AFTER SALES SERVICE IN UK MANUFACTURING

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Acknowledgements

1. INTRODUCTION

This is a report based on a questionnaire survey carried out between September and December 1987. The questionnaire was developed from an earlier survey in conjunction with a number of interviews with Service Managers. The report basically follows the form of the questionnaire.

The questionnaire was sent to Service Directors, and therefore some answers may be slightly biased!

The motivation for the report comes from a realisation that After Sales Service or Product Support will have an increasing importance in an integrated company offering to the market and a desire to understand how managing the detail service operation enhances the customer's opinion of the company.

2. SURVEY PARTICIPANTS

The response rate to the questionnaire is shown in Figure 1. In total, some two hundred replies were received.
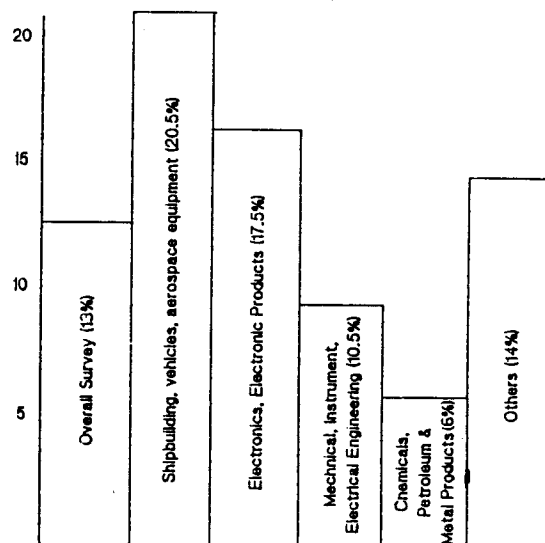
Figure 1: Survey response rate by Industry

At first sight, the response rate for companies in the shipbuilding, vehicles, aerospace sector seems high. This relates to significant interest in Product Support in two segments of this sector. Consumers are very aware of the relative effectiveness of service operations of automobile manufacturers and have forced suppliers to adopt a more thorough approach to their service function. This is reflected in the high response rate from this group of companies.

The second segment contains companies supplying cranes and earthmoving equipment. A major factor here is that Caterpillar have raised the level of customer expectation by offering and delivering a high quality service which includes their guaranteed 48 hour delivery of spares anywhere in the world. There is no doubt that other companies have been forced to follow their lead.

The electronics related companies form a much more homogenous sector and as a group have identified service as a priority. The relatively high response rate from these companies would seem to confirm this. Another piece of evidence for the high profile of service in "High Technology" companies is the membership of the Association of Field Service Managers International (AFSMI) which is largely made up of managers from manufacturers of computers, photocopiers, medical instruments and the like.

As a group, the traditional engineering companies have a more complacent attitude to service as evidenced by the relatively low response rate from this sector. In effect, they have a much more reactive stance to service, it being seen as a "necessary evil" rather than a major opportunity for competitive advantage.

Companies in the chemical and metal products industries were the sector with the lowest response rate, which is not surprising bearing in mind the nature of the product. Service here largely consists of offering technical support in choice of product. How this support is delivered is still important, however, even if its scope is relatively limited.

The largest group of companies in the "other" sector shown in Figure 1 is that of furniture manufacturers. These are interesting in that they should be more aware than many of the needs and expectations of individual consumers, being closely related to the retail trade.

The target companies were predominately those in capital goods industries. As such, just over 50% of those replying were predominately in the "Make to Order" business (greater than 85% make to order). For such companies it is likely that the "cost of ownership" is relatively high, customers are unlikely to be able to afford space or standby capacity and therefore minimising machine downtime due to breakdowns should be a key objective.

The breakdown of product types was as follows:-

    60% Capital Goods
    18% Consumer Goods
    16% Intermediate
     6% Some combination

Those companies classified as manufacturing Intermediate Goods predominately supply components to Capital Goods manufacturers, for example suppliers of valves to the Aerospace industry.

3. SERVICE STRATEGY

3.1 Responsibility for Product Support

In answer to this question, companies responded as follows:-

    Marketing   49%
    Service Division/department   32%
    Manufacturing   11%
    Others   8%

After Sales Service has traditionally formed part of the Marketing Organisation, in many organisations it being largely a "Customer Relations" Department to deal with customer complaints thus minimising the damage caused by poor quality.

This viewpoint is changing rapidly as Service is seen to be a separate business function, often a major source of profit, which needs to be managed as such. Certainly where service has been recognised in this way, a separate division or department has often been formed.

3.2 Formal Service Policy

75% of companies responding stated that they had a formal After Sales Service Policy. The question to be answered is "How good is it?" A Policy which states the objective of "100% Customer Satisfaction" is no use unless it outlines how such satisfaction is to be achieved, and also defines some objective measures of service level.

Of the 75% who have a formal policy, most will communicate it to all service personnel, though 20% said that it was passed to management only. Approximately a third of those with a policy made sure that it was communicated to all company employees.

This policy seems to be communicated largely through statements in company manuals. Approximately 60% of companies with policies have some such method for communication. Only one sixth of these companies used some verbal communication as well. Thirty per cent in total used "word of mouth". Other forms of communication included memos and formal presentations.

The impression gained (perhaps unfair) is of a routine statement of general issues relating to service, rather than a positive, coordinated campaign to instil service attitudes throughout the organisation. Rather more active forms of communication may be necessary for this.

3.3 Service Awareness

The assessment of particular elements of service awareness are displayed in Figure 2.

	Fully	Partially	Not at all
Service Requirement considered at design stage	40%	50%	10%
Production personnel are encouraged to meet customers	15%	60%	25%
Non service personnel understand the importance of after sales service	26%	68%	6%
Service highlighted in company magazine	18%	37%	45%

Figure 2: Service Awareness

Considering the service requirements at the stage of design would appear to be relatively well understood. Certainly there is much greater awareness of the "Total Quality Management" concept, which underlines the need for integrated systems to ensure that the full package of product and service is satisfactory. There is a growing awareness that serviceability can and must be designed in.

