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## BUILDING AN INTEGRATED FRAMEWORK FOR IT GOVERNANCE FACTORS AND BUSINESS-IT ALIGNMENT

Lakshmi Vishnu Murthy Tunuguntla  
Research Scholar, School of Management  
SRM University, Chennai, India  
Process.Innovation@gmail.com,

Dr. Mu.Subrahmanian, Head,  
Department of Management Sciences,  
Jaya Engineering College, Chennai, India  
drmusumba@gmail.com

### ABSTRACT

The objective of this paper is to identify & understand the IT Governance Practices that impact the Business-IT alignment in the Indian IT context. After Identification of the practices, develop an integrated framework to understand the interrelationship among the IT Governance factors and relation between IT Governance practices and Business-IT alignment. In order to achieve this, we have performed an extensive literature survey to understand IT Governance Practices that are impacting the Business-IT alignment, created a set of IT governance areas from Indian IT perspective based on author's experience and Literature survey, surveyed the Subject matter experts in the area of IT in different segments Like System integrators, Product development organizations, captive IT organizations to validate if the articulated IT Governance practices are relevant in the Indian IT context and applied the Statistical theory to see the validity of these results. The statistical validation of results showed that the articulated practices are in line with the expectations of the Subject Matter Experts (SMEs) from the IT Industry. An Integrated Framework was developed showing the interaction and relationship among various governance practices and Business-IT alignment. This model would be a basis to further research for quantifying the relationship between IT Governance factors and Business-IT alignment.

**Key Words:** Business-IT Alignment, Human Resources, IT Governance, IT Governance Framework.

## 1 INTRODUCTION

During the last two decades, Information technology (IT) has become very crucial in supporting, sustaining and enabling the growth of business. As a result of this, a IT has assumed a very important role and that calls for a critical look at IT governance. IT governance consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and objectives [4].

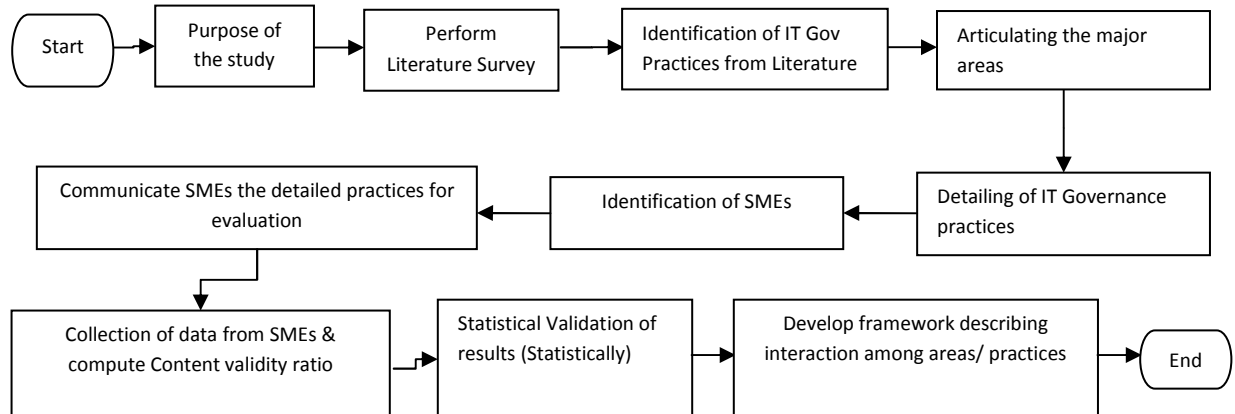
The surveys conducted on “Software Failures “ by KPMG, TCS, Gartner were described in Rupinder Kaur, Dr. Jyotsna Sengupta [10]'s paper “Software Process Models and Analysis on Failure of Software Development Projects” state the following.

KPMG Survey On average, about 70 % of all IT-related projects fail to meet their objectives. From Bob Lawhorn presentation on software failure indicate that Poorly defined applications (**miscommunication between business and IT**) contribute to a 66%, project failure rate, costing U.S. businesses at least \$30 billion every year (Forrester Research), 60% – 80% of project failures can be attributed directly to poor requirements gathering, analysis, and management (Meta Group), .. 50% are rolled back out of production (Gartner), .. 40% of problems are found by end users (Gartner), .. 25% – 40% of all spending on projects is wasted as a result of re-work (Carnegie Mellon), .. Up to 80% of budgets are consumed fixing self inflicted problems.

