



## IMPACT OF VISION FOR IT(VIT) ON BUSINESS-IT ALIGNMENT

**Dr. Lakshmi Vishnu Murthy Tunuguntla**

Associate Professor, Area chairperson(operations and IT),  
Goa Institute of Management, Sanquelim Campus, Poriem, Sattari, Goa – 403505, India.

### ABSTRACT

*The purpose of this research is to understand and quantify the impact of vision for IT on Business-IT Alignment and strength of interaction among them. A theoretical framework is proposed regarding the constructs of, vision for IT (VIT) and Business-IT Alignment (BIA) and the construct validity was established. The sample data from 65 firms were obtained through structured questionnaires. Structural equation modeling (SEM) was used to perform confirmatory factor analysis. Regression model was used to model the relationships between the constructs. The results showed that impact of Vision for IT is moderate on Business-IT alignment.*

**Key words:** Business-IT alignment, Vision for IT.

### INTRODUCTION

Business IT alignment is defined as the extent to which the IT strategy supports, and is supported by, the Business Strategy.

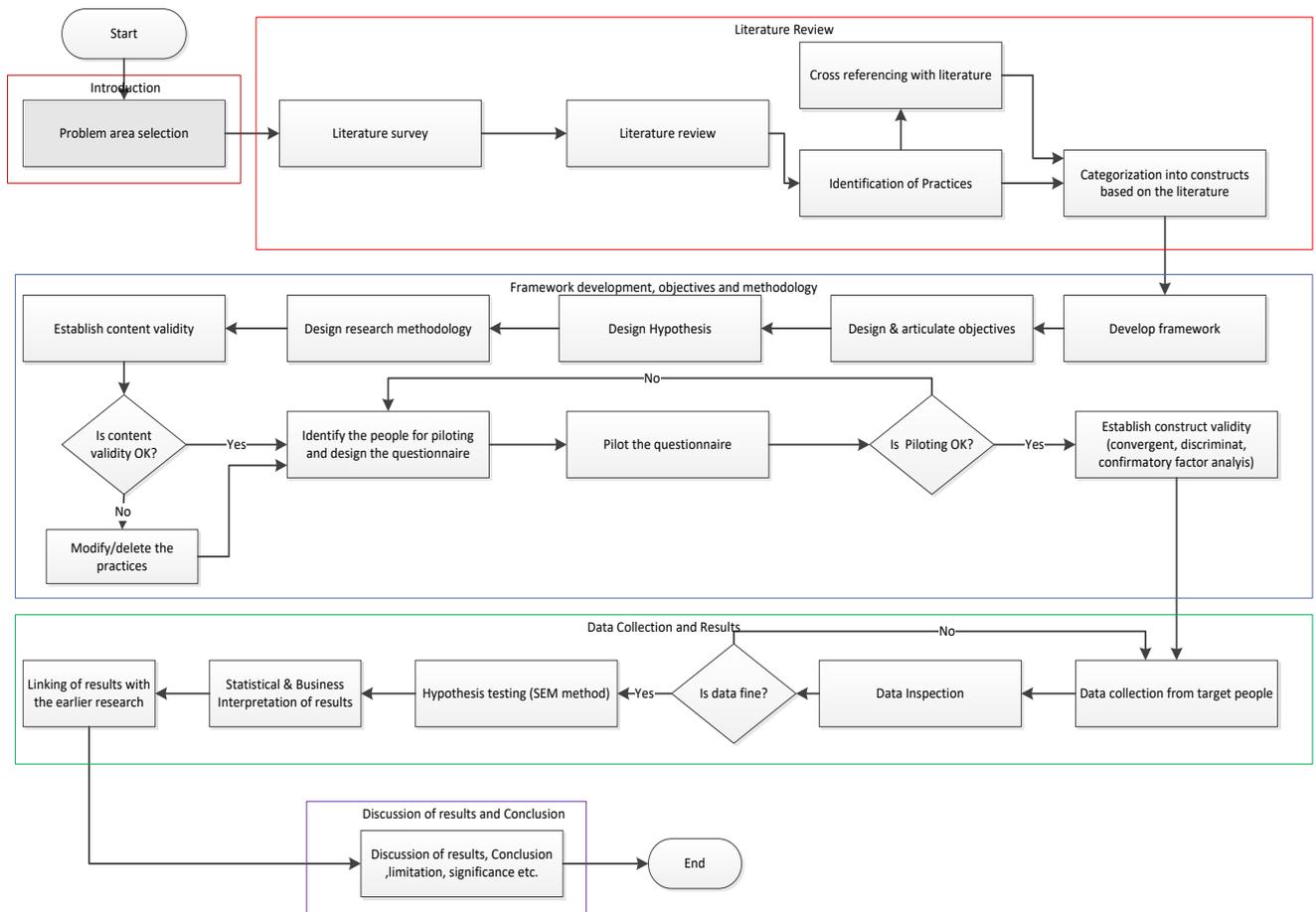
(Venkatraman, et al., 1993), stated that during the last two decades, Information Technology (IT) has become very critical in providing support, sustaining the competitive position and enabling the growth of business. However the alignment of IT with business

