Determinants of Certain Characteristics of Information Technology Deployment in Organizations - A Theoretical Explanation

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<u>ABSTRACT</u>

The last two decades of the twentieth century have seen a rapid evolution of information technology (IT) capabilities. At the same time, we observe that all organisations do not exploit the available IT capabilities in the same manner and to the same extent. Thus the characteristics of IT deployment like the scale, nature, and criticality of IT use etc., differ significantly across organisations. In the face of rapidly changing business environments and exponentially increasing capabilities of information technologies, it has become imperative for organisations to understand and appreciate the correct level of emphasis that they should place on IT. This issue is of critical importance in the present times, for the purpose of planning and managing the information systems (IS)/IT environment in an effective manner. Managers have therefore been concerned about identifying the scale and nature of IT deployment appropriate for their organisations, with the intention of enhancing the business effectiveness of their IT applications. However, such understanding on part of managers has at the best, remained at an intuitive level only. This is because so far the research has not reached the stage of a well-defined framework for understanding the basic causal factors which give rise to the different manifest characteristics of IT deployment in an organisation. This dissertation develops an explanation for the differences in the character of IT deployment in organisations.

Various authors have suggested that there are significant differences in the extent to which firms can exploit IT. They have also emphasised the importance of an orderly and consistent definition of the role that IT must play, in order to address changing business requirements and take advantage of technological developments. Further they have noted the inability of organisations to identify and articulate the impact that IT has, or should have, on their business.

The existing literature in this field addresses the following issues.

1. Frameworks for classifying organisations into different categories, based on certain external manifestations of the characteristics of IT use, like the strategic importance of IT applications, the role of IT in the business, the diffusion of IT in an organisation etc.
2. Certain fundamental factors affecting the characteristics of IT use in organisations. These factors related to characteristics of the external environment, the nature of the products,

services and customer requirements and some aspects of the internal processes within firms.

The classification frameworks describe external manifestations of IT use in organisations. However, they do not explicitly recognise the fact that specific external manifestations are actually the effects of specific fundamental causal factors. There is no comprehensive study in this area, which identifies the basic factors that determine certain characteristics of IT use in organisations. Individual studies have been conducted in an isolated manner. There is also no explicit conceptual understanding of the connection between the basic factors and specific external manifestations. Therefore the research in this field has not yet reached a state where it could yield a detailed and operational framework for determining and managing the level of organisational emphasis on IT resources. What has been missing is a contingency approach that can predict or prescribe the level of importance / relevance of IT for an organisation, in terms of well defined characteristics of IT deployment.

This study addresses a major deficiency in the current research focus in this field. It involves

marketing of IT, and yet which has not been adequately researched into, so far. It leads to a significantly improved understanding of the phenomenon of differences in the character of IT deployment across organisations, because of the following contributions.

1. **The framework presents a comprehensive enumeration and classification, of**

Thus the framework facilitates an analysis of the determinants of and differences in, the character of IT deployment in organisations. The individual **IT Deployment States** and the constituent constructs help us to identify the factors that could drive the deployment of IT in a particular manner. The **IT Deployment Types** define the corresponding characteristics of IT deployment.

Further, the framework has significant predictive and prescriptive value. It prescribes three

resources. The study provides scope for hypothesis testing in further research and is also expected to be of use to practitioners as an operational tool.

Related Publications

Tarafdar M., and Vaidya S. D., "Research in Organizational Adoption of E-Commerce: The Need for an Interdisciplinary Perspective" in Janet deGross (ed.), *Proceedings of the Americas Conference on Information Systems*, Dallas, August 2002.

Tarafdar M., and Vaidya S. D., "Challenges in the Deployment of E-commerce Technologies: The Role of Organizational Factors" in Kaushal Chari and Kemal Altinkemer (eds.), *Proceedings of the Sixth INFORMS Conference on Information Systems and Technology*, Miami, November 2001.

Vaidya S.D., and Tarafdar M., (2000) "Deployment of Information Technology in Organizations: Present Perspectives and Directions for Future Research," *Working Paper Series,* IIM Calcutta, IIM-/WPS/2000