Southern Business Review

Volume 10 | Issue 2 Article 4

A Survey of Small Business Computer Users- What Small Business Owners and Managers Really Want in A Micro-Computer System

F.B. Green
Appalachian State University

Alden Peterson
Appalachian State University

A SURVEY OF SMALL BUSINESS COMPUTER USERS— WHAT SMALL BUSINESS OWNERS AND MANAGERS REALLY WANT IN A MICRO-COMPUTER SYSTEM

F. B. Green and Alden Peterson

INTRODUCTION

For the past several years, a large number of articles, books, brochures, and magazines have been offering advice for potential users of micro-computers, particularly small firms and offices previously unaffected by the computer revolution. Owners and managers of small businesses have been faced with an incredible array of brands and distributors along with a proliferation of advertising and promotional schemes designed to attract their attention. Popular computing magazines provide a plethora of information and advice, most urging the purchase of personal or desktop computers without delay (Rogers, 1982). More than 150 manufacturers of personal computers, and numerous additional companies selling peripherals and software, are creating what some in the industry are referring to as "computer shock" (*Business Week* Aug. 8, 1983). Faced with competitive pressures, tight money, and a fair amount of "bandwagon" anxiety, small business entrepreneurs are seeking, finding and purchasing micro-computer systems in record numbers. Sales of personal computers have been doubling each year since 1980 with a significant share going to the small business market (*Business Week*, Oct. 3, 1983).

Several journal articles and various institutional brochures have been published to provide small business users with practical advice pertaining to the selection process. Several decision models have been proposed for the development of small business computer-based information systems. An earlier article by the authors (Peterson and Green, 1982) observed that the emphasis in much of the literature was directed toward the selection of computer hardware. For some small businesses, this may be appropriate; but experience with small business systems and the ultimate cost of software utilization suggested a change in emphasis toward reviewing and evaluating software prior to considering the particular hardware requirements of a system. Recent articles in the literature have reflected this change.

This article examines the preferences of small business owners and managers and reveals the attributes specifically desired in computer-based systems. A number of small businesses in a region covering portions of three states was surveyed by the authors. The purpose of the investigation was to determine what attributes were considered, what characteristics were most important in the process of selecting a computer system, and what applications or tasks were planned for the acquired systems. Other items of in-

terest included sources of information influencing the purchase decision, the number of models evaluated, and systems actually acquired.

BACKGROUND

Within the past few years, several articles in the literature have been sympathetic to the problems of introducing computers in small organizations. The advice given in these articles range in emphasis from the "front end" study recommended by Burch (1977) to a checklist of detailed questions covering all aspects of computer application (Pipino and Necco, 1982). Although much of the information is based on actual cases and the personal experience of various authors, none of the selection models were verified empirically. There weren't enough small businesses using computers to perform the necessary cross-sectional analysis. Even today, preliminary survey results suggest that the percentage of small businesses owning computers is relatively small (Rees, 1983).

A primary consideration in the literature addressing small business computers pertains to the relative importance of software versus hardware. Earlier computer selection models tended to stress hardware characteristics and costs, with applications software usually relegated to a single factor in the selection process. Many organizations, however, discovered that the cost of programming and software quickly exceeded the cost of computer equipment (Francl, Erickson, and Lin, 1982). While the cost of hardware has been going down, the cost of acquiring or developing the necessary computer programs has been on the rise. Stair refers to the "hidden cost" of applications software and states that "the key to a successful computer system is acquiring good computer programs and software." (Stair, 1979, p. 38).

Cheney (1979) emphasizes the need for developing functional specifications early in the selection process. Newpeck and Hallbauer (1981) add that these specifications should include the objectives of the system, mainline information flow, and parameters, indicating the number of items, orders, customers, etc. These application descriptions then serve as the basis for software selection.

