

IMPACT OF PARTNERSHIP ON ARCHITECTURE

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Abstract

The purpose of this research is to understand and quantify the impact of partnership on architecture and strength of interaction among them. A theoretical framework is proposed regarding the constructs of architecture (DSA), and Partnership (BP) and the construct validity was established. The sample data from 65 firms were obtained through structured questionnaires. Structural equation modeling (SEM) was used to understand the impact and quantify the relationships among the constructs. Partnership had significant effect on architecture.

Keywords: Partnership, Architecture.

Introduction

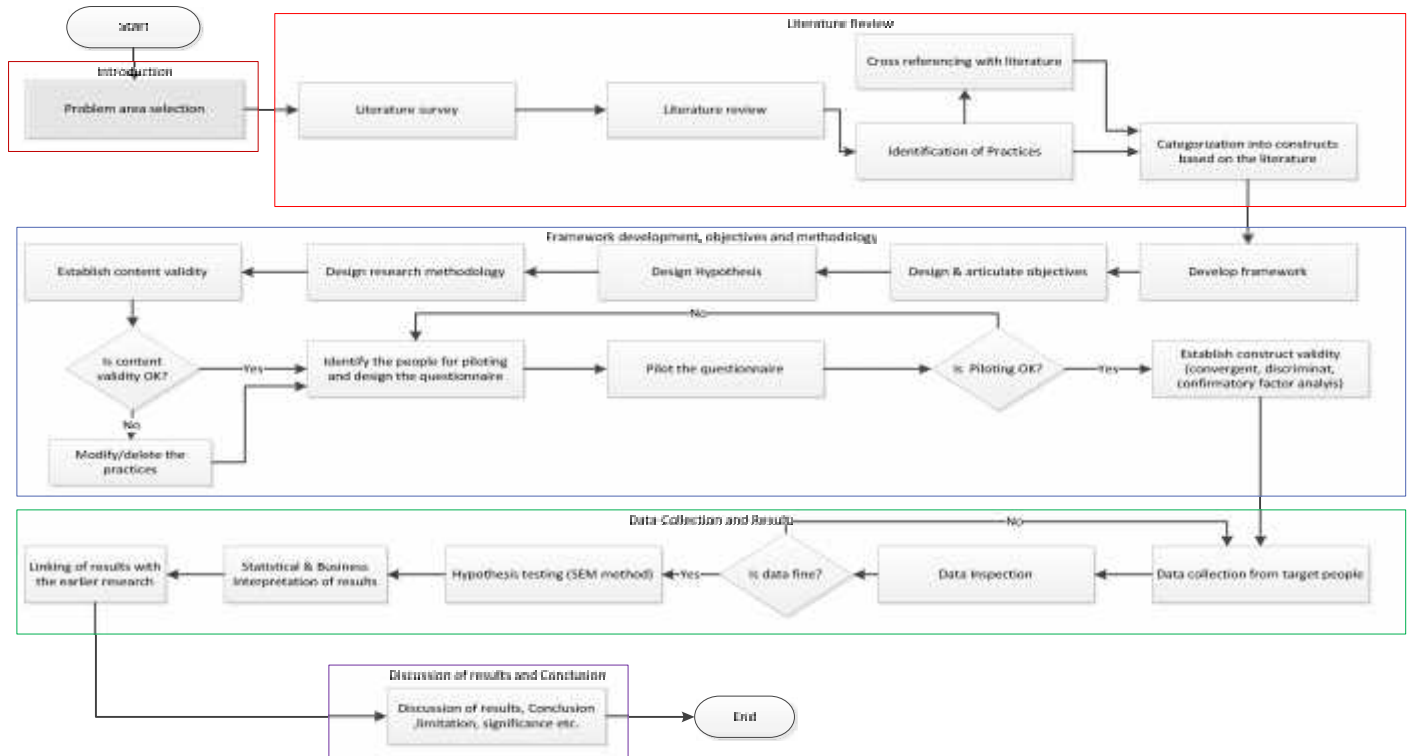
Business IT alignment is defined as the extent to which the IT strategy supports, and is supported by, the Business Strategy.

