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## Abstract

*The relationship between executive involvement and participation with the successful use of Information Technology (IT) has been a frequent topic of research. This paper explores the relationship between two concepts: domain integration (the fit between business and IT strategies) and IT as a core competency. Using a sample of 87 Southeast Michigan manufacturing firms, the author supports a positive relationship. Potential factors to help explain the relationship, including firm size, business changes, IT outsourcing, executive desire to outsource and IT department power are explored for possible influence.*

## Introduction

The relationship between executive involvement and participation in information technology (IT) and the significance of the IT function to the firm has been a frequent subject of research (Jarvenpaa, 1991; Teo, 1996; Goldsmith, 1991). This paper extends this line of research by examining the relationship between two related concepts: domain integration and core competence. In particular, this paper provides an empirical test of the linkage between these two concepts using a sample of Southeast Michigan manufacturing firms. Further, on an exploratory level the paper examines some variables that may help explain the relationship found.

## Literature Review

Several authors have explored the relationship between executive involvement and participation and the success of IT. Two notable works are Jarvenpaa and Ives (1991) and Teo and King (1997).

Jarvenpaa and Ives (1991) present a comprehensive analysis that tests three models. The first model suggests executive participation, in terms of actual behavior (attending meetings, and other activities), leads to progressive use of IT. The second model suggests executive involvement, in terms of the CEO's psychological state, leads to progressive use of IT. Finally, their most sophisticated model posits executive participation, organizational conditions and executive background lead to executive involvement and this in turn leads to progressive use of IT.

In Jarvenpaa and Ives work "Progressive use of IT" is measured with a single subjective question. They do validate this question, however, by correlating results with the frequency of IT references in firm's annual reports All three models are supported, although with relatively low $R^2$ statistics.

Teo and King (1996) conducted a field survey to determine key organizational factors that facilitate or block the development of strategic information systems. Notable among four factors identified on their list is "top management guidance".

Domain Integration is a concept originally created by Henderson and Venkatraman, and advanced by Loh (1993) to describe the fit between business and IT strategies in the firm. In Loh's organizational economic model of outsourcing, domain integration is a component of decision information costs. However, examination of the instrument (shown in the Appendix) reveals that it clearly follows along with Jarvenpaa and Ives concept of executive involvement and participation. Indeed, as a multiple question instrument, it adds robustness to their measurement.

Core Competence is a term used in strategy literature to describe those capabilities of a firm where it excels. It is upon core competencies that a firm builds its strategy and works to obtain competitive advantage. Quinn (1994) suggests that firms should concentrate on these core competencies and consider outsourcing or otherwise dropping non-core competencies.

## Methodology

Based on the literature reviewed, one would expect the following:

H1: There exists a positive relationship between Domain Integration and IT as a Core Competence

The author collected data for this study while researching IT outsourcing. Appendix I includes the actual survey instrument. The instrument was originally developed and validated by Loh (1993) in a LISREL model. In Loh's work (and subsequently supported by this author's testing) domain integration carries a composite reliability of .93 and core competence carries reliability of .71.

The author sent surveys to IT managers in 554 Southeast Michigan manufacturing firms (SIC codes 20 to 39). Representatives from 87 firms responded, providing 102 usable surveys. This yields a response rate of 15.7%.

Non-response bias is a serious concern with this response rate. Responses were found to be vary from the original sample with respect to firm size and SIC code. Subsequent analysis, however, revealed no significant difference when responses were weighted to correct for these variations.

## Results

The author employed Pearson correlation among the core competence and domain integration described above and selected other variables described here and in the Appendix:

- Size - The firm's size measured by sales in millions of dollars
- Business Change - A count of business change activities (such as process redesign, merger and acquisitions)
- IT Outsourcing - A measure of the extent of IT outsourcing
- Outsourcing Need - The perceived need by top management to outsource IT
- T Power - A measure of the level of influence of the IT department.

Results are shown in Table 1. This table shows definite support for the hypothesis, namely that Domain Integration and IT as a Core Competence are positively correlated. This result supports conclusions by Teo and Jarvenpaa about the role of executive involvement and participation in the significant use of IT within the firm.

**Table 1. Correlation Results**

| | Domain | Core | Size | Bus Chg | IT Out Source | Outsource Need | IT Power |
|---|---|---|---|---|---|---|---|
| Domain -R | 1.00 | .4119 | .0508 | .-0590 | -.1351 | -.1138 | .2865 |
| Prob | . | .000 | .654 | .558 | .185 | .260 | .004 |
| | | | | | | | |
| Core - R | .4119 | 1.00 | -.0387 | -.0003 | -.0322 | -.2265 | .2877 |
| Prob | .000 | . | .733 | .997 | .752 | .023 | .003 |
| | | | | | | | |
| IT Outsource-R | -.1351 | -.0322 | .3723 | .1434 | 1.00 | .3306 | .0694 |
| Prob | .185 | .752 | .001 | .157 | . | .001 | .495 |

Equally clear is the fact that several factors that one might think influence Domain Integration and Core Competence do not. Firm Size, Business Change and IT Outsourcing, for example, do not correlate strongly with either construct in this sample. This conclusion, however, could be industry or geographic specific.

