

**End - User Computing Usage By Kuwaiti**

**Managers :**

**The Role Of Individual Characteristics.**

**Dr. Adel M . Al - Adwani**

**End-user Computing Usage  
by Kuwaiti Managers:  
The Role of Individual Characteristics**



**\*Adel M. Al - Adwani**

**Abstract**

This study investigates the use of EUC among Kuwaiti managers. We develop and test a model that links four individual characteristics, i.e., age, gender, training, and computer anxiety, to three measures of EUC usage, i.e., frequency of use, time of use, and number of tasks. The results indicate that there are differential impacts for the four individual characteristics on the three measures of EUC usage. More specifically, we found that computer anxiety is negatively related to frequency and time of use; age is negatively related to frequency of use, time of use, and computer anxiety; gender is negatively related to number of tasks; and training is negatively related to computer anxiety and positively related to the number of tasks. Implications of the findings are discussed.

**Key Words:** Kuwaiti managers, information systems, end-user computing, individual characteristics, and computer usage

**Introduction & Background**

Many organizations are convinced that End-User Computing (EUC), which refers to the activities associated with the employ-

---

\* Department of QM & IS, College of Administrative Sciences, Kuwait University.

ment of computer resources to facilitate job-related tasks and responsibilities (Sipior and Sanders, 1989), is critical for the efficient and efficient performance of their supervisory and professional staff. This is evidenced by the wide assimilation of EUC technologies by many of these organizations (Blili, Raymond, and Ward, 1998, Gefen and Straub, 1997). However, the rate of adoption by individual workers and especially managers has tended to fall behind the rate of EUC adoption by their employing organizations (Abdul-Gader and Kozar, 1995). Therefore, studying what influences a manager's decision to use or not to use EUC is an important research issue.

The decision of an individual to use or not to use EUC technology is a complex phenomenon. Therefore, the measurement of this construct is expected to be multidimensional in nature (Torkzadeh, 1998). In general, there is a widespread agreement among researchers to treat EUC usage as a multifaceted construct that encompasses three major dimensions: frequency of use, duration of use, and number of tasks (e.g., Delone, 1988, Lee, 1989, Barua, Pavri, and Huff, 1989, Keil, Beranek, and Konsynski, Raymond, 1985, Straub, Keil, and Brenner, 1997). Frequency of use refers to the number of times a user interacts with the computer. Duration of use refers to the amount of time spent with the computer in a given day. Number of tasks refers to the number of business tasks involving the use of computers.

The leading works of Dickson, Senn, and Chervany (1977), Parasuraman (1981), Mason and Mitroff (1973), and Zmud (1979) suggest that understanding individual characteristics is critical for understanding EUC usage.

standing information systems success. Since the appearance of these publications, many empirical investigations have attempted to link individual variables to the success of many information systems phenomena. Recently, there has been a substantial effort to study individual variables in the context of EUC (e.g., Al-Jabri and Al-Khaldi, 1997, And and Koh, 1997, Bajaj and Nidumolu, 1998, Gefen and Straub, 1997, Guimaraes and Igbaria, 1997, Igbaria, 1993, Igbaria et al., 1989, Wilkins, 1996). Despite its importance, previous research was generally based on surveys of students or based on non-managerial samples (sometimes pooled with managerial samples). Since some researchers (e.g., Igbaria et al., 1989) have suggested that usage could differ depending on organizational level, there is a need to examine the relationship between individual characteristics and EUC usage among managers.

A number of empirical EUC studies have focused on the role of individual characteristics, such as user computer anxiety, user age, user gender, and user training, in EUC success (e.g., Abdul-Gager and Kozar, 1995, Al-Jabri and Al-Khaldi, 1997, Gefen and Straub, 1997, Guimaraes and Igbaria, 1997, Igbaria, 1993, Igbaria et al., 1989, Wilkins, 1996).

Information systems researchers have made certain effort to investigate the relationship between computer anxiety and EUC usage. This is largely because computer anxiety is a good predictor of EUC usage (Al-Jabri and Al-Khaldi, 1997). Based on data collected from one hundred and eighty-seven part-time MBA students in the United States, Guimaraes and Igbaria (1997, p. 8) report a negative relationship between anxiety and the amount of time spent

with computers. Moreover, in a study of four hundred and seven managers and professionals in North America, Igbaria (1989, p. 193) report a negative relationship between computer anxiety and the duration of daily computer use, frequency of use categories, number of packages, and sophistication of use. Nevertheless, Wilkins (1996, p. 7) found no relationship between computer anxiety and frequency of use, time of use, number of packages, and number of tasks.

