

The use of micro computers in corporate planning: A research note

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ABSTRACT

Since the 1980s, an increasing number of companies have pursued the benefit of increased profit by using computers to give superior information, leading to strategic advantage. To this end, there has been an increase in the use of computers and computer models in the planning process in companies and, in particular, in the use of micro computers and software packages. A study seeks to explore the trends taking place in the use of micro computers by senior managers in large UK and Irish commercial organizations, including banking, financial services, buildings societies, the oil industry, general manufacturing, and recently privatized companies. The findings indicate that since 1987 there has been a large increase in the numbers of micro computers in use and, in particular, in the networking of these machines. The dominance of IBM as the hardware supplier and LOTUS 1-2-3 as the most popular software package indicates that, in combination, these 2 products have a very strong market position. It is imperative that corporate/financial planners and those responsible for their training and development, take appropriate action to ensure that they have the necessary knowledge and skills in computer usage to perform effectively within their companies.

FULL TEXT

INTRODUCTION

Many researchers have reported an increase in the use of computers in companies, as information processing and decision-making aids in addition to their use in data processing (Naylor and Schauland 1976, Higgins and Finn 1977, Holloway and Pearce 1982, Grinyer 1983 and Reichert et al 1988). As a consequence of these changes there has been a notable growth in the application of computer modelling to support the managerial planning and decision-making process (Harrison 1983). The overall benefit often sought by companies from computers is that of increased profits. Silk (1990) reports that in and since the 1960s it has given efficiency benefits and hence increased profits via reduced costs in areas using standard systems, such as personnel and accountancy. Since the 1980s an increasing number of companies have pursued the benefit of increased profit by using computers to give superior information, leading to strategic advantage.

To this end there has been an increase in the use of computers and computer models in the planning process in companies (Higgins and Finn 1977) and, in particular, in the use of micro computers and software packages. Harrison (1983) and Jones (1986) comment that computers have led to enhanced responsiveness and effectiveness among companies through the speed and accuracy with which they capture, process and disseminate appropriate information to managers. Given that the business environment is now characterised by a high degree of turbulence (Emery and Trist 1965), micro computers have enabled companies to improve the general quality of planning.

It would appear that financial/corporate planners have been most reliant upon computer technology for the longest period of time. Grinyer (1983) reported that accountants in larger companies regarded computer-based financial modelling as a natural extension of their role, while MacGregor (1983) cited corporate planners as dominating the design, development and running of computer models in budgeting, medium and long-term planning and investment appraisal.

This study seeks to explore the trends taking place in the use of micro computers by senior managers in large UK and Irish commercial organisations, including banking, financial services, building societies, the oil industry, general manufacturing and recently privatised companies.

THE GROWTH OF MICRO COMPUTERS

During the past twenty years the computer has changed out of all recognition, becoming small, cheap and ubiquitous (Brown 1991). The decline in the use of mainframe computers and bureau systems by companies reflects the trend towards downsizing, brought about by increases in the power and performance of mini and micro computers. In the decade between 1981 and 1991 the number of computers installed in UK companies rose from 109,000 to 3,070,000, while the projected figure for 1996 is 5,240,000 (International Data Corporation Statistics 1991). The bulk of this growth has been in micro computers, with a consequential growth in the number and range of employee types using computers. The growth in the use of applications' software and the emphasis on making such software user friendly has meant that many sophisticated tasks, which were previously the domain of highly skilled specialist professionals, can now be performed routinely by lower grade employees or by professionals in other areas. Evans (1979) discussed the implications of the growth in the adoption of micro computers for the accountancy profession, and suggested that their widespread use would lead to a loss of power and influence previously wielded through the possession and dissemination of specialist knowledge. These implications also seem relevant for other specialists, in areas such as operational research and econometrics, especially when one considers the range of 'off-the-shelf' applications software for micro computers now available.

THE SURVEY

Since the study was of an exploratory nature and the companies contacted were selected rather than sampled from a universe of all Irish and UK companies, the results can only be regarded as indicative. Initially senior managers in 100 medium to large Irish and UK companies, from a variety of manufacturing and service industries, were sent a questionnaire in December 1990.

The questionnaire aimed to ascertain:

- * company size;
- * company growth rate;
- * computer usage;
- * change in computer use over time;
- * plans for future computer use.

Replies were received from thirty-seven companies, representing twenty different manufacturing and service industries. Twenty four of the respondents held senior posts at either the corporate or Strategic Business Unit (SBU) level and so it was assumed that they were all well placed to comment on issues associated with current and future computer usage in their companies, as well as in their own departments. Table 1 indicates the size of the respondent companies based on sales, numbers of employees, assets and net profits for the period 1987-1989 (1989 was the latest year for which this data was available). (Table 1 omitted)

The figures in Table 1 indicate that on all four measures the companies experienced a notable increase in size in the period 1987-1989. The large differences between the mean and median figures are accounted for by the presence of a few very large companies. For example, the sales of the largest responding company were £3,792m in 1989.

