IT Governance: An Alignment Maturity Perspective.

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RESEARCH BRIEF

IT GOVERNANCE: AN ALIGNMENT MATURITY PERSPECTIVE

Jerry Luftman
Stevens Institute of Technology
jerry.luftman@stevens.edu

Tal Ben-Zvi
Stevens Institute of Technology
tal.benzvi@stevens.edu

Rajeev Dwivedi
Stevens Institute of Technology
rajeev.dwivedi@stevens.edu

Eduardo Henrique Rigoni
Escola de Administração
Universidade Federal do Rio Grande do Sul
ehrigoni@gmail.com

Executive Summary

Aligning Information Technology (IT) and business has been a persistent and pervasive problem for over three decades. Studies show that one of the essential components for organizations seeking to improve their alignment maturity is IT Governance. This paper demonstrates the relationship between IT Governance and business performance. The Strategic Alignment Maturity Assessment (SAM) framework is applied as the foundation for relating IT Governance to company performance and to overall alignment maturity. Based on this research model, IT strategic planning, IT budgeting, and IT reaction capacity demonstrate strong contribution to the overall IT Governance maturity score. Furthermore, IT Governance has a significant impact on company performance. Although these results underscore the importance of IT Governance in alignment maturity, there is no silver bullet and the other five SAM components (Communications, Value, Partnership, Technology Scope, and Skills) must also be addressed.

Keywords

Strategic Alignment, Strategic Alignment Maturity Model (SAM), Structural Equation Model (SEM), IT Governance, Performance.

1. Introduction

Low alignment maturity between business strategy and Information Technology (IT) strategy is one of the main reasons why enterprises fail to exploit the full potential of their IT investment, and why IT business alignment has been such a persistent and pervasive conundrum (Luftman and Kempaiah, 2008; Luftman et al., 2006; Luftman, 2009). In fact, companies with lower alignment maturity tend to demonstrate lower overall company performance, e.g., lower Return on investment (ROI), lower profits, etc. (Luftman and Kempaiah, 2007; Luftman 2009). To improve company performance, business IT alignment should be regularly reexamined. One important aspect of this reexamination is the consideration of the role IT Governance plays in organizational decision making processes (De Haes and Van Grembergen, 2009).

IT Governance should be part of the overall corporate governance process. It is comprised of the management processes, procedures, and policies established to provide decisions and direction to the IT services and resources, including considerations regarding risks, compliance, and performance. IT Governance is the responsibility of the strategic, tactical, and operational "owners" of IT resources on behalf of the stakeholders who expect discernible value. The IT Governance Institute's definition of IT Governance includes the leadership and organizational structure and processes that ensure that IT sustains and extends the organization's strategies and objectives (The IT Governance Institute, 2009). The growth of outsourcing, continuous regulatory changes, and the high rate of IT project failure affecting organizational performance have brought increased deliberation to IT Governance (Luftman, 2000; Luftman and Kempaiah, 2008; Nash, 2005; Rigoni et. al., 2006; Sledgianowski, 2004). An important consideration related to IT Governance is how IT investment decisions are made at the strategic, tactical, and operational levels, and who makes them; for example what projects to pursue and how to allocate financial and human resources.

One model that has received exceptional receptivity among researchers and practitioners is Luftman's (2000) Strategic Alignment Maturity Model (SAM). This model combines descriptive and prescriptive aspects of alignment that generate a roadmap that practitioners and consultants can follow to attain higher levels of IT effectiveness which in turn helps organizations attain better business performance (Luftman, 2009). SAM combines six different organizational components into a strategic alignment maturity score: Communications, Value Measurements, IT Governance, Partnership, IT Scope, and Skills. Each of those components is comprise of elements or indicators used to measure the component. Using Structural Equation Modeling (SEM), this paper focuses on the IT Governance component and the question of governance pertaining to IT investment decisions. In particular, the purpose of this paper is to investigate the impact (see Figure 1):

1. of the individual elements of IT governance on the IT Governance component
2. that IT Governance has on the overall strategic alignment maturity score
3. of IT Governance on business performance

A benchmark repository of 250 global 1,000 organizations is investigated to identify the role IT Governance plays in IT business alignment, as well as its impact on organizational performance. Partial Least Square (PLS 3.0 software) was applied to analyze and validate two relationships: (1) the relationship between IT Governance and its elements; and (2) the relationship between IT Governance and organizational performance.

