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<http://aisel.aisnet.org/icis1992/52>

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APPROACHES TO COMPUTERIZATION IN SMALL BUSINESSES IN GREECE

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ABSTRACT

It is widely recognized that IT has made considerable inroads into large organizations, such that the majority now rely on IT for their day-to-day operations. The position regarding small businesses is less clear as they face somewhat different opportunities and constraints. In particular, the approach to computerization in small firms in less developed national IT environments has received little attention in the literature. This paper reports on the results of a survey of the approaches adopted by small firms in Greece. The findings are analyzed in terms of previous experience with computers, factors influencing the decision to adopt IT, advice received, staff involvement in IS development, training, and problems encountered and the solutions adopted. The results are compared with an earlier study performed five years ago in order to identify recent trends.

1. INTRODUCTION

During the last twenty years, there has been considerable growth in the number and prosperity of small businesses (SBs) throughout Western economies, including Europe (Sengenberger, Loveman and Piore 1991). This has been noticeable regardless of the political complexion of the national government. This growth, which is in line with the teachings of management theorists such as Drucker (1989) and Porter (1990), has been seen in both the manufacturing and services sectors. Across Europe, SBs are employing an increasing proportion of the total working population and are becoming increasingly identified with new products and new production processes, thus contributing to exports and national wealth and competitiveness. Many national governments have recognized the benefits of SB growth and have attempted to provide a relevant support infrastructure in terms of local enterprise agencies or small business development centers (Gibb and Manu 1990). SBs comprise the vast majority of businesses throughout Europe (taking the widest definition of a business, including all the self-employed), counting for more than 90% of businesses in the United Kingdom, Italy, Germany, Belgium, Holland, and Greece.

As is widely recognized, information technology (IT) in the form of computer-based information systems (IS) has made

considerable inroads into large organizations, such that the majority now rely on IT for their day-to-day operations. This diffusion of technology has been credited with significant cost reductions, gains in productivity and organizational effectiveness plus, in some cases, a definite competitive advantage. There is a widespread view that IT is so crucial to success that large organizations need to relate their IT strategies closely to their overall business strategy (Earl 1989). While considerable successes have been achieved, there have also been a number of technical and commercial disasters. Angell and Smithson (1991) argue that IT needs to be viewed in terms of both opportunities and risks, where the risks may outweigh the promised opportunities.

There is no reason to believe that these issues apply any less to small enterprises than to the largest multinational. Meyer and Boone (1987) outline numerous cases where small companies have benefitted through the use of external databases, office automation applications (e.g., spreadsheets) and project management software. The general trend away from costly mainframe computing, based on in-house programs, toward cheap user-friendly microcomputers, with standard software packages, means that sophisticated tools are becoming increasingly available to SBs, without the need for advanced programming skills.

However, it is less clear to what extent these advantages are realized in practice by firms in less developed national IT environments such as Greece, or how such firms approach IT in order to reap the rewards. For the remainder of this paper, we report on a survey started in the summer of 1989 that collected information on the introduction and use of microcomputers in Greek SBs. We concentrated on microcomputers since this is the technology that dominates this sector. We wished to "paint a picture" of the situation confronting SBs including their previous experience with computers, the factors that influenced their decision to adopt IT, the type of advice they received, the amount of staff involvement in IS development, and the type of problems they frequently encountered. The results are compared with an earlier study performed in 1984 (CEC 1985) in order to identify recent trends. Although our study uses different firms, we carefully selected the firms and designed the interview questionnaire in such a way as to render the studies as comparable as possible.

2. INFORMATION TECHNOLOGY AND SMALL BUSINESSES

Concerning the use of IT, Heikkila, Saarinen and Saaksjarvi (1991) propose three major differences between SBs and large organizations. First, they propose that SBs tend to use computers more as tools and less as a communications medium. However, it could be argued that this is only a temporary phase as networks promise considerable gains for SBs in terms of collaboration with other firms. Second, they suggest that the few stakeholders involved in SBs mean that there are likely to be fewer problems in terms of organizational politics. However, SBs are not totally free of such conflict and "family" politics can be just as bitter as the organizational politics found in bureaucracies. Third, they argue that SBs have much fewer resources available to employ on computerization and this is certainly the case.

