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E-service: enhancing internal customer service through e-procurement

Internal customer service

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Abstract E-business developments represent a significant step in the evolution of inter-organisational systems (IOS). Their impact on external supply chains is a major area of discussion and analysis in the literature, principally examining issues of governance structure and process efficiencies. This paper, however, addresses issues relating to the impact of e-business developments on internal customer service with a focus on electronic procurement introduction – in other words it concentrates on the intra-organisational system dynamics of e-business. The procurement process is the basis for one of the primary internal customer-provider interfaces and thus presents a valid and useful domain of study in internal customer service. In contributing to the emerging e-service field the article first contends that much of the recent research into e-service has taken a primarily external customer focus. However, reports suggest that the potential of e-business comes from applications both within and between businesses. Consequently, this paper focuses on the findings relating to internal e-service obtained from an extensive, primarily qualitative and exploratory, research programme incorporating 97 organisations. The article concludes that internal customer satisfaction is central to the success of e-procurement deployment and is a significant determinant of the cost benefits to be gained from its adoption.

Introduction

This paper arose as a consequence of our early analysis of interview and other research data from a broad research study into e-business implementation for supply chain management. Internal customer service improvement emerged as a significant and relevant issue for procurement professionals and e-business project teams. As the efficiency, speed and ease of use of electronic, Web-based procurement systems became apparent to early adopters, respondents were highlighting the substantial improvement in internal customer satisfaction from users of electronic procurement systems and a consequent major improvement in user compliance. Greater compliance to procedures supports the shifts that occur as a result of the “economics of information” effect initially proposed by Evans and Wurster (2001). In their treatise, the impact on relationships and behaviours between parties to Internet-enabled processes was viewed as a major component of e-business success.

Consequently, by focusing on internal dyadic (customer-provider) relations we intend to examine the characteristics of internal customer service resulting from e-business deployment. This paper is thus intended to posit our initial



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evaluation of the drivers and implications of internal service within the context of e-procurement systems deployment, an issue we feel is critical to the impact and evolution of e-business systems.

E-service and the external customer

Recent e-service research has been primarily concerned with the provision and development of service between an organisation and its external customers. Voss (2000) for example developed ten key steps in the development of an e-service strategy to help create outstanding Web-based services. Mieczkowska and Barnes (2002) investigated issues of customer participation in the delivery of library services. Sousa (2002) while concerned with the quality of the customer's experience considered the issues for service design. Verma *et al.* (2002) investigated the value-added features e-services need to provide to gain market share and profits. Zhu *et al.* (2002) developed a model linking consumer-perceived quality with e-service to the SERVQUAL dimensions. Walker *et al.* (2002) investigated the reasons why consumers accept or reject technology. Electronic customer relationship management (CRM) while recognising the potential for data mining, improved segmentation and one-to-one marketing appears also to have been primarily concerned with managing the relationship and indeed the contact with customers (see for example Nyamp, 2001; Storbacka and Lehtinen, 2001).

It is interesting to note that the manufacturing-based e-commerce literature has been much more internally focused concerned with, in particular, the implications for process design (see for example Albores *et al.*, 2002; Dennis *et al.*, 2000, Barnes *et al.*, 2002; Gunasekaran *et al.*, 2002). Enterprise resources planning (ERP) systems in particular have been concerned with trying to integrate and co-ordinate the various internal functional areas to break down those functional boundaries and ensure that marketing, operations and financial decisions, for example, are all made using the same data. CRM systems are also used to co-ordinate the supply chain by ensuring better sharing of information. Recently there has been a deal of discussion about the usefulness of ERP systems because of some poor results obtained despite the huge costs involved (Hanna and Newman, 2001).

Even more interesting is the conclusion reached by some authors, summarised by Barnes *et al.* (2002):

... e-commerce is tending to automate, rather than redesign existing processes: e-commerce operations tend to be run as discrete processes, with little or no integration between traditional and e-commerce business processes and their respective information systems. Organisations often display confused and often contradictory motives for e-commerce; there is little measurement and evaluation of e-commerce performance.

The importance of an internal customer perspective in e-services

Although understanding the impact of e-service on the external customer is important and not in dispute, data from research organisations such as Forrester Research and Gartner, has demonstrated that the greatest potential from e-business will be in business-to-business (B2B) rather than business-to-consumer (B2C) applications both within an organisation (i.e. internal services) and between organisations. The internal perspective seems to be lacking in the service research and its success questioned in the manufacturing literature.

