

The Role of Social Capital and ICT in Corporate Social Responsibility in a Developing Economy: An Empirical Study of the Finance Industry in Sri Lanka

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ABSTRACT

Social Capital (SC) has been recognised as an important factor in developing relationships of trust, providing the foundation for greater collaboration among individuals, groups, organisations, industries or countries, which is essential for enabling developing economies. Similarly, Corporate Social Responsibility (CSR) is touted as a key enabler of both organisational performance and of sustainable development, which are also essential for developing economies. Moreover, SC has significance as the basis for and the development of stakeholder relationships, which are essential to CSR.

Information Systems (IS) researchers have become increasingly interested in exploring SC in relation to Information and Communications Technology (ICT). However, the combined effect of SC and ICT on the CSR in developing contexts remains unexplored. What role, if any, does ICT play in strengthening the relationship between SC and CSR?

This study investigates the relationships between SC, ICT, and CSR in the developing economy context. Using a quantitative approach combining network science and structured equation modelling (SEM) to analyse both primary and secondary data, the study develops a model of the significant relationships theorised and confirmed in the analysis. The findings of this study provide new knowledge in both social capital theory and network theory, contributing to a more holistic perspective that incorporates social, technical and organisational aspects and provides insights useful for building effective strategies in similar developing contexts.

Keywords: Social Capital, ICT, Corporate Social Responsibility, CSR, Banking, Developing Country, Developing Economy, Global Development

INTRODUCTION

Sri Lanka is focusing on long-term strategic and structural development challenges as it strives to transition to an upper middle-income country after a civil war of nearly three decades. Despite many drawbacks, Sri Lanka boasts of a highly cohesive society. The 2014 Legatum prosperity index [1] ranked Sri Lanka in the overall ranking of 27th place among 142 countries in the sub-index of social capital which measures countries' performance in two areas: social cohesion and engagement, and community and family networks.

Social Capital (SC) is a very influential concept in understanding how societies work. As an emerging economy, it is important to understand and utilize the power of SC towards sustainable development. Banks and financial institutions play an essential role in the developing economies, such as in Sri Lanka. Banks that choose to engage in CSR provide essential resources to the Sri Lanka economic, social, and environmental development, in areas such as education, health, the environment, disaster recovery, and entrepreneurship [2]. Improving the engagement of banks in CSR would enhance the development of less developed countries like Sri Lanka.

As the banking industry is inherently networked and relies on trust-based interactions, using a network science approach could be helpful in investigating how SC affects CSR and how ICT may further enhance this effect. Modelling and aggregating different dimensions of SC relationships as multiple interrelated sets of networks (i.e. a meta-network) can serve as input to develop a model of how individual and collective social capital affects CSR in Sri Lanka, incorporating the role of ICT and other enablers and limiters.

Overview of Financial System in Sri Lanka

The financial system in Sri Lanka comprises the major financial institutions, such as the Central Bank of Sri Lanka (CBSL), 26 Licensed Commercial Banks (LCBs), 9 Licensed Specialised Banks (LSBs), 47 Licensed Finance Companies (LFCs), Specialised Leasing Companies (SLCs), Primary Dealers (PDs); the major financial markets, such as the Foreign Exchange Market, Money Market, Capital Market and the informal financial market; and the financial infrastructure which is the legal framework related to the financial system and the payment and settlement [3]. The banking sector dominates the financial system and accounted for 58 per cent of the total assets of the financial system as at the end of 2014.

Social Capital and ICT

Social capital is an important factor in developing relationships of trust, those relationships forming the foundation for greater collaboration and successful collective action [4]. Researchers have previously provided evidence that inter-organisational collaboration leads to various beneficial outcomes such as increased organisational performance through resource sharing, knowledge acquisition, value creation, intellectual assets creation and strategic alliances [5-7]. Previous studies also suggest that information and communication technology (ICT) is critical to the development of collaboration between organisations. There have been many studies of the role, impact and benefits of ICT or inter-organisational information systems (IOS) on inter-organisational relationships [8-10]

Recently, IS researchers have increasingly become interested in the link between social capital and ICT. While some studies have recognised the important role of Social capital in ICT development, acceptance or diffusion[11-13], another set of studies focused on the role of ICT as an enabler towards development of Social Capital[14-19]. Accordingly, it is evident that social capital and ICT are mutually complimentary in the inter-firm level. Very little is known about the effect of ICT-enabled Social Capital on inter-firm collaboration[20]. More importantly for this research, none of these studies holistically examined how the interplay between Social Capital and ICT may affect CSR. More specifically, the effect of the interplay of ICT and Social Capital on CSR in the banking context in developing economies remains unexplored.

The aim of this research is to develop a model of how ICT enabled social capital affects CSR in the banking industry in Sri Lanka, incorporating the relevant enablers and limiters. The purpose of this research is to investigate multiple dimensions of social capital, the types and levels of CSR in the Sri Lankan banking context, the enabling role of ICT, and other enablers and limiters to the effect of social capital.