Wroe (1987) argues that small firms possess certain potential advantages in making use of the technology, since they are able to complete the transition process much faster and they possess greater flexibility to undertake any reorganization required to realize the full benefits of the technology (Poutsma and Walravens 1989). Furthermore, the flexibility of new technologies facilitates small batch, tailored, or niche-focused production, the preserve of the small firm. It has been argued (Dwyer 1990, Clark 1987) that IT promises considerable gains for SBs, allowing them to increase their market scope and secure their position within the industry through improved communication with both large firms and other small firms. Through accurate and systematic record keeping, IT can help SBs in areas of traditional concern: the collection of outstanding payments, stock control, increased sales, and improved after-sales service. Lincoln and Warberg (1987) found that SBs failed to utilize the marketing data that they possessed. Poutsma and Walravens argue that IT can help an SB to develop its markets, increase turnover, raise profitability, and still remain a small firm, able to realize the benefits of that

smallness in service and flexibility. These views are further supported by Cornford and Whitley (1991).

On the other hand, SBs have particular problems in introducing and using IT. Typically they do not have the appropriate skills available in-house and thus have to train existing staff or purchase those skills in the marketplace. IT is usually associated with a systematic approach to management and decision-making and its introduction requires careful planning, whereas much SB management practice is based on short-term, informal, ad hoc lines (Hill et al. 1984). Although the technology is much cheaper than before, it still represents a considerable investment for SBs, which traditionally lack such funds. Computerization, which may lead to dramatic changes in the business's fundamental activities, requires an awareness and basic knowledge within the management function but many owners of SBs appear to be too busy "surviving" to invest their valuable time in such projects. These difficulties imply a significant risk of failure, which may be terminal for the small firm lacking adequate financial and productive cushioning (Scholhammer and Kuriloff 1979). Thus, it is hardly surprising that many SBs in the past have fought shy of the risks involved and ignored IT.

3. SURVEY METHODOLOGY

Fifty companies were selected on the basis that they employed less than 100 staff, they had used microcomputers for between six months and five years, and they made up a sample that was comparable with the earlier study in terms of industrial sectors (i.e., manufacturing, services, retail, and distribution). The sample was obtained from membership lists of chambers of commerce, from which we excluded wholly owned subsidiaries of large companies and publicly owned companies. This sample was roughly representative of the overall Greek distribution of SBs and, like the majority of companies and computer systems in Greece, most of the respondents were located in the greater Athens area (Attiki). As can be seen from the profile (Table 1), the companies comprised a wide range of SBs in terms of industrial sector, size, age of the company, and length of microcomputer experience.

The survey was conducted through semi-structured interviews based on a questionnaire similar to the one used by the earlier study. The questionnaire comprised a balance between "open" and "closed" questions and was divided into the following main areas: previous experience of IT, factors influencing the decision to adopt IT, advice obtained, staff involvement, training issues, and problems encountered and their solutions. We chose to use interviews to allow the respondents to provide a contextual interpretation of the issues raised. The questionnaire was tested through pilot interviews. In the main, the interviewees were those managers responsible for the introduction and/or operation of the microcomputers; their organizational positions are shown in Table 2. The title "general manager" includes managing directors and chief execu-

Table 1. Profile of Companies Surveyed (n = 50)

Sector	%	No. of employees	%	Years of trading	%	Years using micro-computers	%
Retail and distribution	40	Below 20	38	1 - 10	26	Below 1	22
		21 - 40	14	11 - 20	34	1 - 2	32
Services	32	41 - 60	28	21 - 50	26	2 - 3	26
Manufacturing	28	61 - 100	20	over 50	14	3 - 4	14
						4 - 5	6

Table 2. Profile of Respondents (n = 50)

Title	%
Owner	38
General manager	26
Manager	16
Accountant	12
Other	8

tives. In SBs, owners and general managers are often the same person; in this case, the respondent was treated as the owner. In this table, "manager" denotes someone responsible for a single department, although for the remainder of this section the term will be used as a synonym for "respondent," reflecting the general level of the respondents. Each interview was quite detailed, lasting from one to three hours. In many cases, other company staff were invited to contribute regarding specific details. The questionnaire was used to structure the discussion and, where necessary, follow-up telephone calls were used to clarify any outstanding or ambiguous issues.

