AN ASSESSMENT OF ELECTRONIC PUBLISHING PRODUCTS & INDUSTRY

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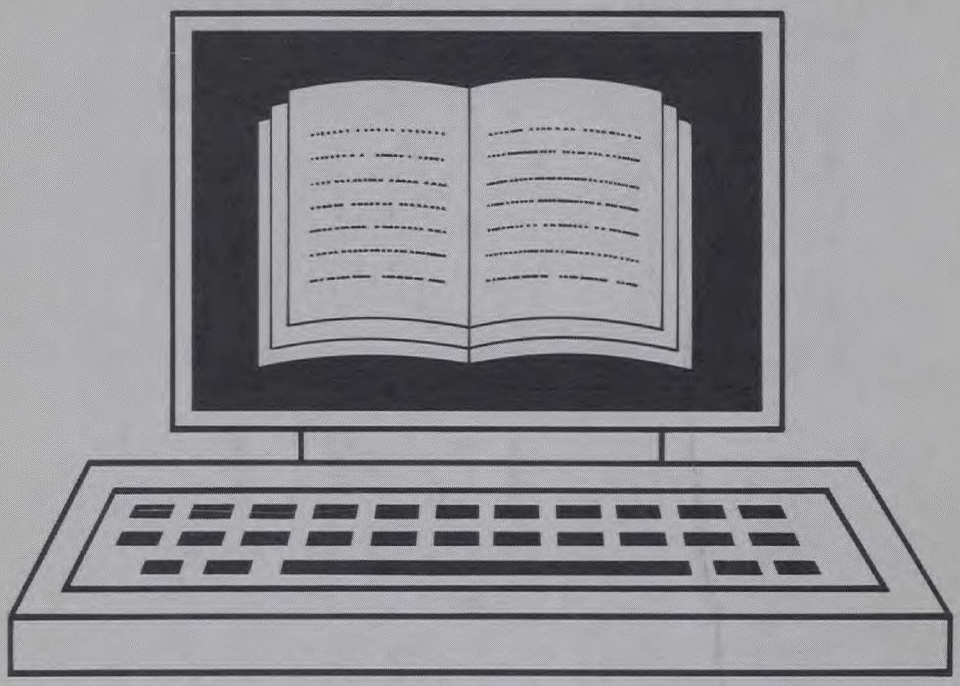

Prepared For
The Department of Communications
Government of Canada

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DESKTOP PUBLISHING IN CANADA

A Report Prepared for the Department of Communications

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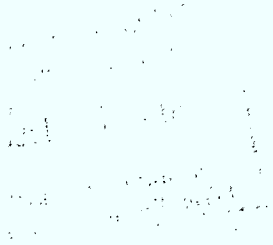

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EXECUTIVE SUMMARY

Desktop publishing (DTP) is a means of automating the pre-printing phase of document production. It promises to bring publishing costs down, speed up communications, and cut total yearly publishing expenditures by as much as fifty percent. It employs microcomputers, peripherals, laser printers, and software to produce professional-looking documents containing text, data, and graphics. The low-end laser printer is the technological innovation underpinning the market success of desktop publishing.

A complete DTP system falls in the $10,000 to $20,000 price range for a microcomputer, software and laser printer. For users who already own a microcomputer, publishing software packages can be purchased for from $200 to $8,000, and laser printers start at about $3,000.

In the second half of 1986, sales in Canada of microcomputers, laser printers, scanners and software for DTP configurations began to accelerate rapidly. ERC estimates that in 1986 the total DTP market in Canada was worth $ 50 million. By 1991, it should be over $ 450 million.

At present virtually all the equipment used in DTP systems is manufactured in the United States and Pacific rim countries. Because of the nature of the computer hardware industry, it is very unlikely that any Canadian manufacturers will become major players in this market. The chances for Canadian firms in the market for DTP software are better but by no means assured. For any DTP software package to be successful it must win a major market share in the broader North American market.

The reasons for purchasing a DTP can be reduced to three essential categories: (1) to produce more documents, (2) to improve document appearance, or (3) to reduce costs by saving time and money.

Desktop publishing systems create their own demand. Over three quarters of the respondents claimed that they planned to purchase additional DTP hardware and software within the next two years. Most plan to spend between $5,000 and $10,000.

A DTP system offers a very attractive return on investment. Just over sixty percent (60.9 percent) of the survey respondents indicated they expected their DTP system to pay for itself within two years. Overall, 28.7 percent estimated the payback would come in less than a year and 32.2 percent felt it would take one to two years.

Control of the organization's DTP system can be with either an internally or an externally-oriented department. For 32.3 percent of the responding organizations, the DTP system is found in departments responsible for communicating the company's message to the outside world. Included among these externally-oriented departments are communications, marketing, graphics, sales, and printing. In 42.5 percent of the companies surveyed, departments with an internal communication orientation such as production, MIS, administration, and planning controlled the DTP system.

Expertise in the use of DTP systems tends to be limited to a fairly small number of people within an organization. In 57.6 percent of the organizations surveyed, there were five users or less. In 23.8 percent, only one or two users were proficient.

Less than a third of the respondents indicated that they had received formal training. The majority of users were self-taught or learned through manuals. Almost all respondents felt that more training was needed regardless of the level of DTP expertise achieved.

In terms of the number of organizations producing them, the most popular DTP applications are newsletters, marketing literature, reports, letters and presentations. In terms of mean units produced, the most popular applications are letters, business forms, proposals, reports and pamphlets.

Although user-published documents do not appraoch professional typeset quality, 83.3 percent of the respondents indicated that they were now producing higher quality documents containing more design elements. For many of these respondents, desktop publishing represents a considerable advance over what they were used to -- word-processing and manual cut-and-paste.

One of the biggest impacts of DTP is the amount of excitement it creates among users. Respondents commented that the quality of worklife had increased, and that employees became happier and more satisfied with their jobs after becoming proficient with DTP. It is also proving to be a popular and relatively painless way for computer novices to enter the world of information technology. Another major impact is the increased positive image and prestige it brings to the user organization or department.

In descending order, the eight key benefits of desktop publishing are:

1. Reduced Costs
2. Quicker Turnaround and Improved Productivity
3. Increased Control
4. Increased Flexibility
5. Time Saving
6. More Suitable Quality
7. Improved Image
8. Increased Creativity

The major drawbacks associated with desktop publishing are:

1. Length of Learning Curve
2. Hardware Limitations
3. Software Limitations
4. Price
5. Training
6. Compatibility
7. Available Fonts

1.0 INTRODUCTION

1.1 Objectives

The key objective of this study is to review the state of desktop publishing (DTP) in Canada. Secondary goals include:

* describing the technologies used in desktop publishing
* comparing desktop publishing with traditional printing methods in terms of cost, quality and performance
* documenting the size of the Canadian desktop publishing market, the types of users, and typical applications
* identifying future trends and applications of desktop publishing
* analyzing the impact of desktop publishing on end-users and on others who are either directly or indirectly affected
* identifying issues related to the diffusion of desktop publishing

1.2 Definition

Desktop publishing is a means of automating the pre-printing phase of document production. Using a microcomputer, the unsophisticated user can perform some or all of the typesetting, artwork and page mark-up functions that precede mass printing. Alternatively, the DTP system can be used to enhance documents that previously would have been typewritten or wordprocessed. The DTP systems do not quite match conventional typesetting technology in terms of resolution and, hence, are said to produce documents that are merely of "near typeset" quality.

At a minimum, a DTP system is comprised of a micro-computer, a laser printer and a page composition software package. The hardware configuration can be expanded to include

scanners and other special input devices. Drawing, painting and graphics software can be added to the basic page composition package. Depending on what is included, the DTP system will cost from $8,000 to $30,000.

The definition of desktop publishing used here does not include the more sophisticated "electronic publishing" systems which are based on minicomputers. Electronic publishing systems typically have multi-user capability. While the DTP systems employ general purpose operating systems such as MS-DOS or Apple-DOS, electronic publishing sometimes have special operating systems written specifically for publishing packages. These more advanced systems which cost from $30,000 to 300,000 can produce documents with true typeset quality. They offer composition features normally unavailable on DTP systems such as kerning, justification, leading and proper hyphenation. As operation of the electronic publishing systems is fundamentally more complex than is case for DTP systems, users must be "technically sophisticated".

1.3 Methodology

1.3.1 Bibliographic Sources

Since the industry is still in its early stages, the literature on DTP is not extensive. The computer trade press is filled with short items dealing with product announcements, price changes and vendors strategies but books and major studies of substance are virtually non-existent. Once the industry matures, a secondary literature will emerge. For this report, however, the consultants had to rely almost exclusively on their experience gained with several market research projects conducted for private sector vendors and on the primary research performed for this project.

A list of some of the more useful articles consulted can be found in Appendix A.

1.3.2 Questionnaire Design and Administration

The primary research involved a survey of sixty individuals currently using desktop publishing systems. The questionnaire was initially designed and tested by Evans Research Corporation. Modifications based on the results of the test and on recommendations from the Department of Communications were then introduced. A copy of the final version of the questionnaire can be found in Appendix B.

The telephone interviews normally lasted one half hour. Occasionally they took longer. Despite the length, the respondents did not become bored or impatient. Unlike the respondents for many of the surveys conducted by the consultants, the, desktop publishing users were very enthusiastic about their systems. They not only answered the interviewers' questions but often introduced their own questions and comments about the industry, the players, new products and techniques.

Fifty respondents were interviewed over the telephone. Ten interviews were conducted in person.

1.3.3 Sample Selection

For the purposes of sample selection, a desktop publishing user was defined as an individual who uses a microcomputer with a laser printer and page composition software. This technology could be used for a variety of publishing applications. The ultimate difference between a desktop publishing user and an individual who combines a microcomputer with a laser printer for simple word processing is the desktop publisher's ability to integrate text and graphics on screen.

All respondents were qualified to ensure that they understood publishing applications and use of DTP within their organizations. They had a wide range of responsibilities, were known by many different titles, and came from a variety of functional areas. All were either DTP systems operators or persons who directly supervised systems operators.

1.3.4 Sample Demographics

Although Evans estimates that Ontario represent 60% or more of the Canadian market for DTP products, the consultants felt that it was important that the survey have a "national flavour". Accordingly, the consultants decided that a minimum of 50% of the respondents should come from outside the province of Ontario. (See Exhibit 1.1 for the achieved geographical distribution of the sample).

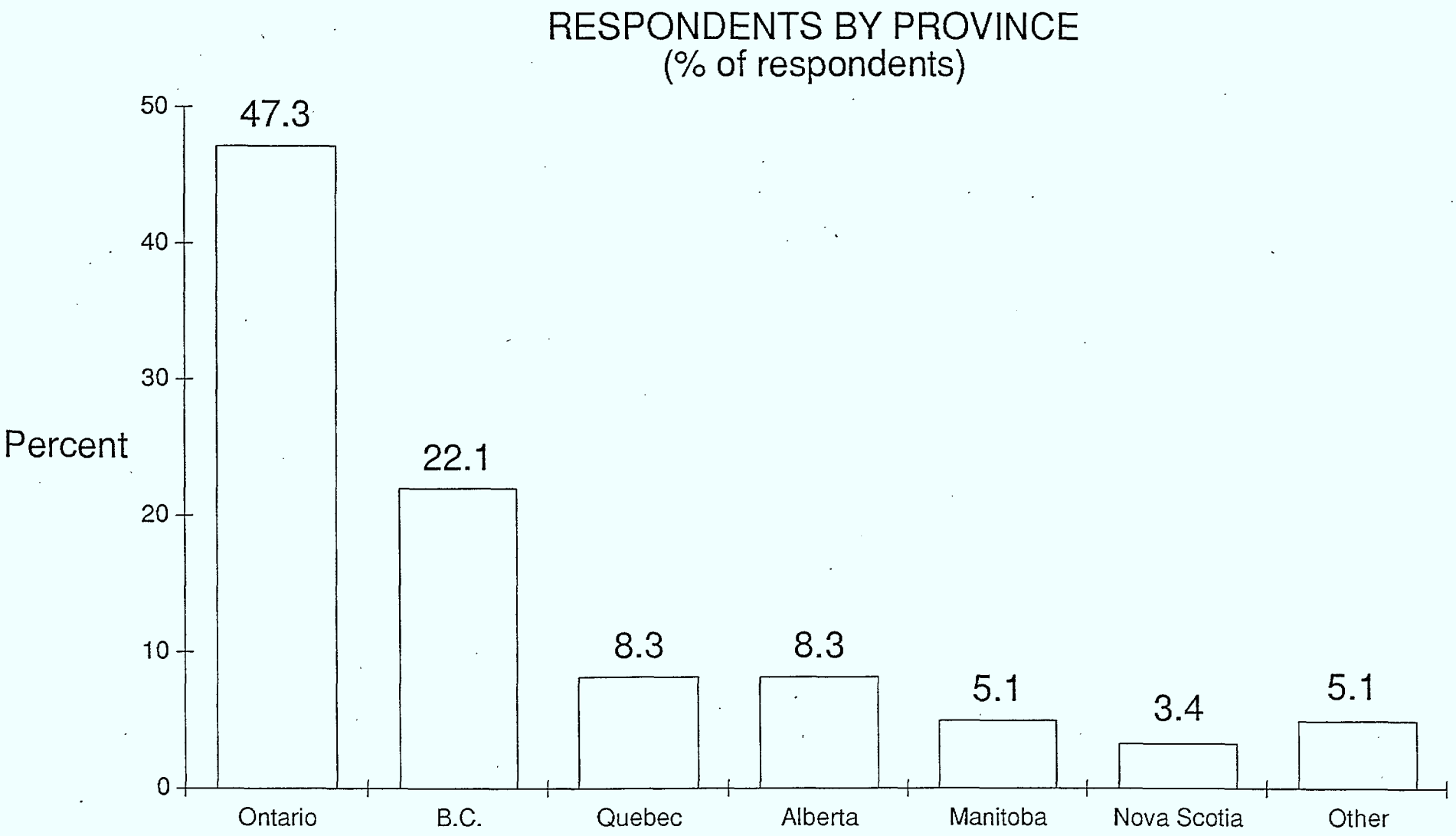
No quotas were set on the industry sector, number of employees or revenues of the respondent organizations so that data series on these variables can be assumed to mirror those in the actual market. (See Appendix C for a list of the organizations participating in the survey.)

At present, DTP systems are found most often in organizations from the services to business sector, publishing companies, government offices and educational institutions. The relative popularity of DTP in these organizations reflects their orientation towards document production. Where the organization is not oriented towards document production as part of its basic function, DTP systems are less likely to be found. Consequently, industries such as manufacturing, resources, wholesale/retail, finance and communications account for only modest portions of the installed base of DTP systems. (See Exhibit 1.2.).

Once the basic need has been identified, organizational size does not seem to be an important factor in determining whether or not an organization would have a DTP system. Whether measured in terms of annual revenue or number of employees, the survey results show that DTP systems are found in organizations of all sizes. (See exhibits 1.3 and 1.4).

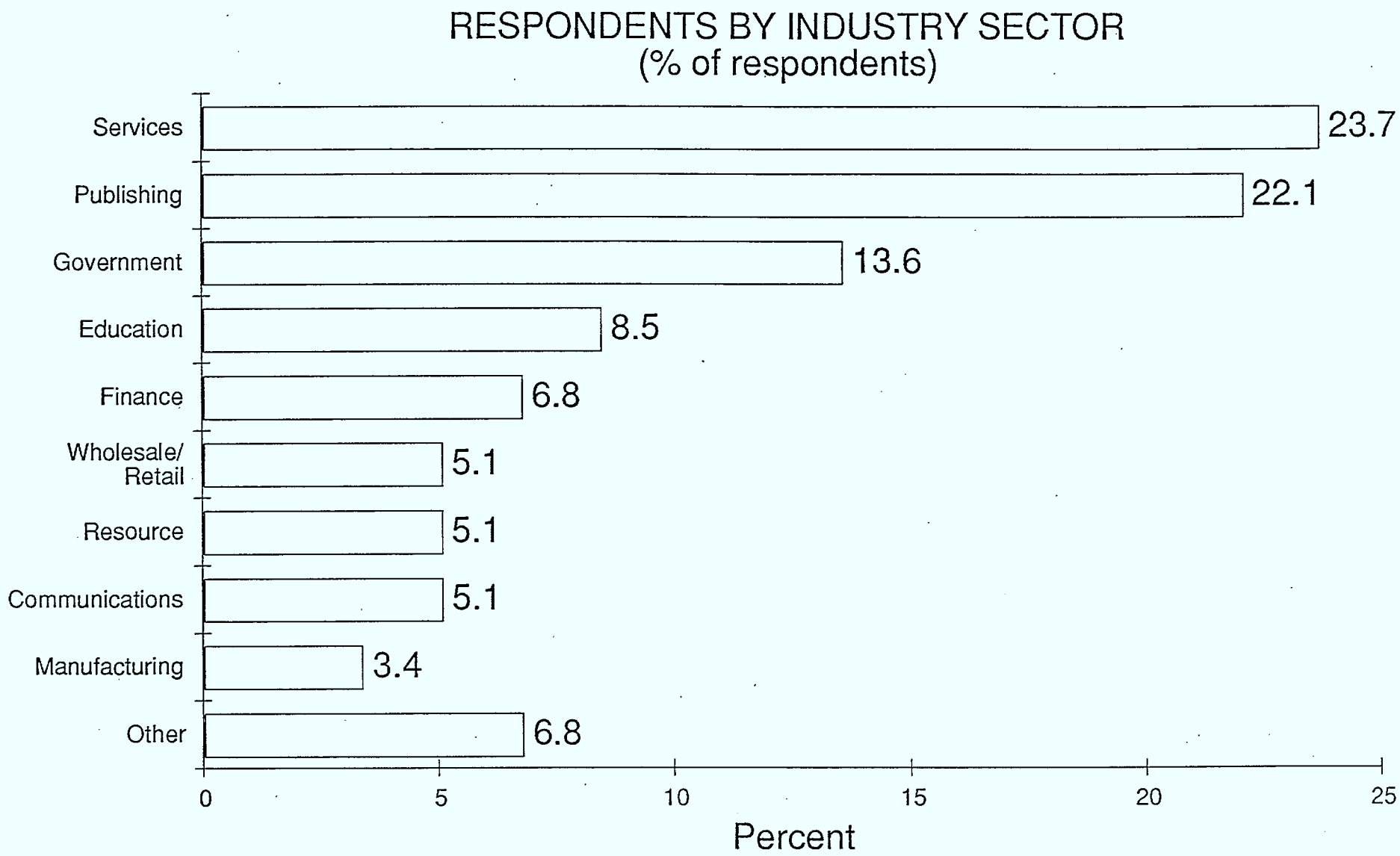
1.4 Charts and Graphs

Several of the questions on the survey called for multiple responses which are not mutually exclusive. For example, a respondent could list up to five benefits from using DTP. Because there are more answers than respondents for these questions, the percentages will sum to more than 100 percent. The series shown in the chart could run as follows: 70 percent of the respondents report the first benefit; 60 percent the second; 50 percent the third; etc.