The research used a mixed-method approach, combining quantitative and qualitative data gathered through a survey and from public sources. The qualitative data was then coded for quantitative analysis. The quantitative analysis was based on Structured Equation Modelling (SEM) technique using variables derived from network science approaches, which there were input for SEM analysis.

The remainder of this paper is organised as follows. The next section introduces relevant literature, finishing with an initial, literature-based model of the influence of social capital and ICT on CSR. The subsequent section describes the research methodology, including the measurement model, data collection sources and processes, and the data analysis method. Following that the model resulting from the analysis is presented. After that, the findings are discussed and conclusions are drawn.

LITERATURE REVIEW

This section introduces relevant literature on (1) social capital and its dimensions, (2) the relationships between ICT and social capital, (3) CSR, (4) the relationship between social capital and CSR, and (5) how the network science approach used in this research deals with social capital, finishing with (6) an initial, literature-based model of the influence of social capital and ICT on CSR.

Social Capital

‘It takes a village to raise a child’ -African pro-verb. The casual idea behind the “Social Capital” is that one can access benefits such as information, resources or new opportunities through his/her relationships with others. This is evident through day to day social situations such as when people get better chances through friends in influential positions or receive help from close family and friends during hardships. While social capital is usually considered to operate in individual level, it can also be viewed at the group or firm level where the aggregates of ties may operate among the so called social units.

Social Capital Studies can be roughly divided into two groups: individual social capital, and collective social capital [21]. Bourdieu [22], Coleman [23], and those who follow them, regard social capital primarily as the resources derived by an individual from his social network. Social capital defined from this point of view is called ‘individual social capital’ [21]. The school of ‘collective social capital’ was pioneered by Putnam [24] and Woolcock and Naryyan [25]. They generally considered social capital as both individuals’ social networks and their moral attitudes, or social norms, which contribute to the common good of a community.

The measurement of individual social capital usually focuses on variables indicating the network position of an individual inside a social network [26]. Some of the measurement instruments include the Name Generator, the Position Generator, and the Resource Generator [27-29]. Collective social capital requires multi-dimensional measurement [30]. Among the most widely agreed dimensions of social capital in the literature are social networks, trust, and norms of reciprocity.

Nahapiet and Ghoshal [6] defined Social Capital as 'the sum of actual and potential resources embedded within, available through and derived from the network of relationships possessed by an individual or social unit'). According to them, 'Social capital comprises both the network and the assets that may be mobilized through that network'. This definition allows social capital to include both individual and collective properties. Therefore, this study intends to adopt this definition. It presents a distinction between three dimensions: structural, relational and cognitive, and discuss the highly interrelated nature of the features they present.

Structural Dimension

The structural dimension comprises the actual relationships or interactions that provide the opportunity for accessing resources or acting together or the actual links between actors in the network. Structural social capital includes formal and informal social networks. Informal networks are formed by the interpersonal relationships between friends, relatives, colleagues, neighbours, etc. Formal networks refer to participation in the associations and voluntary organisations: professional, religious, cultural, etc.

Measurements in several levels were used in literature. Overall pattern of linkages between actors [31] such as density, connectivity, hierarchy, closure and holes have been considered. Commonly identified important facets of structural dimension are: the presence or absence of network ties between actors [6, 32], and network configuration (Krackhardt, 1989). The existence of the networks created for one purpose may be used for another referred to as 'network appropriability' [23, 33]. Also the locations of individual nodes in the network such as centrality and betweenness have been considered as measurements of structural dimension [34]. The position in the network can have a significant impact on firm performance and is an important source of competitive advantage [34, 35]. Some positions are more beneficial than other positions[36]. Especially "bridging" [31] and "closed" [23] network positions have often

been linked to the improvement of firm performance. Structural social capital generally facilitates mutually beneficial collective action through established roles and social networks supplemented by rules, procedures and precedents [37].

Relational Dimension

The relational dimension considers affective qualities routed in these links which serves as a motivation of individuals to act collaboratively toward others [38]. It describes the forms of personal relationships people develop with each other through a history of repeated interactions [39]. This focuses on relationships such as friendship and respect that influence their behaviour. Among the key facets of this dimension are trust and trustworthiness[24, 40], norms and sanctions [23, 24], obligations and expectations [23, 41, 42] and identity and identification [43].

Seppänen, et al [44] suggested that trust is a multi-dimensional, reciprocal and context-specific concept after reviewing a number of empirical studies on inter organisational trust and identified some common indicators of trust between two parties: Competence, Reliability, Predictability, Contractual trust, Lack of dependence and Information Sharing. In case of high trust, the expectations that others will reciprocate are high and people tend to really follow the civic norms [45]. Trust is the expectation that arises within a community of regular, honest and cooperative behaviour, based on commonly shared norms, on the part of other members of that community. Those norms can be about deep “values” or encompass secular norms like professional standards and codes [46]. Institution-based trust means that one believes the necessary impersonal structures are in place to enable one to act in anticipation of a successful future endeavour [47]. Institution-based trust reflects the security one feels about a situation because of guarantees, or other impersonal structures [47]. Individuals make trust choices based on rationally derived costs and benefits (Williamson 1993).

