Abstract

Advice for manufacturing companies to increase their attention to opportunities downstream of production had grown loud by the mid 1990s. Accompanying this advice lay warnings of generic, implementation issues to be addressed in the journey downstream - new marketing and commercial capabilities to be acquired; fresh perspectives on appropriate performance measures; new relationships with customers; and adopt and nurture a service culture and supporting processes.

In this exploratory paper we gather and critically analyse the increasing volume of research on servitization strategy implementation from the operations, marketing, and
service literatures to summarize and structure current knowledge on the barriers to servitization for manufacturing companies. Contingencies like company size; competitive situation; and the extent of services provided were studied, however, the range of available research was not yet sufficient to draw useful conclusions. The paper therefore concentrates on identifying, assembling and structuring generic barriers to the implementation of servitization strategies from research over the last twenty years to provide researchers and practitioners with an appreciation of the wide scope and implications of a servitization strategy.

Introduction

In this paper we assume that the motivation to initiate the development and implementation of a servitization strategy has already been established. Guidance on the benefits and feasibility of this strategy has been discussed widely (Vandermerwe & Rada, 1988; Matthyssens & Vandembempt, 1988; Anderson & Narus, 1995; Wise & Baumgartner, 1999). The decision to begin may be the logical first barrier to implementation, however our focus is on the process of implementation of servitization strategies. Thus the initial decision is less important to us than any subsequent questioning of the strategy as economic and other realities emerge en route.

To structure these barriers it is necessary to define a path or route to different levels of servitization and we have used Oliva & Kallenborg’s (2003) work for this purpose, see Figure 1. Their route is not necessarily comprehensive, as Oliva & Kallenborg

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1 A term first used by Vandermerwe & Rada (1988) to describe the trend whereby customer-focused services are bundled and added to traditional offerings of manufacturing companies.
Figure 1: Servitization route map, based on Oliva & Kallenborg (2003)

acknowledged. However, this route has the benefit of being empirically derived and frequently cited.

Their study of 11 large German capital equipment manufacturers’ entry into servicing their Installed Base (IB) identified of four transitions, see Figure 1. The first transition moved the firm’s service offering from an unconsolidated group of services, spread across the organization, to a consolidated Service organization. The second transition concerned an initial entry into the IB market. The third transition involved expanding services in the IB market. This expansion might be in one or two separately identified directions to a third state. One possibility was expanding service in a product sense leading to product centred contracts on availability and response time in case of failure. Pricing of such contracts was based on the service provider’s knowledge of failure risks. Alternatively expansion of services led a state concentrating on process-centred services where the integration of its equipment beneficially in the customer’s value stream was the objective. Here the focus of the contract was on the equipment’s
fit with the user’s particular process and strategy. The service provider moves to become a solution provider, comparable to a professional services provider.

Taking over the end user’s operations – the final transition – finds the supplier taking on entire responsibility for the end-users’ process. Their sample had no firms operating at this level, but Oliva & Kallenborg (2003) speculated this could only occur when a company was firmly established in the maintenance and professional services market.

The remainder of this paper uses these transitions to locate the barriers to implementation, and ends with a discussion and suggested research areas.

1.0 Transition 1: Initial consolidation of services

In Oliva & Kallenborg’s (2003) sample, the most successful firms underwent this step by drawing together the service aspects of the business under one roof. The services involved may consist of a wide range of activities in excess of installation, spare part provision and maintenance activities. There may be laboratory, transportation, field problem resolution (Chase & Garvin, 1989), financing, and customer training services, embedded in the Finance, Engineering, Manufacturing, Quality and HR organizations. This move provides clarity of the value and scope of service operations and a focus for service improvement. Indeed the driver for this step is often a need to improve service performance and results in additional measures of service quality and service cost. Early in this stage the value of services to the company is not appreciated since the service activity often operates as a cost centre. As the full service picture emerges, practices that undervalue service activities like offering free installation as an incentive (and subsidy) to a new product sale become questioned. As service management look for growth from the Installed
base rather than new product sales the status of the service organization as a profit centre becomes an issue.