The results were analyzed in terms of simple frequency distributions and compared with the findings of the earlier study. The results are interpreted in the light of the qualitative comments of the respondents themselves.

4. PREVIOUS EXPERIENCE WITH COMPUTERS

There had been a considerable increase in respondents' and companies' previous experience of computers since the earlier (1984) study (Table 3). In 1989, more than three-quarters (76%) of the companies had some experience, compared to the 1984 situation, when only one-fifth had any previous experience. Personal experience had similarly grown considerably, with the majority of respondents (56%) claiming substantial or extensive experience, as opposed to

the position in 1984 when the majority had no experience at all with computers.

Personal experience had usually been obtained at university, through a training course, or through the use of computer bureau services. Almost half of the companies had used, or were still using, a computer bureau service, in comparison with 10% in the earlier survey. University courses are likely to continue to play an important role but, in many cases, personal experience had been gained in positions previously held in other companies, such that these people brought with them valuable IT knowledge acquired elsewhere. The influence of the younger generation was important; we encountered cases where a manager or key employee had been encouraged to work with IT by a child's familiarity with microcomputers (through school studies or hobbies). Even computer games seemed to have facilitated this familiarization. Stair, Crittenden and Crittenden (1989) found that the majority of owners/managers of small businesses in the United States that they surveyed had no formal IT education or training. From our interviews, it was apparent that this considerable increase in previous experience (both company and personal) had changed people's expectations of IT and consequently their approach to computerization, as will be demonstrated below.

This increased experience would seem intuitively to indicate a greater likelihood of successful systems development although the literature is somewhat ambivalent concerning

Table 3. Previous Experience with Computers (n = 50)

Level	Company		Personal	
	1984 %	1989 %	1984 %	1989 %
Extensive/substantial	6	34	8	56
Moderate	6	24	12	18
Little	8	18	26	12
None	80	24	54	14

Table 4. Factors Influencing the Initial Decision to Computerize (n = 50)

Factors	1984 %	1989 %
Improved processing & availability of information	40	50
Time savings and coping with workload	18	42
Improved stock control procedures	24	24
Greater accuracy	12	22
Improved accounting procedures	40	18
Cost reduction	0	16
Staff reduction	12	6
TOTAL	146	178

the various aspects of this factor. On the basis of their survey in Finland, Heikkila, Saarinen and Saaksjarvi found that there was little substitute for experience; prior experience of computers meant that users were more likely to evaluate the packages in advance (perhaps by consulting existing users), more likely to obtain the benefits of integration by applying the software over a number of linked applications, and were less dependent upon vendors' training facilities. They found that problems were most likely where inexperienced users failed to give sufficient consideration to the acquisition and requirements specification phases.

However, other writers argue that, taken by itself, the length of time an organization has used IT has either no effect on success (DeLone 1988; Montazemi 1988) or a slightly negative effect (Raymond 1985). They argue that expertise and skills are more important than the passage of time. For example, Raymond found that satisfaction increased where organizations developed and operated more applications in-house. Lees (1987) claims that expertise in the use of formal systems analysis, design and implementation procedures, through the employment of internal technical personnel and/or external consultants, backed up by extensive vendor support, is related to successful IS development in SBs. These results were mostly echoed by Montazemi, who also found that satisfaction increased when end users were computer literate. However, DeLone

argued that it was the expertise and knowledge of the chief executive that was important. He also advocated increased attention to the coordination of planning and control over computers, a skill that is often lacking in SBs (Stair, Crittenden and Crittenden 1989).

5. FACTORS INFLUENCING THE DECISION TO ADOPT IT

One result of the increased experience can be seen in the larger number of factors prompting the initial decision to acquire a microcomputer (Table 4). Respondents expected to have information available on actual production costs and details of sales and customers. In most cases, they expected IT to provide this essential management information not only both faster and when needed, but also in various formats, depending on the manager's decision making needs. Similarly, Farhoomand and Herveyk (1985) found that "information overload" was a key incentive to computerize. The increasing realization of IT's value as a productivity tool can be seen in our correspondents' increased emphasis on "time saving and coping with workload." This reflects two inherent problems of SBs: lack of in-house expertise for specific tasks and a continuous fight for survival in a competitive world. This can also be seen in the demands for improved stock control procedures and greater accuracy.