Recognising the importance of internal services is not new. The importance of the internal customer has long been accepted as a key issue in operations design and improvement.

For an organisation to be truly effective, every single part of it, each department, each activity and each person and each level, must work properly together, because every person and every activity affects and in turn is affected by others (Muhlemann *et al.*, 1992).

Central to this is the notion of the internal customer “every part of an organisation contributes to external customer satisfaction by satisfying its own internal customers” (Slack *et al.*, 2001). From a marketing perspective this internal customer notion is also well accepted (see for example Berry and Parasuraman, 1992) and has led to the concept of internal marketing (see for example Berry, 1981). However the application of the notion of the internal customer to e-business, and e-service in particular, is relatively new. The impact of e-business on organisational process and routines has concentrated primarily on the “internal alignment” characteristics of systems and practices within IT/IS strategy (Venkatraman, 1991; Baets, 1992), and the implications of IS and e-business for knowledge management and organisational learning (see Swan *et al.*, 1999).

The objective of this paper is to evaluate an application of e-service (e-procurement) to internal services in order to assess if such developments can not only improve the quality of service provided but also reduce the cost of doing business.

Procurement

The purchasing and supply (procurement) activity of organisations is one which spans both internal service and B2B services. This is an important activity found in all organisations, public, private, governmental and charities and can be responsible for a large amount of spending. Such spending on, for example, materials components, facilities, subcontract capacity, IT equipment and supplies, consumables, stationery, travel and insurance can constitute a significant amount of money. Most organisations spend at least one-third of their turnover/income on the purchase of goods and services (Zenz and Thompson, 1994; Killen and Kamauff, 1995), indeed many of the organisations involved in this research spent as much as 60 per cent.

Procurement is traditionally an internal service provided by a dedicated team of professionals. It typically operates at the interface between the organisation's external supplier marketplace and the organisation's operational processes. Procurement has many of the characteristics of the marketing function though it faces the other direction in the supply chain. Procurement is usually responsible for the identification of (internal) customer's needs, translation of those needs into specifications, management of the delivery of goods and services and an assessment of the (internal) customer's satisfaction with those goods and services. The other elements of the process involve communication with suppliers – sourcing, requests for tenders, price negotiation, ordering, receipt and invoicing. In examining the utility of an internal service perspective for procurement, Stanley and Wisner (2002) reinforced the links between internal and external service quality, supporting the contention that positive internal customer service provided by procurement has a significant impact on external procurement performance.

But unlike marketing, procurement is often seen as a "Cinderella" activity in many organisations. Managers often see "promotion" into the purchasing function as a retrograde step into an organisational backwater (Bales and Fearon, 1996). It is often held in low regard by its internal customers who see the function as bureaucratic, difficult to deal with, sometimes remote and delivering poor service (Nolan, 1999). Senior managers too, often see it as a problem area where there is low compliance with internal customers either abusing or circumventing the systems (Croom, 2000; Gebauer and Seveg, 2001). It is also regarded as a high cost activity where there is unnecessary paperwork, material costs and errors (Lamming, 1993; Hines, 1994). Indeed PriceWaterhouseCoopers suggested that a 10 per cent reduction in purchase costs could easily lead to a 50 per cent rise in profit margin (Sheng, 2002).

E-procurement

Electronic procurement systems in essence mirror the procurement process through the provision of two distinct, but connected, infrastructures – internal processing (via, for example, corporate intranet) and external communication with the supply base (via, for example, Internet-based platforms) (Croom, 2000). The critical difference is that such systems allow individual employees to order goods and services directly from their own PCs through the Web. Requests and orders are channelled through various forms of "hub" or database which acts as an online catalogue of specifications, prices and often, authorisation rules. Such systems allow individual employees to search for items, check availability, place and track orders and initiate payment on delivery. It is important to note that e-procurement is not an example of re-engineering old manual processes but a re-engineering of the process itself (Sheng, 2002).

E-procurement has been the subject of a great deal of research but again this has tended to focus on the development of inter-organisational electronic

networks (de Boer *et al.*, 2002). Malone *et al.* (1987) argued that inter-organisational electronic networks would improve co-ordination between firms to reduce the costs of searching for appropriate goods and services (they call these “electronic brokerage effects”). Consequently, they claimed that one of the major effects of inter-organisational networks would be a shift from hierarchical to market relationships.

