FIELD SERVICE PROFITABILITY

INPUT

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INPUT Planning Services for Management

FIELD SERVICE PROFITABILITY

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FIELD SERVICE PROFITABILITY

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FIELD SERVICE PROFITABILITY

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1 INTRODUCTION

I INTRODUCTION

A. PURPOSE AND SCOPE

- This report is part of the 1983 Field Service Programme in Europe. It addresses the issue of field service profitability and the extent to which vendors have reorganized or adapted their field service functions to maximise field service profitability.

- This is a critical matter since declining hardware and software revenue is eroding corporate profitability. In most cases, companies are dependent on developing the field service function in order to remain competitive and maintain their profitability.

- To provide the field service manager with an understanding of current revenue trends and guidelines for increasing field service profitability, this report focuses on :

  - A review of accounting procedures for profitability.

  - A profile of existing structures for European field service functions.

  - Revenue trends.

  - Aspects of accounting for asset management and control.

- An outline of strategies to which vendors attribute their profitability.

- An analysis of the factors which reduce field service profitability including details of the effect of macroeconomic factors such as recession, inflation, etc.

- Guidelines for future profitability including an analysis of the field service environment.

- Strategies for increasing profits.

- An analysis of techniques. These included strategies which vendors are currently implementing in marketing, productivity, human resource management, quality control, and organisational techniques.

- Clients are encouraged to comment on this report from their own perspectives.

B. METHODOLOGY

- Research for this study involved telephone and on-site interviews and a questionnaire mailing.

  - Five on-site interviews were conducted with companies representing the mainframe, minicomputer and terminal manufacturers, as well as third-party maintenance suppliers.

  - Eleven telephone interviews were conducted throughout Europe. The sample covered France, Germany, Benelux, Switzerland, Italy, and Scandinavia.

- Twenty companies responded to the mailing, including research material for past and future research.

- The duration of the interviews was an average of two and one-half hours for on-site interviews and one hour for telephone interviews.

- Secondary research was provided through INPUT's reference library, various business libraries, and the computing press.

- Respondents were managers responsible for major field service activities. They included worldwide, European, and national field service managers.

- The companies surveyed represent a range of sizes and products. They are listed in Exhibit I-1.

- The questionnaire used for this study is provided in the Appendix.

EXHIBIT I-1

VENDOR RESPONDENTS BY PRINCIPAL BUSINESS AREA AND COUNTRY

	UK	FRANCE	GERMANY	HOLLAND	ITALY	EUROPE	SWEDEN	TOTAL
Major Mainframe	5		1			1		7
Small & Mini Systems & Micros	8	1	2	1	1		1	14
Data Communi-cations	1							1
Peripherals/ Terminals	3			1		1		5
TPM	4			1				5
Other (leasing costs, etc.)	1							1
Total	22	1	3	3	1	2	1	33

II MANAGEMENT SUMMARY

II MANAGEMENT SUMMARY

A. CONCLUSIONS

1. EVOLUTION OF FIELD SERVICE AS A PROFIT CENTRE

- Field service has had an unusual evolution. Ten years ago it was the stepchild of marketing - a necessary evil, but effective in its efforts to keep equipment functioning at maximum performance levels. The fast growth and change in the industry brought a rapid maturity to field service as it became more recognised for what it could or could not do in crucial customer situations.

- To customers, the nature of post sales attention, whether installation, warranty, corrective or preventive service, software, spare parts, or advice, developed into a separate market and toward the end of the 1970s, became recognised as a separate "product" unto itself. Business challenges followed that involved revenue which had been growing at a compounded rate of more than 20% per year.

- Field service has become a large and profitable business. By 1985, according to a recent INPUT survey, European field service revenue will approach $10 billion. Currently, over 80% of service organisations operate using profit/loss accounts.

2. IMPACT OF PROFIT-ORIENTED SERVICE

- The trend towards profit-oriented service business has shifted the role of the service managers from technical managers to business managers. The emphasis on the financial aspects of the service business create a dilemma - finding the right level of service that produces increasing profits while at the same time offering high customer satisfaction. To a certain extent these objectives are contradictory, as shown in Exhibit II-1.

  - Employing more resources will increase customer service levels but will reduce profits.

  - Trimming resources will increase profit but reduce customer satisfaction.

- The solution is to alter resources qualitatively rather than quantitatively in order to make them more productive.

- Field service resources are a combination of materials and labour and, to improve the utilisation or productivity of each, require changes in strategies and techniques.

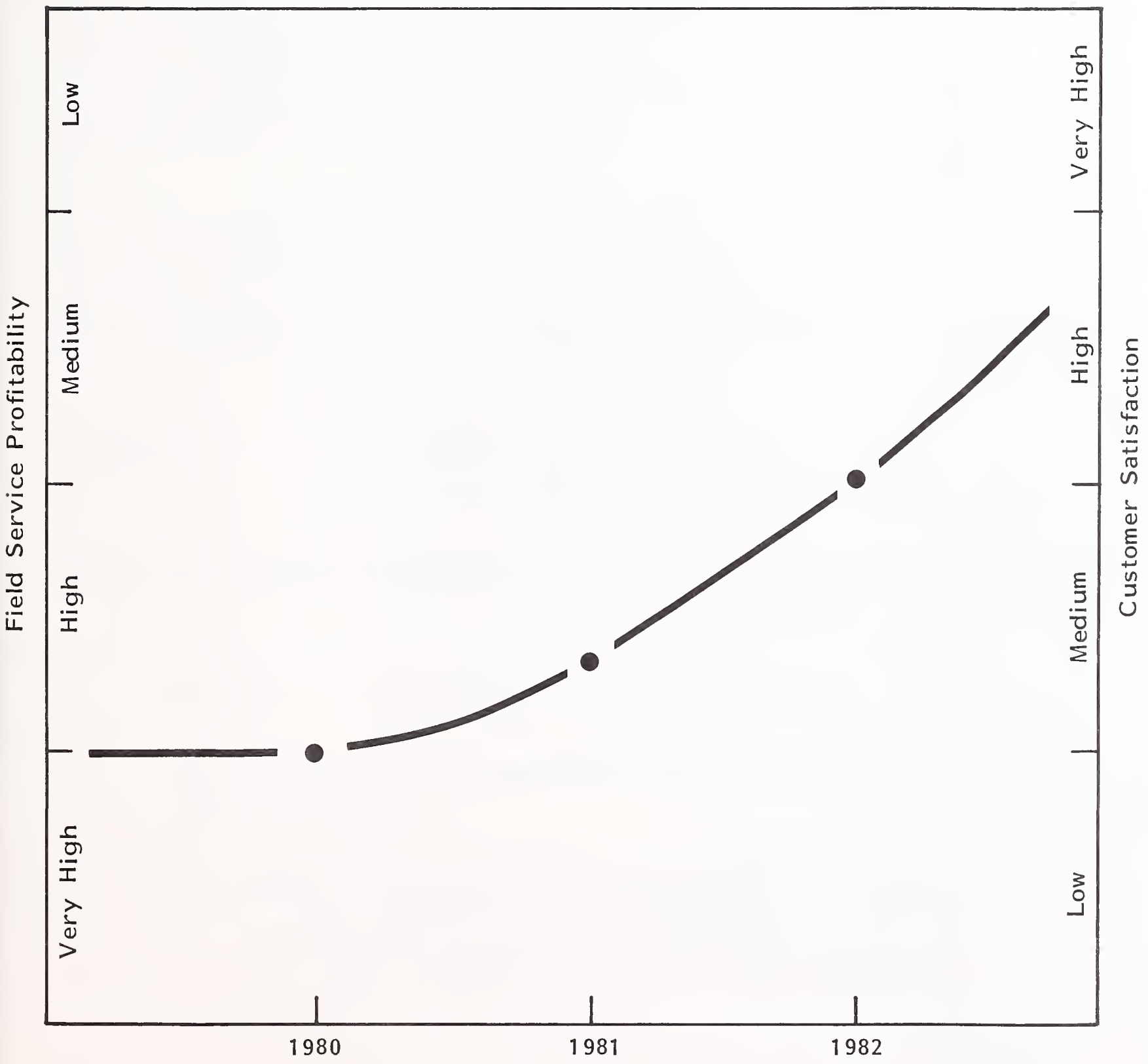
- Field service materials resources, spare parts for example, have been reduced in size and quantity as the result of advanced microtechnology. The cost of smaller cards has risen because of the increased number of components on them.

  - Consequently, the field engineer is typically handling a much more valuable part, as a single unit, than before.

  - These fewer but more expensive assets require better logistical management and control, such as:

EXHIBIT II-1

THE FIELD SERVICE BALANCE



  - Improving repair turnaround time for such parts, which results in more parts available in the pipeline.

  - Providing better packaging techniques to protect valuable and delicate spares.

  - Buying or building parts in more quantity to take advantage of reduced costs.

- Progressive field service organisations are responding to the need for greater labour productivity by altering and streamlining their service organisations. These changes are discussed in greater detail in Chapter III but essentially they involve three ideas.

  - The development of field service as a profitable business has created a need for a dedicated marketing team to sell and promote its products, either separately from hardware sales personnel or in conjunction with them.

  - Trends towards smaller systems and off-site repair have resulted in different personnel requirements, including:

    - Less technical and lower cost board swappers, and all round experts.

    - Concentration of technical expertise in central locations.

    - More use of remote diagnostics and central dispatch.

  - Service managers have stressed the importance of company-wide teamwork in order to become more productive. Some aggressive field service managers have successfully become catalysts for improving communications with other departments in their companies including

engineering, manufacturing, and sales. The teamwork approach to productivity, induced by field service, is clever and profitable.

3. FIELD SERVICE PROFITS BECALMED

- Pressures on field service management to become more profitable are compounded because of a diminishing growth rate in traditional maintenance revenue. This problem was analysed in INPUT's 1982 European report entitled Alternative Revenue Opportunities for Field Service, December 1982.

  - By 1987 traditional sources of maintenance revenue will erode to 77% of the 1982 base.

  - Newer sources of revenue will have to be created and developed to replace those that are diminishing.

- To maintain and increase profits without newer revenue forces reductions in costs that ultimately mean cutbacks in personnel. This is undesirable especially after investing heavily in training field service personnel.

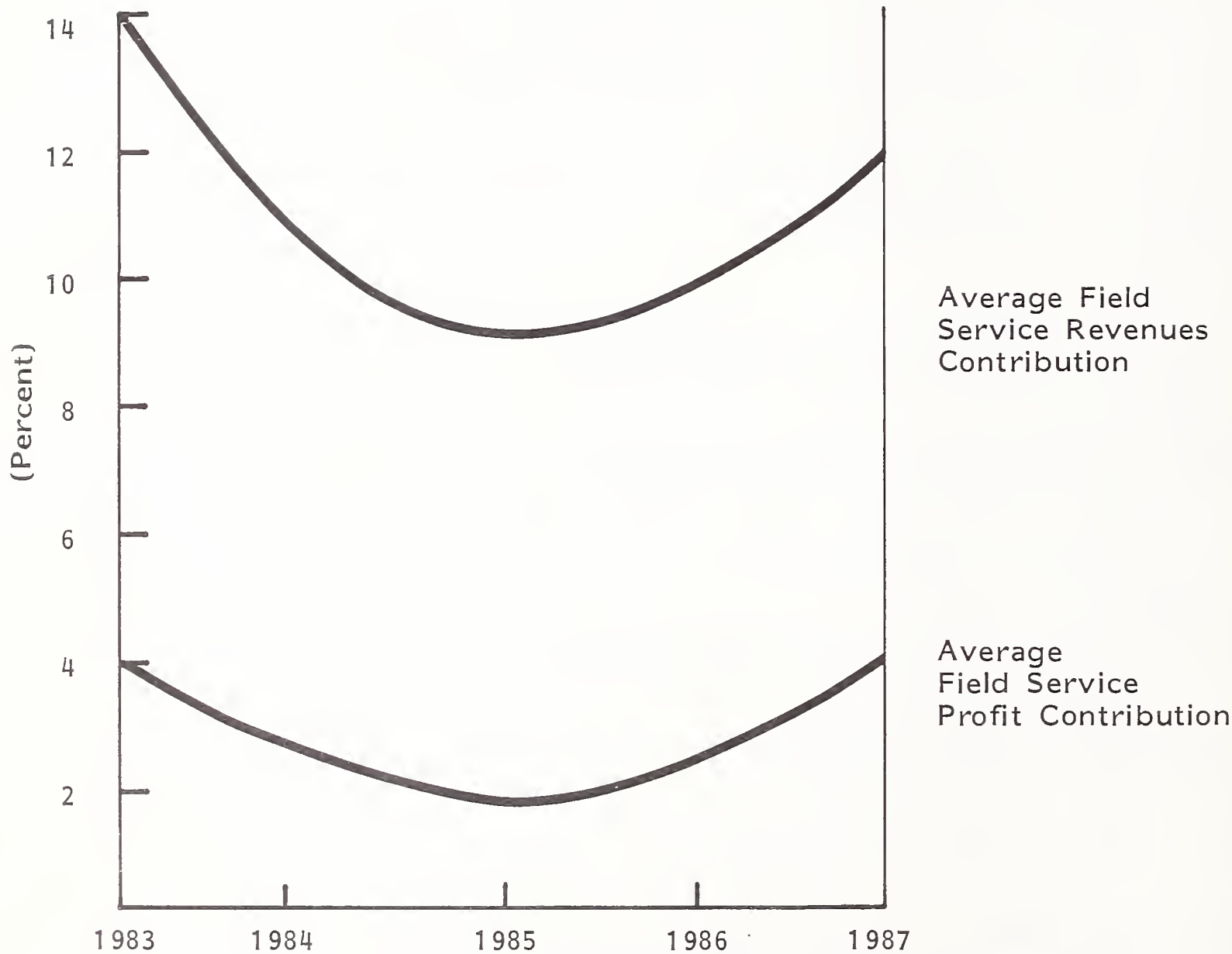
- External economic factors such as recession, inflation, unemployment, and currency exchange rates, in addition to government actions over, for example, tariffs, sick pay requirements, and other social legislation, all tend to negatively affect profitability. But the degree of this negative impact is nominal when compared to the revenue crisis in field service.

- This creates an unusual amount of stress on the field service manager who, more than ever before, requires closer communication and guidance from company management.

  - Service organisations are currently contributing significantly to division or corporate revenue and profits, as shown in Exhibit II-2.

EXHIBIT II-2

FIELD SERVICE CONTRIBUTIONS*
TO REVENUES AND PROFITS



* Contributions = $\frac{\text{Field Service}}{\text{Corporate}}$

Source: Vendor Surveys and INPUT Estimates

- The average contribution to a company's revenue by the service unit is 14% in 1983, which is estimated to decline to 9% by 1985 before recovering to 12% by 1987.

- The average profit earned by field service is 4% in 1983 and 2% in 1985, following the revenue pattern closely.

- The projected stagnation in revenue and profit contributions by field service reflects the fact that corporate management will not recognise or react to the field service crisis until mid-1984.

  - This situation implies that corporate management needs to get more involved in guiding and directing field service in a critical phase.

  - This is not to say that field service can't manage its own business. Rather, with the size of the stakes involved, corporate objectives should recognise the potential value of field service products and services vis a vis the rest of the product line(s).

  - INPUT estimates that the one and one-half year period to gain management's attention to the overall problem will result in relatively quick recovery plans, which are tied more closely to corporate strategies and survival.

  - The quick recovery and increase in profit and revenue contribution are also facilitated by progressive field service planning, which implements profitable strategies and techniques through corporate teamwork.

4. FIVE WAYS OF INCREASING PROFITABILITY

- There are five ways of enhancing profits, one or more of which may be appropriate at any given time: raising prices, reducing costs, improving the product

mix, increasing revenue, or reducing capital employed. Each method works only if the others remain equal. For example a price increase will not increase profits if there is an increase in costs at the same time.

- Raising prices can be the quickest way to increase profits provided there is no loss of sales volume. This is the crux of fundamental economic supply/demand theory.

  - The main consideration deterring price increases is competition. Maintenance prices have become more elastic recently as users find more choices for service available.

  - One way to increase prices without losing business to competition is to introduce new products or improve the quality of existing products concurrently with a price increase. An example of this would be to expand the principal period of maintenance from 9 to 12 hours and implement a price increase that would more than cover the cost of the new service.

- Cost reduction is one of the objectives of every manager. Costs are based on labour and material. For material there are only two ways of achieving reductions.

  - Either less money must be paid for the same quantity of material by:

    . Lower prices.

    . Discounts on current prices.

  - Or less material must be used by:

    . Reducing the amount of waste or scrap.

. Increasing repair efficiency.

- Similarly, methods for reducing labour costs have the choice of paying less money for hours worked versus using fewer hours to accomplish the same task. A reduction in labour costs can also be achieved by the drastic measure of reducing salaries. The best way of reducing labour costs is by improving productivity.

- Overhead costs are always good sources for cost reduction and include telephone, office, administration, and travel expenses.

- Improving the product line can influence profitability. This involves selling more of the most profitable products and less of the least profitable products. An example would be to sell more spare parts and less remote on-site service.

- Increasing the volume of revenue is another method of increasing profits. Of all five methods this one is the most effective because it has no risk of losing customers and no arbitrary reduction in resources. A profitable corollary to increasing revenue is to decrease the length of time it takes to get paid - accounts receivable. As most contracted service is usually paid in advance, this applies to ad hoc or other services such as supplies or spare parts.

- Finally, profits can be accelerated by decreasing capital employed. This involves capitalised spare parts, tools, test equipment facilities, and machinery, as well as borrowed funds.

B. RECOMMENDATIONS

1. MARKETING AND SELLING

- The profitable field service operation must develop its own marketing function to promote and sell its service products. This function can become either the primary customer interface or support the primary interface - sales departments or distributors for example.

  - Neither anarchy nor head to head confrontation with sales or marketing is recommended. On the other hand, field service cannot afford to remain passive.

  - Field service needs to assess its organisation, products, and capabilities. If an existing sales organisation is responsible for all selling, field service marketing should concentrate their sales efforts on them.

  - But the selling of service is no longer a part-time job to be done ad hoc by hardware salesmen.

  - Field service marketing will also enhance the knowledge of service in the eyes of customers. They know their product better than all round salesmen and should be given the opportunity to present field service wares directly to prospects and buyers, whether independently or in conjunction with sales.

- Marketing includes promotion and advertising, and field service has a great deal of material to communicate both internally and externally. Brochures, advertisements, and newsletters are instruments for describing and promoting benefits and capabilities of service. Selling is the most important aspect of marketing and needs to be formalised within field service.

- Setting sales projections and goals is the first step.

- Establishing incentives, if any, for selling and establishing relationships with others, including hardware marketing or sales groups, is another step.

- It is also important to implement the sales pitch with or without corporate or divisional sales managers.

- Close the sale by asking the customer to buy the service products.

- Update sales planning based on the above steps.

2. PLANNING

- The field service planning function should be accelerated and improved to incorporate all the known possible parameters and variables in and external to the company that might impact the market.

  - Planning for profitability requires budgeting and controlling costs and revenue.

  - Planning future field service profits should include other important company functions such as:

    . Executive management, directors, and a chairmanship.

    . Other departments, including sales, engineering, and manufacturing.

- By integrating field service planning with peers, superiors, and subordinates revenue and profits will be optimised. The net result will be to introduce new products and control product life cycles so as to produce a constant profit.

- Exhibit II-3 shows the roller coaster curve for sustaining profits.

- One product becoming obsolete and eventually terminating is accompanied by other new products.

- The timing is obviously important so that profits from older products can subsidise partial losses of new products.

- The field service manager should not wait to alert corporate management of field services' contribution to overall company profits.

- Most businesses fail because expenditures exceed revenue, and cash flow management is poor or nonexistent. Typical causes of running out of money include the following:

  - Allowing excessive credit to customers.

  - Allowing materials to accumulate to excessive levels.

  - Expanding revenue too quickly in relation to available working capital.

  - Investing too heavily in fixed assets.

  - Underestimating the effects of the economy on business.

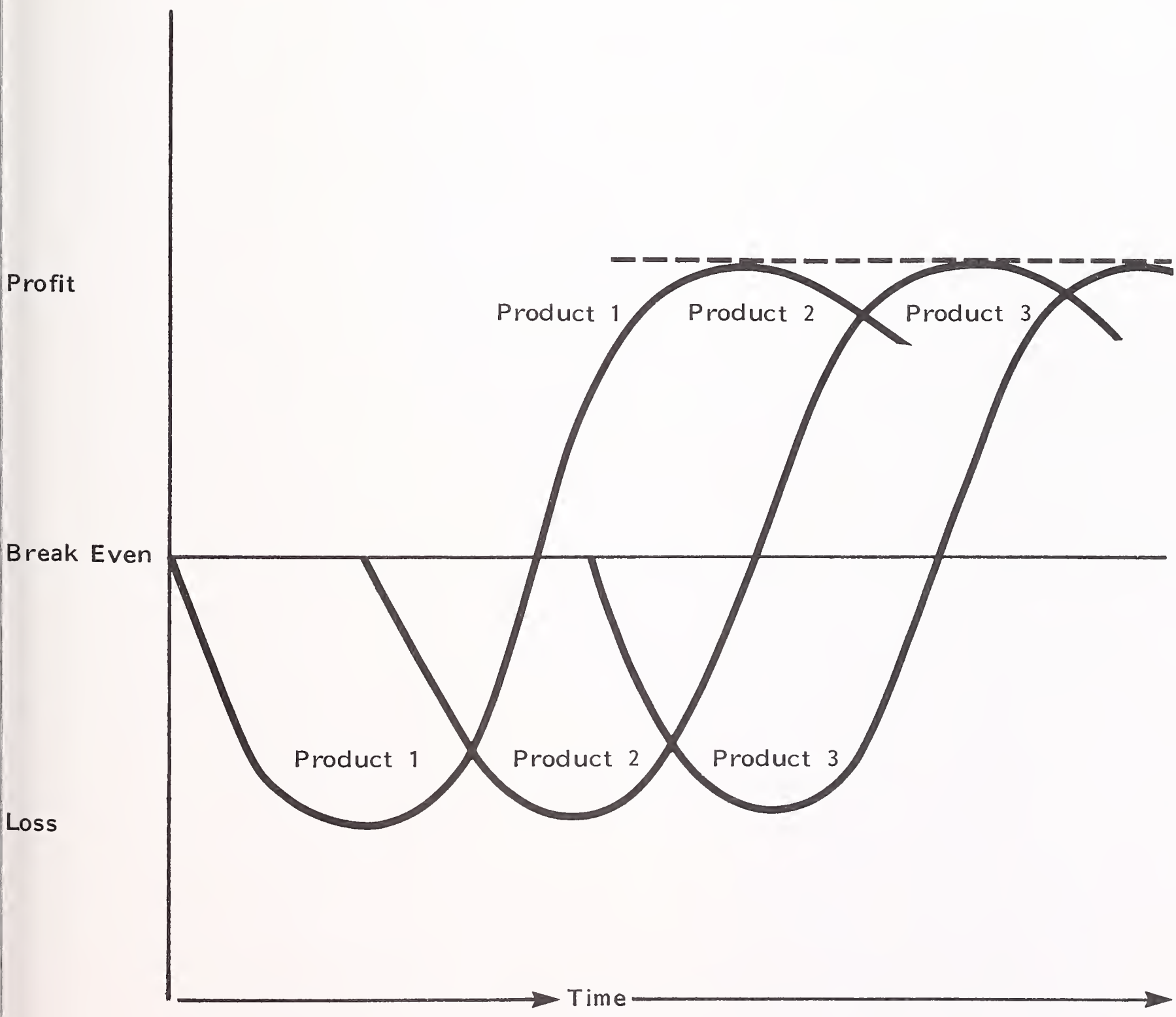
- Besides bad cash flow management, businesses become insolvent due to poor management. Poor management results whenever there are shortcomings in any or all of the following:

  - Planning.

  - Marketing.

EXHIBIT II-3

PROFIT SUSTENANCE IN FIELD SERVICE



- Record keeping.

- Industrial relations.

- Willingness to consider traditional methods.

- Acceptance of responsibility.

III MANAGING FOR PROFIT

III MANAGING FOR PROFIT

A. ACCOUNTING FOR PROFIT - A REVIEW

1. THE NEED FOR ACCOUNTS

- Every company is required by law to submit to its shareholders an annual report as well as accounts giving the financial information required by law.

- As a precaution, to ensure that the accounts give a true and fair view of the financial position of the firm, the books and accounts must be audited annually by a recognised firm of auditors who must employ qualified accountants.

- Managers are more concerned with management accounting than with financial accounting. But it is important they should understand financial accounting as the information in the financial accounts forms a basis for management accounting.

2. UNDERSTANDING ACCOUNTING REPORTS

- A first step in understanding and interpreting the financial accounts is an appreciation of the traditional accounting reports. Most companies produce two main types of annual accounts. These are the balance sheet and the profit and loss (P&L) account. These two types of accounts are often confused and misunderstood. Although they are interrelated, each has a distinct nature and purpose.

- The balance sheet is a snapshot picture, expressed in financial terms, of the assets and liabilities of the firm, on one particular day of the year. The P&L account tells the story of the year's activities in terms of sales, costs, and profit. It is not an instant picture. It is a broader view in condensed form.

- The balance sheet is not an "account," but a statement. It shows the sources of the company's capital in terms of share capital, loan capital, and retained profits. It also shows how the resources are currently deployed in the form of land, buildings, plant, stocks, and cash. It shows how much the company owes to creditors, the bank, and other external sources of finance.

- The balance sheet shows the picture on one particular day in the year. However, a balance sheet struck on a different day might show a more attractive picture than the same picture taken in winter.

- A balance sheet can be made to show a more favorable picture by such legitimate means as reducing stocks, reducing the overdraft, and other outstanding debts. However, it can also be distorted to cover up some information.

- The P&L account is a series of accounts. There may be one for manufacturing, one for trading and one for profit and loss. The modern tendency is to combine them all into one account. It shows the sales revenue, the change in stock levels, the cost of materials, labour and expenses, and the net profit. There may also be a separate profit and loss appropriation account. This shows how the net profit has been used to pay taxation and dividends. It also shows any balance of profit carried forward to next year's accounts or transfers from previously accumulated profit.

3. THE BALANCE SHEET

- The balance sheet is so called because it is a summary of the balances from the various accounts kept by the company. In the traditional layout, the

balance sheet has two sides which must balance. One side shows all the assets of the company. The other side shows all the liabilities which must equal the total assets. In Britain the assets are shown on the right-hand side whereas in the U.S. they are shown on the left.

- The liabilities are of two main types. There are the external liabilities to the company's suppliers, the bank and any other external sources of loans. And there are the internal liabilities to the shareholders. Money owed to the shareholders by the company is, therefore, a liability of the company to the shareholders.

  - The balance sheet can be summed up in the formula:

    . Total assets = total external liabilities plus shareholders' capital.

- It follows that any change in the total on one side must be accompanied by an equal change on the other side. For example, if the shareholders decide to subscribe further capital, there must be an increase in the total assets, e.g., plant, stocks, debtors and cash, unless the money is used to reduce external liabilities, e.g., bank overdraft.

- The balance sheet shows where the money in the business has come from and where it is currently located. The three main sources of funds are shareholders, the bank and creditors. The main types of assets are land, buildings, plant and machinery, stocks, debtors, and cash.

- Exhibit III-1 shows a typical balance sheet. It is easy to calculate the working capital (current assets less current liabilities) and the fixed capital (fixed assets less deferred liabilities). Working capital is also known as net current assets.

