BUSINESS-IT ALIGNMENT AND ORGANISATIONAL CULTURE RELATIONSHIPS: TOWARDS AN INTEGRATED VIEW

Mohamed El-Mekawy  
*Stockholm University, moel@dsv.su.se*

Lazar Rusu  
*Stockholm University, lrusu@dsv.su.se*

Erik Perjons  
*Stockholm University, perjons@dsv.su.se*

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Research

Mohamed El-Mekawy, Stockholm University, Sweden, moel@dsv.su.se
Lazar Rusu, Stockholm University, Sweden, lrusu@dsv.su.se
Erik Perjons, Stockholm University, Sweden, perjons@dsv.su.se

Abstract

The analyses of literature on business-IT alignment (BITA) and Organisational Culture (OC) domains of practice revealed needs for combined studies as the impact of each domain on the other is not well studied in research. The purpose of this study is to develop and validate a set of relationships between components of BITA and OC towards development of a BITA-Culture integrated view. For achieving this purpose, we adopted a multi-stage (based on mixed-method) approach starting by an extensive literature review on both BITA and OC for constructing hypotheses on correlations between their components. Following that, an empirical research was conducted in three case organisations for empirical investigation of relationships and for refining the hypotheses. To test the research hypotheses an extended quantitative test was performed by a survey on 117 business and IT practitioners. The results were the bases for developing the BITA-Culture integrated view. This integrated view is aimed to support both practitioners in order to understand the insights of the relationships between BITA and OC components and provide a road-map for improvements or desired changes in OC with highlighted target business areas.

Keywords: Business-IT alignment, Organisational Culture, BITA-Culture Integrate View
1 Introduction

Business-IT alignment (BITA) continues to be a top management concern (Kappelman et al. 2014). It generally refers to a preferred condition in which the relationship between business and IT is optimised to maximise the business value of IT and to increase efficiency and effectiveness of organisational processes (Irani 2002; Schwarz et al. 2010). Early approaches in both research and practice have focused on the role of IT in supporting BITA (Tallon & Pinsonneault 2011), but a more holistic understanding of BITA has been embraced since then, recognising the strategic and governance elements of BITA as well as soft factors, such as people and culture issues (Chan & Reich 2007). Organisational culture (OC) has often been identified as one of the most critical factors for organisational success in an increasingly competitive and IT-driven global environment (Cameron & Quinn 2011). OC can, in its wider concept, be defined as ‘how organisations do things’ (Ngwenyama & Nielsen 2003). In this context, it is seen as consistent and observable patterns of behaviour in organisations that emphasizes what people feel, think or believe. In addition to that, it has a focus on the forces that shape structure, processes, and incentives of the organisation (Davison & Martinsons 2003).

Earlier research about the notion of BITA-Culture (e.g. Schwartz & Davis 1981; Argyswamy & Byles 1987; Vesta et al. 1997; Higgins & Allater 2004) has discussed how the domains of BITA and OC practice can be put into a strategic fit of an organisation. This has been done by focusing on the business objectives or on achieving an organisation-wide competitive advantages by aligning concepts such as business strategy, organisational culture and leadership (Demir 2015). The organisation-wide competitive advantages have become increasingly important for organisations today when considering the current digital business era, of fusion view between business and IT strategies and functions, in which we live (El Sawy & Pereira 2013).

However, the literature is characterised by the lack of knowledge on how various cultural concepts or conceptualisations of culture intervene in BITA projects more precisely. One possible reason for this dearth is the lack of appropriate operationalisation of culture. In order to carry out empirical studies of cultural settings and their influence on BITA and its maturity, reliable and valid conceptual models and instruments for operationalisation are required. Such models and instruments would also provide practitioners with an analysis and benchmarking tools that could be used to examine an extent to which OC facilitates BITA approaches.

To address this gap, the purpose of this study is to develop an integrated view of BITA (represented by Luftman’s Strategic Alignment Maturity (SAM) model developed Luftman (2000)) and OC (represented by the Organisational Culture Assessment Instrument (OCAI) developed by Cameron & Quinn (2006)). The integrated view represents BITA components on the quadrants of OCAI based on a validated set of hypotheses between them. Beside the assessment of an organisational culture’s support of BITA, we aim by the integrated view to support decision makers and practitioners in organisations for understanding the insights of the relationships between BITA and OC components. This understanding can be used for planning desired changes in an organisation and to focus on different specific areas of misalignment between business and IT strategy. Although, the proposed integrated view represents the research gap identified by several researchers (e.g. Neubert et al. 2011; Rapp 2004) for investigating the organisational culture impact on the dynamics of BITA perspectives, the need for such an integrated view is not only academically rooted but it is also observed from the point of view of practitioners who aim to apply BITA concepts in their organisations. This has been identified during interviews with more than 200 different large and medium-sized organisations as part of the teaching activities in IT management courses in our university for the last seven years in row. During the interviews with CIOs and business and IT managers in these organisations, the lack of knowledge of BITA and its challenges are proved to be one of the top concerns.

The remainder of the paper is structured as follows: a theoretical background is presented followed by the research process. The theoretical relationships between BITA and OC found in research literature are then presented followed by the presentation of case studies. The research hypotheses are then constructed. Following that, the survey results are presented for testing the hypotheses. Finally, concluding remarks are presented.

2 Theoretical Background

2.1 Implications of Business-IT Alignment

BITA is a comprehensive approach to optimise the relationship between business and IT and to realise efficient and effective business value of IT (Leonard & Seddon 2012). Results from BITA research have shown that organisations that successfully align their business strategy with IT strategy can increase business performance (Irani 2002; Kearns & Lederer 2003). Achieving BITA has traditionally been seen as a part of Chief Information Officer’s (CIOs) duties. That typically involved communication and strategy translation at executive levels (Sabherwal et al. 2001). Today, successful BITA however entails tactical and operational levels in organisations as well, and focuses on managing
activities that help in achieving cohesive goals across IT and business operations (Tarafdar & Qrunfleh 2009). Therefore, it requires senior manager’s support, appropriate prioritisations, trustful relationships and effective communications between different levels in the organisation (Avison et al. 2004). In addition to that, considering the strong focus of current alignment approaches on strategic aspects, Tarafdar & Qrunfleh (2009) argue that alignment at operational and tactical levels is necessary to ensure that applications are successfully implemented, maintained and used in accordance to the business’ needs.

