

Analyzing the Relations between Intellectual capital and Performance in Local Governments¹

Sandra Cohen² and Orestes Vlismas

Athens University of Economics and Business
Department of Accounting and Finance
76 Patission Street
GR-10434 Athens. Greece

Please do not quote without authors' permission

This Draft: May, 2011

Abstract

This paper examines the relation between intellectual capital (IC) and organizational performance in local governments (LGs) in Greece. Existing research literature argues that public organizations seem to be more intellectual capital idiosyncratic than private sector organizations. Therefore, it is expected that effective intellectual capital management would have a positive effect on their performance. However, empirical evidence in this field is lacking. We address this issue within the context of two intellectual capital epistemological views proposed by Mouritsen (2006); the IC1-ostensive view and the IC2-performative view. We employ a dual approach in our research by combining published and survey data. We have gathered financial information through accrual accounting financial statements in order to measure inferred intellectual capital (according to IC1-ostensive view). Additionally, we have collected data suitable for analyzing the perceived intellectual capital through a structured questionnaire addressed to a sample of Greek LGs (according to IC2-performative view). Our sample refers to 92 LGs. Our empirical evidence advocates the existence of significant positive relations among the sub categories of intellectual capital. Further, data analysis reveals that the sub categories of intellectual capital are related with improved performance measured both with financial ratios and perceptions of performance. Therefore, our empirical findings hold irrespectively of the intellectual capital epistemological view and offer corroborating evidence that LGs with high IC perform better than low IC LGs.

Key words: *Intellectual Capital, IC-ostensive view, IC-performative view, Financial Performance, Local Governments, Greece*

1. Cohen is an Assistant Professor of Accounting at the Department of Business Administration in Athens University of Economics and Business and Vlismas is a Lecturer Adjunct of Accounting at the Department of Accounting & Finance in Athens University of Economics and Business.

Email addresses: scohen@aubg.gr (Sandra Cohen), vlismas@aubg.gr (Orestes Vlismas).

2. Correspondence author.

1. Introduction

The sunrise of knowledge economy has increased the economic significance of intangible assets for the operational performance of organizations (McGrattan and Prescott, 2007). Initially, research efforts for establishing empirical relationships of intangibles with operational performance and subsequently with market performance focused on specific types of intangibles associated, primarily, with advertising and research and development (R&D) expenses (e.g. Hirschey and Weygandt, 1985; Chauvin and Hirschey, 1993; Sougiannis, 1994; Lev and Sougiannis, 1996; Eberhart *et al.* 2004). Progressively, the relationship of intangibles with operational performance started to be examined under the prism of human capital (Hanson, 2004; Pantzalis and Park, 2009) or organizational capital (Lev *et al.* 2009).

A growing number of recent research efforts examines the economic significance of intangibles within the context of a broader and more abstract concept, that of intellectual capital (Steward, 1991). Intellectual Capital (IC) is a broad concept including the knowledge and the learning capabilities of an organization. It is manifested as the synergy of knowledge resources associated with the human assets (i.e. human capital), the organizational structures (i.e. structural or organizational capital) and the external social partners (i.e. customer, or relational or social capital) of an organization.

Existing empirical research has, primarily, focused on investigating the relations between IC and operational and financial performance of profit seeking organizations. The relationship of IC and intangibles with operational and subsequent market performance has been confirmed across different industrial settings, national economies, firm characteristics and other environmental or organizational contingencies (e.g. Lin and Edvinsson, 2008). At the same time, an emerging literature argues that public organizations are intellectual capital idiosyncratic and, thus, effective intellectual capital management is expected to improve the efficiency of the public sector organizations as well (Kong and Thomson, 2006; Kong, 2007; Kong and Prior, 2008; Kong, 2010). This strand of literature can be viewed through the lances of New Public Management, in the sense that intellectual capital is a source of economic efficiency for public sector organizations. However, empirical evidence for the relation of intellectual capital with the operational efficiency of public sector organizations is lacking.

The scope of this study is to analyze the relation between intellectual capital and performance within the context of the public sector organizations and Local Governments in particular. In order to attain a more holistic approach to this investigation the aforementioned relationship is examined under the two principal intellectual capital epistemological views recognised by Mouritsen (2006). These are the IC1-ostensive view and the IC2-performative view. Our analysis is based on a sample of 92 Greek local governments.

We believe that our study is timely by taking into account the financial problems faced in the public sector in Europe and in Greece in particular. Unrevealing the relations between IC and financial performance is expected to have useful implications for public sector management.

We believe that our study contributes to literature in several aspects. Firstly, we attempt to apply in practice the two epistemological views of IC as recognised by Mouritsen (2006). Therefore we adopt a dual approach in our research by combining financial statements and survey data in order to operationalize and measure IC under the two different IC approaches. Secondly, we propose an approach in order to assess the level of IC sub-domains (i.e. human capital, organizational capital and social capital) in local governments by using accrual based financial data. Our approach is innovative in the sense that tries to adapt to the idiosyncratic characteristics of local governments that deviate from those of private sector companies. Finally, we develop a categorization scheme to distinguish local governments according to their IC intensity.

The remaining of the paper is organized as follows. Section 2 presents the background and Section 3 the theoretical framework, the research objectives and the hypotheses of the study. Section 4

analyses the methodology of this research initiative. In Section 5 we present the empirical results. The last section of the paper includes our conclusions.

2. Background

This section provides the theoretical background for the study. Initially, the term intellectual capital is defined by reviewing a variety of theoretical propositions (Mouritsen, 2006; Swart, 2006; Martín-de-Castro *et al.*, 2011). Then, the idiosyncratic role of intellectual capital in public sector is analyzed.

2.1. Definition of Intellectual Capital

The term intellectual capital is usually employed by the research community as a synonym for intangible assets (Steward, 1991) which can be transformed to economic value. Yet, there is not a common accepted unified definition for intellectual capital.

In the endeavour to clarify intellectual capital, related literature demonstrates a proliferation of theoretical propositions and possible reporting frameworks for visualising intellectual capital to both internal and external agents. A diversity of theoretical propositions for the nature of intellectual capital is observed within the relevant literature (Swart, 2006; Martín-De-Castro *et al.*, 2011). Yet, by reviewing Table 1, which presents various definitions of intellectual capital, we can draw some conclusions. Firstly, intellectual capital refers to three dimensions; the organizational knowledge of the human assets, the organizational structures and the external social partners of an organization. Secondly, intellectual capital is transformed to economic value through organizational action. Thirdly, intellectual capital is related to the existence of competitive advantage because intellectual capital enhances the environmental responsiveness of the firm. The ability to manage knowledge for improving environmental responsiveness is associated with organizational learning (Argyris and Schön, 1996). For the purposes of this study, we define intellectual capital as the stock of organizational knowledge and the collective ability to transform this knowledge to action by leveraging organizational learning phenomena.

- Insert Table 1 -

As already mentioned, intellectual capital is usually analysed to, at least, three dimensions: human capital, structural capital and relational (or social capital) (Martín-de-Castro *et al.*, 2011). Human capital refers to the knowledge, capabilities and behaviours of the human factor (Cabrita and Bontis, 2008; Hsu and Fang, 2009). Structural capital includes the knowledge incorporated into technological infrastructures (e.g. Edvinsson and Malone, 1997; Sveiby, 1997) and organizational forms (Chang *et al.* 2008); and the ability to improve it. Relational capital which remains rather under explored relatively to the other two aforementioned dimensions of intellectual capital (Swart, 2006; Martín-de-Castro *et al.*, 2011), concerns the knowledge and the ability of an organization to manage its relations with external social partners to create economic value. Customers, suppliers, allies, other social agents as well as corporate reputation can be considered as variables associated with external environment. In the case of local governments and public organizations relational capital is referred as social capital. The three dimensions of intellectual capital are highly interrelated. Human capital is an input to structural and social capital. Structural capital is an input to social capital. Finally, the interaction of intellectual capital with the environment goes through social capital.

The implied causal relationship between intellectual capital and organizational performance (Lev *et al.* 2009) and the absence of sufficient information within the context of traditional financial accounting paradigm (Canibano *et al.* 2000) stimulated the development of a number of intellectual capital reporting frameworks (see e.g. Kaplan and Norton, 1992; Brooking, 1996; Edvinsson and Malone, 1997, Roos *et al.*, 1997, Sveiby, 1997; Bontis *et al.*, 1999; Andriessen, 2005). Intellectual capital reporting frameworks are classified as: (a) return-on-assets, (b) market capitalization, (c) balanced scorecard, and (d) direct measurement methods. The information provided by intellectual capital reporting frameworks is market oriented, i.e. it is addressed to stakeholders external to the organization. Yet, intellectual capital reporting frameworks have been developed within the context of

management control systems. Existing research initiatives for developing and analysing intellectual capital reporting frameworks are primarily oriented towards private sector (see e.g. Kaplan and Norton, 1992; Brooking, 1996; Edvinsson and Malone, 1997, Roos *et al.*, 1997, Sveiby, 1997; Bontis *et al.*, 1999; Andriessen, 2005). They emphasize on the provision of qualitative information that is not accounted for in traditional financial statements in order to access the effects of intellectual capital on economic performance.

2.2. Intellectual capital in Non-Profit Sector

Intellectual capital has been mainly studied within the context of the private sector (Kong, 2010). However, the rise of the new management paradigm for public sector organizations and the idiosyncratic nature of the public sector triggered research initiatives to investigate intellectual capital within its context. More specifically, the changes in the public sector since 1980s, such as the extensive use of commercialization, the increased levels of competition and the demand for improved efficiency in service delivery, posed requirements for a new management philosophy for public organizations usually described with the umbrella term of New Public Management (Hood, 1995). New Public Management (NPM) dismantles the distinction between private and public sector by proposing ideas borrowed from the conceptual framework of private administrative practise (Power, 1997). NPM provides a theoretical rationalization for intellectual capital, as a private sector oriented metaphor, to be viewed as a new conceptual framework for public strategic management (Kong, 2007; Kong and Prior, 2008; Kong and Thomson, 2006).

Preliminary research initiatives indicate that the role of intellectual capital in non-profit sector is more critical than in the case of private sector. Ramírez (2010) argues that the growing significance given by literature to the application of models for intellectual capital management in the non-profit sector is due to the fact that intangibility is even more present than in the case of private organizations. The intangibility of the public sector organizations concerns their goals, production process and their outputs. Public organizations tend to have multiple objectives of non-financial nature (Ramírez, 2010). Moreover, the public sector has always been human capital-intensive in its production process (Serrano *et al.*, 2003). Finally, public sector organizations focus on intangible outcomes (Wall, 2005).

3. Theoretical Framework, Research Objectives and Hypotheses Development

The research objective of this study is to investigate the relationship between intellectual capital and performance within the context of the public sector. The relationship of intellectual capital with operational performance has been documented in the private sector (e.g. Lev *et al.*, 2009) albeit not extensively. In our study we choose a typical public sector setting, that of local governments to test the relation between intellectual capital and performance. As local governments are more intellectual capital intensive than private organizations (Cinca *et al.*, 2003, Kong, 2007; Kong and Prior, 2008) we expect that this relation will be evident as well.

This leads to the following hypothesis:

H₁: In the case of local governments, Intellectual Capital is positively correlated with performance.

In our study, we operationalize the value of Intellectual capital under the two prisms that correspond to the two different epistemological views developed by Mouritsen (2006). Mouritsen (2006) distinguishes two central themes within intellectual capital (IC) research: IC1-ostensive view and IC2-performative view. IC1-ostensive research stream adopts a positivistic view and argues that intellectual capital can be analyzed to its components (i.e. human, organizational and relational capital) and the contribution of these components to organizational performance can be measured in terms of their implications on financial fundamentals (e.g. risk and returns, market-to-book, etc.). On the other hand, IC2-performative research stream recognises that intellectual capital is part of a configuration of knowledge management and, consequently, the nature of intellectual capital is, idiosyncratically, defined within the specific organizational context and its effects on performance are

realised by interpreting its role on making organizations capable of performing towards endogenously defined values. IC2-performative research stream emphasises on narratives, qualitative information and descriptions.