- The working capital and the fixed capital are then added together to arrive at the total capital employed. This gives the same answer as deducting the total

EXHIBIT III-1

SAMPLE BALANCE SHEET

	FIXED ASSETS	
	Land and Buildings	
	Plant and Machinery	
	Office Equipment	
	Vehicles	_____
A	TOTAL FIXED ASSETS	_____
	CURRENT ASSETS	
	Raw Material Stock	
	WIP and Finished Stock	
	Debtors and Pre-payments	_____
B	TOTAL CURRENT ASSETS	_____
C	TOTAL ASSETS (A+B)	
	CURRENT LIABILITIES	
	Creditors and Accruals	
	Bank Overdraft	
	Current Taxation	_____
D	TOTAL CURRENT LIABILITIES	
	DEFFERED LIABILITIES	
	Hire Purchase Balance	
	Long-term Loans	
	Mortgage	_____
E	TOTAL DEFERRED LIABILITIES	_____
F	TOTAL EXTERNAL LIABILITIES (D+E)	_____
G	WORKING CAPITAL (B-D)	
H	FIXED CAPITAL (A-E)	_____
I	TOTAL CAPITAL EMPLOYED (G+H) OR (C-F)	_____
	Represented by:	
	Ordinary Shares	
	Retained Profits	
	Capital Reserve	_____
	SHAREHOLDERS' NET WORTH	

external liabilities from the total assets, leaving a figure equal to the internal liabilities.

- There are other forms of revised layout. Some of them do not show the total assets, fixed plus current. Instead, they start with current assets then deduct the current liabilities to give net current assets (working capital). To this figure is added the fixed assets. The resulting sum is then shown as being financed partly by shareholders' capital and partly by deferred liabilities.

- The total capital employed is also known under a variety of other names. These include shareholders' capital employed, owners' equity, net assets, net worth. All these terms mean much the same thing. They represent the amount of money originally put up by the shareholders plus any further sums invested by shareholders, plus the retained profits, plus any increase in the value of land and buildings. The multiplicity of names is confusing. All that really matters is that this is the sum of money on which the return on capital employed is calculated. This is the generally accepted index or profitability.

- The term "net worth" does not imply that this is what the business would bring if it were sold as a going concern or broken up. It is simply an accounting expression. It means the value of the net assets as shown in the books.

- The value of a business as a going concern depends more on the profit record and potential profits than on the balance sheet values. Two companies with the same net worth may have very different values on the open market. One may have incurred losses while the other made handsome profits. Even if they both have the same profit record, one might have a greater potential for future profits or more readily disposable assets.

- When a business is closed down and the assets are sold off, it is unlikely that the book values will be realised. For instance the land and building may be worth far more than their written-down value. The equipment may be worth far less than book value, particularly if it has to be sold for scrap. The stock

of finished goods may be virtually worthless in a forced sale. But the raw material may sell at book value or even more if prices have risen since the purchase.

- The broad nature and purpose of the balance sheet have now been outlined. The various types of assets and liabilities are discussed in more detail below.

4. ASSETS

- Assets are divided into two groups: fixed assets and current assets. Fixed assets are those with some degree of permanency beyond the current year. Current assets are those that change from year to year and even day to day. The company aims to turn over its current assets in the course of trading. It is not in business to turn over its fixed assets. The fixed assets are usually shown at cost, less depreciation. The current assets are shown at cost or market value, whichever is lower.

- Under the heading of fixed assets, the first item is usually land and buildings. These may be shown at the original cost, less accumulated depreciation. If they are more than a year or two old, the value will tend to be understated. Such a situation may delude management and shareholders into thinking that the return on capital is good. In fact, it may be poor in relation to the real value of the assets.

- The land and buildings should be re-valued every few years by a professional estimator in order to present a more realistic picture. Any change in the value of these fixed assets must be accompanied by an increase in the liabilities side, usually shown as capital reserve. The capital reserves may be converted into share capital by a bonus issue of shares. However, this does not mean that the shareholders are better off. Dividends depend on profits, not on asset values. The increase in the value of such assets is a form of profit. By law, it cannot be distributed in the form of cash dividends.

- Usually the next items of fixed assets are the plant and equipment, followed by the fixtures and fittings, and motor vehicles. These will normally be shown at cost, less accumulated depreciation. These kinds of fixed assets tend to wear out faster than buildings so they are rarely re-valued upwards. However, the value shown in the balance sheet, usually after depreciation, may seriously understate the cost of replacing the assets, especially in a period of high inflation.

- Another category of fixed assets found in some balance sheets is investments. These may be funds invested in fixed interest securities or perhaps shareholdings in subsidiary and associated companies. In such cases, it may be important to separate the profit generated by the parent company from the interest received on securities or the profit generated by the subsidiary. Then each profit can be related to the appropriate capital.

- The policy on depreciation varies from one company to another. In theory each asset should be depreciated at a rate that will reduce its value to zero at the end of its working life. In practice, many assets are written off before they are entirely worn out. For example, motor cars and machinery may be written off in three or four years.

- Depreciation shown in the balance sheet is not necessarily available as cash for replacement of the asset. It is simply a means of ensuring that the initial cost of an asset is not charged wholly against the profit from the year of purchase. Instead the charges are spread over a longer period to give a truer and fairer picture.

- Depreciation is based on the original cost. The replacement cost may be considerably higher due to inflation and/or technical improvements.

- In some companies the balance sheet shows not only the written-down value of each category of the asset but also the value at the beginning of the year, the cost of any additions, and the amount of depreciation. Alternatively, the information may be given in notes to the accounts.

- Current assets include stocks, debtors and cash. Stocks may be separated into raw materials, work-in-progress and finished stocks. In some companies it may be appropriate also to distinguish stocks of maintenance materials, fuel, lubricants, etc. Stocks are usually valued at cost or market value, whichever is lower. A prudent management will tend to undervalue the stock, thus creating a hidden reserve.

- The figure for debtors represents the sum of money owed to the company by its customers for goods and services already supplied but not yet paid for. In theory, it should represent only the deliveries made in the last month of the financial year. Settlement for these items will be due later under normal trade terms. In practice some customers may not pay their debts within the normal period. So the debtors figure may represent the sales of several months.

- Cash in the balance sheet is usually cash at the bank, plus a small amount in hand. If a company has an overdraft it is rare to find more than a small amount of cash in hand on the assets side of the balance sheet. Of course, the stocks and debtors may have been deliberately reduced towards the end of the year in order to present a more favorable cash figure in the balance sheet. Alternatively, the company may have deliberately delayed payment to suppliers in order to inflate the cash figure.

5. LIABILITIES

- Liabilities can be classified into two main categories: external and internal. The external liabilities are amounts owed to suppliers and also any external sources of funds, e.g., bank overdraft and long-term loans. The external liabilities may be further divided into two groups: current and deferred. The internal liabilities are those to the shareholders, i.e., the total capital employed (or the net assets, the net worth, or the owners' equity or any other phrase with the same meaning).

- The main types of current liabilities are trade creditors and the bank overdraft. The first of these items represents the amount owed to suppliers for goods and services already supplied but not yet paid for. As with debtors, in theory, the figure for trade creditors should represent only the items received in the last month of the financial year. In practice, many companies take longer to pay their bills. There may be some items in dispute, so the figure may represent more than the last month's receipts.

- In theory the bank overdraft is a short-term credit facility provided by the bank. Its function is to help the company to meet its day-to-day payments to suppliers and employees while awaiting payments from customers. Overdrafts are also used to finance seasonal trading in some industries. In practice, many small firms seem to use the overdraft on a semi-permanent basis. This can be dangerous because, strictly speaking, the overdraft is repayable on demand.

- However, the bank is in business to make a profit by lending. It does not really want to reduce the loan unless there is a danger of loss. The general practice with overdrafts is to negotiate a credit limit for several months ahead. The limit may be reviewed from time to time. Overdrafts should not be used to finance long-term expenditure on fixed assets. For such purposes, a long-term loan is more suitable.

- Another item of current liability is taxation due within the current year. It is a short-term commitment, though not as short as the commitment to creditors and the bank.

- In some private companies there may be an item entitled "director's loan account" treated as a current liability. Although this may be a correct classification in accounting practice, it may be more appropriate to treat the sum as part of the shareholders' capital employed when calculating the return on capital.

- Long-term bank loans are deferred liabilities. Another type of deferred liability is a mortgage, i.e., a loan secured against the land and buildings. Yet another is a hire purchase loan. In some companies these are treated as current liabilities in the balance sheet. But they are not really short-term debts. Arrears of dividend on preference shares are another form of deferred liability.

- Internal liabilities can be divided into two categories, namely, the capital originally provided by shareholders and undistributed profits accumulated from previous years.

- Many balance sheets show items called capital reserves, usually arising from re-valuation of the land and buildings. These items are a form of profit but not available for distribution. In effect, they are simply an updating of the value of the land and buildings from the original cost to the current value. The main cause of the change is inflation.

- Revenue reserves are another form of reserves. These are the accumulated profits retained in the business from earlier years. The term reserves, both capital and revenue, can be misleading. The uninitiated shareholder may think that they represent cash available for distribution. In fact, the reserves may be entirely locked up in fixed assets, stocks and debtors. Examination of the assets side of the balance sheet will reveal whether the revenue reserves are covered by cash.

6. PROFIT AND LOSS ACCOUNT

- A profit and loss account example is given in Exhibit III-2. It starts by showing the sales turnover plus closing stocks, of all types. Next the materials purchased are shown, plus the opening stocks and the direct wages. A balancing figure, called gross profit, is then derived.

EXHIBIT III-2

SAMPLE PROFIT AND LOSS ACCOUNT

Sales Turnover	_____
Closing Stock	
Materials Purchases	
Opening Stock	
Direct Wages and Payroll Taxes	_____
Gross Profit	
Advertising	
Bank Charges and Interest	
Consumable Stores	
Depreciation of Plant	
Depreciation of Vehicles	
Hire Purchase Interest	
Indirect Wages and Payroll Taxes	
Insurance	
Mortgage	
Postage and Telephone	
Power, Light and Heat	
Printing and Stationery	
Professional Fees	
Rent and Rates	
Repairs to Buildings and Plant	
Salaries and Pension	
Transport and Carriage	
Travel and Motor	
Total Overheads	_____
Net Profit Before Tax	

- The remaining items then show what happened to the gross profit. There is a list of the various "overheads" taken from the nominal ledger. The total of these items is then deducted from the gross profit to give the net profit before corporation tax.

B. LIFE CYCLE COST AND PROFITS

- Life cycle costing is essential for information processing manufacturers as well as for independent service organisations. Products are born, undergo transition and maturation, and ultimately die.

- By examining, projecting, and monitoring the lifetime costs of a product, the manufacturer or servicer can optimise and exploit the utility as well as the financial return of that product.

- Conversely, by having only a minimal awareness of life cycle costs, manufacturing firms can be very harmfully affected by unplanned expenses associated with an aging product.

- Maintenance, installation, and warranty costs must not be taken for granted in product planning and are important as a potential hazard to profits as well as a potential profit earner.

- As evidenced by the enormous amount of competition in the information processing industry, there are thousands of excellent products being marketed and used. Unfortunately, many of these will have a premature demise due to neglect of life cycle cost evaluation, especially in areas of maintenance, installation, and warranty.

- Inordinately excessive service costs can spoil the excellence and profitability of a product. At least one major worldwide computer manufacturer once

developed a very competitive portable dumb terminal, packaged in a briefcase. Just prior to product release, the service organisation appraised its maintainability limitations and submitted such high service costs to the product manager that the product was abandoned.

- One wonders if the current microcomputer surge will result in victims who have not performed their life cycle costing homework with respect to service.

  - There has been a tendency by microcomputer manufacturers to pass the responsibility of service to dealers and distributors.

  - This scheme will only be successful if the manufacturers' agents are properly trained and provided with parts.

  - Life cycle cost programmes for other microcomputer competitors involve carry-in or mail-in service options.

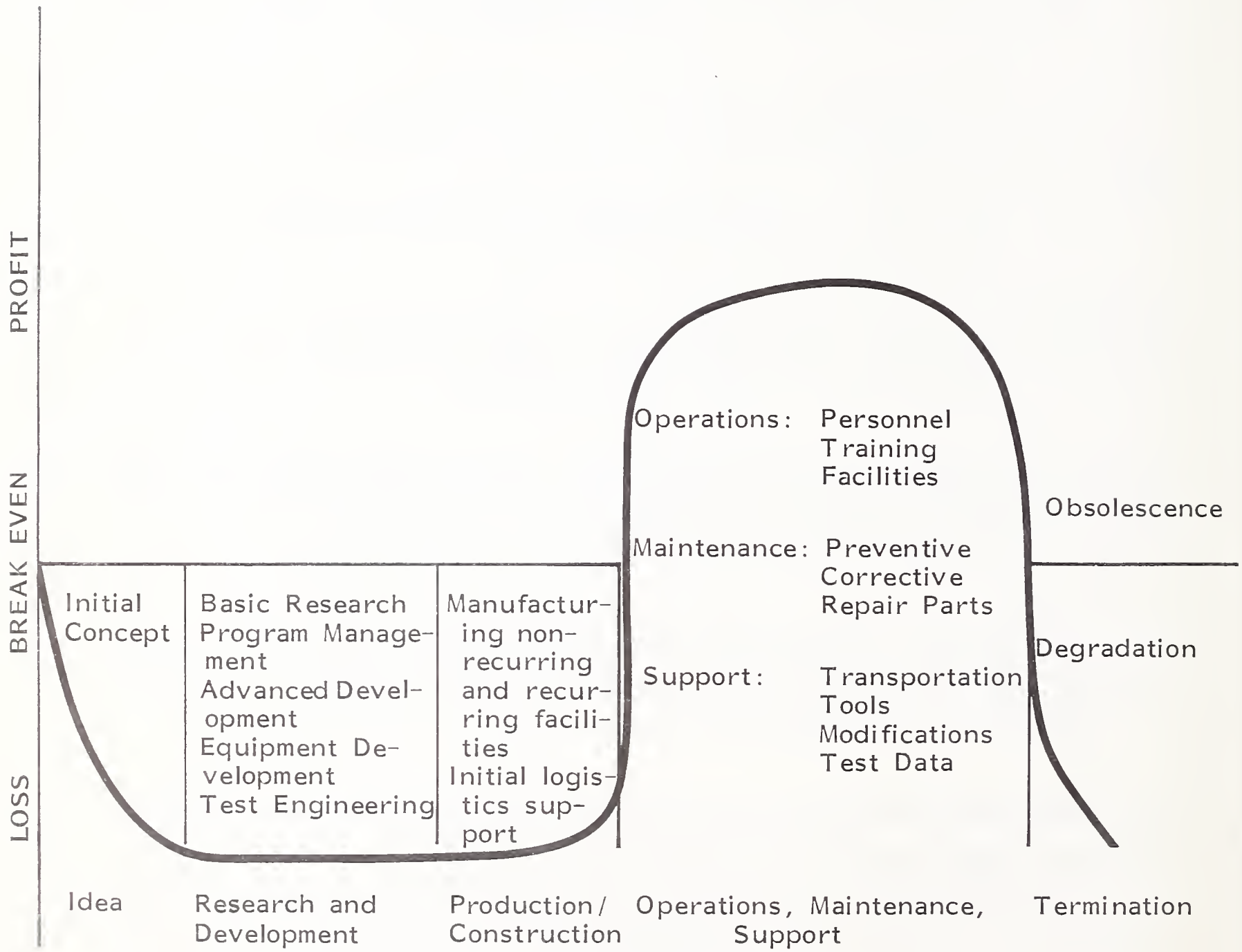
  - On-site service for micros would be prohibitively costly and would quickly plunge the total product into a loss unless, of course, an appropriate price adjustment were made.

- The life cycle cost concept is a comprehensive business plan projection of costs associated with a particular product or group of products. Exhibit III-3 shows the overall picture of life cycle costing.

- While the concept of life cycle costing is empirically a simple one, the timing and implementation of various strategies relating to stages is critical. Knowledge of the point at which revenues first exceed expenses is a milestone. It is more critical to note, however, product termination, at which time expenses exceed revenues. This, of course, is the time to either offer other products and/or make other service options available.

EXHIBIT III-3

LIFE CYCLE COST THEORY



- The relationship of life cycle maintenance costs, revenues, and profits is shown in Exhibit III-4. Cost per unit diminishes in Cycle I in time because of experience, which means more units are installed in the field, and costs per unit decline in a fixed proportion. This is the basis of learning curve theory.

  - As unit costs subside, cumulative costs level off.

  - And as unit revenues grow, cumulative revenues surpass cumulative costs, thereby creating a profitable situation in Cycle I.

  - Eventually, costs per unit begin to rise because of obsolescence, reduction of installations, general wear and tear, and scarcity of both human and material resources.

  - This bathtub curve has the effect of pushing cumulative costs beyond cumulative revenues in Cycle 3.

C. ORGANISATION FOR PROFITABILITY

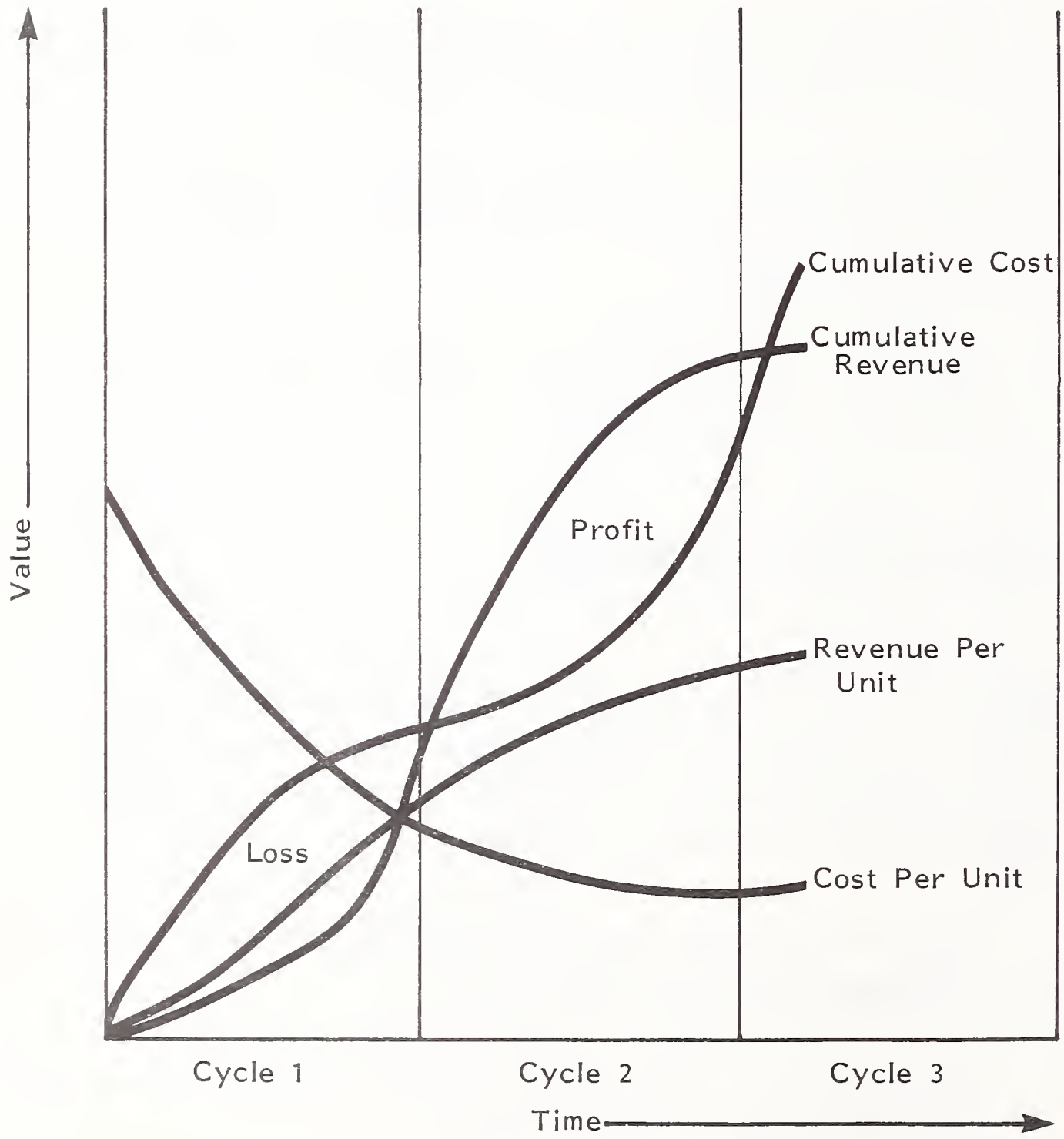
- The organisation of profitable service functions requires removing traditional structures to facilitate the introduction of field service at top levels, reducing "top-heaviness" in the middle, and decentralising operations, including profit responsibility, to the regional and branch level.

  - One such corporation increases the profitability targets each year and pays large bonuses for achieving them.

  - "Devolution" of the field service function from the marketing function is a frequent change in profitable firms.

EXHIBIT III-4

LIFE CYCLE MAINTENANCE COSTS, REVENUE, AND PROFIT



- Organisation by function rather than by product group is another response by progressive service organisations to focus on and embellish field service profitability.

- Strong communication links at all levels with improvement of internal communications is a keystone to profit-making for services. Emphasis on communicating long-term strategies to field service personnel is expected to prove successful and will be achieved through fully informing staff so that they identify with corporate goals and are motivated to achieve the desired results.

- It is clear that the emergence of field service as a profit centre warrants some changes in the organisation structure and, in many companies, the field service organisation is changing. This varies according to the type and age of the company. A variety of profitable vendor organisations are discussed in the following analysis.

  - Exhibit III-5 illustrates the organisation chart of a mainframe manufacturer in which the field service function operates at divisional level.

  - The main effect of this, according to the respondent, is that it has restrained the marketing function from "giving away" maintenance contracts.

  - Exhibit III-6 illustrates a more traditional organisation structure within a mainframe manufacturer who is at the "in-between" stage where field service operates as a profit centre but continues to report to marketing.

  - Field service is now more involved at corporate level and in setting corporate targets. However, it will take some time to re-educate the marketing function to recognise the importance of field service. Previously they used to think that customer services profit hindered their sales.

EXHIBIT III-5

TYPICAL MAINFRAME MANUFACTURER

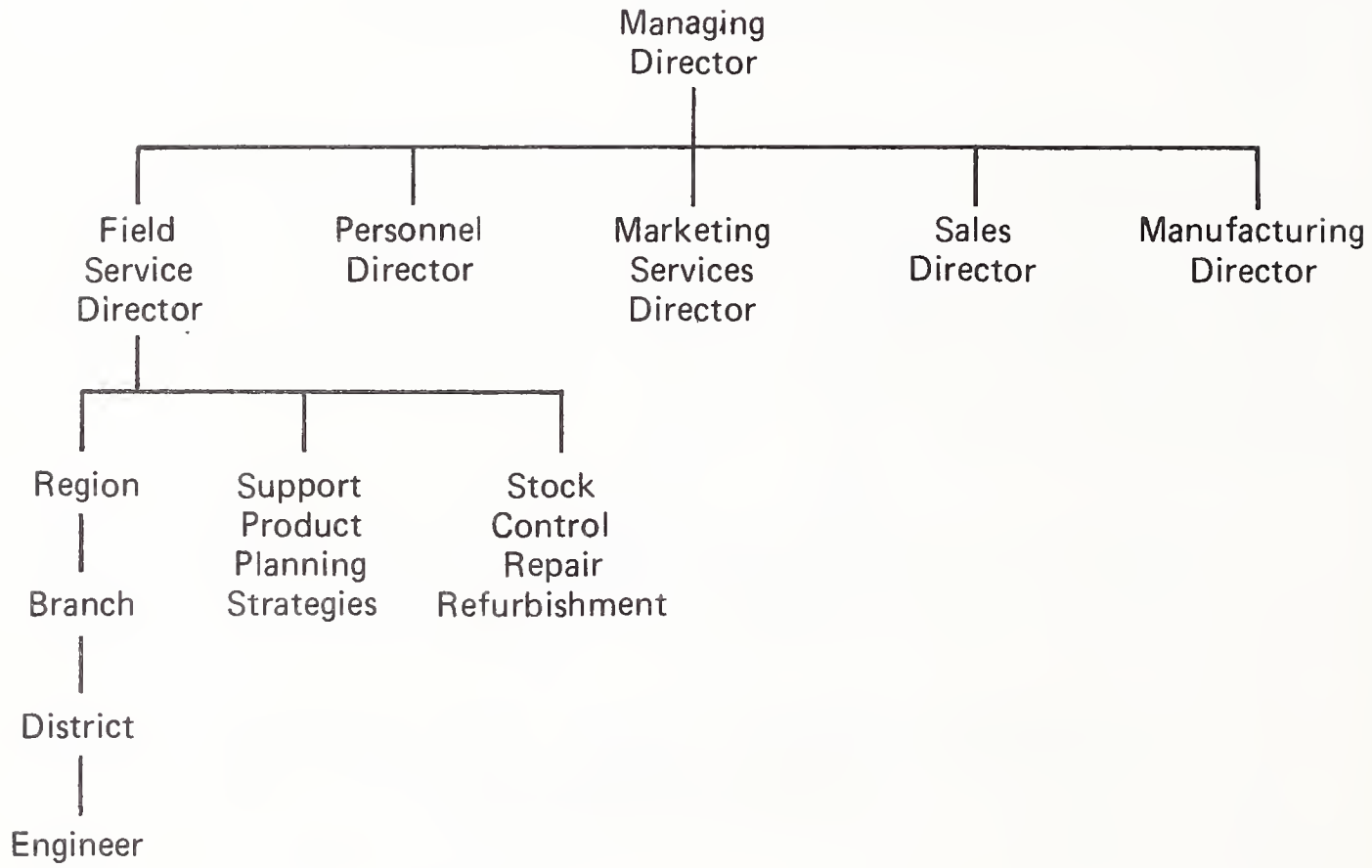
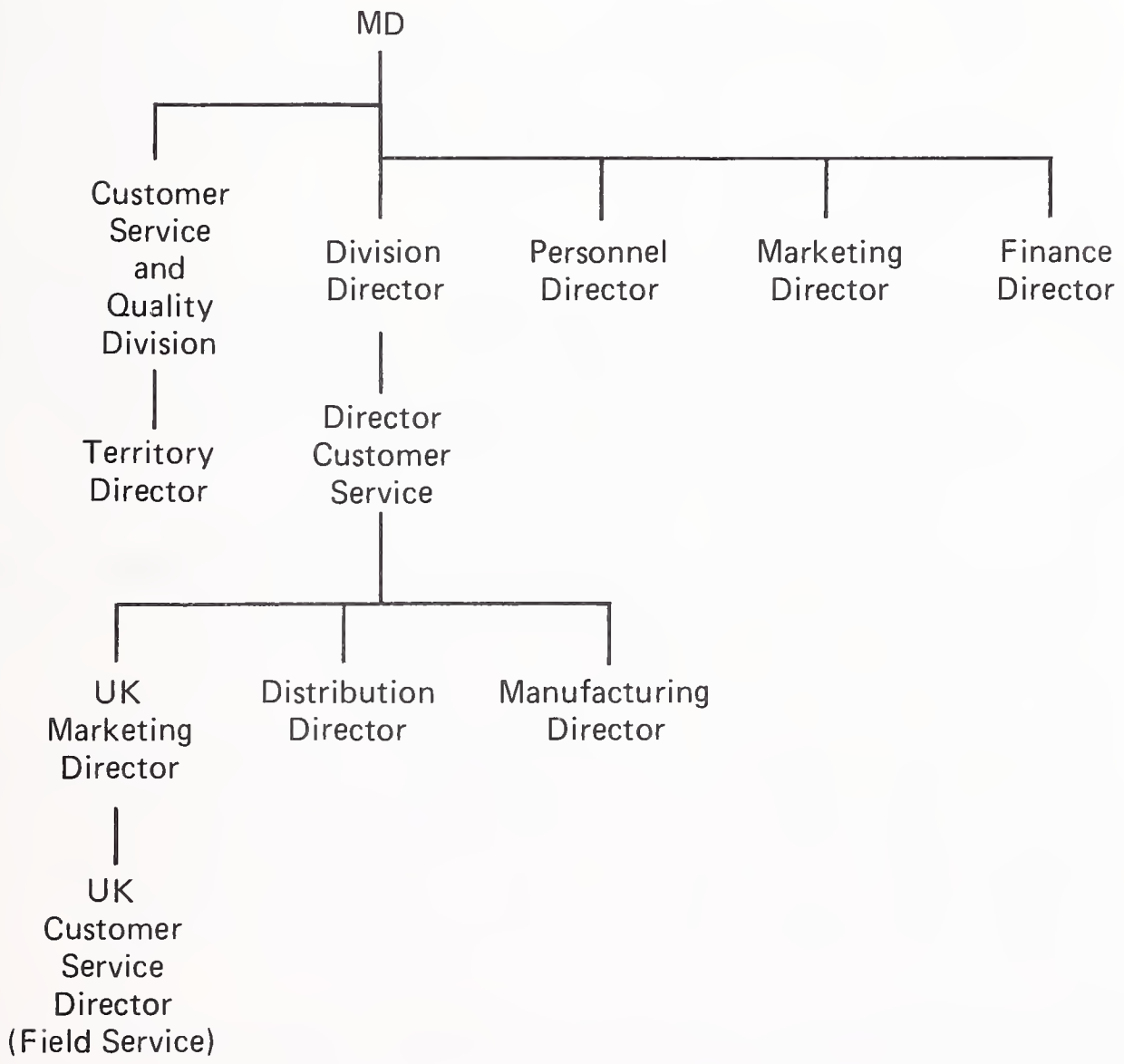


EXHIBIT III-6

TRADITIONAL MAINFRAME MANUFACTURER AT "IN-BETWEEN" STAGE WHERE CUSTOMER SERVICE STILL REPORTS TO UK MARKETING DIRECTOR



- In this company, the field service function was once separate from marketing and operated as a cost centre. It was placed under the responsibility of marketing when the company realised that maintenance contracts were becoming a more important part of the sales "package."

