FACTORS AFFECTING THE END-USER COMPUTING SATISFACTION

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Abstract

In this study we investigate factors that are affecting the end-user computing of accounting information system satisfaction from financial managers’ point of view. Our sample is selected from companies listed on Tehran Stock Exchange. This research is a descriptive – empirical field study. The required data is collected by sending out questionnaires to the financial managers of the sampled companies. Our findings indicate that, the information content, ease of using accounting information system, accuracy and correctness of information, format of the reports and timeliness of information have an impact on the end-user computing satisfaction.  

Key words: Accounting Information Systems, End-User, Satisfaction.

Accounting information systems (AIS) fulfill the role of gathering, processing, classifying and reporting financial transactions with the aim of recording, attention seeking and decision-making by end-user of such information.

Simon (1987) explains the main role of AIS as providing information in the form of daily or weekly reports for decision-making and performance evaluation. Gelderman (1998) argues that the success of an organization is due to the decisions that are taken and the level of reliability of such decisions is related to the quality of information provided for decision-making. The quality of the information is also related to the success of the information system.

The success of information system (IS) is important to organizations because they are making huge investment in information systems. Srinivasan (1985) argues that measuring IS success is important for organizations and researchers. Powers and Dickson (1973), Ives et al (1983), Igbaria, and Nachman (1990), Chen et al. (2000), Lin, and Shao (2000), Al-Adwani (2003), Zviran and Erlich (2003) argue that one measure of IS success is end-user computing satisfaction.

The success of an IS can be viewed from three dimensions, information content, information timeliness, information collection and classification. Information content consists of financial and non-financial information for predicting future events. Timeliness is related to ability of IS to provide systematic and periodic reports. Collection and classification of information is related to different types of collecting and classifying information in a specific time period.

Mahmood et al. (2000) suggests that studying the user satisfaction because of the ease of study is one of most appropriate and common ways of assessing IS, and that is why researchers focus of the definition of end-users and their satisfaction. Davis and Olson (1985) pointing out to the primary and secondary users of IS. Primary users are responsible of entering data to the IS and working with software, but secondary users are those who make decision based on the reports provide by IS.

Lefkovits (1979) by pointing to direct and indirect users of IS, believes that indirect users, use IS via other people and direct users are interacting with IS. Doll and Torkzadeh (1988) define users of IS as those who are interacting with information systems, using the information provided by them to make decisions. They believe user satisfaction is an important criterion for measuring the success of IS.

Bailey and Pearson (1983) argue that user satisfaction is related to different dimensions of an IS and they believe that an information system can provide them with required information anytime they need it. Rahat (2005) argues that
satisfaction depends on technology that supports financial managers’ decision making. In this definition technology is referred to the computer systems (software and hardware) and customer support (training and helping users). He believes that user satisfaction is a positive perspective influenced by people who interact with these systems, and because of complex interrelationship that exists in the duties of information systems users, separate analysis of the factors having impact on user satisfaction is difficult.

Previous Studies

User satisfaction is an important criterion for measuring the success of IS. Though indirect, it is the most prevalent measure of IS success due to its applicability and ease of use (Melone, 1990; Mahmood et al., 2000).

With regard to the information discrepancies, information systems are designed for providing important and useful information for the users and also for the uniformity of data provided. Somers et al. (2003), argue that behavioural aspects of user computing are the best measure of evaluating satisfaction. On the other hand user satisfaction tends to increase their behaviour and lends to the success of information systems. Success cannot be attributed to a single factor. Complex relations of interdependence exist between the Information System and its environment, organization, users, and management. Thus, for example, improvements in organizational performance (such as reduced costs and increased income) cannot be attributed solely to the information system. Improvements may also result from other organizational changes, such as a modification of work processes, introduction of new work procedures, or personnel training (Gallagher, 1974; Goodhue, 1986).

Powers and Dickson (1973) studied factors affecting IS success, and identified user satisfaction as one of the key factors affecting it. They assumed that if users are satisfied with an information system, they use it. Therefore, satisfaction is a good measure of IS success. On the other hand, if the users are not satisfied with the information system, they are unlikely to use it. Therefore, to improve an information system, it is important to know how the opinion of the users about it, and where its weak points lie. Ives et. al., (1983) suggest that user satisfaction to be used as the degree to which users believe that the information system at their disposal fulfils their needs. User satisfaction provides a significant surrogate for the critical product of the information system – which cannot be measured – namely, changes in organizational effectiveness.

Baroudi, et. al. (1986), conclude that user satisfaction lead to system use, and thus, should be considered as a measure of the success of an information system. Igbaria and Nachman (1990) studied 104 end users in six large companies. They found a positive relationship between user satisfaction and hardware/software accessibility and availability, and system utilization.