The reminder of the paper is structured as follows: the next section explores IT-Business Alignment, SAM and IT Governance, followed by a section describing the research approach and methodology. The fourth section presents the research results, followed by the research limitations, conclusions, and suggestions for future research.

2. IT-Business Alignment, SAM and IT Governance

The first strategic alignment model that gained attention from both practitioners and scholars was the Henderson and Venkatraman model (1993). Since its introduction in the early 1990s, this framework has been the focus of constant improvements (e.g., Maes et al. (2000) used this model as a starting point and created a model called the Unified Framework for Alignment). However, those and other known strategic alignment models (e.g., Bergeron et al., 2001; Hu and Huang, 2005; Luftman et al., 1993; Marchand et al., 2001; Reich and Benbasat, 1996; Tallon and Kraemer, 1998; Teo and King, 1996, 1997) are essentially descriptive, making them very difficult to be applied by practitioners, consultants, and researchers.

Demonstrating the relationship of alignment between IT and Business, and business performance is essential in demonstrating IT's value contribution to organizations, as well as the importance of IT-Business alignment (Luftman et al., 2006; Luftman and Kempaiah, 2008). Several studies have investigated the relationship between strategic alignment and business performance, e.g., Byrd et al. (2006), Chan et al. (2006), Sabherwal and Chan (2001), and Chan et al. (1997), albeit not to the extent of the SAM research.

The SAM framework, first published by Luftman (2000), has received strong receptivity among IT researchers and practitioners from around the globe (e.g., April et al., 2005; Van Grembergen and De Haes, 2004). This framework provides a comprehensive view of IT business alignment, and has been validated by extensive research (Luftman 2000, 2003, 2004, 2005, 2009).

SAM is comprised of six IT/Business strategy alignment components (see also Luftman and Kempaiah, 2007, Luftman 2009; and the Appendix for an overview of the model):

1. Communications
2. Value
3. Governance
4. Partnership
5. Scope and Architecture
6. Skills

While previous papers focused on the overall alignment maturity scores, this paper focuses on the IT Governance component; future papers will be focusing on the other components (Luftman, 2009). As the SAM assessment examines the role of IT Governance in achieving alignment between business and IT, it considers the following IT Governance set of nine elements (see Luftman, 2000; and Table 1):

1. Business Strategic planning
2. IT Strategic Planning

3. IT organizational structure
4. IT reporting
5. IT budgeting
6. IT investment decisions
7. IT steering committee(s)
8. IT project prioritization process
9. IT Reaction Capability

Table 1 provides a brief description and supporting literature for each of the nine elements. This study explores the impact of those individual elements on IT Governance (see Figure 1). Considering those elements are fundamental to enhancing IT governance, enhanced IT Governance improves the maturity of IT business alignment, and higher alignment maturity results in improved business performance (Luftman et al., 2009). Therefore, this research focuses on the impact that IT Governance has on the overall strategic alignment maturity score and on company performance (also see Figure 1).

Table 1. The Nine Elements of IT Governance.