Cognitive Dimension

The cognitive dimension involves the means by which the interactions between actors are enabled or the ability of people to act together. Nahapiet and Ghoshal [6] used shared code, shared language and shared narratives as indicators of cognitive dimension. Cognitive social capital, which includes shared norms, values, attitudes, and beliefs, incline people towards mutually beneficial collective action [48]. Norms can be viewed as a social contract or unwritten

rules. One important norm is reciprocity [11] in which people act for benefit of others and expect to get help in return when it is needed. Shared vision and goals and collective values, help promote collective action [49]. Cognitive and structural forms of social capital are commonly connected and mutually reinforcing [50].

ICT and Social Capital

The interactions between ICT and social capital in organisations and society have drawn both researchers' and policymakers' attention. Yang et al. [38] categorised the studies that focus on the link between social capital and ICT. Research using social capital as a dependent variable explores the role of ICT in social capital building and maintenance. Impacts of ICT on social capital at both the individual [14, 16, 18] and collective levels [15, 17, 19, 51] are discussed here [52, 53].

Studies treating social capital as an independent variable examine the effects of social capital on the development and use of ICT. Some of these studies regard the effects of social capital on individual's acceptance and usage of ICT [54, 55], whereas other studies regard the effect of social capital towards overall ICT diffusion and use in communities [11-13]. Some studies demonstrate that a high level of already established social capital, such as pre-existing, strong, non-electronic networks and community commitment, is a factor for success in establishing electronic based networks [46, 56].

Fountain [1997] claimed that the ability to collaborate both within and among firms and other organisations appears to be a necessary condition for firms to take advantage of new technologies. Some studies explore the role of social capital in relation to various forms of virtual organisations enabled by ICT and e-commerce in an organisational context (Arenius 2002; Nahapist and Ghoshal 1998; Spence and Schmidpeter 2003; Steinfeld 2004). Existing relationships between partners can both enable and constrain the effect of IT on inter-organisational collaboration [20]. In addition, IT reinforces and stabilises the already existing inter-organisational structures and arrangements [20].

Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) is concerned with what corporations (or business organisations more generally) do to fulfil responsibilities beyond what is required to make a

profit for their owner(s) and what is required by law. In an early publication on CSR, Carroll [57] identified four different kinds of responsibilities: economic, legal, ethical, and discretionary. Later, Carroll [58] modified these to develop a “pyramid of Corporate Social Responsibility”. In his pyramid, the different component responsibilities of CSR are built one on top of the other, with economic responsibilities (“be profitable”) at the bottom and ascending through legal responsibilities (“obey the law”) and ethical responsibilities (“be ethical”) to philanthropic responsibilities (“be a good corporate citizen”) at the top [58].

CSR is entirely discretionary and can be undertaken (or not) to varying degrees and in a vast diversity of ways. As Galbreath and Shum [59] put it, “firms ... can address these responsibilities by doing nothing to doing much.”

Much work has been done investigating the relationship(s) between CSR and developing economies [60-63]. A central theme (albeit somewhat condescending and critical toward the governments of developing economies) is that CSR is seen as a way to fill the gap left by poor government fulfilment of its responsibilities toward its citizens and other stakeholders. As Eweje [64] puts it, “In the absence of good governance and transparency in some developing economies – and the belief by citizens that no improvement of their economic being is in sight – attention has been focusing on multinational enterprises (MNEs) and large corporations to do more in terms of CSR and sustainable development for their host countries and communities.” Large businesses are seen as having the capacity to make an impact through CSR activities.

Corporate Social Responsibility & Social Capital

In theory, Corporate Social Responsibility (CSR) and Social Capital are closely related [65, 66]. In 2008, Sacconi and Antoni [66] theorised that “relational aspects, in terms of trust, trustworthiness and spirit of cooperation, may have a key role in promoting the coordination processes between firm and stakeholders that are essential in order to implement the CSR practices.” (pp. 1-2). They further identified a gap in that “Even though SC and CSR seem to be linked by many common elements related to the quality and quantity of social relations between agents, their relationship has not been deeply investigated yet.” (p. 2). Their theoretical analysis further identified how and under what conditions a virtuous circle between Cognitive Social Capital, CSR, and Structural Social Capital would operate. In particular, firms who wish to benefit from CSR must treat both strong and weak stakeholders fairly in order to continue to

benefit from social capital beliefs and reputation that continue to support cooperation between the firm and its stakeholders. Their 2011 analysis[65] concluded that four factors lead to sustainable CSR and maximal structural social capital: “(a) reciprocal beliefs that others will cooperate [cognitive social capital], (b) a generic disposition to cooperate, (c) conformist motivations contingent on agreed norms and beliefs, and (d) the existence of sanctions against agents that decide not to cooperate.” (p. 225).