- Now the company has come full circle and intends to devolve the customer services function from marketing and set up a field service marketing function. This corresponds with the fact that field service is a rapidly growing profit centre.

- Exhibit III-7 illustrates the organisation chart of a large multinational mini manufacturer, showing how the various country activities are controlled. The field service/customer services function operates at divisional level and is involved in setting maintenance prices in each country.

  - In this case the field service function has its own marketing research function that gathers competitive knowledge.

  - Although field service is a profit centre, the company will occasionally enter a new market using maintenance as a loss maker in order to establish an installed base if the market value is high enough. The company will make a profit after one hundred units are sold.

- Exhibit III-8 illustrates the organisation chart of a typical multinational mini manufacturer. In it the field service function operates at divisional level where customer satisfaction rather than profit is the main corporate objective.

  - The organisation is structured so that customer problems are easily escalated to top management.

EXHIBIT III-7

LARGE MULTINATIONAL MINI MANUFACTURER

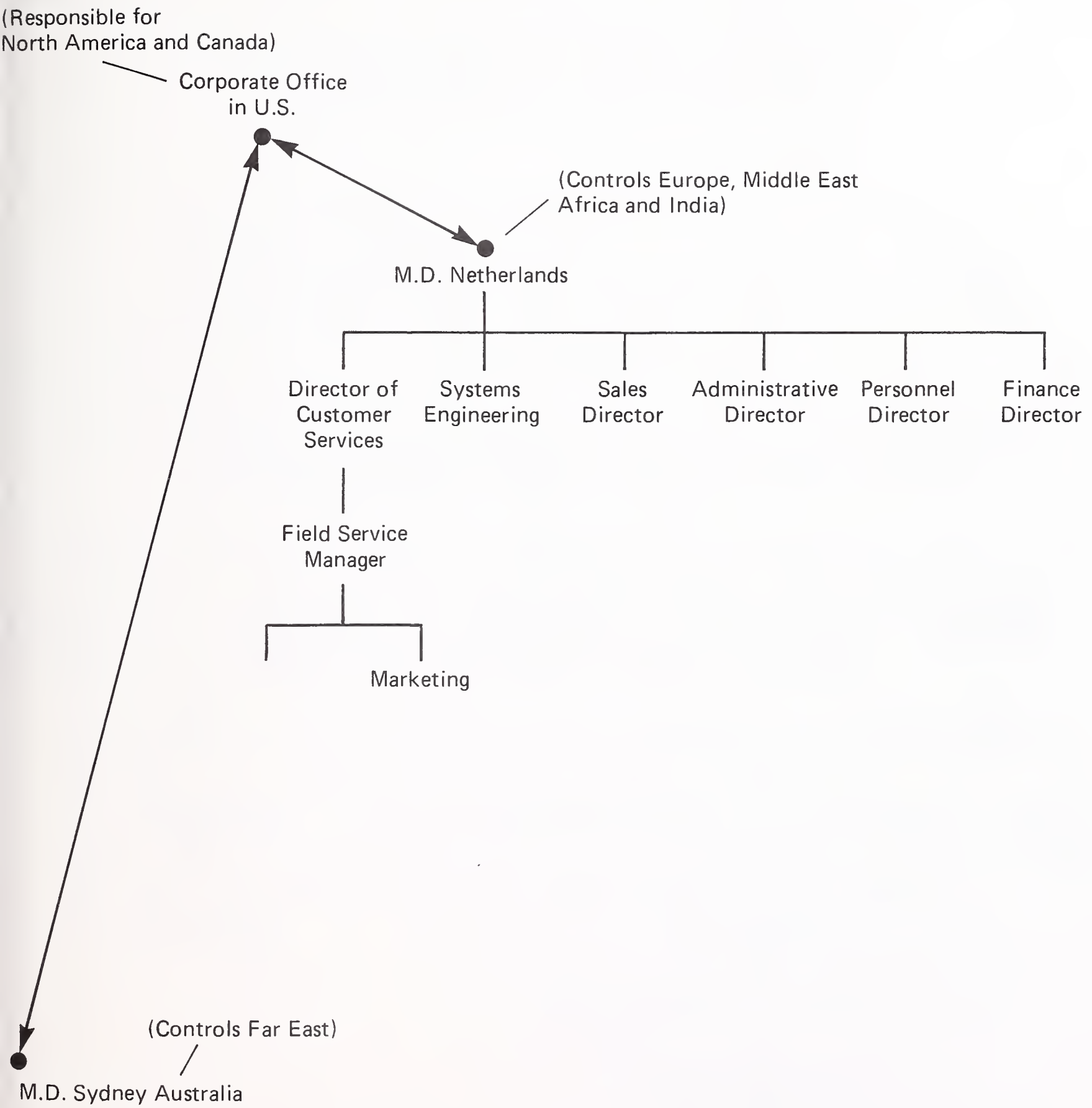
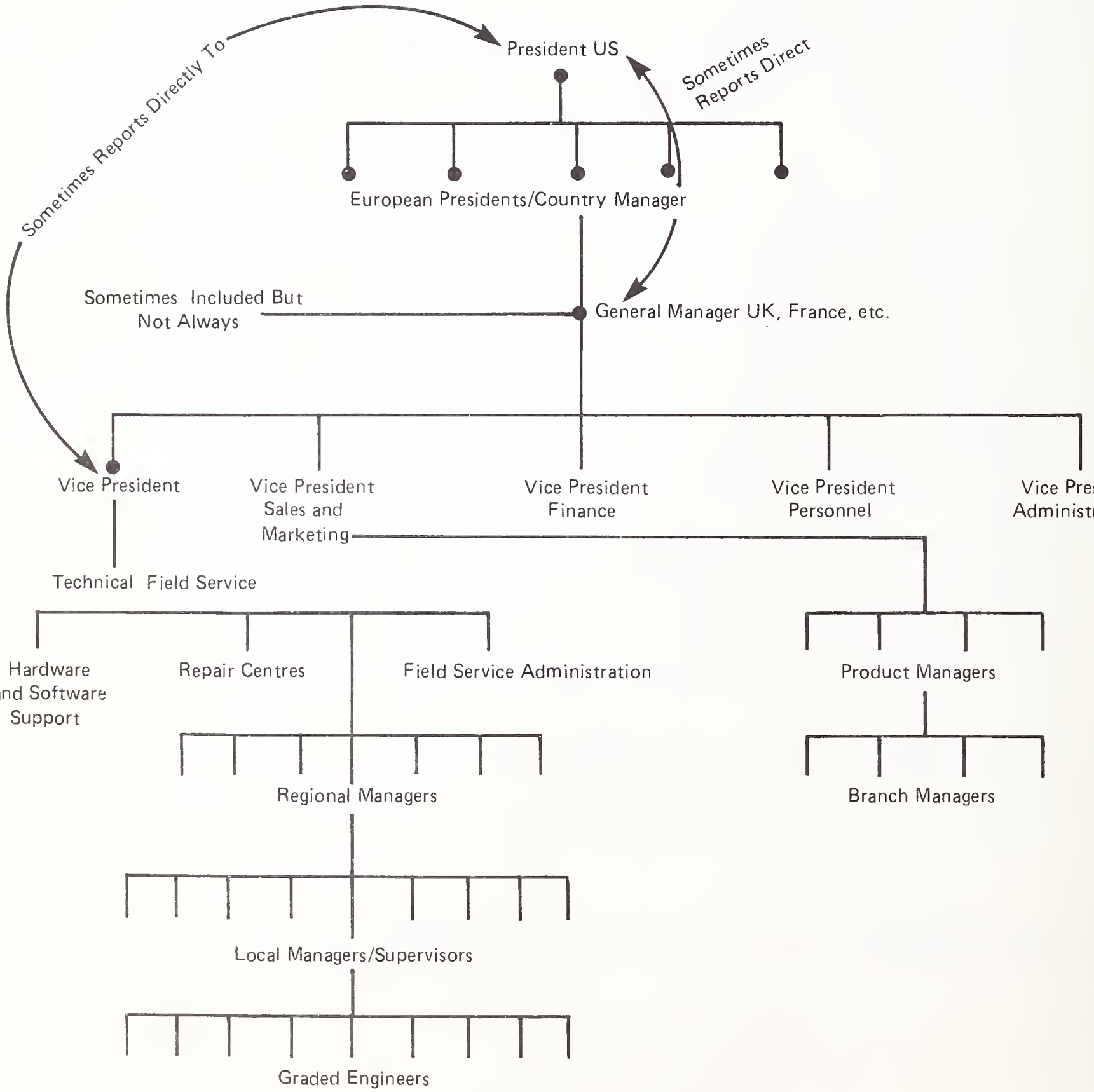


EXHIBIT III-8

TYPICAL MULTINATIONAL MINI MANUFACTURER WITH FIELD SERVICE AT DIVISIONAL LEVEL



- The lines of communication between the field service vice president or the technical vice president and the president of the U.S. operation, can be direct, if the field service vice president considers it necessary.

- Likewise, the general manager (this position is sometimes included in the typical organisation, but not always) may contact the president of the U.S. operation, if he considers it advisable to do so.

- Other companies that have similar organisations reflect the movement of the field service function to divisional level, which can often automatically increase profits as the reorganisation causes the removal of other managers! Note that in this organisation, centralised repair facilities are used.

- Exhibit III-9 illustrates the organisation of a software engineering-orientated minicomputer manufacturer in which the field service function entitled Field Software Engineering Operations (FSEO) operates at divisional level.

  - All of the four managers reporting to the FSEO Director have their own budgets and targets. Monthly progress reports and targets are presented, and competition is strong between the four sections and their branches.

  - This healthy competition has a positive effect on profits.

- Exhibit III-10 illustrates the organisation of a minicomputer manufacturer in which field service is an autonomous profit centre at divisional level.

  - Despite the relative autonomy of field service function, profits are eroded when the sales function gives discounts that field service is not aware of and not in agreement with.

  - This demonstrates that even if the field service function is devolved from marketing and sales, very definite rules have to be set about the

EXHIBIT III-9

SOFTWARE ENGINEERING-ORIENTATED MINICOMPUTER MANUFACTURER

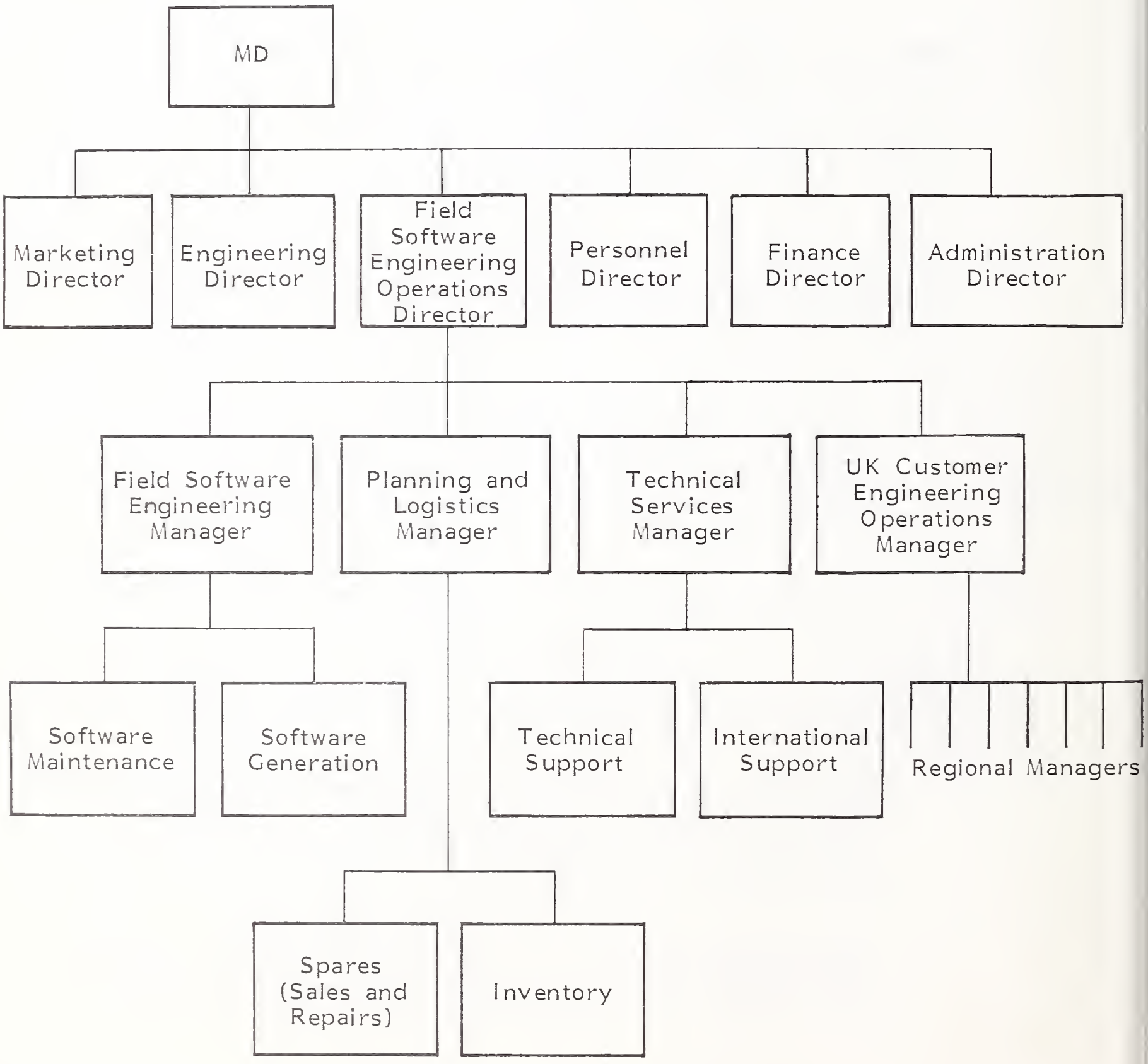
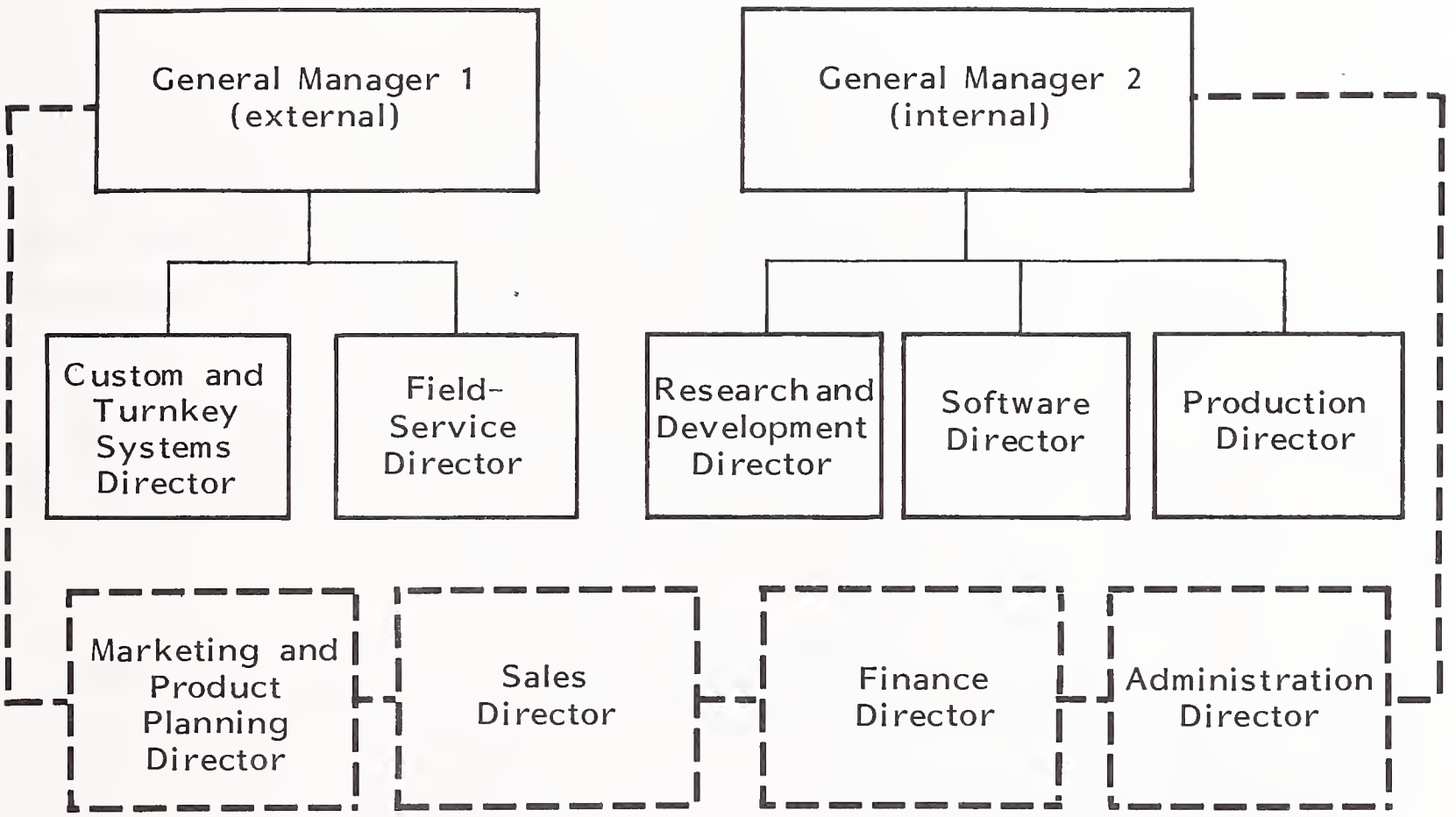


EXHIBIT III-10

MANUFACTURING COMPANY IN WHICH FIELD SERVICE IS AN AUTONOMOUS PROFIT CENTRE



General Managers 1 and 2 are individually responsible for the functions outlined in black and have dual responsibility for the functions outlined by dashed lines.

flexibility of maintenance contract prices. This also suggests that involvement of the field service manager or a customer services marketing manager would be desirable in order to avoid such problems.

- Exhibit III-11 illustrates the organisation chart of a diversified company with third-party maintenance terminal manufacture in the U.K. The company has been operating in the U.K. for one and one-half years and is breaking even. To break even at such an early stage, however, indicates the high profitability potential for third-party maintenance and terminal sales.

- Functionally, field service is devolved from sales. Currently field service is not at divisional level, but its responsibilities are increasing to include training courses for the European field service staff. Thus it is expected that field service will move up to divisional level by 1984 or 1985. The field service department's profitability is buffered to some extent from the unacceptable and high costs of the European HQ.

- One guideline for profitability is the machine-to-man ratio. A firm can be profitable when the ratio of engineers to systems is 1:40. Now it is 1:20 for the company in question.

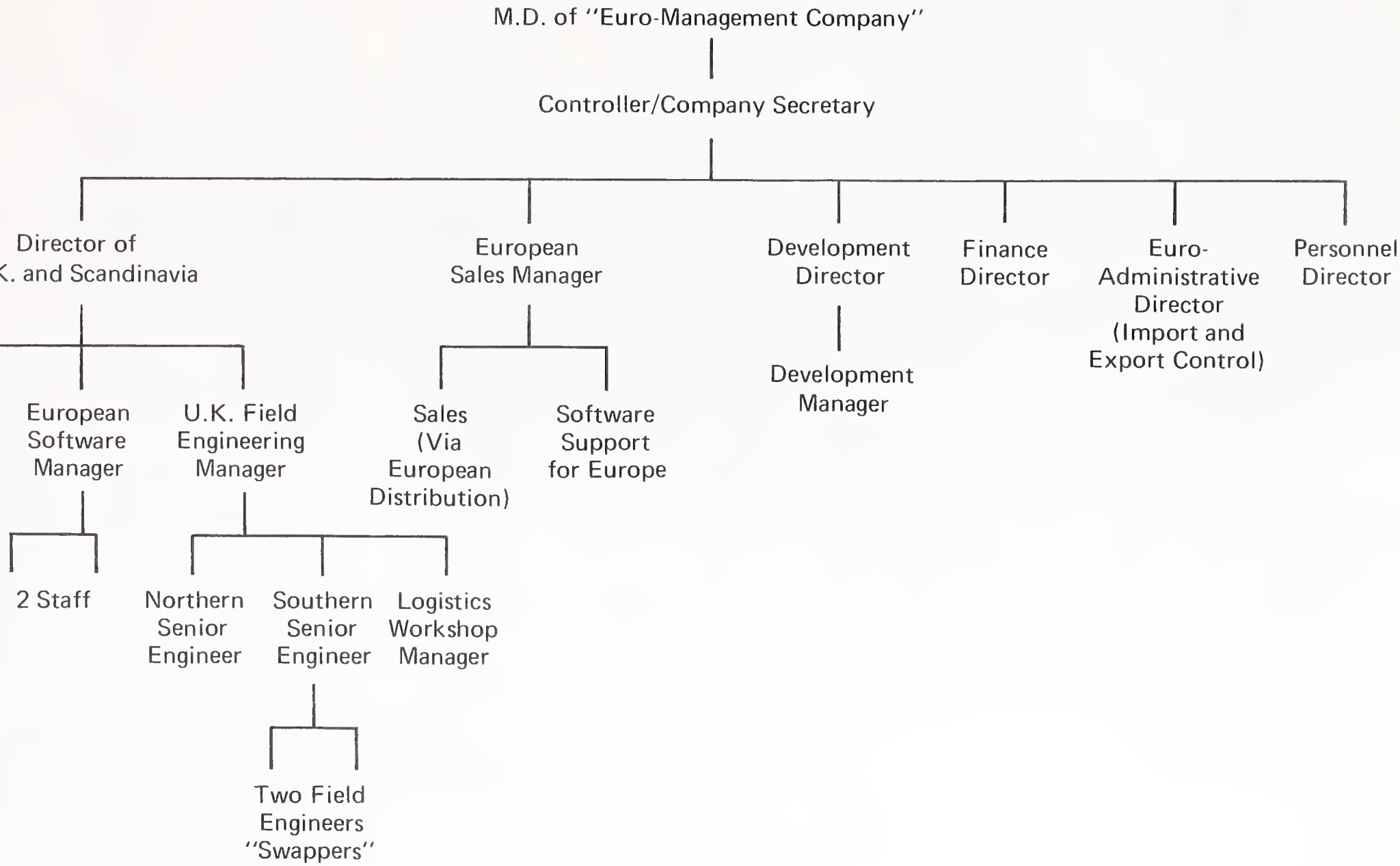
- Profit and loss responsibility in field service departments is managed at headquarters in the majority of firms (57%), while others decentralised the profit and loss responsibility to local or country levels as shown in Exhibit III-10. The lack of delegation reflects the multinationality of the respondents, whether field service is a profit or cost centre, and the length of time it has been operating as such. Generally, policy, pricing, and targets are set at corporate levels and implemented at regional and local levels.

- In the case of field service profitability being centralised at HQ level, it is likely that the regional, district, and local field service departments are cost centres.

EXHIBIT III-11

ORGANIZATION STRUCTURE OF A VERY DIVERSIFIED COMPANY WITH TERMINAL MANUFACTURING OPERATIONS IN THE UK

(Multicomputer)



- It is vital that field service functions are devolved from marketing functions and made responsible for setting business objectives by operating as profit centres. This is the only solution to change the attitude of marketing personnel toward field service and thus avoid sales persons treating maintenance contracts as "give aways."

  - It is not only the marketing department that must be made aware of the importance of field service activities to overall corporate profitability. The company as a whole must recognise that field service is the area with the greatest profit potential in view of the declining hardware and software profitability as a result of falling hardware prices and the standardization of software.

  - In order to maximise the profitability of the field service function, it is essential that it has its own marketing function. As one respondent mentioned, "Even though the field service function is separate from marketing, the salespeople still offer discounts without the consent of the field service function."

- The organisations studied reflect the changing role of field service in the organisation: field service operating at divisional levels, having its own marketing function, and providing training services for affiliated companies abroad.

- They also emphasise the need to design organisations for easy escalation of customer problems to top management and a two-way flow of communications throughout the company.

- Vendors are changing the role of field service in order to keep pace with the technology trends and to become better profit contributors.

  - Selecting and training involve:

- Changing the selection criteria for new field service personnel in response to the changing skills needs.

- Investment in training and education aimed at developing a new profile of field service personnel - more profit and marketing orientated.

- Training field engineers to become customer engineers through training in more sales orientated customer relations.

- Internal crosstraining in new areas, methods and equipment.

- Buying in field engineers with communications expertise through mergers with communications companies.

- Special training programmes for field service managers including financial accounting and sales methods to enable them to be more business orientated.

- Educating and training the sales force about field service products.

- The organisation, to survive, must implement newer service and management techniques including automation of field service activities, e.g., productivity, performance and cost controls, and the use of built-in diagnostics and different tools for preventive maintenance. Changing or adapting the field service function in response to the changing role of field service will be in the form of a gradual evolution rather than a revolution.

- Approximately 75% of the organisations sampled recognised the changing role of field service and have changed successfully and easily. The remainder encountered difficulties in the areas of personnel management and training, revenues, and the nature of the installed base.

- One company is finding it difficult to introduce new measures because the trade unions are reluctant to accept them, and the company is "heavily unionised."

- The unions are reacting to the memory of very bad, unprofessional handling of change by previous management.

- One company has had to publicly rebuke senior managers who attributed more importance to profits than to customer satisfaction.

- For another company the evolution is moving very slowly because the personnel involved in the changes are not sufficiently committed.

- Cross-training personnel in new areas and methods often shows that some staff are not capable of cross-training and are concerned that they will have to be made redundant eventually.

- A company that is changing the emphasis of field service techniques from corrective to preventive maintenance is unsure exactly how to deal with customer systems where 90% of the maintenance is preventive and 10% is curative. So far no fixed rules have been set.

- These difficulties illustrate the impact of changes in field service function on company policies, personnel structure, and users.

D. ASSET MANAGEMENT AND CONTROL

1. INVENTORY ACCOUNTING

- Methods for inventory accounting include computerised accounting, depreciation, cost-in, write-off, and profit and loss. These methods are summarised in Exhibit III-12. Depreciation is the most frequently cited method of inventory accounting. The period of depreciation varies from three to eight years depending on the value and type of inventory.

  - Major spares are depreciated over the shortest period (three years).

