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INSOURCING, OUTSOURCING AND SERVICE LEVEL MANAGEMENT

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Abstract

This paper describes Service Level Management (SLM) and Service Level Agreements (SLA) noting that there is little relevant academic literature and that these concepts originated in the context of computer services (e.g. banking at ATMs) distributed to users through networks. It recommends that the SLM and SLA concepts be used to formalise any kind of insourcing or outsourcing arrangement. Insourcing denotes a department obtaining goods or services from another department of the same organisation. In Australia at least, outsourcing is becoming more common; perhaps especially because technical advances allow data to be effortlessly, instantly and cheaply transferred amongst organisations. As part of funded research on outsourcing in Australia, we will collect data on the use of SLM and SLAs, delineate their incidence and test simple research questions such as "Do SLAs contribute to participants' perceptions of the success of outsourcing arrangements?"

INSOURCING, OUTSOURCING AND SERVICE LEVEL MANAGEMENT

WHAT IS SERVICE LEVEL MANAGEMENT?

"Service level Management (SLM) is the disciplined and proactive methodology and procedures that ensure that service levels satisfying clients' reasonable expectations are delivered to all classes of users in accordance with business priorities at reasonable cost." (Sturm, Morris et al. 2000) or "the disciplined, proactive methodology and procedures used to ensure that adequate levels of service are delivered to all IT users in accordance with business priorities, at acceptable cost and in line with customer expectations." (www.nextslm.org).

The term Service Level Management has almost always been used to signify a methodology for monitoring, negotiating and improving the performance of network-based computer applications. In this paper we propose extending its use to all situations in which it is desirable for parties to an agreement to supply services to define quality of service (QOS), agree on the service level to be provided, ways in which the service level will be measured and penalties for non-compliance.

Why is SLM important?

SLM is important because the proportion of organizations outsourcing or insourcing tasks is increasing. Gupta(1992), Willcocks (1995) and others have defined outsourcing as passing functions previously performed in-house to outside contractors (the definition should be extended to functions not previously performed in-house). We define insourcing as an agreement for one part of an organisation to provide goods or services to another part. Such an agreement may be tacit or informal but, as will be demonstrated, formalisation is highly desirable. The term sourcing means either insourcing or outsourcing.

Insourcing is obviously common and implicit in an organisation that is divisionalised by function and exploits specialisation. Our research into Information Technology (IT) outsourcing in Australia demonstrates that outsourcing is also common:

> The incidence of IT outsourcing is increasing in Australia, this is exemplified by outsourcing decisions made by the Australian Federal Government (Beer 1999), AMP Insurance (McFarlan and Nolan 1995), Ansett Australia, Mercantile Mutual (Howarth 1999) and three large banks (Commonwealth Bank of Australia, Westpac and Colonial) (King 1998). The financial press has reported that Telstra, Australia's largest telecommunications company, is considering outsourcing its IT function (Connors 2001). In 1998 the Australian federal government unsuccessfully tried to force government departments to outsource their IT requirements. IT outsourcing is a growing Australian industry; Robertson (2001) opines that "Revenue from the Australian outsourcing market was $A1.3 billion in 1997, and projections to 2004 will push it up to $A5.3 billion, an average growth rate of 16 per cent". (Costa and Beaumont 2001)

Other forms of outsourcing are also common; cleaning, supply of components (in manufacturing), call centre requirements, labour, printing, courier and delivery, staff cafeterias, human resource requirements (training, recruitment and payroll) and professional services (accounting, advertising and legal advice) are often outsourced, especially by small organizations. We therefore extend the applicability of SLM to all forms of sourcing noting that, even where the outsourcer's prime responsibility is providing material goods such as raw materials or components, this responsibility is essentially a service: the goods ordered, of appropriate quality, must be delivered to the right place, in correct quantities, at the right time.

