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RESEARCH ARTICLE OPEN ACCESS

How Effective IT Governance Can Foster a Culture of Innovation

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ABSTRACT
This paper addresses a specific research problem pertaining to examining the relationship and mutual effects between strong IT governance implementations and the dominance of a culture of innovation in organizations. The paper uses a case-study approach to collect structured primary data from five carefully selected companies, and rationalizes the gathered data into a multidimensional format to observe relevant behavioral and relational patterns. For the sake of analysis, the methodology employs the use of an empirical parameter, constructed out of different framework parameters, to reflect the *perceived strength* of an IT governance implementation. This empirical parameter is herein called *Governance Strength Index* or GSI. Analyzing the primary data resulted in observing some interesting patterns regarding the way companies evolve in their journey of attempting to balance between governance and an innovation-fostering culture. In this context, the paper proposes a hypothetical five-level maturity model that describe the evolutionary process companies can go through while pursuing a balanced IT governance implementation. The paper also presents a number of novel theories, such as the *Compartmentalization Theory*, which suggests that companies can *compartmentalize* (i.e. selectively implement) IT governance practices away from innovation-thirsty business units, in an attempt to preserve their innate innovation-centric culture.

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I. Introduction

Through the study of the relationship between strong IT governance and organizational culture, the research aims to propose a set of business recommendations and best practices to be implemented side by side with IT governance frameworks, to ensure the preservation of other important aspects of the organizational culture, such as a spirit of innovation, teamwork, and trust.

Research Problem

IT governance is an indispensable tool to ensure and guarantee the value of IT investments for the business. However, governance, in general, can have some implications on corporate culture. And IT governance is no exception. The main research problem for this paper is to study and understand the implications of strong governance on the organizational culture, particularly from the perspective of innovation.

The paper will put special emphasis on innovation-intensive or innovation-reliant business models. Common sense might suggest that strong governance (e.g., too many rules) can hinder, restrict, or slow down innovation. On the other hand, little or no governance can put the business at risk and jeopardize the stability and profitability of the organization.

The delicate balance between governance and culture is, therefore, a rich playground for new research. Based on the ideas outlined hereinabove, the research question can be summarized as follows: *"How can effective IT governance foster a culture of innovation?"*

Despite the apparent focus on innovation as the most prominent cultural facet in the research, the research will also look into other, relevant cultural aspects within the organization, such as stress and team cohesiveness. This is based on the basic assumption that the culture of innovation itself is strongly affected by a number of other cultural phenomena within the organization. For

example, team spirit, trust, freedom and openness can all boost innovation, whereas the absence of such behaviors from an organization's corporate culture can severely hamper and hold back innovation.

Related Work

To study the effects of the effective IT governance on the organizational culture, we attempt to examine numerous factors of Enterprise Governance of Information Technology (EGIT) including the following: a) organizational culture, b) related literature in the field of the relationship between effective EGIT implementation and the organizational culture, and c) how effective implementation of EGIT can be defined.

Organizational Culture

According to their study, Rowlands, et al. (2014) defined the organizational culture as "The culture of an organization is basically its personality. It includes the goals, assumptions, beliefs, values, norms, behaviors, customs, rites, history, and even the style of dress of the people who work for the organization", and they emphasized on referencing Detert *et al*'s (2000) model for organizational culture, "This framework supports assessment of dimensions of organizational culture and the practices or artefacts that arise out of those dimensions. It focuses on organizational culture as a system of shared values that define what is important and that guide organizational members' attitudes and behaviors". The model could be presented using the following eight dimensions:

Relationship between Effective EGIT and Organizational Culture

Many researchers and academics studied the factors that might affect the effective and successful implementation of the IT governance, e.g.: (Ali & Green, 2012), (De Haes & Van Grembergen, 2006), (Peterson, et al., n.d.). However, there are few studies about the interchangeable relationship between the organizational culture and the IT governance. According to their review, (Aasi, et al., 2014) noticed that "a*lthough an increasing amount of literature is dedicated to study IT and organizational context related to IT, research in exploring the particular role of culture in IT governance related issues is in short supply*". Additionally, (Aasi, et al., 2014) claimed, "*The gap in the research about the influence of culture on IT governance and the emerging attempt of the organizations to build up effective IT governance, are the main motivations for conducting this research*".