Different efforts have been oriented towards assessing BITA by proposing theoretical models that can be applied as supportive tools for addressing different BITA components. An extensive study by El-Mekawy et al. (2013) presented such BITA models in a comparable framework. Among the BITA models, Luftman’s Strategic Alignment Maturity (SAM) model (Luftman 2000) has been appreciated by different researchers due to the following advantages over other models: (a) SAM follows a bottom-up approach by providing a linkage between business and IT on operational, tactical and strategic levels, analysing and prioritising gaps, choosing and evaluating success criteria, and consequently sustaining alignment, (b) SAM presents a complete holistic process that encompasses the establishment of alignment by maximising its enablers and minimising inhibitors (Avison et al. 2004), (c) SAM provides a modular approach by introducing six BITA criteria (Table 1) and 38 attributes (Figure 1) as well as five maturity levels: Ad Hoc Process, Committed Process, Established Focused Process, Improved/Managed Process, and Optimised Process. This approach gives a clear view of BITA maturity and helps to spot particular areas of where an organisation needs to improve for maximising the value of IT investments, (d) SAM has been used by several researchers and in number of industries for assessing BITA and its components. On top of that, Chan & Reich (2007) explain that SAM has large popularity in research and practice of BITA. Following these points, SAM was motivated to be used in the research as a base for studying BITA and its components.

**Figure 1. Strategic Alignment Maturity (SAM) model (adapted from Luftman. 2000)**

<table>
<thead>
<tr>
<th>BITA Criteria</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications</td>
<td>Refers to clear understanding between business and IT communities with an effective exchange and sharing of each ideas, processes and needs.</td>
</tr>
<tr>
<td>Competency/ Value Measurements</td>
<td>Concerns about demonstrating IT values in compatible figures with the business community understanding. Therefore, both business and IT have usually different metrics of values they add.</td>
</tr>
<tr>
<td>Governance</td>
<td>Ensures that business and IT communities formally and periodically discuss and review their plans. Different priorities are important to be clearly defined for allocating the needed IT resources.</td>
</tr>
<tr>
<td>Partnership</td>
<td>Refers to the relationship between business and IT in having shared vision of the organisation’s processes in order to facilitate the IT as an enabler or driver for business transformation in processes and strategies.</td>
</tr>
<tr>
<td>Scope and Architecture</td>
<td>Illustrates the involvement of IT in all organisational processes. It defines the IT role in supporting flexible and transparent organisational infrastructure. This, however, facilitates applying technologies effectively and providing customised solutions responding to customer needs.</td>
</tr>
<tr>
<td>Skills</td>
<td>Refers to all human resource aspects that influence/are influenced by changes. They include factors that enhance organisation’s cultural and social environment as components of organisational effectiveness.</td>
</tr>
</tbody>
</table>

**Table 1. Criteria Definitions of Strategic Alignment Maturity (SAM) model of Luftman (2000)**

### 2.2 Culture and Organisational Culture Overview

Culture as a concept has many definitions found in literature. Kroeber & Kluckhohn (1952) collected in their book over 150 different definitions. According to Hofstede & Hofstede (2005) culture consists of shared language, belief systems such as religion and political beliefs, ethnic heritage and history. In addition to that, culture has been defined...
Different models and theories have been presented as reference frameworks to understand national and organisational culture and their components, such as Hofstede (1980), Deal & Kennedy (1982), Cameron & Quinn (1999), House et al. (2001; 2004) and Smit et al. (2008). In this study the Organisational Culture Assessment Instrument (OCAI) proposed by Cameron & Quinn (2006) is used. The OCAI was developed by Cameron & Quinn (2006) based on the Competing Values Framework initiated by Quinn & Rohrbaugh (1983) and further developed by Kimberly & Quinn (1984) and Cameron & Quinn (1999). The selection of the OCAI is motivated by the following: (a) OCAI is a method to examine organisational cultural and it was originally empirically derived, (b) OCAI has shown that it integrate many of the dimensions derived from OC research, and (c) the results of OCAI provide a means by which organisations can navigate organisational change successfully. The framework was developed based on 39 effectiveness criteria identified and analysed by Quinn & Rohrbaugh (1983). Two major dimensions emerged that organised the indicators into four main clusters or quadrants (Cameron & Quinn 2011). Each quadrant (Hierarchy, Market, Clan, and Adhocracy) represents a type of organisation with a distinct set of organisational effectiveness attributes (Figure 2). In addition to that, the focus of OCAI on specific profiles provides detailed understanding of a specific cultural context of an organisation. This can be considered when talking about Hofstede’s model (Hofstede 1980) for national culture as it is criticised by several researchers (e.g. Ailon 2008) for its stereotyping of nations. The main characteristics of the cultural profiles are presented in Table 2.

<table>
<thead>
<tr>
<th>Culture</th>
<th>Main Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan culture</td>
<td>Committed and satisfied employees produce effectiveness. Norms and behaviours thus emphasise open communication, collaboration, and participation. The organisation is internally focused on its people, creating a friendly environment that is flexible and empowering.</td>
</tr>
<tr>
<td>Adhocracy culture</td>
<td>Innovation and new ideas lead to effectiveness by creating new markets, customers, and opportunities. Norms and behaviours emphasise creativity, risk-taking, and entrepreneurship. The organisation is externally focused on its environment, and encourages agility and individual discretion.</td>
</tr>
<tr>
<td>Market culture</td>
<td>Striving for goals and market success are the drivers of organisational effectiveness. Norms and behaviours thus emphasise focusing on results, attaining or exceeding goals, and productivity. The organisation is externally focused on customers and the market, and pursues the kind of stability that supports goal achievement.</td>
</tr>
<tr>
<td>Hierarchy culture</td>
<td>Formalised structures and processes increase efficiency and consistency, and therefore effectiveness. Norms and behaviours thus emphasise control, reliability, and the following of rules or procedures. The organisation is internally focused on its operations, seeking a high degree of integration and predictability.</td>
</tr>
</tbody>
</table>

Figure 2. Organisational culture profiles (adapted from Cameron & Quinn 2006)

Table 2. Criteria Definitions of Strategic Alignment Maturity (SAM) model of Luftman (2000)
2.3 BITA-Culture Conceptualisation

For more than a decade, the relationship between BITA and culture has been studied. A literature analysis of these researches revealed the following five themes summarised in Table 3.