Looking at the data above Business-IT alignment is one of the major issues contributing to the failures of IT. Off late India has become one of the major IT services provider and contributing to the Global IT Deliveries. Also very limited or no research was done in this area in India. So In this study we planned to understand the IT Governance Practices impacting Business-IT alignment in the Indian Context and create a model describing the relationships among these practices.

In the Previous Research , we observed that the research was not providing end-end IT Governance practices impacting the Business-IT alignment or confined to a specific sector or just describe the IT Governance factors but not showing the interrelationship among them. In this paper we are focusing on the identification of the IT Governance practices that impact the Business-IT alignment in the Indian context with different types of organizations like System integrators, Product development, Captive IT organizations, describe the IT Governance Factors right from Business strategy Understanding to benefit sharing and connecting it back to Business Strategy. So we are building on the previous research by bringing in the End-end perspective, interrelationships in multiple types of IT organizations (System Integration, Product Development and Captive IT organizations)

## 2 METHOD USED FOR THIS RESEARCH



## 3 PURPOSE OF THE STUDY

The study is to understand the IT Governance factors Impacting the Business-IT Alignment in the Indian Context in System Integration, Product development and Captive IT organizations and build a framework.

## 4 LITERATURE SURVEY

During the Literature survey phase, lot of International Journals (e.g. Information systems management), on line databases (EBSCO) have been referred to understand the IT Governance Practices that are impacting the Business IT alignment.

### Definition of IT Governance and Business – IT alignment:

- IT Governance is the responsibility of the Board of Directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and Objectives [4].
- Business-IT alignment is the degree to which the information technology mission, objectives and plans support and are supported by the business mission, objectives and plans"[11].

### Identification of IT Governance Practices from Literature Survey

In this article, we tried to provide the key articles that describe most of the IT Governance Factors.

**Luftman J[7]** stated four major areas for achieving business \_ IT alignment. They fall in to four categories.

- Business Strategy: Business Scope, distinctive competencies, Business governance
- Organization Infrastructure & Processes: Administrative structure, Processes, Skills
- IT Strategy: Technology Scope, Systemic competencies, IT Governance
- IT Infrastructure and Processes: Architecture, Processes, Skills

**Dr Dr. Gad J. Selig[1] identifies three major practice areas of IT Governance for sustaining the competitive edge**

- Leadership, Organization and Decision Rights
- Flexible and Scalable Processes.
- Enabling Technology

LUFTMAN J. AND BRIER T [8] identifies five enablers of Business-IT alignment described as below.

- Senior executive support for IT
- IT involved in strategy development
- IT understands the business
- Well-prioritized IT projects
- IT demonstrates leadership

Eric Bartholet [3] described the following factors for Business-IT alignment.

- Governance starting at the top
- Business direction and IT initiative alignment
- IT resource alignment
- Partnership and alignment between IT and the clinical communities, business communities and research
- Accountability
- Transparent project request and prioritization processes.
- Effective budget and project management
- Board-Level IT
- Executive Committee
- IT Steering Committee (ITSC)

Masa'deh, Ra'ed, Kuk, George[2] described in their casual model the factors effecting the Firm performance as given below

- Communication between business and IT executives.
- Connection between business and IT Planning.
- Shared domain knowledge between business and IT executive
- Prior IS success
- Environmental uncertainty
- Organizational size
- IT-business managerial resources
- Rationality and adaptation in the SISP process
- IT Flexibility

Ivor Jonathan Farrell [5] described the following factors to align to IT to Business - objectives

**1. Management & Planning**

- CEO Attitude, CEO / CIO Relationship and Reporting Structure,
- CIO Management Style
- Strategic Planning Quality and IT Planning Methodology

**2. Business**

- Methodology, Program Management,
- Stakeholder Management

### 3. Technology

IT Infrastructure Management, Intranet Usage, Integrated Information System, Data warehousing, Information Modeling , Reporting & Analysis Tools, E-Mail Usage, Standard Service Definitions, SLAs

Mekinsy[12] describes a three layered approach describing why business needs should shape the IT architecture

- Business Model
  - Business operations, Business capabilities
- Application landscape
  - Applications and data, IT integration platform
- Infrastructure
  - Infrastructure services, Information and communications Technology.

