

## PERSONAL COMPUTER COMPETENCIES OF MARKETING STUDENTS: AN EMPIRICAL STUDY

Michael L. Boorum and Arthur Saltzman, Department of Marketing, California State University - San Bernardino, 5500 University Parkway, San Bernardino, CA 92407-2397 (909 880-5777)

### ABSTRACT

Descriptive studies detailing current business executives' personal computer competencies and related educational studies prescribing competencies required to adequately prepare students for the business environment are reviewed. An empirical study of 234 business students (74 marketing majors and 160 other business majors) assesses student skill level in utilizing eight functional types of software, e.g., word processing, spreadsheets, statistics, and communication (email) software. Results indicate students are most proficient in word processing, adequately knowledgeable of spreadsheets and business simulations, and deficient in the use of statistical packages and communication software.

### INTRODUCTION

A desired outcome of any marketing program is to adequately develop student computer competencies and prepare students to enter the business world with requisite skill and knowledge of a variety of software applications. Miller (1985) recommends classroom microcomputer usage in order to strengthen student employment potential and to support marketing educators in their presentation of complex decision-making techniques that are more easily demonstrated with commercially available software. Further, Dyer (1987) encourages the total integration of personal computers into the marketing curriculum to develop student knowledge and application of decision support software.

Reinforcing the importance of student computer proficiency, the *Marketing News* (1985) reports that 70% of marketing professionals use computers to execute at least one software application; Sherwood and Nordstrom (1986) find entry-level marketing personnel spend 23% of their time interfacing with a computer; and Rogers, Williams and McLeod (1990) discover 75% of respondent companies utilize microcomputers or desk-top stations (rather than

mainframes and company specific programs) that access commercially available software, e.g., word processing, spreadsheet, electronic mail and data base management, in their marketing departments. Rogers, Williams and McLeod (1990, p. 20) advocate, "...colleges of business should be exposing marketing students to micros and to specific software packages that will be necessary in pursuing a career in marketing."

Given these findings and recommendations, a search was conducted to discover the current state of business student computer usage and their skill level in executing software packages. Although several studies report institutional responses (key informants are deans, chairs or faculty) about courses requiring computer usage (Kurtz and Boone 1987; White and Righi 1991; Novitzki 1993), only one study by Geissler and Horridge (1993) surveys students about their computer skills, and these researchers find business students self-report higher levels of knowledge of computer functions and program writing than arts and science students. However, students were not surveyed about knowledge of specific functional software such as spreadsheets and statistics.

Surprisingly, insufficient information exists to evaluate the progress business schools and marketing departments have achieved in cultivating and developing the personal computer competencies of students. In order to assess the current status of student computer skills, an empirical study was executed to determine personal computer usage and knowledge of functional software packages.

### METHODOLOGY

**Institutional Characteristics :** A limitation of this study is the use of a sample from a single school of business. However, whereas other studies sampled non-student key informants at a small number of schools, this study utilizes students as respondents. All majors are

required to take information science courses to acquire word processing, spreadsheet and data base skills, and marketing students utilize statistical software in marketing research and spreadsheets in marketing strategy. In conclusion, sample levels of computer usage and proficiency in utilizing software may be indicative of general trends in student computer competencies, and, at least, the levels can be used for comparative purposes as other schools evaluate their students' computer competencies.

**Measures . Computer Usage :** Students were asked to self-report: (1) how frequently they utilized personal computers, (2) what percentage of their personal computer use could be attributed to school work, and (3) the duration (in minutes) of their last use of a school lab personal computer.

**Software Competencies :** Categories of functional programs were selected after reviewing business and computer education literature (Dyer 1987; Rogers, Williams and McLeod 1990; White and Righi 1991). From software identified in these studies, students were asked to self-report their competency on eight categories of software: (1) spreadsheet, (2) statistical, (3) graphics, (4) database, (5) business strategy simulations, (6) word processing, (7) programming language, and (8) communications (electronic mail). For each software category, any students who had never attempted to use that specific software were deleted and only students who had experience with the software were analyzed. From a review of computer literature, a scale assessing the competencies of personal computer user group members was used to measure student competencies. For purposes of this paper, the five-point scale was collapsed to a three-point scale because student proficiencies do not vary as widely as the more expert computer users (1-failed or needed extensive help, 2-reasonably knowledgeable, 3-very knowledgeable or proficient) was used to measure the degree of student proficiency.

**Sample :** Intercept interviews were completed as business majors entered school computer labs and yielded 234 usable questionnaires. Respondents included 74 marketing majors and

160 non-marketing business majors. Additionally, subjects reported an average of 5.7 years experience in using personal computers and 61% of subjects own a personal computer.

## RESULTS

Analysis of computer usage frequencies (Table 1) reveals that 34% of students report daily personal computer usage and 87% use a personal computer at least once a week. Further, the average time a student uses a school lab computer is 97 minutes. Obviously, personal computer usage has become a routine weekly task and consumes a substantial amount of student study time. However, of the 72% of personal computer usage attributed to school purposes, the bulk of student personal computer usage involves word processing assignments (45%) with little usage allocated for all other computer applications (27%). Apparently, students spend more time and effort accomplishing assignments requiring word processing skill than assignments necessitating use of any types of specialized software.