Formal design/service committees are now quite common with service having the power of veto in some cases. There may be justification for a permanent service liaison engineer to be positioned in the design department much as manufacturing liaison has been handled in the past.

Manufacturers of consumer goods would appear to be rather more aware of the need to "build service in", with 61% of these companies reporting that service is fully considered at the design stage.

The group least aware of service needs would appear to be the manufacturing function. In fact many Service Managers express the opinion that it is best to keep the customer away from manufacturing personnel! The manufacturing/service interface is perhaps the least well managed. There are often conflicts in priorities for production capacity between the demands for original equipment and those of service. Service often loses out here, not because manufacturing doesn't want to supply service, but often performance measurements and control systems are not appropriate. A company wide service strategy would be an advantage here in giving clear guidelines to all concerned.

More positively, it was encouraging to note that in 75% of companies, production personnel do meet the customer. An effective strategy is to transfer manufacturing people to service departments. A short secondment to the service department at least promotes awareness of service needs and an understanding of how their output adds or detracts from customer service.

3.4 Financial Contribution of After Sales Service

Taking the survey as a whole, the objective for 80% of companies is that After Sales Service should make a profit. In the capital goods industries the fact that customers are often "locked in" to a particular company has led to massive overcharging for spares with a resultant deterioration in long term relationships. In these companies, profit has been made relatively easily in the past, but the likelihood is that this trend will not continue.

It is interesting to note that if the consumer goods manufacturers are considered, only 50% of companies aim to make a profit as opposed to breaking even. Possibly the overcharging issue is more sensitive in these industries.

One theory for this difference is that the opportunities for "value added" service are possibly reduced in the volume production, relatively low cost industries. It is perhaps easier to create a differentiated service package for a machine tool worth £1 million, than for a washing machine worth £200.

3.5 Elements of After Sales Service

Respondents were asked to rank the three most important elements for After Sales Service and the results are shown in Figure 3.
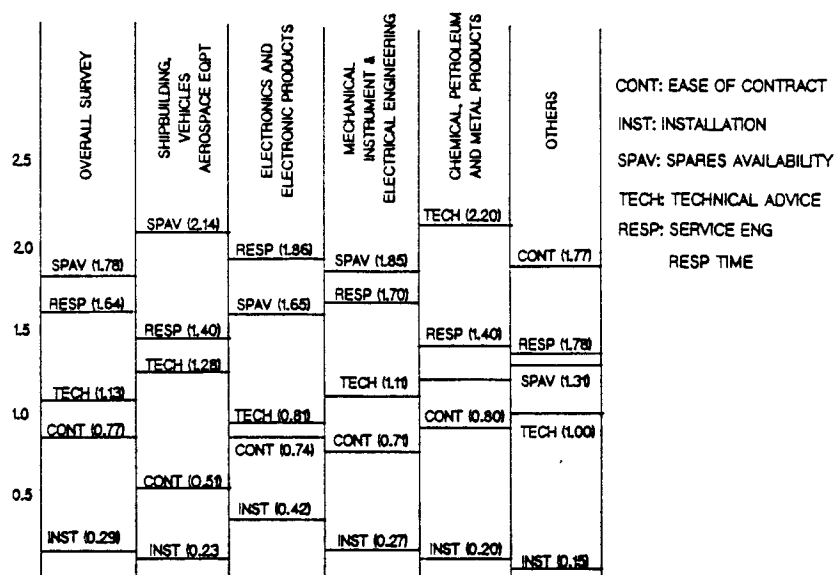

Figure 3: Elements of After Sales Service

With regard to the lefthand column (overall survey), the result is not surprising with effectively little or no difference between Spares Availability and Service Engineer Response Time. The most important measure is the time to complete the repair, which implies a combination of spares availability and, in most cases, service engineer response!

Ease of contact did not rate high importance in the overall sample. This was slightly surprising given the amount of attention that is now paid to ensuring that phones are answered promptly, information is readily available and expert advice quickly given.

The different sectors have detail differences in the relative importance of each element. The chemical and metal products sector clearly places more emphasis on the need for technical advice, both in product selection and also in use for different applications after purchase.

The companies in the miscellaneous category give greatest weight to ease of contact. This is probably linked to the fact that many of these companies are closely linked with the retail trade (furniture companies) and have discovered the value of fostering good relations with individual customers.

The answers in this section of the questionnaire are biased in that most respondents used the options given and did not add other facets of product support. Answers given in Section 4 identify a number of other aspects of after sale service which may be equally important.

3.6 Importance of After Sales Service in Winning Orders

Figure 4 demonstrates the importance of After Sales Service with regard to the orginal purchase decision.
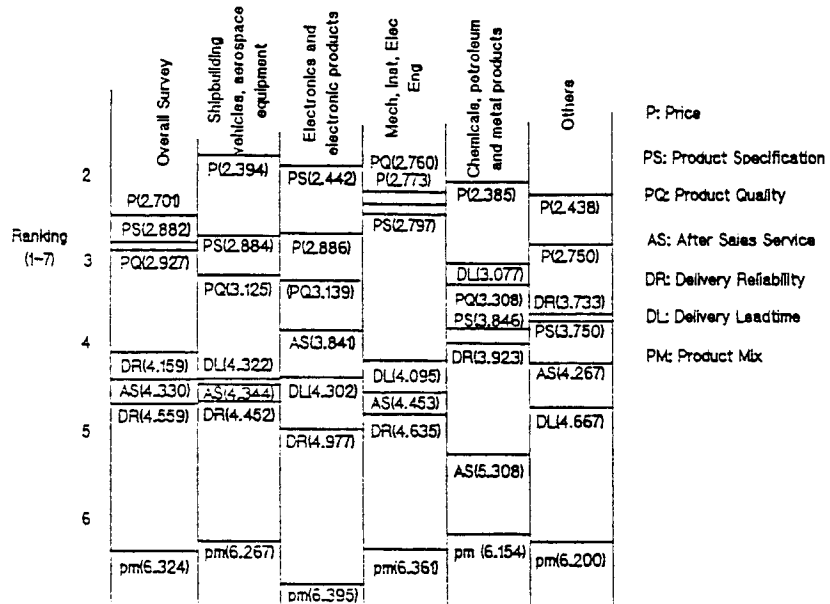
Figure 4: Importance of After Sales Service in Winning Orders

The left hand column (overall survey) demonstrates that the two groups of criteria were perceived by the manufacturers to be important.