There are several reasons why outsourcing has become more popular. This popularity has implications for internal providers of goods and services who must now compete against actual or potential outside providers. The reasons, illustrated primarily by the outsourcing of information technology requirements, include:

Cost Savings

Outsourcing reputedly reduces costs. By having expertise and up-to-date software a service provider may be able to maintain and run an application more cheaply than internal departments (Loh and Venkatraman 1992; Collins and Millen 1995; McFarlan and Nolan 1995; Willcocks, Fitzgerald et al. 1995; Lacity, Willcocks et al. 1996; Lacity and Willcocks 1998). Economies of scale can lower costs; a service provider can supply, run and update the software needed for a common application, classically payroll and share registries (Benko 1992; Currie and Willcocks 1998), and distribute the development, maintenance and running costs over many clients. A service provider may be able exploit a large computer, call center, expensive software or specialist skills uneconomic for a small client (Benko 1992; Currie and Willcocks 1998). Goods can be obtained without incurring a setup cost.

Risk Avoidance

By purchasing services (or goods) at a fixed cost per transaction (unit), a client obtains insurance against cost variation (as well as the goods or services) from the service provider. A firm may prefer to contract out an activity at an agreed price rather than try to ascertain in-house costs, cope with possible variations of in-house costs or manage possible disruptions such as a disruptive malfunction of its own systems; it buys insurance from the service provider. A corollary is that the service provider's incompetence may disrupt its client's business (Benko 1993).

Concentration on Core Activities and Competencies

Outsourcing supposedly allows managers to concentrate on their organisation's core businesses. A manager my feel unable to competently manage a specialist function (such as IT or legal services) or recruit specialist skills, to do so entails learning about and keeping up-to-date with unfamiliar disciplines. It is rational for managers to exploit competencies based on their experience and knowledge, contracting out activities in which they are less competent. Service providers claim they can supply expertise and state of the art technology (Benko 1993), eliminate problems associated with technological obsolescence (Gupta and Gupta 1992), and increase the flexibility and quality of IT services (Antonucci, Lordi et al. 1998). Service providers generally promise to manage the functions that cannot add value internally, allowing management to focus on central strategic business issues (Prahalad and Hamel 1990; McFarlan and Nolan 1995; Willcocks, Fitzgerald et al. 1995; Benson and Ieronimo 1996; Lacity, Willcocks et al. 1996; Caldwell, B. and McGee 1998; Di Romualdo and Gurbaxani 1998).

Avoidance of Cultural Problems

An effective IT department may have to have a culture that is different from that of the rest of the organisation. Effective systems analysts have to be willing to dispute managerial fiats and make suggestions that threaten jobs and hallowed assumptions. Jealousy may arise because young and articulate computer staff may enjoy anomalous working conditions and enjoy salaries that are high compared with those in the rest of the organisation. Outsourcing may ameliorate these problems. "Cultural differences can often cause friction between IT and management" (Williamson 1997).

Better Measurement

Contemporary Information Technology has probably made it easier to measure precisely (but not necessarily accurately) the costs of internal operations such as selecting and inducting a new employee or preparing a customer statement. Although such costs may be stated with precision, their accuracy may depend on courageous assumptions about the way in which overhead costs are distributed amongst departments, activities and time periods; and the estimation of intangible costs. Nevertheless, if management has ostensibly reliable estimates of the costs of internal activities, these will be used to compare insourcers with outsourcers.

Technology

The most compelling reason for outsourcing services comprises the increasing capabilities of Information and Communications Technology (ICT). ICT makes collecting, storing, transferring, sharing and analysis of data much quicker and cheaper. It is much easier to transmit, for example, payroll data to an outsourcer, for the outsourcer to update employees' bank accounts, send reports the tax office and send reports to the organization. The outsourcer is not geographically constrained and may be located where relevant costs are low.

Outsourcing has some disadvantages.

Loss of distinctive competencies

Outsourcing the intellectual or other skills underlying a distinctive competence may be bad strategy. A bank that outsources the development of software driving its automatic telling machines (ATMs) may advantage competitors or create new competitors. The skills and knowledge accumulated by the contractor might be applied to the development of a competitor's like application. Although confidentiality agreements prevent copying code written for one bank being used elsewhere; the experience gained will make developing the second bank's application much easier and quicker. If the service provider's employees disperse, it may be difficult for the first bank to enforce confidentiality.

The bank may become dependent on the service provider (Earl 1989), it may be impractical to transfer the provider's knowledge and skill back in-house and the service provider may use its monopoly power to demand a high price for changes such as making systems year 2000 compliant (McFarlan and Nolan 1995). It may be impossible to keep some commercial secrets from a service provider intimately involved in core activities and the service provider may be able to identify and recruit its client's best staff.