Source: Evans Research Corporation, June 1987

EXHIBIT 1.2



Source: Evans Research Corporation, June 1987

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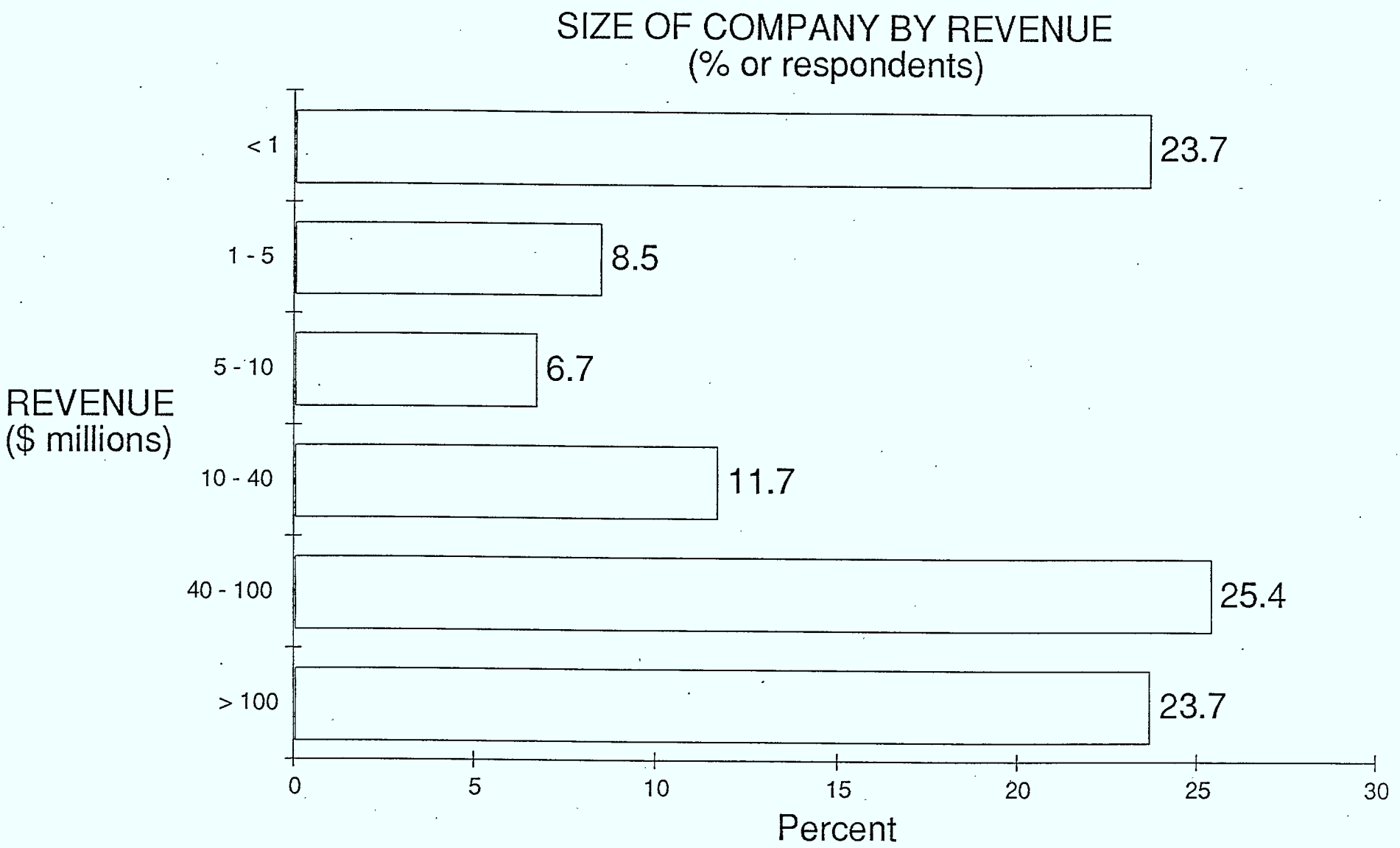

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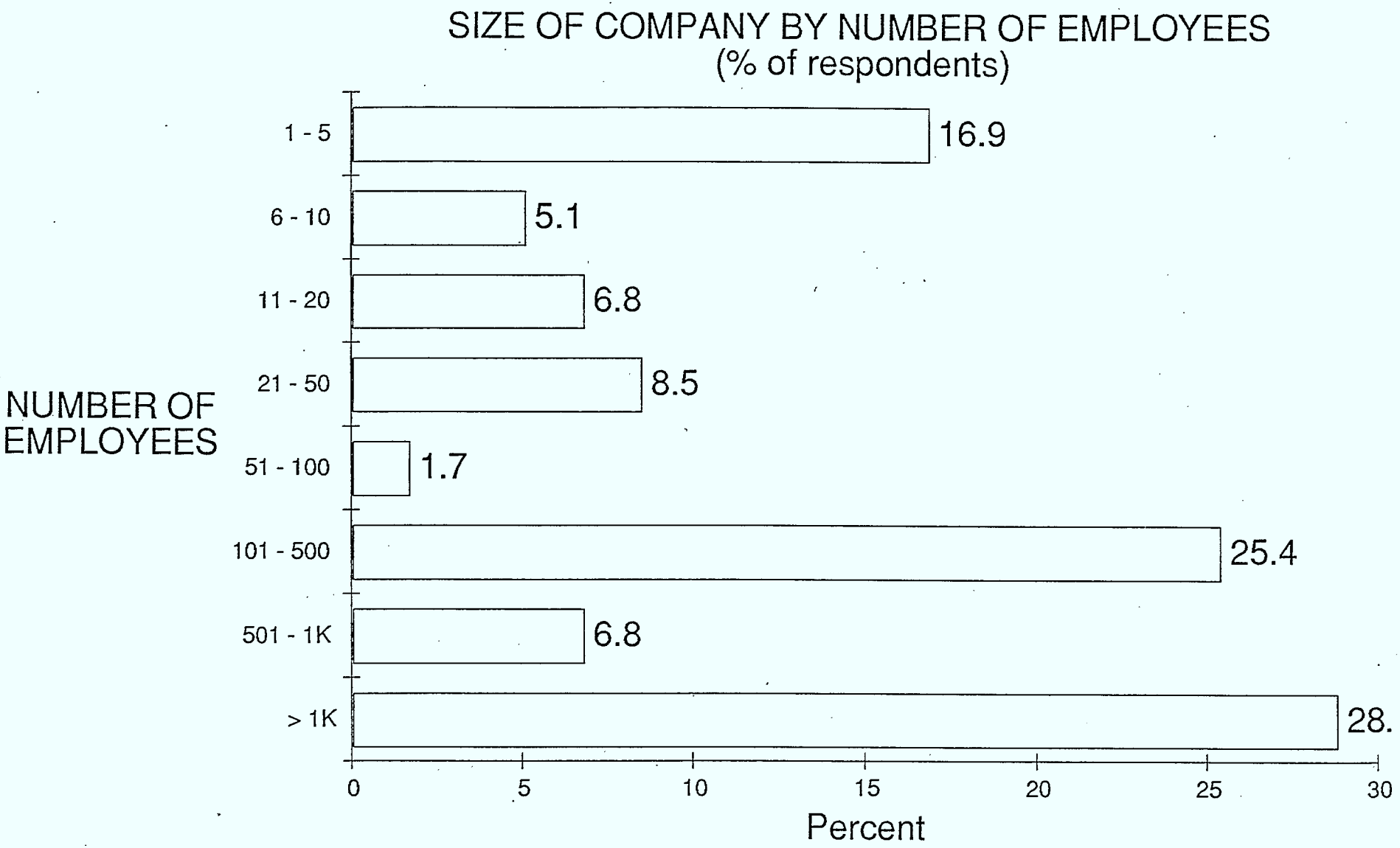


Source: Evans Research Corporation, June 1987

2.0 MARKET HISTORY AND OPPORTUNITIES FOR CANADIAN FIRMS

2.1 History

In the United States in 1985, American businesses produced over 2,500 billion pages of printed material. By 1990, it is projected they will be producing 4,000 billion pages annually. The appeal of desktop publishing is that it offers a means to reduce a portion of the enormous expense now incurred in the production of documents. Vendor spokesmen have claimed that desktop publishing has the potential to reduce the publishing expenditures by of an organization by 25 to 50 percent, yielding an initial return on investment in the range of 30 to 60 percent.

Several developments in the microcomputer industry have directed the evolution of the desktop publishing phenomenon. In 1984, Hewlett Packard introduced the LaserJet, an 8-ppm (page per minute), 300-dpi (dots per inch) laser printer. Designed for the IBM PC and compatibles, it could print graphic images and text in an assortment of fonts.

As the installed base of these low-end laser printers began to swell, market-driven software developers began investigating low-cost "typesetting" as a potential application. Their intention was to serve the needs of individuals who lacked training in typographic techniques. The result was software products like Adobe's PostScript page description language which offered WYSIWYG ("What You See is What You Get") capability. These packages allowed the unsophisticated user to compose documents with text and graphics. The document would be displayed on-screen as it would appear on hardcopy output of the laser printer.

Among the major mirco-computer vendors, Apple was the leader in promoting the concept of DTP. By 1983, it was becoming clear that the IBM PC with the MS-DOS operating system had become the microcomputer standard for business data processing. Apple, therefore, needed to stake out a new market niche for itself. DTP had the advantage that it relied upon capabilities where consumers still perceived Apple to be the leader: graphics and screen resolution.

In 1985, just months after Hewlett-Packard had launched the Laserjet, Apple introduced its LaserWriter. A number of firms, most notably Aldus Corp. (Pagemaker), began marketing page compostion software for the Apple system. In 1985 and 1986, Apple captured well over 70% of the North American market DTP hardware. Although software developers have since released many products for IBM-compatible equipment, Apple is still the leading vendor of DTP hardware. The Macintosh is closely allied with desktop publishing in the public eye and consumers seldom ignore Apple when shopping for a desktop publishing system.

2.2 Market Size

Desktop publishing is now one of the hottest growth segments in the computer industry. Evans Research estimates that in 1986, the Canadian DTP market was $ 50 million (CDN) and that by 1991 it will be $ 439 million. (See Exhibit 2.1).

The DTP market is composed of three basic elements: workstations, input/output devices and software. Included in the workstations category are microcomputers purchased specifically to be used in DTP configurations. The vast majority of these microcomputers will have either an Apple or IBM compatible architecture. A small portion (5% or less) of these workstations will have other machine architectures such as that used in the Xerox Documenter.

Lasers and scanners are the two main input/output devices. In terms of market revenues, the laser is the key peripheral unit. Among the respondents to the study survey, only one in five reported having even one scanning device.

The software category is comprised of packages for page composition, drawing and painting. Also included are wordprocessing and graphics packages which are purchased for the sole purpose of being used with DTP systems.

2.3 Market Opportunities for Canadian Firms

DTP offers business opportunties for equipment manufacturers, software developers and vendors that market to the end-user organization. Canadian involvement is negligible in hardware, somewhat more important in software and quite significant in end-user sales.

2.3.1 Manufacturing

ERC believes that less than 5% of the equipment used in Canadian DTP systems is manufactured in Canada. Major barriers exist for Canadian firms wishing to enter the market for either DTP microcomputers or input/output devices.

As stated above, the DTP microcomputer market is split between the Apple and IBM machine architectures. Hence succeeding as a manufacturer of microcomputers for DTP configurations, means first achieving credibility as a manufacturer of either Apple or IBM compatible microcomputers. To do so would be a daunting task, because DTP applications require the superior speed and menory capacity of the more sophisticated machines from either line. To date Canadian manufacturers have achieved siginificant penetration only in the market for low-end "IBM-clones". These "clone" manufacturers entered the market at a time when prices and margins were falling. They failed to gain market share outside of Canada and did not earn enough profits in order to invest in the physical plant required for the next generation of microcomputers. As a result, sales of high-end machines in Canada are dominated by large Asian or American manufacturers who, on the basis of their earlier successes with the low-end, were able to establish themselves as major players in the microcomputer market throughout North America.

As no Canadian microcomputer manufacturer emerged as a major North American player in the early days, it will now be very difficult. The situation is very similar for any firm considering becoming a manufacturer of input or output devices. Lasers and scanners represent the leading edge of microcomputer peripheral technology. Success will go to those manufacturers who have established themselves in the larger North American market at a time when the technology was simpler.

While opportunties seem remote for Canadian firms, there exists the possibility that a foreign firm might choose to produce a microcomputer or a peripheral device in Canada. In this case, however, the decision would be part of a multinational's scheme to rationalize production on a global scale rather than a response to Canadian market conditions.

2.3.2 Software Packages

Possibilities are better in the software market where success depends heavily on having original ideas and programming skills rather than on being able to invest in state-of-the-art physical plant.

To be commercially viable, a package must achieve considerable market share in the United States. For most products, there is simply not the required critical mass of potential customers present in Canada. As a rule, Canadian firms that develop and support software products rely on the American market to provide 80% of their revenues.

The macro-level trends suggest that it will be possible for Canada to succeed in the DTP market but not inevitable. It will depend on the product development and marketing capabilities of the individual firms involved.

As can be seen in Exhibit 2.2, ERC estimates that Canadian software exports of all products and services (application packagess, system packages and development services) will grow from $285 million in 1986 to $450 million in 1991. During the same period, exports of application packages will grow from $160 to $200 million. These export revenues will not result from Canadian firms winning small shares in all the many application markets that exist. Rather they will come from large shares in a small number of application markets. Chance and circumstance will determine whether or not DTP is one of those markets where a few Canadian firms will succeed.

At this time, one Canadian firm may indeed be on the verge of becoming a leading developer in North America of DTP software for the IBM machine architecture. In 1987, after having spent $ 5 million during three years of product development Laser Friendly Inc. of Scarborough, Ontario released its Office Publisher package. Costing $1,395 it is positioned at the very high-end of the DTP market. The Office Publisher has received highly favorable reviews by the leading American microcomputer magazines. The consensus is that on the basis of technological merit, the Office Publisher deserves to be a market leader. To achieve this potential, however, the trade press feels that Laser Friendly must be capable of a sustained, high quality effort on technical support. At this point, it would appear that Laser Friendly has the necessary resources. Its parent is Print Three, the largest print shop franchise company in Canada. Recently, Olivetti of Italy has acquired an equity postion in Laser Friendly as well as agreeing to take over European distribution.

2.3.3 System Integration

Instead of developing its own packages, a software developer can earn revenues in the DTP market by joining several packages together that perform various functions (eg. graphics, page compostion, and drawing). Then by adding the appropriate hardware, the firm markets a complete, "integrated" solution to the end-user. This has been the strategy pursued by Corel Systems Corporation of Ottawa. Since being founded in 1985, Corel has becomce the leading DTP systems integrator in Canada. Corel offers a full range of software functions with bilingual capability. Hardware components can include scanners, optical storage drives and LAN servers. Depending on the client's needs, the cost of a system ranges from $10,000 to $30,000.

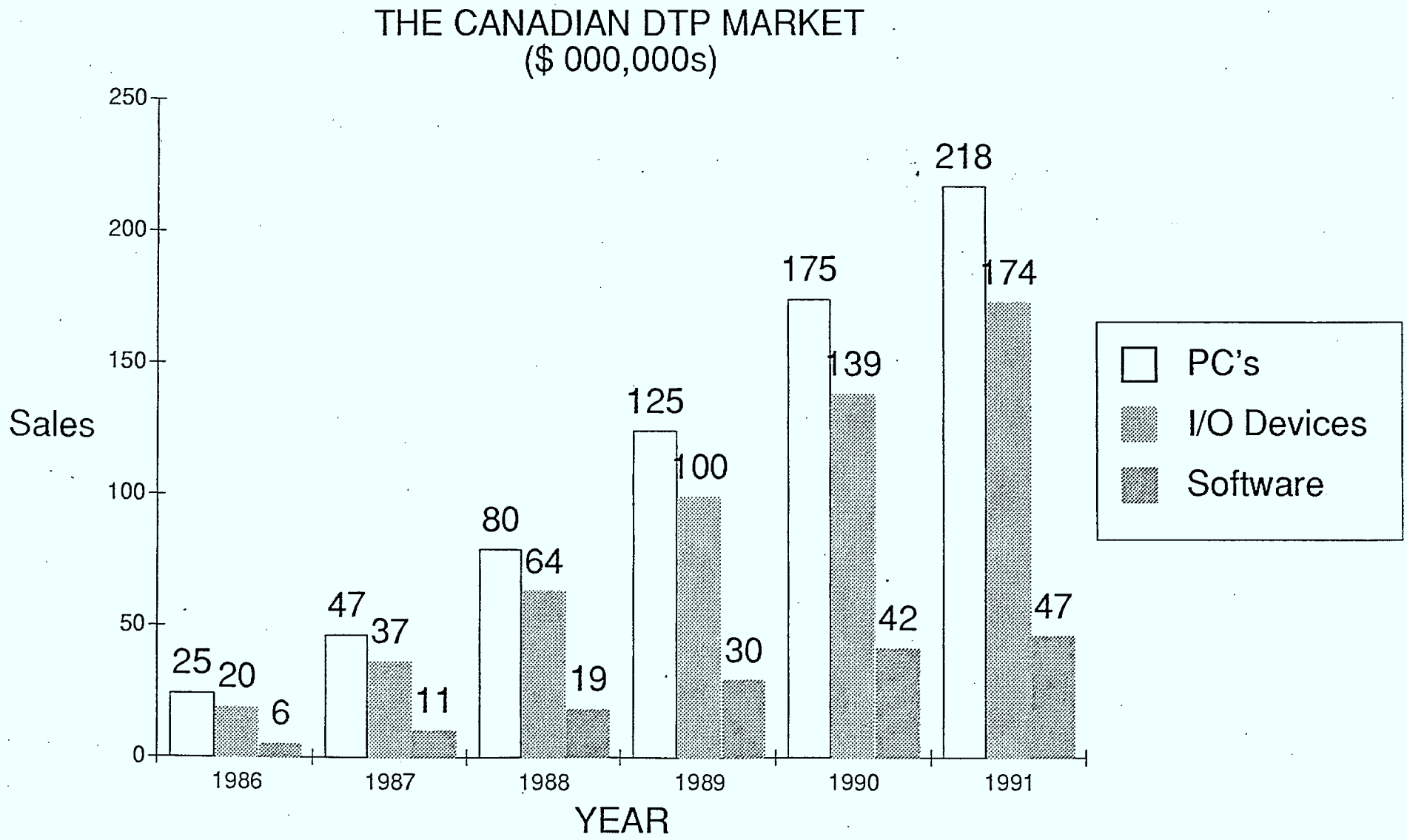
ERC estimates that there could be as many as thirty firms in Canada doing systems integration software development in the software area. However, collectively, revenues from these activities are probably less than $ 4 million. The principal value-added earned by Canadian firms in the DTP market are derived from end-user sales.