Empirical research has also shown other, similar links. Other empirical research has found that firms that operate in a high social capital region (on average, the norm for that region) have higher levels of CSR [67]. González-Rodríguez et al [68], using a conceptualisation of CSR relating to the triple bottom line (financial, social, environmental), found that human values influence perceptions of CSR, and that the CSR perceptions of customers influence the CSR perceptions (and actions) of entrepreneurs, who seek to be congruent with the expectations of customers, in order to build social capital that will lead improved business performance.

Network Science & Social Capital

Network science is an emerging scientific discipline that examines the interconnections among diverse entities. A network, e.g. a social network of individuals and/or organisations, is viewed as a set of nodes and relations (possibly directed) between the nodes. A meta-network encompasses multiple homogeneous networks into a larger heterogeneous network with different kinds of nodes and relationships. Such networks are amenable to analysis with the support of computer-based tools, such as ORA [69, 70]. Commonly used network science concepts include Centrality, Prestige, Homophily, Proximity, Reciprocity, Transitivity and Balance. Centrality is a measure of how well connected a node is, based on its number of connections as well as its connections' connections, etc. A node with high Prestige is usually associated with in-degree centrality [32]. If two actors share common interests, beliefs, goals, and/or culture (more generally, they are similar or have Homophily), they are more likely to form connections. Proximity suggests that if two nodes are geographically closer (one kind of relationship) to each other, there is a much higher likelihood that they will form a link [71] (a second kind of relationship). Reciprocity studies whether agents tend to reciprocate directed relationships [72]. Transitivity is another common attribute of networks [73] which focus on consistency in cognition among actors. A Balanced state exists between three entities if all three possible ties

are positive (e.g. “Your friend is my friend.”) or if two are negative and one positive (e.g. “Your enemy is my enemy.”) [74].

Network theory also provides a helpful viewpoint to investigate inter-organisational collaboration, e.g. as practiced in CSR. Certain structural properties of networks have attracted scholars’ attention. Brewer [75] argued that denser networks increase the likelihood that people will engage in collective action. In closed networks, information about one actor's opportunistic acts diffuses rapidly to other related actors and this will discourage organisations from behaving opportunistically [76]. Dense, embedded networks can facilitate large relationship-specific investments and collaboration and can foster the development of shared norms of behaviour [76]. Organisations in alliance networks exhibit both high clustering and high reach will have greater innovative output [77].

Research Questions

Based on the literature discussed above, there is a substantial body of literature investigating the relationships of social capital and corporate social responsibility individually in the context of developing economies, i.e. the role of social capital within developing economies and of corporate social responsibility within developing economies, including the banking and finance industry. However, no literature has investigated how ICT influences or mediates CSR. Nor has there been such an investigation in the context of developing countries, in Sri Lanka, or in the banking and finance industry, even though the banking and finance industry is potentially a strong force for economic development through CSR. Based on these research gaps this research investigated the following research questions.

RQ1: Does Social Capital in the banking and finance industry in Sri Lanka influence banking CSR and if so how?

RQ2: Does use of ICT in the banking and finance industry in Sri Lanka influence banking CSR and if so how?

RQ3: What factors or characteristics of Social Capital and banking ICT have the greatest influence on banking CSR in Sri Lanka?

RESEARCH METHODOLOGY

A quantitative approach has been used in this study. Secondary data were derived from the annual reports and websites of banking organisations. Primary data were collected in two stages. A pilot study was employed with two banks using 5 semi-structured interviews each with higher management. This stage was mainly concerned with identifying the perspectives of bankers on the proposed concept to augment the findings from the literature. The findings from pilot stage assisted to define criteria on the development of main survey instruments for the main data a collection phase of the research. The survey was carried out manually as well as in online form. Participants of the main survey were the senior management staff in banks in Sri-Lanka. Participants were identified with the help of higher management and through personal contacts. Different versions of the survey instrument were distributed to the above groups of participants. There are 26 commercial banks, 9 specialised banks and 48 finance companies currently operating in Sri Lanka. All of the banks were invited to participate in the survey. 21 commercial banks and 6 specialised banks and only 10 finance companies responded to the survey.

Social Capital Measures

To measure the three dimensions of social capital, survey included a set of questions with regard to the above mentioned indicators. Questions were designed using the resource generator instruments [27-29] as a basic guide and by reviewing the questions used by Tsai and Ghoshal [7]. In each question, participants were given a list of banks from which they have to choose banks.

For the Structural Dimension, we measured the social interactions in the bank level (banks' participation in inter-bank social events) and the social interaction in the directors' level (directors' participation in professional and other inter-bank associations). Following Tsai [7], we constructed two "socio-matrices" from data on the social interactions among the 45 firms based on these two types of social interactions.