The first and more important group are those criteria relating to the product itself, its price, specification and quality. It is almost impossible to separate these three as they describe a product's value for money.

The second group represent the "customer service" criteria, its delivery lead time, reliability in achieving that lead time and After Sales Service. In other words, once the product is correctly specified and positioned in the market place, the quality of After Sales Service is as important as delivering on time.

In considering the different segments of manufacturing, the most significant difference occurs in column 3, that of Electronics and Electronic products. In this sector, After Sales Service is seen to be more important than delivery, supporting the statement that Product support is becoming a major factor in original product choice.

4. COMPETITION

A major input in determining strategy is the threat posed by competitors. Answers were sought to two questions to discover how each company saw itself as better or worse than others.

4.1 How Companies are Better

The replies are grouped by frequency in Figure 5, Group 1 being most frequent.

Group 1   Response Times
                                 Technical Competence

Group 2   Parts Availability
                                 Location of Service Centres/Engineers
                                 Personal Contact
                                 Quality of Service
                                 "Tailored" Service

Group 3   Not known
                                 Price
                                 Warranties
                                 Information Systems
                                 Same as Competition
                                 Maintenance Agreements

Figure 5: Responses to "How are you better?"

There is some correspondence with Figure 3, in that Response Time and Spare Part Availability rank highly in both lists. It may be significant that parts availability is not "top of the list" although it is perceived as being most important in Figure 3. Could it be that the performance of the service operation is not as effective as claimed?

Group 2 provides food for thought in that most of the attributes of service here refer to developing the relationship with the individual customer. There is increasing understanding that not only must the end result of service be good (fast response time, decreased down time) but also the process of delivering that service must be professional and effective. A meal in a high class restaurant may be cooked to perfection, but if the server is bad tempered or unpleasant the total experience will be spoiled. The same process applies to after sales service, and hence the emphasis on ensuring good customer relationships at every stage of service delivery. It is interesting to note that some companies are recruiting service engineers as much for their personality as their technical competence.

At the head of Group 3 is perhaps the most surprising comment of all. Some companies do not know what their competitors offer. It is difficult to imagine how a competitive service policy can be formulated without this information. A number of companies sensitive to this issue have commissioned "independent" market surveys to research how well their operation is perceived in relation to the competition.

A final element of competitive after sales service worthy of note is that of Information Systems. Information is one of the major assets of any Service Operation and an effective strategy here may provide the company with knowledge of the customers equipment which will enable it to present a much more professional image to the client.

4.2 How Companies are Worse

Again response fall into three groups by frequency of response, and these are tabulated in Figure 6.

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Group 1	Price
	Parts Availability
	Response Times
Group 2	Coverage/Number of Engineers
	We are better!
	Flexibility
Group 3	Technical Support
	Ease of Contact
	Image
	Same as Competitor
	Not Known
	Information Systems

Figure 6: Response to "How are you worse?"

It is perhaps not surprising that there were rather fewer responses to this section than the previous one!

Group 1 again contains the two most sensitive elements of product support in the shape of Availability and Response. Also in Group 1, and in fact at the head of the "problem list" is price. The perception of manufacturers is that the customer wants good service at little or no expense. Part of the solution to this problem lies in developing a service strategy which clearly defines the value of service. Once this understanding is reached it should be possible to develop a viable pricing structure. One solution to this dilemma lies in developing a range of graded service agreements with high service levels for higher prices. In the past these have been difficult to administer but more effective information systems assist greatly here. An alternative approach is to segment the market with different groups focussing on different levels of service requirement.

The comment in Group 2 of "We are better!" may be a conscious strategy rather than pious hope. There are companies that set out to be the industry leader in standard of After Sales Service.

The importance of making the customer feel special, in particular providing a system that treats him well in the process is again highlighted in this list. The inclusion of Image is also interesting. Service suffers from an ill defined image in that the word conveys the impression of humble, menial operations rather than a professional organisation delivering something of value.

5 CUSTOMER LIAISON

A service organisation stands or falls on the quality of its customer relationships. If the quality of customer contact is consistently high in all respects, good relationships will be built which will increase the probability of repeat purchase and enhanced reputation elsewhere.

5.1 Frequency of routine contact

Figure 7 shows the level of contact analysed for all customers and also for specific (major) customers

	All Customers		Specific Customers	
	%	Cum %	%	Cum %
Daily	8.4	8.4	26.3	26.3
Weekly	12.9	21.3	31.4	57.7
Every 2-3 weeks	12.4	33.7	16.0	73.7
Monthly	26.4	60.1	17.7	91.4
1-4 times a year	39.9	100.0	8.6	100.0

Figure 7: Frequency of Customer Contact

Capital goods manufacturers figure highly at both ends of the scale. It is not surprising that they should be able to keep in contact with their major customers regularly. It is much easier for a computer manufacturer to identify a handful of key installations than for a washing machine supplier for whom there is no distinguishing feature between many thousands of customers. It is perhaps, then, disappointing to note that capital goods manufacturers make up the bulk of those who are in contact with customers only 1 to 4 times a year.

In the main, this contact is reactive and consists of meeting customers requests. At the other extreme, a very few companies ring selected customers as a matter of routine and find that they are able to prevent problems becoming major issues by so doing. In such companies it is often the policy for senior executives to ring major clients. This has the added benefit of maintaining a high profile of service throughout all functions of the organisation.