2.3.4 End-User Sales

For many resellers of office equipment, software, and microcomputers, DTP products represent an important new source of revenue. Retailers, VADs, OEMs and other resellers should earn a mark-up of almost 10% on their DTP products. In 1987, the DTP value-added for Canadian resellers will be $ 9 million. By 1991, it will have grown to $42 million.

In its recent report Trends in the Canadian Third Party Reseller Market, (January, 1988) ERC determined that there are over 900 firms in Canada which resell computer equipment. Of this number, 31% sell DTP products. In other words, DTP will generate sales and gross margins for a great many firms but few firms will rely on it as their principal source of revenue.

EXHIBIT 2.1



Source: Evans Research Corporation, Jan. 1988

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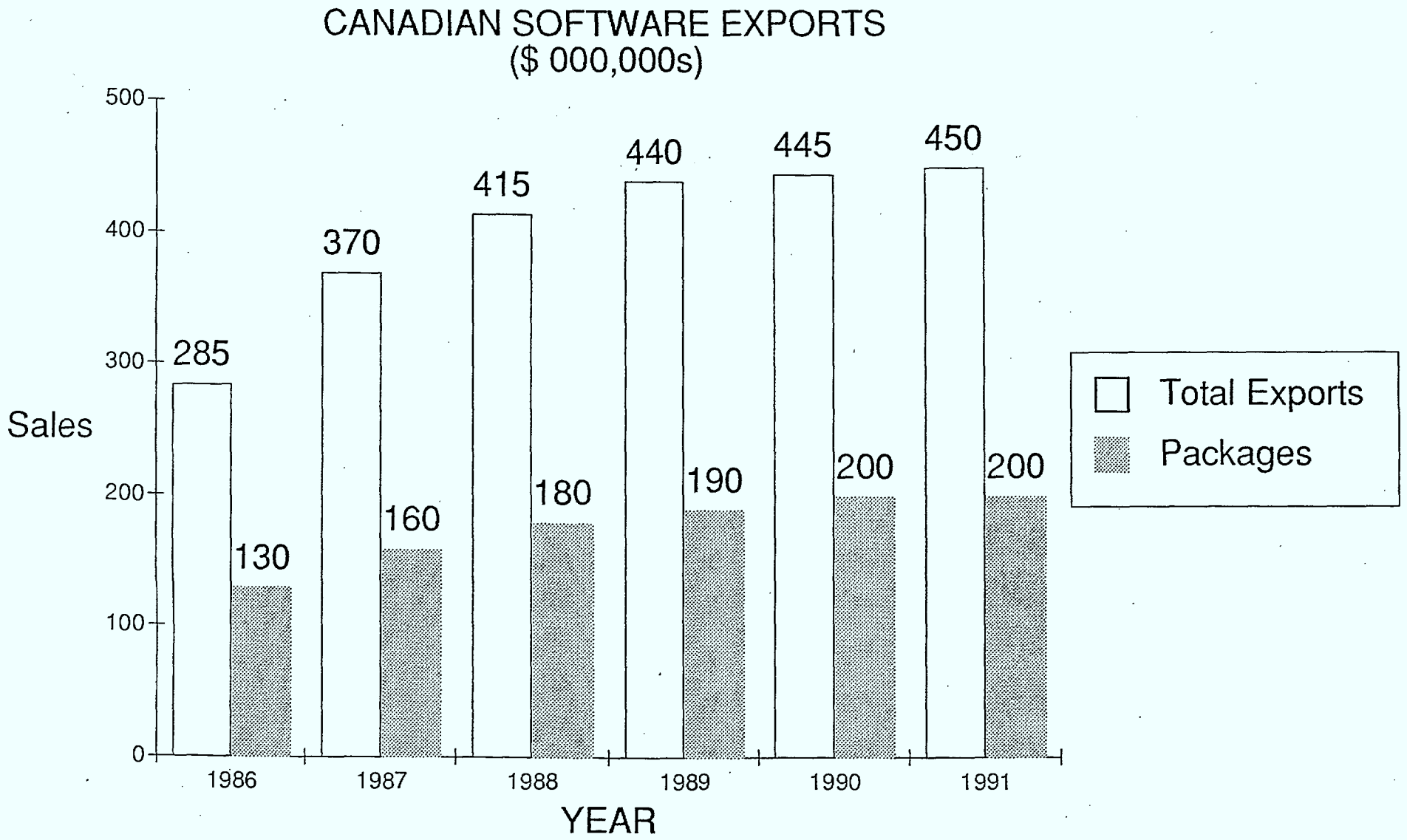


Source: Evans Research Corporation, April 1987

3.0 PERSPECTIVE

3.1 Hardware

3.1.1 Workstations

A desktop publishing system is based on microcomputer technology. The processor itself is usually a general purpose, off-the-shelf product that can also be used for other applications but is most often dedicated to the publishing task. It is commonly a stand-alone system, but may share a common laser printer with other computers on a network.

Most desktop publishing systems are now menu-driven as opposed to command driven. They require the use of a mouse with on-screen icons, a type of user interface which makes the system easy to learn and, therefore, attractive for nontechnical users and composition novices. A mouse also simplifies the design of on-screen graphics and in many cases is faster to use than key commands.

The Macintosh started the impetus towards desktop publishing and performs this application well because of its high resolution screen, multi-font capacity, simplified interface, and built-in laser printer communications. Initially, the systems based on IBM-compatible processors were slower and had lower resolution. However, the performance gap is now narrowing so that their share of the market should increase in the future.

The sixty respondents in the sample reported a total of 221 microcomputers used in whole or in part for desktop publishing applications. Table 3.1 shows the number of microcomputers per organization.

TABLE 3.1

NUMBER OF DTP MICROCOMPUTERS PER ORGANIZATION

Number of Microcomputers	Percentagage of Organizations
1	51.4
2	11.8
3	8.8
4	7.4
5	5.9
6-10	10.3
10	4.4

Source: EVANS RESEARCH CORPORATION, 1987.

The majority (59.3 percent) of the respondents' desktop publishing systems were Apple Macintosh-based. (See Exhibit 3.1). IBM and compatible processors accounted for 42.5 percent of the sample. (Of this number, 13.6 percent used IBM processors while 28.9% used various compatibles.) Finally, 13.6 of the respondents reported Xerox systems.

3.1.2 Printers

The low-end laser printer is the technological innovation underpinning the market success of desktop publishing. Laser printers currently provide an output standard of 300 dots per inch, compared with the minimum typesetter output of 600 dots per inch.

The survey respondents reported a total of 86 DTP laser printers, suggesting that one laser printer is shared by 2.6 microcomputers on average.

TABLE 3.2

NUMBER OF LASER PRINTERS PER ORGANIZATION

Number of Laser Printers	Percentagage of Organizations
1	84.7
2	8.5
3 - 5	3.4
5	3.5

Source: EVANS RESEARCH CORPORATION, 1987.

The Apple LaserWriter and Laserwriter Plus printers were reported by 61.1 percent of the respondents, reflecting once again Apple's early supremacy in the DTP market. (See Exhibit 3.2).

3.1.3 Input Devices

Desktop scanners, digitizers, optical character readers, and other forms of input devices are used to convert hardcopy text and images into a machine-readable format. They allow the operator to manipulate and to modify previously prepared material without having to re-key it into a microcomputer.

Input devices are not yet a popular technology, primarily because there is an imperfect text/image transfer from the device to the monitor screen. Another reason is that existing input devices do not offer very high resolution on the output end.

Only 22.1 percent of the respondents reported they had installed scanners or other input devices. (See Exhibit 3.3).

3.2 Software

The range of publishing programs available for both the Apple and MS-DOS operating environments is growing daily. Products are available in prices from less than $200 to more than $8,000 depending upon features such as WYSIWYG (What-You-See-Is-What-You-Get), graphics importation and the capability of driving photo-typesetters as well as laser printers.

PageMaker was by far the most common desktop publishing software being reported by 55.9 percent of the respondents. (See Exhibit 3.4). This is not surprising as Pagemaker is the leading page composition package for the Apple operating environment. Ventura which is the leading page composition package for the IBM-compatible world was reported by 32.2 percent of the sample.

What is interesting is the number of users that have added software to complement their basic page composition package in order to perform functions such as graphics, drawing and painting. MacDraw, MacPaint, MacWord and MacWrite, (collectively "MacWorks"), were used by 44.1 percent of those surveyed.

Other packages receiving mentions include Cricket Draw, Xerox Viewpoint (the proprietary software for the Xerox Documenter Publishing System), Ready-Set-Go, and PC Paint.

3.3 Comparison With Traditional Printing Methods

3.3.1 Cost

At the low end, desktop publishing systems are relatively inexpensive. A complete system usually falls in the $10,000 to $20,000 price range for a microcomputer, software and laser printer. This of course can escalate quickly depending on the quality of the microcomputer and the output device. For users who already own a microcomputer, publishing software packages can be purchased from $200 to $8,000, while laser printers start at about $3,000.

However, as the respondents tended to share their software, laser printers and scanners between several microcomputers, their cost per workstation was not high. The largest group (39.5 percent) reported having spent less than $9,000 per DTP workstation. Only 18.6 percent spent more than $20,000. (See Exhibit 3.5).

While a DTP system involves an initial investment, it still appears to be a cost-effective substitute for conventional typesetting. An informal investigation of typesetting services in Toronto uncovered typesetting charges ranging from about $25 to $65 per page for text-only copy, and from $40 to $100 per page for copy that includes both text and graphics. Taking $40 per page as an arbitrary average, the $20,000 DTP system (ignoring such factors as labour, paper and other costs) is paid for after it produces the 500th page of material which previously would have been typeset.

The respondents clearly felt that the DTP systems quickly paid for themselves. Just over sixty percent (60.9 percent) indicated they expected their DTP system to pay for itself within two years. (See Exhibit 3.6).

3.3.2 Quality

While financial savings are a key benefit of desktop publishing, the trade-off for some users will be a deterioration in document appearance. At this point in time, desktop laser printers provide output with a 300 d.p.i. resolution. In contrast, typesetting services start at 600 d.p.i. resolution and go as high as 2400 d.p.i. The result is a much sharper, cleaner-looking document.

Despite the superior resolution of professional typesetters, 83.3 of the respondents felt that because of the other design capabilities of the DTP system they were producing documents of an overall higher quality. Many stated that their readers had noticed the difference and

had commented on the improvement. As a group, the respondents felt that DTP represented a considerable advance over their old methods which combined word-processing with manual cut-and-paste.

The 13.3 percent of respondents who felt that quality had declined because of having implemented DTP were primarily dissatisfied with 300 d.p.i resolution. Other complaints included the inability to produce colour output, and the limited number of typestyles and point sizes available compared to traditional typesetting.

3.4 Benefits

DTP users enjoy using their technology and are enthusiastic about what it allows them to do. (See Exhibit 3.7). In descending order, the eight key benefits as derived by aggregating user responses are:

1. Lower Costs
2. Quicker Turnaround/Improved Productivity
3. Increased Control
4. Increased Flexibility
5. Time Saving
6. More Suitable Quality
7. Improved Image
8. Increased Creativity

These benefits can be roughly divided into two different categories. The first five provide measurable "hard dollar" savings, while the last three produce "soft dollar" or strategic benefits. All of the benefits, but especially the "hard dollar" ones, are seen as benefits relative to traditional typesetting and other external publishing services.

3.4.1 Lower Costs

Once installed, a desktop publishing system can result in measurable money savings almost immediately. The number one benefit of desktop publishing is lower costs, cited by 58.9 percent of the respondents. (See Exhibit 3.7).

Most of the respondents were able to make a dollar estimate of the annual savings resulting from having implemented DTP. About a third of the respondents (35.1 percent) were unsure of the savings accrued through desktop publishing, either because the system was too new or because they had purchased it for some reason other than direct cost savings. Among these respondents able to estimate, the majority felt that their annual savings were over $5,000. One large group comprised of respondents (18.2 percent) who had previously been heavy users of typesetting services pegged their estimated savings at over $20,000 per year. (See Exhibit 3.8.)

There are a number of elements to cost savings through DTP. The most prominent one is the reduction or elimination of outside agencies for copy preparation, typesetting, composition and printing. Fifty percent of the respondents mentioned typesetting savings as the major source of economies.

A minor element of reduced costs are those associated with paper and mailing. The near-typeset quality available through desktop publishing allows for minute spacing adjustments between letters, words and lines, while maintaining legibility. This allows more informa-

tion to be put on a single page, reducing the number of pages and therefore, the weight mailed. Many long documents have to be produced and mailed regularly for substantial savings to accrue, but combined with other small economies measurable benefits can occur.

A point related to lower costs, but cited by too few respondents to qualify as a key benefit, is that desktop publishing helps to increase revenues. This is true, of course, of the small companies that are springing up to act as desktop publishing service bureaux or training centres. It also holds for organizations who do not see desktop publishing as their raison d'etre. Several respondents reported that they were increasing revenues by increasing the number of publications they produce or the number of clients they were able to serve.

3.4.2 Quicker Turnaround/Improved Productivity

The second major benefit of desktop publishing is higher productivity and increased turnaround on publishing jobs. Over half (51.6 percent) of the respondents realized productivity gains after introducing desktop publishing into their organization. (See Exhibit 3.7). For many users, desktop publishing has helped to achieve a more efficient production process. With the expenditure of the same or less units of time, users are increasing throughput.

Turnaround is now much faster because making corrections is part of the editing process. The author can do a page proof on the laser and then see the finished product virtually immediately. This results in a more effective use of personnel because less work is involved in compiling the document. Electronic paste-up leads to the elimination of messy cutting and pasting. One respondent, the editor of a weekly community newspaper, reported that page make-up took four people two days to complete. After introducing a DTP system, the same process took one person four hours.

3.4.3 Increased Control

Increased control over the publishing process was cited by 43.5 percent of the respondents as a significant benefit of desktop publishing. (See Exhibit 3.7). The primary rationale was that because a desktop publishing system moves publication in-house, an organization can allocate internal resources to suit its own priorities. This eliminates the need to accept the production schedule of an outside agency.

In by-passing the typesetter, they gain more control over the typestyles, fonts, page makeup and design. Errors are no longer a worry because they can be corrected as they are observed, leading to increased accuracy and less time spent on revisions.

Security is also enhanced. DTP means that a company can prepare internally all competitive proposals, sensitive business plans, confidential personnel documents, budget information and financial statements. In fact, one government treasury department interviewed for this report purchased its desktop system exclusively for reasons of confidentiality. Use of the system was designed to prevent unauthorized leaks of budget information prior to its formal release in the legislature. Any other benefits were strictly incidental.

3.4.4 Increased Flexibility

The corollary of increased control is increased flexibility. It was claimed as a major benefit by 26.7 percent of the respondents. (See Exhibit 3.7). A desktop publishing system permits the user to update or change documents with a few keystrokes. This is a key feature for producers of technical documents, catalogues, price lists, directories, and other publications which require minor but frequent revisions.

The benefits of increased flexibility should not be underrated. It has been estimated that under a traditional publishing regime, a ten percent revision of a document can account for seventy percent of that document's total production time. Over the course of several revisions, the cost can rise to as much as $400 per page.

A peripheral benefit of increased flexibility is a reduction in document inventories. Only the documents needed at a particular time have to be made up, saving space in the short term and the cost of paper for obsolete documents in the long term.

3.4.5 Time Savings

In a sense, time savings are implicit in all the previously mentioned benefits. Nonetheless, 25.1 percent of the respondents listed it as one of the key benefits of desktop publishing. (See Exhibit 3.7).

3.4.6 More Suitable Quality

The sixth most-cited benefit of desktop publishing is the production of final copy whose overall appearance is more suited to the user's needs. This benefit was claimed by 21.6 percent of the respondents. (See Exhibit 3.7).

3.4.7 Improved Image

According to 15.1 percent of the respondents, a key benefit of desktop publishing is the improved image it generates for the user organization or department. (See Exhibit 3.7).

For some users, the introduction of desktop publishing and superior-looking documents has "helped us become better known in our market." For others it "has helped improve the corporate image." One user commented that "people notice quality. We get their attention."

Some users claimed that more sales resulted because they were able to produce attractive and more frequent customer bulletins. They keep their customers informed about product introductions, enhancements, price changes, and new services with professional-looking newsletters, bulletins, flyers, and announcements.