Gelderman (1998) studies the validity and the mutual relations of the two commonly used measures for the success of IS: usage and user satisfaction. The results of the study indicate that user satisfaction is significantly related to IS performance. The study provides empirical evidence for the popular assumption that user satisfaction is the most appropriate measure of IS success. He argues that EUCS is a good predictor of an application’s impact on organizational performance and, thus, a useful surrogate for system success.

The concept of IS user satisfaction can be traced to the work of Cyert and March (1963) who proposed that an information system which met the needs of its users would reinforce satisfaction with the system (Ives et al., 1983). After this initial study, IS user satisfaction was the subject of lively research that reached its peak in the late 1980s (Iivari, 1997).

Mahmood et al. (2000) focused their study on IS user satisfaction. Their research synthesized and validated the construct of IS user satisfaction using a meta-analysis. They analyzed the empirical results of 45 user-satisfaction studies published between 1986 and 1998, focusing on the relationship between user satisfaction and nine variables identified in these studies. They found positive support for the influence of all nine variables on information system user satisfaction.

Chen et al. (2000) studied the measurement of user satisfaction with data warehouses. They identified the underlying factors of end-user satisfaction with data warehouses and developed an instrument to measure these factors. Their study demonstrated that most items in classic end user satisfaction measures were also valid in a data warehouse environment.

Tools for Measuring User Satisfaction

Appropriate tools for measuring user satisfaction and for identifying weak points or failures are imperative for accurate assessment of IS success. To meet this need,
a number of tools were developed. Gallagher (1974) developed a method for measuring perceptions of the value of a Management Information System. He constructed a questionnaire focusing on users’ perceptions of the value of the information included in reports produced by the information system, and tested it by examining the answers of 75 managers who used an information system in a specific organization.

Jenkins and Ricketts (1979) developed an instrument for measuring user satisfaction based on literature reviews and interviews, and tested it in five laboratory experiments with 197 participants. The instrument consisted of 20 items presented as features of five factors: input procedure, system processing, report content, report format, and report value. Ives et al. (1983) and Conrath and Mignen (1990) argued that the instrument focused on information system products, and did not cover the services of information system departments. Joshi (1990) noted that the measure developed by Jenkins and Ricketts was suitable for a specific decision support system (DSS) environment, but, again, might not be applicable to a general information system environment.

Larcker and Lessig (1980) developed a measure based on their interviews, and tested it in a decision-making study with 29 graduate students. Ives et al. (1983) criticized the reliability and validity of this tool, arguing that it was created and tested in an artificial environment, and therefore was not applied to real-life information system environments or to typical information system problems.

Bailey and Pearson (1983) launched a 39-question tool for measuring user satisfaction, and tested it on 32 managers from eight organizations. Bailey and Pearson’s work is considered the most important contribution to the development of a tool for measuring and analyzing user satisfaction (Conrath and Mignen, 1990). DeLone and McLean (1992) affirmed that Bailey and Pearson’s tool is a reliable instrument for measuring satisfaction and for conducting comparison studies. Klenke (1992) found that Bailey and Pearson was the most widely used instrument for measuring users’ satisfaction with information system.

Ives et al. (1983) duplicated and expanded Bailey and Pearson’s findings, and developed a short, 13-question tool based on their questionnaire. Initially, to reinforce the reliability and validity of the Bailey and Pearson questionnaire (as Bailey and Pearson’s sample was too small statistically, 29 respondents for a 39-item questionnaire), Baroudi and Orlikowski (1988) performed a psychometric evaluation of this short questionnaire. They collected questionnaires from 358 users of transactions processing systems in 26 organizations, and performed a reliability and validity tests of the short questionnaire. The short questionnaire was shown to be valid and reliable.

Olson and Baroudi (1983), who reviewed and critically analyzed previous studies, argued convincingly for the adoption of the instrument designed by Bailey and Pearson (1983) on the basis of reliability, content, and predictive and construct validity. They also tested and recommended adoption of Ives and al.’s (1983) shorter and enhanced questionnaire. A long list of studies using either Bailey and Pearson’s tool or Ives et al.’s short questionnaire can be found in the literature. Some studies used only parts of Bailey and Pearson’s questionnaire.

Etezadi-Amoli and Farhoomand (1991) criticized the manner in which the questionnaire was composed. They questioned the fact that respondents were asked to rate the frequency of satisfaction with features of the system, rather than their degree of satisfaction. They further claimed that the importance of each question was not measured, that reducing the number of questions from 40 to 12 was not carried out properly, and claimed that the tool had validity problems. Doll et al. (1994) performed a confirmatory factor analysis based on a sample of 409 respondents from 18 organizations to test alternative models of underlying factor structure and assess the reliability and validity of factors and items. The results provided some support for the Doll and Torkzadeh tool. McHaney et al. (2002) administered the Doll and Torkzadeh tool to Taiwanese end-users of typical business software applications. Their research provided evidence that the instrument was a valid and reliable measure in Taiwanese applications. Their findings strengthen the argument that the tool remains valid outside of the United States.