Table 5. Major Reservations (n = 50)

Reservations	1984 %	1989 %
None	40	54
Lack of computer experience	24	22
Software and hardware selection	36	20
Potential implementation problems	8	16
Cost	-	8
Adequate service	14	6
Other	8	20

Improved accounting procedures were mentioned less often, reflecting a realization that computers are much more than glorified adding machines. While accounting applications are still often among the first to be implemented, the benefits of other applications are becoming increasingly well known. The shift in expectations from staff reductions to other cost reductions also reflects the growing experience and maturity regarding IT.

A clear majority (54%) of the companies reported no reservations at all about the introduction of computers (Table 5), reflecting increased awareness and perceived improvements in the technology. Despite the general increase in experience, more than 20% of respondents still felt that a lack of computer experience remained a constraint. However, there was less concern with the problem of software and hardware selection, mostly as a result of improved access to information through consultancy, magazines, exhibitions, etc. However, this was less true in the case of smaller companies who typically cannot afford the services of an IT consultant and must rely on the personal efforts of the owner/manager. This is an extra burden on the owner/manager, who is usually a "jack of all trades" with very little time to explore the relatively new world of IT. Nevertheless, Heikkila, Saarinen and Saaksjarvi argue that software selection is still a key decision. They found that success was more likely where such users evaluated software packages in advance both to ensure that the package fitted the information requirements but also to consider aspects of usability and adaptability.

"Potential implementation problems" refers to fears concerning the changeover period, mostly due to perceived shortcomings in the existing (manual) system. The relatively unstructured way in which most SBs are managed (Yap 1989) can make such implementation a considerable problem. Worries over the cost of computerization are not surprising given the very limited investment funds typically available to SBs. This may also reflect increased experience, especially where past projects have exceeded their budgets. Another important fear (included in the "other" category) was the resistance to change expected mostly from older staff approaching retirement who may be reluc-

tant to learn new working practices. Our findings are mostly in line with those of other researchers. Apart from aspects of cost and lack of expertise, Gable and Raman (1992) also noted a belief among some CEOs of small businesses that IT was unnecessary for them, based on a lack of understanding of the benefits and the reluctance to pay for consultancy and software. Baker (1987) found that small businesses were constrained by a feeling that the technology was moving too fast, by a lack of knowledge about the technology, a lack of confidence in the claims of the vendors, and a mistrust of future vendor support.

One way of reducing such uncertainty is to carry out a formal feasibility study. It should be noted that the proportion of companies that performed a feasibility study, prior to the purchase and introduction of their first microcomputer, increased from 40% to 60%. In the light of the risks involved, it could be argued that such a proportion is still inadequate, but it does indicate that Greek SBs are taking a more systematic and professional attitude toward such important decisions. Only 30% of the respondents used outside consultants, which is partly due to a traditional reluctance of Greek managers (from both large and small companies) to pay for external services and a lack of appropriate consultants. Very few of the smaller SBs performed a feasibility study, due not only to the costs of hiring a specialist but, perhaps more importantly, because many of these managers had little understanding of the concept of a feasibility study. They preferred to base their decision on an informal exchange of ideas with other managers and whatever information they could discover through personal research into the IT market.

Although it was difficult to give a precise number of man-days spent in reaching the decision to purchase IT, only 16% spent less than a week, 26% spent two to three weeks, and 36% spent over three weeks (20% of respondents were unable to answer as they did not keep such records). By SB standards, this activity consumes a considerable amount of effort, especially on the part of the owner/manager, reflecting the uncertainties SBs face in computerization.