Other users stated that the professional looking documents they are now able to make client proposals more "sellable". They felt that a typeset document with a "professional" look had greater credibility than if it is just in typewritten form.

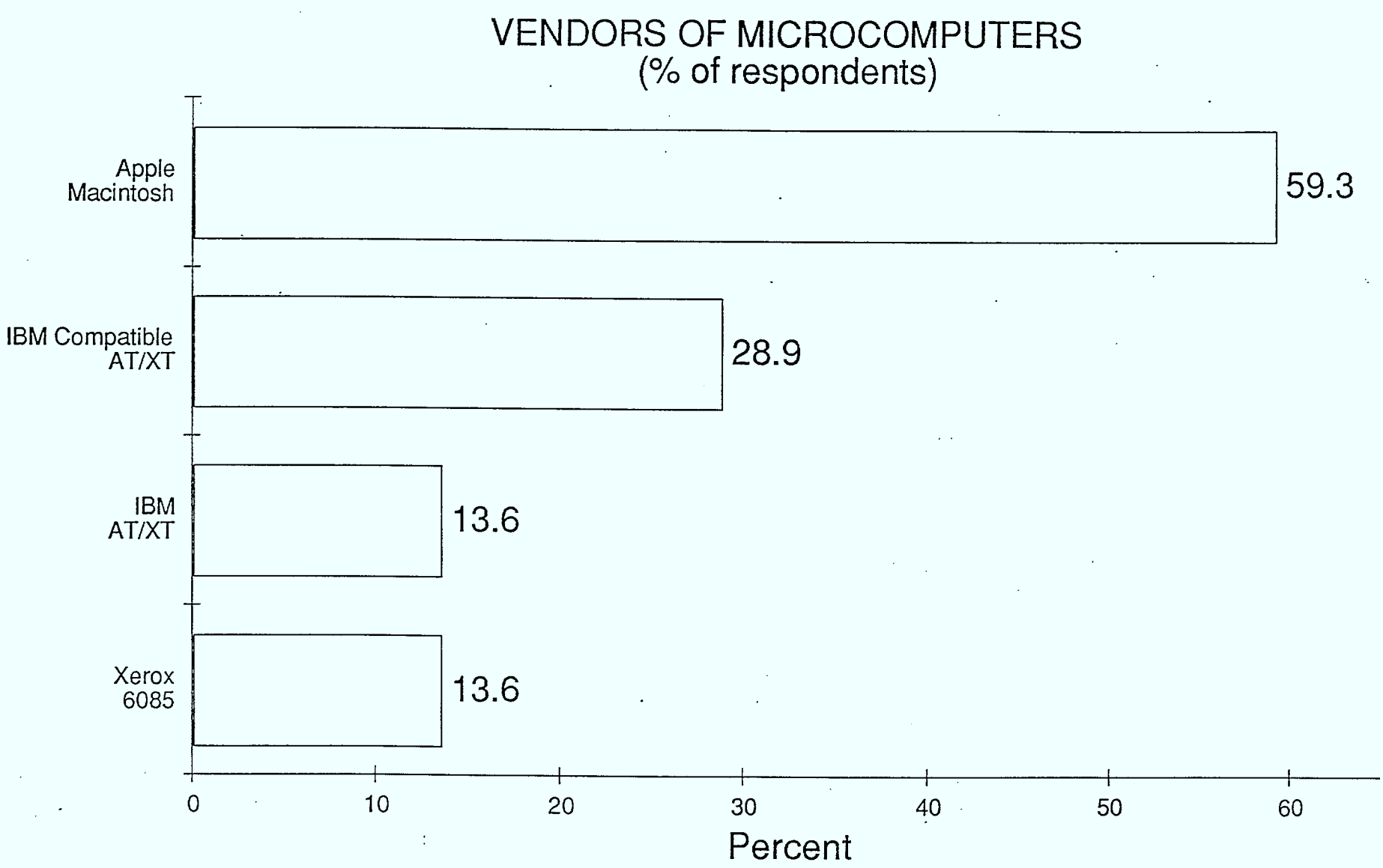
Larger organizations have discovered that desktop publishing can help generate an improved image internally as well as externally. Two users reported higher morale and productivity within their organizations because of improved employee communications. They used their in-house publishing system for company newsletters, benefits literature, policy and procedure manuals, salary adminstration documents, and company announcements.

3.4.8 Increased Creativiy

The last major benefit, claimed by 11.7 percent of the respondents, is that desktop publishing leads to higher levels of creativity. (See Exhibit 3.7). Users said that an increase in creativity flows primarily from the time savings realized through the use of the system. Because DTP is quicker and easier, they now have more time to be adventurous, to experiment, and to introduce new design elements into their documents.

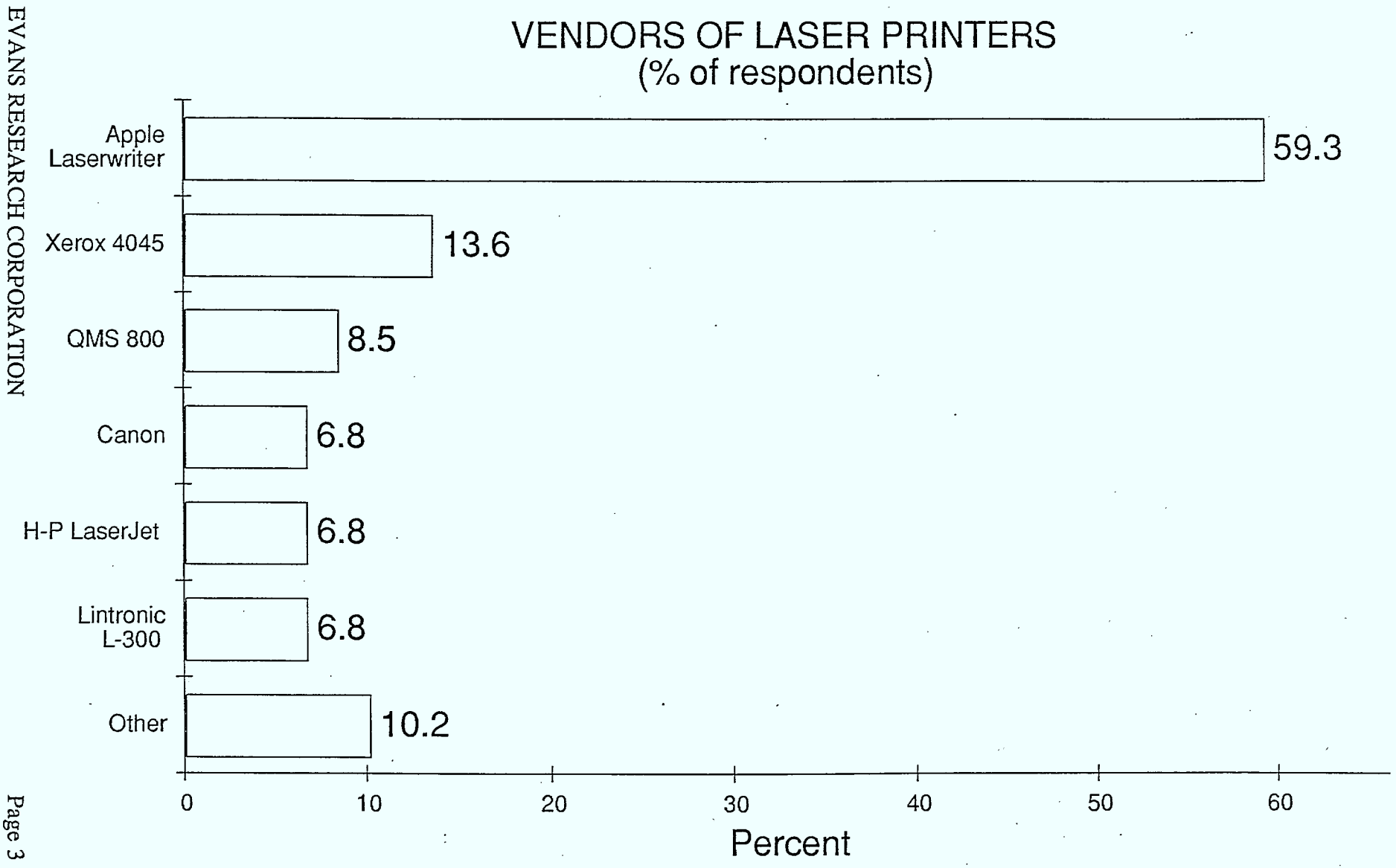
Increased creativity was most apparent in layout and in the use of graphics. Users commented that desktop publishing "opened up a whole new world" and that it was "absolutely amazing".

Many users were not quite as sanguine about an increase in creativity. The consensus among these respondents was that any creativity resides in the operator, not in the technology. One user felt that DTP limits creativity because the ability of the artist is restricted by the capabilities of the machine.



Source: Evans Research Corporation, June 1987

EXHIBIT 3.2



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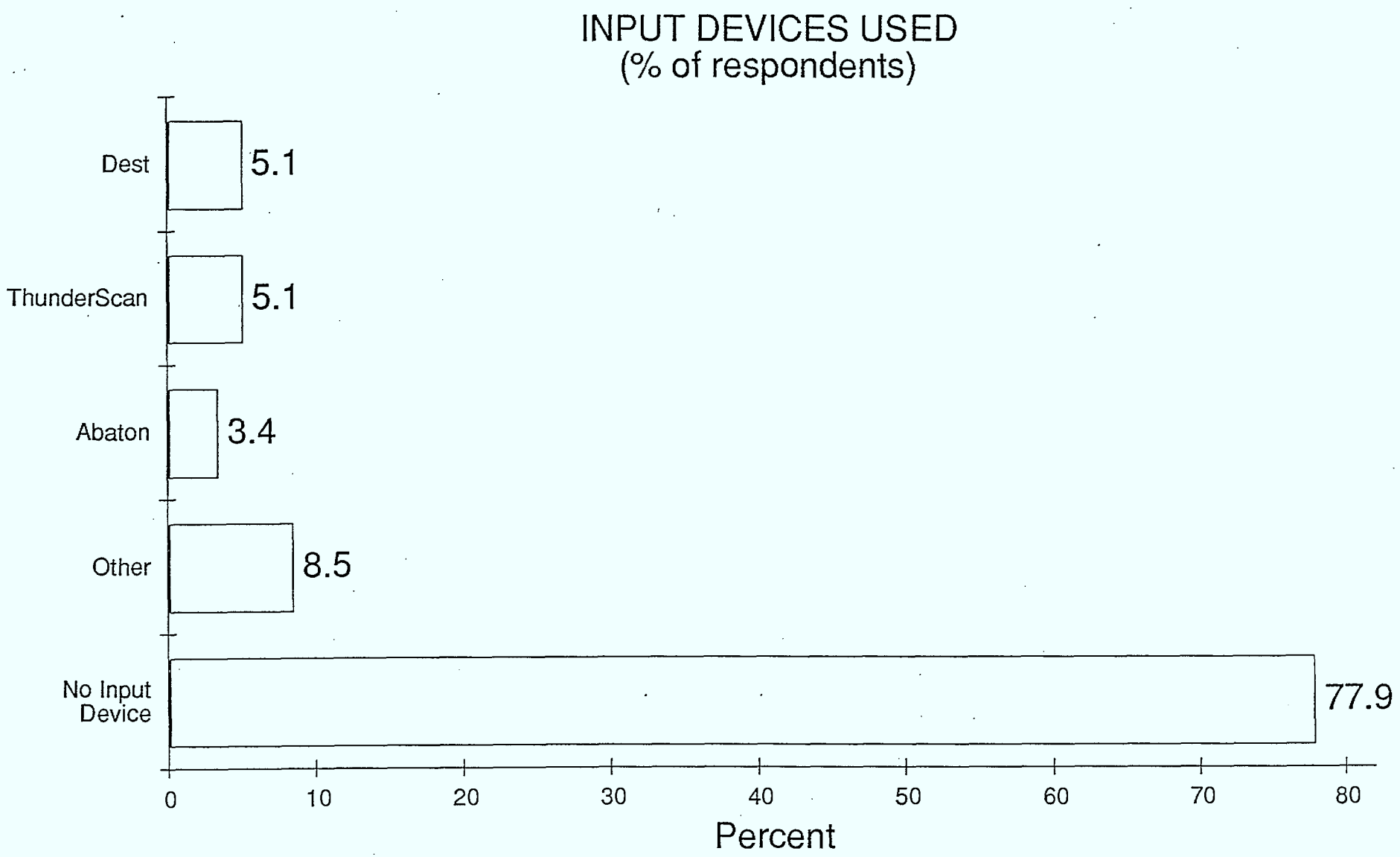

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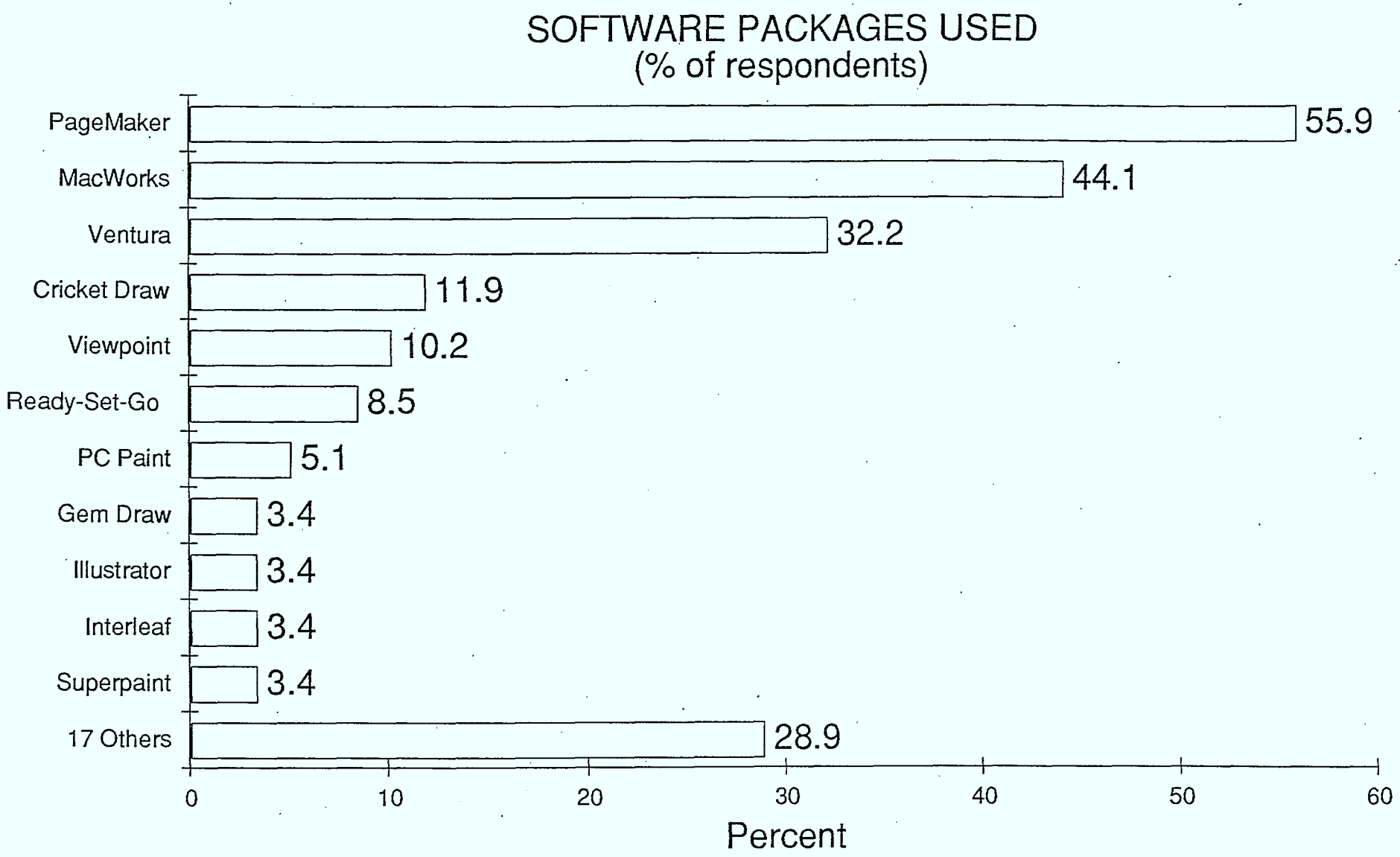