IT governance is about specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT (Weill and Ross)[9]. The Five Key IT Governance decisions are

- IT Principles: High Level decisions about the strategic role of IT in the business
- IT architecture : an integrated set of technical choices to guide the organization in satisfying business needs
- IT infrastructure: Centrally coordinated, shared IT services Providing the foundation for the enterprise's IT capability and typically created for before precise usage needs are known
- Business application needs: Business requirements for purchased or internally developed IT applications
- Prioritization and Investment: Decisions about how much and where to invest in IT, including project approval and justification techniques

### **ARTICULATING THE MAJOR AREAS**

**The practices described in the above table were analyzed and 10 major areas were articulated and classified as below.**

1. Business Planning & Goals
  - a. Vision for IT department/understanding the Vision for IT
  - b. Business Value Planning
2. IT Planning & Execution
  - a. Develop Scope and Implement architecture
  - b. Develop & Implement Portfolio Management Practices
  - c. Develop and Implement IT (Project) Investment management
3. Enablers
  - a. Build and Implement Communication Strategy
  - b. Enabling Technology
  - c. Build Partnership
  - d. Human resource skills
4. Business – IT Alignment

## 5 DETAILING OF THE AREAS INTO DETAILED GOVERNANCE PRACTICES

Table 5.1 - Detailed Practices		
· <b>Vision for IT department/understanding the Vision for IT (VIT)</b>	· <b>Build and Implement Communication Strategy(BCS)</b>	<b>Develop Scope and Implement architecture(DIA)</b>
· Defining the vision for IT ( while considering the understanding the vision of our customer's Business/IT department/function )	· Building communication strategy that describes the elements of close interaction with the customers	· Map business process architecture and technical architecture
· Involving stakeholders in setting the direction	· Tracking the effectiveness of the interaction with the customer on a periodic basis	· The Scope of IT architecture encompasses the entire organization wherever the Business strategy is applicable
· Communicating the direction to all the stakeholders	· Addressing the corporate internal communication about IT application initiatives and their success on regular basis.	· <b>Develop &amp; Implement Portfolio Management Practices(DPM)</b>
· Ensuring understanding of this direction by all the stakeholders	<b>Enabling Technology(ET)</b>	· Collecting the list of Projects related to each of IT Application Initiatives/software products
	· The operating processes for supporting the delivery of IT initiatives are automated (e.g. planning and budgeting, portfolio investment management, project management, risk and change management, IT service management and delivery, etc.).	· Classification of all projects related to each of IT Initiatives/software products in to different Portfolios based on criteria (for eg. Transformational, operational and informational)
<b>Business Value Planning</b>		· Prioritization of Projects and allocation of resources is based on the business priorities
· Understanding Business strategy of my customer organization and formulate its strategy	· Tools provide governance to facilitate decision support.	· Building infrastructure needed for the portfolio management in terms for experienced human resources , tools and processes
· Understanding of Business processes that support the Business strategy	· Tools provide communications to facilitate decision support	
· Understanding the critical business processes( including the parameters that are needed for the success of these processes) of my customer organization	· Tools provide info on effectiveness metrics for decision support	· Assessing risk with respect to each portfolio on a regular basis and take appropriate course of actions
· Establishing mechanisms or formal organizational roles to perform the above activities (For eg. IT strategic committee at the board level to assist the board and CIOs involvement in Business strategy development)	<b>Build Partnership (BP)</b>	<b>Develop and Implement IT (Project) Investment management(DIM)</b>
· Understanding business expectations of the software products/ Applications to be delivered to the customer from by preparing a Business case or going through an existing business case by involving relevant people	· Establishing the Connection between people from business side and people involved in Planning of IT applications/ Software products	Building required metrics (for eg based on balanced score card) based on the business objectives
· Creating Service Level agreements (SLAs)	· Ensuring sharing of domain knowledge between business and IT executives leading to understanding of business by people involved in IT application/software products planning and development	Collecting metrics related to Cost, Quality and schedule including the performance indicators (for eg Billing accuracy in case of telecom billing products)
· Assigning accountability to roles to ensure the success of the IT Applications/Software Product Initiatives	· Ensuring close interaction between people involved in IT application planning & Dev and customers/end users to understand the expectations and issues	Building the required governance processes for project/Program/Account Management and Software development based on the models like CMMI/ITIL/ISO 9001/ISMS/proprietary model
· Making the people accountable for the success/failure of IT applications/software products	· Availability of processes/practices for account Management (by customer)	Building needed Operational level agreements (OLAs) with the appropriate stakeholders within the organization to meet the SLAs