Many information systems researchers maintain that older users view computers unfavorably. Igbaria's (1993, p. 85) study of one hundred and nineteen users from North America reveals that older computer users exerted negative intentions to system use and lower acceptance of EUC technology. Guimaraes and Igbaria (1997) report that user age is negatively related to both utilization categories and system usage.

Khalil and Elkordy's (1997, p. 30) study, which is based on responses from one hundred and twenty users in twenty-two Egyptian banks, reveals that age is negatively associated with system usage. However, in a study of seventy-two managers and professionals working in thirteen Irish organizations, Wilkins (1997) reports no relationship between age and number of tasks, number of software packages, frequency of use, and time of use.

Some researchers suggest that there are differences between male and female users in terms of usage of computers. Harter and Rainer (1992, pp. 104-105) conclude that females are more pessimistic than males in computer-related activities. This has found some support by empirical research. Igbaria (1993, p.

for example, reports that female users generally show less EUC usage than male users. Moreover, Guimaraes and Igbaria (1997, p. 8) report that females show lower outcome in utilization categories. Wilkins (1996, p. 5) concludes that males perform more tasks using computers than females. However, she reports no differences between males and females in number of packages used, in frequency of use, or in time of use. In addition, Igbaria et al. (1989, p. 193) found no support for the proposition that males and females differ in terms of computer usage.

User training is another important individual variable that received attention from EUC scholars. In a study of one hundred and thirty-six Saudi users of a computer-mediated communication system, Abdul-Gader (1996, p. 39) reports that proper training is one of the most important dimensions that may encourage or limit system use. Igbaria et al. (1989, p. 193) found a positive relationship between user training and time of use, frequency of use, use categories, number of packages, and sophistication of use. Moreover, Igbaria (1993, p. 85) reports a significant relationship between user training and EUC usage. Nonetheless, Wilkins (1996, p. 7) did not find an association between user training and number of tasks, frequency of use, and time of use.

Many information systems scholars subscribe to the view that EUC characteristics such as user age, gender, and training are associated with user computer anxiety (e.g., Al-Jabri and Al-Khaldi, 1997, Howard and Smith, 1986, Igbaria, 1993). Gefen and Straub (1997, p. 397) assert that attitudes toward technology use can differ between genders. The data reported by Harrison and Rainer (1992,

p. 104) reveal that females tend to show more negative attitudes toward computers than males. Nonetheless, Howard and (1986, p. 614) found no significant correlation between user age and computer anxiety using data from the United States.

Furthermore, Igbaria (1993, p. 85) reports a positive relationship between user age and computer anxiety. However, in a study of two hundred and thirty-eight Saudi business students, Al-Jab Al-Khaldi (1997, p. 18) found no support for this finding. Research has also shown that there is a relationship between user training and computer anxiety. Torkzadeh and Koufteros (1993, p. 10) conclude that user training leads to less negative reactions to computers. In the same vein, Igbaria (1993, p. 84) reports that training is negatively associated with computer anxiety.

## **Hypotheses**

Based on the above review and rationale, the present study attempts to examine the relationship between individual characteristics and EUC usage, i.e. frequency of use, duration of use, and number of tasks. Moreover, the present study tries to investigate the effect of age, gender, and training on computer anxiety of managers. Therefore, we make the following predictions:

H1a: Age will significantly influence frequency of use, duration of use, and number of tasks.

H1b: Gender will significantly influence frequency of use, duration of use, and number of tasks.

H1c: Training will significantly influence frequency of use, duration of use, and number of tasks.

H11d: Computer anxiety will significantly influence frequency of use, duration of use, and number of tasks.

H2a: Age will significantly influence computer anxiety.

H2b: Gender will significantly influence computer anxiety.

H2c: Training will significantly influence computer anxiety.

## **methodology**

### **-Sample**

The data for this study was collected by means of a questionnaire using a convenience sample of end-users with supervisory responsibilities. We used the convenience sample approach because a complete list of computer users was not available. The research assistants distributed questionnaires to a sample of managers working for sixty private and public organizations operating in the State of Kuwait. The target respondents in the organizations studied were managers who use EUC technology. The participating organizations cover a wide spectrum of work sectors in the country including government ministries, public agencies, banking, investment, oil, insurance, real estate, manufacturing, food, and general services sectors.