  - Inventory over $50; fixed assets, e.g., swap out units and disks; and printed circuit boards are depreciated over four years.

  - Nonconsumables are depreciated over five or six years and sometimes eight years.

- Computerised accounting is used less frequently than it should be in view of the size and type of business in which the respondents operate. Several firms however contemplate implementation of computerised accounting methods in the near future. The scarcity of proper management tools for field service is perhaps a vestige of the times when service was considered a necessary evil.

- Equal mention is given to the method of costing-in, and no distinction is made regarding the nature of the inventory. One respondent costs in consumables on purchase, while the other costs in all inventory.

- Writing-off is another method used by one respondent in accounting for small spares.

EXHIBIT III-12

INVENTORY ACCOUNTING

METHOD	INVENTORY	MENTIONS (percent)	TOOLS & TEST EQUIPMENT	MENTIONS (percent)
Conputerised accounting	On-line system	6%		
	Management information system	5		
Depreciation	Major spares depreciated over 3 years	13	Equipment over $100 depreciated over 5 years	6%
	Inventory over $50 depreciated 4-10 years	7	Test equipment depreciated over 5 years	13
	Non-consumables depreciated over 5 years	6	Fixed assets depreciated over 4 years	7
	Fixed assets, i.e., swap-out units & disks depreciated over 4 years	5	Tools & test equipment capitalised over 4-10 years	6
	Printed circuit boards-30% depreciation at cost per year	8	Tools & test equipment depreciated over 3, 4, 5, 6, years (emphasis on 5 years)	50
	Inventory depreciated over 5, 6, 8, years			
Cost-in	Consumables expensed on purchase			
	Cost-in all inventory and log by product in logistics inventory	6	Cost-in expensive tools	12
Write-off	Write-off small spares	9	Write-off as consumables on purchase	6
Profit and loss	Profit & loss account with reserve equal to depreciation amount (This is in Germany where there is no system for depreciation.)	8		

SOURCE: Vendor Survey

- Profit-and-loss accounting is also used by one respondent due to the fact that depreciation is not an accepted method in Germany, so profit and loss statements are used with a reserve equal to the depreciating inventory value.

2. INVENTORY CONTROL

- Methods used for inventory control include computerised control, physical stocktaking, manual systems, depreciation, profit and loss, and a form of ad hoc control, dependent on the economic climate as shown in Exhibit III-13.

- Physical stocktaking is the most popular method of inventory control and is conducted biannually, annually, and at random depending on the nature of the inventory.

- Computerised methods are also relatively popular and are more widely used for inventory control than in inventory accounting. The remaining methods are given one mention each. They include:

  - Manual control for nonconsumables, especially field-based equipment.

  - Depreciation whereby depreciation targets are set.

  - Profit and loss - the purchased equipment is allocated to a monthly profit and loss account.

  - Ad hoc control dependent on the economic climate - here inventory is reexamined in view or market trends and action is taken according to the findings. In this current recession, one company has found it advisable to extend the inventory holdings because there is a decrease in the replacement rate of equipment.

- The fact that the period of depreciation varies from three to eight years is somewhat peculiar. It makes sense for vendors to depreciate assets as quickly as possible in view of the possible obsolescence of equipment.

EXHIBIT III-13

INVENTORY CONTROL

METHOD	INVENTORY	MENTIONS (percent)	TOOLS & TEST EQUIPMENT	MENTIONS (percent)
Computerised control	Computerised inventory management info systems control	12%	Computerised control	7%
	Computerised stock control & annual stock check	6	Computerised yearly stock-take	6
	Minicomputer tracks transactions	5		
	Computeried regionalised inventory down to each engineer	7		
Physical stocktaking including frequency	Physical count	5	Physical count	0
	Annual physical stock check	18	Annual physical stock check	0
	Spot checks	7	Annual stocktaking of equipment up to 1,000 Swedish krone	5
	Twice yearly inventory	12		
	Yearly inventory of valued stock	6	Twice yearly stocktaking of equipment over 1,000 Swedish krone	6
			Twice yearly stocktaking (inc. independent audit)	7
			Tools inventory	7
			Test equipment has serial numbers and are fixed assets and have an annual inventory	6
Depreciation	Set depreciation targets	7	Completely depreciate after 3-5 years	5
			Capitalise	6
Profit and loss	Purchased equipment is allocated to monthly profit & loss and kept 'year to date'	4		
Other	Re-examine inventory re market trends & extend holdings when recession causes non-replacement of equipment	4	Treat as control resource	

- By assigning long lives to assets and using straightline depreciation, however, vendors will increase reported profits. The choice of depreciation method is entirely dependent on the financial policy of the vendors.

- What is important is that the depreciation periods for assets are accurately measured in order to account for cash flows. Taxable income may be reduced by claiming the maximum depreciation as early as possible and results in maximising cash flow on a present-value basis.

- Vendors who conduct inventories biannually or annually should consider the timing of the inventory. Most companies take inventories at the end of the fiscal year but would benefit from conducting the inventory up to three months before the end of the fiscal year.

- Often it is cheaper to do so, and it also allows more time for review and pricing. Naturally it will be necessary to review inventory transactions from the physical inventory to the end of the fiscal year. If the accounting system is reliable, the extra work should be minimized.

3. TOOLS AND TEST EQUIPMENT MANAGEMENT

- The methods used for tools and test equipment accounting are similar to those used for inventory accounting. Since the quantity and value of tools and test equipment differs from that of inventory, emphasis is on fixed asset accounting in the balance sheet. Depreciation is the favoured method of tools and test equipment accounting, with periods ranging from four to ten years according to the value of the equipment.

  - Test equipment and equipment over $100 is considered a fixed asset and is depreciated over four and five years.

- Although the depreciation period ranges from four to ten years, the most frequently cited period is five years. This suggests that the value of tools and test equipment is fairly standardised among the sample companies.

- The costing-in method of accounting is used less frequently for expensive tools while the writing-off method is used to write off tools and test equipment as consumables on purchase.

- The methods used for tools and test equipment control ranked in order of preference are: physical stocktaking, manual systems, computerised control and depreciation, and central control.

- Stocktaking is biannual and annual, according to the value of equipment, and the system most suitable for the company operations. Again it is remarkable that only two respondents use computerised methods of control, although it is possible that a physical stocktake is preferred in the interests of security of equipment.

- Manual systems of control include manual counting, individual responsibility, roll-over listing and monitoring the utilisation of tools. Depreciation targets are used to ensure that equipment is completely depreciated after three to five years. One company controls tools and test equipment by treating the equipment as a central resource.

4. FACILITIES ACCOUNTING AND CONTROL

- Methods of accounting for facilities include rental leasing depreciation, ownership, and overhead allocations, as shown in Exhibit III-14. Rental is the most widely used method for facilities accounting. Rental is paid to the owner of the building, or to the central HQ of the company if the renting company is a profit centre. Leasing applies most frequently to buildings and cars.

EXHIBIT III-14

ACCOUNTING FOR FACILITIES

METHODS	FACILITIES	PERCENT MENTIONS
Rent	Rent Rent form Central Head Quarters Monthly Provision for Rent, Electricity, Telephone	56% 6 7
Lease	Lease Building Lease Cars	6 7
Depreciation	Depreciate Over Lease Period (Approximatly 20 Years) - GCS	7
Ownership	Owned to Show Stability to Customers - Building Program in Europe	6
Overhead Allocation	Overheads Allocation	5

SOURCE: Vendor Survey

- Depreciation for facilities is the same as it is for parts inventory or tools, but the amortisation periods are longer for facilities.

- Only one company actually owns its buildings, and financial reasons are not stressed as the reason for ownership. Rather, the respondent points out that the purpose of ownership is to show stability to the company's customers. Indeed a Europewide building programme is underway.

- One company receives an overhead allocation for facilities from the company HQ.

- A few companies use financial justification and review the facilities situation each year. One company guards against unexpected increases by taking out a fixed price lease for five years. In another case the personnel department informs the relevant department of changes in lease(s), and the profit and loss account is reviewed. Only one company conducts annual inventories of buildings.

IV FUNDAMENTAL FACTORS

IV FUNDAMENTAL FACTORS

A. FIELD SERVICE FINANCIALS

1. REVENUES

- Field service revenues are increasing at a slow rate, as shown in Exhibit IV-1. The growth in revenue in 1983 from 1982 is 1.19%, while the growth in revenue in 1984 from 1983 is projected at 1.27%.

- The main factor contributing to the low growth in field service revenue is customer resistance to maintenance price increases. Customers do not accept price increases above the inflation rate, and since the rate has fallen in some countries (e.g., the U.K.) and has only marginally increased in others, vendors are restricted in setting prices, which in turn curbs revenue growth.

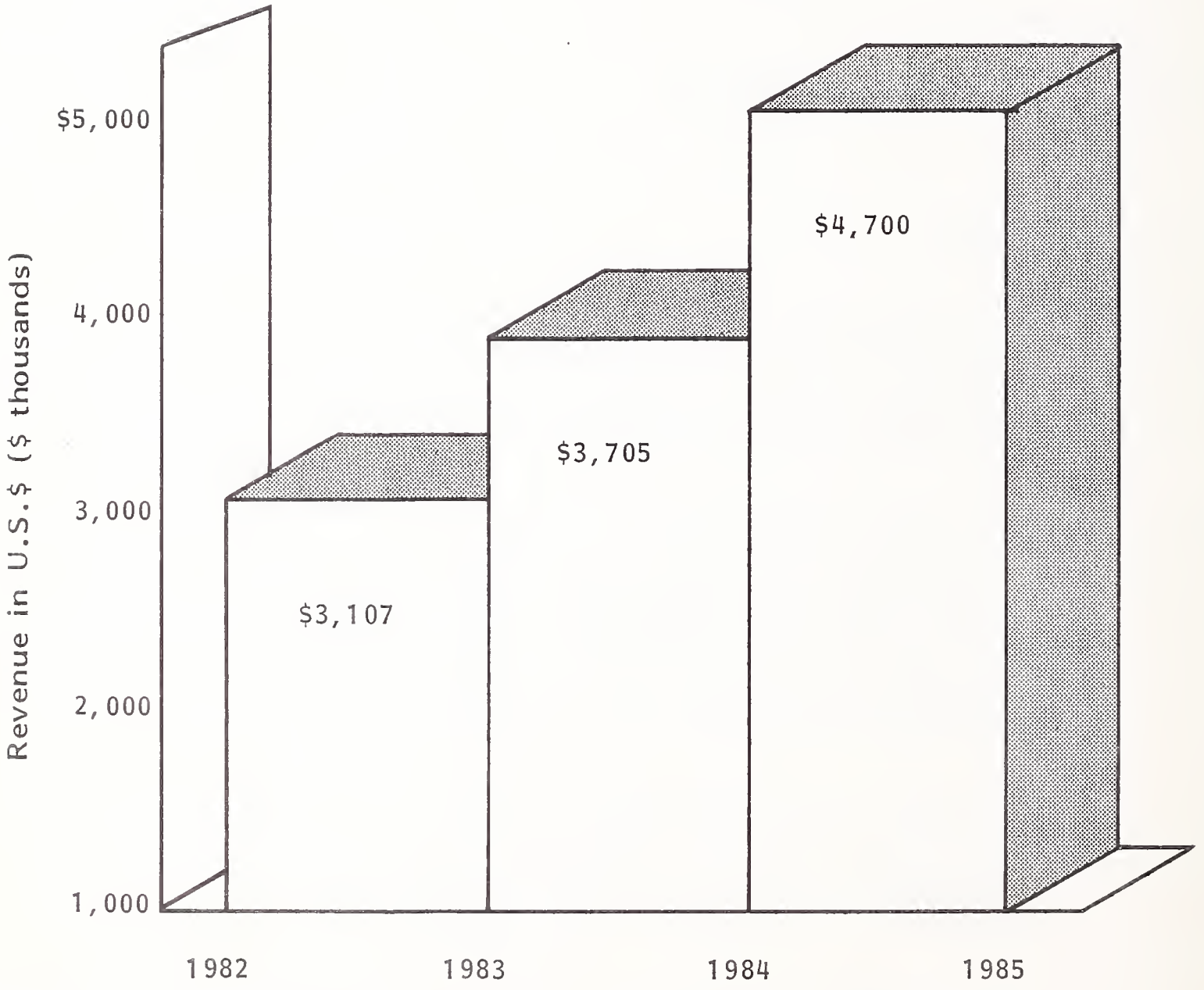
  - Another factor contributing to low growth is increased competition for maintenance business, which has resulted from the growth of more reliable third-party maintenance companies.

  - The combination of cheaper and more reliable hardware has allowed customers to consider the options:

    . The use of backup or redundant devices to ensure equipment uptime and reliability.

EXHIBIT IV-1

AVERAGE EUROPEAN TOTAL FIELD SERVICE REVENUES
1982 - 1984



SOURCE: Vendor Survey

  - . Less comprehensive and cheaper maintenance contracts since more reliable equipment needs less service than previous products.

- The declining costs of hardware and software, due to the reduced costs of components and the trend in standardising software, have also contributed to profit erosion.

- A U.K. field service executive of a major, international computer manufacturer with a worldwide service revenue of $1 billion is worried about finding new sources of revenue to replace traditional ones.

  - He believes that competition and products "five times more reliable" than earlier ones will contribute to a major erosion in two to three years.

  - Because of the large investment in training and supporting field engineers, the company earnestly wants to find other revenue-producing work for their staff, who otherwise would be made redundant.

- The maintenance revenue crisis is a real one.

  - Exhibit IV-2 shows that the need for alternative sources of revenue is critical.

    - . By 1985 traditional revenue sources (maintenance contracts, time and materials, and parts) will drop to 77% of what they were in 1982.

    - . A comparison of field service revenues over 1982-84 for respondents in revenue categories ranging from $500,000 to $5 million is illustrated in Exhibit IV-3. In 1983, the range of respondents

EXHIBIT IV-2

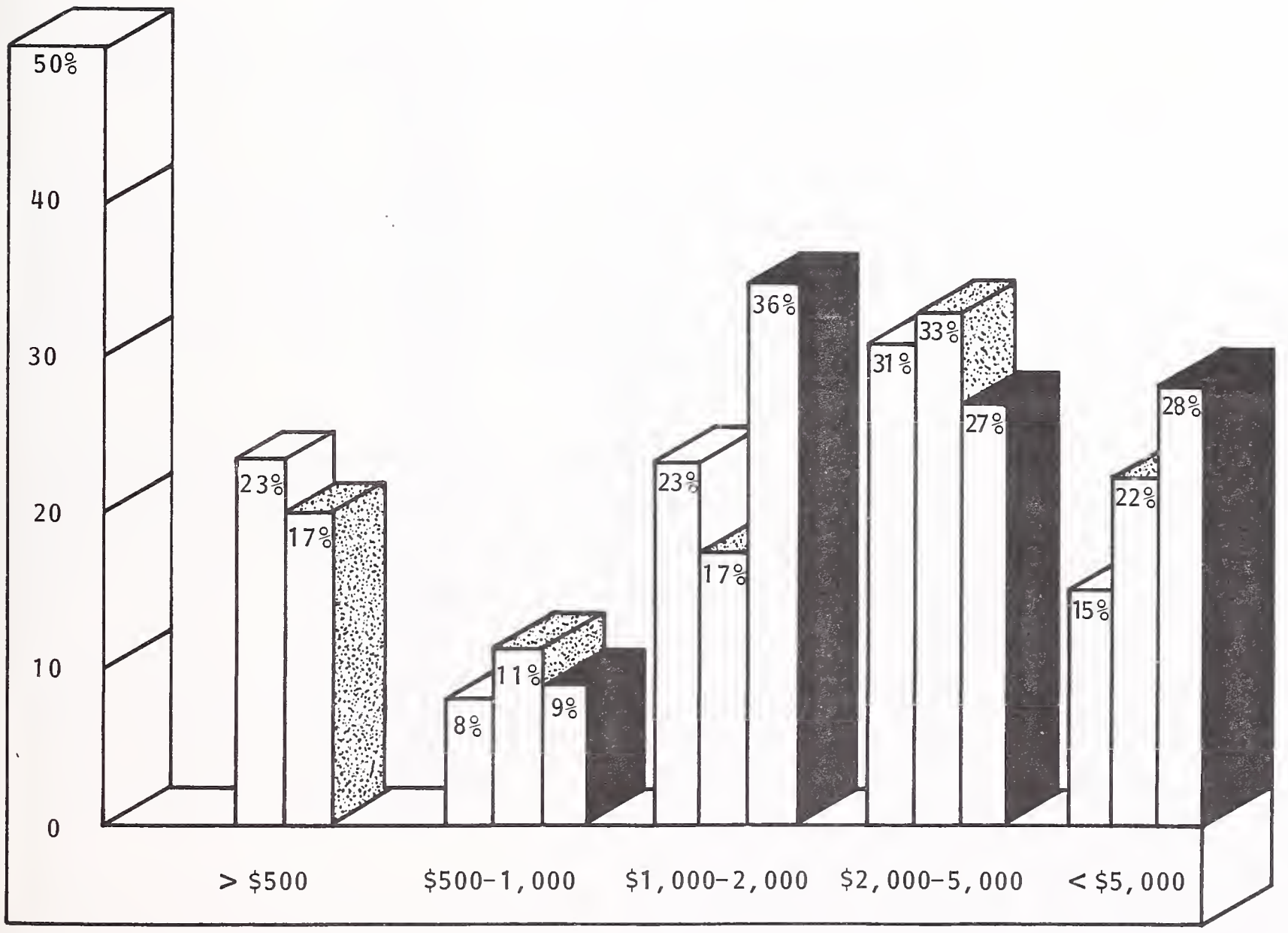
THE NEED FOR ALTERNATIVE REVENUE

SOURCES OF MAINTENANCE REVENUE		
	1982	1985
Traditional Revenue Sources	100%	77%
Alternative Revenue Sources	0	48
Total	100%	125%

SOURCE: Vendor Survey

EXHIBIT IV-3

FIELD SERVICE REVENUES (ANNUAL)
($ thousands)



SOURCE: Vendor Survey

shows accelerated movement from the $500,000 and $500,000-1 million categories toward the $1-2 million category which represents the relatively rapid growth expected of companies in their early years.

- In 1981 to 1983 the spread of respondents in the $2-5 million and $5 million plus categories illustrates a relatively static period with possible loss in revenues due to companies' reorganising in response to their growth in size and change in market orientation.

- After this stage the rate of movement and revenue growth is approximately 33-35% per annum of those in the early years of business.

- Technological changes can severely affect businesses in the $2-5 million plus categories unless the organisation is designed in a manner that allows the company to quickly assess which functions are most profitable and where the most effective changes should be made in response to the changes in technology.

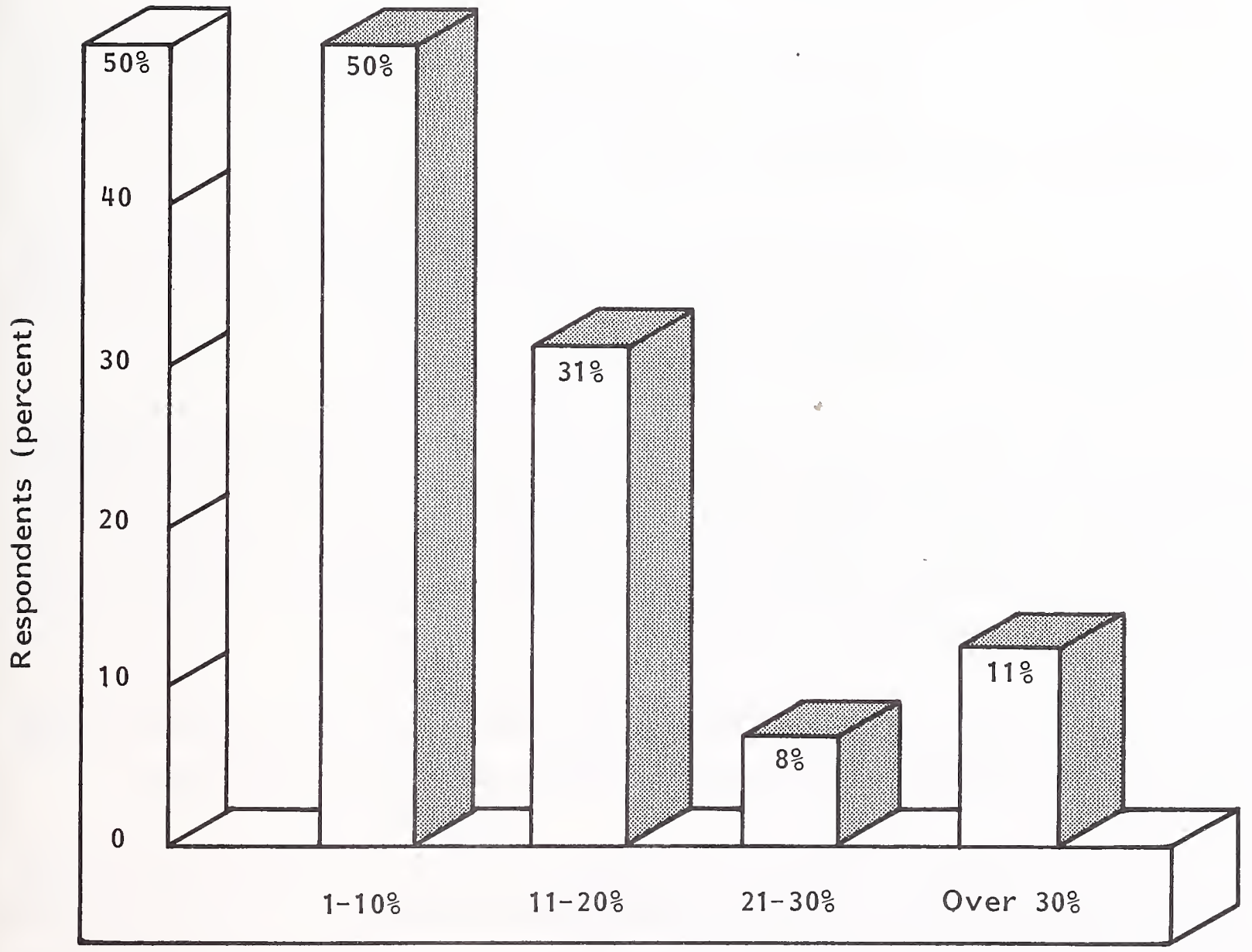
- Smaller companies can usually change more quickly and avail themselves of the benefits of technological change because of the relatively low amount of invested capital and the tendency for their various functional interrelationships to be less complex.

- This advocates the case for designing the organisation according to the "small is beautiful" concept with independent, profit-centred functions. This is discussed further in the company profile section later in this report.

- The contribution of field service revenues to total corporate revenues is illustrated in Exhibit IV-4. Fifty percent (50%) of the field service functions contribute up to ten percent (10%) of total corporate revenues.

EXHIBIT IV-4

FIELD SERVICE TO TOTAL COMPANY REVENUE
(percent)



SOURCE: Vendor Survey

- The companies in this category tend to have the following characteristics:

  . Large established companies that pioneered computer and computer-related technology in the 1960s and early 1970s.

  . Companies that invested large sums in the research and development of leading-edge computer products in the 1960s and early 1970s.

  . Companies which are heavily dependent on a narrow line of leading-edge products such as mainframes aimed at low-volume, high-value markets.

  . Companies which are heavily dependent on a narrow line of leading-edge products such as computers aimed at low-value, high-volume markets.

- These companies have been radically affected by the accelerated pace of technological developments. Moreover, the impact of such technological developments has been more severe and intense because of the policies, financial commitments and organisational structure of these companies.

- First, technological change has rendered some of the products of these companies obsolete, and/or reduced their expected life cycles.

- Secondly, this has dramatically affected the expected maintenance revenue and overall profitability of the companies, often reducing the profits to such unacceptable levels that the survival of the companies is in question.

- Finally, the companies have had to reorganise, develop new products, and in some cases, change their marketing orientation.

- Unfortunately, the reorganisations generally occurred when there was still significant profit potential in hardware and software products, so that maintenance revenues were not given high priority. These companies find themselves forced to reassess their business and reorganise again in the eighties when the profit from hardware and software products is being continuously eroded. Such companies have the very same handicaps in the eighties as they had in the seventies and are consequently less able to react to market trends than the younger companies discussed below.

  - Thirty-one percent of field service functions contribute 11% to 20% of corporate revenues.

    . These tend to be "younger" computer manufacturers with a product line comprised of minicomputers and small business computers and/or peripherals.

    . Although these companies also have high levels of investment in research and development, the width of their product range and versatility in high-volume markets and organisations by product group gives them the much-needed flexibility to react to technological change.

  - Eight percent (8%) of field service functions contribute 21% to 30% of corporate revenues.

    . These are terminal manufacturers and mini manufacturers that also manufacture small business machines and desktop computers.

  - The product lines of such manufacturers have been tailored to the market needs for information processing. This guarantees volume sales, which in turn increase the size and significance of field service.

- Eleven percent (11%) of field service functions contribute over 30% to corporate revenues.

  - This category consists of third-party maintenance suppliers. In a company dedicated to third-party maintenance, the field service revenue is 95% of corporate revenue.

  - Another company, also dedicated to third-party maintenance but providing additional services such as supplies and accessories, obtains 60% of its revenue from third-party maintenance.

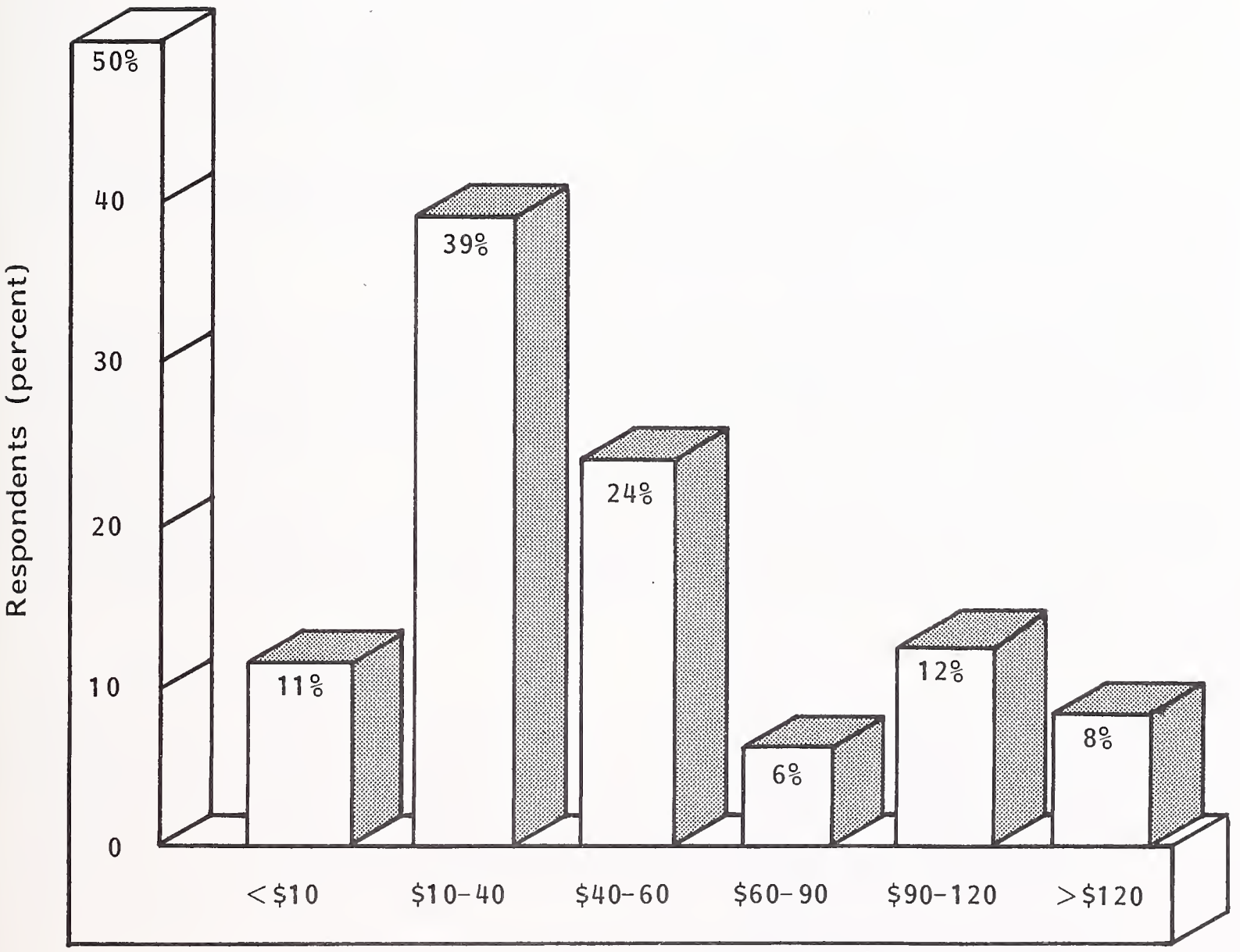
- Maintenance is big business. It is the main area in which companies can become more competitive and increase their market share in order to overcome the current trend of profit erosion caused by the declining profitability of hardware and software.