Under the prism of IC1 ostensive research stream, the positive effects of intellectual capital on the performance of local governments can be measured in terms of improved financial performance. Yet, IC1 ostensive stream has not developed common accepted unified metrics for measuring the value of the intellectual capital of an organization (see, e.g. Bontis, 1998, Swart, 2006). Only inferences of the economic value of intellectual capital can be derived which are expected to be homeostatic to its latent true value. For this reason, consistently with the IC1 ostensive perspective, we use the term “inferred intellectual capital” to denote the value of the intellectual capital that could be captured through publicly available financial information reported in financial statements.

Following hypothesis H_1 , it is expected that higher values of inferred intellectual capital would be positively correlated with financial performance. Further, as IC1-ostensive research stream theorizes intellectual capital as the sum of discrete but interrelated components (e.g. human capital, structural capital, social capital), it is expected that all these components of inferred intellectual capital affect financial performance in a positive manner. Summarizing the above analysis, the following hypotheses are derived:

H_{11} : In the case of local governments, Inferred Intellectual Capital and its Components are positively correlated with Financial Performance.

Financial performance is assessed in terms of efficiency, liquidity and debt management. The criteria used for the selection of these dimensions are that they constitute both commonly encountered and distinctive aspects for financial performance assessment. Thus, from hypothesis H_{11} , the following hypotheses are derived:

$H_{11.1}$: In the case of local governments, Inferred Intellectual Capital and its Components are positively correlated with efficiency.

$H_{11.2}$: In the case of local governments, Inferred Intellectual Capital and its Components are positively correlated with liquidity.

$H_{11.3}$: In the case of local governments, Inferred Intellectual Capital and its Components are positively correlated with debt management.

Adopting the IC2-performative epistemological view, the research question of the relationship between intellectual capital and performance should be examined by interpreting its role on making organizations capable of performing towards endogenously defined values. Decoding the intra-organizational role of intellectual capital requires analysing the perceptions of the internal agents of the organization towards perceived intellectual capital. Perceived intellectual capital, in contrast to inferred intellectual capital, reflects the qualitative characteristics that internal agents attribute to the intellectual capital. Further, perceived intellectual capital is evaluated by its ability to make organizations capable of achieving endogenously defined values. This implies that IC2-performative epistemological view opposes to the direct linkage between intellectual capital and financial performance and attempts to visualise the effects of perceived intellectual capital on perceived performance using narratives, qualitative information and descriptions. Perceived performance refers to what extent internal agents believe that the perceived intellectual capital serves organizational goals. Perceptions are views that do not necessarily correspond to reality.

- Insert Figure 1 -

In the case of local governments, IC2-performative epistemological view is valuable in examining H_1 hypothesis from a multifaceted perspective. Empirical research documents the diversity that exists in terms of the awareness and the perceptions of non-profit organizations regarding intellectual capital (e.g. Scheimer and Samkin, 2008, Guthrie *et al.*, 2009, Benevene and Cortini, 2010). Public sector is

characterised by lower motivation to adopt new management practises, bureaucracy and less urgency to quantify economic values than private sector (Cinca *et al.*, 2003). These idiosyncratic organizational contingencies of public sector formulate an unfriendly internal environment for intellectual capital cultivation. Under these conditions, inter organizational perceptions towards intellectual capital have significant implications on the organizational behaviour, attitudes and abilities of these organizations to manage the available intellectual capital for creating organizational value. Yet, the relationship between perceived intellectual capital and its perceived effects on performance has not been consistently investigated in literature. Nevertheless, we expect that the factors synthesizing perceived intellectual capital are positively associated with perceived performance. This is because this relationship is existent on the collective cognitive maps of the members of the local governments and that higher (lower) levels of perceived intellectual capital are associated with higher (lower) levels of perceived performance. The level of perceived intellectual capital can be only captured through analysing the views of the actors in local governments. Therefore as this type of information is not reported in financial statements, it should be collected through survey instruments. Based on the aforementioned analysis, the following hypothesis is stated:

H₁₂: In the case of local governments, Perceived Intellectual Capital and its Factors are positively correlated with Perceived Performance.

Perceived performance is analysed in terms of cost, quality and quantity of the services provided by local governments to the local communities. Thus, from hypothesis H₁₂, the following hypotheses are derived:

H_{12.1}: In the case of local governments, Perceived Intellectual Capital and its Factors are negatively correlated with Perceived Cost of Services Provided by Local Governments.

H_{12.2}: In the case of local governments, Perceived Intellectual Capital and its Factors are positively correlated with Perceived Quality of Services Provided by Local Governments.

H_{12.3}: In the case of local governments, Perceived Intellectual Capital and its Factors are positively correlated with Perceived Quantity of Services Provided by Local Governments.

Both inferred intellectual capital and perceived intellectual capital are theoretical constructs that allow studying the relationship between intellectual capital and performance under the two different epistemological views. Since each of the above theoretical constructs examines different perspective of the organization's reality, a more holistic approach is required in order to capture the breadth of the interaction between intellectual capital and performance.

A local government may be classified in a different rank in terms of its inferred intellectual capital and its perceived intellectual capital. For simplicity reasons, local governments may be classified as high or low intensive in terms of either their inferred or perceived intellectual capital. This categorization creates a matrix of four quarters in which all local governments can be plotted to. Figure 2 is a graphical presentation of the above classification.

- Insert Figure 2 -

Local governments with high both perceived and inferred intellectual capital are classified as high intellectual capital local governments. Local governments with low both perceived and inferred intellectual capital are classified as low intellectual capital local governments. These two groups represent local governments which are classified uniformly under both IC1-ostensive and IC2-performative views. Therefore there is unanimity in local government categorization irrespectively of the IC theoretical perspective. For all other local governments the two theoretical views (IC1-ostensive and IC2-performative) result into different categorizations. Therefore their classification is reliant on the theoretical view employed; they can be classified either as low (high) perceived or high (low) inferred intellectual capital intensive.

Using the aforementioned classification schema and the implied positive effect of intellectual capital on performance the following hypothesis is derived:

H₁₃: Local governments with high Intellectual Capital show better performance both financial and perceived than local governments with low intellectual capital.

4. Methodology

In the present study, the relation between intellectual capital and performance is examined under the two different epistemological views of the intellectual capital research, the IC1- ostensive and IC2- performative. In order to accommodate the differences in intellectual capital quantification as well as the methodological requirements considering the nature of data, variables employed in the analysis and data processing dictated by the two intellectual capital viewpoints, we adopt a twofold methodological approach.

Under IC1-ostensive research stream, we calculate inferred intellectual capital by using data found in the annual financial statements of local governments. Moreover, financial statements data is used in order to calculate financial ratios commonly used to evaluate the financial performance of an organization.

Under IC2-informative research stream, we calculate perceived intellectual capital by using data gathered through questionnaires in a field survey. The questionnaire serves a dual scope; firstly to write down the perceptions of local governments in terms of several propositions related to intellectual capital within the local government and secondly to gather information in relation to the perceived level of performance.

4.1. Definition of Variables for the Inferred Intellectual Capital

This section analyses the proxy measures used to visualize the components of the inferred intellectual capital using the financial statements data of local governments. These proxy measures rely only merely on measures that have been previously proposed within the strand of existing intellectual capital reporting literature. The reason is that the measures encountered in literature have been analysed through the lens of the private sector and, they therefore correspond to measurement techniques with a strong market orientation, which does not fit to the public sector (Guthrie *et al.*, 2009). Inferred intellectual capital is analysed into inferred human capital, inferred organizational capital and inferred social capital.

4.1.1. Inferred Human Capital

Human capital includes knowledge, skills, innovativeness and the ability to response effectively at task performance (Edvinsson and Malone, 1997, Martin-de-Castro *et al.*, 2011). Under the assumption of a homogeneous production function, differences on the level of human capital are associated positively with productivity differentials (Aliaga, 2001, Becker, 1964) and, for a given level of resource consumption, with abnormal production.

We consider two main inputs in the production function of local governments: capital and labour. As a proxy of capital the amount of total assets is used, whereas as a proxy of labour we use the number of employees. A local government with higher levels of human capital is expected to record higher average per employee productivity.

Assuming that there is a homogenous Cobb-Douglas production function across the local governments of the research site, the inferred human capital of j local government IN_HC^j is measured in terms of the abnormal output Q^j over the number of employees N^j .

$$IN_HC^j = \frac{Q^j}{N^j} \quad (1)$$

Abnormal output Q^j is the estimation error of the following OLS model:

$$\log(S^j)=\log(a_0^j)+a_1^j\log(TA^j)+a_2^j\log(N^j)+e^j \quad (2)$$

where:

S^j denotes revenues from own operations of the j local government,

TA^j corresponds to the total assets of the j local government, and

N^j is the number of employees in the j local government.

We use revenues from own operations as a surrogate for output. Local governments are service-oriented organizations and thus the level of revenues represents the output for a given fiscal year. Revenues correspond to the sales of goods and services as well as the taxes imposed by local governments to citizens and businesses. We exclude government subsidies from revenues, as subsidies are granted to local governments on the basis of a set of political and social criteria that are not directly controlled or affected by the actions of local governments (e.g. population, location).

4.1.2. Inferred Organizational Capital

According to Subramaniam and Youndt (2005) organizational capital is defined as the institutionalized knowledge and codified experience residing within and utilized through databases, patents, manuals, systems, and processes. Prior literature uses selling, general and administrative (SGA hereafter) expenses as an accounting fundamental associated with organizational capital (see, e.g. Edvinsson and Malone, 1997, Roos and Roos, 1997, Lev et al., 2009). The underlining rationale is that the normal operation of each organization requires a minimum level of SGA expenses and the remaining part represents investments on developing organizational capital. This rationale has been heavily used in the IC private sector literature.

Following, the same paradigm, the inferred organizational capital IN_OC^j of the j local government is measured in terms of abnormal SGA expenses scaled by the number of employees:

$$IN_OC^j = \frac{AB_SGA^j}{N^j} \quad (3)$$

where:

AB_SGA^j denotes the abnormal SGA expenses of the j local government, and

N^j is the number of employees of the j local government.

Using the number of employees as a measurement variable for the level of SGA expenses in a local government, the level of abnormal SGA expenses AB_SGA^j of the j local government is defined as the estimation error of the following OLS model:

$$\frac{SGA^j}{TA^j} = b_0 + b_1 \frac{N^j}{TA^j} + e_{AB_SGA}^j \quad (4)$$

Both dependent and independent variable of the OLS model of Eq. (4) are scaled with the total assets TA^j of the j local government. The reason is to take into consideration the size effect of the local government on the level of SGA expenses.

4.1.3. Inferred Social Capital

The third component of intellectual capital refers to the ability of an organization to absorb, exploit and explore new knowledge from its environment so as to obtain and sustain competitive advantage positions (Martin-de-Castro *et al.*, 2011). Within the context of private sector, it is referred as relational capital. However, the term social capital seems more appropriate to describe the third component of the intellectual capital of the local governments due to their social oriented physiognomy.

High levels of social capital indicate that the local government has increased ability to obtain economic benefits on behalf of its citizens. Local governments provide monopolistic services to the local communities and their relationship with their citizens can be viewed within the context of an agency

model. Citizens represent the principal site which supply their local government with capital through taxation, bear risk in case that local government fails to serve local community and construct incentives ranging from social acceptance of specific policies to the approval of economic benefits obtained by public servants. Local government represents the agent site that makes decisions on behalf of the citizen relying on superior knowledge about the social environment. This superior knowledge is the social capital.