<table>
<thead>
<tr>
<th>Theme</th>
<th>The Focus</th>
<th>Main Findings/Results</th>
<th>Research Literature</th>
</tr>
</thead>
</table>
| a     | • National and societal cultural insights on IT management  
       • Cultural characteristics impact on practices of IT in managing business processes | The use of IT varies in different contexts, not only because of tangible conditions or development level, but also because of cultural aspects | Livonen et al. (1996); Davidson & Chan (2001) |
| b     | • National culture impact on organisations’ perceptions of IT values  
       • How cultural differences may influence the decision makers’ perception, towards utilising IT in achieving competitive advantages for their organisations | Significant differences in the acceptance of involving and utilising IT and IS in transforming and developing their organisations | Hofstede (2000); Chan (2001); Chan & Reich (2007) |
| c     | • National and societal culture effect on maturity of BITA  
       • How different cultural profiles of nations and societies may have an impact on BITA | Relationships between business and IT domains in organisations can be anticipated differently according to the profiles of national culture | Silvius (2008); Silvius et al. (2009); El-Mekawy & Rusu (2011) |
| d     | • Extended theoretical discussion on the potential relationships between OC and BITA | Relationships between OC variables and BITA variables are identified based on a literature review and limited empirical data | Silvius et al. (2010); El-Mekawy et al. (2012a) and (2012b) |
| e     | • Extended theoretical discussion on the impact of BITA on OC | Impacts of BITA on OC are identified based on limited empirical data | El-Mekawy et al. (2014) |

Table 3. Summarised Literature Themes on the BITA-Culture Studies

The studies referred to in Table 3 show clear limitations in their outcomes as they can be reported to have at least one of the following limitations: (i) The separated focus on business or IT performance without looking at the relationships between the two domains (e.g. Davidson, 1996; Livonen et al., 1998; Sabherwal & Chan, 2001). (ii) The lack of the needed focus for measuring/assessing BITA components (e.g. Silvius, 2008; Silvius et al., 2009; El-Mekawy & Rusu, 2011). ‘BITA components’ here refers to various attributes or criteria that define the relationships between different aspects of business and IT domains, (iii) The use of Hofstede’s model (Hofstede 1980) for national culture and its extensions for societal culture (e.g. Hofstede & Bond 1984; Hofstede, 2000; Silvius, 2008). Although it is one of the most frequent and widely accepted models, it is criticised by several researchers and practitioners as it is too old and for its stereotyping of nations without giving accurate images of a specific culture (Ailon 2008), (iv) The abstract level of relationships between BITA and OC without any deep analysis of their components (e.g. Silvius et al., 2010; El-Mekawy et al., 2014). In addition to that, studies usually adapt unidirectional rather than a bidirectional approach for supporting practitioners in their understanding of the BITA and OC domains of practice and the relationships between them (e.g. El-Mekawy et al., 2012a and 2012b).

Following the above mentioned discussion, the aim of this paper for studying the relationships between BITA components and OC profiles towards the development of BITA-OC integrated view contributes to the knowledge base by filling the gap found in research literature.

3 Research Design and Process

Theories in both BITA and OC domains of practice are originated from empirical studies. Myers (2009) suggested that a research in such context is to be performed in multi-stages approach for increasing its validity and reliability, and thus the use of an inductive reasoning research approach would be more appropriate to proceed with in this research. For developing the proposed BITA-Culture integrated view, we, therefore, employed a mixed-method approach as illustrated in Figure 3. The choice of mixed method was motivated by two of the seven purposes that were defined by Venkatesh et al. (2013) and previous work (e.g. Creswell, 2003; Greene et al., 1989; Tashakkori & Teddlie, 2003, 2008). The two purposes are: developmental (i.e. questions for one strand emerge from the inferences of a previous one (sequential mixed methods), or one strand provides hypotheses to be tested in the next one) and corroboration/confirmation (i.e. mixed methods are used in order to assess the credibility of inferences obtained from one approach (strand)).
Argue that for an empirical perspective in research, it would be ideal to derive from literature and then extend the results by iteration/s of empirical studies. Following these guidelines, we started our research by reviewing literature for indicating the relationships between BITA components and OC profiles and formulating the research hypotheses. As a first step, we studied the SAM model, i.e. definitions of its criteria and attributes. For instance, the criterion Communications in SAM has six attributes that are rooted in literature. These attributes can be related directly to the way of communicating between business and IT. In a second step, we went back to the original sources of all criteria cited by Luftman (2000), Luftman (2004) and Luftman & Kempaiah (2007). Primarily based on these sources and other BITA literature, we collected reflections over OC’s four quadrants of the OCAI. For example, Communications is defined in terms of social dimension of strategic alignment by Reich & Benbasat (2000) as: ‘the state in which business and IT executives within an organisational unit understand and are committed to business and IT mission, objectives, and plans’. In other definitions, Communications is defined in terms of tools/platforms that support knowledge sharing (Campbell 2005). These findings indicate that Communications and its attributes have implications on OC, specifically on the Clan profile (a quadrant in OCAI).

