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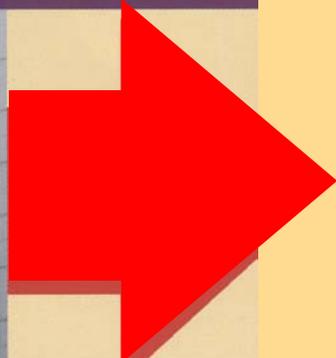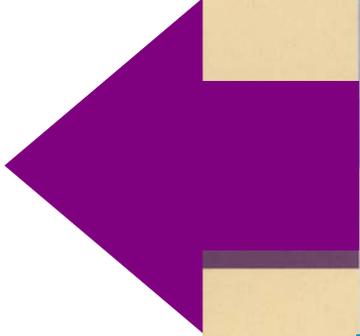## IS A QUALITY SYSTEM WORTHWHILE IF IT DOESN'T IMPROVE CUSTOMER SATISFACTION? A CASE STUDY EXAMINING THE VALUE OF IMPLEMENTING AN IT-BASED BUSINESS MANAGEMENT SYSTEM

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Abstract

This paper reports on the experiences of an Australian software development firm that implemented an information technology (IT)-supported business management system (BMS) to gain ISO 9001 certification. Data was gathered before and after implementation to measure the changes brought about by the BMS. The results indicate that a BMS may ostensibly have little effect on customer satisfaction levels for suppliers that have already implemented effective work practices. However, in these circumstances, a BMS can be implemented and certification obtained at low cost, and other benefits may be realised. Consideration of these and other factors will help managers evaluate the potential value of a BMS to an organisation.

DEPARTMENT OF MANAGEMENT

IS A QUALITY SYSTEM WORTHWHILE IF IT DOESN'T IMPROVE CUSTOMER SATISFACTION? A CASE STUDY EXAMINING THE VALUE OF IMPLEMENTING AN IT-BASED BUSINESS MANAGEMENT SYSTEM

INTRODUCTION

The Foley (1987) and Karpin (1995) reports into quality management in Australia have encouraged Australian organisations to invest in many kinds of quality initiatives, especially ISO certification. Many studies have investigated the value of certification, reporting benefits such as improved quality and effectiveness, and reductions in operating costs (Curtis & Paulk 1993; Lee & Kim, 1992; Perry 1992; Tan & Yap 1994). Baker and Rouse (1997) found that certification had greater benefits for organisations initially lacking systemic processes. Despite claimed benefits, certification is stereotyped as a costly and bureaucratic process (Brown & Van der Wiele 1995; Carroll 1996; Zampetakis 1994). The estimated initial cost (including intangibles) of certification for an organisation can be as much as $500,000 (Baker & Rouse 1996; Zampetakis 1994), and on-going costs can be up to $100,000 per annum (Carroll 1996). These costs especially disadvantage small firms (Kean 1995).

Software vendors such as Domain Software and Integrated Quality Management Software (IQMS) claim that using business management systems (BMS) software can cut the cost of obtaining certification while facilitating quality improvement. Both companies can demonstrate to potential customers savings achievable by using their software to support a BMS. However, because BMS software has been available only since the 1990s, little empirical evidence supports this claim. This research project, investigating the use of information technology in facilitating BMS, began in 1998. The first stage of the project entailed designing and implementing a process using BMS software to help a software development organisation gain ISO certification (Seen & Mingins 2000) , and identifying key performance indicators (KPIS) to capture and measure changes in work effectiveness (Seen, Beaumont & Mingins 2001). This paper investigates the impact of implementing an information technology (IT) supported BMS on customer satisfaction and and other intangible outcomes.

THE COMPANY

Domain Software (a pseudonym) is a software development company based in Melbourne, Australia. Its flagship product, sold in Australia and overseas, is an application designed to help organisations manage records pertaining to their customers, suppliers, personnel, quality, equipment, documents and images, workflows, scheduling, audits and problem tracking and resolution, and meetings. In Domain Software itself, the software product was already implemented and in use, but for a number of separate and mostly isolated functions. Several ad hoc information processes supported decision-making but were not integrated with the BMS. The challenge the organisation faced was to expand the internal use of the software product so that the product supported and integrated all business processes.

Customer Satisfaction and Quality Systems

Many organisations seek ISO certification primarily to improve customer satisfaction (Hunt 1993; Weston 1995; Struebing 1996; Rayner & Porter 1991; Lee 1995) and some succeed (Finley 1993; Rayner & Porter 1991; Weston 1995). For others, this motivation may be misplaced. Batchelor (1992) found that only 15% of 647 certified manufacturing and service organisations studied had derived business value on nine dimensions (one of which was customer satisfaction) of organisational performance. Terziovski, Samson & Dow (1997: 12) found that in Australasian manufacturing, '…ISO 9000 certification is not significantly related to a variety of organisational performance measures…'. Lim (1997: 93) found '…a significant and negative relationship between certification status and customer satisfaction' on four out of five categories of services, and suggested that this may be attributable to 'higher documentation work loads and a stronger internal focus'.