strategy has been consistently ranked as the single most important issue facing business and IT executives, not only in North America but also in Europe.

(Kaur & Sengupta, 2011) conducted a research to understand the reasons for the failure of software. Their findings indicate that majority of the projects fail to meet their objectives due to poorly defined applications, miscommunication between business and IT, poor requirements gathering, analysis, lack of relationship between business and IT, and management costing U.S. businesses about \$30 billion every year.

## METHOD

The following picture describes the method followed to achieve the purpose of this research paper.



## Literature Review

(Feeny & Wilcocks, 1998) suggested framework for planning in-house IT function to keep pace with changing needs of technology based on their research. The framework has nine core capabilities and how the core capabilities can be used to handle the challenges in IT exploitation in addressing Business & IT Vision, Design of IT Architecture and Delivery of IT Services. Some of the core capabilities like Business Systems Thinking (equivalent to Business Value Planning in the current research), Relationship Building, is involved in integrating the IS/IT effort with business purpose and activity.

Reich, B. H., & Benbasat, I. (1996) Vision was defined as a clear expectation of the role IT would play in contributing to the longterm success of the organizational unit. Issues such as what business processes would benefit the most from the application of IT, how the benefits would be realized, and what other changes would occur in the business environment were considered to be part of vision

Khadem (2007) describes “Vision for IT” is one of the strategy incubating factors impacting the enterprise strategy. The correlation between incubating factors and enterprise strategy is found to be positive and is significant.

Brown and Magill (1994) identified antecedents such as corporate vision, strategic IT role, satisfaction with management of technology, satisfaction with the use of technology, and the locus of control for system approvals.

Lederer and Mendelow, 1989; Reich and Benbasat, 2000; Wang and Tai, 2003). Clearly defined business goals and vision are often first steps in an alignment process.

Reich and Benbasat (2000) in their study described four factors that impact the business-IT alignment after conducting a total of 57 semi structured interviews with 45 informants. They examined written business & IT strategic plans, meeting minutes of IT steering committee meetings and other strategic documents were collected and analyzed from each of the 10 business units. The factors identified were shared domain knowledge between IT and business executives, IT implementation success, communication between business executives & IT executives and connections between business and IT planning processes. All four factors

described above were found to influence the short term alignment. Only shared domain knowledge and strategic business plans were found to influence in the long term as well as short term. There were several measurement problems encountered in this study, **the most important thing is measurement of connections in business planning and IT vision.**

### Mapping of Practices with Literature

The research described above indicates the impact of VIT on Business-IT alignment individually. So the literature has been surveyed to get the support from the literature for VIT construct and the same is provided in the form of tables below.

**Table 3-1 Mapping between VIT Practices and Literature**

<b>Practice number</b>	<b>Vision for IT (VIT)</b>	<b>Cross references</b>
1	Defining the Vision for IT ( while considering the understanding the vision of our customer's Business/IT department/function )	Farell(2003),Weil and Ross (2004), Mark (2005),Buckow and Rey (2010),Ross (2004),Khadem (2007)
2	Involving stakeholders in setting the direction	Farell(2003),Mark (2005),Ross (2004)
3	Communicating the direction to all the stakeholders	Farell(2003),Ross (2004)
4	Ensuring understanding of this direction by all the stakeholders	Farell(2003),Reich and Benbasat (2000)