Source: Evans Research Corporation, June 1987

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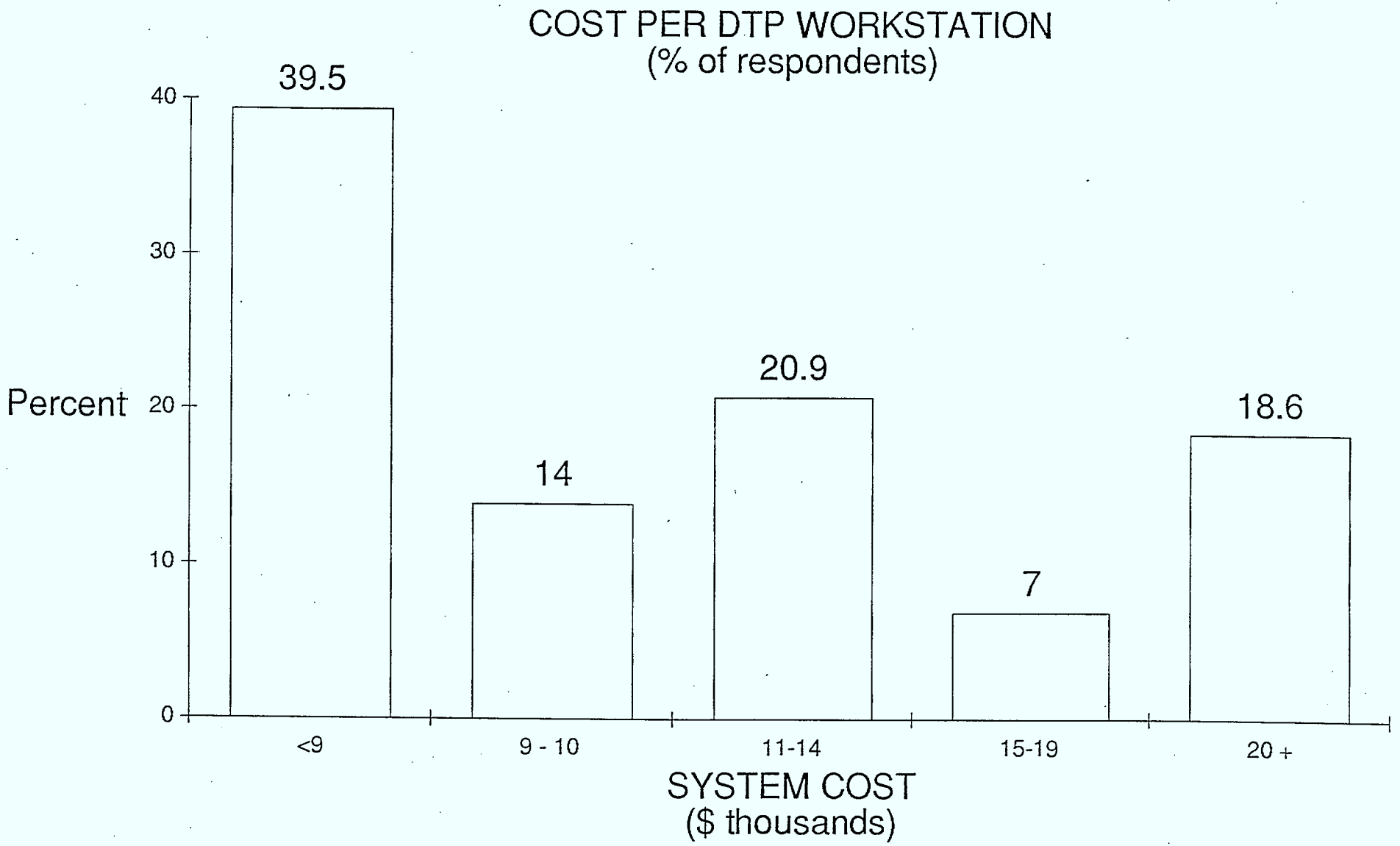

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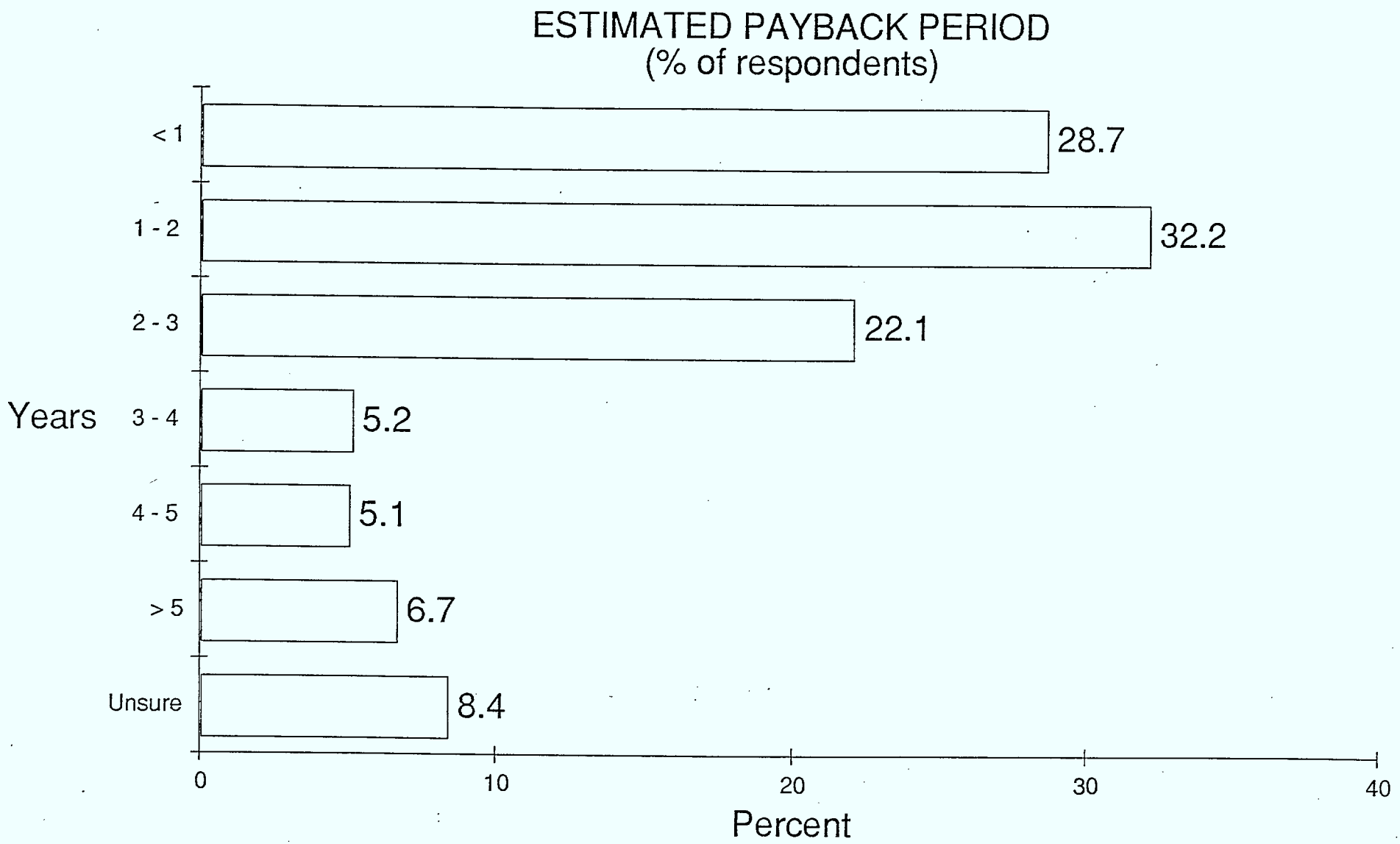
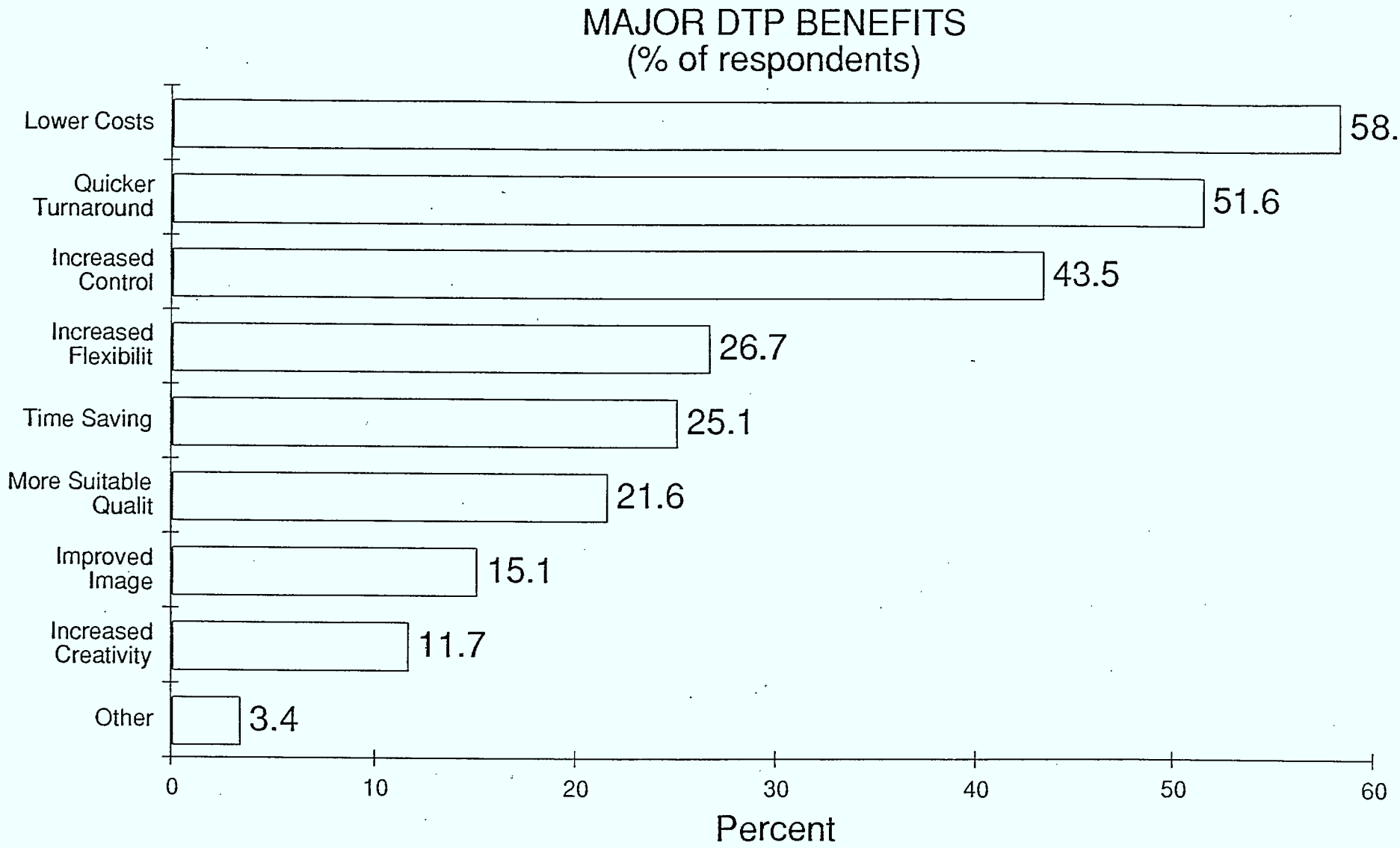


Source: Evans Research Corporation, June 1987

EXHIBIT 3.7



Source: Evans Research Corporation, June 1987

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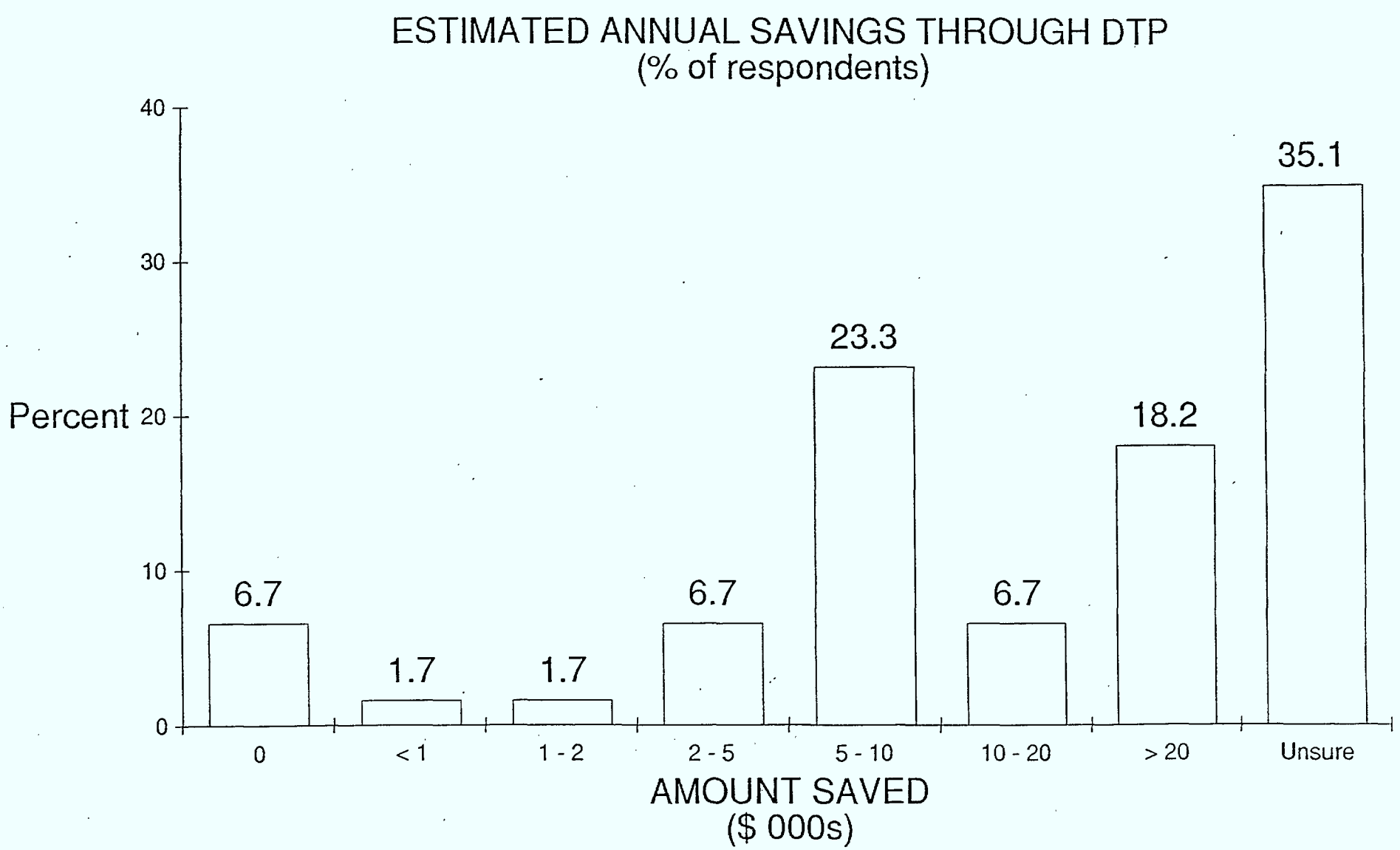


Source: Evans Research Corporation, June 1987

4.0 CURRENT STATUS IN CANADA

4.1 User Profile

4.1.1 Date of Purchase

Desktop publishing is a recent development in microcomputer applications. The first desktop laser printer entered the market only in 1984, preceding page composition software by a few months. As a result, desktop publishers tend to be relative neophytes.

As Exhibit 4.1 illustrates, system sales to the survey respondents began to ramp up in the second and third quarters of 1985, about the time when the concept of "desktop publishing" first achieved wider currency. The gradual upward trend continued until about the third quarter of 1986, after which it accelerated sharply. This shift roughly coincided with the widespread availability of desktop publishing products for the MS-DOS operating environment.

ERC believes that the dramatic increase in purchases evident in the last half of 1986 will represent the norm for the next two years at least. It is for this reason amongst others, that our estimates presented in Section II project the Canadian DTP market to grow from $ 95 million in 1987 to $ 439 million in 1991.

It is not simply new users that will be driving this growth. The survey data shows that current users will be acquiring more equipment. It would appear that desktop publishing systems create their own demand, as 78.3 percent of the respondents claimed that they planned to purchase additional DTP hardware and software within the next two years. This impressive indicator must be tempered somewhat, however, because only 28.3 percent actually had a committed DTP budget.

4.1.2 Purchase Rationales

People purchase desktop publishing systems for a variety of reasons, but all the reasons can be reduced to three essential categories: (1) to produce more documents (2) to improve document appearance or (3) to reduce costs by saving time and money.

Of the respondents, 39.8 percent purchased a DTP system so that they could either begin or expand their in-house publishing efforts. (See Exhibit 4.2). Desktop publishing allowed specific users to create in-house periodicals and newsletters, to develop more advertising and promotions, to increase the number of publications produced, and to begin publishing technical manuals for self-developed software.

The second most popular purchase rationale was to save money. It was cited by 35.1 percent of the respondents. Respondents had anticipated saving money by increasing productivity, lowering staff costs, decreasing the time expended per task, and especially, by reducing the use of outside typesetting and printing services.

A desktop publishing system was acquired by 30.3 percent of the respondents in order "to serve the organization's needs". The conception of "needs" was as diverse as the number of different users, but specific respondents noted that DTP systems were cheaper than full-line electronic publishing systems, that they were invaluable in preparing client presentations, that they were an aid to confidentiality, that they helped the user (reprographics) department better serve other departments, and that they provided a competitive advantage.

Almost a quarter (23.4 percent) of the respondents purchased a DTP system in order to automate their publishing procedures. In doing so, these users were making a migration from a manual cut-and-paste environment to a more technologically sophisticated milieu.

According to the aggregated responses of those surveyed, the last major reason for purchasing a desktop publishing system is to generate revenue. A number of smaller establishments have either sprung up or expanded their operations in order to leverage the opportunity offered by DTP. Included are companies that supply freelance (newsletter) editorial and writing services, advertising/copy-writing firms, mainstream typesetting companies that want to interface with their clients' equipment, and commercial design and graphics shops.

4.1.3 Levels of Satisfaction

The users interviewed are very pleased with their DTP systems. They were asked to rank their satisfaction with their system on a ten point scale, with "1" meaning "very dissatisfied" and "10" indicating "very satisfied". Only one respondent gave their system a score below the midpoint in the range. The mean score was an exceptionally high 8.2. (See Exhibit 4.3.)

In conducting this survey, ERC researchers were continually surprised at how enthralled the respondents were with their systems. This type of reaction contrasts sharply with that obtained in the majority of surveys conducted by the consultants. Users whose computers run more traditional applications simply lack the same degree of excitement and are more likely to be worried that their systems are not delivering all the benefits that they should.

4.1.4 Dedicated versus Multi-Use Systems

Among the users surveyed, only 42.4 percent indicated that their systems were dedicated to DTP. The remaining 57.6 percent stated that their system was also used for other applications such as basic word processing, accounting, database manipulation, and spreadsheet analysis.

4.1.5 Who Controls Desktop Publishing?

Control of the organizational DTP system is divided between internally- and externally-oriented departments. In 42.5 percent of the companies surveyed, such internally-oriented departments as production, MIS, administration, and planning controlled the DTP system. For 32.3 percent of the responding organizations, the DTP system is found mainly in those departments responsible for communicating the company's message and presenting the company's public face. Included among the externally-oriented departments are communications, marketing, graphics, sales, and printing. In 18.6 percent of the organizations, all departments had access to the DTP system. (See Exhibit 4.6).