Some of these studies highlight the importance of the organizational culture as a main factor to ensure the successful implementation of the IT governance. (4) In their work tried "*to explore how differing dimensions of culture can potentially influence a successful Information Technology Governance (ITG) implementation"* and they concluded, "*Organizational culture is potentially a very important factor in ITG*

implementations and deserves further study". Similarly, (Aasi, et al., 2014), in their two researches, suggested that "*After testing the theory in Netherlands and Belgium, the authors conclude that culture can affect the business IT alignment maturity and they emphasize on governance maturity as one of the components of the used model*". In addition, in their study, (Doughty & Grieco, 2005) suggested, "*The main reason for any type of governance failure is poor corporate culture*", and "c*ulture is an important element in ensuring successful governance*". Also (Pereira & Mira da Silva, 2012) concluded based on a study supported by nine interviews with ITG experts evaluating the contingency factors for effective ITG that "c*ulture, structure, industry, and maturity are seen as the most relevant contingency factors for ITG implementation*". The study of the relationship between EGIT and culture has been addressed on deeper technical level as (Corriss, 2010) studied in her report the integration between information security governance and organizational culture, and she stated as a result that "*management should not initially try to force employee buy-in to the entire security policy*".

However, we noticed that there might be very few resources studying the impacts of the effectively implemented IT governance on the organizational culture. After a long research process to review many articles related to the topic, the authors were able to find only one related article; (Clohessy, et al., 2014) in their study tried to answer different questions, one of them is "*what is the relationship between Living Lab IT governance and open innovation effectiveness*".

Effective EGIT

According to (Ferguson, et al., 2013) study and based on a survey of professional auditors there are "*significant positive relations between the overall level of effective IT governance and three IT governance mechanisms: IT steering committees, senior management involvement in IT, and corporate performance measurement systems*". Additionally, according to (Ali & Green, 2012) study results, they suggested "*significant positive relationships between the overall level of effective IT governance and the following mechanisms: the involvement of senior management in IT, the existence of ethic or culture of compliance in IT, and corporate communication systems*".

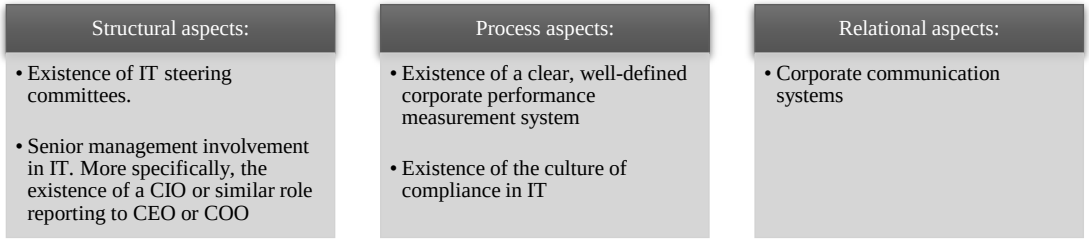
According to these two studies, the authors will consider the following factors to assess the effective IT governance saturation: a) IT steering committees, b) Senior management involvement in IT, c) Corporate performance measurement systems, d) Existence of ethic or culture of compliance in IT, and e) Corporate communication systems.

II. Framework

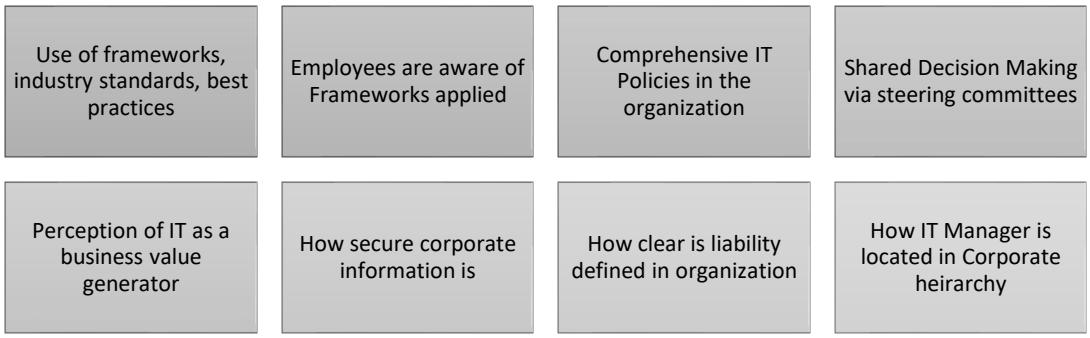
The theoretical framework used in this research consists of the dependent and independent variables shown in the figures below to study the relationship between IT governance and the cultural aspects within an organization. The paper identifies two major categories of framework parameters: *Independent* variables; factors that characterize the specific implementation of governance within an organization, and *Dependent* variables (affected), or factors that characterize how the corporate culture is impacted by the said implementation. In an attempt to find out the relevant parameters, our literature review has focused on gathering secondary data around these organizational aspects:

- How aware are normal employees of Frameworks applied
- How comprehensive the IT Policies are in the organization
- Is IT well-aligned with business
- Perception of IT as a business value generator
- How secure corporate information is
- How clearly is liability defined in organization
- How the organization is structured
- Is business following industry standards and best practices

Based on the literature review, the following parameters were obtained to determine the depth and level of success of IT governance in the organization:



Independent variables



GSI

Dependent variables

Governance Strength Index (GSI)

For the sake of analysis, this paper uses a special composite framework parameter, Governance Strength Index – GSI, which is specifically constructed by combining a subset of raw primary data parameters using an empirical formula, to indicate the *perceived* strength of IT governance within each studied organization or business unit.