The research assistants distributed one hundred and fifty-eight questionnaires. All questionnaires were completed and returned. The high response-rate may give an indication that the research matter is of concern to participating managers. Of the one hundred and fifty-eight responding managers, one hundred and eighteen are males and thirty-seven are females. The gender question for three questionnaires is not answered. The average age of the respondents



is thirty-five years and the standard deviation is approximately ten years. Forty-two managers are accountants and financiers, twenty-four managers are engineers and information systems professionals, twenty-nine managers are human resources specialists and twenty-one managers are marketers. Twenty-two managers work in general management, public relations, research, etc. The job nature for the remaining of the sample is not specified. Table 1 summarizes the profile of respondents.

Table 1 Profile of respondents

|                  |                                                                                                                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Age              | Mean = 34.95 years<br>SD = 6.84 years<br>Range = 22-57                                                                                                                                                                    |
| Gender           | Males = 118 (74.7%)<br>Females = 37 (23.4%)<br>Unknown = 3 (1.9%)                                                                                                                                                         |
| Functional areas | Accountancy and finance = 42 (22.6%)<br>Engineering and IS = 34 (21.5%)<br>Personnel = 29 (18.4%)<br>Marketing = 21 (13.3%)<br>Other (general mgmt, public relations, research, etc.) = 22 (13.9%)<br>Unknown = 10 (6.3%) |

### Measures

Three indicators were used to tap EUC usage: frequency of use, time of use, and number of tasks (Cheney and Dickson, 1982, Delone, 1988, Igbaria et al., 1989, Lee, 1986, Raym

1985). Frequency of use was measured on a single item six-point scale: (1) "less than once a month", (2) "once a month", (3) "a few times a month", (4) "a few times a week", (5) "about once a day", and (6) "several times a day". Time of use was measured on a single item six-point scale: (1) "almost never", (2) "less than 1/2 hour a day", (3) "from 1/2 hour to 1 hour a day", (4) "1-2 hours a day", (5) "2-3 hours a day", (6) "more than 3 hours a day". A list of eight tasks (e.g., looking for trends, planning, budgeting, communicating with others, etc.) was given to the respondents to indicate whether they used EUC to perform these tasks. We adopted a use/no-use format for the purpose of our analysis. We summed the answers to the eight items to come up with an indicator for the last usage measure, number of tasks.

The predictor variables in this study include age, gender, training, and computer anxiety. Single item questions were used to ascertain participants, age, gender, and training. Gender of respondents was coded (0) for men and (1) for women. The respondents were asked to indicate the extent of self-training they had received using a five point scale:

(1) "no training" (2) "some training", (3) "regular training", (4) "extended training", and (5) "very extensive training".

The computer anxiety measure was developed by Raub (1981) and was used by Howard and Smith (1986) and Igbaria et al. (1989). The computer anxiety scale assesses an individual end-user's general anxiety, apprehension, confusion, hesitation, etc. in using computers. The measure asks the respondents to indicate their agreement with ten statements. Sample statements included

are: "I hesitate to use a computer for fear of making mistakes not correct," and "I feel apprehensive about using a computer response options were: (1) "strongly disagree", (2) "disagree", (3) "neutral", (4) "agree", and (5) "strongly agree". Factor analysis with varimax rotation on the ten items revealed two factors with eigenvalues of one or higher. Nevertheless, a second-order analysis produced one factor that explained 63.8 percent common variance.

Thus, we decided to average the ten items to come up with a general measure of computer anxiety. The cronbach alpha for the ten-item scale was .86.

## results

We used path analysis to test the proposed relationships. Path analysis is a regression-based technique that is widely used in research models that assume causal ordering (Duncan, 1966). Standardized betas are usually used to determine the strength and direction of relationships in the model. In our path analysis model, we postulated that user age, gender, and training could influence computer anxiety, which in turn could influence EUC usage. The reasoning for the suggested causal ordering was provided in the Introduction and Background section.

When using path analysis, it becomes imperative to have reliable scales and to assure the absence of a multicollinearity problem. We closely examined the reliability level of multi-item scales on our study and found that all reliabilities exceeded .7, which is considered adequate by most IS researchers standards.

also examined the intercorrelations matrix (Table 2) looking for a possible problem of multicollinearity. All intercorrelations among predictor variables (i.e., user age, gender, training, and anxiety) were less than .3. Billings and Wroten (1978) suggest that  $r$ 's  $> .8$  indicate a multicollinearity problem.