5.2 Customer Audits

One of the fundamental techniques of Total Quality Management is that of understanding what the customer wants and finding out how well he thinks you are providing it! The most useful way to find out is to conduct a formal customer service audit. Although this is a relatively simple thing to organise, relatively few companies have done so as Figure 8 demonstrates.

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	Audit (% companies)	No Audit (% companies)
Overall Survey	32	68
Shipbuilding, vehicle Aerospace Equipment	33	67
Electronics and Electronic Products	48	52
Mechanical, Instrument Electrical Engineering	27	73
Chemicals, Petroleum and Metal Products	27	73
Others	14	86

Figure 8: Customer Service Audits

As previously noted, companies in the electronics sector would appear to be ahead in general awareness and expertise here. Those companies that have carried out audits report that they have implemented a number of changes to their operation as a result. The implication is that without such audits the organisation runs the risk of not providing the service the customer wants and making costly mistakes as a result.

Examples of actions taken following customer service audits are as follows (in order of frequency of reporting):-

Customer Care Programmes. A development of the "Smile" campaigns of recent years, conducted for all members of staff who come in contact with customers, focussing on interpersonal skills

Reporting Procedures A number of companies discovered that the way that they were measuring performance was highlighting factors that were irrelevant to the customer. One company implemented a system to measure downtime of equipment as the major performance measurement as a result.

Customer Meetings Companies discovered that different customers want different things! An electronics company has implemented a regular schedule of liaison meetings with its major customers (if they require it!)

Spares Targets A customer audit can be a way to set realistic service levels.

Range of Product Support Some companies found that there was a demand for services other than those they were already offering (hence increased possibilities for profit!)

Training With shorter product life cycles, and changing technologies, training needs were identified for both service engineers and customer's own staff.

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Price Structure   Some firms were able to design service packages that were more commercially attractive.

5.3 Complaints Procedures

Current quality management theory highlights the importance of taking a positive approach to customer feedback. It suggests that procedures should be developed that make it easy for dissatisfied customers to complain, for these complaints to be monitored and analysed so that direction can be given to improving products. This contrasts quite definitely to the rather defensive stance traditionally taken by manufacturing companies which stems from a mixture of complacency and also fear that the company will be manipulated by its customers.

In this light, complaints should be seen as an opportunity rather than a threat. In order to make the most of this opportunity, then, it follows that they should be dealt with in a professional manner. There is evidence that problems and complaints in many companies are dealt with in a haphazard manner. Of the firms surveyed, only 54% had a written complaints procedure, and in only 38% did customers know of such prodcedures. In a very few cases was there evidence of the existence of an escalation procedure, with senior managers involved as the severity of problem increases.

In fact, answers to the question "How are complaints dealt with?" were very mixed, from rather bland, such as:

> "Quickly and with sympathy"
> "Complaints are rare"

Through to the very detailed:

> "Response within 12 hours, 90% dealt with within five days"
> "Summary of month's problems at board level"
> "Final procedure agreed with principal customers".

One of the building blocks of the Caterpillar Quality strategy is the management of a worldwide database coordinating reports of problems thus allowing trends to be highlighted and remedial action initiated.

One company researched has a central facility dedicated to analysing faulty components replaced by service engineers. In some cases this has enabled them to change components before breakdown, replacing these with an improved design.

Complaints are generally dealt with quickly, with 84% of companies responding within 5 days and 34% within 24 hours. Within those targets firms vary tremendously in their approach to managing the process. Set out below are two examples of the most impressive:

- a) Phone call within ½ hour
  b) Letter within 24 hours
  c) Explanation within 4 days

- a) Holding letter within 24 hours
  b) Action within 1 week
  c) Follow up visit within 1-2 weeks

Clearly this level of response may not be possible or appropriate for a consumer goods company with thousands of customers, but it is indicative of the level of thought and commitment to after sales service given by a few organisations.

This principle of "managing the process" is extended to the decision as to who deals with complaints. If this is to be effective and consistent there must be clear guidelines established to ensure that the most appropriate personnel are involved. Nearly half of the companies surveyed said that complaints were either dealt with by the Service Manager himself, or a member of a customer serivce department or "complaints desk" nominated for the task. The "excellent" companies all emphasise the need for there to be a coordinated approach with one nominated person only dealing with a customer and for that person to be of sufficient status in the organisation.

5.4 Delivery Promises

A survey carried out in 1985 by Professor Colin New of Cranfield School of Management for the BIM and BPICS discovered that delivery performance improvements was still high on the agenda of most manufacturing firms. Depressingly, there had been no perceptible improvement in performance on the previous ten years. Making delivery promises can be a hazardous business, particularly if the business depends on "firefighting" to meet its programmes.

5.4.1 Supply of Spare Parts

Problems experienced by Service Managers in making reliable promises for spare parts are as follows: (in order of frequency of answer)

1. Third Party Suppliers
2. Factory Priorities
3. Production Lead Times
4. (No Problems!)
5. Discontinued/Obsolete Spares
6. Customer's Procurement Policies
7. Sales and Forecasting
8. Inventory Reduction.

With bought out components making up an increasing percentage of product cost, it is becoming more and more important to build solid relationships with suppliers for original product build and also for continuity of supply for spares. The traditional adversarial approach of changing suppliers every year to gain short term price advantage is not effective in the longer term, and has negative effects on service.

The manufacturing function is seen to be the major problem, appearing at 2, 3 and 5 on the list. The setting of priorities consistent to the firms overall strategy has already been referred to in section 3.3.

Lead times and customers procurement/stocking policies are largely interlinked. If the customer carries no stock, then the firm must make some commercial judgement as to whether it should carry spares or not, rather than continually reacting to each breakdown/crisis situation.

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Some firms have solved the problem of discontinued/obsolete spares by subcontracting these relatively low volume items. It is often inappropriate to attempt to manufacture them on main production facilities which are targeted on higher volumes and longer lead times.