(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 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. Business Systems Thinking addresses envisioning the business process that technology makes possible. Relationship building is concerned with getting the business constructively involved in IS/IT issues.

Weil and Ross (2004) state that governance is about specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT.

Vision for IT

This represents the defining of vision for IT by involving appropriate stakeholders in the organization, communicating the vision for IT to the entire organization and ensuring the uniform understanding of vision across organization.

Business Value Planning

This is to ensure that the critical business processes are identified in accordance with business strategy, creation of value indicators and SLAs while identifying the needed roles and accountabilities.

Design and Develop Suitable Architecture

An integrated set of technical choices to guide the organization in satisfying business needs and the technical architecture represents the intent of the business process architecture.

Business-IT Alignment

The degree to which the information technology mission, objectives and plans support and are supported by the business mission, objectives and plans.

Design and Implement Portfolio Management

IT Portfolio Management is the combination of tools and methods used to measure, control, and increase the return on both individual IT investments and on an aggregate enterprise level in a desirable manner that meets the organization's business objectives without exceeding available resources or violating other constraints.

Investment (Project) Management

To manage the project like an investment thus generating the ROI for the stakeholders and the organization through collection of metrics that are linked to business benefits.

(Heather, et al., 2007) conducted research to understand the issue of how to develop an effective strategy using focus group methodology. The research identified the critical success factors for creating the business value through building the IT strategy and challenges involved. The critical success factors included revisiting the business model on a periodic basis, developing strategic themes to develop business capabilities and building partnerships with business. The major challenges are lack of supportive governance structure, lack of enterprise-wide funding models, lack of appropriate traditional planning and budgetary practices, lack of better skills of business and IT leaders for strategizing and finally inability of IT strategy to create balance among conflicting strategic imperatives.

(Smith & Mckeen, 2010) describe the issues with respect to the communication between the business and IT. One of the most important skills all IT staff need to develop today is how to communicate effectively with business. Over and over, research has shown that if IT and business cannot speak the same language, focus on the same issues and communicate constructively, they cannot build a trusting relationship. And business is consistently more negative about IT's ability to communicate effectively than IT is. In fact, even while IT collaboration is improving, business's assessment of IT's communication skills is declining. While much attention has been paid to organizational alignment between IT and business (e.g., governance, structure) very little has been paid to the nature and impact of the social dimension of alignment, a big element of which involves communication. To explore the business and interpersonal competencies that IT staff will need in order to do their jobs effectively over the next five–seven years and what companies should be doing to help develop them, the authors convened a focus group of senior IT managers from a variety of different organizations.



(Tunuguntla et al,2013) conducted a study in the context of Indian IT industry to understand and quantify the direct and indirect effects of partnership and building human resources on business-IT alignment. The research identified about seven to eight empirical studies that described the interaction between the factors considered in this study and business-IT alignment. A theoretical framework was proposed regarding the constructs of partnership, human resources and business-IT alignment (BIA). The sample data from sixty-five firms were obtained through structured questionnaires. Structural equation modeling (SEM) was used to understand the strength of relationships among the three constructs and estimate the probability associated with the indirect effects using bootstrap technique. The results showed that building human resources and developing partnership between business and IT groups have a significant direct and indirect effect on business-IT alignment. The results suggest that building human resources and partnership is essential and play a key role to establish business-IT alignment contributing to business strategy.

(Manfreda & Mojca, 2014) proposed this paper is thus to improve the understanding of the relationship between top management and IS personnel and to identify the key factors that are important in this relationship. Two separate questionnaires were used for IS department managers and top management to identify key factors in the relationship. In total, 221 CIOs and 93 CEOs agreed to participate in the research. The empirical investigation reveals the existence of nine factors that are important in the business-IS relationship. Seven factors (top management support to the IS department (topSUP), mutual trust between management and IS personnel (muTRUST), perceived value of the IS department (Isval), managerial knowledge and skills of the IS manager (manKNL), technological knowledge and skills of the IS manager (techKNL), business knowledge and skills of the IS manager (busKNL), business role of the IS department (busROL), supporting role of the IS department (supROL), and technological role of the IS department (techROL)). are perceived differently by top management and IS management and thus causing the gap in the relationship, while two factors are similarly perceived. This paper presents the key areas business and IS personnel should pay attention to. Therefore, it enables reducing the business-IS gap by considering the identified factors and dedicating significant effort to the factors with significant differences.