IT Governance Practice	Supporting Literature
Gov1 - Business Strategic Planning: capturing and synthesizing how the organization can reach its vision.	Mintzberg et al. (2000)
Gov2 - IT Strategic Planning: conceptualizing and assimilating how the organization can meet its vision by leveraging IT.	Peterson (2004), Lee & Bai (2003), Jiang & Klein (1999), Teo & King (1997)
Gov3 - IT Organizational Structure: the way the IT function is structured (e.g., centralized, decentralized, federated) and where the IT decision-making authority is located within the organization.	Sambamurthy & Zmud (1999), Brown & Magill (1994)
Gov4 - IT Reporting: who manages the senior IT executive and IT function; and how.	Raghunathan (1992), Smaczny (2001)
Gov5 - IT Budgeting: financial control (processes for allocating financial resources; is IT managed as a cost center, investment center, profit center, etc.)	Venkatraman (1997), Jensen & Meckling (1998)
Gov6 - IT Investment Decisions: how IT asset spending is allocated and reviewed (e.g., cost based, creating business value, etc.), and by whom.	Gunasekaran et al. (2001), Boonstra (2003)
Gov7 - IT Steering Committee(s): strategic, tactical, and operational teams commissioned to allocate and oversee IT initiatives, priorities, spending, and resource allocation.	Weill & Ross (2004), Mintzberg (2003), Karimi (2000)
Gov8 - IT project prioritization process: how IT projects are selected, and by whom.	Wu & Ong (2008), Wen & Shih (2006)
Gov9 - IT Reaction Capability: IT's ability to quickly respond to the organization's changing business needs/demands.	Schildt et al. (2006), Patten et al. (2005)

3. Research Approach and Global Data Collection

A Partial Least Square (PLS) method was applied to establish the relationship between IT Governance and business performance. PLS was originated in the social sciences as an econometric technique (Wold, 1966) and is currently used in various disciplines such as chemistry, economics, medicine, psychology, and pharmaceutical science (see for example, Geladi & Kowlaski, 1986, Kramer, 1998; Martens & Naes, 1989). This method generalizes and combines features from principal component analysis and multiple regression (Abdi, 2003). Specifically, PLS searches for a set of components (called latent vectors) that performs a simultaneous decomposition of the predictors and the responses with the constraint that these components explain as much as possible of the covariance between them. This is followed by a regression step where the decomposition of predictors is used to predict the responses.

This method was chosen because it is considered one of the less restrictive of the various multivariate extensions of the multiple linear regression models. As a result, it becomes particularly useful when predicting a set of dependent variables from a (very) large set of independent variables with the maximum precision and stability of a regression model. Note that to assure the orthogonality of the projected values, PLS requires the use of weights.

This data was based on Luftman's SAM benchmark repository (Luftman, 2000). Data has been collected and maintained since 1999. The database includes results from over 2,000 IT and business executives from more than 250 global 1,000 organizations. The IT Governance data was included as part of the overall SAM assessment and it was obtained using field interviews, group discussions, and surveys. Performance data, ROA (Return on Assets), and ROE (Return on Equity), was gathered from public resources such as annual reports published on Google Finance and on Yahoo Finance. The choice of ROA and ROE as performance indicators was made because these measurements assess company performance regardless of company size; these indicators are size independent.

The repository contains data from 4 geographic regions and 7 countries. There are 140 companies from the United States, 39 from India, 20 from Europe, 40 from Latin America, and 1 from Africa. They cover the financial (74), manufacturing (48), services (43), pharmaceuticals (16), government (8), retail (8), chemical (7), insurance (7), utility (7), home/entertainment (6), education (5), healthcare (3), oil/gas/mining (3), transportation (3) sectors. For this study, 2,081 individual responses were aggregated using means to converge the data based on company. The aggregated company responses were screened and only data for which complete information on ROA and ROE was available was included in the study.

Missing value analysis was performed before proceeding with the actual analysis. However, since more than 20% of the cases had missing values (Missing Completely At Random – MCAR), Little's (1988) MCAR tests were performed to identify the randomness of the missing data. The Structural Equation Model (SEM) method was selected to complete the missing data because the pattern of the missing data was deemed random (Hair et al., 2006). At the end of this

process, complete data from 130 companies, corresponding to 465 executive participants, were obtained. These represent 81 companies from the USA, 30 companies from India, 13 companies from Latin America, and 6 companies from Europe. The industry breakdown is as follows: financial (20 companies), manufacturing (31), pharmaceutical (4), insurance (4), services (27), hotel (3), retail (4), chemicals (2), government (1), healthcare (2), transportation (3), utility (1), entertainment (1), and Indian IT service (27).

Furthermore, SEM was used to find the relationship between IT Governance, SAM, and company performance (see Figure 1). Previous performance studies found no significant direct influence of IT on performance variables (e.g., Byrd and Marshall, 1997; Sriram and Stump, 2004). This has prompted us to explore those relationships from a different perspective, using SEM as an appropriate and powerful tool (see, for example, Hair et al., 2006); thus, this study makes use of SEM to establish the relationship between IT governance, Business-IT alignment, and company performance.