To measure firm-level social interactions, we used the following question to identify firm-level participation in social events in the industry; "Does your bank take part in any of the following common events or groups that may allow the staff of your bank to blend with the staff of other

banks? Please tick all choices that apply.” We provided a list of social events or groups that exist in the inter-bank domain. Then we developed a matrix linking banks and social events. We also wanted to consider the social interaction in the Director level. For this, a micro level measure was developed. We identified well-known banking industry associations in Sri Lanka, obtained the list of committee members in each and identified the banks they are from. Similarly, we prepared a list of 18 professional bodies related to banking in Sri Lanka. We Identified whether any directors holding the fellowships or positions in professional bodies. We refer as ‘industry bodies’ to the both professional associations and industry associations here after in the text. A matrix was developed linking banks and Industry bodies through directors. Both of these matrixes were transformed into a Bank x Bank matrices using a network analysis tool named ‘ORA’. This new networks between banks were used to generate per-bank centrality measures such as ‘Betweenness centrality’. Betweenness tells us which node is the most connected to other parts of a network. Other researchers have identified the ‘Betweenness index’ as the most suitable centrality measure for capturing the information or access benefits within a social structure [7].

For the Relational Dimension, we used two questions to measure ‘Trust’ between banks: ‘Non opportunistic behaviour of a bank’ (“Please select the banks that you can rely on without any fear that they will take advantage of you or your bank even if the opportunity arises”) and the ‘Competence based trust’ towards a bank (“Please select the banks with a good industry reputation so that you would be willing to trust this bank to get a job done properly even without your monitoring”). These items were based on similar questions used by previous researchers [47, 78-80]. Using the data gathered from the two questions, we created two relational matrixes measuring interfirm trust. We averaged the responses within each firm to get firm-level data. Since the trusting relationships here were directional, both in-degree and out-degree centrality could be calculated. For the analysis reported here, we used in-degree as a measure of trustworthiness as it counted the number of nominations each business unit received in the interunit trusting relations matrix.

For the Cognitive Dimension, we used a two-item measure to assess the level of shared cognition of a bank with other banks; Shared Institutional Vision (Please select other firms that share the

same vision and ambitions as your firm.), Shared Work Understanding (Please select the firms that you have a good understanding with so that it's easier to work with them compared to other firms?). Again, we followed the same procedure as for the relational measures above. Here we used betweenness centrality measure of each bank for each of the two networks.

Measures of Corporate Social Responsibility -CSR

We investigated the websites and annual reports for the CSR contributions of banking firms. We identified two reflective measures as indicators of CSR contributions of banks; the amount of money spent for CSR activities and the number of different key CSR goals they are contributing to. Both of these measures were direct, per-bank measures.

Measurement of ICT Capability

ICT capability level was measured using the organisational ICT level indicators presented in literature [20, 81, 82]. Given the amount of variety of technologies and industry specific nature of ICT, we developed a list of most representative technologies used in banking domain in Sri Lankan context and also captured aspects related to ICT infrastructure in banking domain. See table 1 below for aspects measured.

As we required to test the effect of different types of ICT on the observed relationship, we identified several measures indicative of ICT use in the firms that could be obtained from public sources. First we created a simple bank level measure 'Use of Media Tools' which is the count of media tools the firm is using (official website, official Facebook page). Secondly, we rated the official web page in a scale of 1 to 3 based on pre-set characteristics in which 3 is reflective of 'strong', 2 is reflective of 'average' and 1 is reflective of 'weak'. Those rated as 3 had a full-fledged dedicated website with most up-to-date information. Those that were rated 2 had a dedicated website but was not up-to-date with enough information. The ones that did not have a full website on its own or had only one page under the website of a parent company was rated as 1. As a third measure, we wanted to measure the degree of integration to shared banking ICT infrastructure. For this we identified 10 shared banking systems dedicated for interbank activities such as payments, settlements, clearing etc. and obtained the list of participating banks for each system from an authority. Developed a matrix of bank x shared system. This was converted to a

bank x bank matrix using ORA and obtained total degree centrality measure which tells us how embedded a bank is among other banks in the shared ICT network.

ANALYSIS OF DATA

This is a research deals with locational measures obtained from network analysis to measure social capital. For the manipulation of network data, information is recorded in matrices, enabling relational algebra to be performed on the networks. Graph theory is used to visualise the networks. Krackhardt and Carley [83] introduced ‘meta-networks’. A meta-network is a set of interconnected networks, which consists of multiple types of nodes (such as Individuals, Tasks, and Resources) and links [69, 84]. In this study, different networks of social interactions were surveyed. Different kinds of social networks were modelled using the software tool ‘ORA’ [70] and a meta network was developed. The meta-network model created in this research presented a holistic view of inter-bank social interactions and consist of a variety of entity types such as; organisations, events, knowledge and beliefs. From this network, centrality measures were obtained. these measures were input as observed variables to structured equation modelling.

Data Screening

In this research a total of 270 responses were collected. Among those responses there were many responses with considerable amount of missing values. Among the remaining responses, the number of responses per firm varied from 3-6. For this research, we used SPSS to impute the few missing data values through maximum likelihood estimation technique. This technique is a widely used for imputing missing values that appear at random [85, 86].