Up to this point there are few barriers to progress, the service organisation will have imposed more data requirements on the sales force in areas like installation requirements like access to services in order to more accurately estimate and control installation costs (Mills & Platts, 2003). But sales’ incentive schemes will not have been affected, indeed the consolidation stage, with the Service organization as cost centre may be seen as a logical and sensible action across the business.

Transition to the next stage changes relationships within the organization as a whole since it affects the nature of individual tasks and incentives.

2.0  Transition 2: Entering the installed base

The decision to pro-actively service the IB has significant economic, organizational / behavioural, and implementation implications. This section is arranged in that order.

2.1  Economic implications

The decision to enter the installed base market may not be wise for all products (Wise and Baumgartner, 1999). In a yet to be published empirical2 article on global trends in servitization (Neely, 2007) one conclusion stands out:

“While servitized firms generate higher revenues they tend to generate lower net profits as a % of revenues than pure manufacturing firms. The reasons for this are that servitized firms have higher average labour costs, working capital, and net assets. And they appear to be unable to generate high enough revenues or margins to cover the additional investment they have to make over and above the investment needed for pure manufacturing firms.”

Neely, 2007, p26

2 Data are drawn from the OSIRIS database on 10,078 firms incorporated in 23 countries.
However, this research also shows the wide variety of services manufacturers offer and the author suggests it may be possible that particular portfolios of services in particular markets enable firms to move more profitably up the value chain. And the regularity of service income compared with new sales revenue can also be considered a valuable stabilising effect. (Anderson & Narus, 1995; Knecht et al, 1993).

Entering the installed base inevitably requires investment if only to service an increased geographic footprint, let alone the encroachment on or acquisition of existing providers. Gebauer et al (2005), in a study of thirty equipment manufacturers, identified what they termed a “service paradox”. In one sub group of the firms studied substantial investment in entering the IB market led to increased service offerings, higher costs and below expected returns. By comparing this group with more successful servitizers they concluded the reasons for the paradox lay in three areas:

- Cognitive phenomena limiting managerial motivation
- The implications of changes in organizational structure
- Management of a complex implementation process

### 2.2 Behavioural and Organization effects

This section is divided into two parts suggested by the literature, managerial cognition and the implications of organizational change:

**Managerial cognition:** Gebauer et al (2005) point out that strong managerial motivation is necessary to support the scale and complexity of change towards servitization. Using Vroom’s (1964) theory of motivation as the product of how much an individual wants a reward (valance), their estimate of the probability that
effort will achieve successful performance (expectancy) and their estimate that performance will result in receiving the reward (instrumentality), they show that all three factors are influenced negatively in a servitization context by classic cognitive biases, they contend that:

“The overemphasis on obvious and tangible environmental characteristics (Kahneman et al, 1982), explains, for example, why managers do not place a high valance (reward) on extending the service business, thus limiting the investment of resources in the service area. Scepticism of the economic potential explains why managers underestimate the probability that their efforts will result in successful performance. Risk aversion (Kahneman et al, 1982) limits managerial expectations of estimating accurately that (successful) performance will result in the rewards” Gebauer et al, 2005, p 17

Further, behaviour aligning with such assumptions can become a self-fulfilling prophecy. Low investment leading to low performance creating further scepticism of economic benefits and exaggerated perceived risks thus leading to further low investment.

Organization change: Research to date is unanimous on the necessity to make the Service organization an independent profit centre (Donaldson, 1995; Knecht et al, 1993; Oliva & Kallenborg, 2003; Gebauer et al, 2005). There are several reasons for this conclusion:

• The consolidation enables the service business to be untangled from the new product sale to produce a service price list (Knecht et al, 1993; Anderson & Narus, 1995), and thus a realistic set of incomes and costs. Equipment sales executives can discount the equipment price but not the installation or service contract prices - the service division must control this.
• It enables the benefits, status, and importance of the service business to be recognised within the company. This is important to tackle other human issues in a traditionally product focussed business. For example, with its focus on old equipment, an after sales business starts with lower status and initially may fail to either attract the best staff or have good staff directed toward it (Knecht et al, 1993).