An explanation of the dubious link between certification and customer satisfaction may lie with the ISO standard itself. Zubrod (1996) found that '...quality standards are no guarantee of business success...ISO

9000 places relatively little emphasis on keeping customers satisfied and more on standardising and documenting operating processes.' Reimann and Hertz (1996) and Peach (1990) support this view. Other writers (Spreha & Helms 1995; Corrigan 1994; Oskarsson & Glass 1996) opine that failure is due to poor interpretation or implementation, rather than the standard itself.

This paper augments empirical evidence relating ISO certification and customer satisfaction. We found no quantitative evidence of tangible benefits but did find evidence of *intangible* benefits.

THE SURVEY PROCESS

The Softqual instrument, developed by Rouse, Watson and Jian-Xiang (1997) was used to collect customer satisfaction data. Softqual is based on Parasuraman, Zeithaml and Berry's (1988) ServQual. The research entailed surveying Domain Software's customers before and after Domain Software had implemented the BMS and obtained ISO certification and determining whether the customers perceived an improvement in Domain Software's services. In 1998, nine customers were selected to test the survey's appropriateness and minor adjustments were made to it. The final version comprised 31 questions (see Table 1) and solicited customers' opinions of the service they received from Domain Software, especially its responsiveness to customer queries, viability, market reputation, courtesy of staff, ease of access and communication and quality of deliverables. Responses, coded on a Likert scale were anchored by 1= "Strongly disagree" and 5 = "Strongly agree". During 1999, 43 of Domain's 80 customers returned completed "before" surveys. Once Domain Software had implemented its formalized BMS and gained ISO 9001 certification, in 2001 the initial participants were asked to participate in the "after" survey. Twenty respondents completed and returned the survey.

Results

Mann-Whitney tests were used to detect differences in the "before" and "after" responses to each question. No significant differences were found.

Table 1: Customer Satisfaction Survey Items

Responsiveness of Domain Software	Domain's staff behave in an ethical manner.
Domain staff work with us to resolve problems.	Domain's staff are always polite and friendly.
Domain staff give us confidence that problems will be solved.	*Access and Communication*
Problems in the software are promptly remedied.	It is easy for us to contact Domain's help-desk.
Domain staff respond quickly to our requests.	Domain has mechanisms in place for us to communicate our needs as necessary.
Domain arranges prompt on-site visits	Staff provide timely support.
Staff put in the effort necessary to achieve results.	Staff talk to us in a language we can understand.
Market Reputation of Domain Software	Staff inform us of the progress of work.
Domain has a good reputation in the market.	Domain has strategies enabling us to access the right people at the right time.
Domain has an active presence in the market.	Staff honestly tell us what Domain products can do.
Domain will exist to support us in the future.	Staff tell us honestly what their organisation can do.
Domain has a strong commitment to investment in product research and development.	*Deliverables*
Domain has a strong commitment to quality.	Domain's documentation is comprehensive.
Domain has a reputation for satisfied customers.	Domain's documentation is easy to use.
Courtesy of Domain Staff	Domain provides easy-to-follow training.
Domain's staff are professionally presented.	Domain's software is stable and reliable.
Staff fit into our work style when at our premises.	Agreed enhancements are delivered on time.
Domain's staff are on time for appointments.	Requested enhancements perform as expected.

Discussion

The overall result indicates that the company's implementation of an IT-based BMS and gaining of ISO certification did not change customers' perceptions of the service they received from Domain Software. This finding is consistent with earlier reports of the outcomes of implementing quality systems (Allan 1993; Terziovski, Samson & Dow 1995; Weston 1995; Lim 1997). These authors attribute the lack of improvement in customer satisfaction to faults within ISO 9001 itself, criticising its focus on internal processes and their documentation rather than customers, and its inapplicability to some industries. Lim (1997) suggests that ISO-certified organisations' customers have higher expectations of customer service, implying that, despite improvements in service levels, customer satisfaction levels remain constant. The studies also suggested that fault lay with the implementation process, especially staff placing too great an emphasis on preparing documentation for examination by ISO auditors, and neglecting everyday work until the certification audit was passed.

Implementing a *computer*-based BMS can create additional complications. Building and installing a computer system entails costly upfront investment to determine system requirements, and acquire and implement the system. Implementation may entail converting existing data, changing business procedures and training staff. These activities may divert energy from normal work, adversely affecting customer services. However, the above factors do not explain the lack of change in customer satisfaction at Domain Software for the following reasons:

- Although at times it was difficult to determine how to relate ISO 9001 requirements to a software development company, the debated clauses did not relate to customer service.
- The effort required to update documentation was minimized by using the BMS software. The pre-existing high level of organisation, recognised procedures and documentation, and the help of the first author also contributed to the BMS implementation.
- First analysing and documenting the critical processes within the organisation balanced regular organisational activities and the ISO 9001 implementation. Only when this was completed was ISO 9001 examined to identify requirements not yet met.
- Because the IT-based BMS was already in limited use within the company, there were no technical problems related to its use. Management and staff strongly supported its expanded use.