**Phase-I (Literature Survey).** Dubé & Paré (2003) argue that for an empirical perspective in research, it would be ideal to derive from literature and then extend the results by iteration/s of empirical studies. Following these guidelines, we started our research by reviewing literature for indicating the relationships between BITA components and OC profiles and formulating the research hypotheses. As a first step, we studied the SAM model, i.e. definitions of its criteria and attributes. For instance, the criterion Communications in SAM has six attributes that are rooted in literature. These attributes can be related directly to the way of communicating between business and IT. In a second step, we went back to the original sources of all criteria cited by Luftman (2000), Luftman (2004) and Luftman & Kempaiah (2007). Primarily based on these sources and other BITA literature, we collected reflections over OC’s four quadrants of the OCAI. For example, Communications is defined in terms of social dimension of strategic alignment by Reich & Benbasat (2000) as: ‘the state in which business and IT executives within an organisational unit understand and are committed to business and IT mission, objectives, and plans’. In other definitions, Communications is defined in terms of tools/platforms that support knowledge sharing (Campbell 2005). These findings indicate that Communications and its attributes have implications on OC, specifically on the Clan profile (a quadrant in OCAI).

**Phase-II (Case Studies).** We aimed by this phase to empirically explore the relationships between BITA components and OC profiles, and to refine the research hypotheses. Three in-depth case studies in three multinational organisations that are members in OMX-Stockholm Large Cap\(^1\) and Medium Cap\(^2\) were conducted to explore the indications between BITA and OC components. The three cases were carefully selected. First of all, five years membership in the Large and Medium Cap was a must condition as an important indication for the stability of the organisations. Following that, one organisation has IT as its core business with the fastest growth in telecom industry since 2000 and with excellent achievements regarding its customer base. The other two organisations have IT as not their core business, but IT is playing a significant strategic role and is considered as a strategic partner to the business. On top of that, these three organisations have IT applications and functions distributed among all the strategic, tactical and operational levels as well as through the whole supply chain. This condition is important for reflecting a balance between business and IT while dealing with such topics like BITA and OC.

Based on the guidelines of Myers (2009) for emergent themes to be explored, the data was gathered through semi-structured interviews allowing for some unstructured interactions. Following the guidelines of Dubé & Paré (2003), the interviews were done in two sets, i.e. from both business and IT domains. This helped us to involve and gain insights of both stakeholder groups. To select suitable informants, certain criteria were defined to enable the best selection for the case study. Firstly, informants should have knowledge and decision-making authority in the general area of interest (Myers 2009). The main reason for this selection criteria is to ensure that the informant has a solid understanding of strategy and alignment to enable better focus on the research problem. The interviewees should also hold a managerial position within their business unit, have fundamental knowledge about the terminology used within the BITA area, be active members of steering group(s), and have a solid understanding of the company’s main goals and objectives. In total, 20 interviews were carried out with key business and IT practitioners in the three organisations: eight in Organisation-A, four in Organisation-B, and eight in Organisation-C. The interview questions were based on the SAM (Luftman 2000) and the OCAI (Cameron & Quinn 2006). Each respondent was asked 38 questions (one for each of SAM’s attributes) for assessing BITA maturity, and 24 questions for assessing the OC using OCAI. The

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\(^1\) Organisations with market capitalisation of over EUR one billion (accessed May-2015 from: www.nasdaqomxnordic.com)

\(^2\) Organisations with market capitalisation of over EUR 150 million and under EUR one billion (accessed May-2015)
SAM and OCAI were explained for the respondents before the interviews. Each interview lasted for approximately between 60 and 90 minutes. The interviews were carried out in different periods through the years 2014 and 2015. Additionally, collected data from internal documents of these organisations were used in the analysis. During the whole empirical process, the ethical issues argued by researchers like Payne and Payne (2004) for collecting the data and its reliability and validity, were considered (Myers 2009). Furthermore all participants were guaranteed anonymity and the results were presented anonymously.

**Phase-III (Survey).** To test the research hypotheses, a quantitative cross-sectional study was undertaken. An online survey was developed and the link (https://www.surveymonkey.com/s/BITA-OC-Correlation) was sent out by e-mail to business and IT practitioners in organisations which are members in the OMX-Stockholm Large Cap and Medium Cap for at least the last 5 years. The questionnaire was developed based on the SAM assessment (Luftman 2000) and the OCAI assessment (Cameron & Quinn 2006). The survey consisted of three sections. The first section consisted of general questions for collecting information about the practitioner’s position, relation to IT or business and type of organisation’s industry. The second and third sections were about the SAM and OCAI models, respectively. In the second section, SAM was firstly explained with its components (six criteria and their 38 attributes), and then respondents were asked to assess the alignment in their organisation collectively. In the third section, the OCAI was firstly explained with the main characteristics of its four culture profiles, and then respondents were asked to provide percentages of each culture profile. The survey was sent out to 272 practitioners in 96 organisations, from which 44 are large and 52 are medium organisations. The positions of the contacted respondents included strategic and tactical levels that are related to BITA such as strategies, planning, operation, production, governance, architecture and others. The affiliation to a large or medium organisation was not identified in the survey’s responses; therefore they have no effect on the final analyses but just to keep the balance in the study. Responses were received from 169 respondents (62.13 % of all respondents contacted), from which 52 incomplete responses were received. The number of completed responses were 117 (43.01 %). The explanation of this relatively low response rate is related to the limited time that respondents in such positions can allocate for such a detailed study.

## 4 Constructing Research Hypotheses (Qualitative Research)

### 4.1 Literature Survey (Constructing Hypotheses)

In this subsection, informed literature discussions between BITA components and OC profiles are presented.

