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EFFECTIVE INFORMATION SYSTEMS: ATTITUDES OF EXECUTIVES ON THE CONTRIBUTIONS OF INFORMATION SYSTEMS TO STRATEGIC DECISION MAKING

MUHAMMED ADEMOLA BADAMAS
MORGAN STATE UNIVERSITY
Muhammed.Badamas@morgan.edu

ABSTRACT

In today's organizational environment, Executive end-users are trained to use the information systems. Sometimes end-users do not understand IT. This study is to examine the attitudes of end-users that affect the corporate environment within which IS contributes to the strategic development of the organization. Executives agreed that information systems have had a positive impact on organizational efficiency. While the literature indicates that information systems are providing some organizations with a strategic advantage, the Executives surveyed in this study did not think so. However, it is encouraging that these Executives thought that information systems have the potential to provide the organization with such an advantage.

Keywords: Strategic Decisions. Information Systems Producers, End-Users, IT Executives, Effectiveness, Relationship, Perception, Satisfaction, Success

INTRODUCTION

Information system is an important infrastructure of today's business organization, coordinating the resources and activities of the input, process and output subsystems of the organization An information system is an organized combination of people, hardware, software, communication networks, data resources, and policies and procedures that stores and disseminates information in an organization. The top end-users who are Executives must coordinate their activities with Information Systems producers in order to have an efficient and effective enterprise organizational information system. Sometimes end-users do not understand information system and what it does. This is even more evident when users are considering whether an information system is providing the organization with a strategic competitive advantage. This study is to examine the attitudes of Executive end-users that drive the environment in which they operate. The study assesses their satisfaction with the effectiveness and efficiency of Information Systems in their organizations, and their attitudes on the strategic potential of information systems in their organizations. The objective is to examine their attitudes regarding the role and utility of information systems in their organizations.

LITERATURE REVIEW

During the early 1990s end users were not getting needed reports in timely fashion from the Information Technology Department, which was in charge of producing information systems. These meant users could not make strategic decisions in a manner that meets enterprise deadlines [15]. Inability to receive the needed reports in a timely fashion can lead to user dissatisfaction. Underlying the relationship between end-users and Information Technology staff, who are the

producers of information systems, is user acceptance and satisfaction. User acceptance of a system is a critical measure of a system's success. Information Systems researchers rely on user satisfaction in measuring information system success [9]. It has been shown that there is no clear relationship established between system effectiveness and user satisfaction when dealing with Information Systems [18]. Seddon [22] defined User Satisfaction as a subjective evaluation of the various individual, organizational, and societal consequences of using information systems. User Satisfaction is a measure of the net benefits as seen by the information system's stakeholders who are the individuals, groups of individuals, management of organizations, and society. Shaw et al. [25] examines satisfied and dissatisfied end-users in an organization to determine if they hold different technological frames of reference towards end-user computing. The study examines the effectiveness of the computer systems at the organizational level, while at the same time measuring the level of end-user satisfaction with the end-user computing environment.

Different stakeholders in an organization may come to different conclusions about the success of the same information systems because stakeholders or individuals can evaluate the results of IT use in different ways [22]. There is a stronger correlation between an organization performance and the degree of use of information technology in the planning, administration and financial affairs, than in other areas of Information Technology application in an organization [16].

While information systems can be critical to an organization's ability to conduct and develop business, the information systems function is often considered as a secondary activity. Senior managers and others often perceive the information systems function as having a secondary status within organizations. General Managers are more likely to be willing to get involved with functions they perceive as having high status. Status is an element of power. Power is the ability to influence others' behavior [3].

Every organization has its own culture. Norms, values, beliefs, and hidden assumptions that organizational stakeholders share in common form the culture of the organization [8]. In accepting and adopting information technology, organizational culture plays a moderating role [11, 12]. It is known that computer attitudes have a positive direct influence on end-user satisfaction and that management advocacy has positive direct effects on computer attitudes and end-users satisfaction [2]. Brown [7] shows that management commitment and involvement with Information Systems development at the senior management level, the Information Technology management level, and the project management level significantly enhances the probability of success.

Melone [18] defines user attitude as *"a predisposition to respond favorably or unfavorably to a computer system, application, system staff member, or a process related to the use of that system or application"*. The usefulness of a system depends on the attitude of the user. The use of a system indicates the acceptance of the system [1]. System usage has a notable value for managers who are interested in evaluating the impact of the system [26]. Yasin [31] examined the utility of Information Systems in some organizations among two groups of Executives. User attitude is affected to a great extent by the user interface of the Information Systems. The adoption of a technology which in turn might result in the success of the technology depends on the user interface which needs continuous improvement [23].