4.1.6 Numbers of Users

Expertise in the use of DTP systems tends to be limited to a fairly small number of people within an organization. In 57.6 percent of the organizations surveyed, there were five users or less. (See Exhibit 4.5). In 23.8 percent, only one or two users were proficient.

Organizations plan to increase the number of employees able to use the systems. Approximately two thirds of the respondents indicated that within two years additional individuals would learn how to use the system. Twenty percent said that they would not be training additional users. The remainder were unsure as to future training plans.

4.1.7 Training

Training is an issue for desktop publishers. The survey respondents frequently commented that they hoped to arrange more training for themselves and for other persons working on the systems.

Less than a third (32.2 percent) of the respondents indicated that they had received formal training. (See Exhibit 4.6). The majority of users were self-taught (47.2%) or learned through manuals (17.1%), which amounts to essentially the same thing. The remaining 4.5 percent of the respondents had the advantage of an in-house expert.

A number of reasons were advanced to explain the low incidence of training. Some respondents stated that they had been early desktop publishers who acquired their systems when formal training was not readily available. Other respondents, especially Apple users, claimed their systems were easy to learn and that formal training was not really necessary for basic page composition.

Almost all respondents felt that more training was needed regardless of the level of DTP expertise that they had achieved. Respondents cited graphics design and layout as two critical areas where self-study was inadequate for acquiring the necessary skill levels.

4.2 Typical Application Areas

4.2.1 General Applications

Desktop publishing systems are being used for two basic types of applications: general corporate publishing and commercial publishing:

1. General Corporate Publishing includes internal documents, reports, proposals, memos, letters, marketing and sales literature, product brochures, fact sheets, customer newsletters, bulletins, forms design, telephone directories, and price lists. They share the common characteristic of not being produced for sale. In addition to text, they often contain other information in the form of spreadsheet tables, pie charts, bar charts, and line drawings.

Information-intensive organizations such as consulting firms, advertising agencies or insurance companies which must produce many professional looking documents, will make up the largest customer base for DTP systems. In the nonprofit sector, government agencies, educational institutions, and industry associations also have extensive corporate publishing requirements.

2. Commercial Publishing includes newsletters, newspapers, magazines, and books. According to the Gale Directory of Publications (1987) there are 2,075 commercial publishing sites in Canada, including daily newspapers, weekly newspapers, magazines and newsletters. Statistics Canada reports that in 1984 there were 177 Canadian book publishing operations.

Desktop publishing systems are not of interest to the larger commercial newspaper, book and magazine publishers because of their existing investment in high-end equipment. However, for publishers of weekly newspapers, newsletter producers, and for small or

regional book and magazine publishers, desktop publishing represents a viable instrument of cost reduction. Indeed, for some smaller Canadian publishers, the advent of affordable desktop publishing systems provides a window of opportunity for start-up and market entry.

4.2.2 Specific Applications

Table 4.1 ranks typical desktop publishing applications by the percentage of respondents who indicated they produced them. Table 4.2 reassembles this information and rank orders the applications in terms of the mean number of units produced annually.

In terms of users, the most popular DTP application is newsletters. Just over half (50.9 percent) of those surveyed stated they were publishing newsletters. ERC predicts that newsletters will become a growth industry under the influence of desktop publishing. In this regard, the democratizing influence of DTP will become apparent as the technology allows Everyman to construct his own soapbox.

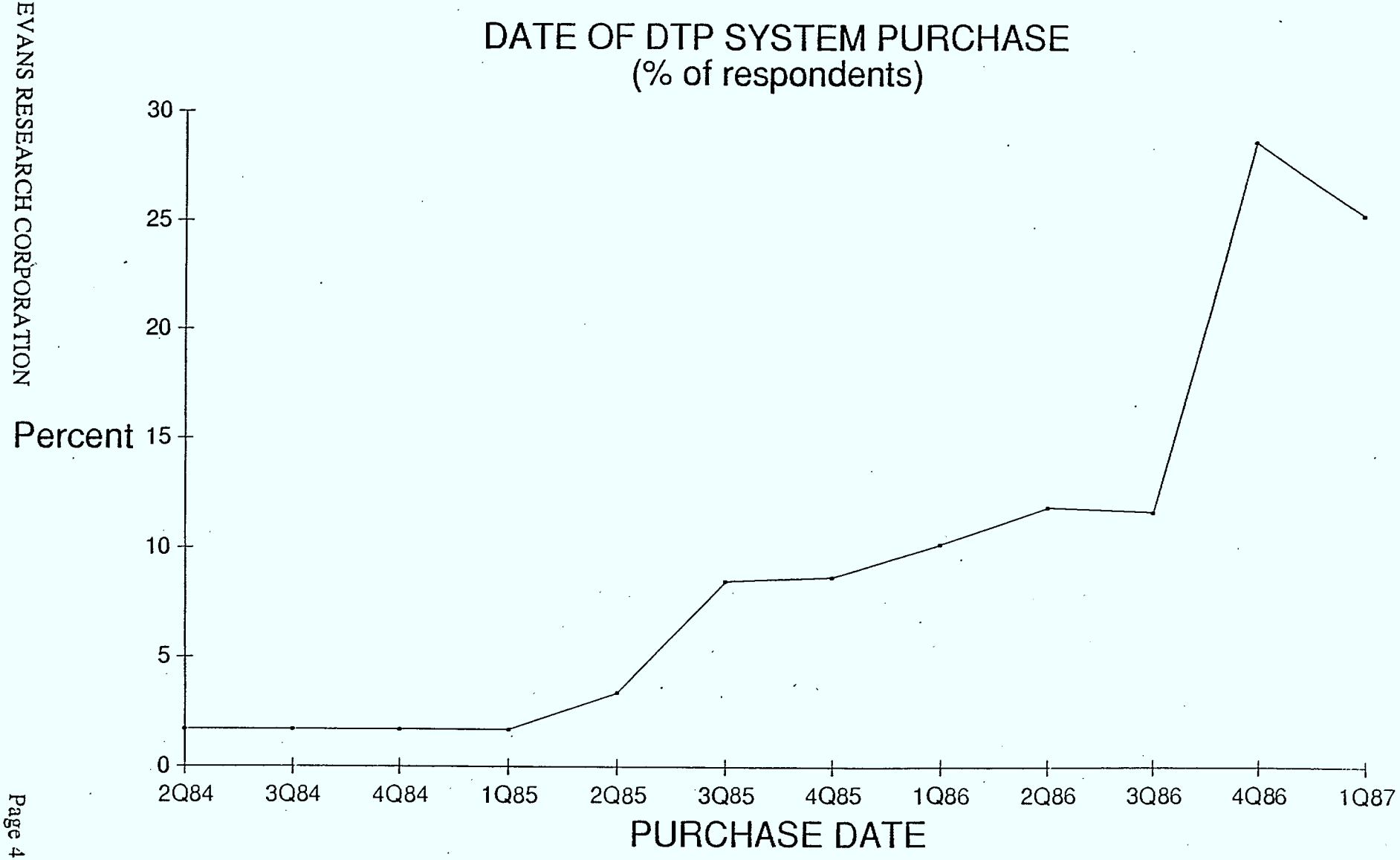
The least popular DTP application, in terms of the number of users, is book publishing. Only 6.8 percent indicated they were in the business of publishing books, and on average each published 11.8 books per year. Distribution, of course, is 100 percent external. Book publishers find desktop publishing to be a great aid in making revisions or in producing updated versions of previously published titles.

In terms of production volumes, the most popular DTP application is letters/memos, including internal correspondence, stationary and letterhead. Only 30.5 of the respondents indi-

cated they use their DTP system for this purpose, but on average they generate 307.2 letters per year.

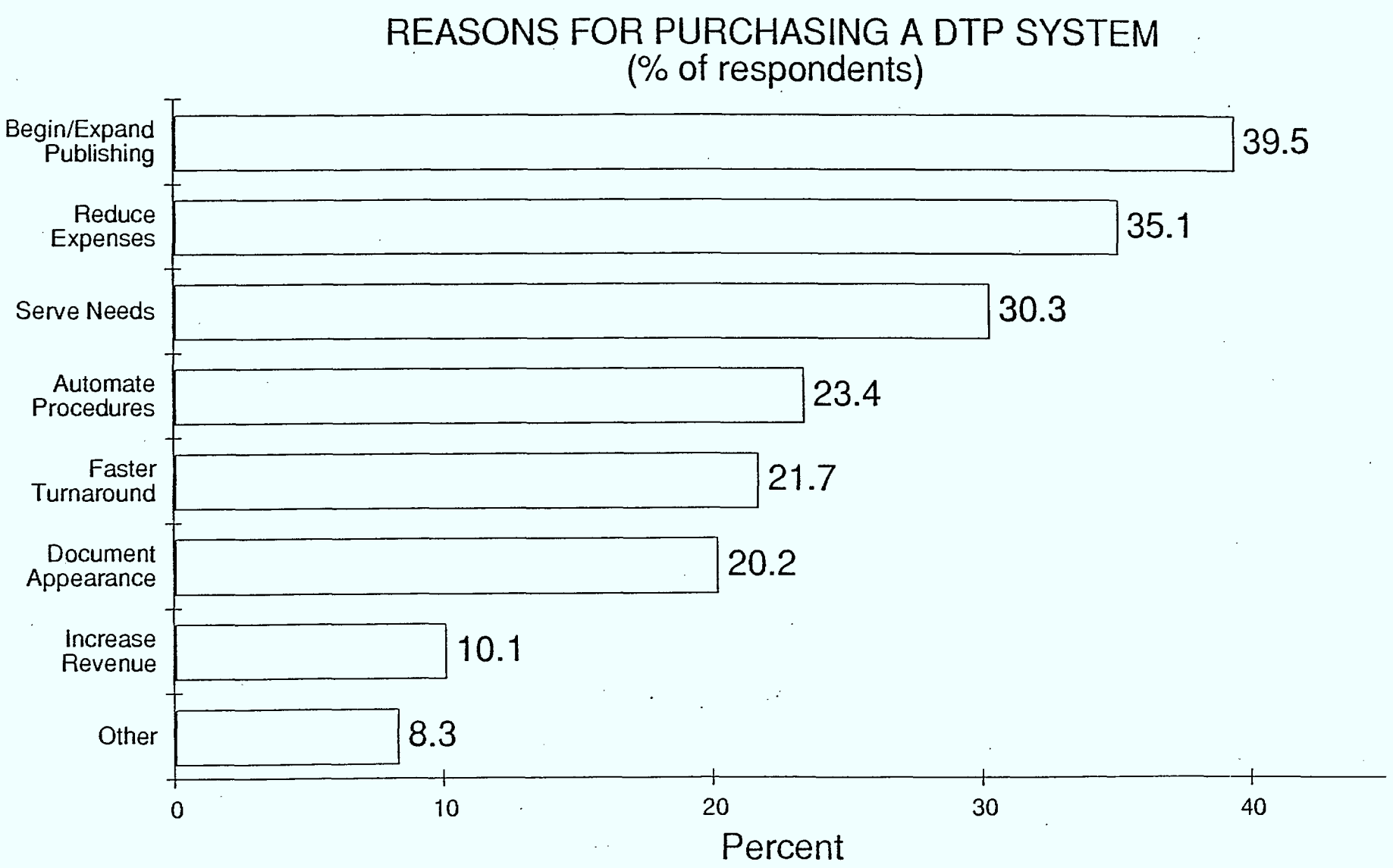
Data on the remaining applications can be found in Tables 4.1 and 4.2. "Marketing literature" includes advertisements, brochures, sales kits, and promotional literature. "Presentations" refers to charts, graphs, slides, and overheads produced by DTP systems for use in internal and external presentations. "Flyers" includes such materials as posters, announcements, notices, invitations, and signs. "Manuals" includes technical documentation, student handbooks, curriculum outlines, and product guides. "Price Lists" includes catalogues.

EXHIBIT 4.1



Source: Evans Research Corporation, June 1987

EXHIBIT 4.2



Source: Evans Research Corporation, June 1987

EXHIBIT 4.3

Source: Evans Research Corporation, June 1987

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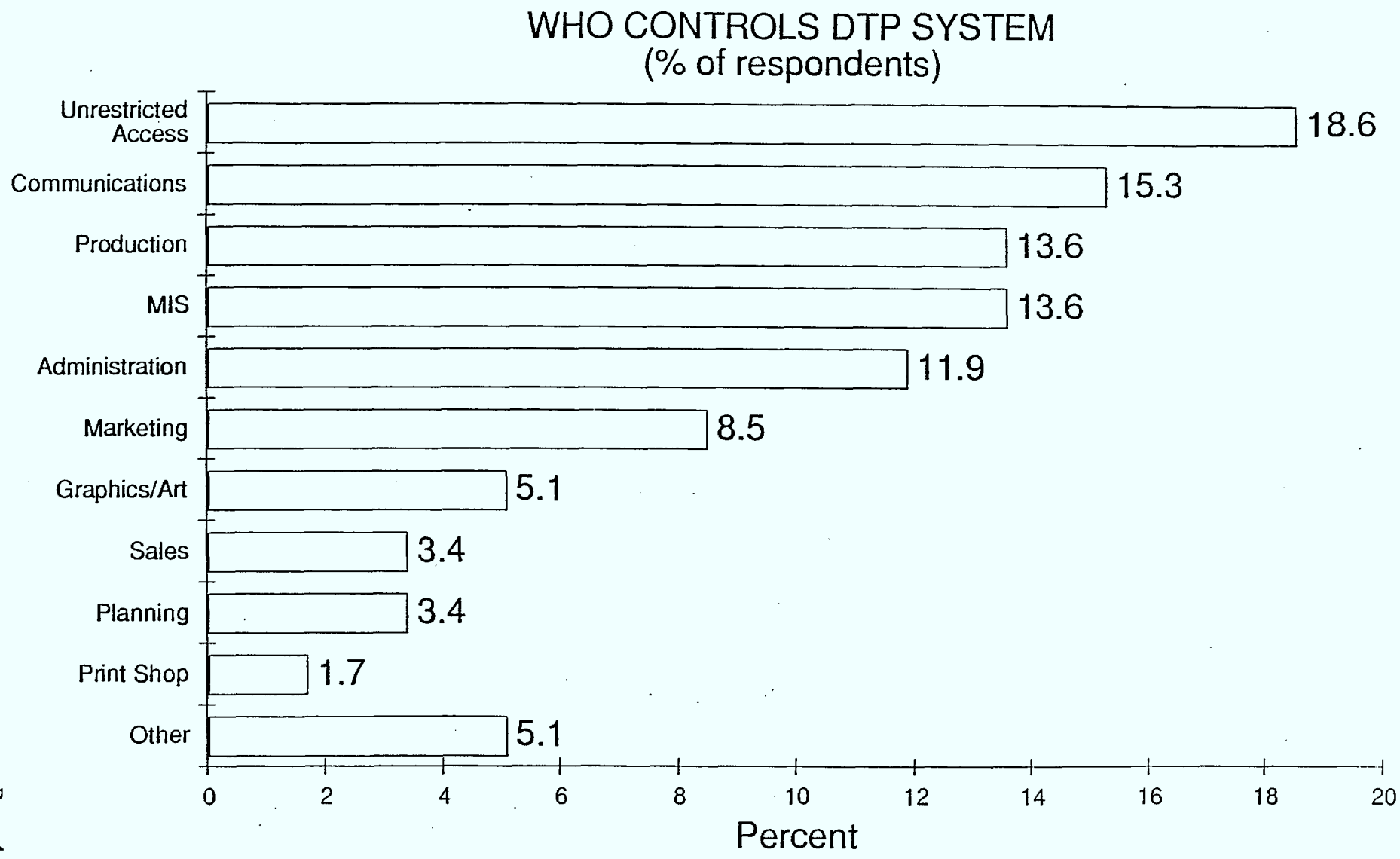

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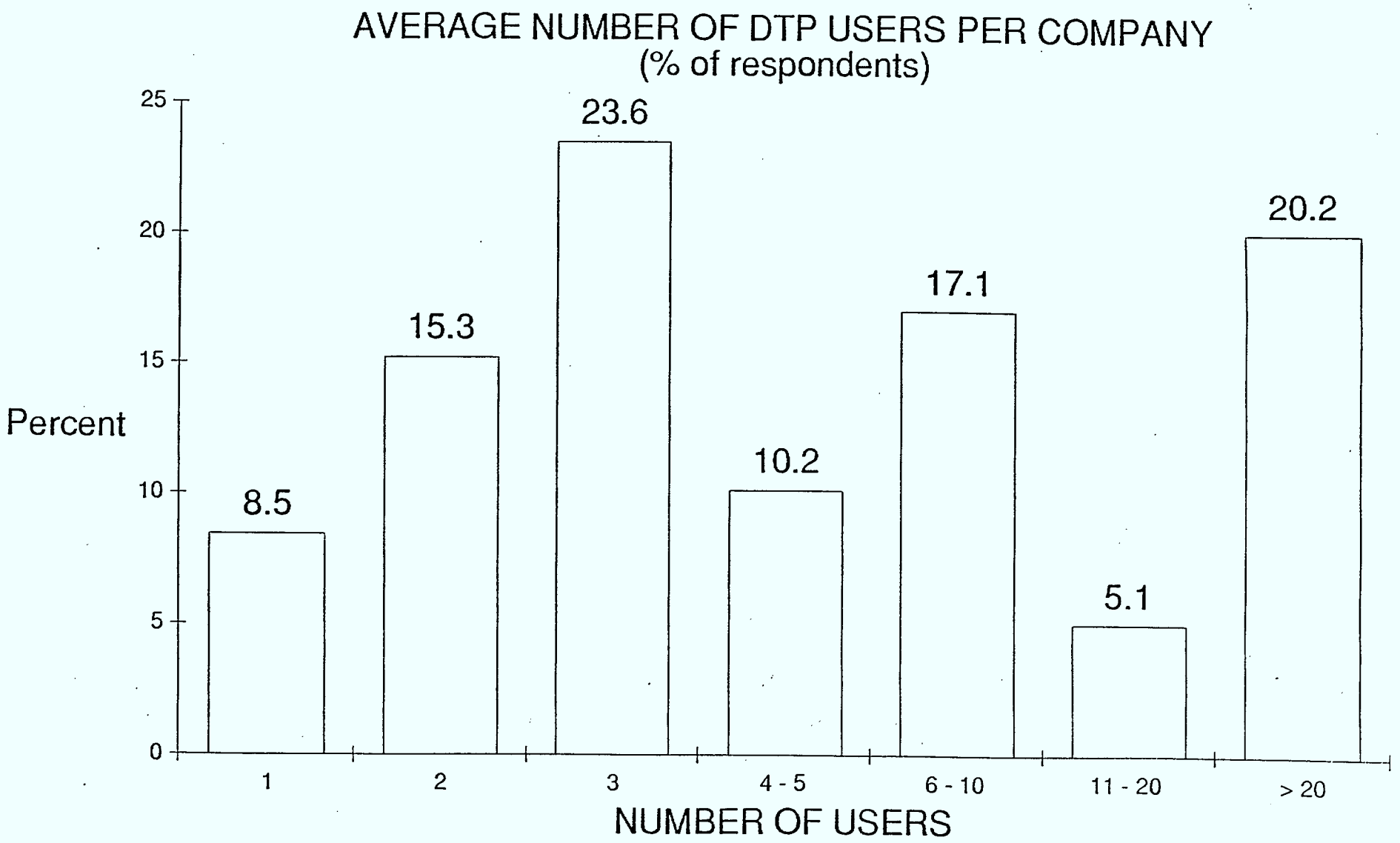

