Evaluating the Performance on ERP systems in King Saud University (KSU):
A Stakeholders’ Perspective

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Abstract

Enterprise resource planning (ERP) systems are complex and comprehensive software designed to integrate business processes and functions. Despite the difficulties and risk, adopting ERP systems is expanding rapidly. Universities make large investments in information systems (IS) expecting positive impacts. However, universities are facing serious challenges in implementing the new technology. This research is a case study that seeks to explore the impact of an ERP system (MADAR system) on the stakeholder performance of King Saud University’s employees. The results show that system quality factors (flexibility, compatibility, right data, currency, ease of use, and timeliness) have positive impacts on the stakeholders’ performance. Furthermore, the service quality (tangible, reliability, responsiveness, and assurance) has a positive impact on the stakeholders’ performance.

1. Introduction

Enterprise resource planning (ERP) systems are complex and comprehensive software designed to integrate business processes and functions. Despite the difficulties and risks involved in adopting ERP systems, organizations spend millions of dollars on information systems to improve organizational and individual performance. Swartz and Orgill (2000), major proponents of ERP systems, argue that there are many encouraging reasons to implement ERP systems, for example to improve information access and the effectiveness of workflow. Moreover, other reasons to consider ERP are capability to improve controls and the ability of stakeholders to use ERP easily. According to Petter et al. (2008), information systems (IS) are developed using information technology (IT) to help individual performance, practitioners and researchers seek to understand and measure the success of these investments (Goodhue, 1995). Despite the importance of IS success, Sedera et al. (2003) argue that the success of large IS, particularly ERP systems, is difficult to measure, since ERPs generate substantial and intangible benefits and the systems involve many users (stakeholders) ranging from top executives to data entry operators, who can define its success differently. Furthermore, universities make large investments in information systems (IS) expecting positive impacts. Nevertheless, universities are facing serious challenges in implementing new technology. Meeting stakeholders’ expectations in higher education is one of those challenges; universities are unique organizations. Effectiveness subsequent to the implementation of ERP systems has become an essential indicator of success; effective selection, development and improvement of information systems require a systematic evaluation tool.

The organization of this paper is as follows: the research problem is illustrated, then the relative literature review follows with the evaluation of the stakeholders’ performance, and ERP system in higher education. The theoretical framework is then developed, with a section concerning the theoretical aspects of the proposed hypothesis, and a section concerning the methodology and case study. The data analysis is conducted to explain the findings. Discussion is made of issues in the research and conclusions are drawn from the study.

1.1 Research Problem

Although researchers and practitioners consider user satisfaction with information systems to be a fundamental indicator of an information system’s success (Aladwani, 2003), the literature published to date reveals that there are significant shortcomings to this assumption, including that IS systems can be viewed from two distinct perspectives: the organizational viewpoint focuses on the quality of the interface and the information provided by IS to help employees to fulfill their tasks; and the socio-technical viewpoint is concerned with individual needs (Au et al., 2002). Investments in information systems are very costly. Saudi Arabia spends millions
of dollars on information systems every year, to
develop and improve the higher education system.
Investors—particularly the state sector, which
generally foots the bill for education worldwide and
offers excellent support for innovative technological
solutions, as discussed above—require a return on
their investment; thus the massive investment in ERP
systems by higher education bodies needs to be
evaluated in terms of the success of their application.

Saudi Arabian universities are facing serious
challenges in adopting the new high technology.
Therefore, in response to the need to update and
develop the integration between universities’
different administrative functions into a more
systematic effective approach, and thus obtain a
strategic advantage, higher education has always had
advocates and proactive adopters of new technology
(Rabaa‘i et al., 2009). Consequently, to achieve this
goal, Saudi Arabian universities intend to
adopt/develop a new IS/ERP system to improve the
higher education process. ERP systems have been
increasingly adopted by different organisations in
both the private and public sectors. Universities are
spending more than $20 million each to implement
modern ERP projects that can take between two to
three years to implement (Swartz and Orgill, 2000).