GSI does not necessarily indicate the level of success of IT governance implementation. Instead, a higher GSI signifies a stronger, more restrictive system of governance. GSI is normalized and refined to limit the effects of subjectivity, but the core concept itself still incorporates some level of subjective, perceived value.

Attention shall be given to the fact that this research focuses on the implications of IT Governance, *not* Corporate Governance. Similarly, research analysis will focus on the implications on *Corporate Culture* in general, as opposed to IT team or IT-centric culture within a generic organization.

III. Method

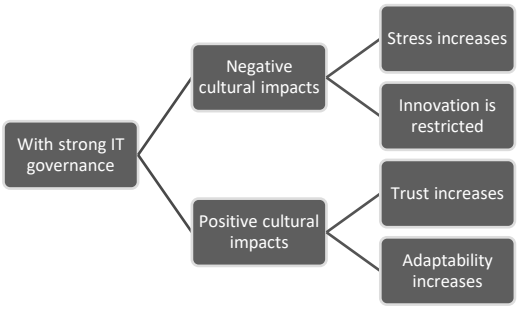
This research employs an inductive, dual-stage, multi case study approach. The primary data set is collected from a number of companies by examining the cultural aspects within those companies via unstructured interviews during the initial data gathering stage, followed by structured interviews and surveys during the second stage. The target companies were selected to fall within the sampling criteria which focuses on innovation-intensive companies. From an IT governance perspective, studied organizations were examined against three categories: a) companies with successful IT governance implementations, b) companies with failed and/or incomplete implementations of IT governance frameworks and methodologies, and c) non-implementations: organizations that have never undergone any formal attempt to implement IT governance systems. At least ten structured interviews were conducted for each target company, with specific predetermined questions. Results from interviews and surveys were collected and tabulated for data cleansing. GSI values were calculated for each sample, and after eliminating outliers (highest and lowest values) remaining values were averaged. The GSI value is normalized to range between 1 (weak governance) to 5 (strongest governance).

Primary Data Collection

A two-step approach was employed for identifying the structure of data collection tools, and collecting primary data from the sampling frame. The first phase was through a series of non-structured interviews with carefully chosen targets. Phase I resulted in providing some initial indications on the patterns and relationships. To verify those patterns and relationships for applicability on target organizations, a set of comprehensive structured interviews and surveys was designed and deployed within the sampling frame.

Research Proposition

The core proposition of this research is: "Strong IT governance restricts innovation and limits the innovation-fostering culture within the organization". The main task this paper is trying to achieve is to uphold or reject this proposition. However, the research also presents several other hypotheses regarding the effect of strong IT governance on other cultural aspects, such as stress, team orientation, and trust. The *impact tree* illustrated below summarizes the presented set of hypotheses discussed.



Hypothesis testing in this research is geared towards a specific ultimate goal – building a set of recommendations to boost the positive cultural impacts of implementing strong IT governance, and minimize or eliminate the negative impacts.

Primary Data Analysis

Five companies were subjected to in-depth analysis through the primary data gathering exercise to find out specific parameters about these companies. Initially, the Perceived *Governance Strength Index* (the GSI) was calculated per each company. Also, scores for "innovation fostering culture", IT/business alignment, and "IT governance compart-mentalization" (see sections below) were estimated per company. All scores were normalized to fit a simple 1-to-5 scale shown below.

Additionally, an "Implementation success grade" was estimated for each analyzed company. Companies were categorised into three different groups: successful, failed, and non-implementations. IT governance success was estimated based on a simple set of criteria, described as follows:

The company has implemented and maintained at least one ITG-relevant framework and associated certification.

The company manifests at least one structural aspect of IT governance in effect (e.g., we looked at the CIO or equivalent position's reporting line).

Employees exhibit minimum level of awareness regarding IT initiatives.