Within the context of the above agency model, local governments are expected to maximize citizens' economic welfare. The internal economic value of the services provided, the economic sacrifices required to produce and to deliver services, equals the cost of goods sold. The higher the levels of social capital indicates that local government has increased ability to absorb, exploit and explore new knowledge from its environment in order to provide better and, thus, more valuable services.

Abnormal levels of cost of goods sold for a given quantity of services indicate that local government either provides to the citizenry services of higher internal economic value or operates inefficiently. A local government is efficient if the abnormal revenues exceed the abnormal cost of goods sold. In that case social capital enables local government to improve its efficiency and to reserve higher levels of economic wealth for its citizens.

Based on the aforementioned analysis, the inferred social capital of j local government IN_SOC^j is measured as the difference between abnormal own revenues from operations AB_S^j and abnormal cost of goods sold AB_COGS^j scaled with the number of employees of the j local government N^j :

$$IN_SOC^j = \frac{AB_S^j - AB_COGS^j}{N^j} \quad (5)$$

Abnormal cost of goods sold AB_COGS^j is the estimation error of the following OLS model:

$$\frac{COGS^j}{TA^j} = c_0 + c_1 \frac{P^j}{TA^j} + e_{AB_COGS}^j \quad (6)$$

where

$COGS^j$ denotes the cost of goods sold of the j local government, and

P^j is the population of j local government.

Both dependent and independent variables of the OLS model of the Eq. (5) are scaled with the total assets TA^j of the j local government.

Abnormal own revenues from operations AB_S^j is the estimation error of the following OLS model:

$$\frac{S^j}{TA^j} = d_0 + d_1 \frac{P^j}{TA^j} + e_{AB_S}^j \quad (7)$$

where S^j denotes revenues from own operations of the j local government, and

P^j is the population of j local government.

Both dependent and independent variables of Eq. (5) are scaled with the total assets TA^j of the j local government.

Eq. (5) can, alternatively, restated in terms of the estimations errors of the estimated OLS models of Eqs. (6) and (7):

$$IN_SOC^j = \frac{e_{AB_S}^j - e_{AB_CGS}^j}{N^j} \quad (8)$$

4.1.5. Definitions of Variables of Financial Performance

Various financial ratios can be employed in order to measure the financial performance of a local government. The ratios used in this study correspond to ratios used in traditional financial analysis to evaluate (i) profitability, (ii) liquidity and (iii) debt management.

The financial ratio selected to evaluate the profitability of local governments is the following:

- i. *Return on Assets*: the ratio of net income over total assets for a given fiscal year.

The financial ratios that are used to evaluate the liquidity of a local government are the following:

- i. *Liquidity*: the ratio of current assets over current liabilities.
- ii. *Total Assets Turnover* (Total Sales Revenue): the ratio of total revenues (own revenues plus subsidies) over total assets.
- iii. *Plant, Property, Equipment Turnover* (Total Sales Revenue): the ratio of total revenues over Plant, Property and Equipment.
- iv. *Total Assets Turnover* (Own Revenues from Operations): the ratio of own revenues from operations over total assets.
- v. *Plant, Property, Equipment Turnover* (Own Revenues from Operations): the ratio of own revenues from operations over Plant, Property and Equipment.

Finally, the financial ratios that are calculated in order to evaluate the quality of debt management of a local government are the following:

- i. *Liabilities over Total Assets*: the ratio of liabilities over total assets.
- ii. *Debt over Total Assets*: the ratio of long-term debt over total assets.

4.2. Definition of Factors Identified for the Perceived Intellectual Capital

This section analyses the factors that constitute the perceived intellectual capital. These factors emerged from an analysis of the answers obtained through the questionnaire that was developed for the purpose of the study. The survey instrument, requested the respondents to express on a Likert scale the extent of their agreement (where 5 corresponded to totally agree) or disagreement (where 1 corresponded to totally disagree) on sixty one (61) statements. A translated copy of the statements included in the questionnaire is found in the appendix. The selection of the statements was based on previous literature properly adjusted for the setting of local governments and Greek reality. The questionnaire has been pilot tested in one local government where we sought at spotting unclear questions or sources of possible misunderstanding. The statements corresponding to different intellectual capital sub-dimensions were scattered in the questionnaire. Moreover there were six (6) reverse coded statements. The questionnaire was addressed to 340 randomly selected local governments out of the 577 that are obliged to issue accrual accounting financial statements. The questionnaire was addressed to the Mayor of the local government. A total of 92 local governments participated in the survey by returning completed questionnaires. Thus, the response rate of our research study was 27%. The field study took place during the summer of 2010. A non-response bias analysis did not reveal any statistically significant differences between early and late respondents.

The questionnaires were mainly answered by either the Mayor or the Vice Mayor (25%) or the Officer of Administrative Services (64%). The experience of the respondents was indicative of their knowledge regarding local government operations. The 33% of respondents had working experience in the local government for 6-10 years while 51% had more than 11 years of experience.

The answers that we received were grouped together so as to create factors that are coded as (i) perceived human capital (factors HC_1 to HC_6), (ii) perceived structural capital (factors SC_1 to SC_4), (iii) perceived social capital (factors SOC_1 to SOC_4) and (iv) perceived performance (factors Qual., Quant. and Cost). A Cronbach's Alpha test was used to assess the validity of the identified factors. Table 2 presents a brief summary of the factors, their definition and the Cronbach's Alpha value for each factor.

- Insert Table 2 -

The factors presented in Table 2 are consistent with the intellectual capital theory. According to Martin-de-Castro et al., (2011) human capital is an amalgamation of knowledge, abilities (including learning and collaboration) and behaviours (including motivation, commitment and thus satisfaction). The following factors for perceived human capital are defined: Knowledge & Skills (HC_1), Learning, Adaptation & Human Resource Development (HC_2), Synergy with Environment (HC_3), Commitment (HC_4), Motivation (HC_5) and Satisfaction (HC_6). As far as organizational capital is concerned, Subramaniam and Youdnt (2005) define it as the institutionalized knowledge and codified experience residing within and utilized through databases, patents, manuals, systems, and processes. The factors recognized in the case of organizational capital are Knowledge Management (OC_1), Innovation (OC_2), Internal Integration (OC_3) and e-governance (OC_4). Knowledge Management and Innovation refer to the codified knowledge, the ability to manage this knowledge and the supporting IT infrastructure. In order local governments to efficiently manage organizational capital they must support its dissemination within organizational boundaries. A necessary condition for this to happen is the existence of Internal Integration (OC_3). Finally, special reference is made to the ability of local governments to employ IT infrastructure for supporting their operations, that is, e-governance (OC_4). Definitions for social capital approximate those for relational capital. Chang et al. (2008) argue that relational capital represents the knowledge embedded in the relationships with the outside environment. The first factor of social capital is defined as Knowledge of Social Environment (SOC_1). However, the ability of a local government to utilize the available Knowledge of Social Environment depends on the level of its integration with its social environment. Three different aspects of integration have been recognized: social (External Integration SOC_2, Communication SOC_5 and Social Culture SOC_6), economic (Economic Relations SOC_3) and governmental (Collaboration with Central Government SOC_4).

Additional empirical evidence provides support for the theoretical validity of the factors described above. Recognizing the distinct factors within each dimension of perceived intellectual capital is a process that enables its study in a systematic way. Moreover, the factors found in each dimension of perceived intellectual capital are expected to be positively correlated with each other since they all constitute fundamental elements of a broader entity (i.e. either perceived human capital or perceived organizational capital or perceived social capital) and operate with the same teleological way. Tables 3, 4 and 5 provide empirical evidence that the factors of perceived human capital, perceived organizational capital and perceived social capital are positively correlated at 1% statistical significance level. Further, each of the dimensions of the perceived intellectual capital is expected to be positively correlated with the other two. This is empirically verified by the correlation statistics that are presented in Table 6.

- Insert Tables 3, 4, 5 and 6 -

4.3. Definition of Factors of Perceived Performance

Except for the factors identified in relation to perceived intellectual capital, factors proxying for the perceived organizational performance of the local governments were calculated as well. Local governments, primarily, provide services to the citizenry. Accessing the performance of a service oriented organization is a multidimensional and difficult task. For simplicity reasons, the emphasis was given on three basic dimensions, those of, quantity, quality and cost. The factors that constitute the perceived performance are therefore: the perceived Quality of services (Qual.), the perceived Quantity of service provision (Quant.) and the perceived Cost of services rendered (Cost). These factors correspond to the self assessment of local governments in respect to the level of quantity, quality and the cost of the services provided. The values of these perceived measures were retrieved from the questionnaire where local governments made their (self) assessments.

5. Results

This section presents the empirical results of the study. Initially, the relationship between inferred intellectual capital and inferred financial performance as it is assessed in terms of efficiency, liquidity and debt management is discussed. Secondly, the relationship of perceived intellectual capital with perceived performance is examined. As a final step, the empirical relation between intellectual capital and performance is examined irrespectively of the theoretical perspective on intellectual capital (i.e. IC1-ostensive view or IC2-performative view).

5.1. Inferred Intellectual Capital and Financial Performance

The data used to calculate the inferred intellectual capital is based on public available information included in the financial statements of Greek local governments. Local governments in Greece that satisfy specific size or revenue criteria are obliged to publish yearly audited financial statements that mainly include a Balance Sheet and a Profit and Loss Account. Our data is obtained by the financial statements published at the end of 2008 and corresponds to the fiscal year of 2007. Data about the employees in local governments corresponds to the same period and was retrieved by the National Statistical Authority. Population information refers to the 2001 census.

Table 7 presents the results of the estimated OLS models of Eq. (2), Eq. (4), Eq. (6) and Eq. (7). Further, Table 8 presents basic descriptives of the ratios used to evaluate the financial performance of local governments and summary statistics of the basic variables retrieved by the OLS models.

Inferred human capital and inferred social capital seem to be positively correlated with Return on Assets at 1% and 5% significance level respectively. All three components of inferred intellectual capital are positively correlated with turnover ratios at 1% level of significance but they are no correlated with liquidity. Furthermore, they are positively correlated with Liabilities over Total Assets and Debt over Total Assets ratios at 1% significance level .

Summarizing the aforementioned analysis, inferred intellectual capital seems to be positively correlated with both efficiency and liquidity but presents no correlation with debt management. This indicates that the presence of inferred intellectual capital improves efficiency and turnover ratios without undermining the financial structure of local governments.

- Insert Tables 7, 8 and 9 -

5.2. Perceived Intellectual Capital and Perceived Performance

The correlation between the factors of each dimension of the perceived intellectual capital and the perceived organizational is presented in Table 10. It seems that the effects of perceived intellectual capital on perceived performance are realised through the provision of superior quality services and to a lesser extent though cost savings. Further, the presence of a high level of perceived intellectual capital seems not to be associated with the level of the quantity of service provision.

Within the context of perceived human capital, all factors are positively correlated with the perceived quality of the services rendered at 1% level of statistical significance with the exception of the factor entitled Commitment (HC_4) which is, also, positively correlated albeit at 5% significance level. The factors Synergy with Environment (HC_3) and Satisfaction (HC_6) present the highest correlation values with perceived quality of service rendering relatively to the other factors of the perceived human capital. A possible reason for that is that the level of synergy with environment and the satisfaction of human assets are both critical factors that mediate so as the core dimensions of perceived human capital (i.e. Knowledge & Skills and Learning, Adaptation & Human Resource) to be transformed into improved performance. As far as the relationship between perceived human capital and perceived cost is concerned, only the factors Learning, Adaptation & Human Resource Development (HC_2), Synergy with Environment (HC_3) and, Satisfaction (HC_6) exhibit negative correlations with perceived cost of service provision. Negative relations mean than human IC is related

with cost savings. Finally, there is no significant correlation between the factors corresponding to perceived human capital and those related to perceived quantity of service provision.