2.2. Evaluation of the Stakeholder’s
Performance

The evaluation in IS has been centre of attention for
many researchers (Farbey, et al. 1993; Irani, 1998;
Land, 2001; Adelakun and Jennex, 2002; Irani &
Love, 2008). This section outlines three IS models to
evaluate ERP system stakeholders’ performance:

2.2.1 Task-Technology Fit (TTF)

The Task Technology Fit proposed by Goodhue
(1995) is defined as “the extent that technology
functionality matches task requirements and
individual abilities”. On the other hand, Goodhue and
Thompson (1995) identified TTF as “the degree to
which a technology assists an individual in
performing his or her portfolio of tasks”. Chang
(2008) explained that the TTF model considers the
degree to which the capabilities of the technology
match the demand of the task. TTF has four main
constructs: task characteristics, technology
characteristics and individual characteristics, which
gether affect the fourth construct of TTF which in
turn affects the outcome variable - either utilization
or performance (Dishaw et al., 2002). In addition,
Goodhue et al. (2000) stated that TTF presumes that
performance impacts upon the fit between three
constructs: technology characteristics, task
requirements, and individual abilities.

2.2.2 Information Systems Success Model
(D&M)

Delone and Mclean’s (1992) IS success model is
the most widely cited, and has been a valuable
contribution to the literature on IS success
measurement, because it was the first study that tried
to impose some order to develop a comprehensive IS
model and instrument for a particular context (Gable
et al., 2008). Delone and Mclean (1992) analysed a
large number of studies found in the academic
literature covering the period of 1981-1987,
attempting to identify those factors that contribute to
information systems success. Based on these studies,
they defined six major dimensions or categories of IS
success: systems quality, information quality, use,
user satisfaction, individual impact and organizational impact.

2.2.3 End User Computing Satisfaction (EUCS)

The End User Computing Satisfaction Model designed by Doll and Torkzadeh (1988) is a potentially measurable surrogate for utility in decision-making. It interacts directly with the application software to enter information or prepare output reports. The end user application’s utility in decision-making is enhanced when the output meets the user’s requirements (Doll and Torkzadeh, 1988).

All three models discussed previously (TTF, EUCS and D&M) do not when applied separately provide effective evaluation of stakeholder performance, since TTF and EUCS evaluate the technical aspects of systems, and the individual impact in the D&M model focuses on the human/social aspects. Integration of the three models will effectively evaluate stakeholder performance in ERP system environment. Therefore, to overcome the shortcoming of previous models, this paper aims to integrate all three models to create a new synthesized model by adopting the conceptual model developed by Gable et al. (2008), which combines the impact and the quality, and selects the appropriate factors. This offers a more comprehensive view of the most important factors that affect stakeholder performance, the consequence of the factors from Delone and Mclean’s (1992) IS success model (which considers impact as a half measure). The factors gathered from the TTF model and EUCS consider quality as a half measure, which will be used to evaluate stakeholders' performance. While individual performance is an essential indicator of organizational performance, consequently, studying the impact of ERP systems on stakeholders’ performance is a significant way to assess the utility of this software on higher education and how it contributes to performance efficiency and effectiveness, as shown in (Table: 1).

2.3. ERP system in higher education

ERP has played a significant role both in the recent history of information technology management and the history of higher education itself. It is important to define a concept of ERP systems in higher education (Robert et al., 2004): “multiple in scope, tracking a range of activities that include human resources systems, student information systems and financial systems”. It is clear that there are many similarities between implementing ERP system software in both educational institutes/sector and other organisations/sectors. However, the uniqueness of universities is based on different combinations of certain characteristics, which were identified by Okunoye and Folick (2006) as: “complexity of purpose, limited measurability outputs, both autonomy and dependency from wider society, diffuse structure of authority, and internal fragmentation”. In higher education, the stakeholders are considered to be a fundamental factor that distinguishes education institutes from other organizations. In contrast, Bradley and Lee (2007) identified that universities have similar problems to other organizations, such as: coordinating resources, controlling cost and motivating and facilitating ERP amongst the faculty and the staff; therefore, IT evaluation is important, especially with the large budgets universities spend on IT/ERP systems projects. ERP systems literature has considered manufacturing industries, but few studies discuss ERP in academic institutes. Despite, the rapid, current growth of the ERP in higher education sector, there is lack of scholarly publication discussing ERP implementation in higher education (Rabaa’i et al., 2009), given that the value from IS evaluation and the impacts of ERP systems on both the organization and individuals justifies the value of the productivity, quality, and competitiveness of the organization. Although there are a variety of IS success evaluation studies, there is no consensus on the appropriate manner of evaluation of IS success to help organisations returns on investments in information systems. Previous studies focused on information systems and user satisfaction, but they highlight the need for more focus on ERP systems and stakeholder performance. Despite the importance of IS evaluation, there is a lack of accepted frameworks on IS evaluation in general and ERPs in specific in higher education.

