



The Benefits of an E-Business Performance Measurement System

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ABSTRACT

This paper reports work-in-progress from research investigating the performance measurement systems used in e-businesses. Results from seven case study companies are reported. The findings reveal a variety of approaches to e-business performance measurement, with no common framework apparent.

INTRODUCTION

Organizations of all kinds continue to invest heavily in e-business but struggle to adapt their performance measurement systems to the digital environment. Little research has been conducted and it is far from clear how, or even if, existing models of performance measurement needs to be modified for the needs of e-businesses. This paper reports work-in-progress from research investigating performance measurement systems in e-businesses. (E-business is taken to be any business activity underpinned by Internet-based ICT.) The aim of the research is to identify the nature of the performance measurement systems in operation in e-businesses and to identify the benefits from their use.

LITERATURE

It has been claimed that e-business can offer huge improvements in productivity. For example, Forrester (2001) predicted that e-business would provide a 15% boost to the US economy over the next decade. They also claimed that productivity gains of up to 50% are available in European B2B e-business. However, establishing a relationship between IT investments and productivity gains has proved notoriously difficult in the past (Lucas, 1999).

Moving into e-business, whether to clicks-and-mortar, or by dotcom start-up, requires considerable financial investment in ICT, in processes and in people. Companies need suitable performance measures to justify such investments, and, once implemented, to evaluate their worth (Hinton and Barnes, 2005a). There are some (e.g. Souitaris and Cohen, 2003) who argue that there is little evidence to support the view that e-business is markedly different to other forms of business. But the more common view is that expressed by Tonchia (2002), who asserts that performance measurement and value analysis of 'click' companies is very different from that of 'brick' companies. It seems likely that existing performance measurement systems might have to be adapted for the e-business context. As Straub *et al.* (2002: 117) argue, "the unique characteristics underlying the Web may in some cases require new metrics or, at least, the careful evaluation of existing ones to facilitate the development of innovative solutions to emerging problems".

One might expect to see a burgeoning literature discussing the benefits of distinctive e-businesses performance metrics and reporting attempts to develop and implement these. It is therefore surprising to discover a relative dearth of academic literature in the field. Marr and Neely's (2001) study of performance measurement practices in e-businesses remains a rare example of empirical research. Their study paints a picture of e-businesses measuring many different dimensions of performance. Yet, they report near universal dissatisfaction with existing

measurement systems. Consequently, they "question the appropriateness of existing performance measurement systems in today's (digital) economy" (Marr and Neely, 2001: 214).

This literature advocates the need to develop multi-dimensional performance measures in e-business. However, there is no agreement on what should be the basis for an e-business performance measurement system, the extent to which performance metrics for e-business should be linked to those for traditional business and what benefits can accrue from adopting differing e-business performance measurement systems. Previous empirical research points to a lack of any consensus amongst practitioners as to which measures are effective for measuring e-business performance and has questioned the accuracy of measures that are in use (Hinton and Barnes, 2005a).

METHODOLOGY

Recent survey-based research has enabled us to identify a number of organizations that claim to have developed performance measurement systems suited to the e-business environment (Hinton and Barnes, 2005b). These might be considered to be *exemplar* organizations whose e-business performance measurement systems seem worthy of more detailed investigation. Accordingly, this research adopts a case study methodology based on in-depth interviews with key informants in these organizations. The interviews, conducted in 2005, were semi-structured, based on a standard set of questions. Additional data came from company documents.

RESULTS

This paper reports results from seven organizations investigated to date. (Pseudonyms are used and some case data disguised to protect confidentiality.)

Lawco

Lawco is a large corporate legal practice employing 3,000 lawyers in more than 20 countries. They operate a number of on-line services. Some support the work of Lawco's own staff, some offer generic help for particular industries and some facilitate transactions with individual clients. Lawco aims to use e-business to achieve cost and time advantages. They use ICT to support their aim of being one of the top two providers to their market segments. Lawco has metrics for the technical performance of its websites, including availability and processing times. They monitor all costs, including those associated with its ICT operations, very closely on a daily basis. However, it wants to evaluate ICT performance against business objectives, but this presents a significant challenge due to many intangible factors.