**Communications:** In BITA research, based on the findings of (Kaplan and Norton, 2004), it can be concluded that organisational learning, knowledge sharing and communication between business and IT facilitate the adaptation of new changes in the organisation. In addition to that, Luftman (2000) and Parise & Henderson (2001) emphasise the importance of knowledge sharing across the organisation for effective management of a dynamic environment in which most of organisations today find themselves. In the OC literature, according to Bennis (1989), communicating goals as well as business and IT strategies provide a better understanding among employees of business targets to achieve. Leadership, according to Koestenbaum (1996), can also result in transferring the bigger organisational image and its meaning. In the Clan profile, organisational learning, knowledge sharing and communication can be used for empowering employees (Lopez et al 2004). It can then be expected that high maturity of Communications is strongly attached to the Clan profile of OC. It could be argued that the Adhocracy profile with its dynamic environment also requires communications between employees regarding products management as well as customer and suppliers. On the contrary, for the Market and partially Hierarchy cultures, which is characterized by stability, is indicated to have a lower maturity of Communications. However, it could be argued that the Hierarchy profile requires communication according to standard protocols. Thus, we hypothesise:

*H (1): The maturity level of ‘Communications’ is positively correlated with the ‘Clan’ culture.*

*H (2): The maturity level of ‘Communications’ is possibly correlated with the ‘Hierarchy’ culture.*

*H (3): The maturity level of ‘Communications’ is possibly correlated with the ‘Adhocracy’ culture.*

**Competency/Values Measurements:** In the BITA literature, Silvius (2008) and Nijland (2004) define a well co-ordinated organisation as the one that has high ability to continuously measure and align its performance with service delivery outputs, for example expressed in Service Level Agreements (SLAs). Luftman (2007) and Love & Irani (2004) emphasise the importance for demonstrating the IT contribution to business using some form of value measurement. In the OC literature, assessing and reviewing organisational performance is an important area of interest (Kotter 1995; Senge 1999). Continuous improvements are usually expected to be facilitated if there is a leadership vision behind (Koestenbaum 1996). From the above mentioned characteristics, it can be expected that high maturity of Competency/Values Measurements is strongly attached to the Market profile of OC at first level, and secondly to Hierarchy. Both the profiles have a focus on stability and control. We therefore hypothesise:

*H (4): The maturity level of ‘Competency/Values Measurements’ is positively correlated with ‘Market’ culture.*
H (5): The maturity level of ‘Competency/Values Measurements’ is possibly correlated with ‘Hierarchy’ culture.

Governance: In BITA literature, Van Grembergen & De Haes (2008), but also Maes et al. (2000), relate the importance of strategies and their planning in OC to its ability to create long-term direction and meaning, to concretise vision into tangible goals, to involve and to consult personnel in strategy formulation. These characteristics are found to be more attached to the ‘Hierarchy’ profile of OC with more internal focus in the organisation and integration of all governance levels. However, the maturity of aligning governance in an organisation is attached to adaptive culture (i.e. culture where changes are easily accepted and applied) that has high ability to promote useful changes in structuring, reporting and controlling (Lufman 2000; Hu & Huang 2006). This can be done by external views of policies and regulations in changing the way organisations act in the marketplace (Nijland 2004). This can make a potential for Market and Adhocracy but not Clan culture, and thus we hypothesise:

H (6): The maturity level of ‘Governance’ is positively correlated with the ‘Hierarchy’ culture.

H (7): The maturity level of ‘Governance’ is positively correlated with the ‘Adhocracy’ culture.

Partnership: In this alignment criterion, representing the real fusion of business and IT in one union is the dominating notion. Based on the findings of Luftman (2000) and Wierenga et al. (2005), it is concluded that a more matured partnership reflects opportunities for IT function to have an equal role in defining business strategies in an organisation as business functions have. In such environment, business and IT domains co-adapt for steering the organisation towards desired directions and adapting proposed changes. This can also be reflected on adapting flexibility of policies and regulations for Shared Goals, Risk and Rewards (Kaplan & Norton 2004). From the above mentioned characteristics, it can be expected that high maturity of Partnership is strongly attached to the Adhocracy profile of OC at first place and somehow to the Clan culture. Consequently, we hypothesise:

H (8): The maturity level of ‘Partnership’ is positively correlated with the ‘Adhocracy’ culture.

H (9): The maturity level of ‘Partnership’ is possibly correlated with the ‘Clan’ culture.

Scope and Architecture: The main focus in this criterion is on the role of organising IT in supporting, driving and co-adapting with business. Based on the findings of Maes et al. (2000), it is concluded that a matured IT architecture reflects the ability of IT to be more involved in the organisation and going beyond the back and front offices. Hu & Huang (2006) argue that a well coordinated organisation is the one that achieve higher quality at lower costs because internal systems are aligned and standards are applied. These characteristics are found to be attached to the ‘Hierarchy’ profile of OC. From a matured IT architecture perspective, architecture transparency and flexibility in managing and adapting emerging technologies are important for enriching the possibilities of building dynamic business (Luftman 2000). In literature of OC, Denison (2000) argue that an organisation with formalised and structured procedures should have the ability to improve service delivery through responding to different needed changes. These conditions are indicated for requiring external focus of policies and regulations by Van Grembergen & De Haes (2008). This offers potentials for the Market and Adhocracy but not the Clan OC, and we thus hypothesise:

H (10): The maturity level of ‘Scope and Architecture’ is positively correlated with the ‘Hierarchy’ culture.

H (11): The maturity level of ‘Scope and Architecture’ is possibly correlated with the ‘Market’ culture.

Skills: In BITA literature, the focus on people is seen as a crucial aspect for organisations’ success. Based on the findings of Bassetier & Benbasat (2007), a matured Skills in an organisation is attached to an innovative and entrepreneurship working environment, and thus, the locus of power and management style is more characterised by the leadership style. From an OC perspective, Smit et al. (2008) define leadership as culture antecedent that expresses the ability of leaders to influence OC in achieving optimal service delivery. These characteristics are expected to positively correlate with the attributes of ‘Innovation, Entrepreneurship’, ‘Career Crossover, Education Training’ and ‘Hiring and Retaining’ in the Skills criterion. From the above mentioned characteristics, it can be expected that high maturity of Skills is strongly attached to the Adhocracy profile of OC at first place and secondly to the Clan. Thus we hypothesise:

H (12): The maturity level of ‘Skills’ is positively correlated with the ‘Adhocracy’ culture.