Two elements, IT organizational structure (Gov3) and IT Reporting (Gov4), were removed from the model since they do not employ the same 1 to 5 Likert scale as the other elements; they are operationalized using categorical and nominal scales and therefore, they are discussed separately.

4. Results

4.1. Individual IT Governance Elements and their impact on Overall IT Governance

PLS Graph 3.0 was used to obtain an overall view of the IT Governance elements: their weights (their impact on IT Governance), t-values, and p-values. The results are provided in Table 2 and in Figure 1. When t-values were calculated, several IT construct items (Gov1, Gov6, Gov7 and Gov8) did not statistically contribute to the construct. The practices Gov3 (IT organizational structure) and Gov4 (IT reporting) were not assessed because they are operationalized by using nominal scales.

The following seven insights can be drawn from Table 2:

First, business strategic planning has almost no impact (-4.5%) on IT governance. This is likely due to other SAM component considerations; there is no silver bullet and all components must be addressed. For example, previous research found that IT understanding the business and business understanding of IT are among the lowest rated maturity scores (Luftman et al., 2006); this often results in not including IT in the business strategy process.

Table 2: Individual IT Governance elements impact on Overall IT Governance

Information about IT Governance elements	Weight (in %)	t-value	p-value
Gov1 -Business Strategic Planning	-4.5	0.192	0.848
Gov2 -IT Strategic Planning	62.5	3.061	0.003
Gov5 –IT Budgeting	-60.1	1.983	0.048
Gov6 –IT Investment Decisions	20.4	0.676	0.499
Gov7 –Steering committee	2.5	0.075	0.940
Gov8 –IT Prioritization Process	32.1	1.310	0.191
Gov9 –IT Reaction Capacity	50.3	2.072	0.039

Second, IT strategic planning makes a significant contribution in formulating IT Governance, as reflected by an impact of 62.5% on IT Governance. It demonstrates that proper IT strategic planning plays a fundamental role for good IT Governance. A 2002 Cutter Consortium survey found that 39% of the respondents had no formal IT strategy at all. However, SIM (Society for Information Management) annual IT management concerns surveys have consistently ranked IT strategic planning among their top ten issues since 1980 (Luftman and Kempaiah, 2008; Luftman, Kempaiah, Nash, 2006; Luftman, 2009). Historically, strategic planning for the CIO has meant discerning the business's strategy and then trying to support or enable it. The CIO has the capability to see how IT can both enable and drive strategic change to the company. That is not to say that CIO's should write their IT strategy independently, and then attempt to force the business strategy to match it. Rather, both the business strategy and the IT strategy should be derived collaboratively by the entire executive team, including the CIO.

Third, the data on IT budgeting indicates that budgeting has a negative impact (-60.1%) on IT Governance. One possible reason could be the constant demand to reduce cost, especially during economic downturns. The Value component of SAM is important in ensuring that IT's contribution is clearly demonstrated. It is preferred that IT be treated as a value center than a cost center; albeit for IT this has been elusive (Luftman, 2004).

Fourth, IT governance has a relatively low contribution from IT investment decisions, with a weight of only 20.4%. This means that major decisions related to IT investments are beyond the scope of IT Governance and are made outside the IT function. Too often IT investment decisions are made by the finance organization.

Fifth, the role of steering committees in IT Governance is negligible (2.5%). Although these committees are often thought of as one of the more effective vehicles for IT Governance, their contribution has not been demonstrated. Luftman (2009) suggests that IT managers need to consider several factors when proposing or establishing a steering committee. The author states

that truly effective steering committees include the appropriate level of management membership from the business as well as from the IT organization making strategic, tactical, and operational decisions. In addition to membership, other factors related to the organization's bureaucracy (such as, its willingness to share risks and rewards, how it prioritizes investments and the objectives of the steering committee itself) need to be carefully considered.

Sixth, the IT prioritization process has a positive impact on formulating IT Governance with a weight of 32.1%. As expected, this tends to be one of the major focus areas of the governance process.