Some of the initial providers of electronic markets have attempted . . . to capture customers in a system biased towards a particular supplier. We believe that, in the long run, the significant additional benefits to buyers possible from the electronic brokerage effect will drive almost all electronic markets toward being unbiased channels for products from many suppliers” (Malone *et al.*, 1987, p. 492).

Brousseau (1990) reviewed 26 inter-organisational networks, finding that most were used to reduce production or distribution costs and served to reinforce already existing hierarchical relationships among firms. Only in two, the petroleum business and textiles, was the use of inter-organisational networks associated with buyers gaining advantage by having more suppliers from which to choose. Evans and Wurster (2001) claimed that the low infrastructure and transaction costs of Internet-based systems allowed organisations to exploit the increased opportunities for complex information exchange with multiple partners, but also recognised the value to be gained through closer relationships between trading partners (“affiliation”). Amit and Zott (2001) likewise discussed the importance of close relationships (“lock-in”) between trading partners as a key source of advantage to both buyer and seller, while Barratt and Rosdahl (2002) claimed that ease of search and transparency acts as an advantage to the buyer but may be a disadvantage for the seller. Finally, Sheng (2002) evaluated the impact of Internet-based technologies on procurement, in particular the role changes in the purchasing department, the role of e-bidding and e-auction and some of the obstacles that organisations were encountering.

Impact of internal customer service on e-procurement performance

From the literature on internal service, e-service and e-procurement we identified three main elements of internal service performance, namely:

- (1) cost (efficiency and expenditure);
- (2) process conformance; and
- (3) internal customer satisfaction.

In the e-procurement literature (Croom, 2000; de Boer *et al.*, 2002), internal process efficiencies and automation are seen to be key drivers for increasing process efficiency. Typically the cost per transaction using e-procurement is reduced by 65 per cent compared to “traditional” procurement transactions (Croom, 2000), while procurement costs are reduced through economies of

supplier search and increased price competition among suppliers (Evans and Wurster, 2001). Much of the literature on e-procurement has focused on indirect purchases (maintenance, repair and operating supplies – MRO), a key issue which is the high level of so-called “maverick” or off-process purchasing (de Boer *et al.*, 2002). Improving the ease of procurement through use of ubiquitous network protocols (Malone *et al.*, 1987) such as intranet and Internet encourages users to abide by the procurement process. Linked to the benefits of procurement process compliance is the issue of (internal) customer satisfaction (Oliver, 1993). Satisfied customers are more likely to reuse a service or process and thus we would contest that internal customer satisfaction is critical for procurement process compliance.

From the literature, we posit that e-procurement compliance is likened to increased levels of internal satisfaction with the e-procurement service. Reducing “maverick” or off-process purchases has the potential to increase compliance and thus improve the organisation’s economies of scale and scope in their e-procurement operations.

The various elements of our model of internal service in e-procurement are illustrated in Figure 1. We also posit the direction of the relationship between each variable.

Methodology

The main objective of our research programme has been to conduct an exploratory study into supply chain management practices and policies across a range of European organisations using interview survey and case methods of data collection. We surveyed executives, managers and users of a range of e-business systems through a series of semi-structured telephone interviews. Although we only focus in this paper on one element of our findings – that relating to the nature and impact of electronic procurement (e-procurement) systems on internal customer service – we set out here the methodology employed for the research programme as a whole.

The pilot phase of the study was conducted to identify the key issues relating to e-business implementation and involved eight organisations. Their responses and data are not included in this analysis as the principle role of the pilot phase was to develop and validate the method.

The second phase of the study involved a series of telephone interviews conducted by the research team over a five week period. All of these interviews were documented contemporaneously, approximately one-quarter were tape recorded (with permission) and all were summarized in interview reports. The survey instrument used by the researchers contained a mixture of open and closed questions and allowed a significant degree of flexibility to broaden the discussion and provide for further data gathering if required. Furthermore, the

Figure 1.
Potential relationship between internal customer satisfaction, e-procurement compliance and procurement costs



questions provided for both quantitative and qualitative data collection. All qualitative data from the interviews were coded once preliminary evaluation of the response data had been completed (Miles and Huberman, 1994).

The third and final phase of the study involved the development of a further six case studies, produced through site visits, interviews, observation and analysis of internal management data.

In this paper we report on only one element of our analysis of the findings – that relating to the nature and impact of electronic procurement (e-procurement) systems on internal customer service. The primary participants in this aspect of our study were the procurement department, IT specialists, finance department and a range of user department managers and operatives. This paper reports on the findings relating to all 97 participating organisations.

