Determinants of Microcomputer Usage in the Republic of Ireland

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This study reports the current status of microcomputer usage and focuses on the relationships between microcomputer usage and certain demographic variables, training, computer experience, user participation, organizational support, task characteristics, and perceptions about microcomputers. It investigates daily microcomputer usage through the following indicators: frequency of use, time of use, number of software packages used, and number of tasks for which the system was used.

Microcomputing in the United States, Taiwan, Israel, Ireland

Microcomputer usage has been investigated intensively in the United States and other developed countries. Igbaria, Pavri, and Huff (1989) looked at microcomputer use in the United States and reported that usage there was related to computer experience and anxiety about its impact. They also reported a significant relationship between computer training and microcomputer usage. In studying microcomputing in Taiwan, Igbaria (1992) reported that significant positive correlations exist between computer experience, user training, management support, and attitudes; and negative correlations exist between task complexity and microcomputer usage. In a study comparing end user computing in the United States and Israel, Ein–Dor and Segev (1992) found no statistical differences between types of software packages used, location of data, and mix of proprietary and commercial software packages. They suggested that organizational size, data processing resources, top management use, and user needs are closely associated with microcomputer usage; however, they noted the need to study personal attitudes and needs as reasons for adopting end–user computing.

In the Republic of Ireland, where there are some 43,000 small businesses (less than 50 employees) (Young, 1990), the top 1,000 companies (by turnover) includes fewer than 100 firms with more than 500 employees. (Business and Finance Top 1000, 1993) A recent survey of Irish businesses (Williams, 1993) reported that 97 percent of organizations using computers use microcomputers, 9 percent use mainframes and 63 percent use minicomputers. In spite of the fact that many firms in Ireland start computing with microcomputers, Irish Computing reported that key issues in information systems management in Ireland are similar to those reported in other parts of the world. The 300 MIS managers surveyed reported that facilitating and managing end–user computing ranked ninth in the top ten issues (Liston, 1991).

Surveys conducted semiannually by the Irish Computing Association show that "... users are much more computer literate and therefore take a much more active part in guiding and directing of all data processing activity" (Computer Users Survey, 1993, p. 44). Irish Computing also reports a move to local area networks in the national government. A recent

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survey also shows a decrease in the number of civil servants per computer screen from nine to three and one-half per screen (Stern, 1991). The government is taking steps to network rural areas as well as the cities.

Further, many U.S. firms have established subsidiaries in Ireland because of its location within the European Community, its well-educated labor pool, and the tax advantages offered. Nearly 80 foreign software companies have their European base of operations in the Republic of Ireland. (Business Outlook Abroad: Ireland, 1990) The software industry represents a large percentage of the Irish GNP and the role of computing is growing even though Ireland is a relatively small country of 3.5 million people.

Survey Format and Organizational Profiles
Study data were obtained from a sampling from microcomputer users within 15 organizations in Ireland. The questionnaire used was developed by Igbaria (1992) and was modified slightly to reflect Irish culture, educational levels, and degrees.

The Executive Information Systems Research Centre, University College Cork, provided names of individuals in organizations using microcomputers who were willing to assist with the study. Key individuals in those firms distributed the questionnaires to microcomputer users in their organizations. They also collected and returned the completed questionnaires to the researcher. Of the 15 firms originally contacted, thirteen participated. Of 80 questionnaires delivered, seventy–two (90%) were returned usable.

The organizations in the study include merchandising, finance, wholesale, manufacturing, utilities, and education. Since they represent about 70 percent of the categories of the Irish labor force, (Bradley, Fitzgerald, and McCoy, 1991) these organizations make up a representative cross section of Irish business. Of the 13 organizations participating in the study, six rank in the top 1,000 Irish firms.

Forty–seven of the respondents were men and twenty–seven were women. Their average age was 28 years. They held supervisory, managerial, and professional staff positions in a variety of functional areas. Those classified as non–managerial professional consisted of professional personnel and clerical staff and comprised 65 percent of the sample. The supervisory and managerial personnel (35%) were classified as management in the data analysis. The respondents were about equally divided among four functional areas: accounting and finance (24%), general management (39%), production and operations (29%), technical including management information systems, engineering and research and development (25%).

Study Variables
The four indicators of microcomputer usage included in the questionnaire were frequency of microcomputer use, actual daily use, number of packages used, and numbers of tasks for which the microcomputer is used. Respondents indicated the amount of time spent on microcomputers on an average day using a six–point scale ranging from "almost never" to "more than 3 hours per day." They indicated frequency of use by indicating on a six–point scale ranging from "less than once a month" to "several times a day." To ascertain the number of software packages and tasks performed using them, participants were asked to indicate their usage of software packages and tasks performed using a 5–point scale ranging from "not at all" to a "great extent." The list of software packages included ten generic packages such as spreadsheet, data management, communications or electronic mail, and word processing. The task list consisted of eight business–related tasks including looking for trends, making decisions, planning, and communicating with others.

The independent variables include demographic variables: age, sex, education, and organizational level. Computer experience, user participation, training, organizational support, task characteristics, and perceptions about computers were also included as independent variables.

Computer experience was measured by six statements regarding software packages, languages, and systems analysis which required respondents to indicate their level of experience from none to extensive. A total of the points was used as an overall index of computer experience.

User participation included eight items in which respondents were asked to indicate the amount of time they participated in various developmental activities for computer–based information systems. The scale was a six–point Likert–type with not at all (1) to a great deal (6). Factor analysis revealed a single factor which accounted for 77 percent of the total variance, which was used as an overall index of user participation.

Computer training was measured with a five–point Likert–type scale on four items related to the type of training respondents had received. Factor analysis (with varimax rotation) produced two factors with eigenvalues greater than one which accounted for 65 percent of the total variance. The first factor, labeled informal training, included vendor or outside consultant training and self study. The second factor, labeled formal training, included college courses and in–house company training.

Organizational support was measured by an eight item Likert–type scale on statements related to two broad categories of support: application development and general management support. Factor analysis (with varimax rotation) indicated two factors with eigenvalues more than one which accounted for 61 percent of the variance. Factor one included three items which described general management support of MIS, while the remaining five items described management support for individual end–user computing.

User satisfaction was the twelve–item scale developed by Doll and Torkzadeh. (1988) Although the use of the scale has been debated, it continues to be generally viewed as a reliable measure of overall user satisfaction with information
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