The consolidated analysis results can be shown in the table below:

Table 1: Companies examined in the data set, with observed GSI values and organizational parameters

Company	ITG Implementation Grade	GSI	Innovation fostering / Compartmentalization	IT/Business Alignment
Company1	Successful Implementation	High	Very High – All Across	High
Company2	Successful Implementation	Very High	High – Selective	High
Company3	No Formal Implementation	Low	High – All across	Average
Company4	No Formal Implementation	Average	Average – All across	Average
Company5	Failed Implementation	Average	Average – Selective	Low

Governance-Innovation Interaction Dynamic

One of the prime questions this research is trying to answer is whether innovation is restricted or stimulated by IT governance in organizations. Analysis of the primary data shows that this question may not have a simple yes/no response. Instead, there seems to be a deeper, less conspicuous behavioral pattern inherent in the organizational culture and governing its interaction with IT governance, particularly from a perspective of an innovation-fostering culture.

To answer the above question with greater certainty, special attention is given to the dynamics of interaction between IT governance and the cultural aspect of innovation. Behavioral patterns observed in the primary data have been rationalized and mapped into a multi-step evolutionary process that seems to be consistently applicable to the majority of organizations examined within the context of this research. To present a sharper visual image for this evolutionary process, the paper outlines it in a format that is vastly familiar and popular among business and IT management communities – *a five-level maturity model*. This proposed model describes how innovation-thirsty businesses may evolve as they strive to implement strong IT governance without suffocating their innate creativity. For the sake of reference, the model will be labeled hereinafter as "Governance-Innovation Maturity Model" or GIMM.

A core concept on which this model pivots is the notion of IT governance compartmentalization – a strongly observed phenomenon that appeared in our primary data with a high rate of recurrence. The following sections shed more light on the concept of IT governance compartmentalization, provide some real-world examples of the concept,

and present a detailed picture of the model and its implementations.

Compartmentalization Notion Introduced

IT Governance Compartmentalization is a phenomenon that can occur when organizations are seized by the perception that governance systems can hinder or restrict creativity, and try to protect their culture, particularly innovation-fostering aspects, from suffocating under restrictive rules and policies, but without losing the business value and benefits of IT governance. As a result, they create *compartments* within the organization, inside which staff and executives are somehow immune to those policies or excluded from their application altogether. Compartmentalization usually occurs informally, sometimes even unintentionally. Often, these protective compartments are built around innovation-intensive or innovation-thirsty business units. However, compartmentalization can occur in revenue-driving departments (such as sales), or in certain organizational levels (such as upper management).

This research suggests that some form of compartmentalization is likely to exist in every organization that attempts to enforce any level of information technology governance. Symptoms of Compartmentalization in medium and large enterprises that we examined were more common than initially perceived. We collected a list of interesting instances that demonstrate the presence of the phenomenon in organizations.

In case 1, a senior sales employee mentioned that he often used her personal laptop at work. She justified that by stating that "she does not need to carry it everywhere with her. She also added: "IT guys won't let us do anything or install any software on company laptop. I cannot really be productive this way."

In case 2, another senior employee told us during the interview that his company won't buy him a Mac, so he bought his own. He mentioned that his boss allowed me to download business emails and use it in presentations because he knew that his employee would be more productive this way.

In case 3, similar observations were made although the provided justification was a bit different: "Work laptop is too heavy. I needed something lighter."

In case 4, a sales employee mentioned during the interview that he "cannot risk wasting an entire day waiting for the IT guy to repair PowerPoint." His justification was to protect the company's interest.

In case 5, an engineering employee made a very similar statement, mentioning that he cannot risk wasting a couple of hours for the IT guy to install a new piece of software for him.

In case 6, an employee in upper management stated that he needed some exceptions from IT policies because his data is way too sensitive. He I struck a deal directly with the CIO to keep all his devices outside the domain so that the IT guys cannot have access to it. He only needed his devices to check emails anyway.

In case 7, a Chief Officer told us during an interview that he could not afford to change his password every forty-five days like the rest of the staff, "I could forget it while away on a business trip. That could have drastic consequences for our business". He requested the CIO to exclude his laptop from the Group Policy Object that enforces this security rule.

In case 8, a VP of corporate sales said "We allow the sales team to login to the ERP without a VPN. They are always on the move, and they require fast and easy access from their hotel rooms or remote conference rooms. We created a special OU (Organizational Unit) for them, and we made sure they could only login over encrypted connections such as SSL and HTTPS."

In case 9, a corporate training executive told us that "Everybody in the company have attended the security awareness training, except the CxOs, who are, naturally, too busy and always on a plane."

In case 10, we found out that in one of the companies we had examined, SLAs did not apply to employees at Level 6 and above.

In case 11, an IT manager told us that they allowed senior developers to be local admins on their machines. "They know what they are doing anyway. But we cannot do the same for, say, accounting guys."