Outsourcing Need and IT power are related with Domain Integration and Core Competence in ways that make sense. First, executive's desire to outsource is negatively related with core competence. This suggests, at least within this sample, that executives in firm where IT is a core competence are less likely to seek outsourcing. Although some have suggested that outsourcing IT can be a strategic move, this data suggests the contrary.

IT power is positively related to both Domain Integration and Core Competence. This suggests that in firms where IT has a significant role in the firm's competitive response, executives are involved in IT and the firm sees IT as a core competence.

## Future Research

Although this research identifies a significant relationship between core competence and domain integration, the results suggest some further research opportunities.

First, although there is a relationship between these two constructs, it is not all clear which is dependent and which is independent. Although prior researchers (Jarvenpaa, 1991) have assumed that executive involvement/participation is the dependent variable that drives innovative use of IT, could the reverse be true? Are executives the driving force that makes IT a core competence? Or could the IT department, functional area managers, or external market forces, cause a firm to become competent in IT?

The frequently cited case of American Airlines is a case in point. While American's top executive, Bob Crandall, has strong IT roots and is a textbook case for executive involvement in IT, can the same be said of American's competitors? What if another airline found IT to be essential in the market, despite a lack of interest or knowledge of IT by their CEO? In such a case, might IT as a core competency drive executive interest and participation, instead of the other way around?

Second, further work to uncover the underlying causes of Core Competence and Domain Integration are worth pursuing. Although this research suggests some factors that are not causes, one could certainly investigate other factors, such as differences in industry and the role of market forces.

*References*

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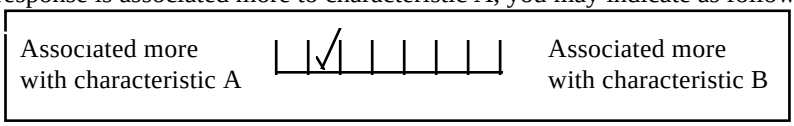
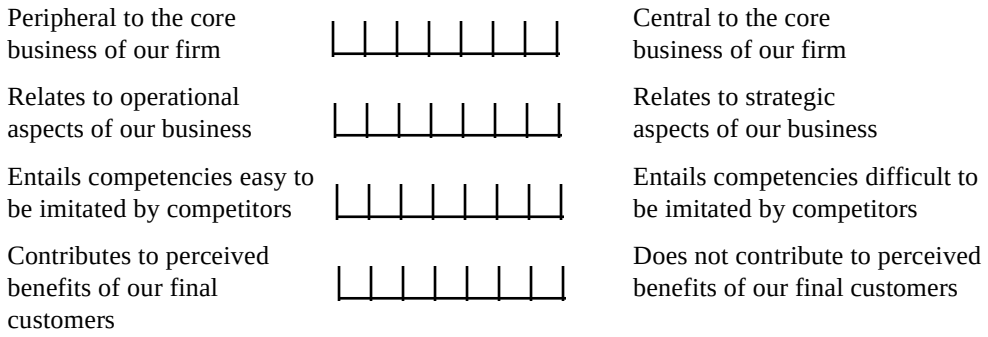
## Appendix I: Survey Instrument

Core Competency - Companies have different ways of positioning IT in the context of their overall businesses. How would you perceive your firm's IT function in relation to your firm? Please check the appropriate box on the bipolar scale provided. For example, if your response is associated more to characteristic A, you may indicate as follows:




Domain Integration - Top management of companies have different philosophies pertaining to the appropriate role of IT in relation to the overall business. How would you perceive the attitude of top management of your firm toward IT?

| | Seldom | | | | | | Always |
|---|---|---|---|---|---|---|---|
| Incorporating IT as an integral part of our firm's mission or goals | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Having a clear articulation of the role of IT in our basic business | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Contributing actively to the IT planning process | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Considering IT as a strategic investment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Business Change - Has your firm undergone or planned to undergo any of the following restructuring activities during the last three years? (Circle all that apply)

Downsizing/Consolidation  Business process redesign
Merger and acquisitions  Bankruptcy/liquidation  Significant Layoffs

IT Outsourcing - Measured by three questions that ascertain decision rights, relative amount of outsourcing versus competitors and the change in outsourcing over the last three years.

Outsource Desire - How does your firm's top management perceive the need to outsource IT work? (1=outsourcing is not needed, 7=outsourcing is needed)

Power - How much influence do you think each of the following departments has in your firm's response to competitive challenges by other firms? (1= Very Little Influence, 5=Very Great Influence) (Question is asked of Finance, IT, Manufacturing, Marketing and Product Engineering)