Articles appearing in 1982 and 1983 began to stress the importance of applications software as a concern of equal or greater importance than hardware selection. Peterson and Green developed a model which called for the identification of suitable software packages noting that "the number of acceptable software candidates may be limited by premature hardware selection" (Peterson and Green, 1982, p. 124). Francl, Erickson, and Lin (1982) suggest a list of likely processing needs and urge small business owners to put these needs in writing so that they can select programs designed to meet specific application goals. Garris and Burch (1983) reemphsize software costs incurred at the time of implementation and observe that for the

average small business, the particular computer purchased doesn't matter a great deal. Petro (1983) gives considerable attention to vendor support stating that software availability and service are of utmost importance. Hemmer and Fish (1983) advise software selection first, hardware selection second, noting that "the software package is the most critical aspect of structuring a computer-based information system to fill the firm's needs." Even mass media articles are reflecting this concern urging computer shoppers to look first at the software available, then decide which computer will run the programs most efficiently (Davis, 1983).

The methodology described in this paper is designed to establish the perceptions of small business owners and managers regarding various selection criteria and provide an empirical basis for future advice to small business entrepreneurs seeking in-house computer capability.

SAMPLING TECHNIQUE

To perform this analysis, a survey of 230 small businesses was undertaken using a questionnaire mailed to a key business manager in each firm. Follow-up questionnaires were sent to a random sampling of non-respondents. A total of 61 useable questionnaires were returned for a response rate of 26.5 percent. Respondents were not required to identify their organization (although some did), and the confidentiality of all responses was assured.

The survey form itself included demographic data regarding the type of business, number of employees, and the categories of business applications for which the firm's computer system was (or would be) used. Each firm was also asked how many computer systems were evaluated in the selection process, and what system was eventually purchased by the company. Respondents were asked to rank attributes on the advantages of using a computer in the business and identify sources of information having the greatest influence in the purchase decision. Finally, a five-point scale was used to enable respondents to designate the relative importance of 13 specific attributes and one or more unspecified attributes pertaining to the selection of a computer system. After screening the data for omissions and inconsistent responses, the sample was processed using the SPSS statistical program package. Analytical techniques and findings are described in the next sections.

SURVEY RESULTS

The vast majority of small business respondents represented the service sector (95.1%). Of these, many were professionals (doctors, accountants, etc...) and many were involved in sales and financial services (insurance, real estate, and others). Only three firms represented small business manufacturing.

The number of employees in participating firms ranged from 1 to over 40 with 70% having fewer than ten employees. The survey revealed that 36% of the businesses had acquired a computer, 54% were considering the purchase of one, and 10% had no computer and were not considering acquisition. This distribution of owners, prospective owners, and non-owners is not considered typical since many non-owners may have had little interest in responding to the survey.

Survey participants were asked to check one of the following sources of information which had (or would have) the greatest influence in the purchase decision. Percent responses are indicated:

Personal recommendations	34%
General reputation of manufacturer	25%
Sales presentation	8%
Reviews in publications	8%
Other	16%
No response	9%

The personal recommendations of friends and business associates and the general reputation of the computer manufacturer seemed to have the greatest impact on the purchase decision. Other influences noted were dealer support, service, manufacturers' specifications, personal needs, proven software, interface with other computers, and selection made by home office or franchise headquarters. One respondent indicated that "compatible software is the primary factor leading to a choice of economically feasible hardware that offers the best support."

A list of four attributes pertaining to the value of having a computer in the business were ranked by each participant. Overall results of this ranking are contained in Table 1. Respondents were asked to rank the items using "1" as the highest, but leave out any that were not considered advantageous. For this reason, totals do not add up to 100%. The results in Table 1 reveal that there is no dominant attribute for the various businesses, but an aggregate ranking of all attributes would tend to place them in the order listed. Thus a majority of respondents indicates that the primary value of a computer for their businesses centers around better and faster control of operation. Cost saving *per se* is not a primary concern.

TABLE 1. Attributes Ranked According to Relative Value by Small Business Survey Respondents. (Table entries reflect percent responding).