Teleco

This case investigated a product development department within one of the world's largest telecommunications companies. The department, whose members operate predominantly in a virtual environment, uses

an on-line workflow management system to monitor progress on its projects. The system provides performance metrics for cost, quality and time. These are linked to the company's strategic objectives through a hierarchy of objectives. The main benefits of the on-line performance measurement system are reporting speed and its availability via the Internet. All departments are required to develop five-year plans, linked to specific financial, market and product performance targets. This is, however, problematic in an environment where product lifecycles are typically less than two years.

Softco

Softco is a specialist software house, serving business clients from offices in Europe, North America and the Far East. Externally, the company aims to use e-business to brand build and strengthen relationships with customers. It uses its website for promotional marketing and after sales support, rather than sales transactions. Internally, it uses e-business to support remote working and promote integration across its sites. It uses the Internet for sales administration, human resource management and for joint working on documents by staff at different locations. Softco does not have any separate e-business measurements. The company is managed against corporate level financial measures, which are cascaded down to individual departmental metrics, which are also mostly financial. There is no attempt to isolate costs or revenues associated directly with any particular e-business activity. Neither does Softco do detailed financial analysis for ICT investment proposals. But it does monitor operating costs, staff usage and satisfaction levels of particular applications after their introduction to evaluate their success.

Hi-form Metals

Hi-form Metals is the European division of a large multi-national producer of high specification metals for OEMs whose products operate in highly demanding environments. The OEMs require e-business use for electronic bidding for contracts, electronic exchange of documents and production scheduling (including placing, tracking and tracing orders). Hi-form aims to use e-business to improve customer service and reduce staff costs. Hi-form does not have separate measures for e-business, treating it as integral to its normal business operations. All capital investment proposals, including ICT, are subject to a rigorous financial appraisal process requiring approval at the corporate headquarters. Internally, each stage of Hi-form's operations performance is measured against a weekly plan, in terms of time, volume and cost. Externally, performance is measured against each customer's requirements for delivery and quality. Additionally, customer satisfaction is measured quarterly through an on-line customer questionnaire. No additional or different measures have been adopted as a result of moving to e-business.

Seaside Hospital

Seaside Hospital is a large NHS general hospital serving around 300,000 people. It has recently introduced e-business into its materials management systems in order to improve operating efficiency and service levels. Materials are scanned using barcode technology when they are withdrawn from local stocking points in wards or operating theatres. Replacements are automatically ordered via a centralized system, which generates an e-mail acknowledgement. The supplies are delivered to the hospital's central store, prior to distribution to local stocking points. The NHS is subject to performance monitoring via government-imposed targets. This has resulted in top-down cost saving targets being imposed throughout the hospital. However, these do not seem to link to the metrics used to monitor materials management performance in the hospital. Rather measures are based on deliveries to wards and any materials shortages. No attempt has been made to link this performance to patient treatment rates or quality of care.

Port Authority

Port Authority is a public body responsible for managing the navigable waters of one of the UK's largest ports. The Authority uses e-business

in a number of ways. Ships' manifests (i.e. details of their cargoes), used by Customs to authorize offloading, charge duties etc., and by freight forwarders arranging onward handling, are submitted on-line by shipping lines. This automates a previous paper-based system, speeding up the process, cutting costs and improving accuracy. The Authority maintains an on-line database of shipping movements, which is used to manage the provision of harbor pilots. The Authority's website posts important information for all uses of its waters and includes an Extranet for key users of the port such as terminal operators, dredging companies, etc. Port Authority aims to use e-business to improve its efficiency. It is trying to develop e-business measures that link to its corporate level performance targets. However, to date it focuses on systems availability, number of users and satisfaction with the Authority's services.

LG Union

LG Union is one of the UK's largest trades unions with over one million members, employed mostly in local government. The union has a national website and linked regional sites. The sites are aimed principally at members, but have only a low level of interactivity. Currently, the union is rolling out on-line systems to support its remote workers (e.g. case workers). The union's aim is to provide a better service to the members and operate more efficiently, particularly with regard to peripatetic staff. The union's most significant measures of performance are membership growth, its effectiveness in protecting its members and the efficiency of its delivery of services. Although, the union has attempted to utilize the balanced scorecard as a template for performance measurement, it is finding it difficult to link its top-level performance measures to its use of e-business.

CONCLUSIONS

The cases examined to date reveal a wide range of e-business technology use. Unsurprisingly, there appears to be an absence of much commonality in the organizations' approach to e-business performance measurement. One common theme is a concern to link e-business performance to organizational objectives. However, there is some disparity in the level of success. The research is continuing and additional cases are being undertaken. This will facilitate further cross case analysis.

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