Source: Evans Research Corporation, June 1987

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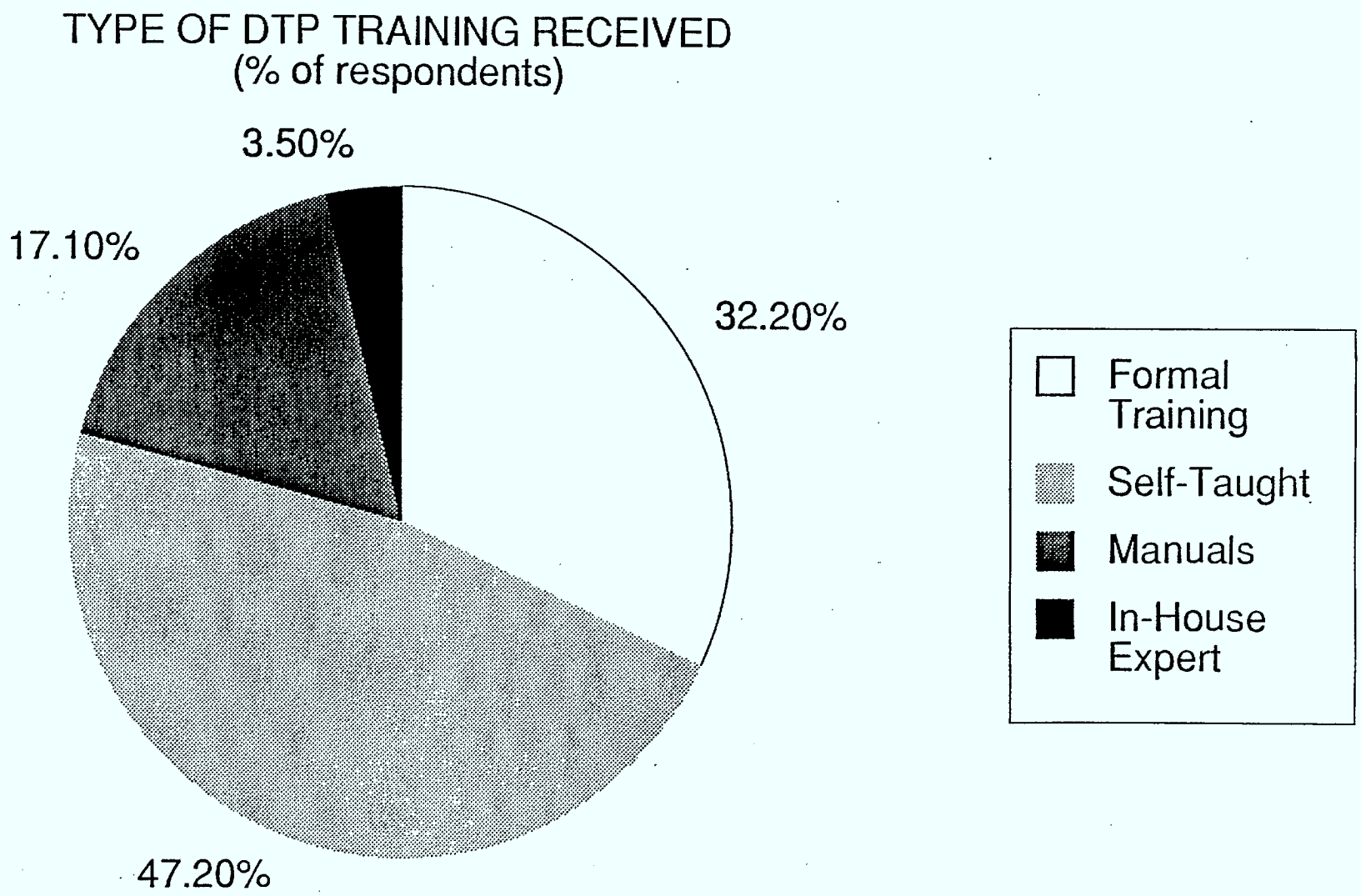


Source: Evans Research Corporation, June 1987.

TABLE 4.1

DESKTOP PUBLISHING APPLICATIONS
Ranked By
Percentage of Respondents Producing

TYPE	PRODUCTION		DISTRIBUTION		
	Respondents Producing (%)	Mean Units Per Year	Internal (%)	External (%)	Both (%)
Newsletters	50.9	32.3	26.7	63.3	10.0
Marketing Literature	50.9	69.8	10.0	83.3	6.7
Reports	35.6	132.5	19.0	66.7	14.3
Letters/Memos	30.5	307.2	11.1	66.7	22.2
Presentations	27.2	59.9	31.3	31.3	37.4
Proposals	25.4	158.6	6.7	86.7	6.7
Forms	25.4	190.5	86.7	6.7	6.7
Pamphlets	23.7	125.5	14.3	78.6	7.1
Flyers	22.1	87.7	7.7	92.3	-
Magazines	20.4	12.3	25.0	75.0	-
Manuals	15.3	44.7	11.1	88.9	-
Newspapers	11.9	36.9	14.2	85.7	-
Price Lists	11.9	7.9	-	85.7	14.3
Books	6.8	11.8	-	100.0	-

Source: EVANS RESEARCH CORPORATION, 1987

TABLE 4.2

DESKTOP PUBLISHING APPLICATIONS
Ranked By
Mean Units Produced Annually

TYPE	PRODUCTION	DISTRIBUTION		
	Respondents Producing (%)	Mean Units Per Year	Internal (%)	External (%)	Both (%)
Letters/Memos	30.5	307.2	11.1	66.7	22.2
Forms	25.4	190.5	86.7	6.7	6.7
Proposals	25.4	158.6	6.7	86.7	6.7
Reports	35.6	132.5	19.0	66.7	14.3
Pamphlets	23.7	125.5	14.3	78.6	7.1
Flyers	22.1	87.7	7.7	92.3	-
Marketing Literature	50.9	69.8	10.0	83.3	6.7
Presentations	27.2	59.9	31.3	31.3	37.4
Manuals	15.3	44.7	11.1	88.9	-
Newspapers	11.9	36.9	14.2	85.7	-
Newsletters	50.9	32.3	26.7	63.3	10.0
Magazines	20.4	12.3	25.0	75.0	-
Books	6.8	11.8	-	100.0	-
Price Lists	11.9	7.9	-	85.7	14.3

Source: EVANS RESEARCH CORPORATION, 1987

5.0 IMPACTS

5.1 On Publishers

Desktop publishing will have the greatest impact on small publishers, who can use the systems to eliminate or to reduce typesetting costs. The resulting improvement in cash flow will allow small or regional houses to publish more titles each year.

The direct impact of desktop publishing will not be as high among larger book publishing firms. However, at least one Canadian publisher has signed a deal with Apple Canada to provide the company with Macintoshes. The company's stable of authors will have the chance to receive a Mac in lieu of royalties, and the publisher will then receive the authors' manuscript in machine-readable form, eliminating one major step in the production process.

5.2 On End-Users

The greatest impact of desktop publishing will be felt at the grassroots level -- among end-users. In the early days of office automation, the "paperless office" was heralded as inevitable as offices increasingly adopted digital technology. Today, the reverse is true. More paper than ever is being consumed in North America's electronic offices because of paper's flexibility as an output medium. This will increase as desktop publishing becomes more popular.

In conducting this survey, ERC asked the respondents how important the DTP system was to their organization. The response was overwhelming. Almost without fail, users said that it was "important", "very important", "vital" or "crucial". More restrained users commented that they expected their system to be important once they themselves had over-

come their own limitations in terms of DTP knowledge and graphics design. Some specific comments on DTP's importance follow:

* "... the important aspect will be in the area of external contacts, especially when a staff member gives a talk and provides handouts."

"We're in the avant garde....There is prestige attached to having it."

* "It is opening up new roads."

* "It is crucial, but top management is not quite aware of it yet. I'm waiting for something to happen to the system to make them realize how important it is."

* "The DTP came in the morning and the Compugraphic went out in the afternoon."

* "It helps us keep customers and generate new business."

Respondents were also asked to rate the impacts of desktop publishing upon their organizations. Many of the answers, such as those dealing with document appearance or consistency, productivity, time and money savings, and flexibility duplicated information found in the section on benefits. However, some responses clearly could not be classified strictly as benefits.

For 21.7 percent of the respondents, a significant impact of DTP was the amount of user excitement it generated. (See Exhibit 5.1). Respondents commented that the quality of worklife had increased, and that employees became happier and more satisfied with their jobs after becoming proficient with DTP. The greatest single source of increased satisfaction was being able to carry the job one step further to completion. The consensus was that DTP is "exciting", that "everyone wants to use it", and that "it will really take off when people realize its applications".

In a related point, those surveyed implied that desktop publishing was a popular and relatively painless way for computer novices to enter the world of information technology. One respondent admitted that older staff members initially resisted the desktop publishing system, but that those responsible for using it had changed their view of technology. Another stated that "DTP has given our people a desire to do more. It has put micros into their hands in a friendly way". Yet another said that employees were willing to do more independent work but "now everyone wants their own terminal!"

Another impact of DTP, cited by 19.9 percent of the respondents, is the increased positive image and prestige it brings to the user organization or department. A graphics art shop commented that "desktop publishing helped us get quite well known." An investment firm which helps new, young companies attract private investment capital noted that "DTP helps project a much better corporate image." An Alberta-based resource exploration company said simply that "people notice quality. It helps get their attention."

Increased demand is a third impact of desktop publishing, mentioned by 6.7 percent of the respondents. Increased demand works on two levels. The first is an increased demand for more documents or more services, and this was most often found in commercial operations which provide desktop publishing services. Many of these companies are start-ups that are using DTP technology and techniques to carve out a market niche for themselves. The second level of demand relates to expectations, and this occurs most often in the corporate publishing environment. Once DTP has been introduced, people's expectations increase and they expect documents to look good all the time. This often means an increased workload for the system operators.

5.3 On Typesetters

Desktop publishing poses a major threat for commercial typesetters, at least in the short term. One of the major findings of this study is the extent to which DTP represents a migration away from the use of typesetting and other outside services. Almost inevitably, users mentioned that any savings they expected from DTP were in the form of reduced typesetting fees. Given the rising popularity of desktop publishing, it is likely that the typesetting fraternity will experience a shake-out and rationalization over the next five years.

Typesetting is in danger because the new technology takes sharp aim at both ends of the typesetting process. DTP software packages can handle much of the page layout and composition task while low cost laser printers have the potential to replace photographic typesetters. Since photo-typesetting was introduced in the mid-1950s, approximately 180,000 units have been installed world-wide.

Despite the gloomy outlook, there is still a significant role for traditional typesetters to play. They will be asked to undertake tasks for which DTP systems or their operators are incapable or unsuited. This will occur especially when high quality, volume production, or personal service is required.

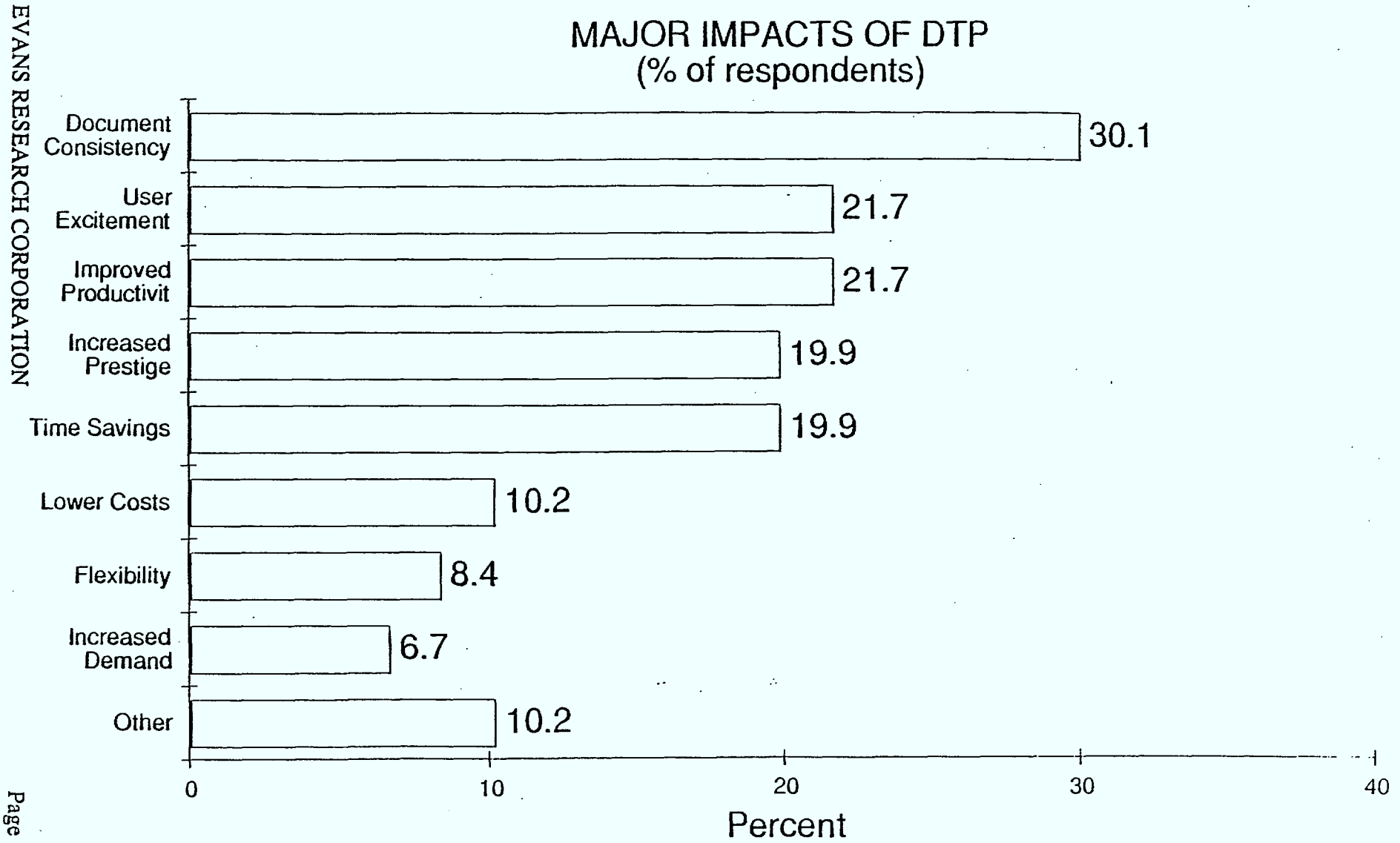
Preserving some of the typesetting business will be the limits of the new technology. Desktop laser printers currently offer "utility" quality resolution in the 300 dot per inch range. This is unacceptable for graphics art quality. Even though researchers are attempting to develop laser printers with resolution levels of 600 and even 1000 d.p.i., typesetting will remain viable because increasing numbers of users want photographs integrated with their textual material. Even superior laser printers will be unable to integrate photos or produce a film negative.

Typesetting will also survive because many large organizations have high volume requirements. It is improbable that they would consign all their publishing to a desktop system, because DTP implies one person putting pages together. Large firms would want to take a more complex, assembly line approach. If they do choose to bring their publishing in-house with DTP, they will have to hire additional staff to cope with the volume of typesetting that goes to outside services. Until desktop publishing becomes de-skilled (like word-processing), specialists requiring training and higher salary levels will be required, and these costs must be factored in to the overall publishing bill.

The third issue that will keep commercial typesetting viable is service. While an in-house staff often goes home at quitting time, work can be sent to an all-night typesetting service for delivery in the morning.

Commercial typesetters will suffer from the effects of desktop publishing in the short term as end-users explore and exploit the new publishing technology. In the longer term, however, they are likely to realize increased revenues and profits. More users will become familiar with typesetting through PC-based products and will turn to high-quality typesetting for more types of output.

EXHIBIT 5.1



Source: Evans Research Corporation, June 1987

6.0 DRAWBACKS AND IMPEDIMENTS TO FUTURE GROWTH

Although almost all the respondents were very happy with their systems, some points of dissatisfaction were raised. Human problems such as training and personnel dislocation proved to be greater concerns.

6.1 Hardware

Hardware was an issue for 39.8 percent of the respondents. (See Exhibit 3.9). Many of the complaints were centred around the speed and memory of the processor. As well, a number of respondents said that they want higher quality resolution from their laser printers. Finally, a few expressed the wish for larger monitors and better scanners.