Seventh, IT's reaction capability has a very significant positive impact (50%) on IT Governance. IT is seen as a facilitator for implementing change throughout the company. Today's managers must have a commitment to apply IT as a vehicle for organizational change. However, it is not just the technology that provides the value; it is how the business changes its processes to take advantage of the technology. Given the frequency of decision changes, it is important for IT to be flexible, responsive, and dynamic.

In addition to the IT Governance elements, this research considered the question of organizational structure and its effect on alignment maturity. Participants in the overall SAM repository reported having three IT organizational structures:

(1) Centralized: (28% of respondents): All IT resources report to one unit, usually led by a CIO

(2) Decentralized: (23.33% of respondents): Each business unit has its own IT organization

(3) Federated: (48.67% of respondents): Some parts of IT are centralized (e.g., IT infrastructure, standards, common systems), and other parts are decentralized (e.g., application resources specific to the business units)

Organizations with a federated IT organization tend to have higher alignment maturity (3.03) than those with centralized (2.87) or decentralized (2.64) structures. Therefore, it appears that IT organizations that combine the strengths of centralization and decentralization, while minimizing their weaknesses, enhance their IT-business relationship. However, organizing IT federally will not by itself ensure mature alignment, because there is no silver bullet. But the evidence suggests that IT organization structure may enable alignment.

Another frequent IT Governance topic of discussion is the reporting structure of the senior IT executive. Participants in this study reported to four different executives. The CIO reports to the:

(1) Chief Executive Officer (CEO), President or Chairman*:* (70% of companies)

(2) Business Unit Executive: (14% of companies)

(3) Chief Operating Officer (COO): (7% of companies)

(4) Chief Financial Officer (CFO): (8% of companies)

Organizations whose senior IT executive reported to the CEO, president, or chairman had significantly higher alignment maturity (3.26) than those whose senior IT executive reported to a business unit executive (3.20), the COO (2.97), or the CFO (2.79). This finding suggests that having the senior IT executive reporting to the CEO, president, or chairman could provide the best structure for maturing their IT-business alignment.

The model shown in Figure 1 (left hand part of figure) illustrates the previously discussed relationship weights between the seven IT Governance elements and the overall IT Governance score. Based on this research model, the only three elements that present statistically strong contribution (i.e. have a significant t-test value) are: Gov2: IT strategic planning (weight: 0.625, t-value: 3.06); Gov5: IT budgeting (weight: -0.601, t-value: 1.983); and Gov9: IT reaction capacity (weight: 0.503, t-value: 2.072). As can be seen, two elements, Gov2: IT strategic planning and Gov9: IT reaction capacity, present positive weights; one element, Gov5: IT budgeting, presents a negative weight.