Table 2: Descriptive Statistics and Intercorrelations Matrix

|                  | Mean  | SD   | 1       | 2       | 3      | 4       | 5      | 6      | 7   |
|------------------|-------|------|---------|---------|--------|---------|--------|--------|-----|
| Age              | 34.95 | 6.84 | ---     |         |        |         |        |        |     |
| Gender           | ---   | ---  | -.25*** | ---     |        |         |        |        |     |
| Training         | 3.32  | 1.33 | -.04    | .01     | ---    |         |        |        |     |
| Anxiety          | 1.90  | .72  | -.14**  | .12*    | -.22** | ---     |        |        |     |
| Frequency of use | 5.58  | .87  | -.10    | -.06    | .18**  | -.32*** | ---    |        |     |
| Time of use      | 4.90  | 1.32 | -.13**  | .05     | .15**  | -.26*** | .63*** | ---    |     |
| Number of tasks  | 6.66  | 1.92 | .05     | -.24*** | .31*** | -.03    | .21*** | .22*** | --- |

\* =  $p < 0.10$ , \*\* =  $p < 0.05$ , \*\*\* =  $p < 0.01$  (one-tailed)

Table 3 presents the path analysis results for regressing frequency of use on individual characteristics. The findings reveal that computer anxiety (beta =  $-.34$ ,  $p < .01$ ) and user age (beta =  $-.15$ ,  $p < .10$ ) are significant correlates of frequency of use and explain 12 percent of the variance in the variable. Moreover, Table 3 shows that user training has the strongest direct effect on anxiety (beta =  $-.22$ ,  $p < .01$ ), next comes user age (beta =  $-.15$ ,  $p < .10$ ). The two

predictors of computer anxiety explain a significant proportion of its variance (Adjusted  $R^2 = .06$ ,  $p < .10$ )

Table 3: Direct and Indirect Effects of Individual Characteristics on Frequency of Use.

|                                  | Anxiety |     |        | Frequency of Use                 |      |      |     |
|----------------------------------|---------|-----|--------|----------------------------------|------|------|-----|
|                                  | D       | S   | r      | D                                | ID   | T    | S   |
| Age                              | -.15*   | .01 | -.14** | -.15*                            | .05  | -.10 | .00 |
| Gender                           | .09     | .03 | .12*   | -.07                             | -.03 | -.10 | .04 |
| Training                         | -.22*** | .00 | -.22** | .10                              | .07  | .17  | .01 |
| Anxiety                          |         |     |        | -.34***                          |      |      | .02 |
| Adjusted R <sup>2</sup> = .06*** |         |     |        | Adjusted R <sup>2</sup> = .12*** |      |      |     |

\* =  $p < 0.10$ , \*\* =  $p < 0.05$ , \*\*\* =  $p < 0.01$

D = Direct, ID = Indirect, T = Total, S = Spurious.

Table 4 reveals that only two individual characteristics have a significant influence on utilization categories (i.e., number of tasks). The strongest effects are those of user training (beta = -.25,  $p < .01$ ) and user gender (beta = -.25,  $p < .01$ ). The findings in Table 4 further show that computer anxiety (beta = -.29,  $p < .01$ ) and age (beta = -.17,  $p < .05$ ) are significant predictors of time of use. The antecedent variables in the number of tasks model and the time of use model explain 16 and 10 percent of the variance in the dependent variables, respectively.

Table 4: Direct and Indirect Effects of Individual Characteristics on Time of Use and Number of Tasks

|                                  | Time of Use |      |      |     |         | Number of Tasks                  |      |      |      |         |
|----------------------------------|-------------|------|------|-----|---------|----------------------------------|------|------|------|---------|
|                                  | D           | ID   | T    | S   | r       | D                                | ID   | T    | S    | r       |
| Age                              | -.17**      | .04  | -.13 | .00 | -.13**  | -.00                             | -.01 | -.01 | .06  | .03     |
| Gender                           | .04         | -.03 | .01  | .04 | .05     | -.25***                          | .00  | -.25 | .01  | -.24*** |
| Training                         | .03         | .06  | .14  | .01 | .15**   | .31***                           | -.01 | .30  | .01  | .31***  |
| Anxiety                          | -.23***     |      |      | .03 | -.26*** | .07                              |      |      | -.10 | -.03    |
| Adjusted R <sup>2</sup> = .10*** |             |      |      |     |         | Adjusted R <sup>2</sup> = .16*** |      |      |      |         |

\* =  $p < 0.10$ , \*\* =  $p < 0.05$ , \*\*\* =  $p < 0.01$

D = Direct, ID = Indirect, T = Total, S = Spurious.