Table 5.1 - Detaild Practices	
Periodic verification of process compliance through external and internal audits to see if the processes are implemented in the intended manner	<b>Business – IT Alignment(BIA)</b>
Metrics are consolidated at the Program level and are translated in to Program level metrics	· Assessment of the alignment between Business and IT
The program level metrics are mapped to the business benefits	· Understanding of Business case (including the value indicators) prepared for the IT Initiatives
<b>Build Human resource skills(BHR)</b>	· Building approach for computing the value indicators (the metrics that quantify the business expectations. For eg "billing accuracy" in case of telecom billing products)
· Availability of people who are working in the IT are Business Savy	· Tracking success of the IT initiatives
· Availability of people who are on the business side are who are familiar with the aspects of IT	· Updating business case and compares actual benefits with the planned benefits
· Availability of people working in both IT and business side who have strong communication skills	· Assessment of value add to the Business from each portfolio based on the value indicators (for eg dollars saved due to "billing accuracy" incase of Telecom billing products) identified during Business value Planning state.
· Availability of people who are good at working at local and virtual teams	
· Availability of people who have the adaptability to move between Business and Application/Product development requirements effectively	

## 6 Identification of Subject Matter Experts(SMEs)

In IT industry, the types of IT organizations that are considered in this paper are System Integrating organizations (Eg. Infoys, WIPRO) , Product development organizations (eg Micorsoft, oracle etc) and captive IT organizations (eg. In house IT of Vodafone) .The subject matter experts from these types of organizations have been identified for reviewing the above IT governance practices from Relevance to the Indian IT Industry perspective. After the identification, the detailed practices were communicated to SMEs for evaluation. The SMEs were asked rate the practices from 1-5 (1- being not relevant and 4/5 – highly relevant). The ratings are tabulated below for all the practices listed above.

## 7 Observations:

The Observations captured from the Subject matter Experts( SMEs). Most of the Subject Matter Experts rated the practices from 4-5 on a scale of (1-5) for each of the Practices. During the discussion with the SMEs, They felt that the sequence and the articulation of the practices were very good .This shows that the captured and articulated are inline with the expectations of SMEs and are relevant in the Indian Context.

## 8 STATISTICAL VALIDATION OF RESULTS

Lawshe[6] developed a formula termed the content validity ratio and used the following formula, using the total number of experts (N) and the number who rated the object as essential (E):

$$CVR = [(E - (N / 2)) / (N / 2)]$$

Where CVR= content validity ratio, Where E = Number SMEs rated the practice at 4/5 (on a scale of 1-5) , N= total number of SME panelists. This formula yields values which range from +1 to -1; positive values indicate that at least half the SMEs rated the item as

essential. The mean CVR across items may be used as an indicator of overall test content validity.

The following is the table that describes the acceptable values for Content validity ratio and the number of Subject matter Experts (SMEs)

**Table 8.1 Number of SMEs Vs the acceptable Content Validity Ratio (CVR)**

No of SMEs	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40
CVR	1	1	1	0.85	0.78	0.62	0.59	0.56	0.54	0.51	0.49	0.42	0.37	0.33	0.31	0.29

## Results & Discussion

**Table 8.2 – Acceptable Content Validity ratio Vs Computed Content Validity ratio**

Practice no	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Computed CVR	0.87	0.73	0.87	0.60	0.69	1.00	0.73	0.73	1.00	0.73	0.87	0.86	0.54	0.71	0.60	0.87
No of SMEs responded	15	15	15	15	13	14	15	15	15	15	15	14	13	14	15	15
Target Value	0.49	0.49	0.49	0.49	0.51	0.51	0.49	0.49	0.49	0.49	0.49	0.51	0.51	0.51	0.49	0.49

**Table 8.2 – Acceptable Content Validity ratio Vs Computed Content Validity ratio (Contd..)**

Practice no	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Computed CVR	0.60	0.60	0.60	1.00	0.86	0.86	0.71	0.86	0.69	0.85	1.00	0.86	0.86	0.86	0.71	1.00
No of SMEs responded	15	15	15	14	14	14	14	14	13	13	14	14	14	14	14	14
Target Value	0.49	0.49	0.49	0.51	0.51	0.51	0.51	0.51	0.54	0.54	0.51	0.51	0.51	0.51	0.51	0.51