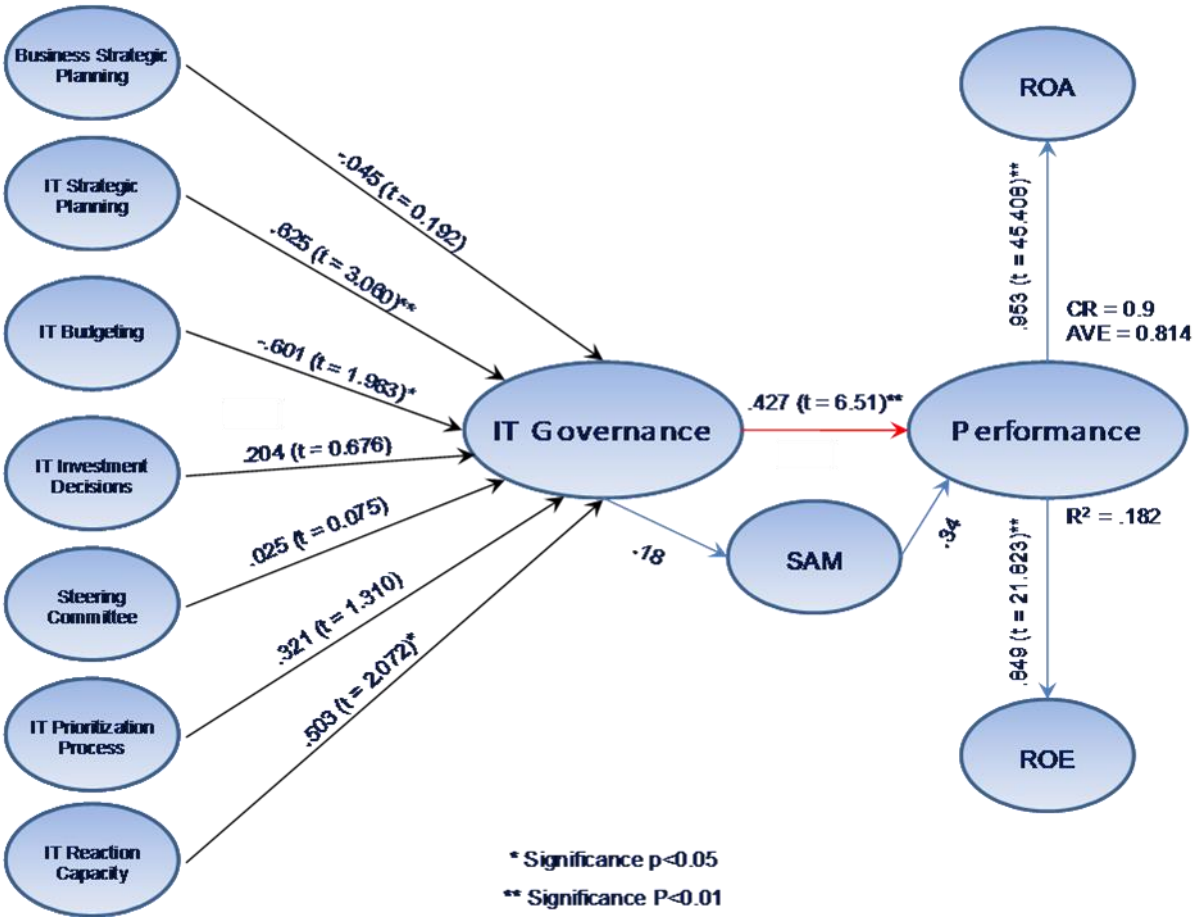

Figure 1. IT Governance, SAM, and Performance

4.2. Company Performance, SAM, and IT Governance

The performance construct (right side of Figure 1) was submitted through the classic process of construct validity: factor loadings, Average Variance Extracted, and Construct Reliability. This construct, comprised of two indicators: ROA and ROE, presents loadings above 0.7 (ROA=0.95; ROE=0.84), as recommended by Hair et al. (2006). An important validation factor is the Average Variance Extracted (AVE), which represents the average percentage of variance extracted among a set of construct items; it is a summary indicator of convergence. Values above .5 indicate convergence (Hair et al., 2006); in our case the AVE was 0.814. Construct Reliability (CR) measures reliability and internal consistence of the measured variables representing the construct. CR level above .7 indicates good values; in our case the CR was 0.897. Finally, the performance construct presents a regular explanation coefficient (R^2=0.182) which indicates the extent to which the formative construct (IT governance) covers the referring construct scope (Performance).

It is important to note that the use of ROA and ROE explains only .18 percent of the overall company performance, corresponding to an approximately error variance of .82. This high error variance can be attributed to the fact that there are other elements not considered in this study that constitutes the performance construct. This research used ROA and ROE because those indicators provide an appropriate measure considering the range of company size in our repository. Also, both indicators are quite similar in the aspect of gauging a company's ability to generate earnings from its investments. In addition, as previously discussed in Section 3, those indicators are considered to be important measurements of company performance by leading researchers. Future research should consider other performance indicators.

SAM makes a significant contribution to business performance, established via SEM at .34, and illustrated in Figure 1 (center of figure). The regression weight for SAM in the prediction of performance is significantly different from zero at the 0.001 level (two-tailed); in other words, the relationship between SAM and performance is significantly considerable. This is a very good validation of the relationship between SAM and company performance.