Table 6. Type of Advice Sought (n = 50)

Type of advice	1984 %	1989 %
Type of computer	86	52
Type of software	72	50
Staff training	44	44
Staffing the project	18	20
Company/job reorganization	2	18
Decide on the need	8	14
Other	0	20

Table 7. Obtaining Advice from External Organizations (n = 50)

Source of advice	1984 %	1989 %
Software houses	20	50
Hardware suppliers	84	44
Outside consultants	18	28
Neighboring companies	36	16
Training companies	0	6
Support organizations	0	6
Other	22	12

6. ADVICE RECEIVED

SBs still actively sought advice on the selection of hardware and software (Table 6), although to a much lesser extent than before. The reduction doubtless reflects again the increased experience and greater availability of information. It is encouraging to see an increasing demand for advice on non-technological aspects, such as the potential company/job reorganization that may arise with the introduction of new technology. There seemed to be a growing realization that IT can have a considerable impact on all aspects of the working and social environment, including the non-automated and informal components (Liebenau and Backhouse 1990). These results suggest that many SB managers are beginning to take computerization seriously.

There was still a high demand for advice about training and other staffing issues, as staff and skill availability can constrain SBs in their attempts to change the way they work. In most cases, the manager has little time to develop yet another skill and it may not be possible to free key employees from their current jobs without risking the smooth operation of the business. Advice on training mainly concerned "what" training should be given and "by whom." The importance of training can be seen where, for example, a new word processor is introduced and the secretaries are insufficiently trained. Their lack of knowledge and confidence may cause a significant loss of

job satisfaction such that they resign, throwing the central administration of the business into chaos. "Deciding on the need" for IT applied particularly to those SBs where quality of customer service was highly valued and such companies were concerned about the loss of personal service.

The high percentage of "other" advice covers two very recent trends. The first concerns the growth in IT other than computers, including telephones, fax machines, photocopiers, typewriters and calculators, in addition to data communications networks and production technology. The second concerns advice that does not involve the use of IT; for example, the redesign of paper forms or changes in the structure or operating procedures may significantly improve the operation of a company's manual systems.

An SB typically cannot afford to hire an independent IT expert/consultant, leaving the responsibility for the analysis and design of information systems with the owner or senior manager. Understanding the problems involved in these tasks and finding appropriate solutions represent a considerable responsibility. Many SBs rely on their IT suppliers (Table 7), believing that they possessed the necessary expertise. This belief can often be misplaced as suppliers frequently lack the independence and the understanding of the user's business that are crucial to successful analysis and design.

Table 8. Number of Staff Involved in the Project Phases (n = 50)

Staff involved	Decision		Selection		Implementation	
	1984	1989	1984	1989	1984	1989
Manager/owner	54	33	47	25	31	16
Accountant	7	12	8	13	20	10
Other	24	8	14	10	34	26
Total	85	53	69	48	85	52

As can be seen from Table 7, software houses, which grew quickly in Greece during the second half of the 1980s, replaced hardware suppliers as the main external source of advice. The use of outside consultants has increased but remains relatively low.

Frankenhuis (1977) found that organizations hired consultants not only because of a lack of expertise but because they also valued an independent view and may well have been looking for staff savings. While many consultants are both knowledgeable and reputable, SBs are concerned not only about the cost and competence of consultants but also the dangers of becoming dependent upon them. Furthermore, for many owners/managers of SBs, calling in a consultant is perceived as an admission of personal failure and lack of competence. Similarly, Gable (1989) found that clients were typically worried about consultants' lack of commitment and experience, their unsystematic approach and their inadequate appraisal of suppliers. He warns of the misconceived views clients had of the role of consultants, including the belief that the client merely had either to provide information or terms of reference to the consultant for a solution to appear miraculously. This extreme reliance on consultants is bound to lead to failure (see also Lees and Lees 1987). Raymond also notes that consultants are not always the answer.

The increasing availability of professional advice seemed to have led to a decline in the popularity of the more informal advice from neighboring companies. The limited role of training companies and support organizations (such as chambers of commerce, professional associations, and public bodies) in providing a significant level of real assistance should be noted. The latter agencies do offer limited IT advisory services, although many SBs appeared to be unaware of the existence of such services. Elsewhere such schemes seem to be more successful; Gable and Raman discuss the success of a Singapore government scheme to support the introduction of IT into SBs.