**Table 8.2 – Acceptable Content Validity ratio Vs Computed Content Validity ratio (Contd..)**

Practice no	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Computed CVR	0.86	0.86	1.00	0.71	0.57	0.73	0.57	0.86	0.71	0.86	1.00	0.87	0.87	0.57	0.86	0.57
No of SMEs responded	14	14	14	14	14	15	14	14	14	14	14	15	15	14	14	14
Target Value	0.51	0.51	0.51	0.51	0.51	0.49	0.51	0.51	0.51	0.51	0.51	0.49	0.49	0.51	0.51	0.51



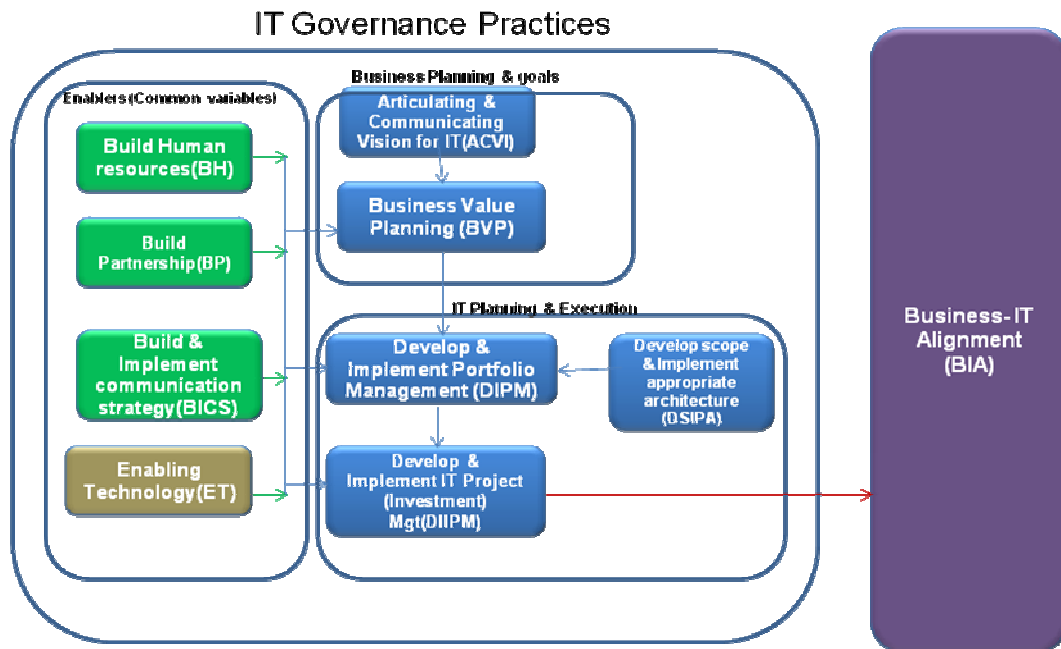
From the above table It is observed that Mean Content Validity Ratio (CVR) = 0.79 as compared to the target value of 0.50. Also for each practice the Content Validity ratio has exceeded the expected target value (which based on the number of subject matter experts) as per the table no 8.2. Since the Mean Content validity and the Content validity for each of the Practice have exceeded their expected target values, we can conclude that the Practices are in line with the expectations of the Subject matter experts and having high relevance in the Indian context to assess the relationship between IT Governance and Business-IT alignment.

## 9 IT GOVERNANCE – BUSINESS IT ALIGNMENT - AN INTEGRATED FRAME WORK

After understanding the relevance of the Practices, the next step is to understand the interrelationships among them and described in the form of a model. Here the Enablers group is facilitating all the Process areas mentioned under “Business Planning and Goals” and the relationship is like one-to many (from each factor of enablers to all the factors Business Planning & goals except for Vision for IT.

Then Based on the Vision for IT which is the direction for the organization, the Business Planning area is performed. The output of Business value planning is the Service Level agreements, Value Indicators, accountabilities. These directly flow in the IT planning & Execution and the Process is executed through Portfolio Management, Develop scope and architecture and Project Investment Management. Through Project Investment Management, the delivery of IT Initiatives to business happen contributing Business-IT alignment.

Figure 9.1 - Framework



## 10 CONCLUSION AND FUTURE RESEARCH

The computed Content Validity Ratio (CVR) is greater than the target value for each of the practices. The Mean Content validity ratio (CVR) is 0.79 as compared to the theoretical value of 0.50. This shows that the identified practices are in line with the Subject matter experts (SMEs) opinion. The relationship/Interaction among the IT Governance Factors is described in the form of a frame work as described above. This could become basis for further research to identify the quantitative relationship among the IT Governance Practices and Business-IT alignment.

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