- Revenues per field engineer are examined in Exhibit IV-5. The highest percentage of respondents (39%) earn $10,000 to $40,000 per field engineer. The companies in this group include young as well as established mainframe manufacturers, highly diversified electronics companies, terminal manufacturers, and computing services companies.

- Twenty-four percent (24%) of the respondents earn $40,000 to $60,000 per field engineer. Members of this group include computer leasing companies, third-party maintenance suppliers, mini manufacturers with considerable communications capabilities, and diversified electronics companies.

EXHIBIT IV-5

REVENUE PER FIELD ENGINEER
($ thousands)



SOURCE: Vendor Survey

- Twelve percent (12%) of respondents are in the higher $90,000 to $100,000 bracket. This represents terminal manufacturers and reflects the activity and high-volume nature of the CAD-CAM market. The level of revenue is also a reflection of the high productivity levels per engineer that can be achieved as a result of highly standardised products. This also involves low spares expenditures and reasonably cost-effective maintenance service when swap-out techniques are used.

- At the low end of the scale, 11% of respondents earn revenues under $10,000 per field engineer. Typically these are highly diversified companies, in which electronics represents a relatively low but increasing percentage of revenue. Maintenance firms in this group are either so young that they are just beginning to become efficient, or they are restricted by marketing or parent organisation to a relatively low revenue base.

- The major activity of the companies among the 8% earning over $120,000 per engineer is the manufacture of peripheral equipment. These companies have also been affected by technological changes, but the effects have been considerably reduced in that these companies have a wide and well-designed product range with high-volume, though low-value, markets. Thus certain products can buffer the direct effects of technological developments on other products.

- From this analysis it is apparent that CAD-CAM terminal and peripheral manufacturers achieve higher revenues per engineer because of the relatively low R&D requirement in these areas and the high volume market potential for the products. Furthermore, the standardization of these products lends itself to new service techniques such as board swapping, which substantially increase field engineer productivity and cost effectiveness.

2. COSTS

- The components of field service costs are illustrated in Exhibit IV-6. Labour costs account for 43% of the total cost of service and are obviously the most effective area for cost cutting when recession and a fall in traditional maintenance revenues occur.

  - Parts and travel costs account for 25% and 21% of the total cost of service respectively, and are also effective areas for cost cutting. The trend towards centralised repair centres and remote diagnostics is indicative of this cost cutting.

  - Overhead costs account for 11% of the total costs of service and are less effective candidates for cost cutting since it is difficult to cut the costs of headquarter operations and actual buildings. Nevertheless, some companies in the vendor survey have actually reorganised these activities and reduced the number of buildings and changed their utilisation.

- The approaches used by respondents to reduce and refine the above-mentioned costs of service are discussed in Chapter II.

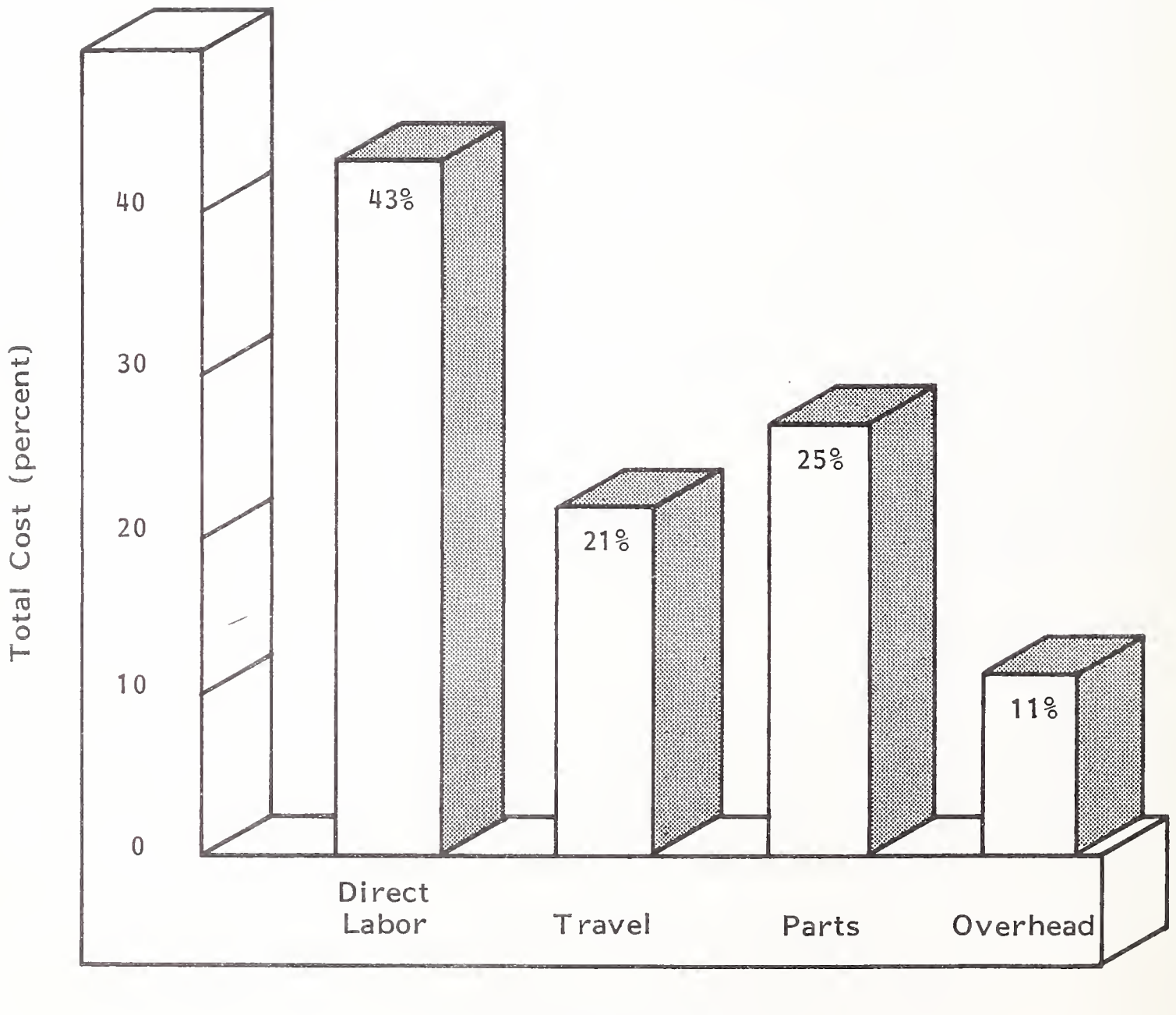
3. PROFITABILITY

- Despite declining revenues there is a healthy outlook for field service profitability. Eighty-two percent (82%) of the companies interviewed are realising gross profits in the region of 10% to 30%, as shown in Exhibit IV-7.

  - The companies at the higher end of the scale (25% to 30%) are mainly large, well-established mainframe vendors, while those at the lower end of the scale fall into the following categories:

EXHIBIT IV-6

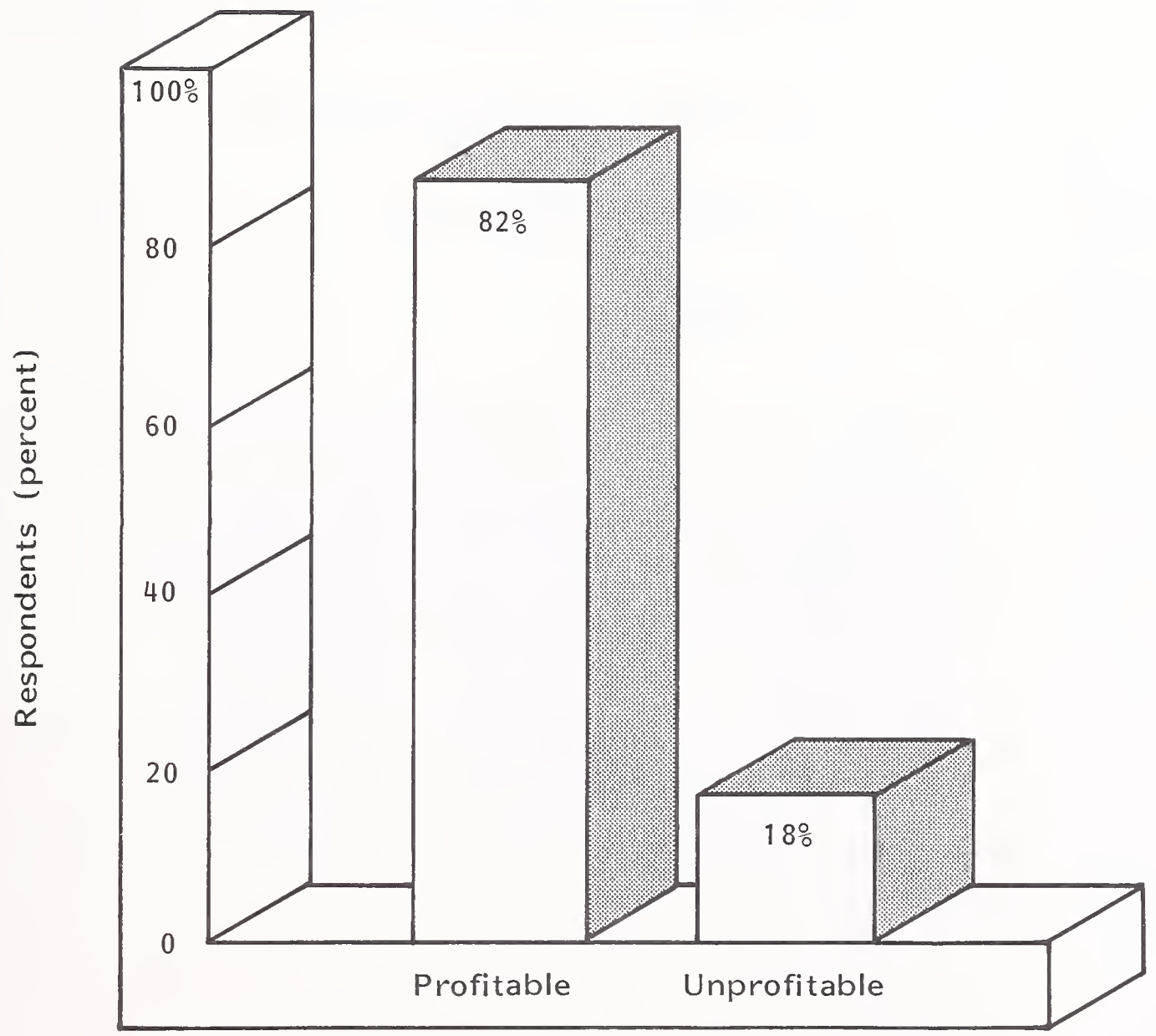
COST OF SERVICE



SOURCE: Vendor Survey

EXHIBIT IV-7

PROFITABILITY IN FIELD SERVICE



SOURCE: Vendor Survey

  - . Mainframe vendors with products at the top end of the range which have high levels of R&D investment.

    . Well-established mainframe vendors with heavy indirect staff costs and companies that have recently undergone the transition from running FS as a cost centre, to running FS as a profit centre.

    . Companies in bureau services.

  - Also included are relatively young companies involved in:

    . Terminal sales including CAD-CAM.

    . Third-party maintenance.

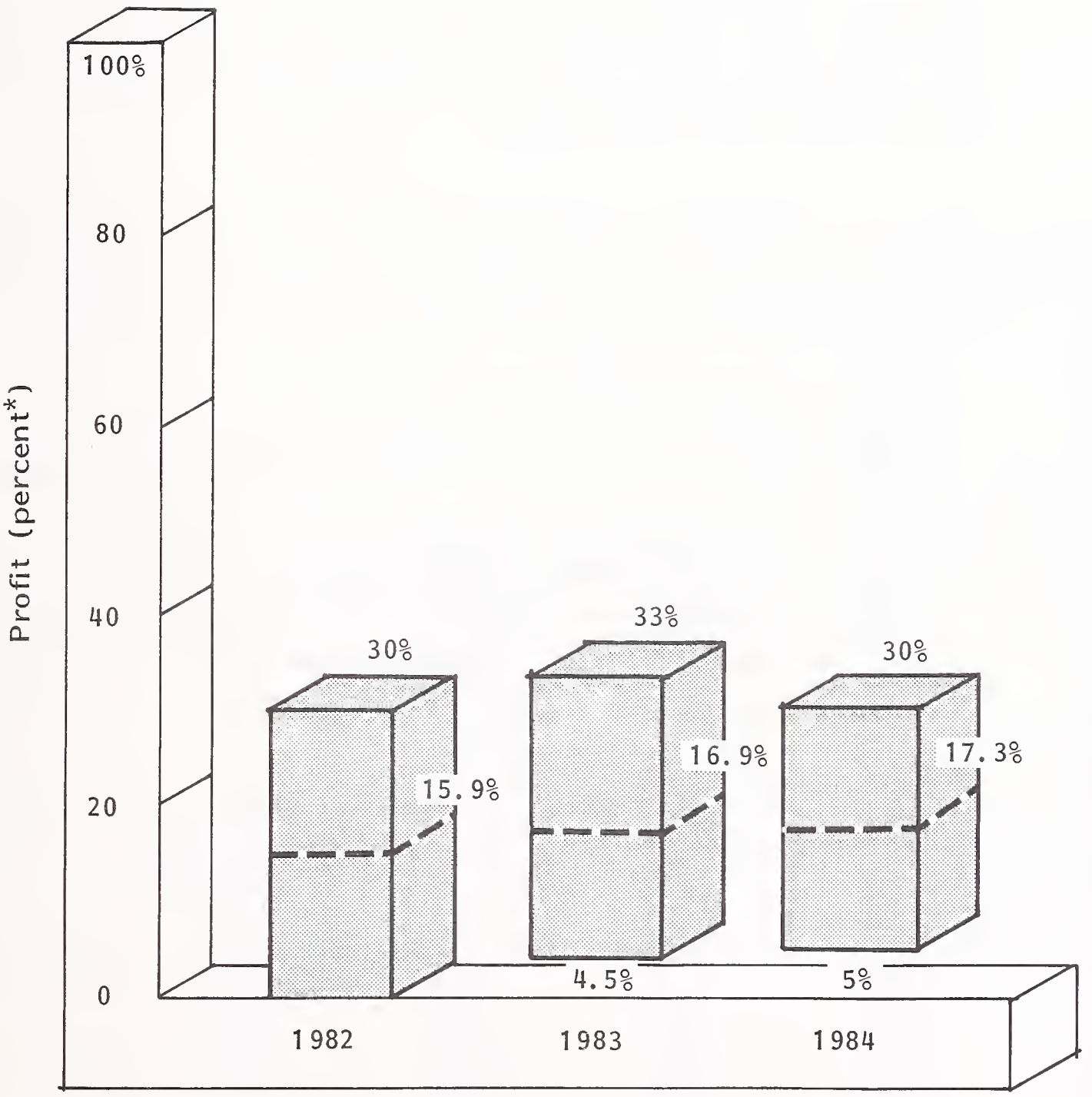
    . Leasing.

- Eighteen percent (18%) of the companies interviewed are not currently profitable and are principally run as cost centres or support services to the marketing function. Some of these companies are simply young companies that have been in business for up to one and one-half years and are now breaking even. They intend to be profitable in 1984 to 1985.

- The growth rate of profitability over the period 1982 to 1984, as shown in Exhibit IV-8, ranges from 0.5% to 1% and averages 0.7% with a range of 4.5% to 33% increases in profitability. The companies expecting the highest growth rates are, not surprisingly, the young companies involved in terminal sales and third-party maintenance. These are followed by larger mainframe vendors that are expanding their installed base and mini vendors that have extended their product range and entered new market sectors.

EXHIBIT IV-8

CHANGES IN PROFITABILITY



= Average

= Range

* Percent profit for profitable companies only

SOURCE: Vendor Survey

- Companies expecting a fall in profits are large mainframe vendors that are reorganising for a change in product and market emphasis and computer services vendors.

- Profits per field engineer are outlined in Exhibit IV-9. It is encouraging to see that 55% of respondent companies are at the upper end of the range, whereas the results are quite the opposite for revenues per field engineer. It is also interesting to note that some of the companies that earn the lower range of revenue per field engineer, are represented among the companies that earn the highest profits per field engineer.

- These are principally large mainframe manufacturers and a terminal manufacturer. For example, two mainframe manufacturers earning $10,000 to $40,000 per engineer are deriving from 24% to almost 100% profit per engineer.

  - So even though these two companies have been severely affected by technological change, they have achieved remarkably high profits.

  - These manufacturers are both highly efficient. What seems to account for their outstanding performances is that one company manufactures its own equipment and peripherals in the countries in which it operates, and the other imports its hardware from the U.S.

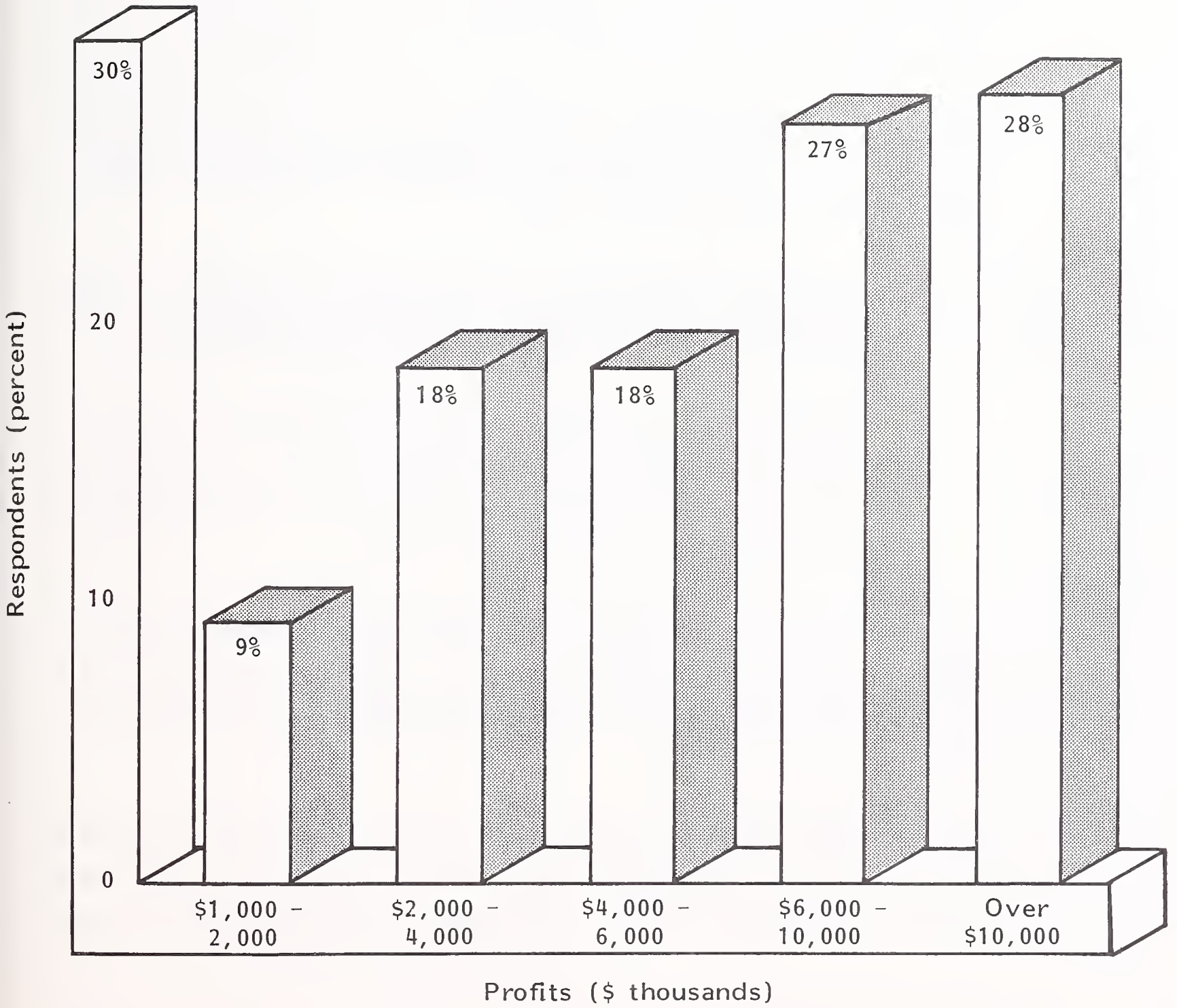
  - These peripherals are indeed used by most of the mainframe and minicomputer companies in the industry.

  - Other factors that contribute to the success of these companies are:

    . The geographical location of both engineers and parts depots, travel costs, and the cost-effectiveness of labour.

EXHIBIT IV-9

PROFITS PER FIELD ENGINEER



SOURCE: Vendor Survey

- Investment in leading-edge technology has resulted in widespread use of remote diagnostics in vendor equipment.

- The efficiency of the organisation within the companies that handle requests for assistance and the relevant engineer movements.

- The commitment is to develop highly trained personnel and engineer expertise as dictated by technology trends.

- This formula for success may be enlarged by reference to the other companies that represent the 28% of respondents earning over $10,000 profit per engineer. They are peripheral manufacturers and CAD-CAM manufacturers. Their presence in this category is not surprising, for they are the very companies that appear in the top revenue categories per engineer. They are achieving 14% and 20% profit on revenue.

  - The lower figure (14%) refers to the peripheral manufacturers while the higher figure (30%) applies to the CAD-CAM manufacturers.

  - The higher profit ratio attained by CAD-CAM manufacturers is due to the relative youth of the company, low start-up capital requirements, and high-volume markets that quickly absorb the research and development costs.

- The above points are also true for the other companies among the 27% of respondents in the $6,000-10,000 category. These companies are in the terminal market and have very similar characteristics to the Cad-Cam companies.

- The $4,000-6,000 category comprises highly diversified electronics companies and minicomputer manufacturers with an extensive range of small business machines and desktop computers. The reason for the relatively low profit

earnings of the mini manufacturers is that in order to maintain their profitability they have been forced to tailor their equipment for new market segments and the investment in R&D, market analysis, planning and penetration has temporarily reduced their profit earnings per engineer.

- In the $2,000-4,000 bracket, the overwhelming success of the third-party maintenance (TPM) companies is broken by the presence of a TPM that is earning 50% profit on revenue. Although this figure is low, one must make allowances for the policies that have caused it. The company is fairly young and has incurred high expenses in setting up a nationwide network of service centres.

B. DEFINITION AND MEASUREMENT OF PROFITS

- The range of definitions of profit quoted by the respondents is outlined in Exhibit IV-10. Some companies use only one method of profit measurement while others use a combination of the methods available.

- The most popular methods of measurement are:

  . Revenue less expenses.

  . Percentage of gross margin.

  . Other widely used methods include ratios and basic profit-and-loss accounts.

- The definitions and measurement of profit depend to a large extent on how the companies are organised, i.e.:

  . The size of the company.

EXHIBIT IV-10

DEFINITION OF PROFITS

- "No profits to field service - sales take revenue and profit."
- "Revenue less expenses."
- "Monthly on an overall basis, taking out direct costs and overhead."
- "Pretax profit on turnover. Return on assets employed. Return on turnover. Turnover versus assets."
- "Percent gross margin. Broken down by product group."
- "Use a cost model that measures all the cost elements, e.g., setting-up, training engineers per quota of systems, corporate overheads, spares, reliability of equipment, critical clusters, number of machines that must be sold in a territory to warrant an engineer, engineer ratios."
- "Profit and loss accounts."

SOURCE: Vendor Survey

  - Whether field service is a function in its own right or acts as support service to the marketing function.

  - Whether field service is a cost centre or a profit centre.

  - The level of profit and loss responsibility that is delegated within the company.

  - The extent to which costs and profits are measured at each stage of the production, marketing, and sales processes.

- Definitions also vary according to the range of products sold by the company, geographical coverage and the variation in service offerings and how the company wishes to present its financial status in the annual report.

- Other factors relative to profit are reflected in Exhibits IV-11 to IV-13, which outline revenues and inter- and extradepartmental costs that are used in the calculation of profit. Exhibit IV-11 illustrates that the range of service offerings and the relationship between the field service and marketing functions are particularly important in determining the revenues included in or excluded from profit measurement.

- Large companies with a wide product range and geographical coverage tend to treat field service as a profit centre and delegate profit-and-loss responsibility at local or district field service manager level. They generally have comprehensive, well-regulated costing systems and unbundle each service component. Thus large- and medium-size companies that do not currently operate in the manner outlined above for large companies are taking action to do so.

EXHIBIT IV-11

REVENUES WHICH ARE INCLUDED/EXCLUDED IN CALCULATING PROFIT

INCLUDED
• "Service, maintenance revenues."
• "Maintenance and installation."
• "Maintenance and accessories, spares, refurbishment."
• "All maintenance contracts and charges, sales of supplies."
• "Software recovery, movement of spares within the company, maintenance contracts revenue. Evironmental services consultancy, customer training. Every component has to make a profit. Some revenues depend on the extent of unbundling."
• "Sales charges from other departments such as marketing give-aways."
• "Hardware, software systems and applications."
• "Maintenance contracts. Rental maintenance ad hoc sale of spares, installation, warranty."
• "Contracts, consulting and customer training."
• "Contracts, ad hoc, repair centres, hardware and software training, hardware moves."
• "A percent of sales to cover installation, warranty, exhibition and demonstrations."
EXCLUDED
• "Some special support agreements in Africa."
• "Installation."
• "Ad hoc services. There is a structure for dealing with this."
• "Intercompany service."

SOURCE: Vendor Survey

EXHIBIT IV-12

INTERDEPARTMENTAL COSTS THAT ARE
EXCLUDED/INCLUDED IN COSTS OF PROFIT

INCLUDED
• "Everything specific to countries and local regulations."
• "Computer costs, administration, communications."
• "All."
• "Share expenses such as publicity, quality improvement."
• "All indirect costs."
• "Administration and personnel."
• "Administration, salaries, buildings, stock, finance."
• "For each cost centre there are central services covering personnel, research and development, directors' salaries, These are indirect costs covering administration. Direct costs include office salaries etc. Costs are calculated on a percent of total company head count."
• "Field service marketing and administration."
• "Marketing, administration, personnel, system engineering, training."
EXCLUDED
• "Maintenance provided to other departments."
• "None."
• "Corporate funding such as R&D."
• "Publicity and travel departments."
• "Facilities."

SOURCE: Vendor Survey

EXHIBIT IV-13

EXTRADEPARTMENTAL COSTS INCLUDED/EXCLUDED IN COSTS OF PROFIT

INCLUDED
• "Everything - marketing, administration, logistics, repair facilities, distribution of parts, literature."
• "All."
• "Personnel and finance."
• "Administration and personnel, finance, buildings."
• "None. Every function is a profit centre such as development, equipment, cost of production. Equipment is transferred to marketing department at a profit and then marketing sets price based on cost of production and marketing expense."
• "General management dividends (SIC) and taxes."
• "Capital equipment."
• "Company overheads, buildings."
• "Marketing, administrative, personnel, system engineering, training."
• "Allocations of administration and buildings."
EXCLUDED
• "Facilities."
• "None."
• "Accounting, warehousing, inventory - these are run by separate divisions."
• "Sales and marketing."
• "Installation and warranty."