In general, fewer companies were satisfied with the advice provided, with the proportion satisfied falling from 72% to 53%. This may be because increased experience has led to higher expectations. The reasons most often mentioned for dissatisfaction were "misunderstanding of real needs" and "incompetence of suppliers." In one case, this resulted in an unacceptable delay costing the user company several

million drachmas. It was only due to the owner/manager's convictions regarding the benefits of IT, together with the effective organizational structure of the company, that the IT plan survived. However, there appeared to be a higher rate of satisfaction with external consultants and software houses, especially when the SB was relatively experienced. In these cases, the users were able to formulate their questions better, as well as gaining greater insight from the advice received.

7. STAFF INVOLVEMENT IN IS DEVELOPMENT

In addition to the external advisors, the fifty respondents were asked how many user staff (including managers and owners) were involved in the three main phases of the project (Table 8): decision, selection and implementation. As can be seen, in the firms surveyed, fewer staff were involved in each phase compared to the 1984 study. This was partly because of the increasing use of external professionals.

The decision phase includes identifying possible areas for improvement, assessing the potential for using microcomputers in the company and evaluating associated costs/benefits and acceptability to staff. Managers/owners continued to dominate this stage but there were an increasing number of accountants involved. Many applications are in the accounting area and accountants are becoming increasingly expert in the use of IT. Compared to the earlier study, fewer other employees were involved in this stage because of the increased use of external advisors, an increased awareness of IT's importance and the increased knowledge of managers. Of the staff involved in this stage, 58% possessed some background knowledge, compared to 15% in 1984.

The selection phase includes tasks such as agreeing on company requirements, reviewing products/suppliers in the market place, and negotiating the final contract. This is a time-consuming process and hence the reduction in managerial involvement is understandable. Accountants still played an important role, linked to their expertise in contracts and contract terms. Although fewer staff in total were involved in this phase (compared to 1984), there was an increase in the proportion with background knowledge/training (from 15% to 55%).

Table 9. Major Problems Encountered (n = 50)

Problem	1984 %	1989 %
Insufficient training	14	28
Power failures	8	22
Supplier incompetence	34	20
Staff	8	16
Software	2	8
Hardware	12	2
Other	22	4

The implementation phase encompasses all those activities required after the major programming or package installation. Typically, it includes the set-up and conversion of files, testing and verification of new systems, changes to clerical procedures, and staff training. There was a reduction in the proportion of managers/owners involved, but managers from one-third of the companies still managed to devote part of their scarce time to these activities. In some cases, this resulted in a delay to the completion of the project because the owner/manager "could not find the time to supervise it." In general, there was less involvement by top management except where the owner had been heavily involved from the beginning.

Senior managers/owners play a uniquely important part in the running of the smaller business and their personal influence has a much wider impact than their counterparts in large firms. In the absence of other managers or armies of administrators, the chief executive of a SB may well be the main information user and decision maker and he/she needs to be directly involved in computerization. DeLone found that the key factor for successful computerization was the chief executive's familiarity and involvement with IT and thus the reduction in involvement by our respondents may give reason for concern. DeLone argues that there is no substitute for the executive's knowledge of the business and his/her understanding of where computerization will achieve the greatest benefit. This is because care has to be taken to ensure that the model built into the IS is a sound reflection of the owner/manager's "real world." In Borovits and Neumann's (1988) case study, they attribute the success to the commitment of top management, high levels of user involvement (especially at the design stage), an evolutionary approach to development, and a concern with managing the change to avoid employee resistance. All of these factors are closely related to the personal involvement of senior management.

Gable (1991) found that, where consultants were employed by small firms, the involvement of managers from the firms was the key to successful projects. In his studies, the hours of client involvement ranged from 35 to 300 hours. He argues that SB owners should accept the responsibility for directing projects rather than relying excessively on the consultants. Montazemi found that user involvement was

likely to improve the prospects of developing a successful system in an SB although DeLone concluded that success was not related to high levels of employee acceptance.

On the other hand, managers of SBs must be careful to avoid investing too much of their time in setting-up complex systems that may only produce a marginal benefit. Such a trade-off can only be managed sensibly where owners/managers have a high level of awareness and confidence in the technology. Martin (1989) identified five markedly different involvement patterns among top managers of small firms. Involvement increases from complete non-involvement (level 1), through goal-setting (level 2), close involvement in implementation (level 3), and direct involvement in development — e.g., programming — (level 4), up to the top level of routine "hands-on" interaction with the technology. We found examples of all levels of involvement but the majority of our managers (about 60%) belonged to level 2, where they were involved only in a managerial capacity, identifying goals and setting targets.