**TABLE 1 COMPUTER USAGE**

| How Often Do Use A PC?     | Freq      | %           |
|----------------------------|-----------|-------------|
| once a day or more often   | 82        | 35.0        |
| once a wk/few times per wk | 123       | 52.5        |
| once a month or less often | <u>29</u> | <u>12.5</u> |
| totals                     | 234       | 100.0       |

Percent PC Used for School Work? (avg) 72%  
 Excluding Word Processing, Percentage PC  
 Used for School Work? (avg) 27%  
 When using school lab pc, time duration?  
 (avg) 97 minutes

Reinforcing the dominance of word processing use, more students report trying and successfully operating word processing software than any other type of software (Table 2). Astonishingly, only 14 students had *not* used word processing, and 98% (216) of students report they are "reasonably knowledgeable" to "very knowledgeable" of word processing software. Students indicate similar levels of proficiency in three other types of functional software: spreadsheets, 85%;

graphics, 65%; and data base management 65%. All four types of software are taught in the required core course and software exposure in this course may account for higher competency ratings and usage by students.

**TABLE2 SOFTWARE COMPETENCIES**

**A. Spreadsheets**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 9          | 22            | 15%      |
| Reasonably      | Knowledge             | 41         | 81            | 60%      |
| Proficient      |                       | 14         | 37            | 25%      |

**B. Statistical Package**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 20         | 20            | 45%      |
| Reasonably      | Knowledge             | 9          | 34            | 48%      |
| Proficient      |                       | 2          | 4             | 7%       |

**C. Graphics**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 19         | 45            | 35%      |
| Reasonably      | Knowledge             | 25         | 56            | 44%      |
| Proficient      |                       | 13         | 25            | 21%      |

**D. Database**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 17         | 44            | 35%      |
| Reasonably      | Knowledge             | 32         | 52            | 48%      |
| Proficient      |                       | 6          | 25            | 17%      |

**E. Business Simulations**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 9          | 19            | 30%      |
| Reasonably      | Knowledge             | 21         | 31            | 55%      |
| Proficient      |                       | 4          | 10            | 15%      |

**F. Word Processing**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 1          | 3             | 2%       |
| Reasonably      | Knowledge             | 26         | 41            | 30%      |
| Proficient      |                       | 44         | 105           | 68%      |

**G. Programming Language**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 20         | 44            | 45%      |
| Reasonably      | Knowledge             | 20         | 33            | 38%      |
| proficient      |                       | 5          | 19            | 17%      |

**H. Communications**

| <u>students</u> | <u>tried software</u> | <u>mkt</u> | <u>others</u> | <u>%</u> |
|-----------------|-----------------------|------------|---------------|----------|
| Failed/need     | lots help             | 11         | 24            | 39%      |
| Reasonably      | Knowledge             | 17         | 20            | 41%      |
| proficient      |                       | 5          | 13            | 20%      |

Students display lesser knowledge of the remaining four types of software. When exposed to business simulations, probably in a senior class strategy or policy course, 75% of students exhibit reasonable knowledge of the software; however, 140 (60%) students had not yet experienced or used business simulations. Also, most students (144, 62%) had not utilized communications software such as electronic mail, information searches or on-line services. Not surprisingly, students demonstrate the least knowledge of programming language and statistical packages with 45% of students reporting "failure or need of considerable help" with both types of software.

Students with different majors exhibit very similar patterns of competency ratings and no significant differences among majors were detected (given differences in total numbers of majors) with one exception. Of import to marketing educators, 64% of marketing majors describe failure with statistical packages, a higher rate of failure than by other majors.

**DISCUSSION**

Results indicate that student usage of personal computers has become commonplace, daily or weekly use is the norm, and such usage signifies personal computers are powerful catalysts that enhance student learning. Further, students expend substantial time in school labs to execute software applications required for class assignments. Overall, students have adequate exposure to word processing, graphics, spreadsheets and data base software, but student familiarization with business simulations, statistics, programming and communication software is limited.

Logically, students acquire the greatest proficiency in software they use often; therefore, high usage and great proficiency result with word processing software because word processing is applicable to virtually all courses

and assignments. Spreadsheets, as financial analysis software, are used in several business courses to facilitate decision-making activities, and students are satisfactorily knowledgeable about spreadsheet software execution. More specialized software such as statistical applications are required in very few courses so students develop little proficiency in their execution. Results of the current study support the direct relationship between usage and proficiency, and this relationship suggests that students will acquire greater software proficiency when more courses and/or assignments prescribe its application.

Substantial investment in school computer labs has been justified to provide facilities to develop student competencies in software more sophisticated and specialized than word processing. Competencies in decision support software identified (Sherwood and Nordstrom 1986, Rogers, Williams and McLeod 1990) as crucial for entry level employment and managerial advancement must be taught and assignments required in as many courses as possible. Otherwise, computer labs become high priced "personal typing labs" with students acquiring little skill in more specialized software.

Study findings reinforce the propositions advocated by Dyer (1987) that specific software competencies should be identified by marketing faculty, and incorporated into as many relevant courses as possible, e.g., software used to execute statistical techniques in marketing research courses. Importantly, curriculum changes need not be implemented, only the instructional tools are updated and adapted. In other words, "what is taught" does not change, only the "method of teaching" changes. Novitzki (1991) found that some schools have fully integrated the business curricula by using application software to provide analyses and information necessary to understand course assignments with the result that, "this approach produced significantly improved case and project performance by students" (p. 460).

### CONCLUSION

The real challenge facing marketing and business faculty is integrating computer usage

and software into the total curriculum in order to maximize student learning and to insure students acquire competencies needed in the marketplace. When students master software applications, their ability to understand and accomplish educational and business tasks is strengthened.

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