ATTRIBUTE	RANK					
	(1)	(2)	(3)	(4)	Total	Aggr. Rank
Better control of operation	44	33	11	7	95%	(1)
Time saving	38	26	23	8	95%	(2)
Better information for decision making	25	28	25	18	96%	(3)
Long range cost saving	13	13	25	34	85%	(4)

(n = 61)

All respondents were asked how many computer models they did (or would) evaluate before making a purchase. The number of models indicated ranged from 1 to 12 with a mode of 3. Those still searching for a computer were asked how many they had already looked into. The quantity ranged from 1 to 6 with a mode of 1. Another question was suggested by a dealer: "Would you pay more for a computer to receive a high level of support, training, and problem solving; rather than paying less and receiving minimal support?" Of all participants, 88.5% answered in the affirmative.

ATTRIBUTE RATINGS

Respondents were asked to evaluate a number of attributes on the basis of level of importance in choosing a computer system for their business. The evaluation categories given on the questionnaire were:

- Critical Importance - an absolute requirement for the system.
- High Importance - strong preference for the feature but will reluctantly trade-off for feature of critical importance.
- Moderate Importance - prefer the feature but will trade-off for feature of high importance.
- Low Importance - nice to have the feature but can do without it.
- No Importance - no need for it, will not be considered in the decision.

Data were submitted to statistical analysis sub-programs available in the SPSS Program (Statistical Package for the Social Sciences). Table 2 presents the attributes with resulting means, modes, and standard deviations. On the basis of the means of these ratings, attributes are listed in perceived order of importance, (Their descriptions are contained in Appendix I.).

It is evident from the first five attributes listed that small business owners and managers are placing considerable emphasis on the need for operational adaptability with minimal complications. Software availability, problem free operation, expandability, user friendliness, and dealer support are rated higher than the other attributes. Cost and the manufacturer's reputation are less important than many of the other attributes, as are technical features such as disk storage, internal memory, and speed. The modal values of the attribute rankings are also presented in Table 2, the most interesting statistic being the low importance given to cost relative to other attributes.

TABLE 2. Percentage Distribution of Attribute Ratings by Level of Importance.

(1 - critical, 2 - high, 3 - moderate, 4 - low, 5 - no importance)

ATTRIBUTE	AGGREGATE RATING		
	Mean	Mode	Std. Dev.
Software availability	1.35	1	.78
Problem free operation	1.37	1	.58
Dealer support	1.57	1	.83
Expandability	1.65	1	.78
User-friendliness	1.86	1	1.05
Versatility	1.97	2	1.15
Internal memory	2.02	2	.79
Cost of system	2.28	3	.85
Mfr's reputation	2.30	2	1.12
Disk storage	2.36	2	.98
Non-mfr's items	2.42	2	1.15
Ability to add terminals	2.50	2	1.23
Speed	2.53	2	1.01

(n = 61)

Standard deviation is a reflection of the level of agreement among the sample members. A low standard deviation indicates a high level of agreement on the perceived importance of an attribute. For instance, "problem-free operation," the second most important attribute on the basis of mean comparison, has the highest level of agreement (e.g., the smallest standard deviation). The highest ranked attribute, "availability of software," has the second highest level of agreement among the sample; it has the same standard deviation as the fourth and seventh ranked attributes, "expandability" and "memory capacity." A ranking of the attributes by the *percentage* of the sample that considers each attribute of

critical importance roughly parallels the ranking of the means; consequently, percentages are not shown in Table 2. Over fifty percent of the sample rated the first four attributes of critical importance.