A similar pattern in terms of the existing correlations is observed in the case of the two other dimensions of perceived intellectual capital as well. Both perceived organizational and perceived social capital have no correlation with perceived quantity of service provision. However, they exhibit a positive correlation with perceived quality of service rendering and a negative correlation with perceived cost of service provision.

More specifically, in the case of perceived organizational capital, the factors Knowledge Management (OC_1) and Innovation (OC_2) have the strongest positive correlation with perceived quality at 1% significance level. Contrary to the relations revealed in relation to the factors corresponding to perceived human capital, the factors capturing the essence of perceived organizational capital are all negatively correlated with perceived cost. That can be interpreted as a positive contribution of intellectual capital on resource consumption and efficiency improvement. Moreover, the factor Internal Integration (OC_3) exhibits the strongest negative correlation with that of perceived cost amongst the other factors of perceived organizational capital.

In the case of perceived social capital, the factors External Integration (SOC_2) and Collaboration with Central Government (SOC_4) have the strongest positive correlation with perceived quality and the strongest negative correlation with perceived cost at 1% significance level amongst all other factors of perceived social capital. However, the factors Knowledge of Social Environment (SOC_1), Economic Relations (SOC_3) and Social Culture (SOC_6) of the perceived social capital are negatively correlated with perceived quantity.

The aforementioned analysis implies that in the case of local governments perceived intellectual capital is positively correlated with perceived performance. More specifically, the perceived intellectual capital is positively correlated with perceived quality of service rendering across all factors that correspond to the three sub domains of intellectual capital. Nevertheless, perceived intellectual capital is in some cases negatively correlated with perceived cost. Moreover, perceived intellectual capital is only sparsely correlated with perceived quantity. The lack of correlation of perceived intellectual capital with perceived quantity of service rendering does not undermine the overall conclusion that the perceived intellectual capital is correlated with performance. A plausible explanation for that is that the quantity of services required by citizens is stable and, thus, the utility that citizens obtain by those services is mainly affected by their quality. Thus, local governments may employ the available intellectual capital so as to offer services of higher quality to their citizens.

- Insert Table 10-

5.3. Intellectual Capital and Financial Performance

This section attempts to examine the relationship between intellectual capital and financial performance irrespectively of the epistemological view used in studying intellectual capital (i.e. IC1-ostensive and IC2-performative). By analysing the results of each epistemological view without taking into consideration the results of the other limits the generalization of the research findings. It is therefore required to examine the empirical findings presented on previous paragraphs under an integrated perspective. For this reason, for each component of intellectual capital (i.e. human capital, organizational capital, social capital), we categorise local governments as high or low intensive for each dimension (i.e. inferred versus perceived). The median values of inferred human capital, inferred organizational capital and inferred social capital are used as corresponding critical values for classifying local governments as high (above or equal to median value) versus low (below median value) intensive for each IC sub category. In the case of the factors of perceived intellectual capital a two stage procedure is followed in order to separate local governments as high versus low. Initial, for each dimension of perceived intellectual capital (i.e. perceived human capital, perceived organizational capital and perceived social capital) the numerical values of the related factors are added to formulate a total score. Then, the median values of the total score of perceived human

capital, perceived organizational capital and perceived social capital are used as critical values for classifying local governments as high (above or equal to median value) versus low (below median value) intensive.

To examine the relationship of intellectual capital with both financial and perceived performance, we compare the mean values of financial ratios and factors of perceived performance of the high IC group and the low IC group. The test is performed by using the 2 independent-samples t test. Therefore, we define three pairs of two independent samples (high IC LGs and low IC LGs) for each IC subcategory i.e. human capital, organizational capital and social capital.

High human capital local governments seem to perform better than low human capital ones as far as turnover ratios are concerned at 1% significance level. Further, high human capital is equated with improved perceived quality of the services provided by local governments at 1% level of significance (Table 11).

The relationship of organizational capital with financial performance and perceived organizational performance is examined in Table 12. Organizational capital seems to improve total assets turnovers at 1% level of significance and the perceived quality of services rendered at 4% level of significance.

Finally, social capital seems to have effects on efficiency, turnover ratios and perceived organizational performance. More specifically, local governments with high social capital report higher mean values for Return on Assets and Plant, Property and Equipment turnover ratios at a, at least, 3% level of significance. As far as perceived organizational performance is concerned, social capital is equated with higher levels of perceived quality but with lower levels of perceived quantity and perceived cost of the provided services (Table 13).

- Insert Tables 11, 12 and 13 -

6. Conclusions

The research motivation of this study was to analyse the relationship of intellectual capital with organizational performance within the context of local governments.

We have analysed intellectual capital from two epistemological stances recognised by Mouritsen (2006): IC1-ostensive view and IC2-performative view. We proxied for inferred intellectual capital which is consistent with IC1 –ostensive view by using information retrieved by accrual accounting financial statements. We assessed perceived intellectual capital of local governments that is compliant with IC2 - perspective view by using survey data collected through questionnaires. We built a classification scheme that allocates local governments to a matrix according to their scores in terms of the two intellectual capital views. Within this matrix local governments that are considered intellectual capital intensive under both views are distinguished from those that are less intellectual capital intensive.

Empirical evidence indicates that intellectual capital is equated with improved financial and perceived performance. This has been confirmed irrespectively of the theoretical view adopted for the study of intellectual capital. More specifically, intellectual capital seems to improve the efficiency and turnover ratios without creating serious debt management issues. Further, local government officers positively associate perceived intellectual capital with perceived quality and negatively with perceived cost of the services rendered.

Our study therefore verifies that the positive relation between IC and financial performance hold in the public sector as well. Apart from that, our findings have significant practical implications for the public sector especially at this period in time where there is a need for all efforts to be motivated towards performance improvement and 3Es (efficiency, effectiveness and economy) attainment.

However, our results are subject to the following limitations. Firstly, our analysis is based on a sample of Greek municipalities. Therefore there is always the question whether the results can be generalized to the entire population. Secondly, we have used some proxies in order to operationalize inferred IC.

There may be other proxies that could better encapsulate inferred IC through the information presented in financial statements. Finally, the statements used in the questionnaire are considered suitable for addressing the scope of our study. Nevertheless, the reliability of answers gathered is subject to the limitations embedded in any field study.

The above research findings might be the starting point for various other research initiatives. A replication of this study to local governments in other European countries would improve our understanding on the way IC is translated into financial performance. Moreover, further research is required to recognize and analyze the organizational mechanisms that enable local governments to realize economic benefits from intellectual capital. This knowledge will improve the management of intellectual capital and will contribute towards the implementation of New Public Management in local governments. Another important research issue is to analyze in a more explicit way how local governments perceive the relationship of intellectual capital with performance. This would enable the recognition of behavioral issues that are responsible for the lack of motivation on behalf of public sector organizations to exploit their available intellectual capital for improving their performance.

References

- Aliaga, A.O., 2001, *Human capital, HRD and the Knowledge Organization*, In Aliaga A.O (Eds.) Academy of Human Resource Development, Conference Proceedings Baton Rouge, LA. (pp. 427-434).
- Andriessen, D., 2004, IC Valuation and measurement: classifying the state of the art, *Journal of Intellectual Capital*, 5, pp. 1469-1930.
- Argyris, C. and Schön, D., 1996, *Organizational Learning: Vol. 2. Theory, Method, and Practice*, Addison-Wiley, Reading, MA.
- Becker, G. S., 1964, *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*, National Bureau of Economic Research. New York: Columbia University Press.
- Bezhani, I., 2010, Intellectual Capital Reporting at UK Universities, *Journal of Intellectual Capital*, 11, 2,
- Bontis, N., 1996, There's a Price on Your Head: Managing Intellectual capital Strategically, *Business Quarterly*, 60, pp. 41-47.
- Bontis, N., 1998, Intellectual Capital: an Exploratory Study that Develops Measures and Models, *Management Decision*, 36, 2, pp. 63-76.
- Bontis, N., Dragonetti, N., Jacobsen, K. and Roos, G., 1999, The Knowledge Toolbox: a Review of the Tools Available to Measure and Manage Intangible Resources, *European Management Journal*, 17, 4, 391-401.
- Bontis, N., Crossan M. M. and Hulland J., 2002, Managing an Organizational Learning System by Aligning Stocks and Flows, *Journal of Management Studies*, 39, pp. 437-469.
- Brooking, A., 1996, *Intellectual capital. Core Asset for the Third Millennium Enterprise*, International Thomson Business Press, London.
- Cabrita, M. R. and Bontis N., 2008, Intellectual capital and Business Performance in the Portuguese Banking Industry, *International Journal of Technology Management*, 43, pp. 212-237.
- Canibano, L., Garcia-Ayuso, M. and Sanchez, M.P., 2000, Accounting for Intangibles: a Literature Review, *Journal of Accounting Literature*, 19, pp. 102-130.
- Chang, S., Chen S. and Lai J., 2008, The Effect of Alliance Experience and Intellectual capital on the Value Creation of International Strategic Alliances, *Omega*, 36, pp. 298-316.
- Chauvin, K. and Hirschey, M., 1993, Advertising, R&D Expenditures and the Market Value of the Firm, *Financial Management*, 22, pp. 128-40.
- Cinca, .C.S, Molireno, C.M. and Queiroz, A.B., 2003, The Measurement of Intangible Assets in Public Sector Using Scaling Techniques, *Journal of Intellectual Capital*, 4, 2, pp. 249-275.

- Dzinkowski, R., 2000, The Measurement and Management of Intellectual capital: An Introduction, *Management Accounting*, 77, pp. 32–36
- Edvinsson, L. and Malone M., 1997, *Intellectual capital. Realizing Your Company's True Value by Findings Its Hidden Brainpower*, Harper Collins Publishers, Inc, New York.
- Eberhart, A., Maxwell, W. and Sidique, A., 2004, An Examination of Long-term Abnormal Stock Returns and Operating Performance following R&D Increases, *Journal of Finance*, 59, pp. 623-650.
- Galbraith, J. K., 1969, The Consequences of Technology, *Journal of Accountancy*, 127, pp. 44–56.
- Granstrand, O., 1999, *The Economics and Management of Intellectual Property: Towards Intellectual Capitalism*, Edward Elgar, Cheltenham, UK.
- Guthrie, J., Steane, P., and Farneti, F., 2009, IC Reporting in the Australian Red Cross Blood Service, *Journal of Intellectual Capital*, 10, 4, pp. 504-519.
- Hansson, B., 2004, Human capital and Stock Returns: is the Value Premium an Approximation for Return on Human capital?, *Journal of Business Finance & Accounting*, 31, pp. 333-357.
- Hirschey, M. and Weygandt, J., 1985, Amortization Policy for Advertising and Research and Development Expenditures, *Journal of Accounting Research*, 23, pp. 326-335.
- Hood, C. 1995, New Public Management in the 1980s: Variations on a Theme, *Accounting, Organizations and Society*, 20, 2/3, pp. 93-109.
- Hsu, Y. H. and Fang W., 2009, Intellectual capital and New Product Development Performance: The Mediating Role of Organizational Learning Capability, *Technological Forecasting and Social Change*, 76, 5, pp. 664–677.
- Kaplan, R.S. and Norton D.P., 1992, The Balanced Scorecard Measures Drive Performance, *Harvard Business Review*, January-February, pp. 71-79.
- Kong, E. and Thomson, S.B., 2006, Intellectual capital and Strategic Human Resource Management in Social Service Nonprofit Organizations in Australia, *International Journal of Human Resources Development and Management*, 6, 2-4, pp. 213-31.
- Kong, E., 2007, The Strategic Importance of Intellectual capital in the Nonprofit Sector, *Journal of Intellectual capital*, 8, 4, pp. 721-31.
- Kong, E. and Prior, D., 2008, An Intellectual capital Perspective of Competitive Advantage in Nonprofit Organizations, *International Journal of Nonprofit and Voluntary Sector Marketing*, 13, 2, pp. 119-28.
- Kong, E., 2010, Intellectual Capital and Non-profit Organizations in the Knowledge Economy: Editorial and Introduction to Special Issue, *Journal of Intellectual capital*, 11, 2, pp. 97-106.
- Lev, B. and Sougiannis, T., 1996, The Capitalization, Amortization and Value-relevance of R&D, *Journal of Accounting and Economics*, 21, pp. 107-38.
- Lev, B., Radhakrishnan, S. and Zhang W., 2009, Organization Capital, *Abacus*, 45, 3, pp. 275-298.
- Martínez-Torres, A., 2006, Procedure to Design a Structural and Measurement Model of Intellectual capital: An Exploratory Study, *Information & Management*, 43, pp. 617–626.
- Martín-de-Castro, G., Delgado-Verde, M., López-Sáez, P. and Navas-López J.E., 2011, Towards 'An Intellectual capital-Based View of the Firm': Origins and Nature, *Journal of Business Ethics*, 98, pp. 649-662.
- McGrattan, E. R., and Prescott, E. C., 2007, *Unmeasured Investment and the Puzzling U.S. Boom in the 1990s*, Working Paper 13499, National Bureau of Economic Research.
- Mouritsen, J., 2006, Problematising Intellectual capital Research: Ostensive versus Performative IC, *Accounting, Auditing & Accountability Journal*, 19, 6, pp. 820-41.
- Nahapiet, J. and Ghoshal S., 1998, Social capital, Intellectual capital, and the Organizational Advantage, *Academy of Management Review*, 23, pp. 242–266.
- Pantzalis, C. and Park, J.C., 2009, Equity Market Valuation of Human capital and Stock Returns, *Journal of Banking and Finance*, 33, pp. 1610-1623.
- Power, M., 1997, *The Audit Society – Rituals of Verification*. Oxford University Press.

