

THE USE OF MICRO COMPUTERS BY TOP EXECUTIVES

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ABSTRACT

Personal computers have the potential for becoming a primary decision making aid for managers and executives. The personal computer is quickly evolving into an important tool in the managing and utilization of corporate information. The purpose of this paper is to report the findings of a study conducted by surveying a cross section of decision makers in both large and small corporations. This paper presents the results of the survey to determine what hardware and software, if any, is utilized and for what applications. For those executives who do not currently utilize a personal computer, an analysis is conducted to determine why they do not and whether they will do so in the near future.

1. INTRODUCTION

Microcomputers have received considerable attention over the last several years. New PC products are continually being announced. However, determining the extent of their use is quite difficult since features and technology are distributed across a wide spectrum.

The popularity of microcomputers can be examined by reviewing the movement from central processing systems toward distributed processing systems. The development of relatively inexpensive hardware enabled an organization to install multiple computers in different geographical locations to serve the different departments of the organization. According to Peter Nulty, with the PC as a stand alone unit, the manager could process more data in a short period of time and then communicate the results to the other managers(5).

Throughout the higher echelons of U.S. corporations, Personal Computers (PC's) are being installed at an accelerating pace as office automation takes hold. The appearance of the PC is almost single handedly restructuring the entire computer-business relationship. These desk top computers available today are the prototypes of the executive workstations of the future. This paper attempts to determine the extent and purposes for which personal computers are utilized by today's decision makers.

In the next section of this paper the methodology used in conducting this research is presented. The third section provides the findings of the survey. In 3.1, an analysis of the amount of utilization of PC's is presented. The purpose of this analysis is to determine who is using the PC's. The question as to what purpose PC's are being utilized and what kinds of software are being

used are discussed in 3.2. The kind of hardware that is being employed by the respondents is identified in 3.3. A final section, 3.4, on training is presented in order to determine how these executives learned to use their personal computer.

2. METHODOLOGY

In order to determine the extent of use and application of PC's in the business community, a survey of 100 managers and executives in various corporations was undertaken in June and July of 1984.

The majority of executives contacted were vice presidents. The remaining executives, however, were given the option of forwarding the questionnaire to someone more suited to answer the questions. This option was exercised by a few of the executives but most executives did answer the questionnaire personally and no one under the level of manager answered the questionnaires. Business organizations represented in the survey were selected from different sectors of the economy such as manufacturing, banking, transportation, communication, oil/gas, etc. Majority of the firms contacted have assets in the range of \$50 million to \$500 million.

The organizations were surveyed by mail questionnaire. The questionnaire contained 23 questions designed to measure: (1) personal computer usage, (2) in which stage of office automation the personal computers are employed, (3) the type of hardware and software which is utilized, and (4) the type of training they received in use of PC. Of 100 firms invited to participate in the study, 54 responded. All of the returned questionnaires were usable for analysis purposes.

3. SURVEY RESULTS

In this section findings of the study are presented.

3.1 Personal Computer Utilization

One of the most pressing problem today's executives face is the availability of up-to-date information. To properly manage present corporations, executives must have available to them whatever information is needed to make a decision, and just as importantly, when it is needed. The success of a business organization may very well depend upon how timely the information is and the speed with which executives can make qualified decisions once the information is available.

One of the tools available to today's decision maker is the personal computer. The personal computer can be used as a decision support system as well as a communicative system. It can be used directly by the executive to support such tasks as planning analysis, database management, and word processing. It can also be utilized as part of a company's communications network.

The Yankee Group [8] believes there are four basic stages of office automation. These stages are:

I. Stand-alone Solutions:

- * word processors and/or desk top computers primarily serving secretarial/clerical personnel.

II. Rudimentary Integration:

- * A few word processors and desk top computers communicate with one another (or a host computer) via a simple communications package or a small local area network.
- * Clustered word processors are connected to a central processing unit in order to share printers and files.
- * A few professionals and/or managers utilize desk top computers mostly in a stand-alone mode.
- * Some experimentation is being carried out with networking/communications with office-oriented information and documents.