A majority of SEM estimation techniques assume the multivariate normality of data distributions [86]. The non-normality of data distributions would cause problems for SEM techniques in fitting the hypothesised framework with the given data [87]. Data in this research indicate that the data distributions are non-normal. To handle the non-normality of the data distributions in this research, bootstrapping is used with AMOS 20.0 (Analysis of Moment Structures). Bootstrapping is often used as a remedy for the non-normality of distributions of the collected data, when data is analysed using SEM [88].

An outlier refers to “an observation that is substantially different from the other observations on one or more characteristics (variables)” (Hair et al., 2010). A univariate outlier is an extreme value that is observed for a single variable in a dataset [86]. A multivariate outlier, on the other hand, has extreme data values for two or more variables [88]. In this research, univariate outliers were identified using box plots [86] and were removed. Statistical software such as AMOS could be used to find multi-variate outliers using the Mahalanobis distance.

Unit and Level of Analysis

After the data screening, the number of remaining responses per-firm varied from 3-6. First it was necessary to aggregate the responses in each firm into a firm-level measure for each of the constructs. As we indicated in our description of the survey, for each relational measure, each respondent had to pick, out of the 45 banking firms listed in the survey, the firm with which his firm enjoyed that specific type of relationship. For each choice of other firms, we computed the average ratio of six responses and obtained a common response per-firm. As per the previous description of the survey, most of our variables were relational and were measured at the dyadic level. But our theory was framed at the level of ‘firms’, and it was necessary to convert the data into a format that is suitable for this level of analysis. The first conversion was related to obtaining locational properties of individual firms from relational measures. We used network analytic methodology which allowed us to compute locational properties (or centrality measures, such as "in-degree centrality" or "betweenness" [7] from the relational data. These data (firm level centrality measures) could then be combined with the data on non-relational measures (such as amount spent on CSR and Number of CSR project types) in a traditional statistical analysis. In adopting this approach, we followed many earlier studies that have used a similar research design to considerable advantage [7].

Structured Equation Modelling - SEM

This research use SEM technique to investigate the enabling role of ICT towards CSR contributions of financial institutions. SEM is a popular statistical technique used in the confirmatory research (Byrne, 2010). SEM allows theoretical frameworks with a number of structural relationships to be validated using collected data (Hair et al., 2010). SEM also enables

developing theories with unobservable theoretical constructs and validate the relationships between such constructs with the use of observable indicators (Kline, 2010; Hair et al., 2010). SEM is also considered suitable for this research due to the availability of user-friendly tools (AMOS). A structural model shows the theoretical constructs and relationships in the conceptual framework (Hair et al., 2010). Theoretical constructs are shown with ovals. Hypothesised relationships are shown by single-headed arrows. An arrow is drawn from one theoretical construct to another if there is a dependency relationship among the constructs [85]. A structural model developed is then estimated to examine its validity [85]. Estimated parameters and the P value provide empirical evidences on the significance of the structural relationships [85, 87].

Based on a comprehensive review of the related literature, we developed a two conceptual models for Social Capital and CSR capturing relationships among unobservable theoretical constructs. The developed models hypothesise five latent theoretical constructs namely, (1) Structural Dimension of Social Capital, (2) Relational Dimension of Social Capital, (3) Cognitive Dimension of Social Capital, (4) CSR Contribution and (5) ICT Use. Additionally, bank size is retained as a control. The first structural model developed and tested for this research, which omits ICT Use, is shown in Figure 1.