- Ramirez, Y., 2010, Intellectual Capital Models in Spanish Public Sector, *Journal of Intellectual Capital*, 11, 2, pp. 248-264.
- Reed, K. K., Lubatkin M. and Srinivasan N., 2006, Proposing and Testing an Intellectual capital-Based View of the Firm, *Journal of Management Studies*, 43, pp. 867–893.
- Roos, G. and Roos, J., 1997, Measuring your Company's Intellectual Performance, *International Journal of Strategic Management*, 30, 3, pp. 413-26.
- Roos, J., Roos, G., Dragonetti, N.C. and Edvinsson, L., 1997, *Intellectual Capital: Navigating in the New Business Landscape*. Macmillan: London.
- Sánchez, M.P., Elena, S. and Castillo R., 2009, Intellectual Capital Dynamics in Universities: a Reporting Model, *Journal of Intellectual Capital*, 10, 2, pp. 307-324.
- Serrano, C., Mar, C. and Bossi, A., 2003, The Measurement of Intangible Assets in Public Sector using Scaling Techniques, *Journal of Intellectual Capital*, 4, 2, pp. 249-275.
- Schneider, A. and Samkin, G., 2008, Intellectual Capital Reporting by the New Zealand Local Government Sector, *Journal of Intellectual Capital*, 9, 3, pp. 456-486.
- Sougiannis, T., 1994, The Accounting Based Valuation of Corporate R&D, *The Accounting Review*, 69, pp. 44-68.
- Subramaniam, M. and Youndt M. A., 2005, The Influence of Intellectual capital on the Types of Innovative Capabilities, *Academy of Management Journal*, 48, pp. 450– 463.
- Sveiby, K. E., 1997, *The New Organizational Wealth: Managing and Measuring Knowledge Based Assets*, Berrett Koehler, San Francisco, CA.
- Stewart, T. A., 1991, Brainpower, *Fortune*, 123, pp. 44–50.
- Swart, J., 2006, Intellectual capital: Disentangling an Enigmatic Concept, *Journal of Intellectual capital*, 7, 2, pp. 136-159.
- Teece, D. J., 2000, *Managing Intellectual capital*, Oxford University Press, New York.
- Wall, A., 2005, The Measurement and Management of Intellectual Capital in the Public Sector. Taking the Lead or Waiting for Direction?, *Public Management Review*, 7, 2, pp. 289-303.

Appendix: Questionnaire

Questionnaire consists of 61 statements. The response scale for each statement was from (1) totally disagree to (5) totally agree. The questionnaires indicated with R where reverse coded.

Statements:

1. Local government personnel have sufficient capabilities to successfully perform their duties.
2. Local government personnel are willing to perform their duties.
3. Citizenry is a source of knowledge and skills for local government.
4. Local government personnel are sufficiently experienced for the execution of their duties.
5. Local government personnel are satisfied with the working environment.
6. Local Government management minds for the introduction of innovative management styles.
7. There is a medium term (2-5 years) training programme for local government personnel.
8. Local government personnel rely on their peers when they need help.
9. Local government cares for the training of the new employees.
10. The level of cooperation among the local government employees is high.
11. Citizenry and local organizations (e.g. athletic organizations, social associations, local businesses, citizen associations, etc.) cooperate for the implementation of local government decisions.
12. Local government utilizes the experience of municipal employees with several years in service.
13. Local government employees directly abide by local government decisions.
14. Local government offers citizenry and local businesses direct information and support for the activities they want to develop.
15. Local Government gets the necessary information and know-how for the support of its operations by the Ministry of Interior.
16. The quality of services would be improved if they were assigned to a private company (R).
17. Suppliers constitute a source of know-how for the Local Government.
18. Some employees, in order to hide their deficient productivity, negatively affect the performance of their peers (R).
19. Local Government rewards employees performing actions that improve its operations.
20. Local Government personnel want to actively participate in decision making.
21. Local government financial health is directly related with the financial health of the businesses in the area.
22. The level of cooperation between the Local government personnel and the local organizations is high.
23. Local government personnel are willing to undertake more responsibilities.
24. Local government offers services through the internet.
25. The financial survival of a considerable number of local businesses relies on local government expenditures.
26. Local government personnel seek moral recognition from their social surroundings.
27. The quantity of services offered by the Local government could be considerably increased (R).
28. The educational level local government personnel is higher to what needed for tasks execution.
29. Citizenry considers local tax burden to be excessive (R).
30. Local Government uses both local and national Media as a means of communication with the citizens.
31. Local Government personnel feel responsible for the success of the Local Government programmes.
32. Local Government personnel are satisfied with the duties assigned to them.
33. The cooperation of Local Government with the Ministry of Interior for local government policy issues is satisfactory.
34. Some employees express their dissatisfaction on a systematic basis (R).
35. Citizenry participates actively in decision-making.
36. Local Government personnel have the ability to adjust to the changes that take place in their working environment.
37. Local Government utilizes the experience and the capabilities of local organizations (e.g. athletic organizations, social associations, local businesses, citizen associations, etc.) to improve its operations.
38. Local Government personnel want to get specific and precise directions for performing their tasks.
39. Local authorities are a source of knowledge for Local Government.
40. Local government encourages its personnel to cooperate and share knowledge and experiences.
41. Local Government cares about the promotion of culture within the local society.

42. The financial health of the majority of citizenry is influenced by local government expenditure.
43. Local Government is effectively supported by the central government in order to confront problems.
44. Local Government is familiar with new technology and internet use.
45. Local government personnel and citizenry cooperate successfully.
46. Suppliers are consistent with their contractual obligations.
47. Local Government cares for the quick integration of immigrants in the local community.
48. Local Government employees are encouraged to take initiatives.
49. The financial health of the local government is directly related with the financial health of the citizenry.
50. Local government has in place and implements a short term yearly programme for personnel training and education.
51. Cultural and educational expenditure corresponds to a significant percentage of local government expenses.
52. Local government encourages the participation of employees in decision-making.
53. The quality and the quantity of service provision could be substantially improved if tighter control was in place (R).
54. Local government personnel mind to be informed about changes in the legislation and the statutory framework.
55. Local government employees are willing to openly express their views.
56. Local government employees are satisfied with the level of safety in their working environment.
57. Both citizenry and local businesses are consistent with their financial obligations towards the local government.
58. Citizenry uses the internet to submit their complaints.
59. Local government implements e-governance programmes.
60. Local government personnel cooperates with citizenry in harmony.
61. Local government cooperates with relevant Ministries for financial issues in a satisfactory manner.