Etrzadi-Amoli and Farhoomand (1996) developed a questionnaire for measuring end-user satisfaction. The questionnaire consisted of 27 items measuring the satisfaction of end-users with a specific application, and 4 items measuring the implications of the application for the user and his or her work environment. The questionnaire was administered to 341 respondents in 22 organizations. Etrzadi-Amoli and Farhoomand performed an explorative factor analysis, correlated the items with the seven derived factors, and deleted two items from the questionnaire. They later defined a model which correlated between the six satisfaction factors and the factor of user performance and examined the quality of the model through confirmatory factor analysis. They found a relation between end-user
satisfaction and user performance, but concluded that further research was needed to determine the nature of this relation.

However, no single measure is widely accepted and no group of measures is used by all organizations. Most tools were developed following a review of the existing literature and tested using interviews, surveys, or a combination of the two. After reviewing the above literature in this study we have adapted an instrument developed by Doll and Torkzadeh (1991) and Bailey and Pearson (1983). Originally developed by Doll and Torkzadeh (1988), five factors (i.e., information content, format, accuracy, ease of use, and timeliness) are considered to have influence on end-user computing satisfaction (EUCS). The EUCS instrument developed by Doll and Torkzadeh (1991) has been widely used (Chin and Newsted (1990), Essex and Magal (1998), Etezadi-Amoli and Farhoomand (1996), Gatian (1994), Gelderman (1998), Igbaria and Zaviran (1991), McHaney and Cronan (1998, 2000)) to measure a user’s satisfaction with a specific application.

Based on the above studies five variables namely, information content, format, accuracy, ease of use, and timeliness was selected as research variables which can affect the end user satisfaction of accounting information system.

Hypotheses

After reviewing relevant literature and theories, for studying factors affecting the end user satisfaction of accounting information system following research hypotheses are set up.

1. Information content of accounting information system affect end user satisfaction
2. Accuracy of information provided by accounting information system affect end user satisfaction
3. Format of the reports of accounting information system affect end user satisfaction
4. Ease of use of accounting information system affect end user satisfaction
5. Timeliness of information provided by accounting information system affect end user satisfaction

Moderator Variables

Hypotheses based on moderator variables are set up to see whether such variables have any impact on the respondents' responses to the research questions. One expects that such variables do not influence the way that respondents reply to the questions in the questionnaire.

Since the questionnaires were sent to the financial managers of the sampled companies, therefore, respondents’ level of education, respondents' field of education and respondents’ job experience are the variables that one expects to affect respondents’ reply to the questions in the questionnaire.

Hypothesis 1: Levels of respondents' education have no impact on evaluation of the effectiveness of accounting information system.

Hypothesis 2: Field of respondents' education has no impact on evaluation of the effectiveness of accounting information system.

Hypothesis 3: Job experience of the respondents has no impact on evaluation of the effectiveness of accounting information system.

Research Method

Sample and Data Collection

The sample of this study consists of all financial managers of the companies listed on Tehran's stock exchange. Up to April 2010 there were 337 companies listed in Tehran's stock exchange. Companies are divided into different industries and 80 companies randomly selected using sampling with no replacement process.

Based on the studies by Doll and Torkzadeh (1991) and Bailey and Pearson (1983) a questionnaire is designed. The questions are on the five point Likert type questions, with a choice of very little to very much. The questionnaire consists of twenty two questions, which were carefully designed to collect relevant data. The revised instrument and a cover letter were mailed to the specific individual who was listed as financial managers of the sampled firms. A reminder was sent and non-respondents were followed up with two additional mailings. Finally 72 usable questionnaires are received.

Validity and Reliability

The data collection instrument of this study is designed based on previous studies namely, Doll and Torkzadeh (1991) and Bailey and Pearson (1983) in addition to
maintain the validity of the instrument it was pilot tested, by expert panels including faculty members. Alpha test for assessing reliability is conducted in this part of the study using the all the questions in the questionnaire. Cronbach’s Alpha test of reliability is carried out for the set of data. This test is mainly conducted to assess the consistency of the instrument. Reliability concerns the precision of measurement regardless of what is measured. Cronbach’s Alpha obtained in this study is 0.83 which is high enough to regard the data reliable.