Change and Cultural Problems

Outsourcing may create change problems. If an in-house function is outsourced, staff may be forced to adopt new work methods. Outsourcing a function may imply dismissal or redeployment of employees, changes in the work they do or their transfer to the service provider's employment and its different conditions (Antonucci, Lordi et al. 1998), (Caldwell, Bruce and McGee 1996).

It may be difficult to ascertain all the functions that a group fulfills. Over time a group may come to supply informally vital but undocumented services (such as after sales support) to other groups or customers. Outsourcing the formally recognized functions and disbanding the group may mean that unrecognised but vital functions are not performed.

Antonucci (1998), Meyer(1999) and Tauhert (1997) emphasise the need for a cultural fit between the parties. Clark (1998) opines that "Equally important, the delivery team must understand and adapt to your organization's culture".

Ascertaining costs

It may be difficult to quantify all the costs relevant to an outsourcing decision. It is notoriously difficult to allocate the costs of internal IT amongst individual applications or to quantify the fixed and variable components. The cost of co-ordination with an outside supplier may be greater than co-coordinating internal departments' activities (Hoffman 1997), and some costs of change may be intangible. Clients may be ignorant of service providers' cost structures and thus find it difficult to ascertain whether they are paying excessive fees.

Other Factors

There may be other, ostensibly irrational, influences: the current Australian government has an ideological commitment to outsourcing, opining that the private sector is intrinsically more efficient than the public sector (Beer 1999). The Kennett government of Victoria (Australia) forced local governments invite tenders for work formerly done in-house. Like TQM and BPR, outsourcing might be a managerial fad (Loh and Venkatraman 1992, p 340; Shapiro 1995) for which enthusiasm may fade. Outsourcing may be a cosmetic avoiding head-count limitations or converting a capital expenditure into a continuing expense. Tariffs levied at national boundaries and cultural and language differences used to protect some kinds of industries from competition. Increased competition may have forced some organizations to turn to outsourcing to reduce costs.

Insourcing and Service Levels

The role of Information and Communications Technology (ICT) in the organisation exemplifies the changed role of insourcing. Earl (1989, p 6) suggests that a firm's IT function may evolve through four stages only two of which are relevant here. In the Support stage the IT department's activities are not time-critical; it produces printed reports. In the Factory stage, the firm is running applications on-line and downtime will have a disastrous effect on cash flow and reputation. Even if the application is up and working, the service IT is providing to the organisation may not be satisfactory; the response times may be excessive, the system may not reflect the firm's expressed policy and the system may not be secure. Similarly, service departments such as Human Resources will usually have an explicit or implicit agreement to fulfill internal clients' requirements professionally and competently. HR should fill vacancies in reasonable times, ensure that shortlisted candidates have appropriate qualifications and provide appropriate career advice and training. We assert that the Service Level Management (SLM) concept espoused by Sturm (2000) and Lewis (1999) for IT systems based on networks can and should be applied more generally; to internal and external suppliers equally and to the supply of both goods and services.

Past Work

There is little academic literature on SLM; it is an emerging discipline almost totally confined in application to computer networks. There is a plethora of short reports on SLM most of which discuss the basic concepts, stress the subject's importance and compare SLM software packages. Sturm (2000) and Lewis (1999) are the two standard texts; the former canvassing business issues (especially Service Level Agreements), the latter having a more technical emphasis. The website www.nextslm.org lists relevant monographs and papers, templates for drafting a service level agreement, links to vendors' web sites and a discussion group. Almost all literature (except where noted) comprises discussion of SLM in the context of networks. Wexler (2001) defines quality of service (QOS) and discusses its importance. Computer packages that monitor a network and measure various aspects of its performance (e.g. security intrusions, response times and equipment utilisation) are discussed by Clark (2000) and Mier & Percy (2001). Definitions of Service Level Agreements, their advantages and disadvantages are given by Hayes (2000) and Beck & Allegretti (1999). Blacharski (2000) gives a lucid account of SLAs, giving the technician's and user's perspectives and rightly stressing that many technical measures of network performance are but indirectly related to the network user's experience. DeNoia (2001) notes that e-business depends on networks and their performance. Bissel & Bogen et al (2000) give a more technical proposal for evaluating the QOS provided by a networked application. DeNoia (1999) explains how network managers can use SLM to move from "management by crisis" to rational management. Coombs and Evans (2000) report on use of SLAs in the outsourcing of services by Great British local authorities.