(Zolper, K et al, 2014) studied the impact of relationships at the application-change level and strives to identify and explain favorable social structures for effective business/IT dialog at the operational level. They collected data in seven comprehensive case studies, including 88 interviews and corresponding surveys, and applied social network analysis to show that three social structures at the implementation level influence the degree to which IT applications are maintained and enhanced in line with business requirements: (1) interface actors connecting business and IT, (2) the relationships between interface actors and the corresponding unit, and (3) the relationships between interface actors and other employees in their unit. In three cases, less favorable structures are revealed that correspond to low application change effectiveness and software applications that do not meet business requirements. The other cases benefit from favorable social structures and thus enhance fulfillment of business requirements and result in higher IT business value. This paper contributes to IS research by helping to explain why companies may not provide favorable IT services despite favorable relationships at the top management level and successful application development projects.

(Maharaj & Brown, 2015) examined the impact of shared domain knowledge (SDK), strategic information systems planning on alignment. Data were gathered from management consultants in a large, global IT organization, through the use of a structured questionnaire, and analyzed. Shared Domain knowledge (SDK) was also found to positively impact both the intellectual and social dimensions of alignment. The implications of the findings are that fostering a knowledge sharing environment in organizations will help improve alignment, as well as the formal processes designed to steer alignment such as on strategic information systems planning (SISP).

(Roses, L.K et al, ,2015) proposed a model of conversational competences for Business and IT managers aiming at the strategic alignment between their areas. The theory of this alignment highlights the importance of communication between Business and IT areas, which is explored in the social dimension of their managers' relationship through conversational competences. A survey research was performed with Business and IT managers from public and private organizations in Brazil, whose data were analyzed through multivariate statistical techniques - exploratory and confirmatory factor analysis - and thematic content analysis. The results confirmed the constructs and most of the hypotheses of the proposed research model, which was expanded with new constructs and hypotheses.

Mapping of Practices with Literature

The research described above indicates the trends in architecture and partnership (BP). So the literature has been surveyed to get the support from the literature for each of the factors considered under each construct and the same is provided in the form of tables below.

Table Error! No text of specified style in document.-1: Mapping between DSA Practices and Literature

| Develop Scope and Implement Architecture (DSA) | Cross References |
|---|---|
| Map Business Process Architecture and Technical Architecture | Weil and Ross (2004),Buckow and Rey (2010),Whittle and Myrick (2004),Ross (2004),Sauer and Wilcocks (2002),Segars and Grover (1998) |
| The Scope of IT architecture encompasses the entire organization wherever the Business strategy is applicable | Weil and Ross (2004),Whittle and Myrick (2004) ,Ross (2004),Sauer and Wilcocks (2002),Segars and Grover (1998) |

Table 3-4: Mapping between BP Practices and Literature

| Build Partnership (BP) | Cross referencing |
|--|--|
| Establishing the Connection between people from business side and people involved in Planning of IT applications/ Software products. | Bartholet, Budd and Turisco (2009),Masadeh, Raed, Kuk and George (2007), Heather, James and Satyendra (2007), Reich and Benbasat (2000),Yalya and Hu (2009), Nelson and Coopriider (1996), Rui, Zmud and Leon (2010, De Haes & VanGrembergen (2006) |
| 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 | Luftman and Brier (1999), Bartholet, Budd and Turisco (2009), Masadeh, Raed, Kuk and George (2007), Reich and Benbasat (2000), Yalya and Hu (2009), Nelson and Coopriider (1996) |
| Ensuring close interaction between people involved in IT application planning & Dev and customers/end users to understand the expectations and issues | De Haes&VanGrembergen, 2006, Sledgianowski (2006), Masadeh, Raed, Kuk and George (2007), Ross (2003), Gutierrez (2011), Segars and Grover (1998) |
| Availability of processes/practices for account Management (by customer) | Luftman(2000); Reich &Benbasat, 2000; De Haes& Van Grembergen(2006) |