In case 12, the only three people in the company who had Enterprise Admin accounts were the two senior network administrators, and the CEO.

Companies are not likely to resort to compartmentalization initially. Instead, they the process evolves through a number of levels. While componentization may sound like a bad idea, it is not necessarily so. If a company is not yet mature enough to implement balanced ITG rules and processes, improper (e.g., over-restrictive) implementations might have a negative impact on business stability and sustainability. In such cases, compartmen-talization might actually be a good compromise. Nonetheless, the most dangerous aspect about compartmentalization is the fact that it happens under the surface. As a result, companies may suffer from its effects for a long time before it can be discovered and addressed properly. The value presented by this research comes from the fact that it helps detect and address the problem, and therefore facilitate a healthier implementation of IT governance practices.

IV. Primary Data Analysis

The table below provides consolidated results of raw data collected from interviews and surveys. The research team has failed to find any clear correlation between the presence of a perceived strong IT governance system in place, and any of the framework's dependent parameters, such as commitment, openness, motivation, etc.

Table 2: Recorded values for different parameters for each company in the data set:

Parameter	Company1	Company2	Company3	Company4	Company5
Innovation	4.5	1	3.5	2.5	4
Openness	1	0	1	1	1
Commitment	1	0	1	0	1
Motivation	1	0	1	0	1
Adaptability	1	0	1	1	1
Team Orientation	1	0	1	1	1
Stress Mgmt	1	0	1	0	1
Trust	2	0	2	1	2
PGSI	3.75	3.125	5	2.5	0.625

These results are consistent with the major findings of our research, as the actual impact on these parameters comes from the level of maturity of the implementation, rather than the perceived strength of the governance system.

The Governance-Innovation Maturity Model (GIMM)

The Governance-Innovation Maturity Model (GIMM) presents a hypothetical evolutionary path for organizations that strive to implement IT governance systems and processes, without incurring any side effects on the innovation process. There are five evolutionary steps that describe an organization's capability to amalgamate strong IT governance with a prevailing culture of unrestricted innovation.

Level 1: Initial, Chaotic, Innovation-Centric

This level is characterized by the collective, intuitive focus on innovation, creativity, and freedom. The behavior can often be observed in entrepreneurial businesses and young startups that struggle to survive in highly competitive markets. Such organizations usually strive to come up with new, enhanced product or service offerings, and typically define themselves through their innovative ideas or new approach to market.

At this level, companies are usually too young and too small to focus on policies, rules and frameworks such as IT governance, despite their heavy dependence on technology.

Level 2: Restrictive/Immature Adoption

Companies arriving at level 2 often get there due to a "*reactive*" management style. Typically, they start as Level 1 companies, with little or no IT policies in place, and continue to grow like that until the inevitable happens: unjustifiable IT expenditure, leakage of critical data, loss of valuable information, or vandalism of electronic assets.

The senior management's reaction was observed in the form of a violent swing towards IT policies and IT-empowering corporate structures. Because the action is more reactive than proactive, insufficient planning and overpowered individuals are prominent characteristics of companies operating at this level. Typically, level 2 companies succeed in achieving proper IT security and data protection strategies. However, they do not necessarily achieve optimum alignment with business objectives and strategies.

Level 3: Realization / Ad-hoc Adoption

Companies arrive at level 3 when they begin to realize the adverse impact of over-implemented IT governance on corporate culture in general, and the culture of innovation in particular.

This realization is then accompanied by a tacit, unspoken collective perception among the upper management about potential adverse impacts of IT governance on innovation, creativity, or business profitability. As a result, confusion and skepticism can gradually appear amongst the senior management. Therefore, this level is most evidently characterized by senior management's relaxed attitude towards implementing and enforcing IT governance rules and policies in critical business units, such as sales, marketing, and product development.

In many cases, the rules officially remain in force, but it gradually becomes acceptable, even normal, for individuals in key business functions to habitually avoid or break those rules. This is the first symptom of *compartmentalization* in the organization.

Level 4: Formal Compartmentalization

Companies that are too mature to allow for informal or unspoken rules to take place in the organization, but are not yet mature or experienced enough to engineer a balanced IT governance system. Therefore, these companies formally make different sets of rules and policies for different departments and business units to minimize potential adverse impacts on the core business, but without losing the benefits of IT governance, thus *compartmentalizing* the implementation of IT governance policies and practices.

In level 4 companies, strict IT governance rules and practices can be found in supporting functions and business units, such as Finance and Accounting, whereas a much less restrictive set of rules and policies is formally applied to the core, innovation-intensive business units.