SOURCE: Vendor Survey

- The opposite is typical of small companies. They generally have centralised profit and loss responsibility and FS is a support service to the marketing function. Most small companies do not unbundle their FS offerings.

- Exhibits IV-12 and IV-13 denote the interdepartmental and extradepartmental costs that are included and excluded in the calculation of profit. Both illustrate company sizes and organisational considerations such as:

  - The interrelationship between the field service and marketing functions.

  - The extent to which costs and profits are measured at each stage of the field service and marketing processes strongly influence which costs are included or excluded in the measurement of profit.

  - The variations of these factors from company to company for the recurrence of the same costs in the two exhibits.

  - Both exhibits include direct and indirect costs.

    . Direct interdepartmental costs include salaries, cars, spares, and facilities.

    . Indirect interdepartmental costs including administration, personnel, finance, R&D, marketing, and training.

- All companies, irrespective of size, include the same direct interdepartmental costs in their profit measurement. They differ in their accounting of indirect costs, however.

  - Small companies include 100% of indirect costs in their profit calculations.

- Medium and large companies include a percentage of indirect costs allocated according to the department head count.

- These costs may be unduly high depending on the age of the company and its efficiency. Consequently, profit figures may be distorted.

- The extradepartmental costs in Exhibit IV-13 are mainly indirect costs and include marketing, administration, logistics, repair facilities, parts distribution, personnel, finance, buildings, development, production management dividends, taxes, capital equipment, systems engineering, and training.

  - These costs refer to corporate functions and resources and have to be met by all companies irrespective of size.

  - Again, these costs can distort profit measurement depending on the efficiency of the company and its capital structure.

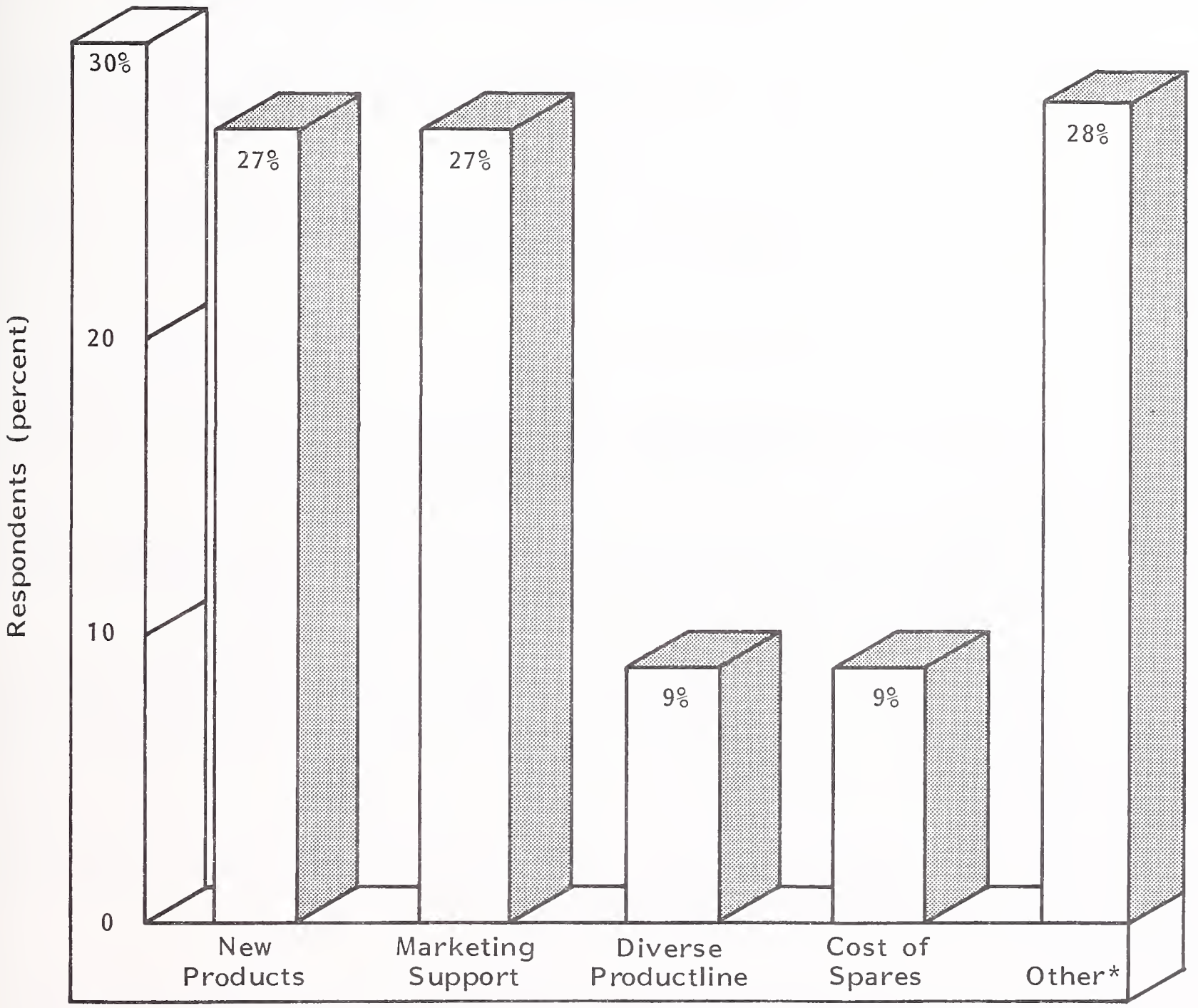
C. FACTORS THAT REDUCE FIELD SERVICE PROFITABILITY

- Although field service activities are generally profitable, there are certain factors that reduce the level of profitability, as shown in Exhibit IV-14. The range of factors is fortunately not so wide as that for factors with a positive effect on profitability. Also, a higher percentage of respondents cite these factors, which are new products, marketing support, "other," diverse product line, and the cost of spares.

  - The category "other" has the highest percentage of mentions and includes the following factors:

EXHIBIT IV-14

FACTORS WITH A NEGATIVE EFFECT ON PROFITABILITY



* Other

1. Equipment fails to meet design specification.
2. Low quality equipment needs more maintenance.
3. Need to minimise cost of support relative to cost of product.
4. Giveaway sales.
5. Free installation.
6. Free updates.
7. High inflation.

SOURCE: Vendor Survey

- Equipment fails to meet design specification due to a rush to meet deadlines or a forced early launch to beat the competition.

- Low-quality equipment needs more maintenance - have to develop R&D and improve the product range and quality.

- Markets are becoming more competitive with more emphasis on support. We need to minimise the cost of support relative to the cost of the product.

- "Giveaway" sales of maintenance.

- Free installation.

- Post sales software support - officially do not offer this service or charge for it, but have to deal with updates.

- The emphasis on financial and cost control is very noticeable since the factors that reduce productivity relate to financial and cost control.

  - New products often reduce the profit life of existing older products, and short series products require constant investment to keep up with the competition.

  - Field service provides marketing support in the form of installation and training for exhibitions.

  - Field service profit is reduced when marketing/sales "give away" maintenance, installation, or software support to meet sales targets and "beat the competition."

- It is sometimes necessary to carry nonprofitable products, i.e., loss leaders, in order to present a comprehensive product line, and a diverse product line -

often with a mix of old and new products - requires a wide range of spares, and it is difficult to optimise spares utilisation and inventory.

- It is clear that a well-defined product series and the operation of the field service department as a profit centre is the long-term solution to these problems. In the short term, companies will experience reductions in profit while they are taking action to develop their product design, and field service evolves from cost centre to profit centre status.

D. MACRO-ECONOMIC EFFECTS ON PROFITABILITY

1. INTRODUCTION

- The macro-economic environment can significantly affect profitability.

- Positive aspects of the economy include salary increases that are less than expected, which help to offset the restriction on price increases caused by falling inflation rates. Another positive aspect is more business for TPM suppliers (in one case an increase of 32%) since TPM is a cheaper maintenance alternative.

- Negative factors include:

  - The Swedish Krone was devalued 16% in 1983 causing the purchase of equipment from the U.S. and Canada to become very expensive.

  - Increasing costs of petrol, vehicles, and transportation.

  - Companies dependent on government contracts are affected by government cuts and need to develop new markets in the commercial sector.

- Legislation and VAT (value-added tax) in Australia pose problems for worldwide organisations in that proven distribution systems need to be changed to conform with Australian law.

- The treatment of VAT in Australia causes problems when equipment is moved from one place to another because a percentage is added to the price for each change of location.

- Companies with three to five year maintenance contracts are not affected and have a steady flow of maintenance revenue.

- To avoid potential erosion of profit by users looking for cheaper options, the customer support group of one company is conducting user satisfaction surveys in an endeavour to maintain the installed base level.

2. RECESSION

- Positive effects of recession on company profits include the following:

  - Recession causes people to evaluate new options, which can mean more sales for TPM suppliers.

  - Budget-conscious and performance-conscious customers who thought they needed a minicomputer have come downmarket and purchased microcomputers and terminals.

  - Leasing companies make more revenue from maintenance agreements and leasing agreements for computer equipment.

  - Some businesses will want to buy computers to reduce processing and personnel costs. The only problem is that they may not have the necessary investment capital.

- Negative aspects of recession involve:

  - Companies dependent on one particular type of business, e.g., airlines, find that the recession has a dramatic effect on sales. Customers are postponing purchase and in certain cases are looking for other options.

  - TPM companies subcontracted by computer vendors find that contracts are not being renewed. The computer vendors have spare capacity and will even offer free maintenance service to prevent the TPM supplier from having the service contract and establishing customer loyalty.

  - Many companies are making fewer sales, and the rate of field service growth is slowing down.

  - Customers are postponing investments and are looking for cheaper alternatives.

- The recession has led to bankruptcies and a restriction of cash flow. Some of the suppliers of equipment to vendors may get into financial difficulties.

- Vendors are keeping overheads low to maintain profits in spite of decreasing sales. Some vendors are revising their prices in order to stabilise costs and cushion the effects of the increasing cost of living and subsequent lack of investment capital.

3. INFLATION

- Effects of inflation on company profits are mostly negative. For example, users are reluctant to accept price increases above the inflation rate. Vendors are restricted and unable to include inflationary elements in service uplifts.

- Some computers have been returned as a result of factories going out of business from inflationary pressures.

- In France the inflation rate is 8% to 10%, but vendors are not allowed to increase prices above 6%.

- In Sweden inflation is 8% to 10%, and employers want wage increases of 5% to 6%.

- In Norway the oil industry has increased the cost of living dramatically, and employees are demanding wage increases of 12% to 15%. Salary demands are also high in Denmark.

- Inflation is causing profit erosion for some companies who are prohibited from increasing costs. These companies are absorbing the costs and trying to increase productivity.

- Sometimes inflation has no impact on profit. In Italy prices are indexed to inflation. Companies operating throughout Europe find that the effects of inflation balance out because of the range of inflation rates.

4. UNEMPLOYMENT

- Unemployment creates some positive effects on company profits. One company received a contract to computerise job centres in the U.K.

  - Companies are able to keep pay increases to a minimum.

  - Unemployment leads to reduce the cost of low-skilled engineers, i.e., labour is cheaper.

  - Personnel turnover rates are reduced.

- Staff do not request or expect salary increases. New staff will accept wages below the standard rates - just to have a job.

- The negative impact of unemployment includes the fact that fewer skilled field engineers (FEs) are available because of a general reluctance to change jobs. Recruitment agencies exploit the fact that the demand for skilled FEs is greater than the supply.

  - They will continue to approach FEs with more attractive job offers after they have placed the FE with a company.

  - Should the FE accept the more attractive offer, the company he leaves is not compensated by the agency - even if the FE worked there for only a few months.

  - There is a high demand for computer technicians that far exceeds the supply.

- It is difficult for vendors to maintain the quality of FS staff: good engineers and managers need to be kept in the company and paid the going market rates.

- Most vendors are "holding" personnel plans and cutting headcount if possible.

5. EXCHANGE RATES

- The exchange rate works to the advantage of one company. With 80% of its income paid in U.S. dollars and expenses paid in local currency, the company benefits considerably from the strength of the dollar.

  - For a company involved in the secondhand market for IBM equipment, the gains made through purchasing equipment in a weak currency area are also considerable.

- Another company overcomes the dollar exchange rate problems by manufacturing in Europe.

- One vendor buying from the U.S. finds that costs of spares have doubled. Profits are affected for vendors which have set a fixed rate on equipment costs. Rapid fluctuations in exchange rates create problems when purchasing U.S. or Japanese equipment. Equipment from the U.S. is expected to have a gradual increase in cost.

- Vendors, to counteract negative effects of exchange rates, should include a clause in the contract for price adjustment according to exchange rates. They should also buy few raw materials outside their own country to avoid exchange rate penalties.

- The standardization of equipment provides wider scope for buying spares wherever they are cheapest. Reduced spares holdings, particularly overseas, can relieve exchange rate pressures.

E. GOVERNMENTAL INFLUENCES ON PROFITS

- Governments can control or regulate free trade through tariff regulations, customs, and related political measures. For example, the U.K. government permitted an American vendor to penetrate the U.K. government sector.

- Also government aid in the form of bank support and government adherence to its defence commitment has benefited vendors who have a large installed base in defence industries and require loans.

- The U.K. Information Technology Year in 1982 brought many official bodies together and helped to implement the development of automation and networking concepts.

- One example, in the U.K., of negative effects of government control is the change in legislation concerning statutory sick pay whereby employees may sign themselves off work for a week at a time, which encourages some employees to abuse the system.

- Also in the U.K., the lack of grants for setting up business and the reduction of grant-aided areas for office/plant development have not benefited vendors.

- In Holland, mandatory salary increases have increased salary costs, dangerously affecting bottom-line profits.

- In France the reduction of the working week (currently 39 hours) by two hours, will reduce field service productivity and increase overtime costs.

- In the U.K. government actions on the price of petrol and action regarding the nationalisation of the electricity board and British Telecom have significantly increased field service expenses. Petrol and travel costs represent a significant percentage of field service expenses. One company calculates that petrol, electricity, and telephone costs account for 10% of the field service expenses, i.e., $500,000 out of $4-5 million.

- In France the government is proposing to conduct its own computer maintenance.

- In Italy government measures rarely have an impact on profits of companies in the information processing industry.

F. OTHER FACTORS AFFECTING PROFITS

- The EEC is less restrictive than it was previously, and this helps to increase exports and the establishment of European markets.

- In general, the marketing of office automation concepts and home computing will lead to an increase in computer equipment sales and "follow-through" maintenance.

- In France it is hoped that the merger between two government-owned companies will strengthen and develop an indigenous French data processing industry.

- In the U.K. the policies of customs and excise cause difficulties in getting equipment in and out of the U.K. and especially affects repair activities. To safeguard against long turnarounds and customs delays, vendors have to keep high stock levels, which is costly and labour intensive.

- In the U.K. the high prices of offices, petrol, and salaries reduce cost savings and ultimately profits.

- In Germany it is possible that the number of work hours per week will be reduced. This will decrease field service productivity and increase overtime costs and ultimately reduce profits.

- The Irish Pricing Commission has exercised price controls, which seriously affects vendors' price increases.

- To overcome problems of customs and excise, it may be advisable to set up manufacturing operations in the foreign countries in which the vendor intends to market.

V STRATEGIES AND TECHNIQUES FOR PROTECTING AND ENHANCING PROFITS

V STRATEGIES AND TECHNIQUES FOR PROTECTING AND ENHANCING PROFITS

A. STRATEGIES FOR OBTAINING PROFITABILITY

- Exhibit V-1 illustrates the factors that help service organisation respondents to become profitable. Since profitability depends on many variables, it is necessary to combine all the factors mentioned, in various proportions, to operate a profitable business.

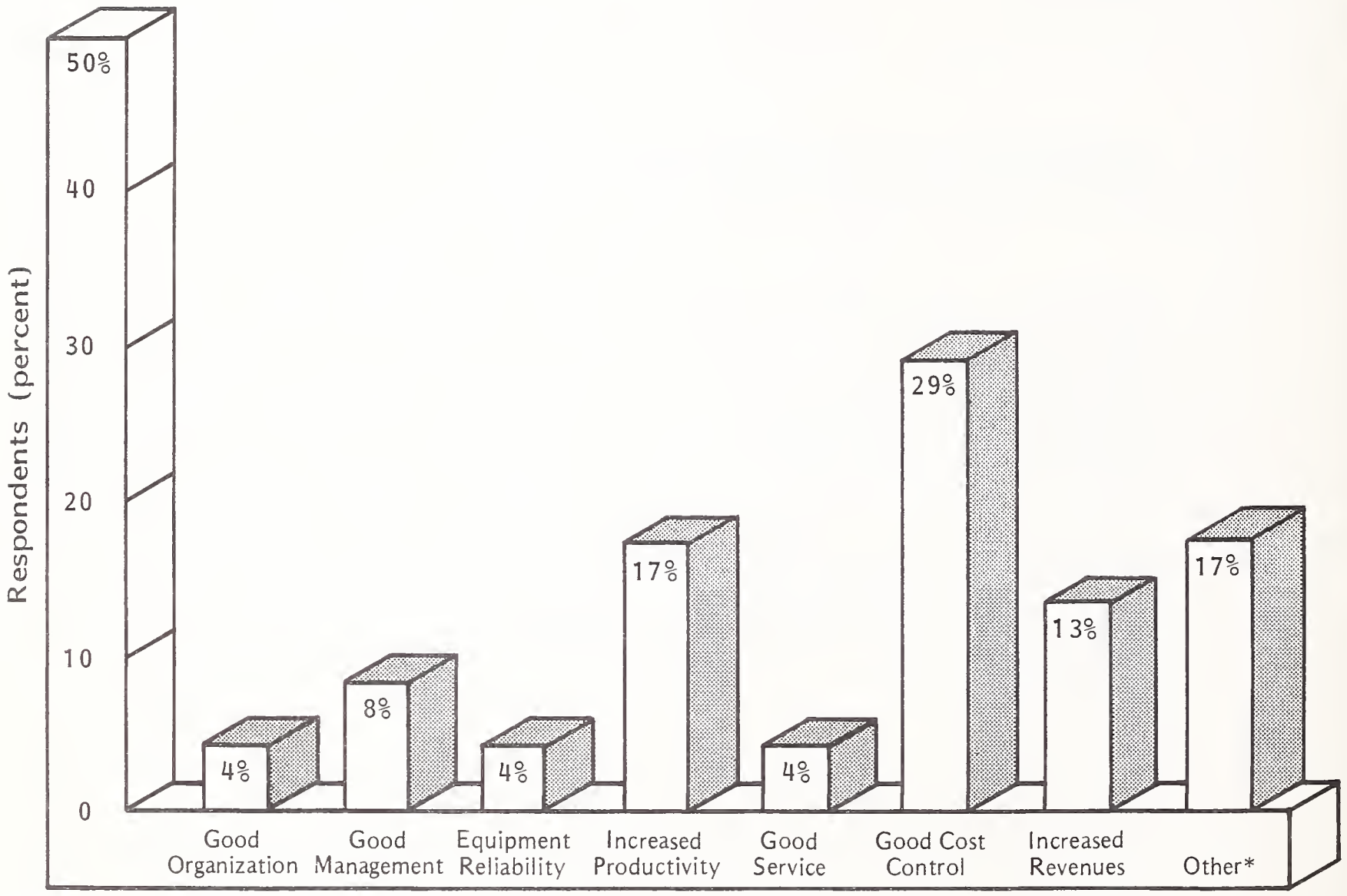
- Certain factors are more effective than others. For example, good cost control is cited by 29% of the respondents; productivity measures are used by 17%, and a variety of factors listed under "other" factors are also used by 17% of the respondents.

- It appears that the most effective methods of cost control are in reducing the costs of personnel, either by controlling salary costs, limiting recruitment, reducing training time, or changing the labour profile to employ fewer skilled engineers.

  - Less-skilled engineers can be used when swap-out maintenance techniques are prevalent. One company quoted that by employing less skilled engineers the cost-coefficient of labour decreased by 15% over four years.

EXHIBIT V-1

FACTORS WITH A POSITIVE EFFECT ON PROFITABILITY



* Other

1. Repair centre network
2. Low cost labour
3. Apply spares at same ratio as engineers to equipment
4. Avoid giveaways
5. Careful selection of product to service (TPM) supplier
6. Field service operates as profit centre
7. Competitive pricing - Set by customer service division, not by marketing department
8. Nationwide coverage
9. Good marketing, planning, and segmentation
10. Optimise resources
11. Volume sales
12. User education

SOURCE: Vendor Survey

- Increasing field service efficiency by using programmes to measure costs, sales, and visits per technician are important features in profitability. Increasing field service efficiency by providing engineers with the best tools available and using remote diagnostics is also critical. Other factors include:

- Reducing the cost of inventory by amortising the cost of spares.

  - Cost control.

    . Using low-cost labour.

    . Applying spares at same ratios as engineers to equipment.

    . Avoiding "giveaways."

  - Equipment reliability, which features careful selection of product to service (TPM supplier).

  - Good organisation.

    . Field service operating as a profit centre.

    . Nationwide coverage.

    . Repair centre network.

  - Pricing, which focuses on competitive pricing - set by customer service division, not by marketing department.

  - Good management, featuring optimising resources.

  - Good marketing.

  - Good marketing, planning and segmentation.

  - Volume sales.

- Increased revenue accounts for many firms achieving profitability. Companies have been able to add to their revenue through price increases, entering new markets with new products, increasing market share in existing markets, unbundling field service services and achieving a higher volume of sales.

- Good service is also important. The quality of service must be high. The range of services must also meet user requirements.

- Good management, planning, coordination and control are the most effective methods used by profitable companies. They plan and review markets, and it is interesting to note the perceived overlap with the marketing function.

  - They also coordinate company activities and field service by having good communications with engineers.

  - Good management must furthermore involve close monitoring of costs and revenue.

- Objectives for equipment reliability, when defined and implemented, influence profitability. These include:

  - Aiming for the first-time fix.

  - Reducing repair time and costs by using remote diagnostics.

  - Reducing repair time and costs by regularly conducting preventive maintenance.

- Reducing repair time and costs by building redundancy into the equipment.

B. INCREASING PROFITS THROUGH TEAMWORK

- Increasing profits in a more competitive market is not an easy task. It can be done, however, with teamwork from all company departments including finance, production, marketing, and personnel. Each area will be treated separately and will include an outline of the objectives and methods used by the respondents to achieve those objectives.

1. FINANCE

- Methods for controlling and reducing costs are always significant. Conducting in-house repair as the installed base grows can trim costs, as can 24-hour manning, which may mean restructuring the organisation, i.e., to have two main remote diagnostic services that can be switched worldwide.

  - Also the following actions will help increase profits:

    . Have a fixed headcount.

    . Phase out on-site calls.

    . Exploit the benefits of swap-out technology by minimising the costs of staff through using low-skilled engineers to change boards.

- One TPM respondent recruits young staff with up to two years experience in micros. These "engineers" are paid $9,000 base plus a car. The employer expects a high turnover of this grade of staff but is reluctant to crosstrain the

engineers because their salary would reach the level of a qualified field engineer and that is not worthwhile for him.

- This respondent feels that it is pointless to have ultra-reliable equipment without exploiting the cost savings of low-grade staff.

- He also occasionally uses television engineers and trains them. Skilled engineers are used for solving problems over the telephone, and this is adequate for 80% of the problems.

- Having a good organisation is essential for making a profit and means increased administrative efficiency of field service operating at a divisional level. Maximum use of spares by strategic location and deployment is a key, as is structuring organisations to minimise the number of repair centres.

- Optimising traveling and manpower costs by having a variable response time.

  - Another respondent charges maintenance at 10% of the capital cost of equipment. This is reduced if the client accepts 6- or 24-hour response times.

  - These response times depend on the distance of the client from the service centre. Overall, the 24-hour users are satisfied with the service.

  - The respondent expects further increases in profitability as the installed-base grographical coverage improves.

- Exhibit V-2 provides a check list of cost reduction parameters including implementation techniques.

EXHIBIT V-2

COST REDUCTION PARAMETERS

AREA	POSSIBLE FAILINGS	POSSIBLE ACTION TO TAKE	POSSIBLE TECHNIQUES TO BE USED
Material Utilisation	High spoilage rate Inefficient scrap recovery Underutilisation of raw material and components Tolerances apparently too tight Product specification achieved	Plan for scrap minimisation Scrap disposal unit to utilise scrap material Standardisation and variety reduction Improve workmanship Improve machines and blunt tools (design) Improve storage and packaging	Is an improved material control system necessary to provide data to control losses more closely? Value analysis Work study Packaging analysis Operations research to optimise 'cut lengths'
Production Costs	High production costs Poor workmanship High reject rate Bad housekeeping High level of machine breakdown High engineering costs	Investigate incentive schemes Possibility of using inventories to even out production flow including semi-finished stock Can further "batching" to improve machine utilisation be made? Queuing theory Linear programming Extra shift working Supervisor training	Method study, to improve: Materials handling Machine utilisation Machine manning Material utilisation Standardisation and variety reduction Plant layout improvments Planned plant maintenance systems (preventive maintenance) Fatigue study General work study Work measurement Motion study

EXHIBIT V-2 (Cont.)

COST REDUCTION PARAMETERS

AREA	POSSIBLE FAILINGS	POSSIBLE ACTION TO TAKE	POSSIBLE TECHNIQUES TO BE USED
Production Planning	Poor machine utilisation	Improve production planning and control system	Economic batch size concept extended
	High work in progress Lack of communications between sales, factory and engineering departments	Improve liaison between sales and planning by organisational and communication changes	Improved inventory production control system
	Late scheduling of orders on to factory Poor deliveries Factory make what is not required Lack of tools, machines, new material and components when required	Improve production control to shop floor information flow Improve training of personnel concerned	
Warehousing and Distribution	Poor delivery, i.e. length of time and mistakes made in deliveries Breakage High frequency of ordering High packaging costs Long turn-round times of lorries High transport and maintenance costs	Fleet replacement: to replace vehicles systematically Vehicle routing plan Introduce work standards for drivers and loaders Use of outsiders for some loads, to improve utilisation of own fleet Is distribution and warehousing policy in line with marketing requirements? Standardised packages and equipment might be necessary	Vehicle routing linear programme Materials handling survey

EXHIBIT V-2 (Cont.)

COST REDUCTION PARAMETERS

AREA	POSSIBLE FAILINGS	POSSIBLE ACTION TO TAKE	POSSIBLE TECHNIQUES TO BE USED
Inventories	Wrong type of inventory held Inventories too high Obsolete and obsolescent inventory High frequency of ordering	Inventory control system poor, link between sales factory and stocks needs to be improved	Exponential smoothing and other forecasting techniques of statistical method to determine stock levels
Sales	High selling costs Underutilisation of salesmen Poor advertising Delays in order processing Salesmen overwhelmed by paperwork	Establish appropriate opjectives and controls for salesmen Build up salesmen's routes and territiories to provide optimum customer coverage Salesmen need better training	Management development programme More intensive market research to provide information on which to base salesmen's activities

2. PRODUCTION

- Objectives of production departments should be to improve the quality and reliability of equipment, increase efficiency, and optimise the use of resources.

- Methods for improving the quality and reliability of equipment include:

  - Increasing the R&D budget to improve the equipment and telecommunications capability.

  - Improving remote diagnostics - aim for error avoidance and soft fails rather than hard fails.

  - Improving management and remote diagnostics software.

- Methods for increasing efficiency are numerous and include:

  - Use of information system with records of faults and solutions. Continually improve this system and use escalation procedures.

  - The use of sophisticated local test equipment for software - respondent aims to solve software bugs within two hours.