To test the accuracy of the fit between the three hypothesized models and the observed data, we followed the suggestions of Duncan (1966) and compared the reconstructed correlations with the original correlations. The total of the direct and indirect effects of an exogenous variable on an endogenous variable is often called the reconstructed, reproduced, or estimated correlation. As the figures in tables 3 and 4 show, the reconstructed correlations duplicate the original correlations with no discrepancies suggesting a good fit between the hypothesized models and the observed data.

## **discussion And Conclusions**

The goal of this study was to examine the effects of individual characteristics, i.e., user age, gender, training, and computer anxiety, on EUC usage, i.e., frequency of use, time of use, number of business tasks involving computers use, among managers. The present study is pioneering in that it is the first to investigate these relationships in the context of Kuwait. The results of our investigation show moderate support for the hypothesized relationships. Our study suggests that individual characteristics of the users have some impact on their feelings and usage of end-user technologies.

User age is found to affect both frequency of use and daily time of use. Age was also found to affect frequency and time of use directly through computer anxiety. The negative effect of age on EUC usage is consistent with the findings of Igbaria (1989), Khalil and Elkordy (1997), and Lee (1986). A likely explanation for this finding may be that older managers prefer to get information needed for their work through information source other than computers (Khalil and Elkordy, 1997). Another possible interpretation is that older managers are likely to have less training than younger managers are.

User gender (coded as male = 0 and female = 1) is found to directly and negatively affect the number of tasks involving computer use. This result parallels the findings of Guimaraes and Igbaria (1997). A possible explanation is that women usually use fewer tasks (Guimaraes and Igbaria, 1997, Wilkins, 1996).

sample, male managers reported almost similar use of EUC in all business categories, whereas female managers used EUC particularly for looking for trends, planning, and controlling and guiding activities. User gender, however, did not directly influence frequency of use, time of use, or computer anxiety. This finding indicates that gender differences along these three variables that have been reported by some scholars may partially be attributed to other factors such as organizational level.

User training is found to influence the number of business tasks involving the use of computers. Training was also found to affect frequency of use and time of use indirectly through computer anxiety. More specifically, increased training is found to lead to a decrease in users' negative reactions toward computers (i.e., feelings of computer anxiety), which in turn cultivates both the frequency and time of EUC use. These findings corroborate the findings of Abdul-Gader (1996), Igarria (1993), Igarria et al. (1989), and Tokzadeh and Koufteros (1993).

Computer anxiety is also found to negatively affect perceived frequency of use and time of computer use in a given day. This result is consistent with the findings of past research, which reports that users with higher anxiety tend to spend less time with computers and to use computers less frequently (e.g., Igarria, 1993, Igarria et al., 1989). The implication of this finding is that inhibiting computer anxiety should be instrumental in encouraging the use of EUC technologies.



## Recommendations

Given the findings of the present study, we provide the following relevant recommendations:

1. We recommend that organizations establish training programs about the applications of emergent EUC technologies designed for older managers.
2. We recommend that organizations provide adequate training for their managers to increase their understanding of and proficiency in the use of EUC technologies and their uses.
3. We recommend that organizations design mechanisms to ameliorate managers' perceptions of EUC. Considering the significant effect of training on anxiety, improving managers' reactions to EUC can be made possible by means of training programs, organizational circulars, etc.

## Limitations

The present investigation has few limitations. In this study, we limited our attention to four individual characteristics—gender, age, training, and computer anxiety. In future research, we suggest that other individual characteristics such as user cognition and locus of control be examined. Moreover, organizational variables (such as the adequacy of systems that support organizational decisions, sector, etc.) are also important for understanding computer usage. Thus, in future studies, there is a need to examine the effect of such variables on EUC usage.

Furthermore, having a multi-item scale to measure a latent

iable is important. Thus, in future studies, there is a need to reconsider the training scale to incorporate more than a single-item. Finally, according to some information systems scholars (e.g., Abdul-Gader, 1996, Guimaraes and Igbaria, 1997, Igbaria, 1993, Khalil and Elkordy, 1997), EUC usage may be related to other EUC outcome variables. Hence, we recommend that future studies develop and test a model that links EUC usage to other outcomes such as user satisfaction and job performance.