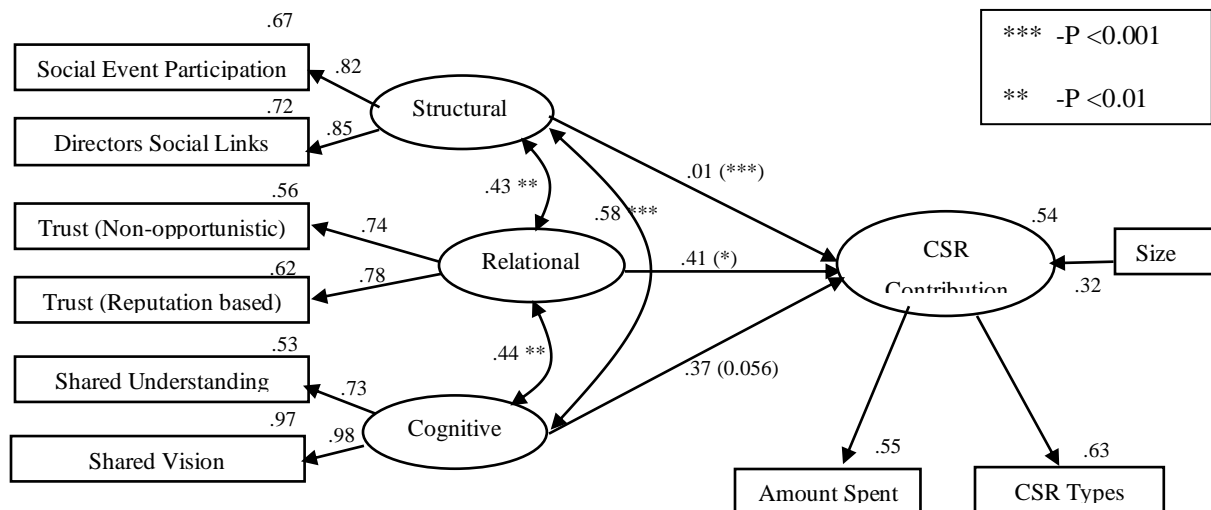


Figure 1: Social Capital and CSR

Reliability and Validity of the Model

To improve the reliability of the research instrument used in this research, multiple indicator variables were selected to measure the theoretical constructs in the conceptual framework in this research. Using multiple indicator variables to measure theoretical constructs is useful for improving the reliability of the measurement instruments (Neuman, 2007). Many of those selected indicator variables were chosen from previous research. There are two main indicators for a valid measurement model. The fitness of a measurement model and the validity of the constructs in a measurement model [85]. Two types of validities, namely, convergent validity and discriminant validity are used in this research to assess the construct validity of the theoretical constructs (Vogt, 2007; Hair et al., 2010).

The proposed model was estimated using the collected data using AMOS. To assess the fitness of the model, several empirical measures known as Goodness-of-fit (GoF) indices were used. The Chi-square statistic (χ^2), the normed χ^2 value, the goodness-of-fit (GFI) index and the root mean square error of approximation (RMSEA) are examples of the absolute fit indices [85]. The Tucker Lewis Index (TLI) and the Comparative Fit Index (CFI) are incremental fitness indices used to measure the fitness of the models [85]. The adjusted goodness of fit (AGFI) index is a parsimony fit index used to measure the fitness of the models [85]

Table 2: AMOS Statistics for Model of Social Capital and CSR (without ICT)

GoF Index	Accepted Range	Results
p	P > 0.05	0.553
GFI	GFI > 0.9	.905
AGFI	AGFI > 0.9	.815
RMSEA	RMSEA < 0.08	.000
CFI	CFI > 0.9	0.999
TLI	TLI value approaching 1	1.015

Since the initial model lacked validity in terms of GFI, AGFI, CFI and TLI, several modifications were performed to achieve a more parsimonious model. Indicator variables with factor loadings less than 0.5 were deleted to improve the fitness of the model. Also the indicator variables associated with standard residuals greater than 4 were considered as unsuitable, so were deleted to improve the model fitness. AMOS provide modification indices with information on the fitness of the model by providing the evidence of misspecifications [87]. The modification indices having 4.00 or above indicated that the measurement model could be further improved [85]. For the proposed model after modifications, GoF results are shown in Table 2.

As the second step, we tested versions of the model including various ICT variables as mediating variables. The results received from the estimation for the original model (without ICT), four models with single individual ICT variables, and the model including all four aspects of ICT are shown in Table 3. The structural model, including the combined ICT variables as a mediator, is given in figure 2.

Table 3: AMOS Statistics on Models of Social Capital and CSR, including ICT

	Without ICT (figure 1)	Use of Media Tools (model not shown)	Rating of Website (model not shown)	Level of Integration to Shared Systems (model not shown)	Use of Internal ICT (model not shown)	Combined ICT Variables (figure 2)
Structural → CSR	.007(***)	.008(***)	.008(***)	.010(***)	.008(***)	.008(***)
Cognitive → CSR	.366(.056)	.577(***)	.503(***)	.552(***)	.525(***)	.285 (.041)
Relational → CSR	.408(.044)	.050(.562)	.063(.490)	.142(.129)	.114 (.211)	-.064 (.660)
ICT → CSR	--	.325(***)	.344(***)	.266(***)	.287(***)	.775(***)
R squared of CSR	.54	.66	.60	.60	.62	.84