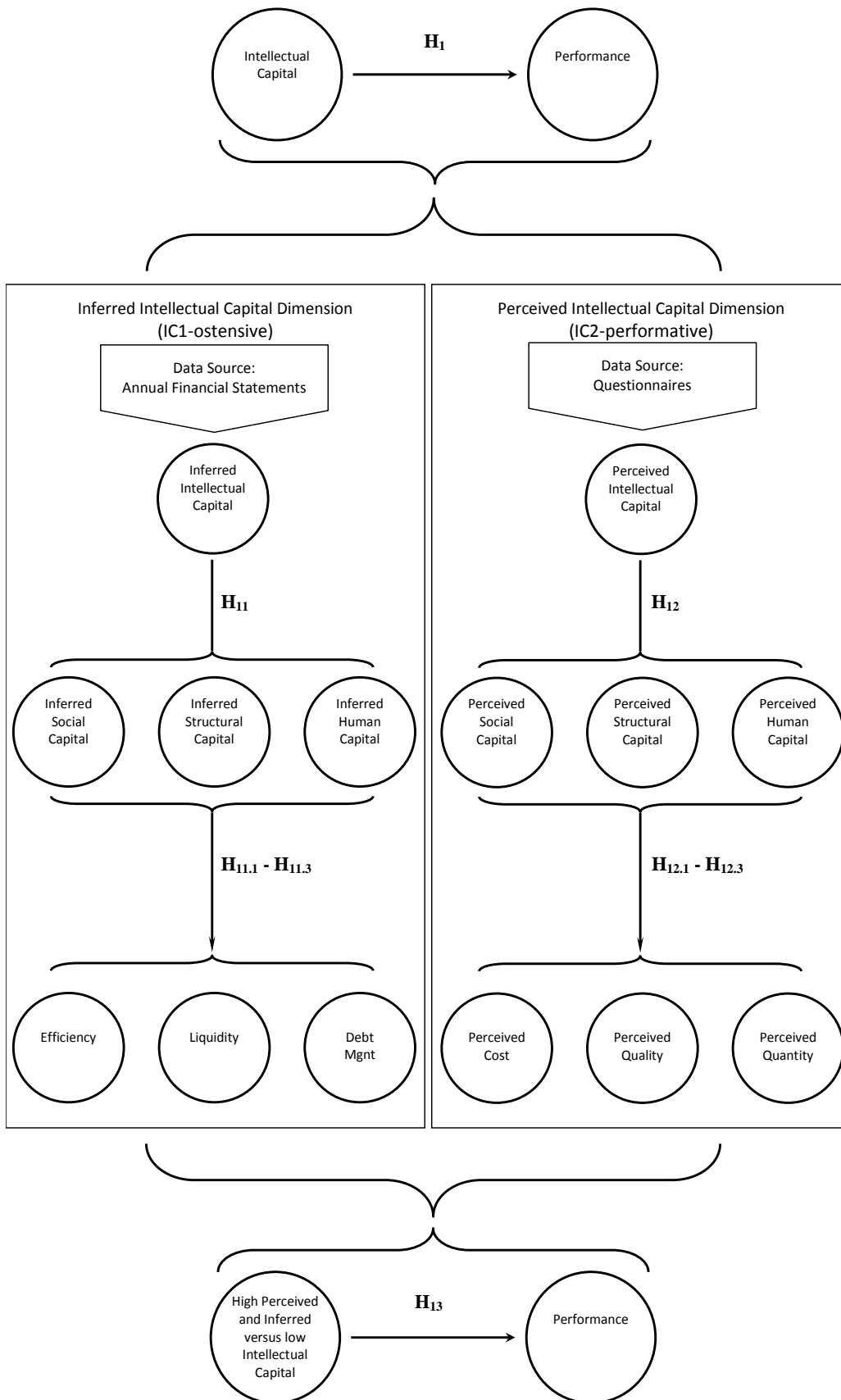


Figure 1: Research Hypotheses

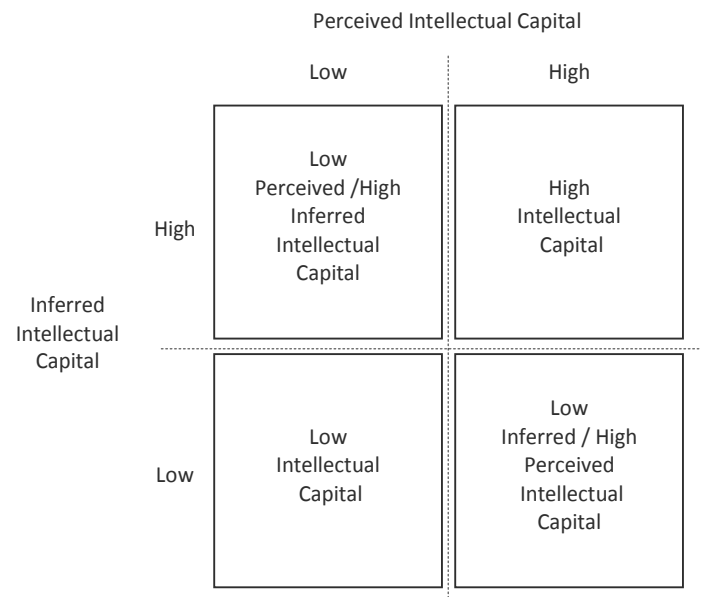


Figure 2: Classification of Local Governments According to the Different Dimensions of Intellectual Capital

Table 1
Definitions of Intellectual Capital

Author(s)	Intellectual capital definitions
Galbraith (1969)	The difference of an organization's market value and book value.
Bontis (1996)	The difference between the market value of the company and the replacement cost of assets.
Brooking (1996)	The combination of market assets, human-centred assets, intellectual property assets, and infrastructure assets.
Sveiby (1997)	The gap between market and book value of the firm.
Edvinsson and Malone (1997)	The gap between a firm's market value and its financial capital (book value of a firm's equity).
Nahapiet and Ghoshal (1998)	Knowledge and knowing capability of a social collectivity.
Granstrand (1999)	Essentially comprises all immaterial resources that could be considered as assets, being possible to acquire, combine, transform and exploit, and to which it is possible to assign, in principle, a capitalized value.
Dzinkowski (2000)	Intellectual assets, knowledge assets, total stock of knowledge-based equity possessed by a firm.
Teece (2000)	Includes knowledge, competence and intellectual property. Also includes other intangibles such as brands, reputations, and customer relationships.
Bontis <i>et al.</i> (2002)	Represents the stock of knowledge that exists in an organization at a particular point in time.
Subramaniam and Youndt (2005)	The sum of all knowledge firms utilize for competitive advantage.
Martínez-Torres (2006)	Includes those intangible assets of an organization that are not recorded in financial statements but which may constitute 80% of the market value of the organization.
Reed <i>et al.</i> (2006)	Basic competences of intangible character that allow creating and maintaining competitive advantage.
Cabrita and Bontis (2008)	The knowledge assets that can be converted into value. Is a matter of creating and supporting connectivity between of sets of expertise, experience and competences inside and outside organization.
Chang <i>et al.</i> (2008)	Represents knowledge-related intangible assets embedded in an organization.
Hsu and Fang (2009)	The total capabilities, knowledge, culture, strategy, process, intellectual property, and relational networks of a company that create value or competitive advantages and help a company achieve its goals.

Source: Martín -de-Castro *et al.* (2011).

Table 2:

Factors Identified for Perceived Human Capital, Perceived Structural Capital, Perceived Social Capital and Perceived Performance

Perceived Human Capital			
Factor		Definition	Cronbach's Alpha
Code	Name		
HC_1	Knowledge & Skills	The knowledge, experience and skills of the human resources to perform required tasks (Statements 1, 4, 28 and 44).	0.751
HC_2	Learning, Adaptation & Human Resource Development	The ability to renew available knowledge, experience and skills of the human resources through individual learning, informal and formal organizational processes (Statements 7, 9, 36 and 49).	0.751
HC_3	Synergy with Environment	The ability of human resources to collaborate effectively (i) within the organizational boundaries of the local government and (ii) with agents operating within the social and economic environment of the local government (Statements 8, 10, 45, 52 and 59).	0.771
HC_4	Commitment	The commitment of human resources towards the organizational goals and values of the local government (Statements 13, 18, 23 and 31).	0.673
HC_5	Motivation	The level of motivation of human resources of the local government (Statements 2, 20, 26 and 38).	0.667
HC_6	Satisfaction	The level of satisfaction of human resources at task performance (Statements 5, 32, 34 and 55).	0.681
Perceived Organizational Capital			
Factor		Definition	Cronbach's Alpha
Code	Name		
OC_1	Knowledge Management	IT investments and the available codified knowledge of the local government and the collective ability to manage for serving the goals of the organization (Statements 12, 37 and 53).	0.683
OC_2	Innovation	Orientation towards the adoption of new management systems and the development of innovative culture amongst employees of the local government (Statements 6, 19 and 40).	0.775
OC_3	Internal Integration	Management policies aiming to improve the integration of human resources with the organization of the local government (Statements 22 and 51).	0.671
OC_4	E-governance	The intensity of electronic services for supporting the operation of local governments (Statements 57 and 58).	0.698
Perceived Social Capital			
Factor		Definition	Cronbach's Alpha
Code	Name		
SOC_1	Knowledge of Social Environment	The available knowledge sources outside local governments (Statements 3, 15, 17 and 39).	0.698
SOC_2	External Integration	The level of social integration of the local government with local community (Statements 11, 33, 35 and 46).	0.737
SOC_3	Economic Relations	The intensity of economic integration of the local government with local economy (Statements 21, 25, 42 and 48).	0.737
SOC_4	Collaboration with Central Government	The level of collaboration of the local government with central government (Statements 43, 60 and 61).	0.616
SOC_5	Communication	The level of communication of the local government with its external environment (Statements 14, 24, 30 and 56).	0.634
SOC_6	Social Culture	Efforts devoted for the creation of social culture (Statements 41, 47, 50 and 54).	0.763
Perceived Organizational Performance			
Factor		Definition	
Code	Name		
Qual.	Quality	The quality of services provided by local government to its social environment (Statement 16).	
Quant.	Quantity	The quantity of services provided by local government to its social environment (Statement 27).	
Cost	Cost	The cost of services provided by local government to its social environment (Statement 29).	

Table 3: Descriptives and Correlations between the Factors of Perceived Human Capital
 Section A reports simple statistics for the factors of Perceived Human Capital. Section B reports the correlation statistics for the factors of Perceived Human Capital.

<i>Section A: Descriptives</i>						
	Mean	Std. Deviation	N			
Knowledge & Skills	3.6576	0.62097	92			
Learning, Adaptation & Human Resource Development	3.3859	0.78307	92			
Synergy with Environment	3.7261	0.58982	92			
Commitment	3.6413	0.45889	92			
Motivation	3.5272	0.60612	92			
Satisfaction	3.4565	0.42518	92			
<i>Section B: Correlations</i>						
Pearson	Knowledge & Skills	Learning, Adaptation & Human Resource Development	Synergy with Environment	Commitment	Motivation	Satisfaction
Knowledge & Skills		0.485(**)	0.595(**)	0.413(**)	0.463(**)	0.333(**)
Learning, Adaptation & Human Resource Development	0.477(**)		0.603(**)	0.361(**)	0.490(**)	0.455(**)
Synergy with Environment	0.620(**)	0.585(**)		0.457(**)	0.607(**)	0.445(**)
Commitment	0.422(**)	0.314(**)	0.388(**)		0.514(**)	0.275(**)
Motivation	0.481(**)	0.438(**)	0.575(**)	0.472(**)		0.292(**)
Satisfaction	0.349(**)	0.445(**)	0.460(**)	0.236(*)	0.296(**)	
Pearson correlations about the diagonal; spearman correlations below the diagonal. * and ** indicate statistical significance at 5%, and 1% levels respectively.						

Table 4: Descriptives and Correlations between the Factors of Perceived Organizational Capital
 Section A reports simple statistics for the factors of Perceived Organizational Capital. Section B reports the correlation statistics for the factors of Perceived Organizational Capital.

<i>Section A: Descriptives</i>				
	Mean	Std. Deviation	N	
Knowledge Management	3.6014	0.75470	92	
Innovation	3.4094	0.88964	92	
Internal Integration	3.3859	0.90512	92	
e-governance	3.0761	0.87581	92	
<i>Section B: Correlations</i>				
Pearson	Knowledge Management	Innovation	Internal Integration	e-government
Knowledge Management		0.688(**)	0.598(**)	0.593(**)
Innovation	0.701(**)		0.768(**)	0.643(**)
Internal Integration	0.632(**)	0.775(**)		0.593(**)
e-governance	0.608(**)	0.646(**)	0.617(**)	

Pearson correlations about the diagonal; spearman correlations below the diagonal.
 * and ** indicate statistical significance at 5%, and 1% levels respectively.

Table 5: Descriptives and Correlations between the Factors of Perceived Social Capital
 Section A reports simple statistics for the factors of Perceived Social Capital. Section B reports the correlation statistics for the factors of Perceived Social Capital.

<i>Section A: Descriptives</i>						
	Mean	Std. Deviation	N			
Knowledge of Social Environment	3.1304	0.72388	92			
External Integration	3.4348	0.69225	92			
Economic Relations	2.9783	0.74739	92			
Collaboration with Central Government	3.4783	0.64867	92			
Communication	3.4438	0.72849	92			
Social Culture	3.6549	0.74110	92			
<i>Section B: Correlations</i>						
Pearson	Knowledge of Social Environment	External Integration	Economic Relations	Collaboration with Central Government	Communication	Social Culture
Knowledge of Social Environment		0.631(**)	0.377(**)	0.441(**)	0.615(**)	0.524(**)
External Integration	0.602(**)		0.322(**)	0.704(**)	0.497(**)	0.617(**)
Economic Relations	0.368(**)	0.324(**)		0.252(*)	0.216(*)	0.322(**)
Collaboration with Central Government	0.433(**)	0.691(**)	0.292(**)		0.388(**)	0.467(**)
Communication	0.659(**)	0.538(**)	0.255(*)	0.425(**)		0.637(**)
Social Culture	0.566(**)	0.630(**)	0.334(**)	0.485(**)	0.641(**)	

Pearson correlations about the diagonal; spearman correlations below the diagonal.
 * and ** indicate statistical significance at 5%, and 1% levels respectively.