Examples of SLAs outside IT are rare, two examples are described at
http://www.dpb.nhs.uk/publications/archives/annualreview/ar97-98/ar97-984.html, and
http://www.adm.monash.edu.au/procserv/suppliers/Copiers/Minolta%20SLA.html.

Parties

It is necessary to define the parties relevant to SLM; they are:

Provider: The organization supplying goods or services, typically the IT department or outsourcer.
Client: The department buying the insourced or outsourced services.

User: The person, internal or external, using the service: the clerk or manager using a report or person using a bank's ATM network maintained by a provider.

The Importance of SLM

Professionalism

The fundamental advantage of SLM is that it enables the provider (internal or external) to create and maintain a professional relationship with the client. No sane organisation would agree to purchase goods without specifying their quality, delivery arrangements and price. We assert that, when acquiring goods or services from an internal or external supplier, the principles of SLM should be applied. The principles comprise deciding on the requirements, negotiating a service level agreement (SLA) and monitoring the supplier's performance. Sturm & Morris et al (2000) properly opine that not to have an SLA with an outside supplier is "unconscionable" and "gross negligence".

In IT, SLM is attracting more interest (Blum and Kaplan 2000). Initially networks (e.g. ATM) were such strategic triumphs that their cost and performance were not scrutinised; IT bewildered most clients, they lacked the knowledge or confidence to confront IT technicians (who were grappling with a technology that was not fully understood, predictable or able to be routinised). Now networks are a routine and vital part of business and clients, more computer literate and confident, are able to join IT specialists (themselves more business oriented) in debate.

The IT discipline is maturing; it is no longer adequate for an IT department (or any service department such as Human Resources or Purchasing) to respond to users' requests with "Join the queue." or "We are working on it." The essence of professionalism is to undertake to complete a task competently at an agreed cost within an agreed time.

Entering into an SLA has many other benefits for all parties. Some of these are (Sturm, Morris et al. 2000, p 16-18):

Creating client satisfaction by meeting agreed targets. An SLA forces clients to codify their requirements, thereby improving the supplier's understanding of them. Agreement on targets will prevent "expectation creep": the assumption that services will continually improve.

Efficient resource allocation. There is a playoff between the level of service desired and its cost. During negotiations, a call centre operator might point out that responding to all calls within 30 seconds might be four times as costly as responding to most of them within a minute. Negotiation forces clients to appreciate the costs of their requirements.

Professional interaction with clients. If the HR department can demonstrate that it has fulfilled its agreement to recruit and train salespeople, its reputation and ability to market itself to other internal clients (perhaps in competition with outside suppliers) is enhanced.

Cost Control. The SLA process forces suppliers to analyse their costs and forces both parties to think through the effects of the business growing or changing.

MEASURING SERVICE LEVELS

The criteria by which service quality is judged vary with the goods or services being delivered. These criteria may be tangible or intangible, it may be difficult to measure some important attributes and users' perceptions of and reaction to some criteria vary with their moods and circumstances.

Commodities such as steel and cement have tangible criteria: Questions such as "Were the agreed quantities delivered to the right place in the right quantities at the right time?" and "Is the material of requisite quality?" can be answered objectively. Measuring the skills learnt on a "Negotiating Skills" workshop is more difficult; a pencil and paper test mark may poorly reflect face-to-face performance. Measuring the response time users experience when using a computer network is technically difficult (and varies with time of day and day of week, the number of people trying to use the system and outages). Users perceive response times and react to slow responses in different ways: a person facing a deadline may explode, a phlegmatic colleague may simple turn to another activity.

The criteria underpinning a SLA vary with the kind of activity sourced. For a recruitment function criteria might comprise the client being presented with a shortlist of three people all meeting the formal requirements within one month of notification of the vacancy. For a computer network criteria would include:

- The system working according to specifications
- Availability: the system is working during the agreed hours and is accessible from agreed locations.
- The response times being no greater than was agreed.
- Security: the system is not penetrable by unauthorized users and client data is kept confidential.
- User friendliness: the system is easy to learn and use.