**Table 3-2 Mapping between BIA Practices and Literature**

<b>Practice number</b>	<b>Business – IT Alignment(BIA)</b>	<b>Cross referencing</b>
5	Assessment of the alignment between Business and IT	(Luftman & Brier, 1999),(Callahan & Keyes, 2003)
6	Understanding of Business case (including the value indicators) prepared for the IT Initiatives	(Buckhow & Rey, 2010)(Callahan & Keyes, 2003)

7	Building approach for computing the value indicators (the metrics that quantify the business expectations. For e.g . "billing accuracy" in case of telecom billing products)	(De Haes & Van Grembergen, 2006);(Van Der Zee & De Jong, 1999)(Farrell, 2003)(Callahan & Keyes, 2003)
8	Tracking success of the IT initiatives	(Luftman & Brier, 1999)
9	Updating business case and compares actual benefits with the planned benefits	((Chad, et al., 2005)
10	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.	(Luftman & Brier, 1999)

### Framework development, objectives and Methodology

#### RATIONALE FOR DEVELOPING THE RESEARCH FRAME WORK

The rationale for the framework is developed by identifying how VIT impacts Business-IT alignment and then the framework is designed.

**Table 4-1 Rationale for Research Model Design**

Paths in Research Design			Evidence from Literature survey
BIA	<---	VIT	Lederer and Mendelow, 1989; Reich and Benbasat, 2000; Wang and Tai, 2003

#### RESEARCH FRAMEWORK

Based on the above rationale, the research framework is developed and Regression analysis is used to model this in quantitative terms.



**Figure 0-1 Research Model**

## **OBJECTIVE OF THE STUDY**

- To understand the impact of Vision for IT on Business-IT alignment in the context of Indian IT Industry

## **HYPOTHESIS DESIGN**

Hypothesis (H1) :Vision for IT does not affect the Business-IT alignment.

## **RESEARCH DESIGN**

The basic research design selected for this initiative is cross sectional survey conducted in the IT cover IT Industry in Chennai, Hyderabad, Pune and Noida who are in System Integration, through stratified random sampling from Middle and Senior Management executives with 5 plus years of experience. The questionnaire has been derived with factors of Vision for IT and Business-IT alignment using a 5 point scale (1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree). The tools used for Construct Validity are Content Validity, Reliability, Discriminant Validity and Confirmatory Factor Analysis. Correlation and Regression have been used to acquire appropriate inferences and testing of hypothesis.

### **Control variable**

Control variable here is "type of organization". The examples for types of organizations could be that it is a System integration business or product development business or Captive IT. In this research, the target population is only System integration business and it is constant throughout the research.

## **CONTENT VALIDITY**

A widely used method to measure content validity was developed by (Lawshe, 1975). It is a method for gauging the agreement among the experts regarding the essentiality of a particular item.

It is computed that Mean Content Validity Ratio (CVR) greater than 0.5. For each practice the Content Validity ratio has exceeded the expected target value (which is based on the 15 subject matter experts). Since 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 VIT and Business-IT alignment.

## **PILOTING & CONSTRUCT VALIDITY**

### **Reliability**

The pilot survey was conducted with 49 respondents and checked for its reliability (for all the three factors together) with Cronbach alpha test (Cronbach & Meehl, 1955) and found to be 0.81. Since the pilot survey has shown a significant reliability value, the survey was continued to collect the data. Cronbach reliabilities for the pilot study also had been done for both the factors (VIT and BIA) separately and the outcomes are 0.81 to 0.85.

### **Convergent Validity**

(Bagozzi and Phillips 1982) conducted research on convergent validity to understand “if measures of constructs that theoretically *should* be related to each other are, in fact, observed to be related to each other”. Convergent validity is “the degree to which two or more attempts to measure the same concept...are in agreement”.

Item convergence was assessed through the calculation of the average variance-extracted scores. Commonly, scores greater than 0.50 support a case for convergent validity (Fornell & Larcker, 1981).

According to results obtained, all of the “Average Variances Extracted” for constructs was greater than 0.50. Thus, convergent validity is evident.

According to all the average variances extracted estimates were close to or greater than 0.50. Thus, convergent validity is evident.