Decompartmentalization Threshold

As the maturity of IT governance improves in organizations, they develop the ability to apply mature, balanced IT governance policies that offer enough flexibility to foster and support innovative and creative initiatives, without breaking the alignment with core business objectives or jeopardizing information security or corporate assets.

With this level of implementation maturity, companies no longer perceive the need to compartmentalize the implementation of their IT policies and practices, even within their core, innovation-thirsty business units, as they realize that innovation can actually coexist with compliance through balanced and mature implementation.

Level 5: Liberation/Mature Adoption

Companies operating at this level manage to *jump* the decompartmentalization threshold, and reach a highly reliable level of harmony and balance

between IT governance objectives, and business liberation. This balance is often achieved via decades of cumulative organizational experience and carefully orchestrated governance policies.

This level is characterized by *proactive implementation* of IT governance practices, and is most commonly observed in large multinationals whose business models revolve around innovation and strong dependence on innovation in technology, such as IBM, Apple Inc., Oracle, Samsung, and Microsoft.

The following diagram outlines the five different maturity levels of the GIMM concept, which describes the maturity of the relationship between IT governance and the culture of innovation.

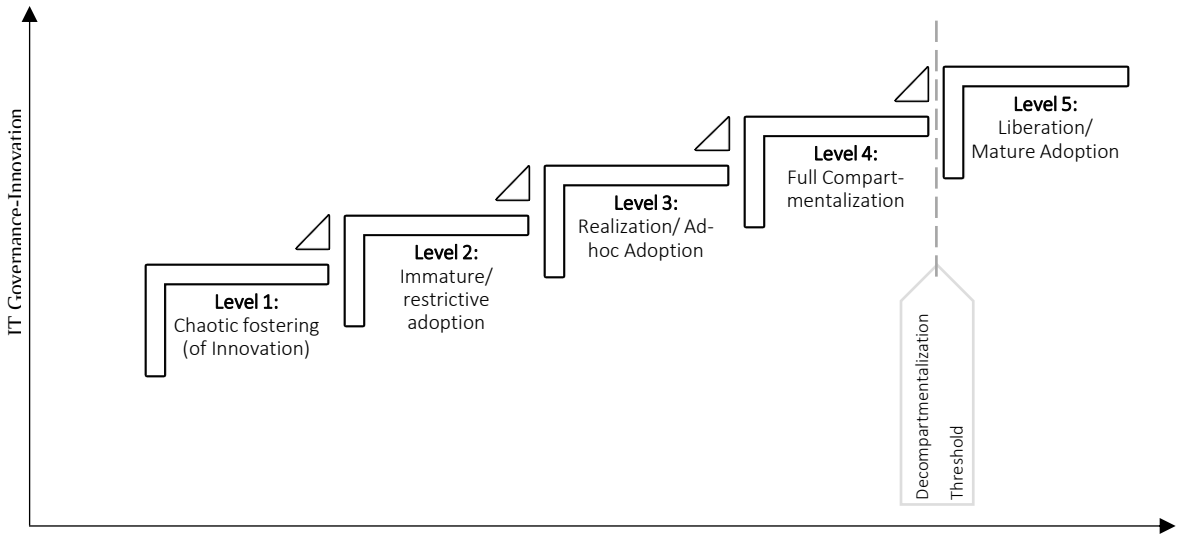


Figure 1: Proposed Maturity Model for managing relationship between IT Governance and innovation.

Revisiting Primary Data In Light of the GIMM

After developing the Governance-Innovation Maturity Model, it can be useful to reexamine the primary data collected during this research, from the newly introduced integration perspective. In this exercise, three different parameters will be studied and examined against the evolutionary maturity levels proposed by the GIMM framework:

Business/IT Alignment: a normalized numerical value ranging between 1 and 5, representing the quality of alignment within each company, based on the average feedback collected from employees.

Government Strength Index (GSI): a normalized, composite framework parameter specifically constructed out of the primary data to indicate the level of strength and restrictiveness imposed in the organization via the rules and processes of IT governance.

Compartmentalization: a normalized value obtained indirectly from primary data to reflect the level of IT governance compartmentalization within the organization being examined (value has been normalized to range between 1 and 5).

By plotting the data on a single graph, we are able to observe the behavioral patterns that characterize each level of the proposed maturity framework. At level 1, there is barely any governance to begin with. As a result, alignment also gets a very low score. Also, since governance is practically absent, organizations do not see the need for compartmentalization.

At level 2, the observed *strength* of IT governance experiences an abrupt peak, possibly the highest

amongst all five levels. This excessive restrictive implementation of IT governance systems and practices is not accompanied by proper alignment with business objectives and strategies. This is often due to the fact that IT governance was implemented in a reactive, rather than a proactive fashion. Due to the restrictive nature of implementation in companies operating at level 2, some aspects of compartmentalization begin to emerge within the organizational culture, albeit not yet strong enough to characterize the level with this property.