Instead, the lack of change in customer perceptions of Domain Software is explained by the minimal impact the implementation of the IT-based BMS had on the company's own operating practices. The managing director (MD) strongly believed in the professionalism and adequacy of the company's work practices, even prior to the implementation of the IT-based BMS. This view is reinforced by the "before" and "after" surveys showing that customers had above-average satisfaction levels on all dimensions of service. The experience at Domain Software supports the proposition (Terziovski 1997; Baker & Rouse 1996): that if an organisation has a 'strong' TQM environment, ISO certification will yield only marginal benefits. At Domain Software, customers would have been unlikely to perceive any difference in service level arising from changes.

Evaluation of the IT-based BMS

The implementation of the IT-based BMS at Domain Software had no discernible short-term effect on customer satisfaction. However, although internal work practices were little affected by the implementation, there were other benefits.

- By attaining ISO 9001 certification, the company gained an internationally recognised qualification that is often, especially in Europe and the USA where Domain Software had commenced operation, a qualifier for new business development (Rayner & Porter 1991; Weston 1995).
- The IT-based BMS helped ensure that work activities were uniformly and correctly undertaken; first by providing information about major work processes, and second, by providing motivation through staff knowing that work records could be audited.

- The IT-based BMS ensured the MD was regularly reminded to monitor critical work processes. It was especially useful in ensuring that processes that were "important but never urgent" received managerial attention. This may help prevent costly errors. The neglect and consequent loss of a single large customer can be disastrous for a small organisation.
- The IT-based BMS provided an audit trail proving that 'due care' had been taken and recognised procedures followed. This could become important if the company should ever be sued. In a litigious society, it is essential to be able to prove diligence.

The MD opined that these and other benefits of the BMS were intangible but substantial. The value of the IT-based BMS was also enhanced by the low cost of its implementation. This took 135 person-days over six months and was costed at \$A55,000. This excludes the time required to establish and collect KPI data before and after the implementation. This compares well with the times of typically 18 months to gain ISO certification reported by Hockman, Grenville & Jackson (1994). The audit fee for the second-party auditor was \$1000. The price of the software was \$3000. The total cost of the BMS implementation was approximately \$60,000 – much less than the costs of \$500,000 typical of larger organisations (Baker & Rouse 1996; Zampetakis 1994).

The factors facilitating the implementation of the BMS at Domain Software were established work practices (some documented) prior to the system's introduction, management's commitment to BMS; the company's small size, high morale, and strong focus; the use of BMS software; the high level of knowledge within the company regarding quality systems; and the first author, helping with many implementation tasks (Seen, Mingins & Beaumont 2000).

Implications

Based on the experience at Domain Software, managers should consider the following issues to help determine whether an IT-based BMS would be a worthwhile investment for their own organisations.

- Improved customer satisfaction may not accrue from the implementation of an IT-based BMS. This may be due to the BMS implementation being overly concerned with compliance to an ISO standard and diverting focus away from customer service; customers having higher expectations from companies with certification; the acquisition and implementation of a computer system to support a BMS creating complications that detract from customer service, even while it minimises the certification effort; and finally, an organisation that already has systematic work practices and 'above average' levels of customer satisfaction may find only marginal improvement in this area.
- Whether any of the following benefits are of value: satisfying customers that require ISO certification as a prerequisite for doing business; consistent and correct performance of work activities; regular management attention being directed to 'important but never urgent' issues to prevent potentially costly errors; and providing evidence that 'due care' had been taken in the performance of work activities.
- The costs and effort that would be necessary to implement the BMS. An organisation with ad hoc work practices will require more effort to gain certification and is consequently likely to experience higher implementation costs, but it also stands to gain more immediate benefit. An organisation with well-organised work processes is in a position to minimise the implementation costs of the BMS because it will require less effort to gain certification, but the benefits in this case are more likely to be potential or intangible.

CONCLUSION

This paper described the results of the first cycle of an action research project in which the researcher collected data before and after the implementation of an IT-based BMS in a small software development company to identify the implementation's effect on customer satisfaction. No statistically significant changes in customer satisfaction were found, a finding echoing earlier studies.

Many of the reasons given in previous studies for lack of improvement in customer satisfaction do not apply here. However, there are plausible reasons for no differences being detected. ISO certification at Domain Software entailed only marginal changes to the company's already largely satisfactory business processes. Although the BMS at Domain Software was IT-based, the usual impediments to the implementation of an IT system were absent because Domain Software had an appropriate culture, its staff were computer literate and its management highly supportive.

Although no tangible changes in customer satisfaction were demonstrated, there is some evidence of substantial, internal, intangible benefits. Domain Software gained an internationally recognised certification, useful for its overseas operations. The BMS systematically directed managerial attention to obscure but vital aspects of the business. Tracking and documenting transactions was legally prudent. The worth of the BMS was increased through the low implementation cost, a consequence of the certification process entailing only marginal changes to extant procedures, the company's small size, and the company's high level of knowledge regarding BMS implementation.

For some organisations then, a quality system can be worthwhile even if it doesn't improve customer satisfaction. Managers should consider the motivation for seeking ISO certification, the benefits likely to be gained, and the potential costs before undertaking this particular form of the 'quality' journey.

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