There is a relationship between management support, the use and the success of Information Technology [13, 21]. There are several reasons for top management support in order for employee to use IS. Some of these reasons are:

- To hire and retain technical expertise and to provide training to existing employees, the support of top management is necessary.
- The responsibility of top management, through the provisions of incentives and reward systems, to creation an atmosphere for an organizational culture that explores and adopts the Intranet technology in order to minimize resistance to change.
- System users need to be motivated by contributing financially or by other means such as better job prospects.

Corporate goals are useful indicators of how executives in firms view the contribution of Information Systems to strategic management. Executives with more focused goals for Information Systems perceive greater payoffs from Information Systems [27]. Sometimes, these might lead the executives to the idea of Information Systems outsourcing. However, the most important reason for outsourcing is the desire of the executives to direct resources to focus on their core competence [10]. Management practices such as strategic alignment and Information Technology investment evaluation can contribute to higher levels of Information Systems business value. Most Executives rated their corporation's amount of investment in Information Technology to support managerial needs as adequate [28].

Information Technology is currently being underutilized by management to support strategic management at the executive level. Wong, Chiang and

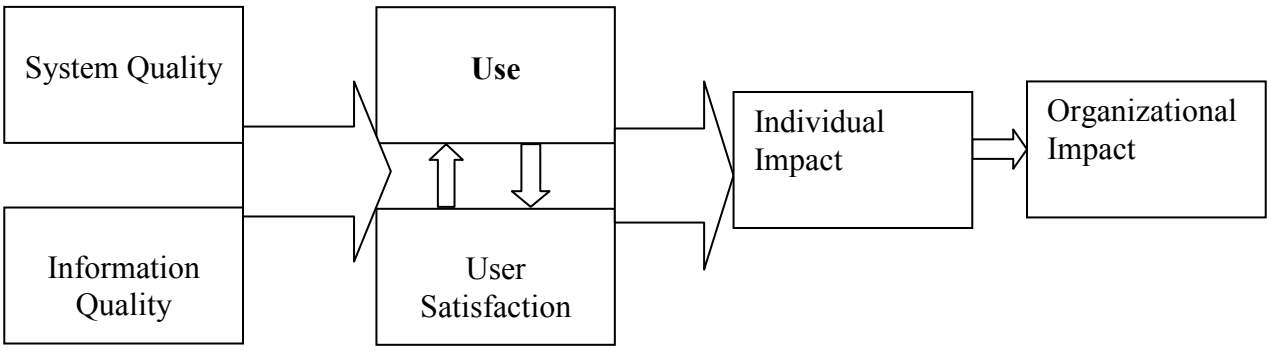
McLeod [30] proposed strategic management support architecture to provide new perspectives on how Information Technology can add value to enhance strategic management

THEORETICAL BACKGROUND

Discrepancy theory indicates that when performance matches expectation, satisfaction is at the highest point [6]. The Discrepancy Theory states that satisfaction in any area can be related to the real outcomes of an endeavor, as expected by the individual seeking to be satisfied. This theory indicates that when performance matches expectation, satisfaction is at the highest point [6]. When the match of the outcomes is closer, then the individual is satisfied. This then leads to a quest of means of measuring the gap between the desired outcomes and the actual outcomes. When the gap is negatively large dissatisfaction is the result. When the gap is small, then satisfaction is the result. The stakeholder determines the utility of items. Large positive gaps result in large satisfaction. Satisfaction of an individual is based on his desires and the delivery of the items. Discrepancy between individual's expectation and the delivery of information systems is important when considering user satisfaction and the role of Information Systems producers [14]. The most widely used measures of Information System success is the End User Information System Satisfaction (EUISS) applied to the effectiveness or success of Information System in the different areas of content, accuracy, format, ease of use and timeliness [4]. These dimensions are combined with other relevant measures in this study.

Certain factors for information systems success affect its use or intention to use the system, and user satisfaction. These factors are identified as the system quality, the information quality, and the service quality. These factors in turn yield some benefits that are the measures of success or impacts on individual and organizations [9]. See Figure 1.