As businesses mature into Level 3, the perceived governance strength is alleviated due to the increasing focus on business priorities, including an innovation fostering culture. As a result, alignment with business objectives is nudged up a bit. Also, compartmentalization begins to appear in the organization.

Level 4 is characterized by the highest level of compartmentalization, combined with better alignment with business objectives. Companies at this maturity level manage to contain and limit the restrictions imposed by governance systems, resulting in a significantly lower GSI score.

At level 5, there is virtually no compartmentalization, as companies operating at this level often implement strong governance that would not allow selective policy implementations or unjustified exceptions. Full alignment with business objectives is attained.

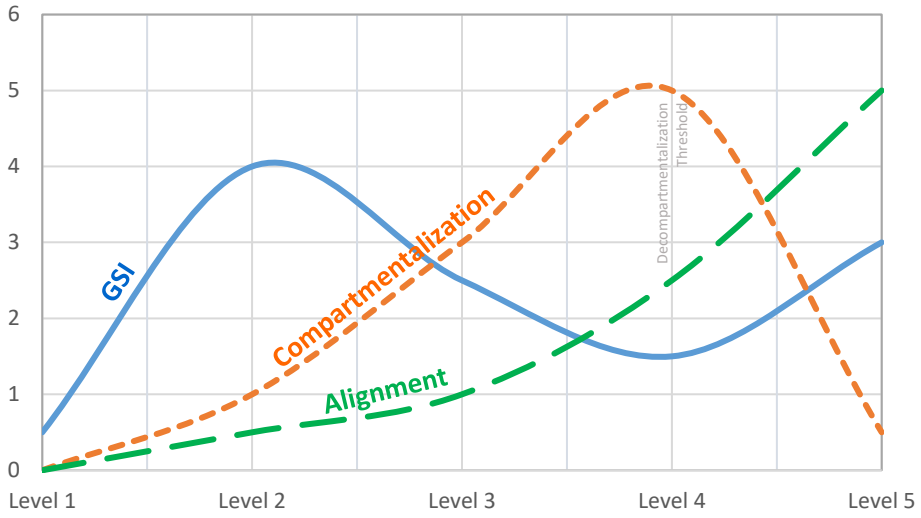


Figure 2: How Governance, alignment, and compartmentalization properties interact at the various maturity levels.

V. Research Conclusions

Based on the above analysis, the research presents a number of general conclusions in the context of applying strong IT governance and its effect on the culture of innovation:

- Organizations tend to compartmentalize the implementation of IT governance measures and practices as they evolve into more innovative or agile approaches. While this tendency may be helpful to liberate the most critical aspects of organizational innovation and agility, they can pose other challenges and risks for businesses, such as ethical issues or security threats.
- The elimination of compartmentalization phenomena can occur through conscious and proactive implementation of governance practices and strong alignment between business leadership IT functions, and it requires a high level of organizational maturity, usually taking place after a number of cycles of governance process improvement.
- Strong IT governance does not necessarily signify or stimulate successful alignment with business. In contrast, a strong culture of

innovation that fosters and encourages creativity does not necessarily signify or stimulate a successful ITG implementation.

- In innovation-thirsty businesses, full alignment between IT and business is achieved through finding good balance between adequately strong (but not overpowered) governance, and innovation liberation through instilling and empowering a culture of innovation.

A Glimpse at Cases of Failure

Studying and analyzing the reasons behind IT governance implementation failures is admittedly beyond the primary focus of this paper. However, the proposed GIMM framework can shed some light on this topic. For instance, companies that fail to experience the "realization" phase, which characterizes maturity Level 3, are likely to drop the IT governance implementation altogether, because they will see it as an inhibitor rather than an enabler. Similarly, companies that do not take the initiative to plan and execute a balanced IT governance system proactively may never be able jump the decompartmentalization threshold and reach level 5. Conscious and proactive awareness within the upper management towards the potential issues outlined in this research, such as compartmentalization or over-implementation of IT governance, can dramatically increase the organization's chances to attain a successful, healthy IT governance implementation.

Further Work

This paper presents a novel, curious thought process for modeling the interactions between IT governance maturity and its impact on the culture of innovation with an organization. The new concepts presented hereinabove were obtained based on observations from a carefully selected group of companies. Finding out whether the same model holds up to different industries, different geographies, or different types of corporate cultures will require further research work that extends the framework parameters presented herein, and employs a wider range of sampling criteria, with larger sample sizes and/or a greater number of organizations studied.