Table 6: Correlations between the Factors of Perceived Intellectual Capital (i.e. Perceived human capital, perceived organizational capital and perceived social capital)

		Perceived Organizational Capital Factors				Perceived Social Capital Factors					
	Pearson	Knowledge Management	Innovation	Internal Integration	e-governance	Knowledge of Social Environment	External Integration	Economic Relations	Collaboration with Central Government	Communication	Social Culture
Perceived Human Capital Factors	Knowledge & Skills Learning, Adaptation & Human Resource Development	0.517(**)	0.427(**)	0.233(*)	0.532(**)	0.351(**)	0.294(**)	0.198	0.436(**)	0.462(**)	0.231(*)
	Synergy with Environment	0.633(**)	0.595(**)	0.563(**)	0.610(**)	0.544(**)	0.537(**)	0.260(*)	0.428(**)	0.500(**)	0.517(**)
	Commitment	0.685(**)	0.670(**)	0.476(**)	0.489(**)	0.513(**)	0.583(**)	0.364(**)	0.488(**)	0.426(**)	0.468(**)
	Motivation	0.410(**)	0.222(*)	0.251(*)	0.401(**)	0.405(**)	0.371(**)	0.259(*)	0.389(**)	0.397(**)	0.222(*)
	Satisfaction	0.492(**)	0.346(**)	0.269(**)	0.420(**)	0.440(**)	0.443(**)	0.292(**)	0.386(**)	0.382(**)	0.298(**)
		0.425(**)	0.474(**)	0.380(**)	0.203	0.360(**)	0.415(**)	0.176	0.332(**)	0.301(**)	0.253(*)
Perceived Organizational Capital Factors	Knowledge Management					0.641(**)	0.656(**)	0.2	0.461(**)	0.547(**)	0.559(**)
	Innovation					0.629(**)	0.656(**)	0.266(*)	0.520(**)	0.607(**)	0.681(**)
	Internal Integration					0.593(**)	0.562(**)	0.323(**)	0.409(**)	0.539(**)	0.672(**)
	e-governance					0.628(**)	0.528(**)	0.257(*)	0.470(**)	0.805(**)	0.643(**)
		Perceived Organizational Capital Factors				Perceived Social Capital Factors					
	Spearman's rho	Knowledge Management	Innovation	Internal Integration	e-governance	Knowledge of Social Environment	External Integration	Economic Relations	Collaboration with Central Government	Communication	Social Culture
Perceived Human Capital Factors	Knowledge & Skills Learning, Adaptation & Human Resource Development	0.491(**)	0.454(**)	0.281(**)	0.539(**)	0.305(**)	0.325(**)	0.198	0.451(**)	0.485(**)	0.258(*)
	Synergy with Environment	0.638(**)	0.598(**)	0.577(**)	0.618(**)	0.525(**)	0.530(**)	0.261(*)	0.435(**)	0.493(**)	0.560(**)
	Commitment	0.673(**)	0.664(**)	0.467(**)	0.494(**)	0.459(**)	0.590(**)	0.333(**)	0.493(**)	0.470(**)	0.462(**)
	Motivation	0.376(**)	0.214(*)	0.256(*)	0.403(**)	0.385(**)	0.387(**)	0.257(*)	0.411(**)	0.392(**)	0.230(*)
	Satisfaction	0.426(**)	0.334(**)	0.283(**)	0.458(**)	0.384(**)	0.423(**)	0.276(**)	0.387(**)	0.410(**)	0.323(**)
		0.444(**)	0.453(**)	0.358(**)	0.205(*)	0.297(**)	0.370(**)	0.192	0.285(**)	0.266(*)	0.258(*)
Perceived Organizational Capital Factors	Knowledge Management					0.632(**)	0.648(**)	0.199	0.467(**)	0.542(**)	0.561(**)
	Innovation					0.649(**)	0.648(**)	0.242(*)	0.516(**)	0.645(**)	0.681(**)
	Internal Integration					0.628(**)	0.582(**)	0.322(**)	0.440(**)	0.576(**)	0.689(**)
	e-governance					0.658(**)	0.544(**)	0.278(**)	0.490(**)	0.842(**)	0.654(**)

Pearson correlations about the diagonal; spearman correlations below the diagonal.
 * and ** indicate statistical significance at 5%, and 1% levels respectively.

Table 7: OLS Estimations and Residuals Statistics

This table presents the OLS estimations and the residuals statistics for the following OLS estimated models:

$$\log(S^j) = \log(a_0^j) + a_1^j \log(TA^j) + a_2^j \log(N^j) + e^j \quad \text{Model 1,}$$

$$\frac{SGA^j}{TA^j} = b_0 + b_1 \frac{N^j}{TA^j} + e_{AB_SGA}^j \quad \text{Model 2}$$

$$\frac{COGS^j}{TA^j} = c_0 + c_1 \frac{P^j}{TA^j} + e_{AB_COGS}^j \quad \text{Model 3 and}$$

$$\frac{S^j}{TA^j} = d_0 + d_1 \frac{P^j}{TA^j} + e_{AB_S}^j \quad \text{Model 4}$$

Section A: OLS Estimations				
	Model 1	Model 2	Model 3	Model 4
Independent Variables	$\log(S^j)$	SGA^j/TA^j	$COGS^j/TA^j$	S^j/TA^j
Constant	1.193 (1.522)	0.041** (5.136)	0.031** (2.411)	0.013 (0.693)
$\log(TA^j)$	0.59** (4.784)			
$\log(N^j)$	0.421** (4.145)			
N^j/TA^j		6144.057** (3.000)		
P^j/TA^j			280.204** (14.044)	197.664** (29.116)
Adjusted R Square	0.694	0.096	0.727	0.375
Number of Obs.	76	76	76	76
F	86.089**	9.001**	197.237**	46.087**
Section B: Residuals Statistics				
	Q^j	AB_SGA^j	AB_COGS^j	AB_S^j
Mean	0.000	0.000	0.000	0.000
Std. Deviation	0.301	0.040	0.058	0.055

* and ** indicate statistical significance at 2%, and 1% levels respectively. t values are in brackets

Table 8: Descriptives of Variables

	Minimum	Maximum	Mean	Std. Deviation
Inferred Human Capital	-0.0491	0.2129	0.0031	0.0341
Inferred Organizational Capital	-0.0040	0.0209	0.0005	0.0032
Inferred Social Capital	-0.0083	0.0090	-0.0002	0.0022
Return on Assets	-0.0600	0.1200	0.0013	0.0259
Liquidity	0.2500	23.8400	2.5942	3.6798
Total Assets Turnover (Total Sales Revenue)	0.0400	0.7300	0.2195	0.1219
Plant, Property, Equipment Turnover (Total Sales Revenue)	0.0100	0.4400	0.1074	0.0847
Total Assets Turnover (Revenues from Own Operations)	0.0445	1.0235	0.2513	0.1632
Plant, Property, Equipment Turnover (Revenues from Own Operations)	0.0100	0.5600	0.1233	0.1080
Liabilities over Total Assets	0.0100	0.4700	0.1132	0.0894
Debt over Total Assets	0.0000	0.2200	0.0513	0.0474

Table 9: Correlations between Inferred Human Capital, Inferred Organizational Capital, Inferred Social Capital and Financial Performance

	Inferred Human Capital	Inferred Organizational Capital	Inferred Social Capital	Return on Assets	Liquidity	Total Assets Turnover (Total Sales Revenue)	Plant, Property, Equipment Turnover (Total Sales Revenue)	Total Assets Turnover (Revenues from Own Operations)	Plant, Property, Equipment Turnover (Revenues from Own Operations)	Liabilities over Total Assets	Debt over Total Assets
Inferred Human Capital		0.875(**)	0.213	0.083	0.006	0.512(**)	0.455(**)	0.527(**)	0.476(**)	0.236(*)	0.244(*)
Inferred Organizational Capital	0.432(**)		0.117	0.037	0.031	0.543(**)	0.422(**)	0.564(**)	0.456(**)	0.216	0.191
Inferred Social Capital	0.493(**)	0.107		0.158	-0.045	-0.015	0.127	-0.063	0.061	0.056	0.161
Return on Assets	0.314(**)	0.027	0.253(*)		0.176	0.331(**)	0.458(**)	0.334(**)	0.445(**)	0.190	0.168
Liquidity	0.096	0.071	0.014	0.200		0.086	0.010	0.106	0.027	-0.317(**)	-0.180
Total Assets Turnover (Total Sales Revenue)	0.631(**)	0.662(**)	0.210	0.205	0.179		0.892(**)	0.991(**)	0.907(**)	0.566(**)	0.461(**)
Plant, Property, Equipment Turnover (Total Sales Revenue)	0.898(**)	0.465(**)	0.493(**)	0.293(*)	0.118	0.810(**)		0.886(**)	0.992(**)	0.582(**)	0.484(**)
Total Assets Turnover (Revenues from Own Operations)	0.631(**)	0.649(**)	0.217	0.241(*)	0.230(*)	0.995(**)	0.814(**)		0.914(**)	0.541(**)	0.434(**)
Plant, Property, Equipment Turnover (Revenues from Own Operations)	0.890(**)	0.477(**)	0.467(**)	0.293(*)	0.155	0.832(**)	0.995(**)	0.839(**)		0.559(**)	0.456(**)
Liabilities over Total Assets	0.422(**)	0.332(**)	0.326(**)	-0.080	-0.502(**)	0.437(**)	0.525(**)	0.417(**)	0.503(**)		0.864(**)
Debt over Total Assets	0.340(**)	0.340(**)	0.315(**)	-0.063	-0.273(*)	0.382(**)	0.451(**)	0.367(**)	0.428(**)	0.883(**)	

Pearson correlations about the diagonal; spearman correlations below the diagonal.

* and ** indicate statistical significance at 5%, and 1% levels respectively.

Table 10: Perceived Intellectual Capital and Perceived Performance

Presents the correlation statistics between the factors of perceived human capital, perceived organizational capital, perceived social capital and the factors of perceived performance.

* and ** indicate statistical significance at 5%, and 1% levels respectively.

	Pearson	Perceived Quantity	Perceived Quality	Perceived Cost	
Perceived Human Capital	Knowledge & Skills	0.093	0.375(**)	-0.099	
	Learning, Adaptation & Human Resource Development	-0.017	0.364(**)	-0.318(**)	
	Synergy with Environment	0.083	0.566(**)	-0.246(*)	
	Commitment	-0.170	0.242(*)	-0.163	
	Motivation	-0.067	0.341(**)	-0.104	
	Satisfaction	-0.135	0.445(**)	-0.197	
		Spearman's rho	Perceived Quantity	Perceived Quality	Perceived Cost
	Knowledge & Skills		0.018	0.376(**)	-0.117
	Learning, Adaptation & Human Resource Development		-0.079	0.348(**)	-0.281(**)
	Synergy with Environment		0.081	0.594(**)	-0.239(*)
Commitment		-0.185	0.214(*)	-0.155	
Motivation		-0.074	0.326(**)	-0.104	
Satisfaction		-0.133	0.430(**)	-0.205(*)	
Perceived Organizational Capital		Pearson	Perceived Quantity	Perceived Quality	Perceived Cost
	Knowledge Management		0.006	0.483(**)	-0.292(**)
	Innovation		-0.162	0.438(**)	-0.359(**)
	Internal Integration		-0.202	0.240(*)	-0.425(**)
	e- governance		-0.113	0.301(**)	-0.212(*)
		Spearman's rho	Perceived Quantity	Perceived Quality	Perceived Cost
	Knowledge Management		-0.054	0.488(**)	-0.336(**)
	Innovation		-0.176	0.443(**)	-0.332(**)
	Internal Integration		-0.207(*)	0.258(*)	-0.366(**)
	e- governance		-0.098	0.320(**)	-0.186
Perceived Social Capital		Pearson	Perceived Quantity	Perceived Quality	Perceived Cost
	Knowledge of Social Environment		-.276(**)	0.217(*)	-0.269(**)
	External Integration		-0.166	0.485(**)	-0.348(**)
	Economic Relations		-0.186	-0.100	-0.221(*)
	Collaboration with Central Government		-0.118	0.457(**)	-0.293(**)
	Communication		-0.189	0.331(**)	-0.128
	Social Culture		-0.192	0.398(**)	-0.266(*)
		Spearman's rho	Perceived Quantity	Perceived Quality	Perceived Cost
	Knowledge of Social Environment		-.261(*)	0.234(*)	-0.238(*)
	External Integration		-0.145	0.542(**)	-0.350(**)
Economic Relations		-0.225(*)	-0.115	-0.198	
Collaboration with Central Government		-0.147	0.457(**)	-0.314(**)	
Communication		-0.177	0.347(**)	-0.116	
Social Culture		-.218(*)	0.417(**)	-0.250(*)	

Pearson correlations about the diagonal; spearman correlations below the diagonal.

