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Towards a framework for evaluating investments in data warehousing

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Abstract.

Data warehousing technology offers organizations the potential for much greater exploitation of informational assets. However, the evaluation of potential investments in this technology poses problems for organizations as traditional evaluation methods are constrained when dealing with strategic IT applications. Nevertheless, many organizations are procedurally obliged to use such methods for evaluating data warehousing investments. This paper identifies five problems with using such methods in these circumstances: evaluating intangible benefits; making the relationship between IT and profitability explicit; dealing with the vanishing status quo; dealing with the extended investment time frame; and evaluating infrastructural investments. The authors studied how four organizations in the UK and Ireland attempted to overcome these problems when introducing data warehousing, and propose a framework for evaluating data warehousing investments. This framework consists of a high-level analysis of the economic environment and of the information intensity of the relationship between the organization and its customers. Based on the outcome of this analysis, the authors propose four factors that have to be managed during the evaluation process in order to ensure that the limitations of the traditional evaluation techniques do not adversely affect the evaluation process. These factors are: commitment and sponsorship; the approach to evaluation; the time scale of benefits; and the appraisal techniques used.

references

Arapoglou, A., Serafeimidis, V. & Doulidis, G. (1997) Rationale and management of IT investments in the case of

Babcock, C. (1995) Slice, dice and deliver. *Computerworld*, **29**, 129–132.

Google Scholar

Ballantine, J. & Stray, S. (1998) Financial appraisal and the IS/IT investment decision making process. *Journal of Information Technology*, **13**, 3–14.

Web of Science® Google Scholar

Barquin, R.C. (1996) On the first issue of the *Journal of Data Warehousing*. *Journal of Data Warehousing*, **1**, 2–6.

Google Scholar

Benbasat, I. (1987) An analysis of research methodologies. In: *The Information Systems Research Challenge.* F.W. McFarlan (ed.). Harvard Business School Press, Boston.

Google Scholar

Berson, A. & Smith, S.J. (1997) *Data Warehousing, Data Mining and OLAP*. McGraw-Hill, New York.

Google Scholar

Broadbent, M. & Weill, P. (1997) Management by maxim: how business and IT managers can create IT infrastructures. *Sloan Management Review*, Spring, 77–92.

Web of Science® Google Scholar

Chapman, P. (1988) All benefits are tangible – I just can't get my hands on them. *IMDS*, **Jan/Feb**, 23–25.

Google Scholar

Clarke, R. & Stevens, K. (1997) Evaluation or justification? The application of cost/benefit analysis to computer matching schemes. In: Proceedings of the European Conference in Information Systems, Cork, Ireland.

Fitzgerald, G. (1998) Evaluating information systems projects: a multidimensional approach. *Journal of Information Technology*, **13**, 15–27.

Web of Science® | Google Scholar

Francett, B. (1994) Decisions, decisions: users take stock of data warehouse shelves. *Software Magazine*, **14**, 63–70.

Google Scholar

Gray, P. & Watson, H.J. (1998) *Decision Support in the Data Warehouse*. Prentice Hall PTR, New Jersey.

Google Scholar

Griffiths, C. (1994) Responsibility for IT: a grey area of management. In: *Information Management: the Evaluation of Information Systems Investments.* L. Wilcocks (ed.). Chapman & Hall, London.

Google Scholar

Grindley, K. (1991) *Managing IT at Board Level*. Pitman, London.

Google Scholar

Hochstrasser, B. (1990) Evaluating IT investments – matching techniques to projects. *Journal of Information Technology*, **5**, 215–221.

Google Scholar

Hopwood, A.G. (1983) Evaluating the real benefits. In: *New Office Technology: Human and Organisational Aspects*. H.J. Otway & M. Pelty (eds). Printer, London.

Google Scholar

Inmon, W.H., Zachman, J.A. & Geiger, J.G. (1997) *Data Stores, Data Warehousing and the Zachman Framework: Managing Enterprise Knowledge*. McGraw-Hill, New York.

Google Scholar

Irani, Z. & Love, P.E.D. (2001) The propagation of technology management taxonomies for evaluating investments in information systems. *Journal of Management Information Systems*, **17**, 161–177.