H (13): The maturity level of ‘Skills’ is possibly correlated with the ‘Clan’ culture.

4.2 Case Studies (Exploratory Study and Refining Hypotheses)

4.2.1 Cases Background

Organisation A: is a large construction company currently active in different markets in Europe and the Americas. It is a member of the OMX-Stockholm Large Cap. The organisation was deemed a good fit for the case study because IT is not its core business, although it is considered an important supporting function to the business. Instead of outsourcing the IT activities, which has been a trend in the last decade, the organisation has recently established a child company that provides IT services. Four business managers and four IT managers were interviewed (four business unit managers, CIO, IT Architect, and two IT managers).
Organisation B: is a medium-sized retail company that has grown up from a family business to a more than 2000 employees’ corporation. Today, the organisation is established as a member of the OMX-Stockholm Medium Cap. With fast growing and strong relationship with IT, the organisation made a choice not to outsource any of their IT activities. Instead they have chosen to manage all of their IT functions in-house with more reliance on IT consultant organisation that frequently customise and develop for them, especially their ERP system. Two business managers and two IT managers were interviewed (CEO, an executive business manager, IT Head, and an IT project manager).

Organisation C: is a large multinational organisation and one of the major telecom operators in Sweden and Europe. It is currently an established member of the OMX-Stockholm Large Cap. The organisation was selected for this research as it has a long experience with a big number of joint ventures with other organisations globally. It has long experiences in outsourcing, although the contract was recently withdrawn. Four business managers and four IT managers were interviewed (two business unit managers, two vice regional managers, CIO, CTO, and two IT managers).

4.2.2 Analysis of the Case Studies

Based on interviews with business and IT practitioners from each organisation, values were given for assessing both the criteria of the SAM and the profiles of OCAI. To recall again, the aim of these case studies is to investigate the relationships between SAM components and OCAI profiles of culture. In other words, it can be considered as an explorative study for testing the hypotheses formulated in the first phase of the research process. Therefore, we only focus on the dominating hypotheses to explore their proposed relationships. The results are presented as follows:

**Figure 4. Organisational culture assessment in the three organisations**

**Figure 5. BITA maturity assessment in the three organisations**

**Organisation A:** In Figure 4, we see that the Clan culture is dominating with a score of (47.5 %). At the strategic level, the business executives in the company focus more on their core business functions and take the support from IT consultants for designing their IT strategies and development. At the operational level, the IT functions are already well established and defined for both business and IT domains with applications, interfaces and tools. From all the business and IT interviews, it was concluded that the human resources are crucial to both the business and IT domains separately as well as to the strategic partnership between them. For the business domain, the main issue is to
lower the cost with best service quality. Therefore, teamwork is highly encouraged, but with clear procedures and reporting structures for achieving targets. This can be understood as one reason for having relatively higher score of Hierarchy culture than Adhocracy and Market cultures.

BITA maturity assessment shows that the organisation has an average maturity of (2.9) which is level of (3+). It can be seen from Figure 5 that the maturity of criteria have the highest averages of (3.9), (3.2) and (2.86) for Communications, Governance, Scope and Architecture respectively. This reflects a mix of higher maturity for a softer component of alignment (Communications) which are reflected by the more social-related criteria with more hard components (Governance, Scope and Architecture). According to the theoretical indications discussed in Section 4, the higher maturity of Communications should be expected to result in stronger Clan culture profile which is actually the case in this organisation. The higher maturity of Communications criterion, contributes to create a working place in which information is managed to encourage a sense of identity. The environment is surrounded by values and norms that emphasise sharing and the proactive use of information, and promote collaboration. Following the Communications criterion, the maturity of Governance and Scope and Architecture are considered relatively high. This can be understood by the need for structured reporting systems and clear working procedures in such environment with extensive information flow. This consequently should reflect lower maturity for the Partnership and Skills criteria.

Organisation B: In this organisation the managers decided to take IT out of their core business, and in 2002 they have outsourced it to an external IT consultant. However, in response to the global economic crisis/recession (started initially in August 2007 and had its particularly sharp downward turn in September 2008, see Gere (2010) for more information), and the double business expansion on the market, the organisation decided to bring the IT back inside the organisation with a more focus on fostering and benefiting from close business-IT relationships. It has been explained in all the interviews that the business domain in the organisation has taken the full responsibility to lead the organisation. Business managers have got more locus of power for monitoring the marketplace relationships. They take more risks as they consider that it is their duty to keep the business going. In addition to that, the focus of the organisation is changed from the internal improvements of doing business to external views of the supply chain components to compete in the marketplace. The shift to external views requires more focus on competitiveness, achieving results, and an emphasis on external relationships. These characteristics are found to be more related to Hierarchy and Market culture profiles. It can be, therefore, seen from Figure 4 that both profiles have higher values than Clan and Adhocracy.

From BITA perspective, bringing IT back to the organisation and facing tough conditions in the marketplace, the relationship’s nature between business and IT was dramatically changed. Even though, the average score of the organisation’s alignment is (2.44), the score for Competency/Value Measurements, Governance and Scope and Architecture are (3), (2.62) and (2.58) respectively. The relationship of Competency/Value Measurements can be confirmed with the Market profile of culture characterised by result-oriented organisation with hard driving business leaders for achieving measurable goals and targets. The high maturity of Governance and Scope and Architecture is seen to contribute to Hierarchy culture.

Organisation C: From the OC perspective, Organisation C is similar to the Organisation B in the domination of Market and Hierarchy culture profiles, however with more sharp differences in the latter case. In Organisation C, the Market profile scores (40%), Hierarchy (35.8%) and only (5.8%) to the Adhocracy (see Figure 4). As a telecom marketplace organisation, business success is defined clearly by both business and IT managers as market share and penetration. Competitive pricing and market leadership are extremely important. Individuals in the organisation are expected to follow superiors, and leaders who are efficiency minded and pride themselves on being good coordinators and organisers. Assessing individuals is becoming extremely important to plan for individuals’ career and rewards. Thus, the focus is more on individuals’ performance rather than good relations between them (the Market culture profile). One of the business managers highlighted the tough management style when achieving a remarkable business expansion or new deals or projects. The conditions reflect characteristic of Hierarchy culture profile.