We focus here on analysis of our findings related to three issues:

- (1) the impact of e-procurement implementation on costs;
- (2) implications of e-procurement adoption for process compliance; and
- (3) consequences of internal customer satisfaction for e-procurement implementation.

Data relating to the impact of e-procurement on costs was reported by participants, although in our case analyses we had an opportunity to undertake some process analysis directly. The findings reported here are based on both secondary (i.e. reported) data and primary (i.e. observed) cost data. While our examination of issues of process compliance involved surveying participants regarding the level of use of the e-procurement system, our primary focus was to identify motivating factors for compliance (i.e. what would encourage users to adopt the system completely).

In respect of internal customer satisfaction we examined both overall perception of internal customer satisfaction (in our interviews) and used some critical incident methods to identify examples of “good” and “bad” experiences with the e-procurement systems. In analysing internal e-service relationships we employed 15 service quality criteria identified by Johnston (1995) as the basis for the codes for labelling and presenting our data (Miles and Huberman 1994). These criteria are:

- (1) attentiveness;
- (2) responsiveness;
- (3) care;
- (4) availability;
- (5) reliability;
- (6) integrity;
- (7) friendliness;

- (8) courtesy;
- (9) communication;
- (10) competence;
- (11) functionality;
- (12) commitment;
- (13) access;
- (14) flexibility; and
- (15) security.

In the next section the service quality criteria used in our analysis are identified in italic type.

Findings

Impact of e-procurement on costs of procurement

Two elements of cost were evaluated in our study: internal (transaction) costs and external purchase cost (price).

We initially encountered some difficulty in identifying a robust figure for the transaction cost per order, with most respondents providing the estimated figures they had used in their business case for e-procurement implementation. Typically pre-e-procurement transaction costs were estimated at an average of £70 per order, which supported our earlier research findings (Croom, 2000). This cost reflects the work content in the stages involved in processing purchase orders including user requisition, supplier search and selection, through to invoice processing and payment.

In order to triangulate the data, we were able to review the analysis undertaken by external consultants into the transactions costs for a public sector body, and in another case we undertook a detailed purchasing transaction cost activity-based analysis for a different organisation. In both cases, a considerable variation in transaction cost was found, depending on a range of factors including the frequency of the purchase, proximity of the user to the supplier, existing procedures across functional departments and complexity of the purchased item. For example, we calculated the transaction cost per order, including commissioning, for desktop computers to be almost the same as the purchase price at £1,038 (the purchase price was £1,100 per computer!). At the other extreme, the transaction cost per order for photocopier paper was £35 per order. We also analysed the average transaction cost per order for the same basket of supplies across five different departments within the same organisation and found that this ranged from £97.60 to £147.50 per order.

In evaluating internal process cost improvements, we identified the main areas of improvement which were found to be relatively consistent across our respondents. Such process savings were achieved through a range of direct improvements in the process such as moving from paper-based systems to

electronic Web-based systems for requisitioning supplies; electronic transmission of orders based on data input by the user (i.e. without further data entry) resulting in few transmission errors (compared to fax or paper-based methods); and electronic invoicing and payment (*functionality and reliability*). This served to reduce the time to conduct the process from an average across our sample of five days to two hours using e-procurement (*availability*).

Many respondents based their calculation of process cost savings on estimates of reductions per order, the average being 60 per cent reduction in cost per order. In our case study analyses we were able to undertake primary data analysis using the same activity-based methodology as above and found the transaction cost per order to range from £8.50 per order for a central government department to £17 per order for a multi-agency body.

Additional internal cost savings were gained through improvements in materials management costs such as the storage and handling of purchased goods. E-procurement leads to changes in users' behaviour; we found that it enabled organisations to consider moving away from high inventories of indirect supplies as a result of a "just-in-case" approach to ordering, towards a leaner, "as-needed", method. Savings made in terms of the amount of inventories of, for example, maintenance supplies led to one large telecommunications organisation reducing its physical stores from five regional warehouses to one national warehouse supported by third party delivery to engineers on a same day/overnight delivery service. The direct cost savings through reduced warehouse facilities was £6 million per annum. Another case organisation reduced the costs of supplies by between 5-20 per cent (depending on the category) and reduced requisition to order acknowledgement cycle time from days to hours. As a direct consequence, not only did this increase internal customer satisfaction but it also provided operational improvements such as reduced inventories of supplies held (sometimes down to zero stocks), significantly reduced paperwork and increased the productivity of clerical staff.