5.4.2 Factory Overhauls

This category is not applicable to all companies. The list of problems is similar to the previous section:-

1. Production overloads and priority clashes.
2. Manufacturing parts availability.
3. Discontinued parts.
4. Estimating extent of repair
5. Use of loan machines.

Most companies now are moving to a totally separate overhaul facility to overcome the problems of mixing original product and repairs.

5.4.3 Scheduling Field Service Engineers' Visits

Problems encountered here are:-

1. Availability of Engineers
2. Breakdown priority vs scheduled visits
3. Priority Setting
4. Customer plant availability
5. Control of Engineers
6. Timing of visits
7. Number of visits vs profit.

A number of these problems can be eased when the service organisation is clear about its aims and objections and has a clearly defined service policy.

6. INVENTORY MANAGEMENT

Inventory management is often a paradox in that it forms the largest single component of company assets and yet often has the least attention paid to it. Since spares availability is perceived as being the most important element of after sales service it is disappointing in the least to discover that it is often very poorly managed.

One reason for this is the problem of allocation of stock for original equipment as against possible spares requirements. There is evidence that many firms don't have detailed inventory policies, but rely on relatively junior staff to make many detailed decisions which are not necessarily consistent with the overall strategy.

6.1 Responsibility for Inventory

The service function has responsibility for stock levels in nearly 60% of firms. This is consistent with the fact that product support generally is a profit centre. However only 41% of companies hold stock in a central service location, 23% being held by production, 6% by

dealers and 30% by some combination. It is probably this last figure which is most significant perhaps suggesting that stock is held in a number of locations, possibly losing control in the process.

6.2 Dealer Stock Levels

Inventory management and hence parts availability should be relatively easy when there is a single central spares facility. The problem is multiplied when there are many local depots and increased many times over when dealers are not directly controlled by manufacturers. The enquiry as to how stock levels at dealers/third parties should be set was poorly answered.

To a large extent dealers seem to be left to their own devices. There was one honest reply stating that they had "no idea!", and it is suspected that this may be fairly representative. In some cases minimum stock levels were advised, particularly for fast moving stock.

Evidence for a more professional approach in some firms was shown by those who give advice in stock levels, particularly for new products. Some firms operate a "buy back" policy to encourage dealers to hold sufficient stock. One firm applies a penalty for dealers who regularly make emergency requests for spares.

6.3 Spares "First Pick" Availability

Since spares availability is the most important element of after sales service, it is disappointing to see that only 49% of firms set targets and measure availability. For those firms who do set targets, the figures are remarkably cosnsistent as shown by Figure 9.

	No Target (%companies)	Target (%companies)	Availability (Target%)	(Achd%)
Overall Survey	51	49	93	85
Shipbuilding, vehicles & aerospace eqpt	36	64	92	88
Electronics & Electronic Products	57	43	93	86
Mechanical, Instrument, Electrical Engineer	49	51	93	82
Chemicals petroleum & metal products	73	27	93	88
Others	64	36	99	93

Figure 9: Spares "First Pick" Availability

6.4 Time before Order Completion

Since those companies who at least measure spares first pick availability achieve only 85%, it would seem sensible to monitor the company's performance in completing spares orders. 45% of companies set targets, but strangely it would appear that only 36% measure achievement against thest targets! The results are shown in Figure 10.
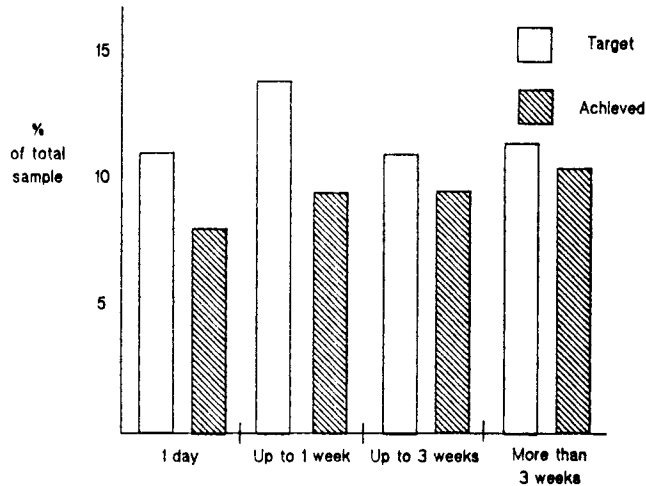

Figure 10: Time before order completion

Some 30% of companies set a target of completion of orders within 3 weeks (11% within 1 day) and 27% achieve this. For consumer goods industries, the majority of those companies who set targets aimed to complete within 1 week.

6.5 Order Process Time

If an order is to be picked and despatched within 1 day, then clearly the order must be processed promptly. The summary of targets and performance against targets is set out in Figure 11.
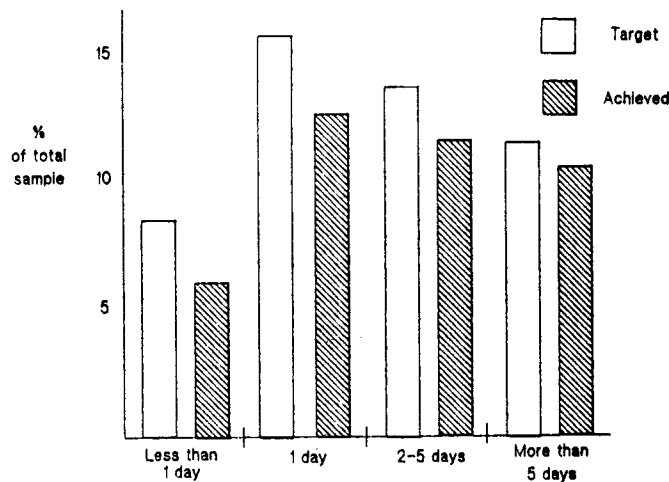

Figure 11: Order Process Time

52% of companies set targets and 43% recorded achievements against these targets. 23% set a target of 1 day or less and 19% achieved this. As with order completion, consumer good manufacturers were heavily weighted towards the target of 1 day or less.