6.2 Software

Software limitations were cited by 35.1 percent of the users. For the most part, the concerns were all very minor. Without being specfic, many respondents said that their packages had had minor "bugs" which they hoped would be solved in future releases. Other respondents, said that they hoped more fonts and character sizes would be available in the future.

6.3 Learning Curve

Almost half (48.5 percent) of the respondents mentioned the time it takes to become proficient at operating a DTP system as a major drawback. Many commented that they had unrealistic expectations about how long it would take to acquire the necessary expertise. Desktop publishing software is not like a word-processing or spreadsheet program in which the operator enters data and the program handles much of the formatting and

manipulation. DTP software is far more complex to use and the quality of the output depends on the skill of the user.

Also it was noted that even a proficient operator could not perform good work as quickly as desired. Here, the respondents were not simply calling for the developers to make their software easier to use. Rather they felt that there was a need for the non-operators to understand that proficiency in the use of DTP could not be acquired rapidly and that good quality work could not be performed in a few hours. At present this is not well understood. Consequently, the non-operators in an organization will make requests for work while being unaware of the effort being demanded.

The difficulties involved in learning and using the software can also cause dislocation of personnel. DTP systems tend to increase significantly the workload of those trained to use the system. These operators find the amount of work rapidly increases as the system output proves to be very popular. What frequently results is that additional staff must be hired in order to handle the increased workload in the department. If new staff is not hired, the person trained in the use of system usually finds their job functions being transformed to accommodate their DTP responsibilities. Several survey respondents described cases where either secretarial or managerial persons began devoting so much time to DTP operations that they neglected their basic job responsibilities.

6.4 Price

For 20.1 percent of the respondents, system price was a major drawback. Some said that they felt the DTP systems were too expensive for the value that an organization could derive from them. Others said that they needed to purchase special accessories (e.g. a scanner or colour laser printer) that they could not afford in order to make full use of their system.

The importance of these cost concerns will ebb as new products and more competition drives prices down.

6.5 Training

A lack of training was cited as a significant drawback by 13.3 percent of the respondents. Almost all felt that more training was needed regardless of the level of expertise. Respondents consistently cited graphics design and layout as two critical areas where self-teaching was inadequate for acquiring the necessary level of skill.

6.6 Compatibility

System compatibility or expandibility was a major consideration for 13.1 percent of those surveyed, especially for companies operating in an IBM or MS-DOS environment. These users sought a desktop publishing system with the capability of converting MS-DOS or ASCii files, or of downloading files from a mainframe. They were also worried about what types of computers their DTP devices could be connected to in the future. Similarly, some were afraid that their software would not be able to run on all the new hardware to be released in the future. Other compatibility issues included the ability to upgrade the DTP system with the addition of new peripherals, a communications or networking capability, and laser compatibility.

6.7 Access and Standards

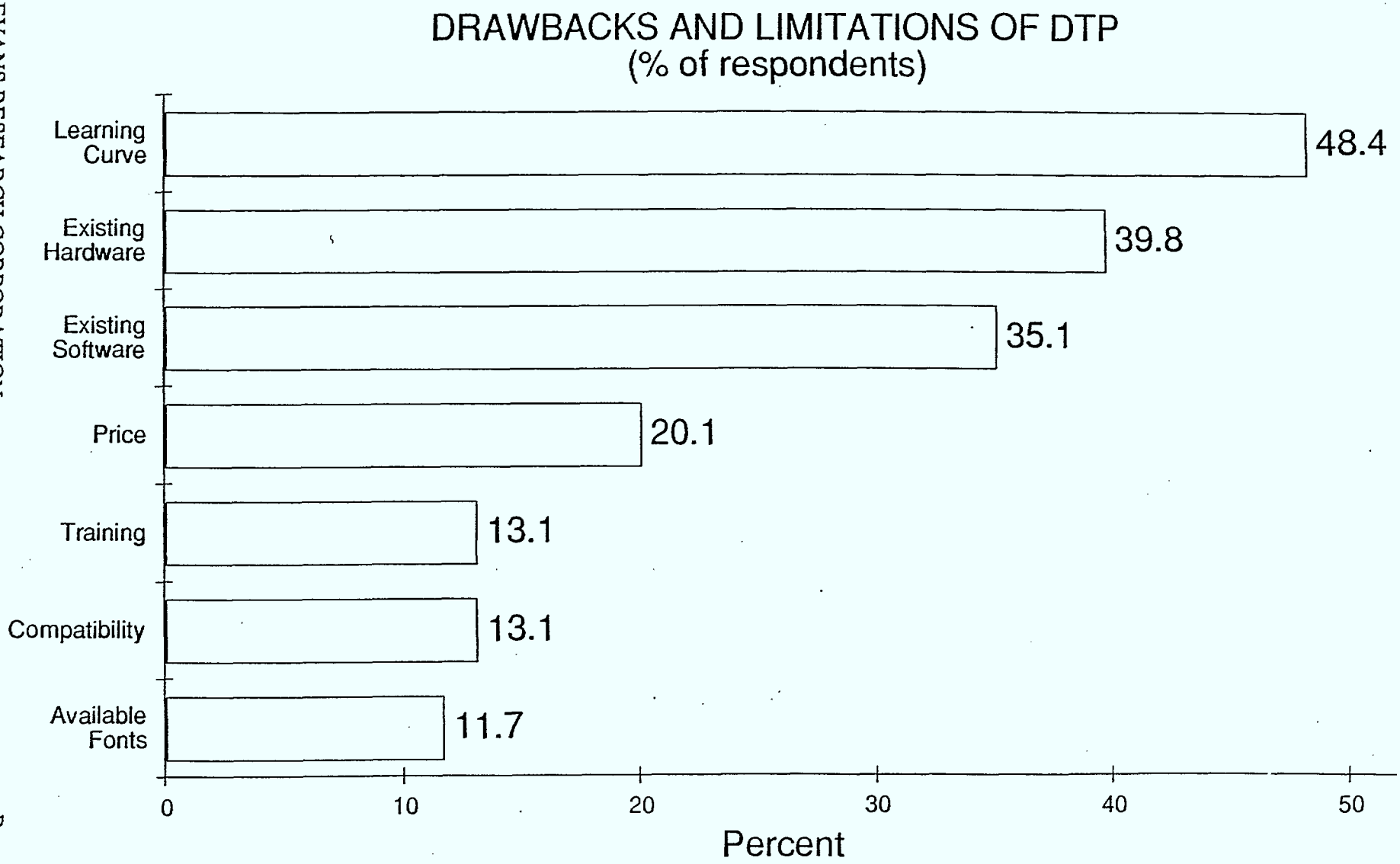
Some of the participants in the personal interviews expressed themselves very forcefully on the issues on the issues of control and document format standards.

These interviewees argued that DTP systems, like microcomputers five years ago, pose serious control problems and that some policy centralization is necessary. Already factions in organizations are disputing who should set the standards. Among the possible contenders are the MIS department, the In-Plant Print Shop, the Information Centre, the Office Automation administrator, and the Corporate Communications/Public Relations department. In the abscence of standards, many managers prefer not to spend money on DTP equipment or training.

Another management issue is the need to establish company-wide standards for the format of documents, reports, memos, letters and other output. Although DTP puts considerable publishing power in the hands of end-users, it has also given rise to the so-called "ugly document" phenomenon, where unattractive material of poor quality is the most common product. DTP systems provide the tools, but can never provide the essential creative element that guarantees pleasing material.

Although there may be agreement on the need for standards, it can be difficult (and trying) to get different groups to agree on standard formats and typefaces. In some organizations, the growth of DTP use was being slowed considerably because of the time required to get standards accepted. This problem was of particular concern to respondents from large geographically dispersed organizations.

EXHIBIT 6.1



Source: Evans Research Corporation, June 1987.

APPENDIX A: BIBLIOGRAPHY

Graham, Gord. "DTP Market Pegged at $ Billion by 1990". Computer Dealer News. (March 26, 1987). p. 21.

Zeidenberg, Jerry. "Quick Print Franchises offer Desktop Publishing". Computer Dealer News. (May 22, 1987). pp. 1, 22.

Cavuoto, James. "Three PC-based Desktop-Publishing Programs". Byte. (December, 1987). pp. 169-175.

Seybold, Patricia B. "The Changing Complexion of Electronic Publishing". Patricia Seybold's Office Systems Report. (May, 1987). pp. 15-21.

Cardiff, John. "Ventura Publisher: Pagemaker 1 for the PC". Computing Canada. (March 5, 1987). p. 26.

Cu-Uy-Gam, Miriam. "In-house Publishing". Computing Canada. (September 18, 1986). pp. 23-26.

Fuller, Arthur. "Desktop Publishing Well Isn't Easy". Computing Canada. (May 14, 1987). pp. 18-19.

Burns, Diane and Venit, S. "PC Desktop Publishing Comes of Age". PC Magazine. (October 13, 1987). pp. 93-182.

Hurst, Rebecca. "Desktop Publishing". Computerworld. (March 4, 1987). pp.23-25.

Faust, Maureen. "Buyer's Guide: Desktop Publishing". PC Week. (March 24, 1987). pp. 65-73.

McSharry, Nancy. "Computer Makers Rush into Print". Electronic Business. (February 15, 1987). pp. 75-78.

Simpson, David. "Desktop Publishing: Sifting Type from Hype". Mini-Microsystems. (January, 1987). pp. 57-63.

Sorenson, Karen. "Who's in Charge". Publish. (June, 1987). pp. 56-61.

Mead, Tim. "Corporate Electronic Publishing Systems". Electronic Business. (September 1, 1986). pp. 111-121.

Brockhouse, Gordon. "The Desktop Printshop". Access. (September, 1986). pp. 27-44.

Brett, George. "High Tech Puts Print Shop on Your Desk". Toronto Star. (July 27, 1986). p. F-1.

Forbes, Wm. B. "Can Typesetters Survive the New Technology". Canadian Printer and Publisher. (March, 1986). pp. EP 8-10.

Olson, Scott. "Moving From Lead to Laser". Canadian Printer and Publisher. (March, 1986). pp. EP 5-7.

Shaw, David. "Keep Your Customers By Involving Them". Canadian Printer and Publisher. (March, 1986). pp. EP 9-11.

Xerox Canada Inc. Orientation to the Publishing Industry. May 1986. Sales Brochure published in May, 1986.

APPENDIX B

QUESTIONNAIRE

Desktop Publishing Questionnaire

COMPANY NAME: _____

TELEPHONE: _____

CONTACT: _____

TITLE: _____

DEPARTMENT: _____

Q U A N T I F Y W H E R E V E R P O S S I B L E

1. What industry is your organization principally involved in?

RESOURCE	_____	COMMUNICATIONS	_____
MANUFACTURING	_____	TRANSPORTATION	_____
FINANCE	_____	SERVICES	_____
RETAIL	_____	GOVERNMENT	_____
WHOLE/DIST.	_____	EDUCATION	_____
OTHER	_____		

2. Number of Employees in Canada?

_____

3. Approximately what is your company's annual Canadian revenue?

(IN $ MILLIONS)

< 1	_____	10 - 40	_____
1 - 5	_____	40 - 100	_____
5 - 10	_____	100 +	_____

4. When did you purchase your desktop publishing system?

_____

5. What was the total cost?

_____

6. Are you planning to purchase any additional desktop publishing equipment in the next two years?

YES NO

7. Is there a budget in place?

YES NO

8. Approximately how much is budgeted?

Under $5,000	_____	$20,000 - $50,000	_____
$5,000 - $10,000	_____	$50,000 - $100,000	_____
$10,000 - $20,000	_____	Over $100,000	_____

9. (a) What type of desktop publishing system do you have?

(b) What additional equipment will you be purchasing?

PROCESSOR

	CURRENTLY INSTALLED		BUYING INTENTIONS		
Vendor	Qty	<6 months	6 - 12	13 - 24
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

LASER AND OTHER OUTPUT DEVICES (i.e phototypesetters)

	CURRENTLY INSTALLED		BUYING INTENTIONS		
Vendor		Qty	<6 months	6 - 12	13 - 24

INPUT DEVICES (i.e. scanners, OCR devices)

	CURRENTLY INSTALLED		BUYING INTENTIONS		
Vendor		Qty	<6 months	6 - 12	13 - 24

SOFTWARE

	CURRENTLY INSTALLED		BUYING INTENTIONS		
Vendor		Qty	<6 months	6 - 12	13 - 24

10. Why did you initially purchase a desktop publishing system?

1. _____

_____

2. _____

_____

3. _____

_____

11. Why did you choose this particular system?
(INDICATE TOP THREE FACTORS)

ease of use _____

price _____

price/performance _____

networking capability _____

upgradability _____

compatibility _____

reliability _____

service _____

training and education support _____

reputation of supplier _____

single-source vendor _____

other? _____

_____

_____

_____

_____

12. How many people in the organization/department currently know how to use the system?

_____

13. Do personnel receive formal outside training?

YES NO

If NO, how are they trained?

_____

14. Is the system used:

Individually _____

Departmentally _____

Company-wide _____

15. Who operates the desktop publishing system? What departments make use of it?

	OPERATE	MAKE USE OF
MIS/DP/OA	_____	_____
Administration	_____	_____
Marketing	_____	_____
Sales/Sales Support	_____	_____
Graphics/Art Dept.	_____	_____
Engineering	_____	_____
Production	_____	_____
Other? _____	_____	_____

16. Is the system:

Dedicated to publishing _____

Used for other functions _____

Don't know _____

17. (a) What is the desktop publishing system used for?

(b) Which of these applications have only been produced since you acquired your desktop system?

	Volume/Time Unit	Production		Distribution	
		Before	After	Int	Ext
Flyers	_____	_____	_____	_____	_____
Newsletters	_____	_____	_____	_____	_____
Proposals	_____	_____	_____	_____	_____
Memos/Letters	_____	_____	_____	_____	_____
Brochures	_____	_____	_____	_____	_____
Manuals	_____	_____	_____	_____	_____
Price Lists	_____	_____	_____	_____	_____
Forms	_____	_____	_____	_____	_____
Advertisements	_____	_____	_____	_____	_____
Internal Presentations	_____	_____	_____	_____	_____
Other:	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____

18. What new applications could you see using your desktop system for in the future?

_____

_____

_____

_____

_____

19. What percentage of your publishing is now done in-house?

_____

20. Is this a change from before having a desktop system?

YES NO

In what way?

_____

_____

_____

21. How were your documents produced before you purchased a desktop system?

_____

_____

_____

22. Are you producing more documents than before?

YES NO

How much more?

_____

_____

23. Has the quality of your documents changed?

YES NO

In what way?

_____

_____

_____

24. Has your use of outside printing/typesetting services changed?

YES NO

In what way?

_____

_____

25. Under what conditions do you still use outside printing/typesetting services? (i.e, for volume printing requirements, special quality requirements, etc.)

_____

_____

_____

26. Has the "look" of your documents changed?

YES NO

In what way?

_____

_____

_____

27. Has there been an increase in creativity?

YES NO

In what way?

_____

_____

_____

28. On a scale of 1 to 10, where 1 is VERY DISSATISFIED and 10 is VERY SATISFIED, how would you rate your overall satisfaction with the system?

1 2 3 4 5 6 7 8 9 10

Comment: _____

_____

29. What would make it a "10"?

Comment: _____

30. Has the desktop publishing system helped your company save any money?

YES NO

In what way?

_____

_____

_____

31. Do you know approximately how much?

_____

32. Where have the savings been realized?

_____

_____

_____

_____

_____

33. How long do you estimate it will take for the desktop system to pay for itself?

< 1 year _____

1 year _____

2 years _____

2-5 years _____

34. What do you consider to be the key benefits of using an in-house publishing system? (IDENTIFY TOP 3 FACTORS AND PROBE FOR COMMENTS)

lower publishing costs _____

lower printing costs _____

quicker turnaround _____

greater flexibility _____

more control _____

quality more suited to needs _____

increased creativity _____

other? _____

_____

_____

35. Are there any disadvantages to having a desktop publishing system?

YES NO

36. What are they?

_____

_____

_____

37. What has been the biggest impact of having a desktop publishing system?

_____

_____

_____

_____

38. How important is the desktop system to your organization?

_____

_____

_____

_____

_____

39. What would help you get even more value out of your desktop publishing system than you are getting now? (PROBE ABOUT PRICING, FUNCTIONALITY, TECHNOLOGY, ETC.)

_____

_____

_____

_____

APPENDIX C: ORGANIZATIONS SURVEYED

Ontario

Teri McMahon Graphics

Etobicoke Board of Education

Ontario Teachers' Federation

Burns Fry Limited

Holt Rinehart

City of Nepean

Westin Hotel

Hay Management Services

Bank of Nova Scotia

Peat Marwick

United Church

Regional Realty

Kids Toronto

W.K Information Systems

Province of Ontario, Ministry of Government Services

Province of Ontario, Ministry of Treasury & Economics

Province of Ontario, Ministry of Transportation & Communications

Medium 2 Publications

Canada Post Corporation

Agriculture Canada

Wm. Eisenberg and Co.

GraphiComp Design

Hay Hurst Advertising Ltd.

Gord Adams Design

Toller Research Co.

Niagara College

G.B.B. Associates

Quebec

Atlantic Video and Sound

McGill University

CompoEm

Quebec Farmers' Association

West Quebec Post

Canadian Transportation Commission

Alberta

Canadian Worldwide Energy Limited

Petro Canada

Detselig Enterprises

Nova

Bidinoff Communications Associates

Nova Scotia

St. Mary's University

Maritime Telegraph & Telephone

Manitoba

United Grain Growers, Ltd.

Investors Group

Plaindealer

Saskatchewan

Co-operative Trust

British Columbia

Friesen Mitchell & Assoc.

B.C. Tel

University of British Columbia

Microtel - Zentronics

City of Vancouver, Planning Dept.

Coast Computers

Self Counsel Press

Plus Publishing

Robert Forrest and Associates

Ronald's Printing Ltd.

Weiser Lock

Duncan Citizen Press

North Air Group

New Brunswick

N.B. Telephone

PEI

Curry, Curry Associates

DESKTOP PUBLISHING IN CANADA