For external purchase cost (price), savings on the price invoiced for goods and services averaged between 16-18 per cent of the previous purchase price, although the range of savings reported in our survey was typically between 10-50 per cent price reductions. Significantly, a number of respondents were unable to quantify the level of price savings attained due to lack of robust management information relating to pre-electronic procurement orders.

Direct price savings arise as a direct result of improved purchasing management information, leading to opportunities for aggregation of an organisation's requirements into large, centralised supply contracts; providing support for variety reduction of products purchased (including pens, desktop computers, air travel); and increasing the richness of data flow between customer and supplier facilitating fewer orders and single monthly invoicing (*communication and functionality*).

In our case research, one large government department had extrapolated the savings from their early implementation to identify a potential for £10 million price savings by 2004, while a manufacturing business had set a target of 18 per cent price reduction for indirect supplies by 2004.

In Table I we summarise the main findings from our investigation into the cost benefits of e-procurement adoption.

Impact on compliance

A major challenge for the control of the procurement of indirect supplies is the high incidence of off-process or “maverick” purchases by employees (Croom, 2000). Such activities include cash purchase of low value items reclaimed through expense systems. One of our case organisations, a large financial service provider, surveyed internal customers and found that “ease and speed of use” (*access and responsiveness*) were the most common reasons why employees preferred to reclaim travel expenses rather than pre-book through the existing travel purchasing office.

Providing employees with access to electronic procurement systems via their personal computers was found to have enabled the purchasing function to exercise greater control over the whole procurement process. E-procurement enabled five main improvements in the procurement process;

- (1) it supported managers’ budgetary control (*functionality and security*);
- (2) it offered robust process performance with fewer failures (*functionality and reliability*);
- (3) it offered far greater transparency and accessibility across the whole process for all stakeholders (*communication and integrity*);
- (4) improved systems reliability ensured compliance to process (*reliability and commitment*); and
- (5) improved management information (particularly transparency of prices) reinforced user compliance (*availability and reliability*).

Table I.
Summary of cost impact of e-procurement

Source of internal cost improvements		Typical external cost improvements
Pre-electronic procurement process cost: £70 per order	Typical process cost reduction (range): 50-75 per cent	Average reduction in cost price: 16-18 per cent
E-procurement process cost: range £8.50-£17 per order		
Process costs (range by participant): £97.60 to £147.50		Price reduction range: 0-50 per cent
Process costs (range by commodity): £35-£1,000		
Process time (throughput time); reduced from average of five days to two hours		
Warehousing costs (case example: £6m per annum)		

In terms of budgetary control the individuals who were responsible for the items now undertook the task of ordering and invoicing. E-procurement provided employees with improved budgetary information through online reconciliation and allocation of expenditure. This ability to control their own budgets while also reducing the burden on the finance department was seen to be a significant benefit. This also led to greater accountability and transparency, as other individuals, remote from the employee, were no longer involved in the process. Employees appreciated the fact they were now responsible and in control of the whole (as they saw it) process.

System reliability was much improved including on time delivery (usually as a result of orders not being combined by a central unit). Mean time between failures (MTBF) of system key requirement (infrastructure reliability) was improved and there was around a 300 per cent increase in speed of response from request to order (process time). Information was also more reliable as employees were able to access, in real time, data on their own transactions.

The organisations reported increased price compliance as the user-friendly single channels provided limitations to pre-arranged suppliers at negotiated prices through consolidation of centralised purchases which also delivered increased budgetary efficiency. However, in a number of cases the impact on budget costs acted as a disincentive. The fundamental concern expressed during our case study research by several departmental managers was that their performance was measured and evaluated according to the size of their departmental budget – it was thus feared that any significant reduction in purchase price would lead to a reduction in the size of their future budget. As a result some respondents viewed with suspicion the fundamental changes needed to ensure compliance and buy-in with the systems. To counter these concerns all our case organisations were actively marketing the benefits of e-procurement to managers of improved control over their department's expenditure and more accurate and up-to-date management information. Further, a number of respondents were exploring the issue of incentives for compliance, including sharing cost savings with user departments.