Web of Science® Google Scholar

Keen, P. (1981) Value analysis: justifying decision support systems. *MIS Quarterly*, **1**, 1–14.

Web of Science® Google Scholar

Kelly, S. (1996) *Data Warehousing: the Route to Mass Customization*. Wiley, Chichester.

Google Scholar

Kelly, S. (1997) *Data Warehousing in Action*. Wiley, Chichester.

Google Scholar

Ladley, J. (1997) Operational data stores: building an effective strategy. In: *Data Warehouse: Practical Advice from the Experts.* J. Bischoff & T. Alexander (eds). Prentice Hall, New Jersey.

Google Scholar

Lee, S.C. (2001) Modeling the business value of information technology. *Information and Management*, **39**, 191–210.

Web of Science® Google Scholar

McAulay, M.L. (2000) Of clouds and clocks: an approach to information technology evaluation and personal freedom. *Southern African Business Review Special Issue on Information Technology*, **4**, 7–13.

Marquez, J. (1997) Creating a business case. In: *Data Warehouse: Practical Advice from the Experts.* J. Bischoff & T. Alexander (eds). Prentice Hall, New Jersey.

Google Scholar

Marshall, C. & Rossman, G. (1989) *Designing Qualitative Research*. Sage Publications, CA.

Google Scholar

Mattison, R. (1996) *Data Warehousing: Strategies, Technologies and Techniques*. McGraw-Hill, New York.

Google Scholar

Miles, M.B. & Huberman, A.M. (1994) Qualitative Data Analysis: an Expanded Sourcebook. Sage Publications, CA.

Google Scholar

Nixon, B. (1995) Technology investment and management accounting practice. *British Journal of Management*, **6**, 271–288.

Google Scholar

Ross, J.W., Beath, C.M. & Goodhue, D.L. (1996) Develop long-term competitiveness through IT assets. *Sloan Management Review*, **Fall**, 31–42.

Google Scholar

Saarinen, T. (1996) SOS: expanded instrument for evaluating information system success. *Information and Management*, **31**, 108–118.

Web of Science® Google Scholar

Sach, T. (1996) Building a data warehouse-the key technical decisions. *Data Warehouse Report*, **8**, 8–11.

Singh, H.S. (1998) *Data Warehousing Concepts, Technologies, Implementations, and Management*. Prentice Hall PTR, New Jersey.

Google Scholar

Smithson, S. & Hirschheim, R. (1998) Analysing information systems evaluation: another look at an old - problem. *European Journal of Information Systems*, **7**, 158–174.

Web of Science® | Google Scholar

Stone, E. (1978) *Research Methods in Organisational Behaviour*. Goodyear Publishing, California.

Google Scholar

Strassman, P. (1990) *The Business Value of Computers.* The Information Economic Press, New Canaan, pp. 73–99.

Google Scholar

Thomas, L.C. (1992) Financial risk management models. In: *Risk Analysis Assessment and Management.* J. Ansell & F. Wharton (eds). Wiley, Chichester.

Google Scholar

Ward, J. (1994) A portfolio approach to evaluating information systems investments and setting priorities. In: *Information Management: the Evaluation of Information Systems Investments.* L. Wilcocks (ed.). Chapman & Hall, London.

Google Scholar

Ward, J., Taylor, P. & Band, P. (1996) Evaluation and realization of IS/IT benefits: an empirical study of current practice. *European Journal of Information Systems*, **4**, 214–225.

Web of Science® | Google Scholar

Wilcocks, L. & Lester, S. (1994) Evaluating the feasibility of information systems investments: recent UK evidence and new approaches. In: *Information Management: the Evaluation of Information Systems Investments.* L. Wilcocks (ed.). Chapman & Hall, London.

Google Scholar

Yin, R. (1989) *Case Study Research: Design and Methods*. Sage Publications, CA.

Web of Science® Google Scholar

Zagelow, G. (1997) Data warehousing: client/server for the rest of the decade. In: *Building, Using, and Managing the Data Warehouse.* R. Barquin & H. Edelstein (eds). Prentice Hall, New Jersey.

Google Scholar

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