  - Increase efficiency of the organisation by reorganising field service. This involves a fallout and retraining of field engineers. Educate field engineers and users. Set up a field service marketing function.

  - "Quality improvement" and "reach-for-excellence" programmes (one company reckons that each field engineer has to increase productivity to match the inflation rate in order to maintain profit levels).

- Creation of more sophisticated workshops using production techniques for board repair.

- Use of monitoring systems to measure performance in detail.

- Productivity programmes similar to the Japanese "P" groups, which are quality control groups, can aid productivity. A respondent, based in Sweden, explained that there had been a "tough" period talking to all the service managers and deciding on the details of the programmes.

- Then there was the time-consuming task of explaining and communicating the programmes to the technicians. It also proved time consuming to motivate the technicians to write up weekly reports and to give verbal reports at monthly group discussions.

- One respondent is pleased with the results to date and has found that many of the best ideas for cost reduction and service improvement come from the technicians.

- Financial rewards in the form of a bonus system for technicians; the bonuses are linked to the field service profits and are a form of profit sharing.

- Optimising the use of resources by having centralised repair is good. Also "optimising the use of high-caliber staff by making them available for difficult problems. This motivates staff." To achieve this the respondent has introduced the use of sophisticated local testing equipment, which has had a 95% success rate in identifying the skill requirement of the engineer.

- A TPM respondent maximises the use of the organisation's resources for service upgrades by offering "total-solution" maintenance contracts that preclude user's buying upgrades without the permission of the TPM company.

3. MARKETING

- Marketing objectives ought to include development of new services, improvement of the efficiency of the marketing function, improved market planning, field service image and customer relations.

- Methods to develop new services are characterised by one vendor who has extended field service offerings and has found that they make a significant contribution to profits.

  - The new offerings are:

    . A refurbishment unit so that the company can continue to remarket old products as they are replaced.

    . Third-party maintenance for specialised equipment and a U.K. micro.

  - The vendor commented that TPM was a natural extension of a service that already existed. In particular, the micro ties in neatly with the company's own new micro.

  - A major departure for the company in order to implement these services has been the introduction of dedicated micro engineers rather than engineers who covered all products.

  - Another vendor has been operating a software maintenance unit with a separate software support group for one year as a profit centre.

- Another new service development that involves a computer services company has extended its range of services to increase sales volume. Thirty "High Street" service centres have been set up within eight months.

- Methods to develop the efficiency of the marketing function have been successfully implemented by creating a marketing service within field service and establishing incentive schemes to encourage field engineers to sell field service. Other methods include:

  - The development of staff telephone sales skills.

  - Training salespeople to sell field service.

  - Offering a bonus to salespeople for add-on sales and maintenance sales, i.e., "growth" of the installed base.

- This is in order to avoid service being considered a giveaway. The approach has been allowed to flourish because of the lack of proper accounting in maintenance, and the penalisation of salesmen who could not meet their targets.

- Methods to improve market planning involve the use of a more disciplined approach to market planning through careful evaluation of competitors, analysis of repair problems, setting up repair centres, more market segmentation, and more feedback from field engineers.

- One very successful company stresses the need for market planning and segmentation. This company "goes for profitable business" by selecting reliable equipment to service.

- The long-term strategy is to aim for large vendors, and this has involved the selection mainly of mini vendors with communications capability.

- In the short term the company is in the process of phasing out standalone equipment contracts. Natural attrition and the migration of many of their clients to carry-in service has been helpful. For the remainder, the company is arranging for another company to take over the maintenance of the standalone equipment.

- Improving the field service image can be achieved by appointing a customer service marketing manager to promote the customer/field service image. Also, brochures, ads, newsletters and other promotional material can help.

- Improved customer relations involve user education about field service. This is necessary since the increasing use of remote diagnostics will reduce direct user interface, and users will feel more isolated and alone. Customer training will be needed in the use of new service techniques, e.g., remote diagnostics and customer-assisted maintenance.

- Respondents emphasise that maintenance contracts are going to change. They stress that the industry standards of four- to eight-hour response times is not appropriate to user needs. With the rapid growth in the use of personal or business computers, customers will need more flexible services and contracts. Respondents commented that swap-out and carry-in services will be more widely used and users expect reduced maintenance charges. Furthermore, the increasing reliability of equipment has caused a change in user attitudes towards maintenance contracts. Users are now prepared to take out insurance policies for maintenance or simply pay per call.

4. PERSONNEL

- Objectives of the personnel department include development of the new field service personnel profile and increased effectiveness and motivation of field service personnel.

- Methods to develop the new field service personnel profile according to the changing role of field service personnel, as discussed earlier, may include a new structure of positions/grades, namely: low skilled engineers for swap-outs, customer engineers who will have a responsibility for the client account, specialised communications engineers, "super-specialists" for the more advanced problems, and the field service manager who is more sales-oriented with better business and managerial skills.

- Implementation of these changes will require a careful assessment of the current staff and their career paths and recruitment of low-grade engineers, and some redundancy of current field engineers.

  - Training all field service staff in customer relations and selling techniques is an added requirement.

  - Cross-training of some engineers to meet the requirements for more software and communications skills is essential in modern service.

  - Recruitment of specialised communications engineers should be examined.

  - Training current field managers in business administration and financial management or recruiting field engineers who have commercial backgrounds is especially critical to profit.

  - Revision of skills requirements and selection criteria for field service personnel are needed.

- Increased effectiveness and motivation of field service personnel will result in good communications, vital in the transition periods when companies are reorganising in response to the changing role of field service.

  - Techniques for this include:

    . Making staff aware of business performance and common corporate goals.

    . Making staff aware of the company's progress in other countries.

. Encouraging ideas, involvement, and good feedback by having regular meetings for discussion and using an open-door management style.

C. TECHNIQUES FOR A PROFITABLE BUSINESS

1. MARKETING

- Marketing field service successfully is a result of "getting the right product to the right people at the right place at the right time." The product mix sold by service firms tends toward the concept of total systems, total systems environment, or total maintenance. Computer manufacturers offer maintenance as part of the system package, while TPM suppliers sell maintenance per se as a product.

- Some computer manufacturers have begun to sell maintenance as a product. This trend will continue as more companies devolve the field service function and realise that users must be educated in the benefits of field service in order to make its cost acceptable to them.

  - This is a challenging exercise for many manufacturers who still offer maintenance as a give away.

  - It is not only the large systems manufacturers who have this attitude - a CAD-CAM terminal supplier was quoted as saying, "We try to give away as much maintenance as possible."

- The variance in concepts of maintenance is indeed very wide. As a company that sells both minis and micros says, "We are keen to sell the idea of total systems. Maintenance is not a major issue although it is sold as a product with specific definitions. Our philosophy is that the ideal customer knows our

systems inside out and does not care about support - he can do it himself. We unbundled maintenance many years ago and do not push support packages. The customer gets only what he needs."

- For TPM suppliers to be successful, it is desirable to be able to service all the products in a company, even if that means subcontracting for certain equipment. Users tend to prefer to deal with one TPM supplier who is responsible for everything. This underlines the importance of telecommunications expertise to service distributed and networked sites.

- The range of maintenance services has been expanded considerably with more and more unbundling. Companies in the sample have also exploited the second hand equipment market by refurbishing systems that have been replaced, thus maintaining their profitability. Other companies now provide leasing services for new and second hand equipment other than that they sell. For example, a company that is part of a group selling micros specialises in leasing arrangements for second hand IBM equipment. IBMs were chosen because they actually have maintenance agreements for second-owner machines.

- Maintenance pricing has traditionally been based on a percentage of the capital equipment value, e.g., 10%. However, in recognition of the changing requirements of users, especially micro users, vendors now offer various maintenance agreements with different prices for response times and 24-hour coverage.

  - Respondents offer "cheap out-of-hours rates for any client," "maintenance from day 1 instead of 90 days warranty if the user signs a maintenance agreement on purchase of the system," and "three-shift rather than two-shift coverage."

  - There are also allowances for users of carry-in, mail-in and customer-assisted maintenance, although vendors have been slow to specify them. This may account for some user reluctance in using such ser-

vices - they do not want to use their own resources unless they are assured of discounts or reduced maintenance rates. This is also applicable for vendors offering remote diagnostics and board swapping. Users expect some form of cheaper maintenance charges.

- Apart from the above maintenance options, the formula for price setting is based on the cost of service, competitors' charges, what the market will bear, acceptability of the price to users, and evaluation of the commercial profit.

- Following the dictum of "getting the right product to the right people," vendor approaches to field service market planning and segmentation are conspicuous by their absence. Market planning and segmentation techniques will be used in the future when field service functions have their own marketing functions. The only vendors who have planned and segmented our markets are TPMs, for it is critical to their success to identify the product to be maintained as well as who sells and distributes it.

- Nevertheless, vendors are making efforts to sell field service, even if they are not quite sure to whom the service should be sold. At the moment a number of people are involved in selling field service - salespeople, field engineers, customer engineers, and field service managers. There is a trend toward more involvement of field service personnel in the sales process. This appears to have advantages in that field service personnel have direct contact with the users and are aware of developing user needs. They also speak the same language in stressing the benefits of remote diagnostics, e.g., MTBF. One supplier commends this approach entirely - there are no maintenance salespeople in the company.

  - Instead the company "attacks the sources of business through the individual area managers who develop strong local contacts and make sure the "right" people are made aware of the company's national activities.

- This supplier has very healthy maintenance revenues and has not needed to advertise the TPM service until now.

- Several companies have made engineers responsible for a quota of accounts or involved them in large accounts to assist the salespeople. They provide sales training and communication skills for engineers with tapes in customer relations, saving time and money on courses. The new profile for customer engineers and field service managers illustrates the new sales orientation of skills.

- It will be some time however before field service personnel are fully prepared for the selling aspect of their work. Companies also need to devise a selling approach involving field service personnel. Meanwhile, companies are trying to overcome the traditional salesman's attitude that maintenance is a give away.

  - Salesmen are trained thoroughly in the range of maintenance services and discounts, etc.

  - Incentives to sell maintenance and increases in rental periods include bonuses for the sale or extensions of service contracts.

- To aid the drive to sell maintenance, manufacturers have begun to promote the image of customer services (field service has become outdated). This protection provides literature and advertising as well as public relations services dedicated to customer services/maintenance. The effect to date has been minimal mainly because it is the corporate marketing function that provides these services and the campaigns lack the enthusiasm one would expect from a marketing function that was part of a field service department.

  - Moreover, much preparation is required to create documents explaining the benefits and quality of the service and the competence of engineers, and to provide statistics that illustrate these points. It is interesting to note that the management reporting capabilities of equipment with remote diagnostics are rarely exploited.

- Referring to the dictum of "right place at the right time," one can only comment that it is very timely to sell maintenance now in view of the erosion of profitability due to declining hardware prices and recessionary effects.

- The right place may be the use of the media, repair centres, and carry-in centres, etc. The aim is to present maintenance as a tangible product to users.

2. PRODUCTIVITY

- Productivity involves productivity of engineers, repair techniques, better utilisation of spares, dispatch, field service administration, and training.

- These are the areas considered significant in increasing the efficiency of field service and reducing costs.

- To encourage engineers to increase productivity, two companies have a "productivity programme" designed to increase overall field service productivity. Another company is more specific and outlines a system that has three elements:

  - "Hot" calls are separated from normal repair work.

  - Regular preventive maintenance is conducted to maintain the general quality of the installed base and to detect errors before they become time-consuming problems.

  - A few have computerised monitoring systems that measure equipment and engineer performance. Useful tools for measuring field service profitability, the systems are also used for planning manpower and repair facilities.

- Another respondent has developed the efficiency of call-logging and dispatch to optimise the number of systems repaired by engineers.

- Repair techniques are as variable as companies. Vendors are especially interested in extending the use of board swapping and establishing more efficient board repair facilities.

- The trend towards repair centres and the use of board swapping have enabled vendors to improve their spares utilisation by reducing inventory and distribution costs.

- Set-with-spares programme to identify the type and quantity of spares required. Concentrate on sale of larger volumes of similar equipment - this improves spares utilisation.

- In addition to a sophisticated call-logging and dispatch system, one vendor has an "instant action" system for micros that increases productivity. Dispatch systems can optimise different nodes in the support network and suppress possible errors.

- An internal telephone communications system based on a private network that connects geographical location administratively is used for normal communications and teleconferencing, which improves the field service administrative capability and, in addition, reduces telephone costs.

- Increased training for field engineers and management skills training for field service managers improve field service effectiveness and motivate field service personnel. Managers are trained in the use of small business computers to evaluate productivity and to apply management techniques to track the profitability of the field service department.

3. QUALITY CONTROL

- Quality control techniques involve quality control circles, monitoring quality, customer satisfaction, and management training. Quality control circles are effective as modules for field work. Quality circles in factories and repair centres create discussion groups that result in participative concerns for quality.

- Quality evaluation and monitoring procedures in the factory and the field require effective equipment reports including details on short shipments, success rate in installation, and faults. Corporate quality improvement programmes use computerised reporting systems giving statistical analysis of quality on original equipment as well as on spares repair.

- New British Standards Approval System (BS 5750) for quality assurance has an impact because the equipment's first six months performance is required to be monitored, and surveys must be conducted to assure quality. Management information systems monitor calls per day, repeat calls, calls per customer, and type of equipment.

- Vendors are also developing clearer reporting procedures and are placing stronger emphasis on verbal reporting by field engineers and on staff communications in general. They measure quality of service; i.e., meeting response times is not relevant unless the correct type and quantity of spares are available.

4. CUSTOMER SATISFACTION AND MANAGEMENT TRAINING

- Several companies monitor customer satisfaction by conducting user surveys. The results are communicated to engineers and top management. In addition to conducting their own surveys, vendors subscribe to market research reports on equipment reliability, etc. The company stresses that increasing staff awareness of customer satisfaction is essential to profitability.

- Management training includes all staff above the field engineer level who receive formal regular management training. In-depth management training and seminars are sometimes offered for all employees.

- This appears to be one of the most active areas for application of new techniques. Emphasis on quality control circles and customer satisfaction surveys relates to emphasis on equipment reliability in productivity techniques.

5. HUMAN RESOURCE MANAGEMENT

- Since human resources are the most important and expensive resources in field service, special attention has been paid to the investment value of engineers, the control of attrition rates, and negotiations with unions. The techniques in human resource management, quoted by respondents, are principally training orientated.

  - They include:

    . Training for lower level technicians in physics, electronics, etc.

    . Correspondence courses for lower level technicians to balance practice and theory. Two weeks every three months are allocated for reviews of the theories studied.

    . A product training programme using video cassettes has proved so effective that video presentations are being used for all areas of training.

    . New supervisors attend Industrial Society training sessions.

    . Field engineers have training courses to help improve their approach to selling maintenance. The courses include sales

skills plus management and personnel skills, financial management, and business administration.

. Training in how to respond to critical situations. This has reduced the amount of time wasted and has improved responses to customers who need help on the spot.

. Cross-training engineers in software and communications.

- One vendor has continual internal training programmes.

- A resident consultant from the Engineering Industrial Training Board (E.I.T.B.), which is part of the Manpower Services Commission in the U.K., conducts management courses tailored to the vendors' needs. This consultant has access to the executive management board and is influential in manpower planning and selection, etc.

- Other human resource management techniques stress the need for motivating staff and providing effective communications procedures. It has proved useful to motivate technicians and field service managers alike by encouraging them to operate as cost centres. All staff have been motivated by providing visible career paths, which has included decentralising local units and encouraging teamwork. Field service engineers and managers have been motivated by expanding their job content to include maintenance sales. Enterprising suppliers are pursuing this policy vigorously, having established that customers prefer to talk to field engineers and managers. One problem that is avoided as a result is that of marketing personnel treating maintenance as a give away.

- Conducting regular performance reviews and rewarding high performers appropriately naturally has a positive effect on human resources, as do effective communications at all levels in the organisation. Regular meetings and an "open-door" policy are typical. There is a need to motivate and communi-

cate with staff in order to overcome the complacency of some field engineers who were once employed by large computer manufacturers and became accustomed to having "leisure" time during working hours. Companies will succeed only if people are willing to work and shake off the typically complacent U.K. attitudes, according to some.

- All respondents are keen to reduce the turnover of field service personnel, although one respondent commented that during a recession it may be helpful if some staff leave of their own accord. Techniques to prevent valued employees from leaving are to provide salary incentives and career path opportunities.

  - Salaries and adjustments can be administered by giving regular increases in salaries, offering competitive salaries, providing productivity bonuses, and by offering profit sharing and equity in the firm.

  - There is an obvious need to provide attractive, visible career paths to valuable service technicians. These career paths should not be too narrow.

  - Furthermore, training and promotion policies, such as always promoting from within the company and advertising all new posts, should reflect career path opportunities.

- Employees are motivated by job interest, job content, participation, promotion, policies that delegate power and authority, and social "perks" such as Christmas parties. Organised competitions to determine "the best group of engineers," where engineers are evaluated according to productivity, teamwork, and effectiveness, seem effective. Winners are awarded a trip to some exciting country under the guise of a "training programme."

  - It is interesting to note that one company offering this type of competition has achieved a considerable reduction in field engineer attrition. The rate dropped from 10% in 1981 to 3.2% in 1982.

- Employees are also influenced by the stability of the company, its size, reputation, and attitude toward field engineers. Engineers are not motivated if the field service department reports to the sales and marketing function and maintenance is considered a "necessary nuisance."

- Very few trade unions are represented in service companies. There are few exceptions where representation is through unions such as ASTMS in the U.K., SIF in Sweden, and The Metal Workers' Union in Holland. It appears that field service personnel are not particularly interested in trade union membership. There appears to be a positive working relationship between unions and management where worker representation is in effect.

- It is clear, however, that the employers are concerned about their employees' satisfaction with remuneration, conditions, and job content. The techniques they use are as follows:

  - Several employers emphasise good communications, encouraging employees to express difficulties as soon as they arise. Generally, these companies take action before the difficulties become real problems.

  - Conducting independent employee surveys on the participative style of management in order to determine employee satisfaction levels helps employees to identify areas for action.

  - Motivation and work interest are sufficient to prevent field service employees in one company from joining unions.

- These techniques are defensive measures that are certainly effective. In companies where a high percentage of field service personnel are trade union members, it is encouraging to find that trade unions are treated as allies.

- In Sweden one company has a "good exchange" with the trade union, SIF, as leaders of SIF have the same goals as the company management. Because they are involved in setting company goals, they also have access to all company information and are actively involved in creating new jobs and selecting the staff for those positions.

- Sixty percent of one U.K. company's field service team are members of ASTMS. All the managers are also union members. The company finds it a great advantage to be immediately aware of any difficulties. Causes of problems are identified quickly and action is taken to solve them.

  - The company also finds it easier to deal with small committees from the union than with individuals, and this means easier staff control. It avoids "us-and-them" attitudes and gives a novel angle to the philosophy of an "open" management style - the managers' membership of the trade union allows them to manage the employees' perceptions of "the management."

  - It is important that employees feel they are participating in the management of their company even if they do not make final decisions.

- A high percentage of the employees of another firm in the U.K. are also members of ASTMS. This company has undergone considerable rationalisation in the last two years and has had to make many employees redundant.

  - The firm now has an "expert" at the corporate level who interfaces with ASTMS in negotiations and promotes understanding and empathy when staff are made redundant. This expert not only interfaces with the staff who are redundant but also with the remaining staff to keep their morale up.

  - The company is currently preparing to enter new markets and to make product changes that will involve changes in the profile of the field service personnel next year.

- Their "expert" has an almost permanent position with the company because the trade union is very wary of corporate policy. This results from two factors:

  . The memory of very bad, unprofessional handling of change by a previous management board.

  . Trade unions in the U.K., that traditionally reject change and are protectionist towards jobs.

D. STAYING PROFITABLE IN THE EIGHTIES

- Continuing to be profitable in the 1980s involves understanding the changing role of field service. This understanding includes market awareness, one of the most important factors in planning for short- and long-term profitability. A dramatic evolution that is changing the general market environment is taking place in the information processing industry.

  - Hardware and software are no longer major issues - field service is. Field service is being unbundled in the same way that software was unbundled from hardware, which is apparent in the trend towards advertising field service as a product.

  - The contribution of field service to revenues and profits is so significant that vendors have been forced to revise their concept that field service is a cost centre to recognise it as a profit centre. Field service is potentially the largest department and profit earner in the company, and service profit could account for up to 80% of corporate revenue.

- The emergence of field service as a profit centre and business in its own right has led to concommitant changes in the role and significance of field service within the company. Field service has a stronger position in the company and more influence on decisions and the setting of corporate objectives.

  - The effectiveness of this change will depend on how quickly traditional vendors release field service from a secondary position to the marketing and sales function. To be a fully effective profit centre, field service must be separated from the other functions in the company.

  - Young companies, free from the traditional or bureaucratic style of organisation, are often at an advantage in the struggle for profit.

  - Other factors will influence how quickly field service is separated. These include:

    . The nature and diversity of the corporate organisation - although field service is very profitable in one company, its contribution to the corporate revenue is only 4%, and a low priority will be given to reorganising field service.

    . In the micro industry it is more difficult to separate field service from other functions, their goals are to achieve volume sales and have reliable equipment.

  - Changes in marketing and technology will determine the rate of the evolution of the field service function.

    . "Field service will change in the near future when new products are launched with fully automated test equipment and 'disposable' hardware."

- "Field service will change with the change of customer profile when the company extends its scope from technical and scientific markets to commercial markets."

- The nature of the work conducted by field service, and how the field service function will be organised, will have to respond to market changes.

  - "Historically field service was purely field maintenance. Now field service is continually changing and taking increasing responsibility each year, e.g., parts repair, international maintenance, field software maintenance, applications software maintenance, and refurbishment of systems."

  - "The job content of the field engineer is changing - there is a movement from having an on-site engineer to a dependency on product stocking and carry-in service."

  - "We are turning from 100% curative maintenance to preventive maintenance and expect that this will improve customer relations. There will be less "fire fighting" and more partnership with our customers."

- In view of the declining revenues from hardware and software, it is vital to have a field service function that remains profitable. The organisation of field service and the profile of field engineers require the most attention.

- To stay profitable in the 1980s field service has to be organised as a profit centre and the field service function has to be separated from other functions. It will be necessary to have a well-defined set of rules regarding how field service should interface with other functions.

- As field service becomes more successful more areas will be placed under its management. Thus field service will become a more substantial part of the company and its status will increase.

- With the growth of field service activity areas, the field service function itself will become more devolved in that the equipment maintenance and software maintenance functions will be separated. This is another business opportunity. Management will need to set new standards of performance both for field service and other functions.

- It will be necessary to move away from the giveaway aspect of service, which is prevalent among computer manufacturers and is the result of field service reporting to sales. The status of field service as a profit centre will be important in that it will encourage and motivate field service managers to charge for all aspects of service, e.g., installation and ad hoc work.

- As field service evolves, it will have its own marketing function and more influence in marketing company products. It is important that the power of field service and sales is balanced in determining prices.

- In response to the changing work content resulting from technological and marketing developments, field engineers and field service managers will be required to change. There will be a movement away from the traditional engineer who had a career path and was constrained to be an "all-rounder."

  - Field engineers will have "devolved" skills in that there will be different grades of engineers from technicians to systems experts.

  - In some companies field engineers will become deskilled in hardware and cross-trained in software skills.

- Eventually organisations will have low-skilled engineers who conduct swap-outs. Systems experts will be "customer" engineers with a certain responsibility for the client account, and there will be a small number of super specialists or gurus for the more advanced problems. With more diverse, competitive products, the distribution of field engineers will change - companies will have new structures.

- In view of the greater profit orientation of field service, field service managers will be developed to manage finance as well as engineers through training in business management. They will be the key pins in the field service organisation and will be more dynamic, self-contained, sales-oriented people with better business and managerial skills.

- The financial implications of the changes in the role of field service and the profiles of the field engineer and field manager are numerous. Reorganisation of the company - even the buildings used by functions - is happening already. One school of thought suggests that by growing the field service force in advance of market developments, (e.g., more widespread networking) the company is assured of a segment of business, irrespective of which opportunities become available.

- The changing role of field service is a basic consideration when examining the profitability of a company.

VI COMPANY PROFILES IN PROFITABILITY

VI COMPANY PROFILES IN PROFITABILITY

A. GENERAL

- INPUT conducted exclusive on-site interviews with maintenance organisations representing a variety of interests, capabilities, lengths of time in business, sizes and profit potentials. This research is the basis for a brief review of how profitability is viewed and managed under a variety of conditions.

- The companies studied represent three market segments, including the large mainframe market, minicomputer market, terminals, and microcomputers. Different types of service organisations are also represented including large manufacturers' service and smaller, independent service firms.

  - The large firms have been in business longer than the small ones and, because of it, have more units covered under service contracts. They are therefore more profitable.

  - Small organisations tend to be younger with a smaller established service base. They are not usually as profitable.

B. COMPANY A - A SMALL INDEPENDENT SERVICE ORGANISATION CONCENTRATING ON MICROCOMPUTERS

I. STRUCTURE

- Company A has been in business since 1980 and in three years has developed an annual revenue base approaching $4 million. The company started as an independent servicer of Digital Equipment Corporation products, the management having been employed previously by Digital.

- Exhibit VI-1 shows the vertical market structure of Company A, whose products now include terminals, microcomputers, and supplies. The microcomputer service market is the principal market target of the future.

  - All lines are handled from four service centres.

  - Support, administration, and management functions are provided from headquarters.

  - Company A employs 80 workers.

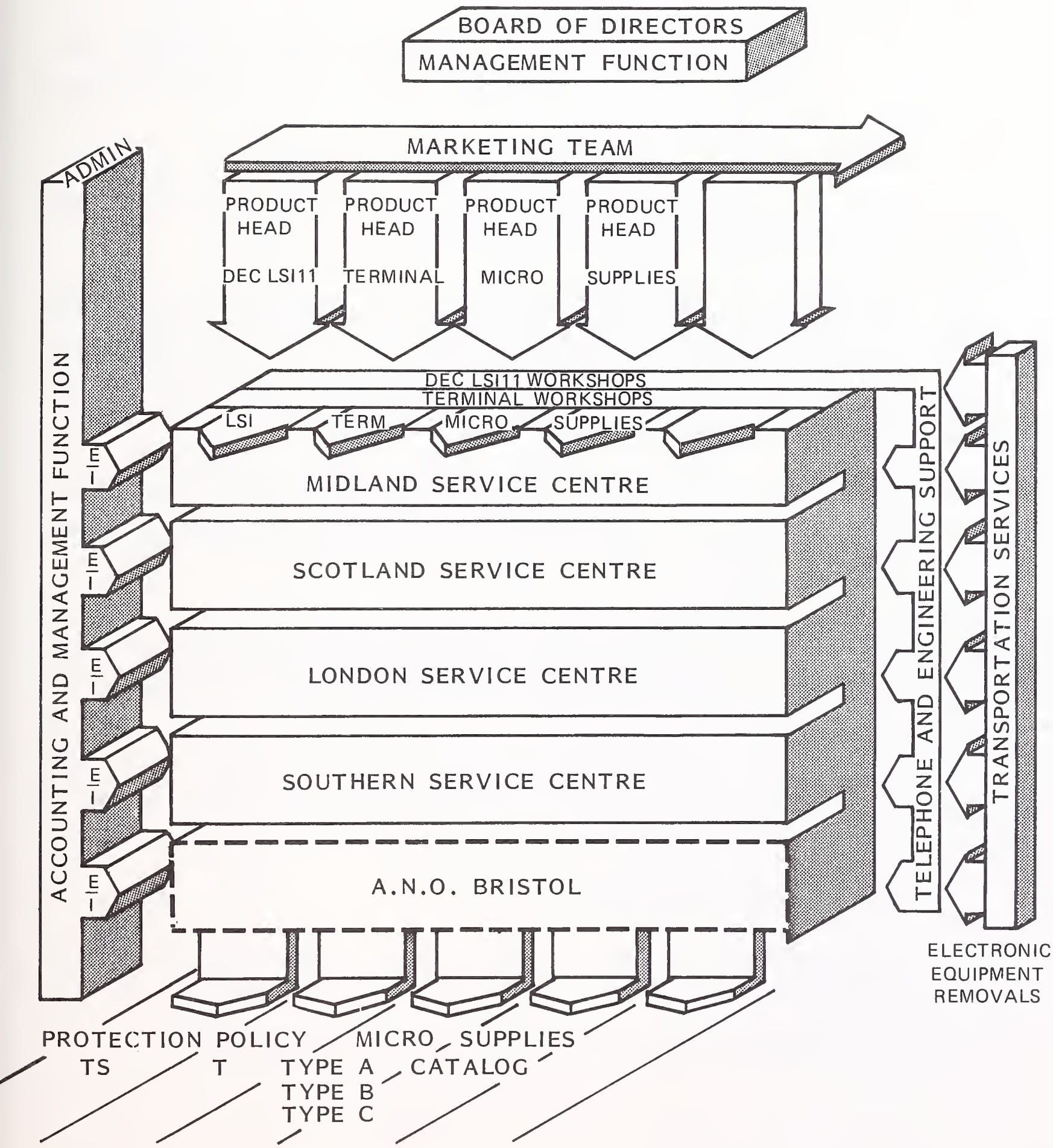
  - In 1982, after a successful start, the company was acquired by a large electronics firm in the television business. Company A is a wholly owned subsidiary.