In BITA maturity assessment, the higher maturity of hard (non-social) alignment criteria is dominating. For Competency/Value Measurements (3.35) IT and business metrics are extensively used to evaluate the provided services and customer satisfaction. Business metrics are dominating to evaluate the importance of IT services. The high maturity of Governance (3.1) is reflected as the strategic planning is done collaboratively between business and IT. The high maturity of Scope and Architecture (3) is reflected in relation to Governance with clear and widely integrated IT architecture. By having a seat for the CIO in the business executive board, IT applies standards across the organisation. They are integrated through the organisational structure according to the business needs. ERP systems are installed using different modules across the organisation and all projects are monitored at an enterprise level. These implications conform to the findings of Hu & Huang (2006) who suggest that the highest level of alignment maturity is reached when the scope of IT and its architecture is standardised, integrated and technologically managed in the organisation and its external partners.
4.3 Refining the Research Hypotheses

Following the analysis of the case studies, different findings were highlighted on the proposed hypotheses. Based on these findings, different changes were proposed to the list of hypotheses. The changes are summarised as follows:

From Organisation-A and Organisation-C, it can be noticed the indications of relationships between the Clan culture and the Skills criterion is not clear. Therefore, the hypothesis H (13) was removed from the list of hypotheses.

From Organisation-B and Organisation-C, it can be concluded that the dominating Market culture profile is attached to the higher Governance maturity, and thus we hypothesise:

The maturity level of ‘Governance’ is positively correlated with the ‘Market’ culture.

In the same context, unclear indications are found between the Market culture profile and Scope and Architecture criterion. Therefore the hypothesis H (11) is removed from the list of hypotheses.

From the analysis of Organisation-A and Organisation-B, it can be concluded that the Hierarchy culture profile has unclear indications of the relationship with the Communications criteria. It is therefore, the hypothesis H (2) was removed from the list.

By analysing the Adhocracy culture profile in Organisation-B and Organisation-C with relatively high and relatively low respectively, it can be noticed that its indications to be related with the Governance criterion are unclear. Therefore, the hypothesis H (7) is removed from the list. However, there are clear indications of relationships found with the Scope and Architecture criterion. We therefore hypothesise:

The maturity level of ‘Scope and Architecture’ is positively correlated with the ‘Adhocracy’ culture.

The final list of 11 hypotheses is presented in Table 4 giving each hypothesis an acronym from its BITA criterion.

| H (C1): The maturity level of ‘Communications’ is positively correlated with the ‘Clan’ culture. |
| H (C3): The high maturity level of ‘Communications’ is positively correlated with the ‘Adhocracy’ culture. |
| H (V1): The maturity level of ‘Competency/Values Measurements’ is positively correlated with the ‘Market’ culture. |
| H (V2): The high maturity level of ‘Competency/Values Measurements’ is positively correlated with the ‘Hierarchy’ culture. |
| H (G1): The maturity level of ‘Governance’ is positively correlated with the ‘Hierarchy’ culture. |
| H (G3): The high maturity level of ‘Governance’ is positively correlated with the ‘Market’ culture. |
| H (P1): The maturity level of ‘Partnership’ is positively correlated with the ‘Adhocracy’ culture. |
| H (P2): The high maturity level of ‘Partnership’ is positively correlated with the ‘Clan’ culture. |
| H (S1): The maturity level of ‘Scope and Architecture’ is positively correlated with the ‘Hierarchy’ culture. |
| H (S2): The high maturity level of ‘Scope and Architecture’ is positively correlated with the ‘Adhocracy’ culture. |
| H (SK1): The maturity level of ‘Skills’ is positively correlated with the ‘Adhocracy’ culture. |

*Table 4. Summary of the hypotheses*

For better insights on the forthcoming analysis, we have highlighted in Table 4 the more strongly reported relationships in bold text, while the others hypotheses are left in plain text.

5 Survey Analyses and Proposal of a BITA-OC Integrated view

Following the theoretical indications and case studies investigations, a quantitative cross-sectional study was undertaken. Based on the responses from 117 practitioners, the Spearman’s correlations function was conducted between each SAM criteria and each culture profile in OCAI. The correlations were carried out using IBM SPSS Statistics. In the survey, respondents were given opportunities to comment or motivate their answers. These comments were very useful for analysing the final results especially for unexpected correlations.

** It is important to mention that different positive and negative correlations were identified in our study. However, in the literature analyses, the highlighted relationships were mainly studied from the found positive perspectives. Therefore the case studies and the following quantitative analysis have focused on investigating only the positive relationships for having strong theoretical roots. All correlations can then be investigated in further studies. The results of the correlations between BITA criteria and OC profiles are presented in Table 5.

From Table 5, it can be observed that most of the expected relationships that were identified in the literature as well as in the case studies are confirmed. There are however important results to be explained as follows:

All the main six hypotheses (highlighted in light grey) (one on each BITA criterion; H (C1), H (V1), H (G1), H (P1), H (S1) and H (SK1), see Table 4) are found to be confirmed by high significant correlations. These hypotheses are...
found to be strongly rooted in literature (see Section 4.1) and their practice in organisations (presented cases in Section 4.2). One natural observation should be highlighted here, i.e. in all the six hypotheses, a clear separation between soft and hard components of BITA is attached to soft and hard driving organisation.

- For example, regarding hypothesis H (C1) *The maturity level of ‘Communications’ is positively correlated with the ‘Clan’ culture*, it is emphasised by Luftman (2000) that *Communications* criterion is more related to soft components of BITA that deals more with human aspects and how people interact in the organisation in regard of aligning business and IT objectives. On the other hand, Cameron & Quinn (2006), in explaining characteristics of a *Clan* culture, emphasise a notion of ‘an extended family business’ that has its sole in communication of people.