6.6 Spares inclusion in Manufacturing Plan

The principal reason for poor spares availability from the Manufacturing function is that the interface between functions is generally poorly managed.

Firms using the MRPII (Manufacturing Resource Planning) approach generally have the opportunity to communicate needs and formalise requirements. The heart of the technique is in the compilation of the Master Production Schedule, which then effectively becomes the business plan agreed and worked to by all functions. Major spares can be included in the M.P.S. effectively as product types. Minor spares may be included on individual item schedules by increasing safety stocks, but there may be problems with this approach.

Companies describing the service/manufacturing interface answered as follows:

Spares included in MRP/MRPII Schedule	20%
Included as percentage of production run	10%
Service Department Request	8%
Not Applicable	15%

Some companies who answered "Not applicable" did so because service in their case is a separate division. This is really avoiding the issue because their spares must be manufactured somewhere!

The figures above suggest that at least 47% of Service Managers don't really know how spares are monitored and controlled through the manufacturing system. It may be that manufacturing managers are equally ignorant!

6.7 Performance and Forecast Review

Spares availability and inventory management can be improved as forecasting techniques are refined. Frequency of review was as follows:

Monthly	:	34%
Quarterly	:	15%
Half Yearly	:	4%
Yearly	:	8%
Irregular	:	27%
Other/No reply	:	12%

The figures suggest that just over 60% of companies have regular reviews, though for input to a manufacturing plan the forecast should be revised at least on a monthly basis. Methods of forecasting were not investigated, though informal research suggests that very few companies employ even the most basic of techniques.

7. FIELD SERVICE

Field Service Engineers are often the primary interface with customer. In Organisation Behaviour terms they are "Boundary Spanning" employees and as such find that they are under pressure to serve the client as well as displaying loyalty to the firm. Hopefully this isn't often a major source of conflict, but clearly such personnel must be organised and motivated to give a service which is consistent with the company's service strategy.

7.1 Central or Local Organisation

58% of field service departments are organised centrally and, indeed, this would appear to be a general trend. The advantages of the central approach were stated as follows:

Uniform Standards - ensuring that the level of service is consistent across all service engineers.

Coordinated Response - the ability to involve all company functions in dealing with a customers' needs and to ensure that such response is not contradictory.

Technical Assistance - particularly from engineering design departments to solve particular problems.

Problem Awareness - being able to monitor trends centrally, making them visible sooner.

Manpower Utilisation - spare capacity for peak demand required in one location only (i.e. centrally) rather than having excess capacity in each regional location.

Availability of Specialists - particularly important where service department must support a wide product range and expertise on all products is rare or even impossible!

Business Integration - being based at headquarters builds loyalty/identification with the total business rather than with a local service area. Ease of communication with other departments.

Perhaps the most compelling reason for having a central department was the response of one company who have only one service engineer!

Whereas a central organisation may be relatively efficient and also useful in terms of strengthening the link between company and service engineer, the local engineer may be more effective in building good customer relationships (provided he is properly trained and has the right interpersonal skills).

Some 33% of field service departments are organised locally, and these companies gave the following reasons for their decision:

Good Customer Relations - building an ongoing relationship on a personal level between the customer's personnel and the local service engineer, gaining a two way commitment.

Client Confidence - giving him a "warm feeling" because there is a service facility near at hand.

Team Spirit and Identity - a relatively small service group focussed on the needs of one segment of the customer base.

Response Time - travelling times will be reduced, though, of course, utilisation may also be reduced.

The remaining 9% of companies with Field Service functions have both local organisations as well as a central facility. The local engineers will deal with preventative/scheduled maintenance and the majority of breakdown calls with expert assistance delivered as and when necessary for the centre.

The company must recognise and manage the trade-off between the efficiency of the centralised department and the effectiveness of potentially better communications at a local level. A further argument for the local organisation is that service engineers can be very effective in picking up sales leads if trained to observe and ask the right questions. This will tend to be more productive when he is known by the customer.

7.2 Service Engineer Response Time

More companies set targets for Service Engineer response time than do for spares availability. 65% of companies set targets, and in fact it is inappropriate for some of the remaining 35% to do so as their product is replaced rather than repaired.

The results are shown in Figure 12, and it can be seen that electronics manufacturers set and achieve much higher targets than the rest of industry.
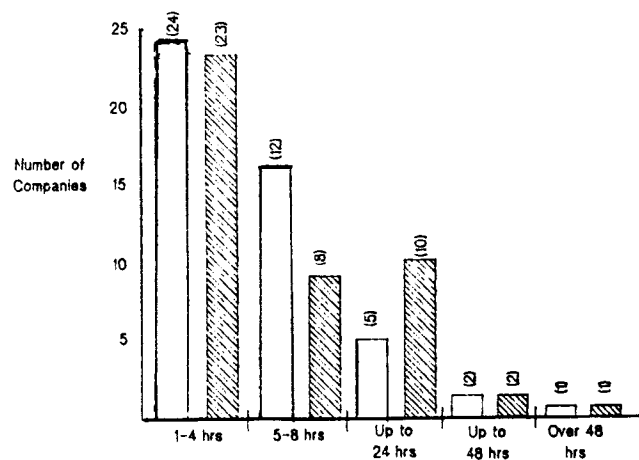
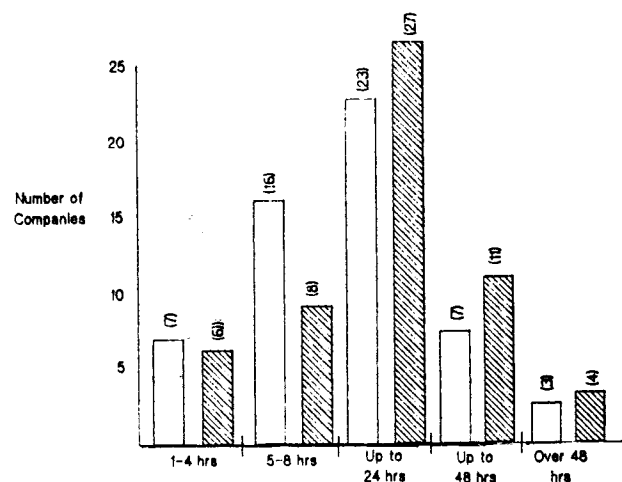