Table 3 presents significant correlations between attributes; the non-parametric Kendall's Tau Analysis was used. All of the significant relationships are positive. Cost is not related to any of the other attributes. Cost and manufacturer's reputation had a low estimate of communality (shared variance) with the other attributes. User-friendliness has a significant relationship with only one other variable, software availability; these two were among the highest-rated attributes (1 and 2 in critical importance). The attributes representing the capacity of the system (expandability, disk storage, internal memory, and the ability to add terminals) have highly significant inter-relationships, as one would expect. It is interesting to note that significant relationships do not exist between manufacturer's reputation, problem-free operation, and support. One would assume that the latter two would be the reason for selecting a well-known system.

BUSINESS APPLICATIONS

Respondents were further asked to list the business applications that the computer was (or would be) used for. After evaluating the questionnaires, eight categories of computer applications were identified. Descriptions of these categories are contained in Appendix II. The most popular business applications by percentage of the sample indicating their preferences are:

Accounting	76.1%
Word-processing	45.7%
Data-base management	39.1%
Analysis	23.9%
Specialized applications	21.7%
Inventory	10.9%
Mailing	4.3%
Information service	4.3%

This ranking parallels the experience of the authors; generally, a computer system is purchased to facilitate the accounting and transcription (word-processing) processes. These are among the most time-consuming processes in non-computer offices; and, as a consequence, they are among the first programs purchased.

These results tend to agree with the findings of Rees (1983) in the areas of word processing and transaction processing (which includes accounting and data base management) as being high on the list of present and future uses. Precise comparisons of other application areas are not possible due to the different categories identified in the survey.

TABLE 3

Non-Parametric Correlations (Kendall's Tau) Between Attributes

ATTRIBUTE:	cost	software available	user friendly	expand	problem free	support	speed	versatile	non-mfr's items	disk stge	internal memory	add terminals	mfr's reputation
cost													
software available		.594[1]	.213[3]						.209[3]	.221[3]	.227[3]		
user friendly			.299[2]				.271[2]	.326[2]	.353[1]	.318[2]	.435[1]	.276[2] .421[1]	
expand						.328[2]	.346[2]		.320[2]		.347[2]	.194[3]	
problem free							.359[1]				.272[3]		
support								.195[3]	.334[1]	.198[3]	.374[1]	.361[1]	.187[3]
speed									.276[2]				
versatile										.350[1]	.433[1]	.211[3]	
non-mfr's items											.649[1]	.369[1]	.255[3]
disk stge												.387[1]	.358[1]
internal memory													.287[2]
add terminals													
mfr's reputation													
estimate of communality	0.67	1.00	1.00	1.00	1.00	1.00	.75	1.00	.91	1.00	NA*	1.00	.61

[1] level of significance < .001
[2] level of significance < .01
[3] level of significance < .05
*iteration for estimate of communality could not be accomplished with inclusion of variable

CONCLUSIONS AND IMPLICATIONS

The sample indicates that the availability of software is the most popular *absolute* requirement of a system and that it precedes the nature of the hardware. Other popular requirements are that the system be simple to use; that it be relatively free of problems; and that, when problems exist, help should be readily available from the dealer. Of lesser importance are the mechanical features of the system (with the exception of expandability). Among these mechanical features are speed, storage capacity, and the capability of adding terminals. It is interesting to note that the name of the system (the manufacturer) is low in importance relative to what is obtained with the system. This may indicate a certain degree of self-confidence on the part of prospective purchasers and a willingness to consider a relatively wide range of options. Price is also given a low priority in importance. It is assumed that there is a cost limit in the purchase of a system; but the data indicate that price is of less importance than many other attributes.

The purpose of this study was to gain some perception of microcomputer selection criteria used by small firms. The information has several implications: Researchers and consultants to small business organizations should be (and some are) emphasizing the importance of applications software, support, and useability. Manufacturers and distributors can reorient their development and marketing efforts to meet the real concerns of their customers. Furthermore, information gleaned from the experience of others is now available to assist small business managers in the selection of an appropriate computer-based system.

REFERENCES

[1] Benasat, I., and A. S. Dexter, "Approaches to IS Analysis in Small Business," *Proceedings* of the American Institute for Decision Sciences, 1977, p. 571.