III. Integration/Office Automation (OA): Pilot Programs Established

- * OA services and/or software are available on minicomputers and/or mainframes.
- * On a company-or site-wide basis a coherent Information Management Group is being assembled to coordinate activities between the communications, MIS, and DP departments.
- * A total OA architecture for at least the next two years is being assessed.
- * Dedicated work processors are being replaced, and clerical personnel are being shifted to networked personal computers.
- * Managers and professionals utilize a variety of desk top computer business applications such as DBMS, spreadsheet, graphics, etc. Electronic mail is also available to some users.
- * Links to minicomputer - and mainframe-based information is also available to professional and managerial personnel.

IV. Total OA Integration:

- * A coherent information Management Group is established with the cooperation of the OA, DP, MIS, and communications departments.
- * Compatibility problems (hardware, software, and communications) have been solved via one of the following solutions: a single standard vendor, a "unified or standardized" network architecture, or a system of protocol converters.
- * As part of the corporate network, desk top computers are used by most professionals and managers. Desk top computers are linked together via LAN's and/or PBX's with access also being provided to OA applications on minicomputers and mainframes. Easy access to DBMS and or other resources is available at all levels, but closely controlled with security procedures.
- * All users have access to printers, plotters, slide generators, and other advanced peripherals.

One of the goals of this paper is to attempt to identify the stage at which today's corporations stand.

Results of the survey indicate that PC's are being widely used. Of the

responses received, 52 percent utilized a PC in the performance of their duties. Of this 52 percent, 71 percent use their PC daily, while 25 percent use it occasionally and 4 percent use it approximately one a week. This level of usage seems to indicate that the average organization lies somewhere between stage two and three of the Yankee Group's four stages [8]. Managers and executives are using personal computers for business applications. However, employing PC's for integration and planning are still in the infancy stages.

Of the 48 percent of the respondents who do not currently use a PC, 85 percent agreed that there is a place in the management environment of PC's. However, 54 percent of these non-users do not plan on utilizing a PC in the near future while 42% do intend on purchasing one and the remain 4% are undecided. The main reason cited for not using a PC was time. It was noted on some of the returned questionnaires that the initial commitment required would be at the expense of current duties and use of a PC would be a misallocation of resources. The area of concern may diminish with the introduction of new user friendly software.

The respondents unanimously agreed that the use of PC's increased their efficiency, and they would advocate the use of personal computers to their colleagues. They are convinced that all large organizations will utilize PC's in 10 to 20 years. While today's companies may not be set up to provide data in a manner that executives can use for strategic decision making, in time technology will make this information available. When this happens, top management will make good sense out of the utilization of PC's.

3.2 Software

One of the most important decisions in the PC implementation process is determining the software needs. The reason is that software will ascertain the nature of the interface and utility of the PC and the user [6]. To meet the user requirements for software, ready-to-run software packages are being developed. While users sacrifice some uniqueness by buying a software package, the time and money saved usually justify the sacrifice. It is forecasted that the sales of software for PC's, the fastest growing part of the software industry, should increase 44 percent annually for the next five years [6].

The results of our survey confirms the popularity of ready-to-run software packages. Table 1 shows that 71 percent of software utilized by the respondents is purchased from independent software manufacturers, and only 32 percent of the software is produced in-house. In Table 1 through 4, sum of the percentages is more than 100% due to multiple responses. The amount of software

SOURCE	NUMBER OF RESPONSES	PERCENT
Independent Vendor	20	71%
Hardware Vendor	16	57%
Developed In-House	9	32%
Modified Purchased Software	3	11%
Total	48	171%

Table 1 - Sources of Personal Computer Software

developed in-house will most likely decrease in the future. Purchases from hardware vendors account for 57 percent of the software packages. Furthermore, 11 percent of the software is purchased software packages which have been

modified for individual needs.

The results of the survey indicates that the primary use of the PC is for decision making. Specifically, 68 percent of the respondents that used PC utilize their PC for this purpose with an average of 25 percent of their decisions being aided by the PC. Furthermore, PC's are being employed for forecasting, analyzing sales/purchases, and communication.

While software packages are available in abundance, finding the package that best meets ones needs can be a mammoth task. Of the 52 percent of the respondents who do employ a PC, 59 percent indicated that they have requirements which could be more efficiently performed or aided on the PC but no applicable software exists. Of the 48 percent of the executives surveyed who do not utilize a PC, 68 percent agreed that they have needs which can only be satisfied through utilizing a custom designed package.