Framework Development, Objectives and Methodology

Rationale for Developing the Research Frame Work

The rationale for the framework is developed by identifying how BP impacts Business value planning and then the framework is designed.

| Paths in Research Design | | | Evidence from Literature survey |
|---------------------------------|------|----|--|
| DSA | <--- | BP | Weil & ross (2004) |

Research Framework

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



Figure Error! No text of specified style in document.-1 Research Model here

Objective of the Study

To understand the impact of partnership on architecture in the context of Indian IT Industry.

Hypothesis Design

Hypothesis (H1) :Partnership does not affect architecture.



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 architecture, and Partnership 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, Content Validity, Discriminant Validity and Confirmatory Factor Analysis. Correlation, and Regression have been used to acquire appropriate inferences and testing of hypothesis. For framework validation Structural Equation Modelling has been used (herein after called as SEM).

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. The computed content validity ratio is higher than the required values prescribed in the literature.

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 and they are greater than 0.75.

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 & Philips, 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.

Table Error! No text of specified style in document.-4 Summary of SEM model Values for constructs

| Name of the Construct | CMIN/DF | P | RMR | GFI | RFI | CFI | NFI | RMSEA |
|-----------------------|---------|------|-------|------|------|-----|------|-------|
| Architecture (DSA) | 0.8 | 0.44 | 0.009 | 0.99 | 0.98 | 1 | 0.99 | 0 |
| Partnership | 0.95 | 0.41 | 0.01 | 0.99 | 0.98 | 1 | 0.99 | 0 |

Interpretation of CFA

The structural equation modeling approach using Confirmatory Factor Analysis (CFA) complements 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.

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 6 questions. 269 valid filled questionnaires have been received.

Results

Hypothesis Testing

AMOS 20.0 was used to model the framework and test the hypothesis. The Bootstrapping method is used for forming confidence intervals and for improving the predictors. In this case the probabilities associated with the direct and indirect effects of Business value planning, Partnership and building human resources on Business-IT alignment are computed using the Bootstrap method in AMOS 20.0 through the analysis properties interface. The results are shown in the following path diagram and table.

Path Diagram



Discussion and Conclusion

Effect of Partnership (BP) on Architecture (DSA)

It is observed that Building Partnership (BP) affects the architecture (DSA). The effect of BP on DSA is 0.80 and is statistically significant at 1% level. The effect 0.80 indicates that when BP goes up by 1 standard deviation, “DSA” goes up by 0.70 standard deviations. So the effect of BP on DSA is strong and significant statistically. *So the null hypothesis (H2) is rejected and alternate hypothesis is accepted.* This relationship signifies that higher levels of Partnerships lead to higher levels of Business-value planning. BP establishes the connection and domain knowledge sharing within the business and IT groups improving/building strong relationship. Also participation of IT in business planning and participation of business in IT planning ensure mutual understanding of the different perspectives, priorities and constraints thus leading to higher levels of Business process understanding. This would facilitate to design the architecture better.

Conclusion

The effect of partnership (BP) on Business value planning indicates that establishing the connection between the counterparts in the context of IT and business areas, knowledge sharing and close interaction would enhance the mutual understanding, and expectation setting process and better understanding of the critical business processes. This would design the business architecture and subsequently the technical architecture

Research Implications

Implications for Theory Base

The implications of this research towards the theory are to build a structure for the constructs buildingpartnership and architecture and provide a framework. The construct structures are designed using the literature survey and tested through confirmatory factor analysis - single factor model using Maximum Likely hood 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 DSA and BP.

Implications for IT Organizations

The study describes a very good correlation between architecture and Partnership. The relationship building (BP) between IT and business teams compliment the efforts of understanding of the business process and articulate the business process architecture. This would help to design the better technical architecture.



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.

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