• The profit centre organization acts as a shelter for the development and support of a service culture (Oliva & Kallenborg, 2003). There is much written about service culture and behaviours and the contrast with a manufacturing culture (Anderson et al, 1997; Bowen et al, 1989; Bowen & Ford, 2002) but it is in tangible examples of good service that the essence of a service culture can be discerned. Consider an engineer on a repair visit – s/he has two problems to solve (Seely Brown & Duguid, 1991). First fix the machine, a technical problem. Second, tackle any frustration created by the breakdown – a social repair involving the reputation of the product and the company. This might consist of advice on how to maintain the machine – perhaps a training session for the plant’s engineers, or would a service contract be appropriate? Particular skills are required to react appropriately in these circumstances - skills that must often be targeted in the recruitment process and developed over time.

• Finally, the service profit centre is the place to develop the service business strategy. It is not often understood that the service business needs an adapted set of systems and procedures that the product business already has, for example:
Dedicated sales force, service technicians and appropriate incentive systems (Oliva & Kallenborg, 2003).

A service development process, underpinned by its own marketing resources (Gebauer et al, 2005).

Information systems and metrics particular to its task - customer satisfaction data; data covering customer equipment age and service history, contacts, spare part stock levels etc. (Knecht et al, 1993)

Recruitment processes, training packages and facilities appropriate to its task (Mills et al, 2003)

Finally, an explicit service strategy and implementation plan, with realistic goals (Gebauer et al, 2005) and a recognition that much of this plan will be about building, importing and sustaining new skills.

2.3 The implementation process

Previous research implies that the implementation of a strategy to enter the installed base business is complex for three main reasons: first because the scope of the knowledge and skills to be developed is wide. Second, even with a profit centre organization, support function services like Purchasing, HR and Finance need to be persuaded to adapt from the embedded mindset and systems of a traditional equipment supply business to understand and respond to service needs. Third, because some of those adaptations will be politically sensitive: for example, incentive systems and traditional management control metrics. By and large, people do what they are paid to do. Those in sales are no different. Bonuses based purely on sales value are to be avoided in a service provider (Anderson & Narus, 1995), better to include improvements in operating profits and customer satisfaction into sales.
compensation packages. The traditional internal efficiency metrics applied in manufacturing are inappropriate for many service activities (Gronroos & Ojasalo, 2004) when the customer is often involved in the production of the service and the customer can perceive a change in the quality of a service simply from a change in server. Moving away from traditional incentive and performance systems can be deeply disturbing for individual workers and senior managers.

A servitization strategy also implies close coordination between the original equipment and after-sales markets, avoiding the temptation for rivalry between the two organizations and confusion for the customer (Knecht et al, 1993). So, for example, the demarcation point where equipment sales hand over to service must be clear and well in advance of installation (Knecht et al, 1993).

It seems, from the equipment manufacturer studies by Oliva & Kallenborg (2003) and Gebauer et al (2005) that firms can be more or less successful in implementing their entry into the installed base and that entry is often a slow process of trial and error especially in surmounting these internal barriers to profitable and growing services. In the main companies appear to face more internal barriers than barriers from the market. Though existing service providers may provide difficulties, for relatively straightforward maintenance / installation / design and support services the customer will recognise the legitimacy and potential advantage of dealing with the manufacturer as service provider. For example, customers may infer that access to spare parts may be more certain when the manufacturer provides service. Thus while this transition may be time consuming and evolutionary senior managers have the potential to control the firm’s success at developing the range of skills, measures and processes necessary to provide good returns and high customer satisfaction in the IB.
3.0 **Transition 3: Expanding services to the IB**

Oliva & Kallenborg (2003) distinguished between two expansion routes;

- Expanding to relationship-based services
- Expanding to process-centred services

There was no evidence to indicate whether one or the other might be the first priority; a sequential strategy was advisable (Oliva & Kallenborg, 2003). The order is most likely to be set by the attitudes of clients in the particular IB.

