

A Systems View of the Drivers Of IT Investment For A Firm.

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In a few (short) years, the Information Technology frame of reference for business organisations has evolved from the automation of a single function to integration on an enterprise level, where the full value-chain of financial, supply chain and customer service transactions is rooted in a single network of integrated information systems. Moreover, the advent of Internet technology and its potential to build extended enterprise capabilities with customers and suppliers have raised both the potential payback and risks to a level that most CEO's and senior managers could never have imagined.

Given the increased importance of IT for an organisation we need a sophisticated tool to assist managers in taking decisions about IT projects. The tool should not only ascertain the present status of IT in an organisation vis-à-vis its strategic needs but also prescribe the way to implement IT effectively.

The present literature on the dynamics of IT infrastructure in an organisation is limited to models, of which the most well known is Nolan's four stage model that describes the four stages of IT growth in an organisation. Notably, Nolan's model measures the growth in terms of investment made in a particular (information) technology and is based on data aggregated over a variety of organisations. It is known that growth of IT has to a large extent been the outcome of interplay among a number of factors such as evolution rate of IT, the importance of IT for an organisation, management support for IT and resistance to IT led change. Nolan's model does not bring out the differences that exists in IT growth due to variations in these factors. It is therefore not possible to assess in what manner the relative strength of these factors in an organisation affect its IT growth.

This paper is an attempt at developing a model that is based on a systems view of both the demand and supply side of Information Technology growth in an organisation. The objective is to unearth the closed loop control structure that determines how IT grows in an organisation. The outcome is an experimental set up that can explain the present pattern of IT investment in an organisation and what handles are available to the management to control the growth to gain sustainable competitive advantage over the competitors. The methodology of System Dynamics has been used for model building. A number of experiments with the model have been carried out for parameter values characterising different types of organisations. In one such experiment, the behaviour observed by Nolan has been reproduced.