### Testing the Hypotheses

To test the research hypotheses a $Z$- test is used and statistical hypotheses is set up as follow:

$$H_0: \mu \leq 3$$

$$H_1: \mu > 3$$

### Results

#### Results of Testing Hypothesis One

The $Z$- statistic for testing the first hypothesis is equal to 13.9 (table-1). Comparing the calculated $Z$ value with critical value of 1.645, the $H_0$ is rejected and $H_1$ is accepted. In other words we may claim that the information content of information provided by the accounting information system has an impact on the end-user computing satisfaction.

#### Results of Testing Hypothesis Two

For the second hypothesis the $z$-statistic is calculated equal to 8.57 which, is greater than the critical value of 1.645, (table -1). Therefore, the $H_0$ is rejected and $H_1$ is accepted, which shows that accuracy of information provided by accounting information system affect end user satisfaction.

#### Results of Testing Hypothesis Three

In testing the third hypothesis $z$-statistic is obtained equal to 8.76 which greater than the critical value of 1.645, which means with a 95 percent confidence level we reject the $H_0$ and accept the $H_1$, (Table-1). We can conclude that, the format of the reports of accounting information system affect end user satisfaction.

#### Results of Testing Hypothesis Four

The findings of testing the forth hypothesis indicates that the $z$-statistic, 13.908, is far greater than the critical value of 1.645. Again for this hypothesis the $H_0$ is rejected and the $H_1$ is accepted, (Table-1). Thus, in this study we may conclude that the ease of use of accounting information system affect end user satisfaction.

#### Results of Testing Hypothesis Five

The $z$-statistic calculated testing the fifth hypothesis is equal to 11.35 which is greater than the critical value of 1.645, (table-1). Based on the results obtained the $H_0$ is rejected and the $H_1$ is accepted, which means that the timeliness of information provided by accounting information system affect end user satisfaction. Our findings in all five hypotheses is consistent with the findings of the following studies: Ives et al. (1983), Pearson (1983), Raymond (1987), Baroudi and Orlikowski (1988), Anderson(1989),Doll and Torkzadeh (1989), Doll and Torkzadeh (1991), Chin and Newsted (1995), Doll and Xia (1996), Kim and Mchaney (2000), Mchaney et al. (2000), Mahmood et al. (2000), Somers et al.(2003), Hendrickson et al. (1994), Abdinnour-Helm et al. (2005).

<table>
<thead>
<tr>
<th>Statistics Variables</th>
<th>No.</th>
<th>Mean</th>
<th>Std.</th>
<th>Mode</th>
<th>Min</th>
<th>Max</th>
<th>Z-value</th>
</tr>
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<tr>
<td>Information content</td>
<td>72</td>
<td>3.70</td>
<td>0.427</td>
<td>3.6</td>
<td>2.60</td>
<td>4.60</td>
<td>13.902</td>
</tr>
<tr>
<td>Accuracy</td>
<td>72</td>
<td>3.56</td>
<td>0.559</td>
<td>3.5</td>
<td>2.25</td>
<td>4.75</td>
<td>8.579</td>
</tr>
<tr>
<td>Format</td>
<td>72</td>
<td>3.58</td>
<td>0.564</td>
<td>3.6</td>
<td>1.80</td>
<td>4.60</td>
<td>8.769</td>
</tr>
<tr>
<td>Ease of use</td>
<td>72</td>
<td>3.77</td>
<td>0.509</td>
<td>3.7</td>
<td>2.50</td>
<td>4.75</td>
<td>13.908</td>
</tr>
<tr>
<td>Timeliness</td>
<td>72</td>
<td>3.72</td>
<td>0.539</td>
<td>3.5</td>
<td>2.25</td>
<td>4.75</td>
<td>11.351</td>
</tr>
</tbody>
</table>

### Results of Testing Moderator Variables

For testing the impact of moderator variables on the respondents' responses to the research questions we conducted Chi-Square statistical tests which the results are shown in table 2.

All the three hypotheses are rejected at 95% confidences interval, indicating that moderator variables have no meaningful effects on the perception of the respondents' answers to the research questions. In other words, these variables have no impact on the results of this research.
Discussion and Conclusions

The results provide evidence that the information content provided by accounting information system, the accuracy of information provided by accounting information system, the format of the reports of accounting information system, the ease of use of accounting information system, and the timeliness of information provided by accounting information system affect end user satisfaction.

The findings of this study are beneficial to both researchers and practitioners.

Researchers can use these findings to find the direction of future research in Iran regarding the end user satisfaction.

Practitioners can now use the results of this study with more confidence usability testing when designing a new information system. Marketing executives can also use the results to discern differences in satisfaction across target user groups. For example, ratings for Content, Format, and Ease of Use may differ based on user experience or search goals, as suggested by the study findings.

One limitation of this study is the lack of confidence in assessing the accuracy of the respondents’ answers to the question in the questionnaire. The unwillingness of many firms to contribute in responding to the questionnaires is another limitation of this research.

References