Fig 12(a) Electronic Companies

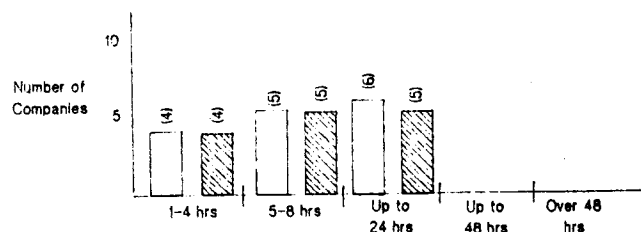Fig 12(b) Mechanical, Electical, Instrument, Engineering

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Fig 12(c) Shipbuilding, vehicles, aerospace

Figure 12: Service Engineer Response Times

The overall results are as follows:

Overall Survey	:	Target	: 15.6 hrs	Achieved	: 19.3 hrs
Electronics	:	Target	: 10.1 hrs	Achieved	: 10.1 hrs
Mech, Elec, etc	:	Target	: 19.9 hrs	Achieved	: 28.1 hrs
Ship, vehicles, etc	:	Target	: 12.7 hrs	Achieved	: 11.9 hrs

It can be seen that not only are Electronics companies swifter in their targetted response, but also very good at achieving it. In fact there are a significant number of companies that set a target of between 1 and 2 hours and achieve it. Some companies measure their achievement in tenths of an hour. There is a trend in the electronics sector to give graded response - faster response guaranteed for higher price levels.

There were a few responses stating targets as "immediate" or "as soon as possible". These are not shown in the analysis as they are not targets that can be measured against. Nearly 10% of companies declaring targets did not state their level of achievement. It is suspected that the total number of companies setting some sort of target but not monitoring the performance against it could very well be greater than this!

7.3 MTTR and MTBF

Firms found it more difficult to answer questions about MTTR (mean time to repair) and MTBF (mean time between failure). For some, there is a legitimate reason in that their range of equipment is so great that it is difficult to give a general answer. Some respondents were able to give an indication of range.

26% of companies gave an indication of targets for MTTR, whereas only 6% gave target ranges for MTBF.

The average results for MTTR were as follows:

Overall Survey	:	Target	36.8 hrs	Achieved :	35.7 hrs
Electronics	:	Target	14.4 hrs	Achieved :	11.6 hrs
Mech, Elec, etc	:	Target	63.8 hrs	Achieved :	64.3 hrs

The distribution of results is shown in Figure 13 and it can be seen that the electronics industry overall figure is distorted by a few results over 24 hours. If the response over 24 hours are discounted the results are as follows:
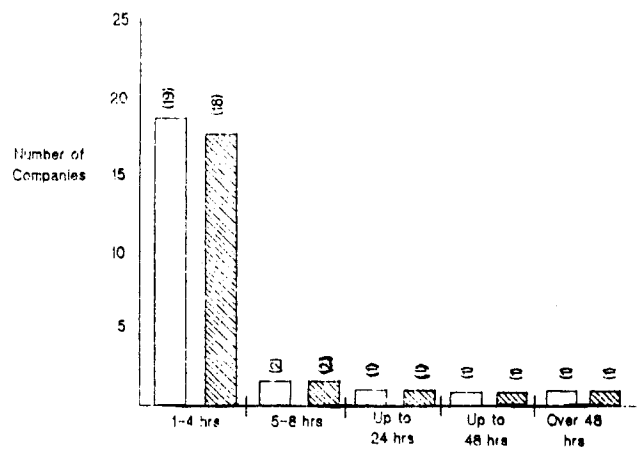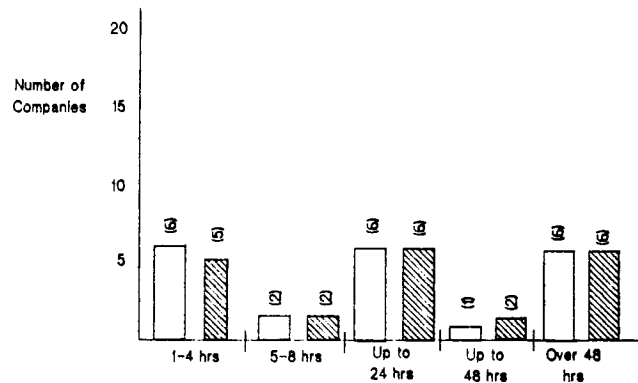
Fig 13(a) Electronics Companies

Fig 13(b) Mech, Elect, Inst Engineering

Figure 13 MTTR Target and Achievement

Electronics	:	Target	2.3 hrs	Achieved	2.0 hrs
Mech, Elec, etc	:	Target	11.2 hrs	Achieved	14.2 hrs

It is impossible to present any similar figures for MTBF as there were insufficient replies. Responses were counted in two ways, calendar time or machine running time. The range of response were as follows:-

2 months	-	18 years
100 hours	-	15,000 hours

As with all other measures, there were those companies who stated targets but apparently did not measure their performance against them.

7.4 Service Engineer Performance

60% of companies measure the performance of individual service engineers in some way from relatively informal assessment through to highly developed systems. The majority of those who use numerical measures are focussing on service engineer capacity utilisation. Examples of measure used are:

Call Report Analysis
Engineer Utilisation
Productivity vs Standard Repair Times
MTTR
Calls per day

A very few companies measure customer service which must suggest that the majority are less concerned about service than pure efficiency. Some companies analyse customer feedback and record positive and negative feedback against individualengineers. One firm employed a points system picking up a variety of elements of the service engineer's job including First time fix, Travel management, Customer feedback and so on.