## References

Abdul-Gader, A. (1996). Usage pattern and productivity of computer-mediated communication in a developing country: an exploratory study. *International Journal of Information Management* 16, 39 - 49.

Abdul-Gader, A. and Kozar, K. (1995). The impact of computer alienation on information technology investment decisions: an exploratory cross-national analysis. *MIS Quarterly*, 19, 535 - 558.

Al-Jabri, I. and Al-Khaldi, M. (1997). Effects of user characteristics on computer attitudes among undergraduate business students. *Journal of End User Computing* 9, 16 - 22.

Ang, J. and Koh, S. (1997). Exploring the relationships between user information satisfaction and job satisfaction. *International Journal of Information Management* 17, 169 - 177.

Bajaj, A. and Nidumolu, S. (1998). A feedback model to enhance information system usage. *Information & Management* 35, 213 - 224.

Billings, R. and Wroten, S. (1978). Use of path analysis in industrial/organizational psychology: Criticisms and suggestions. *Journal of Applied Psychology*, 63, 677 - 688.

Blili, S., Raymond, L., and Rivard, S. (1998). Impact of task uncertainty, end-user involvement, and competence on the success of end-user computing. *Information & Management* 33, 137 - 148.

Cheney, P. and Dickson, G. (1982). Organizational characteristics and information systems success: An exploratory investigation. *Academy of Management Journal*, 25, 170 - 190.

Delone, W. (1988). Determinants of success for computer usage in small business. *MIS Quarterly* 12, 51 - 61.

Dickson, G., Senn, J., and Chervany, N. (1977). Research in management information systems: The Minnesota experiments. *Management Science*, 23, 913 - 923.

Doll, W. and Torkzadeh, G. (1998). Developing a multi-dimensional measure of system-use in an organizational context. *Information & Management* 33, 171 - 185.

Duncan, O. (1966). Path analysis: Sociological examples. *American Journal of Sociology*, 72, 1 - 16.

Gefen, D. and Straub, D. (1997). Gender differences in the perception and use of E-mail: An extension to the technology acceptance model. *MIS Quarterly* 21, 389 - 400.

Guimaraes, T. and Igarria, M. (1997). Assessing user computing effectiveness: An integrated model. *Journal of End User Computing* 9, 3 - 14.

Harrison, A. and Rainer, R. (1992). The influence of individual differences on skill in end-user computing. *Journal of Management Information Systems* 9, 93 - 111.

Howard, G. and Smith, R. (1986). Computer anxiety in management: Myth or reality? *Communications of the ACM*, 29, 611 - 615.

Igarria, M. (1993). User acceptance of microcomputer technology: An empirical test. *OMEGA*, 21 (1), 73 - 90.

Igarria, M., Pavri, F., and Huff, S. (1989). Microcomputer Applications: An empirical look at usage. *Information & Management* 16, 187 - 196.

Keil, M., Beranek, P., and Konsynski, B. (1995). Usefulness and ease of use: Field study evidence regarding task consideration. *Decision Support Systems* 13, 75 - 91.

Khalil, O. and Elkordy, M. (1997). The relationship of personal and situational factors to IS effectiveness: Empirical evidence from Egypt. *Journal of Global Information Management* 5,

Lee, D. (1986). Usage pattern and sources of assistance for personal computers users. *MIS Quarterly* 10, 313 - 325.

Lucas, H. (1981). *Implementation: Key to successful information systems*. New York, NY: Columbia University Press.

Mason, R. and Mitroff, I. (1973). A program for research in management information systems. *Management Science*, 19, 487.

Raub, A. Correlates of computer anxiety in college students. unpublished Ph.D. dissertation. University of Pennsylvania, PA

Raymond, L. (1985). Organizational characteristics and success in the context of the small business. *MIS Quarterly*, 9, 2

Sipior, J. and Sanders, G. (1989). Definitional Distinctions and Implications for Managing End User Computing. *Information Management* 16 (3), 115 - 123.

Straub, D., Keil, M., and Brenner, W. (1997). Testing the technology acceptance model across cultures: A three country study. *Information & Management* 33, 1 - 11.

Torkzadeh, G. and Koufteros, X. (1993). Computer user trust and attitudes: A study of business undergraduates. *Behavioral Information Technology*, 12, 284 - 292.

