Journal of Intellectual Capital, Vol. 6 No. 2, pp. 222-36.

274. Wang, Z., Wang, N. and Liang, H. (2014), Knowledge sharing, intellectual capital and ûrm performance, Management Decision Vol. 52 No. 2, pp. 230-258

275. Wang,W.Y. and Chang,C.(2005), "Intellectual capital and performance in causal models – evidence from the information technology industry in Taiwan", Journal of Intellectual Capital, Vol. 6 No. 2, pp. 222-236.

276. Wasiluk, K.L., (2013), Beyond eco-efficiency: understanding CS through the IC practice lens, Journal of Intellectual Capital, Vol. 14 No. 1, pp. 102-126

277. Weick, K.E., (1979), The Social Psychology of Organizing, Addison-Wesley, Reading, MA.

278. Williams, R.L., and Bukowitz, W.R., (2001), The yin and yang of intellectual capital management. The impact of ownership on realising value from intellectual capital, Journal of Intellectual Capital, Vol. 2 No. 2, pp. 96-108

279. Winston, A.S. (2014), The Big Pivot. Radically Practical Strategies for Hotter, Scarcer, More Open World, Harvard Business Review Press.

280. Wittink, D, R. and. Bayer, L.R.(2003), "The Measurement Imperative," *Marketing Research*, 14 (Fall), 19-23

281. Yin, R.K. (1994), Case Study Research: Design and Methods, Sage, London.

282. Young, S. and Thyil, V. (2008), Building Commitment through Integrating Employees in Governance, The Business Review, Cambridge, Vol. 11 Num. 2, December

283. Zailani, S. et al. 2012. Sustainable supply chain management (SSCM) in Malaysia: a survey. International Journal of Production Economics. 140: 330-340.

284. Zaragoza-Saez1, P. and Claver-Cortesl, E. (2011), Relational capital inside multinationals, Knowledge Management Research & Practice (2011) 9, 293–304

285. Zhou, A.Z., and Fink, D., (2003),Knowledge management and intellectualcapital: an empirical examination of currentpractice in Australia, *Knowledge Management Research & Practice*, 1, 86–94