7.5 Third Party Maintenance

Third parties may take on maintenance contracts in competiton with the orginal equipment supplier and this is a threat that will grow in the future. Some companies, however, may prefer to contract out service for reasons of efficiency coverage, etc. The policy of companies for maintenance is as follows:

Self : 47%
Customer : 3%
Third Party or Dealers : 11%
Combination : 39%

In other words, approaching 50% of all servicing may be undertaken by staff not under the direct control of the original supplier. The question this raises is one of maintaining adequate standards at a distance. This is a particular problem for consumer goods suppliers who may have to deal with thousands of customers as against the relatively small customer base of the capital good manufacturer.

In the case of the manufacturer with many customers, he must rely on good design for service and comprehensive, easy to understand manuals. For those with less customers, the problem is eased and some control can be established by such techniques as monthly audit inspections, complaint monitoring and measurement of MTTR and MTBF.

Some companies hold regular review meetings with their sub contract service engineers to discuss problems and standards of service. One response indicated that the third party service engineer was effectively treated as one of their own staff with all service requests handled by the equipment supplier and passed on individually.

7.6 Use of Microprocessors for Diagnostics

40% of companies believe that Diagnostics will change field service policies in the future, though in fact many electronics manufacturers have discovered that they have already made a major impact.

One major computer manufacturer now has a monitoring system on many of its mainframe installations giving early warning of possible failure, allowing the service function to schedule a repair visit prior to breakdown! This clearly means much reduced machine downtime, but also has another major benefit in that the service engineer can carry with him all the spares he requires for this particular repair, thus increasing the number of "first time fixes" and improving stock control.

One possible disadvantage for the equipment supplier is that the customer may become more independent if this increased diagnostic capability is made available to him. In particular this would mean much reduced personal contact between supplier and user and hence reduced possibilities for building relationships that lead to repeat purchases.

8. GENERAL

8.1 Training

Training has traditionally been given to service engineers in how to overhaul and repair equipment. As more companies recognise that no only is the technical expertise of the service function important (getting the equipment fixed!), but also the way that the service is delivered is crucial, the technical training scope has widened and "customer care" programmes including interpersonal skills have been added. Below is an indication of the spread of such training.

	Technical Skills	Interpersonal Skills
Service Engineer	81%	42%
Receptionist	10%	45%
Telephonist	9%	47%
Service Despatcher	19%	33%

A number of companies have discovered that it is crucial that the first point of contact for the customer with the firm is well managed. If the receptionist or telephonist has some product knowledge, he will at least be able to ask relevant questions to clarify details of the problem the customer is experiencing and may, in some cases, be able to offer basic advice.

It is the experience of firms already some way down this path that giving contact personnel more responsibility than merely answering the telephone breeds job interest and, in general, leads to a more satisfactory service encounter for the customer. There are firms with "prompt lists" on a VDU in front of the telephonists to assist in asking the right questions and thereby solving the problem faster.

The reported level of training in Interpersonal skills is surprising and relatively encouraging, though it has to be recognised that some "smile campaigns" have only a short life cycle. More sophisticated training schemes are relatively rare as yet. Alongside this comment is a recognition by a few companies that selection of service engineers based on their personality rather than technical expertise may soon be an issue to be resolved.

There are some firms that seem to train everybody in everything, using courses as a means of communicating the service culture of the organisation. In these firms it is not unusual to find that support staff who very rarely meet customers also receive Interpersonal Skill training.

8.2 Future Trends

The following aspect of After Sales Service, in order of frequency of response, were identified as being crucial in the future.

Faster Response and "Total Fix"

Service will have to be yet more efficient, in particular doing the basics more consistently better.

Increasing Role in Purchase Devision

As products become more standardised and similar, service is a major point of differntiation. Purchasers are also more aware of service implications over the life of a product.

Third Party Maintenance

In some industries this is a major threat with organisations formed solely to service equipment or in some cases where firms will service competitors' products as well as their own. Some broadening of scope may be necessary as purchasers delegate responsibility for total systems to a single supplier.

Changing Skill Profile for Service Engineers

A move "upwards" away from practical manual repair skills to more technical expertise and, in particular, diagnostic ability. An awareness of the opportunity for generating sales through service.

Reduction in Customer's Own Service Staff

Leading to demand for faster response times.

Emphasis on Improved Communication, Ease and Quality of Contact, Customer Care

Design for Reliability

More Planned Maintenance Contracts

Awareness of Product Liability Litigation

The need for clear instructions and warnings. Also critical that good quality records are held to demonstrate competence.

9 CONCLUSIONS

This survey has been undertaken from the perspective of the equipment suppliers. It would seem that a significant percentage do not really know or understand what the customer needs in terms of service. For many firms the relatively simple step of undertaking a formal customer service audit would reap many rewards.

With service becoming a significant business issue, Service Managers must become much more aware of business issues, of the need to change with changing market requirements and to be able to recognise and manage the trade-off between an efficient low cost basic operation and a more effective operation with added value/added price service. A more effective service may well mean doing little things better than before, and this detailed approach is not evident in very many companies. In particular, it also means managing the basics professionally. These issues have been touched on in the report. They are the basic decisions of inventory management, capacity, service engineer response time, quality management and so forth.

Further research is required to understand such issues as formulating relevant service strategies, pricing structures and managing customer expectations. Cranfield School of

Management is planning to form a Research Centre to undertake relevant research in these areas.

The overall conclusion is that After Sales Service will decline in terms of volume of activity, in that equipment will become more reliable in response to consumer pressure and product liability litigation and the advent of remote diagnostics should lead to more efficient operators. On the other hand Product Support will be increasingly significant in initial purchase decisions and ensuring repeat sales. Service is a major business function and as such demands a more professional approach to its management.