### **Discriminant Validity**

Discriminant validity is “the degree to which measures of distinct concepts differs” (Bagozzi & Phillips, 1982). Measures of different constructs should share little variance. Discriminant validity is important to the discussion of model fit because it establishes that two or more constructs are separate and distinct from one another. If constructs are separate and distinct

from one another, then it can be established whether or not a predictive or causal relationship exists between them.

The results support the existence of Discriminant Validity, as the Average Variance Extracted (AVE) for each of the Constructs was greater than the shared variance between the construct and all other constructs.

### Confirmatory Factor Analysis

Upon satisfactory results, Confirmatory Factor Analysis (CFA) was performed to confirm the findings using SPSS Amos 20.0. The model values found satisfy the literature expectations.

**Table 0-4 Summary of SEM model Values for constructs**

Name of the construct	CMIN/DF	P	RMR	GFI	RFI	CFI	NFI	RMSEA
VIT	0.71	0.39	0.005	0.99	0.98	1	0.99	0
Business-IT Alignment(BIA)	1.15	0.32	0.01	0.98	0.97	0.99	0.98	0.024

### Interpretation of CFA

The structural equation modeling approach using Confirmatory Factor Analysis (CFA) compliments traditional methods of evaluating reliability (like Chronbach alpha) and validity. The measurement model examines the relationship of observed indicators to their underlying constructs (latent variables), and provides a confirmatory assessment of convergent validity by evaluating the significance of the estimated indicators coefficients. The loading obtained are strong.

The measures were validated through CFA using single factor model (Albright & Park, 2009). Here maximum likelihood method is used in AMOS 20.0 version. For all the items under each of the construct, the regression loadings are shown in the table listed above.

## DATA COLLECTION AND RESULTS

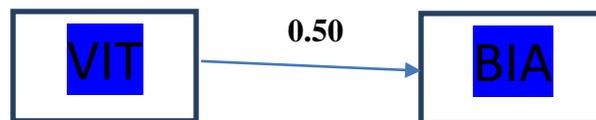
Questionnaires and interviews are a commonly used method of gathering data for research purposes. The major inputs considered for designing the questionnaire are the research objectives, hypothesis and the research framework and target population of research. The questionnaire is divided in to 2 sections with a totalof 10 questions. 269 valid filled questionnaires have been received.

## RESULTS

### Hypothesis Testing

Regression model was used to model the framework and test the hypothesis. In this case the regression coefficient and statistical significance are computed. The results are shown in the following path diagram and table.

#### Model diagram:



## DISCUSSION AND CONCLUSION

### EFFECT OF VISION FOR IT (VIT) ON BUSINESS-IT ALIGNMENT (BIA)

It is observed that Vision for IT (VIT) affects the Business – IT Alignment (BIA) The direct effect of VIT on BIA is 0.50 and is statistically significant at 1% level. The regression coefficient 0.50 means that when VIT goes up by 1 standard deviation, “BIA” goes up by 0.50 standard deviations. So the effect of VIT is moderate and significant statistically. *So the null hypothesis (H1) is rejected and alternate hypothesis is accepted.* This relationship signifies that higher levels of Vision for IT lead to higher levels of Business-IT alignment. Conclusion

The effect of vision for IT (VIT) on Business-IT alignment indicates that the Vision for IT is critical to have effective business value planning

## **RESEARCH IMPLICATIONS**

### **Implications for Theory base**

The implications of this research towards the theory are to build a structure for the construct vision for IT impacting the Business-IT Alignment. The construct structures are designed using the literature survey and tested through confirmatory factor analysis - single factor model using Maximum Likelihood method (ML) through Structured Equation Modeling (SEM). The confirmatory factor analysis showed very good relationships between the constructs and the items under each of the constructs. The model fit values match or exceed the expectations from the literature. The framework developed would add value to the theory base as it describes interaction between the VIT and Business-IT alignment.

### **Implications for IT organizations**

The study describes a very good correlation between Vision of IT and Business-IT alignment. The VIT improves the business-IT alignment.

## **LIMITATION**

- The size of the organization could play a role and thus focusing on Small/Medium/Large organizations may result in a different model/Interrelationships.
- In the current study, the maturity of the organization is not considered in the scope and the maturity of the organization could alter the findings.

## **REFERENCES**

Albright, J. J. & Park, M., 2009. Confirmatory Factor Analysis Using Amos, LISREL, Mplus, and SAS/STAT CALIS. [Online]

Available at: <http://www.indiana.edu/~statmath/stat/all/cfa/index.html>

[Accessed 15 12 2011].