[2] Burch, E. E. Jr., "The Decision to Computerize," *Journal of Small Business Management,* July 1977, pp. 26-32.

[3] Cheney, P. H., "Selecting, Acquiring, and Coping with Your First Computer," *Journal of Small Business Management,* January 1979, pp. 43-50.

[4] "Computer Shock Hits the Office," *Business Week,* August 8, 1983, pp. 46-49.

[5] Davis, Don, "Buying a Business Computer," *Mountain Times,* Blowing Rock, NC, September 8, 1983, p. B1.

[6] Francl, T. J., W. Erikson, and W. T. Lin, "Selecting the First Small Business Computer," *American Journal of Small Business,* Vol. VI, No. 4, April - June, 1982, pp. 50-58.

[7] Garris, John M. and E. Earl Burch, "Small Business and Computer Panic," *Journal of Small Business Management,* Vol. 21, No. 3, July 1983, pp. 19-24.

[8] Hemmer, E. H., and Margaret Fish, "Information Processing for Professional Small Business," *Journal of Small Business Management,* Vol. 21, No. 3, July 1983, pp. 7-12.

[9] McGuire, D., "Learning the Hard Way," *Personal Computing,* August, 1983, pp. 109-113.

[10] Newpeck, F. F., and R. C. Hallbauer, "Some Advice for the Small Business Considering Computer Acquisition," *Journal of Small Business Management July, 1981, pp. 17-23.*

[11] Nie, N. H., *et al., SPSS: Statistical Package for the Social Sciences,* 2nd ed. New York: McGraw Hill, 1975.

[12] "Personal Computers: And the Winner is IBM," *Business Week,* October 3, 1983.

[13] Peterson, Alden, and Fess Green, "A Decision Model for the Development of a Small Business Computer Based Information System," *Proceedings* of the Eighteenth Annual Meeting, TIMS Southeastern Chapter, October 1982, pp. 123-130.

[14] Petro, Louis W., "Minicomputer Systems for Small Business," *Journal of Small Business Management,* Vol. 21, No. 3, July 1983, pp. 1-6.

[15] Pipino, L. L., and C. R. Necco, "A Systematic Approach to the Small Organizations Computer Decision," *Journal of Small Business Management* July, 1981, pp. 8-16.

[16] Rees, Pembroke, "A Survey of Microcomputer Usage by Businesses in a Medium-Size City," *Proceedings* of the 19th Annual Meeting, Southeast TIMS, September, 1983.

[17] Rogers, Michael, "Don't Wait," *Personal Computing,* March, 1983, pp. 49-51.

[18] Seen, J. A. and V. R. Gibson, "Risks of Investment in Microcomputers for Small Business Management," *Journal of Small Business Management,* July 1981, pp. 24-32.

[19] Stair, R. M., "Acquiring Computer Programs and Software for the Small Business," *Journal of Small Business Management,* October 1979, pp. 37-42.

APPENDIX I. Description of Attributes Evaluated by Sample Respondents

ATTRIBUTE		DESCRIPTION
Cost of system	-	The initial cost of a computer system.
Software availability	-	The availability of software needed by the firm.
User-friendliness	-	The absence of difficulty in mastering and using both the software and hardware.
Expandability	-	The ability to expand the system to meet future needs.
Problem free operation	-	The absence of break-downs.
Dealer support	-	Support from the dealer in setting-up, training personnel, and assistance in solving problems.
Speed	-	Rapid input, processing and output of data.
Versatility	-	The system's multi-use capacity.
Non-mfr's items	-	Availability of hardware and software from sources other than the computer's manufacturer.
Disk storage	-	Disk storage capacity.
Internal memory	-	Memory capacity within the computer.
Ability to add terminals	-	Capability of adding terminals to the system.
Mfr's reputation	-	A name-brand synonymous with quality and reliability.

APPENDIX II. Descriptions of Business Applications Reported by Sample Respondents.