There are a number of apparent limitations in this research, in its current format and stage presented herein. For instance, important dimensions such as geography and demographic composition have been omitted from the framework at this stage. We believe that these dimensions may have an observable impact on the observations of our research. Additionally, further statistical analysis is needed, preferably employing methods of inferential statistics, on a considerably larger sample size, with a larger number of companies included in the research, in order to be able to validate the theories and proposed behavioral and cultural patterns presented in this research.

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Appendix A: Primary Data Gathering – Semi-Structured Interview

SECTION I

Q1 In this survey, we try to learn more about your company's culture and support for innovation. In this section, please tell us a bit about your company:

Q1b Company business description

Q2 How many employees work for your company?

Q3 How many offices worldwide?

Q4 What is your industry?

Q5 Does your company implement any quality systems, such as ISO9001?

Q6 Does your company conduct employee training or awareness programs regarding such systems?

Q7 In your company, are you allowed to bring in your own flash drive and copy files to work on them during the weekend, for example?

- There are no rules to prevent using flash drives (1)
- There may be some rules, but employees do that sometimes (2)
- There are strict rules against copying sensitive corporate data outside of the organization (3)
- Such rules exist in other divisions or departments, but not in my department (4)
- Not sure (5)

Q8 Do you think the IT department causes disruption or restriction to the business in your company?

Q9 Can the IT team and IT solutions in your company considered as an enabler/supporter of the main business goals?

Q10 Can you install programs or apps on your own business laptop?

Q11 Who is responsible for the accuracy, correctness, and usefulness of the content on your company's website?

- IT Department/Team (1) / Marketing department/team (2) / Responsibility is shared (3) / It is not clear / I do not know. (4)

Q12 Does your company have a CIO or a similar position?

- We have a CIO (or an IT Director). He/she reports to the upper management directly. i.e. CEO/COO/GM etc. (1)
- We have an IT Manager/Director, but he reports to someone other than CEO/COO/GM (2)
- The role of IT Manager is handled by someone who does not have the term "IT" in his/her title (3)
- The function does not exist in my company or is fully outsourced to a service provider. (4)

Q28 Which of these statements best describes the working environment in your company?

- Too many rules, most of which are not even useful or necessary (1)
- There are strongly enforced rules and policies, but I believe most of these rules are in fact important for business (2)
- There is a high level of freedom within our environment, and we are not yet mature enough to have many rules and policies enforced. (3)

Q14 Does your company give special attention to the task of motivating people and keeping them ignited and excited about their work?

Q15 In your company, do you feel that most employees (including you) show strong commitment towards their employer, and are willing to "go an extra mile" as a result to their trust and commitment to their company?

Q17 Does your company foster a culture of openness and effective communication between different business units, as well as between upper management and employees?

Q18 Does your company foster a culture of adaptability and embraces/encourages change?

Q19 Within your company, is there a particularly apparent/outstanding cultural focus on team orientation and team efforts as opposed to focusing on individual efforts?

- There is focus on team orientation (1)
- There is a lot of focus on individual success and single-players / star employees. (2)
- Neither of these behaviors is particularly evident (3)

Q20 Do you believe your company is taking up some efforts to alleviate / reduce stress in the workplace?

Q21 Do you trust your company?

Q22 Do you think your company trusts you? Is this trust evident in simple mechanisms such as attendance, timesheet submissions, etc.?

Q23 Is innovation and creativity an important factor in your company's profitability and competitiveness in the market?

Q24 In departments where innovation is particularly important, do you see your company encouraging creativity and allowing employees to attempt new ideas?

Q25 In non-core departments and other supporting functions, do you see your company encouraging creativity and allowing employees to attempt new ideas?

Q26 Do you believe that the general environment your company restricts/limits innovation and creativity because of the enforcement of too many rules and policies?

- There is a balance between rules and the necessary flexibility to support creativity and innovative new ideas (3)

Q27 In general, how can you describe your company in terms of innovation and new ideas?

- My company is successful and competitive because of its ability to come up with great new ideas and implement them in products and/or services. (1)
- My company is average when it comes to creativity and new business ideas. (2)

Q29 In your company, is innovation allowed and encouraged in all departments? Which of the following statements best describes your company's environment?

- Innovation and creativity are only encouraged/supported in the major departments, such as marketing or product development. We cannot say there is a lot of innovation in the accounting department for example! (1)
- In my company, innovation is encouraged everywhere and anywhere. There are no limits or constraints on new ideas. (2)
- There is a well-defined process for evaluating new ideas and initiatives. This applies to core departments as well as supporting business units. (3)