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Process Redesign as an Intangible Benefit: Its Impact on Information Technology (IT) Investment Decisions

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Abstract

Traditional cost/benefit analysis is used extensively by organizations to compare alternatives and to make IT investment decisions. The objective is to select the project that maximizes the net present value of all benefits minus all costs. A major contribution of this study is expected to be the discovery of intangible benefits that IT investment decision-makers fail to include in their decision processes. The impact of the intangible benefit of process redesign is examined in the context of certain benefit factors. Organizations that pay close attention to the identification and measurement of value derived from IT investments (both tangible and intangible) are expected to obtain greater productivity from those IT investments that lead to business success.

Process Redesign

Process redesign is defined for the purpose of the current study as the deliberate and systematic adjustment of business processes to achieve alignment between business process objectives and organizational objectives (Mandrish and Schaffer, 1995). Process redesign has been identified here as one of the intangible benefits, the exclusion of which may render an IT investment decision process ineffective, leading to sub-optimal IT investments. A review of the literature has led to the identification of the following factors as benefits arising from process redesign (See Table 1):

Research Questions

1. *To what extent do IT investment decision-makers differentiate process redesign in terms of importance when making an IT investment decision?*

2. ***To what extent do IT investment decision-makers consider process redesign in an explicit manner, an implicit manner, or not at all when making an IT investment decision?***

3. ***What weight does the IT investment decision-maker place on process redesign compared to technical, strategic, and financial consideration when making an IT investment decision?***

4. *What are the factors that impact how much process redesign benefits are included in an IT investment decision?*

5. ***What association exists between information technology investment and corporate productivity?***

Hypotheses

RH1: There is a direct relationship between the presence of a continuous learning culture and inclusion of process redesign benefits consideration in an IT investment decision.

RH2: There is a direct relationship between the strategic relevance of IS in an organization and inclusion of process redesign benefits consideration in an IT investment decision.

RH3: Large organizations consider the intangible benefits aspects of IT investments to a greater extent than do small and medium-sized firms.

Research Methodology Overview

First, a written field survey is administered to obtain information on the actual practice of IT executives in terms of the degree to which they include the identified process redesign benefit factors in an IT investment decision. Second, a DEA procedure is employed to classify corporations in the sample according to their level of productivity (Efficient, Non-efficient). These DEA classifications are matched against the degree of process redesign benefits consideration obtained from survey results. For example, for a firm that falls under the *efficient* DEA productivity classification and whose responses indicate a *high* degree of process redesign benefits consideration, there may be indication of a positive association.

Third, a discriminant analysis procedure is employed to develop a classification function to compare with the DEA classification. The construction of a useful function would imply that an association exists between DEA productivity classifications and at least one of the discriminant variables in the function. The seven process redesign benefit factors are the discriminant variables.

Table 1: Process Redesign Benefit Factors

Factors	Selected Literature Citations
Operative Efficiency	Tinnila, 1995; Petrozzo & Stepper, 1994
Strategic Planning	Tinnila, 1995; Madrish & Schaffer, 1995
Organizational Restructure	Tinnila, 1995; Guha et al., 1993; Harrington, 1991
Technological Innovation	Davenport, 1993; Frenzel, 1999)
Customer Satisfaction	Stalk et al., 1992; Ryan, 1997
Product Quality	Harrington, 1991; Leymann and Altenhuber, 1994
Quality of Work	Moad, 1993; Guha et al., 1993; Bashein et al., 1994)