For the respondent's own department, Table 2 shows the number of micro computers and number of employees for the years 1987 and 1990. (Table 2 omitted)

Thus it can be seen that the number of micro computers in departments has increased. The findings also revealed that in 1987 almost 25% of departments did not have a micro, whereas by 1990 all departments had at least one. Additionally, in 1987 only some 5% had ten or more micros while this figure had risen to 40.5% in 1990. Notably, these increases have taken place against a decrease in the average number of employees.

These results emphasise the continuing growth of computer use in companies, and this seems set to continue given the projections of International Data Corporation Statistics (1991).

There is still a considerable increase possible before all those in organisations whose performance could conceivably be improved by the use of computers have such equipment available. With regard to the categories of computers used, the results indicate significant changes between 1987 and 1989 (Figure 1). (Figure 1 omitted)

The number of companies using each of the categories of computer has shown an increase from 1987 to 1989. Stand-alone micros remain the principal category; however, the really significant change has been in the use of networked micro computer systems. This trend is further supported in that the mean portfolio of computer types for the sample in 1987 was

dominated by stand-alone micros, but by 1989 networked micros had substantially increased their proportion of the portfolio, at the expense of both stand-alone micros and mainframes.

Table 3 highlights the market dominance of IBM for all three categories of computer, based on the relative market share (RMS) for the sample. (Table 3 omitted) In the case of networks, Novell and Ethernet are joint market leaders. The dominance of IBM is particularly evident for stand alone computing where the IBM PS2 series is a clear market leader. These figures were remarkably close to industry figures for 1990, which showed IBM to have a RMS of 2.44, with COMPAQ as the nearest competitor (Silk 1990).

Another finding of note, in Table 3, is the low average age of all computers, which probably indicates how frequently organisations change computers and, in some cases, how recent the introduction of computerisation has been.

With regard to software packages the survey revealed that most companies used off-the-shelf applications software packages, with relatively few using either specially written or in-house developed software. In fact, fourteen of the companies relied totally on off-the-shelf software. Figure 2 shows the principal packages used. (Figure 2 omitted) It can be seen that LOTUS 1-2-3 is the clear market leader, used by 27 of the companies and with a RMS of 3.0. The total number of different packages used was 68.

The actual applications for which the software packages are used are shown in Figure 3. (Figure 3 omitted) The primary application is in statistical and financial analysis, which was cited by 33 of the respondents, followed by strategic planning and modelling (19), processing/documentation (18) and database applications (14).

These findings indicate the high degree of software use for financial purposes, but also that just over half of the organisations reported the use of software for strategic planning and modelling. The principal packages used for strategic planning and modelling were LOTUS 1-2-3 and JAVELIN. However, when the data on specific planning tasks is examined, twenty-nine companies, or 78.4%, reported using micro computers for forecasting, which is generally regarded as a strategic planning activity. The use of micro computers for a number of specific planning tasks is given in Table 4. Not surprisingly, given the prevalence of the use of micro computers and related software for financial purposes, 32 respondents identified the finance/strategic planning function as the heaviest user of computers within their companies.

TABLE 4: USE OF MICRO-COMPUTERS IN PLANNING TASKS

PLANNING TASK--MICRO COMPUTER USED

Product Market Portfolio Planning--13

Experience Curve Analysis--6

Environment Analysis--14

Competitor Analysis--21

Scenario Planning--19

Simulation--19

Risk Analysis--16

Forecasting--29

Goal Setting--20

Consolidating SBU*/Department Results--23

Acquisitions/Merger Decisions--10

Divestment Decisions--9

*SBU = Strategic Business Unit

When the size of the companies was taken into consideration in examining the use of micro computers in specific planning tasks, it was difficult to come to any significant conclusions. Relatively small organisations were just as likely to use micros for strategic planning as large ones. This undoubtedly reflects the falling cost of these products. When asked about future hardware purchases 20 respondents replied. Of these, 11 said they would purchase the IBM PS2 series of machines, five indicated COMPAQ, while one each opted for ICL Digital, HP and Dell. The reasons cited for making particular hardware purchasing decisions are given in Figure 4. (Figure 4 omitted)

With regard to future software purchases, only nine respondents identified specific ones: JAVELIN (6), HARVARD GRAPHICS (1), AUTOCAD (1) and WINDOWS (1). These future purchases would appear to indicate the importance of software for

financial/corporate planning, as JAVELIN, like LOTUS 1-2-3, is primarily used for financial planning and modelling.

CONCLUSIONS

Not surprisingly, the findings indicate that since 1987 there has been a large increase in the numbers of micro computers in use and, in particular, in the networking of these machines. The dominance of IBM as the hardware supplier and LOTUS 1-2-3 as the most popular software package indicates that, in combination, these two products have a very strong market position. Given also that future purchases will be based mostly on compatibility and company policy (which is likely to be highly influenced by the need for compatibility), there is good reason to believe that IBM or IBM-compatible micros and LOTUS 1-2-3 will continue to dominate in corporate/financial planning.

As such, it is imperative that corporate/financial planners and those responsible for their training and development, take appropriate action to ensure that they have the necessary knowledge and skills in computer usage to perform effectively within their companies.

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DETAILS

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