Benefits for internal customer satisfaction

From our analysis of procurement managers' responses a significant "win" for the purchasing function from e-procurement adoption was the increased levels of employee satisfaction they were able to report. Replacing over-bureaucratic requisition and approval process with rapid IT-based systems have impacted particularly on the internal customer satisfaction dimensions of availability, responsiveness (speed), flexibility (range) and care (faster problem resolution). The importance of good communications was highlighted in two aspects. First, as a critical element of the e-procurement implementation process by ensuring users are kept informed of progress and trained effectively. Second, the use of

e-mail and intranet allowed regular and detailed briefings to be communicated across organisations.

From our analysis of internal customers' perception, they expressed greater satisfaction as a result of their ability to exercise more control over their own budgets as a result of rapid and accurate management information. Direct access to ordering and procurement systems made the process easy for users and stressed the importance of system availability. In all of our case organisations, users had reported that it was quicker than the old process – supporting the findings in the literature on e-procurement process improvements and as illustrated in Table I. Furthermore, the operational improvements in terms of speed of processing (measured from requisition to order acknowledgement) were identified to be the main motivator for employees to use the system. In the early stages of the e-procurement project implementation, scepticism was expressed by employees that they would have to spend more time on purchasing. In the words of one respondent – “if it's not easier and quicker to use, then no one will bother with our e-procurement system”. Paradoxically, although e-procurement involves greater commitment by the user, we found that self-purchasing saved time, as less time has to be spent expediting orders and dealing with queries on advice notes and invoices.

As Evans and Wurster (2001) claimed, the use of information technologies enables far greater information to be more widely distributed, and in terms of the ability to offer access to large catalogues of supplies, the range of products and services available to employees was reported to have provided far greater range flexibility.

One important development that supported higher user satisfaction was the development of helplines (including online, telephone and face-to-face). Typically we found that technical helplines were established to support users in operating the software and hardware. However, a number of respondents had broadened their helpline service to include all matters related to procurement. This was particularly significant in organisations with multiple sites and those with a fragmented user base. The speed of resolution of queries was found to be a critical issue during e-procurement implementation and had both an impact on the relationship with employees and also the extent of compliance by users. We found that one of the most direct influences on speed of resolution was the use of expert frontline help staff. By deploying highly trained staff as the first point of contact a far larger proportion of queries were resolved through a single call (as there is less need for referral) than where junior staff were used as the initial contact point. This highlighted the importance of supporting communication with easy access for users to technical and commercial support.

The final area reported by users relates to what was broadly described by respondents as “cultural shift”. The move to e-procurement had resulted in an explicit focus on internal customer service, through mechanisms such as

newsletters, Intranet Web sites and other internal marketing as well as cross-departmental briefings and presentations. However, satisfaction was not found in all cases. A number of respondents complained that the communications had concentrated almost exclusively on the technical characteristics of the systems and on user training. Almost paradoxically, the response from such users was strong only where they were already technically competent (or "computer literate"). The perception in such organisations was that unless the training was well designed and part of a customer-focused service it acted as a disincentive to the user.

Challenges to internal customer satisfaction

E-procurement, however, was not without its problems. E-procurement usually necessitated new IT systems with the usual implementation problems (see for example Earl, 1993) but also, often representing a significant financial investment. Technical issues of security often presented a problem for both users and suppliers. In attempting to maintain the integrity of an organisation's information networks it was frequently found that "firewalls" prevented the transmission of electronic payment instructions to suppliers over the Internet.

There were also administrative issues such as adherence to the organisation's financial regulations, made more difficult by each department or area's interpretation of, or on occasions disregard for, the organisation's regulations or guidelines. This was extremely difficult, if not impossible, for the organisations to police. The trend towards increasing devolution of budgets to the user department also challenged the authority of the purchasing function to enforce centralised contracts. This, in three of our case studies had led to HR problems as changes in individual's responsibilities resulted in demands for greater pay. Also, now with fixed procurement systems and usually limited suppliers there were cases of disciplinary action being taken against individuals who had chosen alternative products/services or suppliers. We found the issues of accountability and authority as presenting the main internal challenges for the purchasing function as e-procurement roll-out progresses.

Figure 2 Summarises the drivers of internal customer satisfaction.

Conclusions and implications for internal e-services

E-procurement is marking a totally different way of conducting the process of internal supply, primarily as a result of the substantial re-engineering of procurement and management processes attendant on such formalised systems development. This paper has provided some evidence that there is an important issue here for service research, in particular the role and contribution of e-procurement to improve internal customer service, improve compliance and reduce costs.