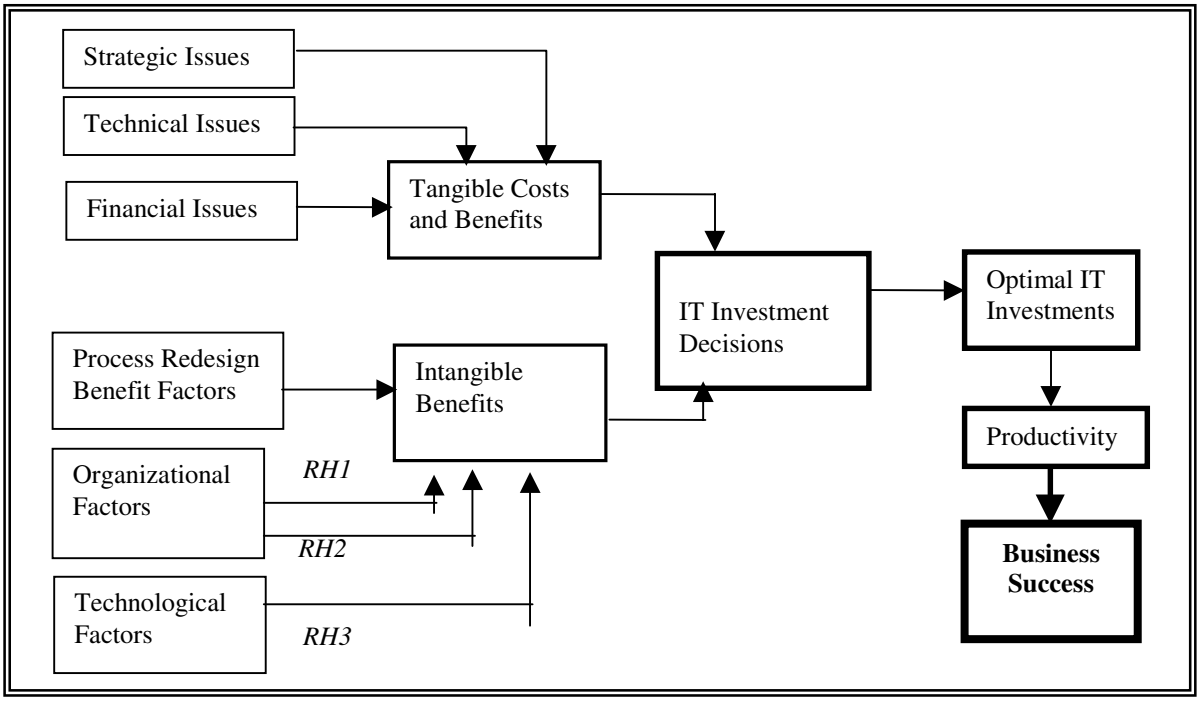

Figure 1: The Research Model

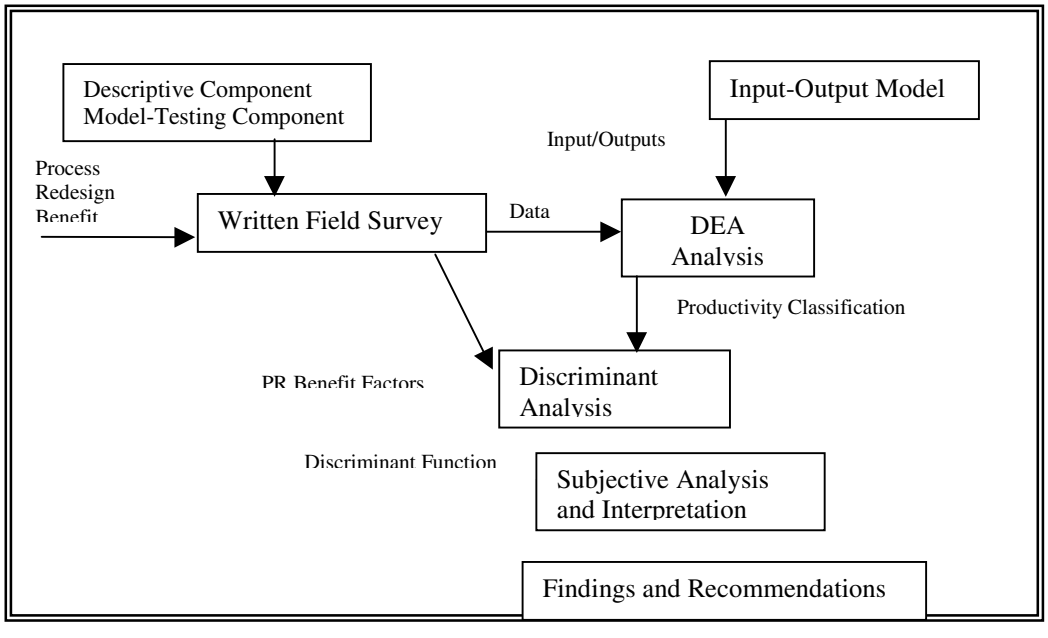

Figure 2: Methodology Overview (adapted from Courtney, 1993)

References:

Courtney, L.M. An Empirical Study of the Relationship Between Information Technology Investment and Corporate Productivity*, Ph.D. Dissertation*: The University of Texas at Arlington, December 1993.

Davenport, T. Process Innovation -- Reengineering Work through Information Technology, *Harvard Business School Press*, Boston, MA, 1993.

Hammer and Champy, M. and Champy, J. Re-engineering the Corporation: A Manifesto for Business Revolution, Nicholas Brealey Publishing, London, 1993.

Harrington, H.J. Improving business processes, *TQM Magazine*, February 1991.

Harrington, H. J., Business Process Improvement: The Breakthrough Strategy Total Quality, Productivity, and Competitiveness, New York, McGraw Hill, 1991.

Hitt, L.M. and Brynjolfsson, E. Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value" *MIS Quarterly*, June (1996), pp. 121-141.

Hochstrasser, B. and Griffiths, C. Controlling IT Investment: Strategy and Management, Chapman & Hall, London, 1991.

Leymann, F. and Altenhuber, W. Managing business processes as an information resource, *IBM Systems Journal*, Vol. 33, No. 2, 1994, pp. 326-348.

Moad, J. Does Reengineering Really Work? *Datamation, August 1, 1993, pp. 22-24.*

Petrozzo, Daniel P. and Stepper, John C., Successful Reengineering, Van Nostrand Reinhold, New York, 1994.

Ryan, S.D. Information Technology Investment Decisions: A Sociotechnical Perspective*, Ph.D. Dissertation*: The University of Texas at Arlington, December 1997.

Stalk, G., Evans, P., and Shulman, L.E. Competing on Capabilities: The New Rules of Corporate Strategy, *Havard Business Review*, 70, 2 (March-April 1992), pp. 57-69.

Tinnila, Markku, Strategic perspective to business process redesign, *Management Decision*, 33(3): 25-34, 1995.