The SAM IT Governance component itself (center of Figure 1) makes a significant contribution to business performance (.427; $p<0.01$); this is superior to the impact of SAM, a broader construct, on performance (.34; <0.001).

Overall, the preceding results show that higher levels of IT Governance result in higher level of organizational performance.

5. Research Limitations and Suggestions for Future Research

This research obtained a very low explanation coefficient (R^2=.18) since it used only two variables to measure performance. It would be reasonable to conclude that additional responses and performance variables would increase the model accuracy or refine its design. For example,

more data would allow researchers to evaluate each element of IT Governance; that is, researchers could measure each element and its impact on IT Governance and indirectly, its impact on the performance construct.

Future research should also consider collecting additional performance data (e.g., earnings per share, revenue per share, return over IT investment, net profit margin). In addition to performance data, collecting data related to other business-IT alignment aspects, like strategic fit or overall SAM, would help getting a different perspective of SAM and its relations with IT governance. As more data is collected, additional investigations that detect causal effects among the IT Governance elements would become valuable. This could provide a better portrayal of the impacting relations.

Research underway correlating all individual six components influence on company performance would derive a weighted average that can be applied to the calculation of the overall SAM score. Establishing these paths and weights would allow scholars and practitioners to gain insight on the SAM components' interactions. That is, practitioners may, with increased assurance, decide the most opportune correction points for a SAM determined weaknesses. For example, a consultant would be able to assist a client in deciding where and how to intervene to improve strategic alignment and what relative affect it would have on subsequent stages. This would enhance the application of SAM as a prescriptive tool as it provides empirical evidence for using the model as an instrument to better leverage IT services.

6. Conclusions

This study focused on one of the six SAM components, IT Governance. Two elements that have a significant positive impact on IT Governance were identified: IT strategic planning and IT reaction capacity. One element had a significant negative impact: IT budgeting. This negative element is a major concern for IT Governance practices. Overall, the three elements that make a significance contribution to IT Governance demonstrate their importance in the governance process. Additionally, the impact that IT Governance has on the overall SAM score based on a SEM evaluation is 18%.

Regarding the relationship of IT Governance and company performance, the PLS weight (.43) for IT Governance in the prediction of performance is significant ($p<0.01$), hence validating the importance of IT governance. Although previous studies demonstrated the relationship between SAM and company performance, this research provides a landmark investigation concerning IT Governance and it is the first study that provides PLS statistical substantiation of the relationship between IT Governance and business performance. This proves the contribution of the IT Governance elements as major contributors to a company's performance, and thus, opens a new horizon for researchers and practitioners to realize the importance of IT Governance in determining business and IT strategy.

This analysis clearly shows that IT Governance is an important component of attaining mature IT business alignment, which in turn can enhance company performance. IT Governance contributes significantly to business performance and should not be taken lightly by executives. However, just having steering committees in place does not ensure their effectiveness. Also, a narrow focus on IT Governance without considering the five other SAM components is not likely to ensure a success. There are still significant opportunities to improve IT governance. Business strategic planning is a major element that needs to be enhanced. It is time to leverage existing tools and the lessons learned from their application to help organizations improve performance by applying IT and enable business change.