This progression to the next phase implies a readiness to share risk with the customer - in the case of availability contracts and/or to increase skills in interfacing the equipment into the rest of the customer’s process and deepening the relationship with the customer. Here success relies not only on the service firm’s technical performance but on the customer’s readiness to move in these directions, for they imply significantly closer relationships with the supplier and other actors in the network required to provide the customer with an integrated solution (Foote et al, 2001).

### 3.1 Expanding to relationship-based services

In this transition the supplier is willing to move from a transaction based to a relationship based interface with the customer. The supplier charges a fixed price to provide specified services over a set period rather than charging for each service event. The supplier takes on the risk of equipment failure, establishing contracts that offer a set level of operational availability, often combined with a specified response time in the event of failure (Oliva & Kallenborg, 2003). It is the notion of availability that enables the customer to evaluate the value or worth of the supplier’s offer.
compared to their current internal and external costs of ownership. And the profitability of an individual contract is largely dependent on the supplier’s assessment of failure risk. The supplier thus needs to assemble failure data as a priority and develop scripts to sell their offer to an enhanced and more senior group of stakeholders in the customer organization. Philosophically however, this transition remains product-centric, as Mathieu (2001) asserted this increased level of service is directed toward the product and the intensity of the ongoing relationship between supplier and customer stakeholders will increase but remain at a low level. Indeed the temptation for the supplier is to standardise this offer in search of scale economies (Oliva & Kallenborg, 2003), in effect converting the service into a “product” through its lack of customer specificity (Mathieu, 2001).

3.2 Expanding to process-centred services
In this transition the focus of the value proposition moves from the product’s operational performance to the product’s efficiency and effectiveness within the customer’s process (Oliva & Kallenborg, 2003). The product becomes part of the service offer (Mathieu, 2001; Oliva & Kallenborg, 2003) and the recipient of the service offer is the customer not the product. The services implied in this transition are highly customer specific, related to the particular requirements of the product in the customer’s context. Mathieu (2001) deliberately used the term ‘client’ instead of customer to emphasize a major change in the relationship, ‘client’ implied a professional, expert service provider capable of providing confidential advice, attention, and support. The technical quality of the product might even become a hygiene factor in some contexts, for the client is looking for a ‘solutions provider’ (Galbraith, 2002; Davies, 2004; Davies et al, 2007; Windahl et al, 2004).
The challenges to making this transition are wide in scope and time consuming to achieve. New capabilities are required in four domains (Windahl et al, 2004):

1. Technical & application
2. Partnering and networking
3. Systems integration
4. Market / business and consulting

Their acquisition increases the scope of the company, perhaps by too much and companies reaching this far toward the client need to outsource non-strategic manufacturing activities. Davies et al’s case studies (2007) of Alstom Transport (Rail), Ericsson (Telecoms), and Thales Training and Simulation (Flight simulators) certainly indicate that possibility is real since all these companies relinquished significant but non-key manufacturing activities in their drive toward the customer.

In this paper the Partnering and Market/ business and consulting domains will be discussed since they are the most generic:

**Partnering & Networking:** Partnership with the customer may be the most obvious capability development but researchers are increasingly realising that is a very limited view of the partnerships a solution provider must enter. Windahl & Lakemond (2006) emphasise the importance of partnerships within the solution provider, with the customer and with other organizations necessary to produce the solution. Ehret (2004) points out that the most brilliant Customer Relationship Marketing (CRM) can be undermined by architectural changes in the solution space. Christensen’s (1997) work on architectural innovation in fast moving technologies
provides clear evidence for this. An awareness of the need to understand innovation in the solution space is the driver for establishing relationships with other actors and vital to be able to offer the most appropriate solutions. An appropriate solution for the client is the key goal of a solutions provider - the client relies on that and trusts them to perform. It would be unusual if some of those solution space relationships did not include competitors. Galbraith (2005) described IBM supplying Sun and Hewlett Packard servers to a customer to the detriment of the IBM server business. Why? The competitor equipment was, in this instance the best for the customer but it also, in a direct way, provided the customer with evidence that their trust was being repaid. Even more difficult (Foote et al, 2001) is the need to share closely held design and/or financial data with partners and be honest about one another’s performance. It is illuminating to view these partnerships from the customer’s perspective and perhaps two themes emerge from the literature but remain largely un-addressed.