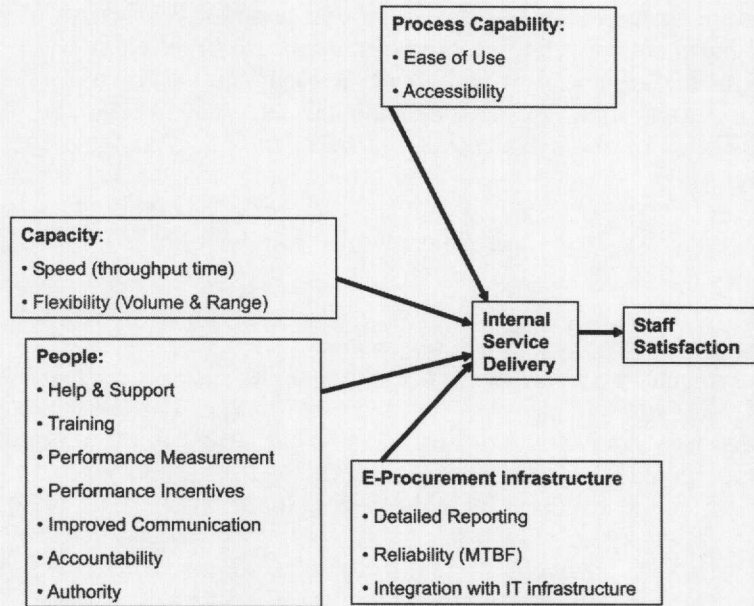


Figure 2.
Key drivers of internal customer satisfaction

In this paper we have identified three main elements of the service characteristics of e-procurement implementation:

- (1) *Cost reduction*: e-service applied to procurement enabled a restructuring of overall costs through the consolidation of centralised purchasing without the need to restrict the supplier base.
- (2) *Process compliance*: the reliability of the process improved through reductions in MTBF together with high levels of compliance and control using help-line support.
- (3) *Customer satisfaction*: the application of e-service to internal purchasing and procurement improved customers perceptions of service – service

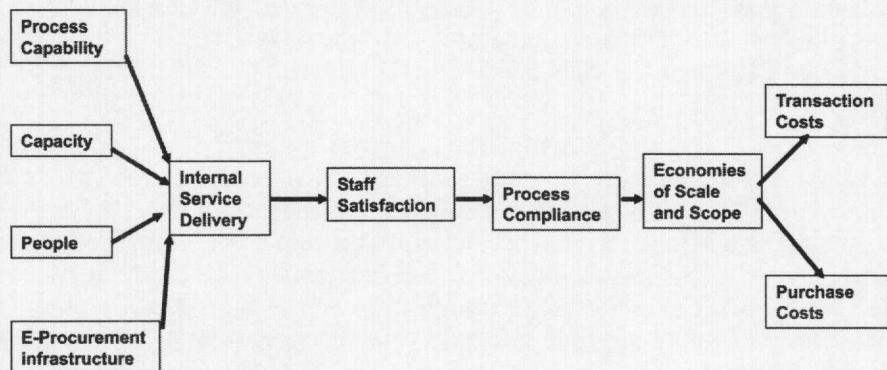


Figure 3.
Causal relationship between internal customer satisfaction, e-procurement compliance and procurement costs

was faster, easier with speedier problem resolution and control of budgets.

Internal
customer service

Figure 3 models the relationships between these three dimensions of internal service delivery, highlighting the central role that internal customer (staff) satisfaction has to play in delivering the operational benefits of e-procurement adoption.

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We have proposed, in this paper, that internal customer satisfaction is determined by the levels of service delivery achieved by e-procurement processes. Internal customer satisfaction is an important determinant of process compliance. Further, we have argued that increased compliance is critical to the achievement of both the internal "transaction" costs and external purchase costs benefits so widely acclaimed for e-procurement adoption. The implications of this research are that greater awareness and attention to internal customer satisfaction are critical for successful e-procurement implementation.

Our research so far has been largely exploratory. In order to quantify the causes, scale and impact of internal customer satisfaction on e-procurement performance, our future research involves further commodity case study analyses involving extensive surveys of internal users and longitudinal observation of e-procurement system deployment in order to model the impact of process efficiency and reliability on internal customer satisfaction. We are also analysing cost improvements in commodity areas in order to undertake comparative analyses between different commodities and usage rates.

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