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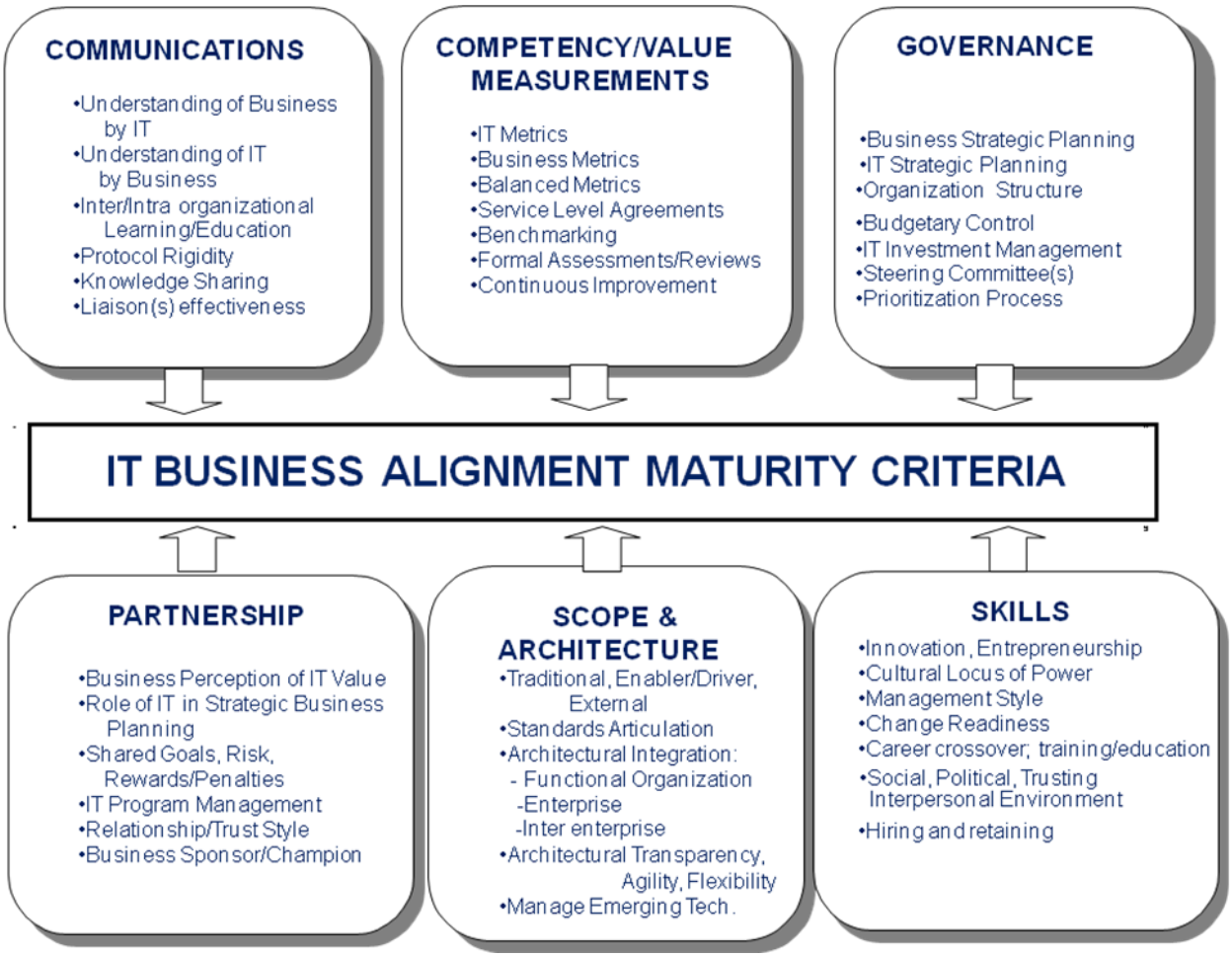
Appendix

The six components of the strategic alignment maturity assessment are illustrated in the figure below, and the text that follows.



1. Communications: Measures the effectiveness of the exchange of ideas, knowledge, and information between IT and business organizations, enabling both to clearly understand the company's strategies, plans, business and IT environments, risks, priorities, and how to achieve them.
2. Value: Uses balanced different measurements to demonstrate the contributions of information technology and the IT organization to the business in terms that both the business and IT understand and accept.

3. Governance: Defines who has the authority to make IT decisions and what processes IT and business managers use at strategic, tactical, and operational levels to set IT priorities to allocate IT resources. This is the focus of the paper.
4. Partnership: Gauges the relationship between a business and IT organization, including IT's role in defining the business's strategies, the degree of trust between the two organizations, and how each perceives the other's contribution.
5. Scope and Architecture: Measures IT's provision of a flexible infrastructure, its evaluation and application of emerging technologies, its enabling or driving business process changes, and its delivery of valuable customized solutions to internal business units and external customers or partners.
6. Skills: Measures human resources practices, such as hiring, retention, training, performance feedback, encouraging innovation and career opportunities, and developing the skills of individuals. It also measures the organization's readiness for change, capability for learning, and ability to leverage new ideas.