Wilkins, M. (1996). Determinants of microcomputer use

the Republic of Ireland. *Journal of End User Computing* 8, 3 - 9.

Zmud, R. (1979). Individual differences and MIS success: A review of the empirical literature. *Management Science*, 25, 966 - 979.

## ملحق الدراسة

### المقاييس المستخدمة في الدراسة

شخصية:

طبيعة وظيفتك؟ (مثال: محاسبة ، شؤون أفراد ، تسويق ، نظم معلومات ، هندسة ... الخ) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

استخدام:

العادي الذي تستخدم فيه الحاسب الآلي، كم عدد الساعات التي تقضيها مع النظام؟

2- أقل من نصف ساعة 3- من نصف ساعة إلى ساعة 4- من 1-2 ساعة 5- من 2-3 ساعات 6- فوي 3 ساعات

استخدام:

أ هو مدى تكرارية استخدامك للحاسب الآلي؟

1 في الشهر 2- مرة بالشهر 3- بضعة مرات بالشهر 4- بضعة مرات أسبوعيا 5- حوالي مرة يوميا 6- عدة مرات باليوم

### البيئات الاداريه التي يستخدم بها الحاسب الآلي:

المشارك تحديد إلى أي مدى استخدم الحاسب الآلي لإنجاز المهام التالية:

| استخدام إلى حد كبير |   |   |   | ولا مرة |                      |
|---------------------|---|---|---|---------|----------------------|
| 5                   | 4 | 3 | 2 | 1       | نمط معين في البيانات |
| 5                   | 4 | 3 | 2 | 1       | الشكاك والبدائل      |
| 5                   | 4 | 3 | 2 | 1       |                      |
| 5                   | 4 | 3 | 2 | 1       |                      |
| 5                   | 4 | 3 | 2 | 1       | نسبية                |
| 5                   | 4 | 3 | 2 | 1       | مع الآخرين           |
| 5                   | 4 | 3 | 2 | 1       | شطة والتحكم فيها     |
| 5                   | 4 | 3 | 2 | 1       | يات                  |

المشارك تقدم وصف لأفضل مستوى للتدريب تلقاه على الحاسب الآلي وذلك:

| تدريب مكثف |   |   |   | لا تدريب |           |
|------------|---|---|---|----------|-----------|
| 5          | 4 | 3 | 2 | 1        | س الذاتية |

## التوتر الكمبيوترى:

تم الطلب من المشاركون وضع دائرة حول الإجابة التي تصف ردة فعله بالصورة الصحيحة.

| لا<br>أوافق<br>بشدة |   |   |   | أوافق<br>بشدة |                                                                                      |
|---------------------|---|---|---|---------------|--------------------------------------------------------------------------------------|
| 1                   | 2 | 3 | 4 | 5             | 1- أنا واثق من إمكانية تعلمي مهارات الحاسب الآلي                                     |
| 1                   | 2 | 3 | 4 | 5             | 2- أنا غير واثق من قدرتي على تعلم لغة البرمجة الخاصة بالحاسب الآلي                   |
| 1                   | 2 | 3 | 4 | 5             | 3- سأكون قادراً على متابعة التطورات التكنولوجية الحديثة الخاصة بمجال الحاسب الآلي.   |
| 1                   | 2 | 3 | 4 | 5             | 4- أشعر بالخوف والترقب حال استخدام محطة كمبيوتر طرفية.                               |
| 1                   | 2 | 3 | 4 | 5             | 5- عندما نتاح لي فرصة استخدام الكمبيوتر فإني أخشى أن أفقد فيه شيئاً بطريقة أو بأخرى. |
| 1                   | 2 | 3 | 4 | 5             | 6- لقد تناديت التعامل مع الحاسب الآلي لأنه يبدو غير مألوف بالنسبة لي.                |
| 1                   | 2 | 3 | 4 | 5             | 7- أخشى استخدام الحاسب الآلي خشيتي الوقوع في خطأ لا يمكنني إصلاحه.                   |
| 1                   | 2 | 3 | 4 | 5             | 8- لست واثقاً من قدرتي على تفسير ما يخرج من طابعة الحاسب الآلي.                      |
| 1                   | 2 | 3 | 4 | 5             | 9- أواجه صعوبة في فهم معظم المسائل التكنولوجية                                       |
| 1                   | 2 | 3 | 4 | 5             | 10- تبدو مصطلحات الحاسب الآلي بالنسبة لي غير مفهومة.                                 |