Among the respondents who use a PC, 15 percent indicated that ready-to-run software packages meet their needs, and 59 percent stated that these packages are not developed to specifically satisfy their needs, but only minor modifications are required. Furthermore, 22 percent pointed out that software developers do not coordinate their efforts with the users needs and major modifications are required to make packaged software useful. Finally, 4 percent of the users expressed that their needs are just not met.

The survey also attempted to identify what software packages respondents used. Twenty-nine software packages were identified by the users. A partial list of these packages is provided in Table 2.

<u>PACKAGE</u>	<u>NUMBER OF RESPONSES</u>	<u>PERCENT</u>
LOTUS 1-2-3	19	68%
VISICALC	8	29%
MULTI-PLAN	7	25%
dBASE II	6	21%
WORDSTAR	5	18%
PFS: FILE	3	11%
MULTI-MATE	2	7%
CROSSTALK	2	7%
OTHER	21	75%
TOTAL	73	261%

Table 2 - Software Packages Utilized

As indicated in Table 2, the abundance of software packages available in the market did not cause any problem in making a selection and only a few of these packages are widely used. The most widely used package is Lotus 1-2-3. It is used by 68% of the respondents that used PC, and no other application package was utilized by even half as many executives.

The cost of the packaged software does not seem to be a factor. Of the respondents who do not utilize a PC, the majority, 92 percent, did not feel that the cost of software packages was prohibitive. Only 8 percent of these non-personal computer users slightly agreed that the cost of software packages was a factor in not using a PC. Most application packages are viewed as a good value and this viewpoint should continue to grow.

3.3 Hardware

Selecting the PC hardware in large organizations is a problem close to being entirely settled. At the time of the survey there were indications that IBM owns or, depending on your viewpoint, is in the process of taking ownership of this very important market for PCs. Although other firms are claiming some portions of the market, but for the most part it truly is IBM-PC land [1]. Furthermore, the standardization IBM has introduced to the hardware market and its past reputation will enable them to continue their market leadership.

The results of the survey, Table 3, confirm the dominance of IBM in the PC market. In fact, 64 percent of the respondents utilize an IBM-PC, or IBM-XT. Other various manufacturers products used were Apple, Wang, DEC, Burroughs, Sperry, and Xerox.

MANUFACTURER	NUMBER OF RESPONSES	PERCENT
IBM	18	64%
APPLE	6	21%
BURROUGHS	1	4%
DEC	1	4%
SPERRY	1	4%
WANG	1	4%
XEROX	1	4%
TOTAL	29	105%

Table 3

However, none of these, except Apple, had any substantial usage according to the results shown in Table 3.

As technology increases, personal computer manufacturers are adding new features and/or upgrading existing features of their products instead of reducing prices drastically. Random access memory (RAM) is being increased, high density mass storage devices are becoming available, and coprocessors to increase speed are a few examples. More and more, however, software is the media used to sell hardware. Not drastic price decreases of technological advances.

3.4 Training

The questionnaire also tried to determine the type of training executives received in the use of their PC's.

The majority, 79 percent, of executives who utilize a PC were self taught. An internal training program was offered to 39 percent of the respondents, and 18 percent received outside training. The result is shown in Table 4. Most of the respondents stated that the training they received was sufficient.

SOURCE	NUMBER OF RESPONSES	PERCENT
SELF TAUGHT	41	79%
IN-HOUSE TRAINING	20	39%
VENDOR SUPPLIED	7	14%
FORMAL EDUCATION	2	4%
TOTAL	70	135%

Table 4 - Training Source

However, 21 percent did not feel that they have had enough training to fully utilize the potential of their PC's.

With the increasing simplicity that is being programmed into the new software packages, outside training requirements will become less necessary. Thus, the reliance upon self teaching aids should be adequate for most needs.

4. CONCLUSION

PC's are indeed finding their way into more and more offices of today's executives. The speed and accuracy that PC's provided in analyzing corporate information makes it an invaluable aid considering its relative inexpensive price. Increased capabilities and exposure will help the PC become as commonplace on the executives desk top as the telephone. Variables can be manipulated and alternate plans evaluated with such ease that the use of the PC's by decision makers will be standard operating procedure in the 1990's. Pioneering managers would be wise to begin learning to like as well as use the PC's.

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