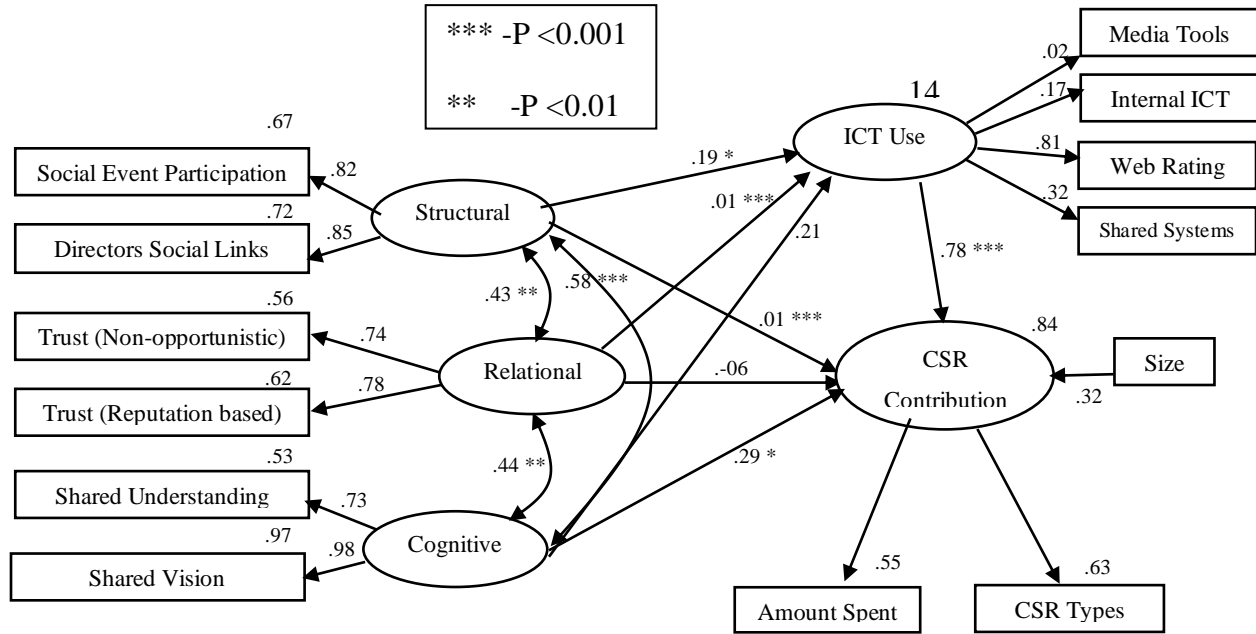


Figure 2: Structural Model of Social Capital and CSR, including ICT

INTERPRETATION OF RESULTS

Results from the initial model (without ICT) suggest that CSR contribution of banks are largely predicted by their relational social capital (trustworthiness). This means that the more central the bank is in the affective relationships network (trust), there is a higher chance of engaging in more CSR. There is also a positive relationship between structural dimension (embeddedness in social interactions network) of social capital and CSR contributions of banks. However, the relationship between cognitive dimension is also strong but significance is slightly less (0.056).

In a cohesive society such as Sri Lanka, social relationships and affective relationships among their top management could play a key role in influencing banks to get involved in more CSR activities and shaping the CSR vision in banking firms. This effect could arise through social norms, social influence and information sharing. Frequent and diverse social interactions among stakeholders expose them to new perspectives of sustainable development while creating a need to achieve or maintain prestige within the inter-firm social network. More reputed firms tend to engage in more CSR or it could be that the more CSR a firm engages in, the higher their reputation will be.

The comparison of the initial model and the models including ICT elements interestingly indicates that the ICT play a strong role in as a mediator strengthening the effect of Social Capital on CSR engagement. The direct effect of ICT on CSR contribution is highly significant. While ICT has only a minor positive effect of the Structural dimension on CSR contribution, it has a strong significant effect in strengthening the effect of the Cognitive dimension on CSR. Such a result indicates that use of different types of ICT within firms can enable them to effectively share their long term vision and strategies driving them towards an industry-wide, sustainable development through CSR contributions. Even though the combined effect of ICT elements is not the same on the Cognitive dimension, the combined ICT elements alone seem to predict 78% of firms' CSR contributions. This suggests that strengthening the ICT capabilities in banking firms may lead to stronger CSR contributions in the future. Overall, there is a positive relationship between social capital of firms and their CSR contributions, with or without ICT, but stronger with ICT use.

LIMITATIONS

It is important to recognise that the Inter-bank domain is highly dependent on economic conditions, government policies and regulations of the central bank as the supervisory body of the financial system and is highly profit driven. As the indicators and measurements tend to be industry-specific, the results may not be directly generalizable to other industries and businesses. Also, Sri Lanka has its own local culture, which will differ from other developing economies' local cultures. Social capital and CSR in the Sri Lankan context may not generalise well to other developing economies.

CONCLUSIONS

The banking sector in Sri Lanka has become the driving force of the post war economic development. This has created a promising platform for this research and the findings could be directly applied through the reforming of strategies and policies that recognise the effects of social capital and ICT on CSR, which in turn enables sustainable development.

This research has contributed to the theory of social capital, ICT, and CSR and provides empirical evidence supporting a model of how social capital together with ICT affect CSR within the banking industry, providing insights for development of effective strategies. The identified

predictive power of network measurements contributes to both network theory and social capital theory and will provide a foundation for future researchers of network science in various contexts and the building of subsequent theory.

The Sri Lankan Government and the Central bank can harness the new knowledge to create effective policies and regulations for the finance sector, which in turn affects the economy as a whole. The financial authorities in similar emerging markets will also gain value from the findings, providing the opportunity to analyse the applicability of the identified mechanisms for their specific circumstances.

Finally, this work provides new knowledge in both social capital theory and network theory, contributing to a more holistic perspective that incorporates social, technical and organisational aspects for a wide audience of researchers in the future.

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