- Bagozzi, R. P. & Philips, L. W., 1982. Representing and testing organizational theories: A Holistic Construal. *Administrative Science Quarterly*, 27(3), pp. 459-489.
- Buckhow, H. & Rey, S., 2010. Why business needs should shape architecture.. *Mckinsey on Business Technology*, 19(5).
- Callahan, J. & Keyes, D., 2003. *The evolution of IT Governance at NB Power*. Hershey(PA): Idea Group Publishing.
- Chad, L., Yu, A., Huang, C. & Wo-Chung, L., 2005. Effects of information technology maturity on the adoption of investment evaluation methodologies: A survey of large Australian organizations. *International Journal of Management*, 24(4).
- Chen, L., 2010. Business - IT alignment maturity of companies in China.. Volume 47, Issue 1. *Information & Management*, 47(1), pp. 9-16.
- Cronbach, L. & Meehl, P., 1955. Construct validity in psychological tests. *Psychological Bulletin*, 52(4), pp. 281-302.
- De Haes, S. & Van Grembergen, W., 2006. *IT Governance best practices in Belgian Organisations*. Hawaii, s.n., pp. 4-7.
- Farrell, I. J., 2003. *Aligning IT to Corporate Objectives: Organisational Factors in Use*. Sydney: s.n.
- Feeny, D. F. & Willcocks, L. P., 1998. Core IS Capabilities for Exploiting Information Technology. *MIT Sloan Management Review*, 39(3), p. 9.
- Fornell, C. & Larcker, D. F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal on Marketing Research*, 18(1), pp. 39-50.
- Gutierrez, A., 2011. *Alignment of IS Projects with Business Strategy: Evolution of Thinking and Practice*. Athens, Greece, Mediterranean & Middle Eastern Conference on Information Systems, p. 509.
- Heather, A. S., James, D. M. & Satyendra, S., 2007. Developing Information Technology Strategy for Business value. *Journal of Information Technology Management*, 18(1).

- Kaur, R. & Sengupta, J., 2011. Software Process Models and Analysis on Failure of Software Development Projects. *International Journal of Scientific & Engineering Research*, 2(2), pp. 1-4.
- Lawshe, C. H., 1975. A quantitative approach to content validity. *Personnel Psychology*, Volume 28, pp. 563-575.
- Lederer, A.L. and Mendelow, A.L. (1989). Coordination of Information Systems Plans with Business Plans, *Journal of Management Information Systems* 6(2):5–19.
- Luftman, J., 2000. Assessing Business-IT alignment maturity. *communications of AIS*, 4(14), pp. 1-50.
- Luftman, J. & Brier, T., 1999. Achieving and sustaining business-IT alignment. *California Management Review*, 42(1), pp. 109-122.
- Maharaj, S., & Brown, I. (2015). The impact of shared domain knowledge on strategic information systems planning and alignment. *South African Journal of Information Management*, 17(1), 1-12. Retrieved from <http://search.proquest.com/docview/1737493344?accountid=45979>
- Preston, D. S. & Karahana, E., 2009. Antecedents of IS Strategic Alignment: A Nomological network. *Information Systems Research*.. 20(2), pp. 159-179.
- Reich, B. H., & Benbasat, I. (1996). Measuring the linkage between business and information technology objectives. *MIS Quarterly*, 20(1), 55. Retrieved from <http://search.proquest.com/docview/218121531?accountid=45979>
- Reich, B. H. & Benbasat, I., 2000. Factors that influence the social dimension of alignment between business and information technology objectives.. *MIS Quarterly*, 24(1).
- Ross, J., 2003. Creating a Strategic IT Architecture Competency: Learning in stages. *MIT Sloan Management Review*, 19(CISR WP No.335).
- Venkatraman, N., Henderson, J. C. & Oldach, S., 1993. Continuous Strategic Alignment: Exploiting information technology capabilities for competitive success., *European Management Journal*, 139(149), pp. 139-149.

Wang, E.T.G. and Tai, J.C.F. (2003). Factors Affecting Information Systems Planning Effectiveness: Organizational contexts and planning systems dimensions, Information Management 40(4): 287–30