First, how can a customer be assured they are being provided the right solution? Second, how can a customer, used to taking product from the solutions provider and developing their own critical services with embedded experts, staff and hardware, overcome that history and move to outsourcing. Both are key to solutions providers and Foote et al (2001) even suggests that changing the basis of relationships with traditional clients may be so difficult that it is new clients without that baggage that should be preferred, this has been especially so in information technology and communication services provision. To illustrate the nature of the solution provider - client relationship, Helander & Moller (2007) assert that the solution supplier’s top management and client peers must interact on the sensitive out-sourcing of key
functions and co-development and management of solutions over the long term, in other words the strategic direction of each partner must be shared.

5.0 Taking over the customers operation

Oliva & Kallenborg (2003) found no companies in their sample that had made this step. However, there are examples - Dupont’s car painting program with Ford (White et al, 1999) Boeing’s many logistic support contracts with the American DOD, (Boeing website). Note that taking over the customers’ operation may be more or less strategic. The Ford - Dupont example certainly is strategic but examples like Coro Inc’s (owned by Herman Miller) provision of complete services for Herman Miller provided furniture (White et al, 1999) to the Fortune top 1000 firms is not.

We found little in the literature to describe barriers in this transition especially from companies who had risen from a manufacturing base. Indeed the Coro Inc example might indicate that an independent company, owned by the manufacturer (Herman Miller) may be required to put sufficient focus on service provision to achieve this status.

Speculating for capital goods manufacturers, this state of complete takeover of a client’s operation implies significant research on their behalf into their core processes and very high levels of trust. More likely some key partnered activities will be necessary that ensure the client can assess the services offered to make sure the supplier acts in the interests of the client.

6.0 Summary, discussion and further research

This paper shows that the barriers to the implementation of servitization strategies are significant in terms of their variety and scope. Establishment in the IB of its own
products faces few external barriers but significant internal barriers in adapting to a service culture and mentality (extending to service competitor equipment may provide more competitive reaction). However, expanding from basic services toward product availability and/or client centred services, implies another set of internal issues. These moves further stretch the scope of the company downstream a frequent result finds the originally manufacturing-focused company relinquishing some manufacturing activities (Davies et al, 2007), changing its priorities, its organization (Davies et al, 2006) and its power structure.

Concentrating on the barriers to implementation may provide a pessimistic view of such servitization strategies, however, what is clear is that the degree of success in implementation will be highly company specific. The rate of implementation is likely to be dependent on the clock-speed (Fine, 1998) of the product or solution space. Companies like Ericsson and IBM have had to move very quickly to maintain profit levels since pure service providers like Cable & Wireless can provide solutions by choosing the most appropriate equipment available in a world of standard rather than proprietary interfaces. The capital equipment market for process machinery has a much lower clock-speed and fewer standards so a slower evolutionary approach is sustainable. However, such companies need a little less trial and error and much more understanding of and readiness for the implications of servitization.

As well as increasing our understanding of the servitization phenomenon, future research should focus on providing companies with implementation approaches and decision support tools that reduce trial and error, assess and react to the key implementation issues in a particular context and phase the implementation plan accordingly. Academically this implies a multidisciplinary approach, drawing on
research from marketing, organization design, behaviour and psychology, operations management, economics and systems integration. Particular efforts are necessary to support culture change and the development of trust in the networks between solution providers, their clients and other organizations in the solution space.

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References