APPLICATION CATEGORY		DESCRIPTION
Accounting	-	Billing, accounts payable, accounts receivable, general ledger, and payroll.
Word-processing	-	Text editing, formatting, letter writing.
Mailing	-	Storing, sorting, and printing of mailing addresses; up-dating.
Analysis	-	Planning, financial analysis, budgeting, estimating, tables, graphs, use of electronic spreadsheet.
Inventory	-	Inventory-item record filing, updating, listing, flagging re-order points, processing requisitions, and printing purchase orders.
Data base management	-	Data manipulation, records filing, cross indexing, data storage and retrieval.
Information service	-	Shared processing, tie-in with other computers, telecommunications, or access to commercial data libraries: i.e., Dow Jones, CompuServe, ...
Specialized applications	-	Applications designed for specific business: i.e., real estate, insurance, ...

APPENDIX III. Survey Questionnaire

This questionnaire is for a business research project; it will not be used as a sales lead. Carefully read the instructions which accompany each question. The questionnaire is directed to all businesses that either already have a computer system or are contemplating the purchase of one.

1. A. What is your business?
   manufacture ____, wholesale ____, retail ____, service ____
   B. What are your principal products (i.e. clothing, real estate)

2. What is the average number of persons employed by the business? ____

3. A. Do you currently have a computer that you use in your business? YES_____ NO_____

   B. If you marked YES to the previous question, what model is it; *or,* if you marked NO, what model or models would you consider if you intended to purchase one?

   _____

4. If you have a computer, for what purposes do you use it; *or,* if you did have one, for what purposes would you use it in your business? (for example: accounting, word processing)

   _____

5. Rank the following attributes ("1" for the highest) on the basis of the advantages of using a computer in your business; if you do not consider anyone of the listed attributes an advantage, do not rank it. Space is provided for any attributes, that are not listed, which you consider advantages (also include these attributes in your ranking.)

Attributes	Rank
long-range cost saving	_____
time-saving	_____
better control of operation	_____
better information for decision-making	_____
_____	_____
_____	_____
_____	_____

6. Which one of the following sources of information had or would have the greatest influence in your purchase decision? (only check one)

sales presentations	_____
reviews in publications	_____
general reputation of manufacturer	_____
personal recommendations	_____
(other) _____	_____

7. How many computer models did you evaluate or would you evaluate prior to reaching a decision? _____

8. What is the importance to you of each of the following items in relation to choosing or having chosen a computer system for your business? Place a mark in the space provided that most accurately reflects your opinion.

space 1 - critical importance: an absolute requirement for the system.
space 2 - high importance: strong preference for feature but will reluctantly trade-off for feature of critical importance.
space 3 - moderate importance: prefer the feature but will trade-off for feature of high importance.
space 4 - low importance: nice to have the feature but can do without it.
space 5 - not important: no need for it, will not be considered in the decision.

	critical importance 1	2	3	4	not important 5
a. initial cost	___	___	___	___	___
b. availability of software	___	___	___	___	___
c. "user-friendliness" of hardware and available software	___	___	___	___	___
d. expandability of system (i.e. ability to expand memory, storage)	___	___	___	___	___
e. quality (problem free)	___	___	___	___	___
f. support (help and servicing from manufacturer and/or dealer)	___	___	___	___	___
g. speed (rapid input, processing and output of data)	___	___	___	___	___
h. versatility (ability to put system to different uses)	___	___	___	___	___
i. availability of hardware and software for the system other than from the computer's manufacturer.	___	___	___	___	___
j. data storage capacity	___	___	___	___	___
k. memory capacity	___	___	___	___	___
list any other features which you consider of critical, high or moderate importance and indicate the degree of importance:	___	___	___	___	___

THANK YOU FOR YOUR COOPERATION!

F. B. Green is an Assistant Professor of Decision Sciences and Alden Peterson is an Assistant Professor of Management at Appalachian State University.