- Company A, having started in 1980, has become profitable in 1983 and expects a year-end margin of 25%. Start-up costs have been amortised, and a conscious effort to keep overhead at a minimum, coupled with aggressive expansion of their revenue base have helped Company A make a profit in a relative short period.

  - Company A's profit plan includes a 1% increase in profits each year.

EXHIBIT VI-1

COMPANY "A" STRUCTURE



- While microcomputers are a main consideration, Company A will depend on other unannounced products and is looking for another independent maintenance company to acquire.

- Company A believes that microcomputers offer an excellent profit opportunity because of the heavy volumes of new users who at some time will require service.

- Also, microcomputer service blends well into the company's basic capabilities and repair centre philosophy.

- Company A is interested in developing "all-around" service personnel who are technically oriented in a commercial environment and have an ability to sell. This key role of local service people is significant in their plan to sustain profits in a small systems and microcomputer environment.

- Another basis for expanding profitability is a contractual requirement that limits Company A's customers from changing service or upgrading without notifying Company A first.

  - Since Company A is also committed to entering the market for selling microcomputers, this policy is advantageous if they can make it stick.

  - Along with the unique maintenance contract provision is a concentrated effort to market the agreement not as an insurance policy, but as a service contract.

2. MANAGEMENT TECHNIQUES

- Company A uses the profit centre concept as a management tool.

  - Employees share in the management and rewards of profits.

- Quality assurance and control are stressed and have improved as a result of profit sharing.

- Regular company meetings, newsletters, and an open-door policy promote effective communication. Two-way loyalty between management and engineers has improved considerably.

  - Company A's management thinks that success is directly related to employees' willingness to work.

  - They also believe that there is a general complacency towards work in large companies, and they continuously remind their engineers that company and personal successes result from hard work.

- Company A is successful largely due to its marketing techniques and management. Their services are well defined and differentiated and marketed. Offerings are flexible and comprehensive.

3. ECONOMIC FACTORS

- The recession has resulted in accelerated competition for service. This results from increased pressures to reduce costs. One of Company A's competitors, a major manufacturer, has resorted to offering free service for a period of time, just to preclude Company A from the business opportunity.

- Inflation erodes profits due to increased salaries and costs and prevents a proportionate increase in productivity. Like recession, inflation breeds more competition.

- Unemployment has a negative impact on availability of service resources because most of the very good technicians are carefully managed by their respective firms. There is therefore little movement or attrition among the

best workers, whereas less desirable or marginal performers are consistently available for hire.

- Exchange rates don't have a significant impact on Company A as they "don't buy abroad."

4. CHANGING ROLE OF FIELD SERVICE

- Company A agrees that the role of field service is changing to a microcomputer market with carry-in service "stores" that provide supplies as well as technical support.

- Also, a key change in service for Company A is to develop capable service prior to advances in products, which is expected to pay off in future expansion. This strategy differs dramatically from the traditional evolution where products are usually marketed ahead of service capability.

- Company A sees an opportunity here in that, as the microcomputer market is flooded with potential dropouts, Company A can develop the stranded customers as new accounts for service.

- The national network of service centres that is part of the Company A philosophy towards the service needs of their DEC and microcomputer users continues to expand. In addition, Company A is entrenching and enhancing the services offered at each of its regional locations.

  - At present, they have established four centres in the U.K. and operate a three-dimensional business in the form of specialist service on DEC LSI 11 systems, micro services, and the sale of supplies and upgrades.

  - As the service commitments increase, Company A will establish more walk-in centres in key locations, and it is foreseen that a further four will be required in the next 12 months.

- The centres act as local fault-reporting points for customers as well as sales outlets. Being aware of most micro users' needs, they can provide supplies locally at competitive rates, and their engineers will give advice on customers' needs.

  - Recommendations can also be given on the environment, and technical advice offered on subjects such as mains interference, static problems, etc.

  - It is perceived that more customers will elect to have micros repaired in workshops, where walk-in rates can be discussed by local representatives.

- Company A has launched three new service products, each of which has been tailored to meet a specific requirement and is economical as well. All three are based on the philosophy of swap technology. This philosophy states that it is cheaper for a user to swap to a replacement machine and let Company A collect the defective unit for repair at base than have a field engineer call.

- The first service product to use this approach is Type A. This is aimed at the large-volume user of terminals or microcomputer sytems. Typical users here will be the large timesharing operations found in universities and large multinational companies. Type A relies on the user to wait until three terminals or microcomputer systems have failed before calling on Company A to collect and repair.

- Though this may not appear to be good practice to many users (it would after all leave them in the worst case with a shortage of three terminals, which could be crucial), it does have two distinct advantages. In most cases, the savings on annual maintenance contract charges will be as high as 60% over normal contract prices. From the service price reductions it will usually be possible to purchase the spare machines to enable the user to adopt the Type

A service approach. In the event the service is required urgently on just one machine, it will be available for the cost of transportation, collection, and delivery charges.

- The other two service products have been tailored specifically for them. A Type B includes collecting a defective microcomputer, taking it back to base for repair, and then returning it. Type C follows the same pattern, but offers the added facility of providing a replacement machine while the user's is away at the workshop.

C. COMPANY B - MAINTENANCE OF PRODUCTS THAT THE PARENT COMPANY MANUFACTURES - ALSO A THIRD-PARTY MAINTENANCE COMPANY

1. OVERVIEW

- Company B is a wholly owned subsidiary of a larger firm and, in addition to marketing a wide range of telecommunications and data systems, also provides third-party maintenance on a number of computer systems, terminals, and telecommunications equipment.

- With particular regard to Data General and DEC systems, it provides a full range of services that include commissioning at its workshops prior to delivery to site, on-site commissioning, and site maintenance. These services are provided from each area office, which together carry a large quantity of spare parts in addition to specialist tools and test equipment to maintain the complete range of systems.

  - In addition to local support, a number of service centres house workshops and offer a "carry-in" service for specific types of equipment.

- A storeman is on call at their central stores 24 hours a day to dispatch emergency spares.

- Company B specialises in the service of mixed configuration systems based on either Data General or DEC processors. Response to fault calls can be on a contracted 24-hour or 4-hour target basis with extended coverage available in certain areas. Maintenance coverage can be tailored to meet customers' exact requirements, thereby offering economies over fixed standard contracts.

- An example of this decentralised management structure is Company B's escalation procedure.

  - In the case of a critical failure causing a major system breakdown, the following procedures are implemented in order to ensure adequate incident management:

    . The engineer must inform his senior engineer within one hour of arriving on site, if he is unable to define the fault.

    . The senior engineer must report the situation to his area manager if the system is still out of action two hours after the engineer has arrived on site.

    . If the system is still out of action eight hours after the engineer arrived on site, the area manager must advise the regional manager's office.

    . After 24 hours, if problems have not been resolved, the general engineering manager must be notified.

  - This procedure can be accelerated at the discretion of the area manager if, for example, supply of spare parts is a problem. The regional

manager or his staff should be alerted to intermittent hardware problems affecting total system performance within two days of the first occurrence.

- The field service department is recognised as an important protector of Company B's assets and customer base. They believe there is more profit in maintaining the product and selling supplies than in hardware sales alone.

  - This progressive attitude has arisen as the field service manager has evolved from the role of managing engineer to that of a business manager.

  - Field service is in the spotlight because of the declining profits in hardware and software sales.

  - Company B recognises and is grateful to its corporate management for viewing service as important in this way.

  - Maintenance is an attractive cash business requiring a minimum capital investment and few bad debts since services are invoiced in advance.

2. MARKETING

- Company B's marketing approach is succinctly stated in their service brochure, which says: "We believe that skill, flexibility, and experience need to be backed up by the right kind of organisation. That's our system."

- Apart from supplying hardware and systems, Company B is organised to supply and maintain equipment from the world's leading manufacturers. In fact, they are the sole maintenance agents for several of them, as well as subcontractors to many well-known names in the computer industry.

- From the users' point of view, this means the reassurance that they can maintain almost all equipment in a range from teleprinters to medium-sized computers.

- Whether the system is entirely from one manufacturer or is a mixed system with different components from several manufacturers or, indeed, any one part of any one system, they are organised to tailor their service to whatever requirement users may have.

- Company B has more than 120 mobile field engineers throughout the country. As well as running their own in-house maintenance courses, they also send engineers to manufacturers' courses to familiarise them with new equipment.

- When it comes to the types of maintenance service available, they are also organised to provide users with what they need. They offer full comprehensive maintenance with regular or periodic visits. They also offer an ad hoc service, which is charged per visit together with the cost of any spares used.

3. ACCOUNTING

- Company B's accounting and control of assets are key factors in its profitability. Assets include inventory, tools, test equipment, and facilities.

  - Spares are capitalised and depreciated over three years. Major spares are treated as a central resource, while individual spares are duplicated in each area.

  - Write-off or expensing of less costly parts occurs each year.

  - Tools and test equipment as well as company autos are capitalised but facilities, consisting mostly of buildings, are rented.

- Control of assets is significantly facilitated through an automated inventory accounting system. Tools and test equipment are in a central pool and costs are negligible.

4. PROFITABILITY

- Company B describes its field service as "very" profitable and "the most profitable activity in the U.K. (in its company). Profit is 20% of annual turnover and measurement is obtained by profit-and-loss accounting."

- Company B states that its field service activity is profitable for the following reasons:

  - They pick and choose the business that they desire, testing for profitability prior to entering a new business or contract by using a break-even analysis.

  - They benefit from their own terminal and mini sales in that their customers are potential third-party maintenance users for non-Company B products.

  - Company B rids itself of unprofitable business except when it involves large and prestigious accounts.

- Strategies for increasing profitability include a continuation of the policy to be highly selective in undertaking new businesses. They are also positioning themselves to pursue communications equipment and information networks.

  - Furthermore, they are continuing to back away from renewals of standalone equipment contracts.

  - Also, Company B expects to focus more on marketing field services and developing market segmentation strategies.

- They believe that maintenance is evolutionary involving, in most cases, a six-year cycle. They claim that there is "no need to restructure field service - it will evolve."

5. ECONOMICAL FACTORS

- Third-party maintenance business increases in a recession as users search for cheaper maintenance options.

- Inflation acts as a catalyst to implement price increases. This obviates profit erosion.

- Unemployment, generally, does not relieve the imbalance of service engineers. Engineers continue to be hard to find. Company B states that the industry requires 3,500 new engineers (in the U.K.) each year but that they end up 1,000 short.

  - "The problem in the U.K. is that there is no formal education policy for field engineers. The system is geared to academics, not practical training."

  - "Other countries have been successful in producing commercial engineers where practical training also includes selling field service. The U.K. lacks a focused training programme.

- Exchange rates have a minimal effect on Company B's profits. Exchange rates only involve spare parts. "Spare parts are a small factor - the real costs are people and cars."

- Customers and excise taxes have a negative impact on Company B's profits. Since they operate overseas as well as within the U.K., parts are required in various countries.

- The expense in time and money for transporting parts over national boundaries is high.

- Company B's answer is to raise stocking levels within each country which cuts down on the time, increasing serviceability to customers, but creates heavier investment in spares.

6. TECHNIQUES FOR PROTECTING AND ENHANCING FIELD SERVICE PROFITS

- Company B's marketing technique is simple and straightforward: identify the product to be maintained, identify who sells and distributes the product, and finally, attack the market.

  - Up until 1983, Company B has not needed to advertise.

  - No maintenance salespeople are employed. Sales are generated by field service area managers.

- Productivity is managed using individual performance parameters, including technical competence, customer satisfaction, revenue, and expense accounts.

- Company B's technique for human resource management is interesting. They believe in the "small is beautiful" axiom, where individual local units have responsibility for their own area.

  - Teamwork is encouraged and little coordination from headquarters is required.

  - Engineering managers are trained to sell third-party maintenance. "Customers prefer to talk to an engineering manager rather than a marketeer. Strong vendor/customer relationships on a local level are stressed."

- Company B's engineers are unionised and this does not present a problem. In fact, Company B views the union as a good buffer for handling individual problems.

- At the same time, an open management style helps foster employee loyalty through participation or, at least, perceived participation.

- The organisation is managed in an entrepreneurial fashion where profits are measured locally, including staff, tools, and building allocations.

  - Headquarters expenses are not allocated to local levels.

  - Spare parts are duplicated in each area office. Local managers then have access to virtually as many spares as they want, but profit goals provide check and balance.

7. THE CHANGING ROLE OF FIELD SERVICE

- In 1982 Company B's profit was $7.5 million, 80% of which was contributed by field service. This dominant role by field service is concurrent with pressures created by off-site and carry-in services.

  - The heavy dependance on service for profits has changed field service's reporting relationship: they are no longer part of marketing, which is dramatic.

- Implications of the changing role in field service are manyfold:

  - Rapid changes in field service leave field service management eager to receive new guidelines from corporate management - in accounting, for example. Management needs to set new guidelines for field service functions as well as other functions.

- Field service as a profit centre at the local level will continue to motivate and encourage efficiency and productivity locally.

8. FORMULAS FOR SUCCESS

- Company B has a clear idea of what it takes to succeed in the service business - success relating very closely to profit. These ingredients for success include:

  . Plan development of the business and people.

  . Exploit strength in communication/networking.

  . Emphasise market awareness and knowledge, closely following market developments.

  . Keep specialist engineers in the field, not desk bound, thereby keeping abreast of problem-solving techniques.

  . Maintain a small infrastructure with "few chiefs and many Indians."

D. COMPANY C - A LARGE, EUROPEAN-BASED MAINFRAME MANUFACTURER

1. OVERVIEW

- Company C markets its information processing products worldwide. Its home base is in England. Field service, currently producing a 25% gross margin, is "very profitable relative to corporate revenue," according to a Company C source.

- Field service revenues for 1982 were $180 million, and are expected to remain the same for 1983, for reasons described later.

- A wide variety of products are manufactured, sold and serviced by Company C. These include large mainframes, peripheral and terminal devices, minicomputers, microcomputers and network products.

  - The minicomputer line, designed for a low-cost, high-volume market, depends heavily upon customer capabilities in diagnosing equipment problems.

  - Experience has convinced Company C that the next generation of equipment will, with appropriate research and development commitment, incorporate network management and error avoidance routines with fix capabilities by remote patching.

  - The high-volume, low-cost market is recognised by Company C to be one where less dependence on client capability and more innate reliability are required.

- The older, once very profitable, products are now putting stress on margins since overheads and staff are still required, but not in the usual proportion to revenues.

  - "The organisation structure cannot react as quickly as market changes occur."

  - There is a TPM threat within this market since TPM companies thrive on low overheads.

- Company C's smaller products are well distributed through retail outlets. This knowledge of the channels of distribution will provide a temporary competitive edge in understanding and delivering service through this type of channel.

2. STRUCTURE

- The field service structure for Company C is shown in Exhibit VI-3. It is very interesting to note that field service is a significant contributor to revenues and profits although it is under marketing in the organisational structure.

  - One reason is that the true power of the field service function is at the corporate level where policies and prices are established.

  - This leaves the field to implement what the corporate level has told them to do, notwithstanding marketing.

- Company C admits to shortcomings in planning organisations to effectively handle technical change. Normally technical change occurs, followed by customer acceptance, followed finally by vendor organisations' response to the changes and acceptance.

  - Typically, marketing may sell an idea, but the project is doomed because the organisation is not there to manufacture, sell, and support.

  - Company C views this as an opportunity for field service to act as a pilot installation for new products before they are officially sold.

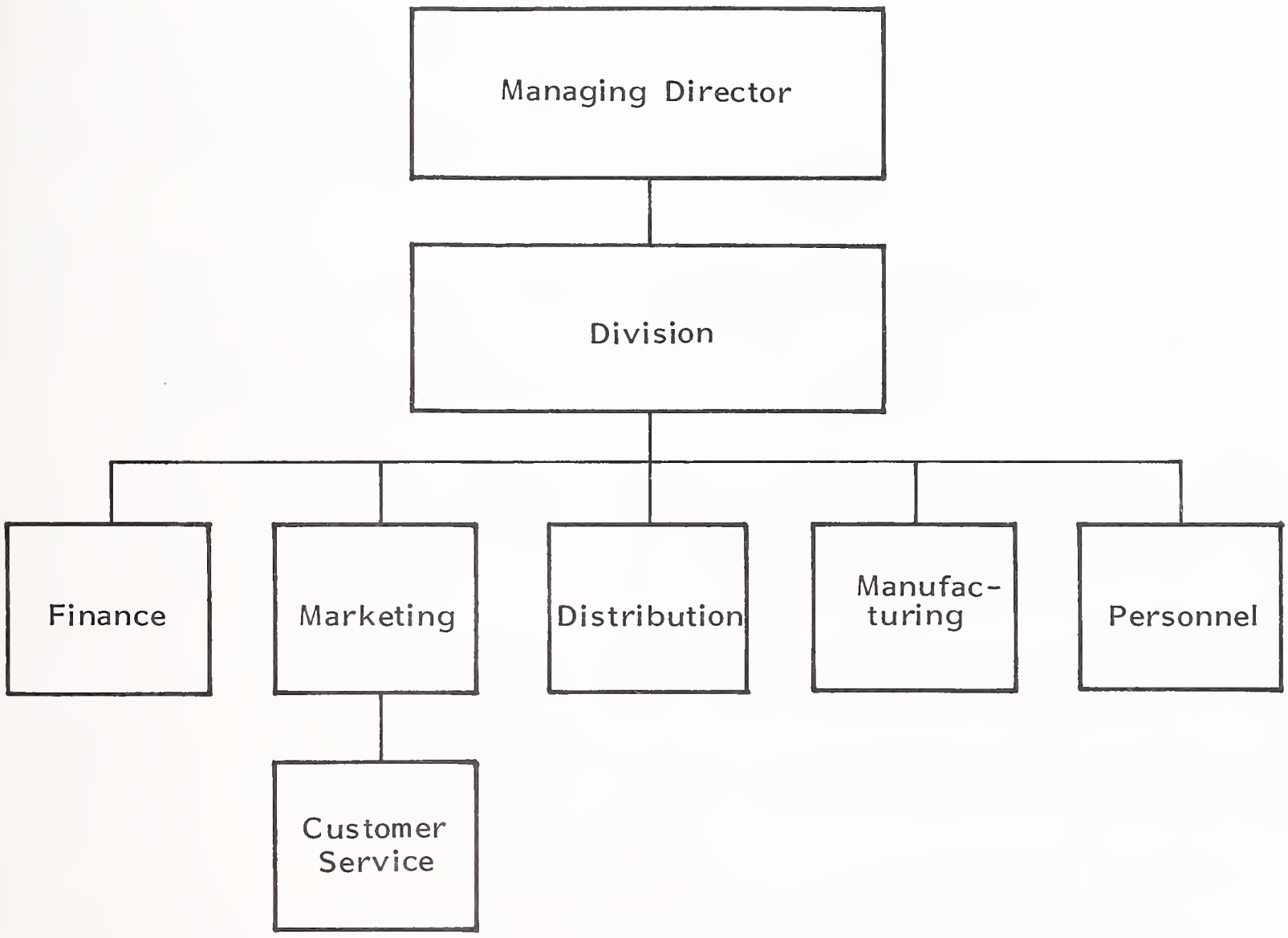
3. PROFITABILITY

- The current profits of $60 million in field service are higher than most other firms' service revenues. However, Company C anticipates a decline in profitability beginning in 1984.

  - It will take time to establish enough volume in newer markets to rebuild profit margins.

EXHIBIT VI-2

ORGANISATION STRUCTURE FOR COMPANY C



- These markets are shifting from large mainframes, which are quite profitable for service, to minicomputers and microcomputer networks.

- Profits within field service at Company C are defined in terms of revenue less expense and overhead. Measurement is accomplished with an advanced automated system, which takes into account start-up and training, corporate overhead allocations, spares, reliability, critical cluster, and engineer ratios.

- Every revenue component is expected to be profitable. Some of these are unbundled more than others. For example, printer maintenance has a minimum charge, but a fixed amount of paper is supplied with the service charge. Revenue components include:

  - Hardware and software maintenance.

    . Contract.

    . Ad hoc.

  - Site services.

    . Preparation.

    . Consultancy.

  - Installation.

  - Commissioning.

    . Cables.

    . Initialise software.

- Build system software (no extra charge if it is Company C's software).

- Field service has become profitable through cost reduction and increased efficiency as well as built-in redundancy. The "first-time fix" has a significant relationship to cost and efficiency.

  - First-time fixes are monitored so as to minimize them.

  - For example, Company C has reduced the first-time fix from 3.9 site visits to 1.9 visits. Remote diagnostics are expected to further improve this situation.

- Profitability is impeded because equipment sometimes fails to meet design criteria. This typically occurs when certain elements of the system are not available at the prescribed moment.

  - Shortfalls in delivery of system components are perceived by customers to be service problems because the serviceman is physically present on-site.

  - The practice of early launching is embarrassing and expensive.

  - A certain amount of this "hurry up and wait" problem is considered in the internal cost structure.

4. STRATEGIES AND TECHNIQUES FOR ENHANCING PROFITS

- Increased efficiency within the field service organisation, better reliability of equipment, and increased implementation of remote diagnostics describe Company C's future profit plan. The aim is for soft failures in lieu of hard failures.

- Increased discipline in the approach to marketing - what to sell, where and when - will help field service convey subtle and obvious trends in market segments.

- Improved software is also expected to help field service maximise profits.

- Organisational alternatives will become important for future profit retention and expansion. Basically this means that Company C is very keen on setting up its own marketing and sales functions.

5. ECONOMICAL FACTORS

- Company C finds it much tougher to sell in a recession as customers are looking for cheaper options. This creates tension between management and data processing managers.

  - Data processing (DP) managers require the equipment to meet the business requirements of the company.

  - Their managers are less eager to fund DP managers' requirements.

- Customers postpone purchase and upgrade decision during inflationary times. Furthermore, Company C believes most of its customers tend toward labour-intensive and costly "empires," which seriously limit the ability to buy new equipment and maintenance in inflationary times.

- Unemployment, caused by recession, has affected Company C as they have had to reduce their own staff. It is difficult to maintain the value of proficient engineers and managers during cutbacks. Company C, unionised, is sensitive to reductions in force.

  - Typical redundancy packages are fair and enticing as well.

- Twenty-year veterans may be terminated with as much as two years of severance allowance.

- The impact of exchange rates forces Company C to reduce spares inventories of American and Japanese parts.

- Government actions have influenced Company C's profits because of the commitment to defence - a strong market for Company C - and aid for common technical causes, which resulted in an advantage to Company C in network products.

- The European Economic Council is viewed by Company C to be advantageous in that former intra-European trade restrictions are relaxed.

6. ORGANISATIONAL AND HUMAN RESOURCE FACTORS AFFECTING PROFITABILITY

- A different field engineer profile is developing despite Company C's heavily influencing union. Both management and unions are aware of the need to increase productivity and re-educate engineers.

  - The engineers, once accustomed to more formal pecking orders and specific assignments, are being molded into "all rounders."

  - While the engineer will require fewer skills, service management will experience more demands.

  - A service manager is expected to be a technical expert, a businessman, and a salesman rolled into one - an "all rounder" in his own right.

- Company C needs to break away from traditional organisational concepts to respond to market and technical changes. Improved communications is a recognised requirement.

- Field service is training better and faster with more students, be they management or engineer, in an effort to keep pace.

- The devolvement of field service into a separate entity, apart from sales, will likely be the reward for contributing so importantly to profits.

APPENDIX: VENDOR QUESTIONNAIRE

FIELD SERVICE PROFITABILITY

VENDOR QUESTIONNAIRE

1.(I) Is your Field Service (F.S.) department profitable?
Yes/No

(II) How would you describe your F.S. department's profitability?

Qualitative description:

Quantitative description:
[eg profit as percentage of department and corporate revenue before and after tax]

	1982	1983	1984
Profit			

(III) How decentralised is the Profit and Loss responsibility for the F.S. department?

2.(I) How do you measure profits?

Definition: _____

(II) (a) What inter-departmental costs are included?

(b) What ex-departmental costs are included?

(III) (a) What inter-departmental costs are excluded?

2.(III) (b) What ex-departmental costs are excluded?

(IV) (a) What revenues are included?

(b) What revenues are excluded?

3.(I) To what do you attribute the F.S. department's profitability?

(II) To what do you attribute the F.S. department's non-profitability?

4.(I) What is your strategy for increasing field service profitability?

Objective: _____

(II) What changes or developments will this involve?

[Probe: targets, timescales, etc.]

5.(I) How does the economy affect your profits?

(II) What is the impact of:

(a) Recession:

(b) Inflation:

(c) Unemployment:

5.(II) (d) Exchange rates: _____ _____

6.(I) What government measures have led to an increase in field service profits?

(II) What government measures have led to a decrease in field service profits?

7. Have any other factors, eg economic, legal etc impacted your profits?

(I) Description of factors: _____

(II) Impact of factors: _____

[Prompt: Import/Export regulations, taxation, legislation, protectionism etc.]

8.(I) What techniques have you employed or do you intend to employ in order to maintain and increase field service profits?
(N.B. Signify current by "C" and future with "F")

8.(II) Techniques in Marketing: _____

(III) Techniques in Productivity: _____

(IV) Techniques in Quality Control (Prompt: Quality circles - employee participation)

(V) Techniques in Human Resource management

8(V) (a) What is your investment value of engineers?

(b) What do you do to prevent valued employees from leaving your firm?

(VI) Techniques in union problem avoidance/prevention

(VII) Techniques in organisation

8.(VII) (a) How is the F.S. organisation integrated in the corporate structure?
[organisation chart showing top three levels of organisation].

(VII) (b) Do you think that the F.S. organisation structure influences profits? Yes/No
[F.S. organisation chart showing modifications where applicable.]

8.(VII) (b) (i) If yes - how

(b) (ii) If no - how

9.(I) Is the role of Field Service within the organisation changing? Yes/No

(II) If yes - how

(III) If yes - what are the implications of such changes?

9.(IV) If no- why not

(V) If no - what are the implications of this?

10.(I) How is your F.S. organisation responding to the changing/non-changing role of F.S.?

(II) What problems have you encountered (if any)?

11. How do you account for:

(I) Inventory: _____

_____

_____

_____

(II) Tools & Test Equipment: _____

_____

_____

_____

(III) Facilities: _____

_____

_____

_____

12. What control procedures do you employ for:

(I) Inventory: _____

_____

_____

_____

(II) Tools & Test Equipment: _____

_____

_____

_____

(III) Facilities: _____

_____

_____

_____

13. What are your F.S. revenues?

	1982	1983	1984
Revenue			