<table>
<thead>
<tr>
<th>BITA Maturity Criteria</th>
<th>Organisational Culture Profiles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clan</td>
</tr>
<tr>
<td>Communication</td>
<td>0.627(*)</td>
</tr>
<tr>
<td>Competency/Value Measurements</td>
<td>-0.573(**)</td>
</tr>
<tr>
<td>Governance</td>
<td>0.130</td>
</tr>
<tr>
<td>Scope &amp; Architecture</td>
<td>0.295</td>
</tr>
<tr>
<td>Skills</td>
<td>-0.335(**)</td>
</tr>
</tbody>
</table>

Table 5. Correlations between BITA and organisational culture profiles. Significance (Hair et al. 2006): * Significant at 0.05(2-tailed); ** Significant at 0.01 (2-tailed)

- Another example is the hypothesis H (V1) *The maturity level of ‘Competency/Values Measurements’ is positively correlated with the ‘Market’ culture*. Luftman (2000) defines Competency/Values Measurements criterion as a highly hard component of BITA where strong IT and business metrics are applied for measuring business performance. In addition to that, the human related aspects in this criterion are more related to formal assessment and periodic reviews. On the OC domain, a *Market* culture is emphasised by Cameron & Quinn (2006) to have a result-oriented organisation with leaders as hard drivers who are tough and demanding.

Another type of results to be discussed here is the unexpected high correlations (highlighted in dark grey) that were not identified high neither from literature nor case studies compared to the main six hypotheses. These correlations are highlighted as possible (likely) relationships, but they resulted to be highly significant.

- **H (C2): The maturity level of ‘Communications’ is positively correlated with the ‘Adhocracy’ culture.** It was highlighted low but it resulted in high correlation significance. It was referred by most of the respondents that even personnel are given a wide space to initiate and be creative in an *Adhocracy* profile, since their solutions has to be: a) communicated to others and especially managers for understanding and assessing the required resources, b) exchanged with others for the overall benefit of the organisation.

- Another example is the hypothesis H (V2): *The maturity level of ‘Competency/Values Measurements’ is positively correlated with the ‘Hierarchy’ culture*. It was expected possible but it showed high correlation significance. This has been mainly referred to the relationship between Competency/Values Measurements and Governance criteria of BITA. When leaders require formalised and structured procedures in a *Hierarchy* culture, they also have to apply different business and IT metrics for assessing the performance and for needed benchmarking.

A third type of results is one high correlation that was neither hypothesised as highly expected nor possible. It is discussed below and surrounded in Table 5 by bold black frame.

- The maturity level of ‘Skills’ was found to be positively correlated with ‘Market’ culture. It was referred highly significant as decision makers consider that in a performance-oriented organisation (*Market* culture), the skills of people should be developed over time. For successful leading in a marketplace, leaders contribute to cross-unit learning and customer-focus objectives. Thus, skills of people including managers themselves are important to consider for their alignment.

The results of all validated hypotheses are depicted in Figure 6 forming a proposed conceptual BITA-OC integrated view. It can be argued that the proposed integrated view might be seen as a visual tool for supporting business and IT managers to identify the correlations between BITA and OC components.

In Figure 6, the grey coloured ovals represent the high significant correlations that were validated in the research, whereas the white ovals represent the validated moderate significant correlations that might be considered as potential influence for the organisation. It can be revealed from Figure 6 that *Adhocracy, Market* and *Hierarchy* culture profiles have three high correlations each. However, *Adhocracy* has also a potential correlation with *Scope and Architecture*. This, for example, provides indications for decision makers to consider when targeting this culture profile.
to highlight needed revisions on criteria of Communications, Partnership, and Skills in addition to an expected reflection from/on Scope and Architecture.

Figure 6. A Proposed BITA-Organisational Culture Integrated View

6 Conclusions

The purpose of this study is to develop and validate a set of relationships between the components of BITA and OC towards the development of BITA-OC integrated view. We aim by this integrated view to support business and IT managers in organisations for better understanding of the relationships between BITA and OC, and to provide a roadmap for improvements or desired changes in OC with highlighted target business areas. For achieving the aim and purpose, we adopted a multi-stage approach starting by an extensive literature review on both BITA and OC for identifying potential relationships between their components. Following that, an empirical research was conducted in three case organisations for confirming the potential relationships and formulating the research hypotheses. For testing the research hypotheses, a quantitative study was performed by applying a survey among business and IT practitioners and researchers. The results are the bases for developing the BITA-OC integrated view. The knowledge contribution of the paper can be seen from both theoretical and empirical perspectives.

The theoretical contribution:
- The research on the relationships between BITA and OC are not well studied or examined yet. The literature analysis in this paper contributes to the knowledge gap on linking the two domains, and highlighting the mutual impact between them.
- The paper contributes to theories in both domains and to resolving a great part of the complexity that is attached to defining and understanding OC changes. By identifying the relationships between elements of OC and BITA components it would be easy for researchers in both domains of practice to find a dependency between related components from one side, and to understand the influences from the other side.
- The research process towards the BITA-OC integrated view contributes to analysing the impact of BITA maturity on organisational cultural and its complexity which results from the complex relationships between cultural dimensions themselves as well as the different impacts from the same BITA components.

The empirical contribution: The paper presents a set of validated relationships by analysing the BITA and OC relationships. The contributions of this research may be argued to be a roadmap for business and IT managers to reach desired changes in OC in regard of support of BITA criteria as checkpoints.

A future research on this integrated view is proposed for empirical validation of its use and grained level of correlating the attributes of BITA in each criterion with specific details on culture profiles. Interesting questions to managers can be further investigated on this integrated view: “Which type of organisational culture exist with higher maturity of alignment?”, “If the company want to improve or to have high BITA maturity, which changes they should expect to have or target in their OC profiles?”, “If you have a certain type of BITA maturity, what profile of OC profile you should have in different situations?”. In addition to that, empirical guidelines should be expected to have a great value for practitioners to apply and use the integrated view.
References