8. PROBLEMS ENCOUNTERED AND SOLUTIONS

Training is now recognized as the major problem (Table 9), with training provided by suppliers being recognized by many respondents as inadequate. This was followed by electrical power failures, which was rather surprising as it is a problem more often associated with less developed countries. Many companies had installed special devices to allow systems to continue working long enough to save the necessary data.

Supplier incompetence, which was perceived as a lesser problem than in 1984, ranged from inability to determine the necessary machine capacity to inability to understand the user's procedures. Staff problems related to perceived job threats through a lack of confidence in the new technology. Software problems included programming errors, complex programs that were difficult to use, and poor documentation. Many of these problems resulted from the inability of the developer to comprehend the problem in hand or their ignorance of the user's business. Many SBs believed that, since their procedures and goals differ from

other (especially larger) businesses, an understanding of both SBs and the industry sector is imperative. This seems to be increasingly recognized by the software houses, a number of which have set up special departments for specific sectors. There was a significant reduction in hardware and other problems.

It should be noted that many of the companies which had the most difficulties with these problems had not performed any form of feasibility study and had not sought any external advice. Some had no software support or hardware maintenance contracts, which intensified the impact of the problems. It seems essential for Greek SBs to understand the need for support in this area. Without sufficient expertise within the firm, the "in-house" policy followed by many SBs resulted in bigger problems.

When asked about ways in which these problems could have been avoided, the most popular suggestions included improved staff training, a more detailed feasibility study, a more careful choice of suppliers, and the clarification of suppliers' responsibilities. The fact that very few mentioned "seeking independent advice" serves to underline the deeply ingrained inhouse attitude of many Greek SBs and the lack of appropriate consultants and related advice-giving organizations. Heikkila, Saarinen and Saaksjarvi also mentioned the problems of inadequate training and support from suppliers, but remarked that a need for extensive training may be indicative of a fundamentally poor package. DeLone found that success was not related to the amount of employee training, nor to the level of external support provided. Nazem (1990) found that most small business users in the United States were fairly satisfied with packaged software in spite of the inadequate support and training provided.

9. CONCLUSION

As in most European countries, SBs are now crucial to the national economic health of Greece but it is widely recognized that SBs have particular problems and opportunities in using information technology. This study has highlighted the trends within Greece, trends likely to be typical of other small European countries (Cornford and Whitley 1991, Heikkila, Saarinen and Saaksjarvi 1991). Furthermore, in today's global information services environment, it is useful to understand the environment for computerization within the less developed, small economies that are characterized by small businesses.

Our survey showed a number of changes since the earlier study in 1984. In general, there was an increased experience and awareness of IT among SBs. This increased maturity was visible both in a greater general level of confidence as well as an awareness of the non-technical problems associated with IT. This suggests that many owners/managers have passed the stage of fascination/terror with the technology and are now actively implementing useful systems. There was an increased use of feasibility studies and external consultants, although the public support

organizations seemed to have had little impact. Software houses have become very important to the SB sector, in terms of providing advice and training as well as the software itself. As expected, the attitude of the managers of SBs was somewhat different than that of large organizations. Doukidis, Smithson and Naoum (1992) show that the main preoccupation of IS managers from larger organizations in Greece surrounds issues of strategic management rather than technology management.

Training seems to be the major problem with many respondents expressing dissatisfaction with the training provided by vendors. Similarly, there was a decline in the proportion of respondents satisfied with the advice obtained. In addition, difficulties with electrical power failures and relationships with suppliers give cause for concern. Perhaps more serious is the lower proportion of owners/managers involved in computerization compared to the earlier study. The fact that the samples were different and not sufficiently large to provide conclusive evidence should not dispel these worries. In general, this situation can be summarized as one full of potential but requiring further professional support.

As a postscript, the results reported here have provided input to a project (Doukidis and Karakoulas 1992; Whitley, Poulymenakou and Cornford 1991) to develop knowledge-based tools to assist the manager and/or employees responsible for IT within an SB in understanding the problem of IT planning and formulating IT needs in concert with their business priorities.

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