* and ** indicate statistical significance at 5%, and 1% levels respectively.

Table 11: Independent-samples T test between high and low human capital local governments

Section A: Group Statistics					
		N	Mean	Std. Deviation	Std. Error Mean
Return on Assets	High human capital	20	0.0010	0.01944	0.00435
	Low human capital	21	-0.0067	0.01932	0.00422
Liquidity	High human capital	20	3.0955	4.22474	0.94468
	Low human capital	21	3.2429	5.33925	1.16512
Total Assets Turnover (Total Sales Revenue)	High human capital	20	0.2510	0.13506	0.03020
	Low human capital	21	0.1576	0.06024	0.01315
Plant, Property, Equipment Turnover (Total Sales Revenue)	High human capital	20	0.1430	0.07828	0.01750
	Low human capital	21	0.0448	0.01806	0.00394
Total Assets Turnover (Revenues from Own Operations)	High human capital	20	0.2949	0.19609	0.04385
	Low human capital	21	0.1707	0.07256	0.01583
Plant, Property, Equipment Turnover (Revenues from Own Operations)	High human capital	20	0.1675	0.11276	0.02521
	Low human capital	21	0.0490	0.01998	0.00436
Liabilities over Total Assets	High human capital	20	0.1195	0.07309	0.01634
	Low human capital	21	0.0800	0.05745	0.01254
Debt over Total Assets	High human capital	20	0.0515	0.04870	0.01089
	Low human capital	21	0.0390	0.03986	0.00870
Perceived Quantity	High human capital	20	2.0000	0.72548	0.16222
	Low human capital	21	2.2381	0.88909	0.19401
Perceived Quality	High human capital	20	3.9500	0.51042	0.11413
	Low human capital	21	3.4762	0.60159	0.13128
Perceived Cost	High human capital	20	3.0000	0.97333	0.21764
	Low human capital	21	2.6667	0.73030	0.15936
Section B: Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	Sig. (2-tailed)
Return on Assets	Eq. Var. Assum.	0.000	0.983	1.266	0.213
	Eq. Var. Not Assum.			1.266	0.213
Liquidity	Eq. Var. Assum.	0.521	0.475	-0.098	0.923
	Eq. Var. Not Assum.			-0.098	0.922
Total Assets Turnover (Total Sales Revenue)	Eq. Var. Assum.	2.708	0.108	2.883	0.006
	Eq. Var. Not Assum.			2.835	0.009
Plant, Property, Equipment Turnover (Total Sales Revenue)	Eq. Var. Assum.	8.419	0.006	5.600	0.000
	Eq. Var. Not Assum.			5.475	0.000
Total Assets Turnover (Revenues from Own Operations)	Eq. Var. Assum.	2.896	0.097	2.714	0.010
	Eq. Var. Not Assum.			2.663	0.014
Plant, Property, Equipment Turnover (Revenues from Own Operations)	Eq. Var. Assum.	8.713	0.005	4.739	0.000
	Eq. Var. Not Assum.			4.629	0.000
Liabilities over Total Assets	Eq. Var. Assum.	2.274	0.140	1.929	0.061
	Eq. Var. Not Assum.			1.918	0.063
Debt over Total Assets	Eq. Var. Assum.	0.418	0.522	0.898	0.375
	Eq. Var. Not Assum.			0.893	0.377
Perceived Quantity	Eq. Var. Assum.	1.791	0.189	-0.937	0.355
	Eq. Var. Not Assum.			-0.941	0.352
Perceived Quality	Eq. Var. Assum.	6.555	0.014	2.713	0.010
	Eq. Var. Not Assum.			2.724	0.010
Perceived Cost	Eq. Var. Assum.	0.163	0.689	1.244	0.221
	Eq. Var. Not Assum.			1.236	0.225

Table 12: Independent-samples T test between high and low organizational capital local governments

Section A: Group Statistics						
		N	Mean	Std. Deviation	Std. Error Mean	
Return on Assets	High organizational capital	20	-0.0060	0.02088	0.00467	
	Low organizational capital	20	0.0050	0.02417	0.00540	
Liquidity	High organizational capital	20	3.2790	4.21208	0.94185	
	Low organizational capital	20	2.0380	2.18183	0.48787	
Total Assets Turnover (Total Sales Revenue)	High organizational capital	20	0.2710	0.10452	0.02337	
	Low organizational capital	20	0.1810	0.12070	0.02699	
Plant, Property, Equipment Turnover (Total Sales Revenue)	High organizational capital	20	0.1330	0.07255	0.01622	
	Low organizational capital	20	0.0955	0.09660	0.02160	
Total Assets Turnover (Revenues from Own Operations)	High organizational capital	20	0.3181	0.14316	0.03201	
	Low organizational capital	20	0.2011	0.15029	0.03361	
Plant, Property, Equipment Turnover (Revenues from Own Operations)	High organizational capital	20	0.1555	0.09185	0.02054	
	Low organizational capital	20	0.1055	0.11870	0.02654	
Liabilities over Total Assets	High organizational capital	20	0.1405	0.10880	0.02433	
	Low organizational capital	20	0.0960	0.06159	0.01377	
Debt over Total Assets	High organizational capital	20	0.0660	0.05325	0.01191	
	Low organizational capital	20	0.0395	0.03980	0.00890	
Perceived Quantity	High organizational capital	20	2.3500	0.74516	0.16662	
	Low organizational capital	20	1.9500	0.88704	0.19835	
Perceived Quality	High organizational capital	20	4.0000	0.56195	0.12566	
	Low organizational capital	20	3.6000	0.59824	0.13377	
Perceived Cost	High organizational capital	20	3.1500	0.93330	0.20869	
	Low organizational capital	20	2.8500	0.87509	0.19568	
Section B: Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Sig. (2-tailed)	
Return on Assets	Eq. Var. Assum.	0.355	0.555	-1.540	0.132	
	Eq. Var. Not Assum.			-1.540	0.132	
Liquidity	Eq. Var. Assum.	1.908	0.175	1.170	0.249	
	Eq. Var. Not Assum.			1.170	0.252	
Total Assets Turnover (Total Sales Revenue)	Eq. Var. Assum.	0.179	0.674	2.521	0.016	
	Eq. Var. Not Assum.			2.521	0.016	
Plant, Property, Equipment Turnover (Total Sales Revenue)	Eq. Var. Assum.	0.083	0.775	1.388	0.173	
	Eq. Var. Not Assum.			1.388	0.174	
Total Assets Turnover (Revenues from Own Operations)	Eq. Var. Assum.	0.370	0.547	2.521	0.016	
	Eq. Var. Not Assum.			2.521	0.016	
Plant, Property, Equipment Turnover (Revenues from Own Operations)	Eq. Var. Assum.	0.008	0.929	1.490	0.145	
	Eq. Var. Not Assum.			1.490	0.145	
Liabilities over Total Assets	Eq. Var. Assum.	2.730	0.107	1.592	0.120	
	Eq. Var. Not Assum.			1.592	0.122	
Debt over Total Assets	Eq. Var. Assum.	1.849	0.182	1.783	0.083	
	Eq. Var. Not Assum.			1.783	0.083	
Perceived Quantity	Eq. Var. Assum.	0.013	0.911	1.544	0.131	
	Eq. Var. Not Assum.			1.544	0.131	
Perceived Quality	Eq. Var. Assum.	4.235	0.046	2.179	0.036	
	Eq. Var. Not Assum.			2.179	0.036	
Perceived Cost	Eq. Var. Assum.	0.008	0.931	1.049	0.301	
	Eq. Var. Not Assum.			1.049	0.301	

Table 13: Independent-samples T test between high and low social capital local governments

Section A: Group Statistics					
		N	Mean	Std. Deviation	Std. Error Mean
Return on Assets	High social capital	20	0.0105	0.02438	0.00545
	Low social capital	22	-0.0059	0.01469	0.00313
Liquidity	High social capital	20	2.4035	2.20103	0.49217
	Low social capital	22	2.6150	4.06790	0.86728
Total Assets Turnover (Total Sales Revenue)	High social capital	20	0.2305	0.15014	0.03357
	Low social capital	22	0.1941	0.09277	0.01978
Plant, Property, Equipment Turnover (Total Sales Revenue)	High social capital	20	0.1315	0.10505	0.02349
	Low social capital	22	0.0700	0.04721	0.01006
Total Assets Turnover (Revenues from Own Operations)	High social capital	20	0.2667	0.18927	0.04232
	Low social capital	22	0.2183	0.12699	0.02707
Plant, Property, Equipment Turnover (Revenues from Own Operations)	High social capital	20	0.1515	0.13283	0.02970
	Low social capital	22	0.0805	0.05972	0.01273
Liabilities over Total Assets	High social capital	20	0.1235	0.09980	0.02232
	Low social capital	22	0.0868	0.06622	0.01412
Debt over Total Assets	High social capital	20	0.0565	0.04416	0.00987
	Low social capital	22	0.0400	0.03952	0.00843
Perceived Quantity	High social capital	20	1.6500	0.67082	0.15000
	Low social capital	22	2.2273	0.81251	0.17323
Perceived Quality	High social capital	20	4.0500	0.51042	0.11413
	Low social capital	22	3.5455	0.67098	0.14305
Perceived Cost	High social capital	20	3.3000	1.26074	0.28191
	Low social capital	22	2.5455	0.73855	0.15746

Section B: Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	Sig. (2-tailed)
Return on Assets	Eq. Var. Assum.	2.451	0.125	2.670	0.011
	Eq. Var. Not Assum.			2.610	0.014
Liquidity	Eq. Var. Assum.	0.915	0.345	-0.207	0.837
	Eq. Var. Not Assum.			-0.212	0.833
Total Assets Turnover (Total Sales Revenue)	Eq. Var. Assum.	2.455	0.125	0.955	0.345
	Eq. Var. Not Assum.			0.934	0.357
Plant, Property, Equipment Turnover (Total Sales Revenue)	Eq. Var. Assum.	7.276	0.010	2.486	0.017
	Eq. Var. Not Assum.			2.407	0.024
Total Assets Turnover (Revenues from Own Operations)	Eq. Var. Assum.	2.021	0.163	0.981	0.332
	Eq. Var. Not Assum.			0.963	0.342
Plant, Property, Equipment Turnover (Revenues from Own Operations)	Eq. Var. Assum.	7.678	0.008	2.271	0.029
	Eq. Var. Not Assum.			2.198	0.037
Liabilities over Total Assets	Eq. Var. Assum.	0.896	0.349	1.416	0.165
	Eq. Var. Not Assum.			1.389	0.174
Debt over Total Assets	Eq. Var. Assum.	0.439	0.512	1.278	0.209
	Eq. Var. Not Assum.			1.271	0.211
Perceived Quantity	Eq. Var. Assum.	0.046	0.830	-2.496	0.017
	Eq. Var. Not Assum.			-2.519	0.016
Perceived Quality	Eq. Var. Assum.	7.331	0.010	2.721	0.010
	Eq. Var. Not Assum.			2.757	0.009
Perceived Cost	Eq. Var. Assum.	3.872	0.056	2.393	0.021
	Eq. Var. Not Assum.			2.337	0.026