Figure 1: Information Systems Success Model [9]



METHODOLOGY

This study is a survey of Executives to determine their satisfaction with the effectiveness and efficiency of Information Systems in their organizations, and their attitudes on the contributions of Information Systems to the strategic information systems in their organizations. The objective of this study is to examine the views and attitudes of these Executives with regard to the role and utility of information systems in their organizations and to assess their satisfaction with the effectiveness of information systems and those who run them in their organizations. A structured questionnaire were used to gain insights into what the subjects felt about the role of information systems in their firms, the degree of their satisfactions with the effectiveness of those who run information systems in the firms and the relationships between the providers of information systems and the end-users. The survey method allows investigation of problems in realistic situations. When data is to be collected from a variety of different people in a relatively short period of time, this method is appropriate [29]. The questionnaires were distributed to the respondents who were requested to complete them. The survey was conducted in June 2010. 200 questionnaires were distributed. 169 were completed returned and found correct. This represented 84 percent that can be considered good for analysis [5].

A rating between 1 and 5 indicates the nearness to most important or least important an issue is to a respondent. A questionnaire on rating factors is the

traditional data collection tool which does not force respondents to confront the relationships between the factors [17]. Rating method was used because some factors could be termed to be homogenous considering the environments within which the respondents were. Rating was also used because it allows the evaluation of one factor at a time rather considering all factors simultaneously. Simple descriptive statistics such as means were used to determine the ratings of the factors on the decision making in their organizations [20]. All statistical comparisons in this report were tested for significance at the 95 percent confidence level $p<0.05$, and all reported differences were statistically significant and were five percentage points or larger, unless otherwise noted.

RESULTS

The respondents cut across the selected three possible sizes of an organization. Table 1 shows the number of organizations in each category.

Table 1: Company Sizes

Company Size		Executives
Small	Count	18
	%	19
Medium	Count	35
	%	36
Large	Count	44
	%	45
Total	Count	97
	%	100

The number of small companies is 18 which are 19.0% of the companies surveyed. The largest number of companies was in the large category. This is 44 [45%], while the medium companies numbered 35, which is 36%. Statements used and the responses from the respondents regarding their attitudes and opinions to the use of Information Systems for decision making in their organizations are shown in Table 2. The number of responses for each scale is shown with the percentage.

Table 2: Degree of Agreements or Disagreements with Statements

Factors	**1**	**2**	**3**	**4**	**5**
DSSExcelent Decision making Tools	30 (31%)	44 (45%)	18 (19%)	1 (1%)	4 (4%)
There is prompt delivery of new Info. Systems IS	22 (23%)	46 (47%)	20 (21%)	9 (9%)	0 (0%)
The role of IS should be taken seriously	60 (62%)	27 (28%)	6 (6%)	0 (0%)	4 (4%)
The investment in IS had been worthwhile	38 (39%)	23 (24%)	26 (27%)	10 (10%)	0 (0%)
IS improved the efficiency of subsystems	45 (46%)	44 (45%)	8 (8%)	0 (0%)	0 (0%)
IS contributed significantly to the organization	53 (55%)	36 (37%)	6 (6%)	2 (2%)	0 (0%)
IS investments result in a compt. strategic advantage	35 (36%)	37 (38%)	23 (24%)	0 (0%)	2 (2%)
IS has potential to provide competitive advantage	41 (42%)	29 (30%)	25 (26%)	0 (0%)	2 (2%)
IS and IS Staff are good	28 (29%)	47 (48%)	16 (16%)	6 (6%)	0 (0%)
Cost of IS is affecting the organization resources	22 (23%)	16 (16%)	41 (42%)	16 (16%)	2 (2%)
IS is efficient in the organization	32 (33%)	45 (46%)	16 (16%)	2 (2%)	2 (2%)
IS is used effectively	36 (37%)	42 (43%)	17 (18%)	0 (0%)	2 (2%)
1 = Strongly Agee; 2 = Agree; 3 = Uncertain; 4 = Disagree; 5 = Strongly Disagree					

The result of the survey indicates that about 75% of the respondents considered their organizations' computerized decision support systems to be excellent decision-making tools. On timely delivery of Information Systems, about 73% agreed that Information Systems is delivered timely in their organizations. Of all the factors considered, most of the respondents are uncertain about the effect the cost of Information Systems is having on their organization. However, most of the respondents, 47.9% believe that Information Systems investments always result in a competitive strategic advantage for the organization. Similarly, 43.2% believe that the investment in Information Systems have been worthwhile. On the delivery of information systems, 42.0% agree that there is prompt delivery of new information systems and 43.2% agree that Information Systems in their organizations are efficient. Most of the respondents, 50.3% strongly agree that Information Systems improve the efficiency of input, process and output, while 57.4% also agree strongly that Information Systems contributed significantly to the effectiveness of the organizations.