QUEUES

There are persistent user complaints of long waiting times experienced when trying to obtain service at call centres and of long queues at checkouts and banks. The creation of queues is not deliberate (consumer groups have darkly suggested that banks deliberately understaff branches to drive customers to Automatic Telling Machines); queues are inevitable when demand is stochastic. Naturally, long queues for emergency services are intolerable and can only be avoided by providing ostensibly excessive capacity.

Consider an ATM at which a user arrives on average every minute and takes on average 48 seconds to complete a transaction. The traffic density (ρ) is 48/60 = 0.8. With simple assumptions the system will be idle 20% of the time but the average number of people in the system will be 4. This seems paradoxical but, if you observe an ATM, you will see that the queue length is extremely variable. If the time to complete a transaction was increased from 48sec to 54sec ($\rho = 0.9$) the system will be idle 10% of the time and the average number of people in the system will be 9. The essential point is that the operator in a call centre or supermarket can be idle 10% of the time and yet there can still be long queues. The simple case presented is a worst-case scenario; in practice queue lengths are shorter because the model's pessimistic assumptions (random arrivals and random service times) do not hold; users do not join a long queue; and the playoff between operators' idle time and queue lengths is less sharp if (as in a supermarket or call centre) there are several operators.

However, queuing problems are exacerbated because demand varies. Sources of variation include day of week and time of day and industry specific causes (holidays for travel agents, special events for booking agents). It is difficult to handle variation economically, workers must typically be employed for at least four hours; a wasteful way of coping with a lunchtime peak. An advantage of national or international call centres is that meeting demand from several time zones evens out loads.

Inventory management also exemplifies queuing. If demand is stochastic, it is prohibitively expensive to maintain enough stock to fulfil immediately any conceivable demand. The sum of stock-out, holding and ordering costs should be minimized.

SERVICE LEVEL AGREEMENT (SLA)

The SLA (the core of SLM) is a document in which provider and client formally agree on the scope and level of services to be provided. The negotiating process preceding and content of the SLA are well documented in Sturm and Morris (2000, pp 58-75); we stress a few points.

The nature of the contract depends on the relationship between the parties. There is a spectrum of business relationships ranging from strictly arms length to close partnership (an integrated and co-operative relationship). The former may be appropriate in near-perfect commodity markets, the latter when companies form a partnership engaged on a common task such as software development (Fulcher 1998; Berendt 1999) or when both parties are internal. Agreements should recognise that the parties intend to co-operate and are entering into a long-term, mutually profitable relationship. However, especially when outsourcing (not insourcing) caution is appropriate: Australian law at least does not recognise partnering arrangements.

If the intent is to reduce headcount, it is very important to document all activities done by the people eliminated. Some companies, after outsourcing, have discovered that vital processes that used to be performed by people dismissed but are not specified in the SLA are no longer performed.

Sturm and Morris (2000 pp 68-71) amusingly recommend that penalties for non-fulfilment be symbolic and embarrassing rather than financial. Imposing heavy penalties on a supplier will not foster co-operation or the supplier's viability.

The supplier's performance should be monitored using agreed measures of performance.

CONCLUSION AND PROPOSED FUTURE RESEARCH

Information and Communications Technologies (ICT) make it much easier for organisations to share data and compare internal and external costs. These new reasons for insourcing and outsourcing augment extant reasons such as obtaining economies of scale. Especially as more "core" activities are candidates for sourcing, it is "unconscionable" to insource or outsource tasks without specifying and monitoring the quality of the work done. The SLA is the appropriate tool for doing this. There is little literature on or evidence of the use of SLM or SLAs except in connection with computer networks. We assume that industry must use the concept but know it by another name.

We have obtained funding to investigate the use of outsourcing by Australian organisations; a large consulting firm is supporting this research. A survey of outsourcing practices applied to Australian companies will include questions on their use of SLM and SLAs.

We want to ascertain basic information: how formal the arrangements underlying sourcing are; the balance between co-operation and contractual obligation; how performance is monitored; how the success of sourcing arrangements is measured and how successful these arrangements have been; how the parties adapt to changing requirements; and how disputes are resolved. We will collect assessments of the success of sourcing arrangements and test the hypothesis that sourcing success is correlated with having a formal agreement and the degree of cooperation.

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