Table 3 shows the opinions of executives on some other issues relating to the acceptance of Information Systems in the organization.

Table 4 shows the opinions of IT executives on some other issues indicated.

Table 5 shows the means and the standard deviations for the factors considered.

Table 3: Statements Agreements by Executives

Statements	**Strongly Agree and Agree #(%)**
The organization's computerized decision-support systems are excellent decision-making tools	74 (76.3%)
The delivery of new Info. Systems IS in the organization is mostly on time	68 (70.1%)
The future role of IS in the organization should be taken seriously	87 (89.7%)
The investment in IS had been worth it in terms of the amount	61 (62.9%)
IS improved the efficiency of input, process and input subsystems of your organization.	89 (91.8%)
IS have significantly contributed to the effectiveness of the organization	89 (91.8%)
Investment in IS result in a competitive strategic advantage	72 (74.2%)
I have confidence that IS in the company have potential to provide competitive advantage	70 (72.2%)
I am satisfied with my IS and those who run it	75 (77.4%)
High cost of IS is affecting the organization resources	38 (39.2%)
I am satisfied with the ability of IS in the organization in terms of efficiency	77 (79.4%)
I am satisfied with the use of IS with regard to organizational effectiveness	78 (80.4%)

Table 4: Non-IT Execs' Opinions

OPINIONS	**Strongly Agree and Agree #(%)**
IS Application as a strategic tool	60 (61.6%)
Motivation of IT Staff	40 (41.2%)
Effective Communication	47 (48.50%)
Delivery of quality systems	61 (62.9%)
Interaction with other Departments	38 (39.2%)

Table 5: Mean and Standard Deviation of Responses on Strategic Focus

Response	Mean	STDEV
IS Professionals and IS as strategic tool	1.0473	1.0955
Management sees IS as an asset	1.0651	1.2157
IS Professionals communicate effectively	1.1361	1.2437
IS Professionals lead staff	1.1657	1.2568
IS Professionals deliver systems in time	1.1657	1.1582
Management understands IS potentials	1.2012	1.6205
Management provides clear directions	1.2604	1.4027
IS Professionals interact with other depts.	1.2781	1.4141
Future role of IS serious	1.5207	0.8937
IS contributed to effectiveness	1.5325	0.6989
IS improved efficiency	1.6154	0.6901
No reward system for creativity	1.6686	1.8117
Inadequate training resources	1.6923	1.8867
Management treats IS Professionals as	1.8047	1.9435
IS investment and competitive advantage	1.8284	0.9637
Satisfied with use of IS for effectiveness	1.8402	0.819
Confidence in IS potential	1.858	0.9838
Satisfied with IS	1.8817	0.8985
Worthy investment in IS	1.8994	0.949
Excellent decision-support systems	1.9941	0.9789
Satisfied with ability of IS	2.0000	0.9574
On-time delivery of new Info Systems	2.0296	0.9026
High cost of IS affecting resources	2.5266	1.1755

Executives voiced some concerns and dissatisfaction in terms of how Information Systems producers and others in the organization view information systems and deal with those who are not running them. These concerns are summarized below.

- the inability of Information Systems producers to communicate effectively with others in the organization;
- the inability of Information Systems producers to deliver high quality systems on time;
- the inability of information systems professional to interact with others in the organization and to be team players.
- the inability of Information Systems producers to lead, manage and motivate their staff effectively;

Executives felt that investment in information systems will increase in the future. However, these Executives indicated that the extent of such investment will be directly linked to the ability of Information Systems producers to find ways to measure return on investment of information systems in terms of dollars and cents to justify future investments. Executives felt that future systems should concentrate on integrating the organization with its environment and should have a strategic focus. In this regard, this vision of future systems is consistent with current trends.

DISCUSSION

From the strategic leadership view, investments in IT innovations are based on the firm's top leadership ability to recognize the potential of the particular IT innovation. Top management makes the decisions on which IT innovations to invest in, and when lower echelons such as departmental heads make the decisions, they are more likely to succeed if they have top management support. The failure by the top management to recognize the potential of an IT innovation always results in non-implementation or adoption information systems. This failure can be attributed, sometimes, to management experience, organizational logic, or industry logic. Organizations gain competitive advantage from Information Systems producers leadership when the

leadership style evolves over time through "learning by doing" making it heterogeneous across firms

The business judgment of Information Systems producers and top management role in IT innovations determine the level of competitive advantage of firms. Information Systems producers and personnel should have business problem solving skills, and expertise that will guide them in making strategic decisions about how to use IT innovations for business performance.

Executives agreed that information systems have had a positive impact on organizational efficiency. While the literature indicates that information systems are providing some organizations with a strategic advantage, the Executives surveyed in this study did not think so. However, it is encouraging that these Executives thought that information systems have the potential to provide the organization with such an advantage. They indicated that future systems should be oriented towards that end.

There are large areas where both managers agree on the contributions of Information Systems to business value. Where differences were identified, it was clear that expectations related to the development and use of IT assets varied [24]. Based on concerns outlined by the Executives, a gap appears to exist between the Executives and IT Executives with regard to their satisfaction with information systems and those who run them in the organization. This gap could be eliminated if the organization is to realize the full potential of information systems. According to the information systems executive, the chief executive officer might want such a system and might push for it. When the system did not result in an improved quality, the information systems department will be blamed. The fact is that the system did what it was supposed to do. However, concern for quality might not be part of the organization culture. Therefore quality did not improve. This gap can be narrowed, if not totally eliminated, in the short run through training programs and in the long run through formal education. Orlikowski and Gash [19] suggest that where the interpretations of the technology by key groups in organization are different, conflict around the use may result. The differences can be used to explain an anticipating actions and meanings not easily explained by other means.

In a similar study of German executives, Vlahos et al. [28] found that top level managers were the lightest users of Information Systems but perceived greater value of Information Systems than middle managers and from the functional areas, managers in information systems and accounting/finance were the heaviest users of Information Technology and perceived the greatest value of Information Systems.

Information Systems function will be powerful if it shows:

1. High coping with uncertainty - units which help to absorb and control uncertainty should have high power.
2. Low substitutability - easily substituted departments have low power.
3. High workforce pervasiveness and immediacy - these capture the extent to which a department is connected to others and how quickly the rest of the organization would be affected if the department ceased operating.
4. High interdependence.

CONCLUSION

In today's global business environment, no business organization can survive without information systems. Therefore, information systems should be viewed as an asset rather than a cost to the organization and must be managed judiciously as other organizational assets. Skilled employees' contributions to the organizational IT innovative capabilities are dependent on how well there are organizational collaborative initiatives with other employees. Information systems Executives need managerial and behavioral training and education to provide them with needed leadership skills. Such skills will allow them to motivate their staff as well as facilitate their interaction with end-users of the information systems in the organization. The relationship between Information Systems producers and end-users is now based on negotiation and influence. Decentralized information technology environment has brought out sophisticated end-users. Therefore Information Systems producers need new organizational skills.

It is essential to involve the users in the design, development and implementation of enterprise wide information systems. This is to avoid implementing an information system that no one will use, If employees are involved in the introduction of new system, it is possible to avoid implementing an information system that no one will use, In order to motivate users and to obtain their full co-operation and support, users should therefore be involved from the beginning of the system development.

To ensure that the Information Systems producers continues to understand how integral its efforts are to the organization, clear and effective communication by both Information Systems producers and end-users Executives is necessary. Information Systems producers should be able to adapt to changing business needs and they need to optimize on multiple dimensions for several stakeholders. The needs of the end-users vary. A section of the end-users may need to urgently add new function while another section might be interested in controlling costs. The Information Systems producers have

responsibilities to satisfy all the organization sections, and must therefore be willing to show greater optionality.

All the structure and due diligence that IT has put in place to make a safe, cost-effective and reliable working environment goes out the window with the advent of smartphones. The situation is a problematic one for Information Systems producers. End users are wielding their own smartphones and tablets. Information Systems producers must recognize this new reality and come to terms with end-user mobility. The added burden of rethinking security, Wi-Fi infrastructure, application delivery, device ownership and support models are some implications of using smartphones.

Information Systems producers have the time and resources to take on a major new strategic initiative. Even though it might be difficult, complicated and expensive, mobility in the workplace are problems that must be tackled. A further study need be undertaken to determine how many companies have mobility strategies in place. This study might reveal the expectations of Information Systems producers on the number of employees that use mobile devices as their primary platforms.

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AUTHOR BIOGRAPHY

Dr. Muhammed Ademola Badamas is with the Department of Information Science and Systems, Morgan State University, Baltimore, MD. U.S.A.. His research interests focus on global information systems for development, management information systems, and project management and information security