2.4. Theoretical Framework

The factors of the theoretical model in this study (Table 1) were derived from D&M, TTF, and EUCS models, which when combined together were assumed to have positive impacts on the stakeholders’ performance. Moreover, the selected factors are the most suitable in the ERP systems environment, and aim to measure how the ERP systems enhance individual performance. The derivation of the performance factors which are presented the D&M model (time taken to complete task, improve stakeholders productivity, immediate recall of information, stakeholders’ confidence and performance and ability to identify problem and solutions) were initially based on a comprehensive
study conducted by Delone and Mclean (1992) under the dimension of individual impact.

### Table 1. The selection factors from the three models

<table>
<thead>
<tr>
<th>Performance Systems Quality</th>
<th>Service quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>D&amp;M ISS</td>
<td>TTF</td>
</tr>
<tr>
<td>-Time taken to complete task</td>
<td>-Lack of confusion</td>
</tr>
<tr>
<td>-Improve stakeholders' productivity</td>
<td>-Right data</td>
</tr>
<tr>
<td>-Immediate recall of information</td>
<td>-Accessibility</td>
</tr>
<tr>
<td>-Stakeholders’ confidence and performance</td>
<td>-Assistance</td>
</tr>
<tr>
<td>-Ability to identify problem and solutions</td>
<td>-Authorization</td>
</tr>
<tr>
<td>-Computer awareness</td>
<td>-Ease of use</td>
</tr>
<tr>
<td></td>
<td>-Flexibility</td>
</tr>
<tr>
<td></td>
<td>-Training</td>
</tr>
<tr>
<td></td>
<td>-Accuracy</td>
</tr>
<tr>
<td></td>
<td>-Compatibility</td>
</tr>
<tr>
<td></td>
<td>-Currency</td>
</tr>
</tbody>
</table>

### 3. Theory and hypotheses

According to Vroom’s theory (expectation theory), employees have different expectations and levels of confidence about their capabilities (Eerde and Thierry, 1996). This is one of the primary theories of performance evaluation in managerial motivation literature (Kominis and Emmanuel, 2007). The expectancy theory focuses on the outcome, and it suggests that individuals consider alternative outcomes, analyse the costs and benefit of each outcome, and choose an outcome with optimum utility (Woodroof and Kasper, 1998). Since this research is focusing on ERP systems post-implementation phase, it is essential to evaluate stakeholder performance and to measure whether ERP system meets their expectation of the systems.

#### 3.1.1. Hypotheses

Performance in IS environment has been defined by Au et al. (2008) as “the perceived outcome from IS use” for ERP systems; higher performance level of ERP systems will lead to higher level of stakeholders’ performance. For IS to be considered successful, it must be both effective (in terms of outcome) and efficient (in terms of process). Both process and outcome are considered to be essential in users’ needs. Expectable ERP Systems Performance refers to the stakeholders’ expectations and needs that can be enabled by using an ERP system at the workplace (i.e. university). This considers basic needs that the stakeholders demand, for example developing performance and functional effectiveness

**Hypothesis 1:** Higher MADAR system quality automatically leads to higher stakeholders’ performance in KSU.

In addition, some IS researchers (e.g. Pitt et al., 1995) found it important to include service quality measure as part of the IS success, which has been considered by Delone and Mclean (2003). The service support that stakeholders have from their ERP system team can lead to higher performance. The service can support stakeholders, answering their questions and solving any problems they may face, and provide the latest hardware and software. Expectable ERP systems of technical support performance refer to the stakeholders’ expectations and needs that are satisfied by using ERP system in the workplace. This considers basic needs that the stakeholders demand, for example developing performance, functional effectiveness and service quality.

**Hypothesis 2:** Higher MADAR system service support quality leads to higher levels of stakeholders’ performance in KSU.

### 4. Methodology

To develop the understanding of ERP systems in the HE sector, this study aimed to highlight the impact of the ERP systems on the performance of an academic institution, and to provide researchers and practitioners with a new technique to enhance their evaluation of ERP systems stakeholders’ performance in higher education. This study identifies the factors contributing to high-quality ERP systems and service quality that leads to high stakeholders’ performance. A quantitative method is adopted in this research. A single case study was conducted at King Saud University (KSU) in the Kingdom of Saudi Arabia. The selection of KSU is based on the need to evaluate such a system and examine the impact from the stakeholders’ perceptive. KSU is the most suitable case study, as discussed in the following section. Case study is commonly used as a research method in the social science disciplines (Yin 2009).

#### 4.1. Case Study

##### 4.1.1. Case Background
King Saud University is the premier institution of higher education in the Kingdom of Saudi Arabia, established in 1957 (as the first university in the Kingdom) to enhance the nation’s growth in response to the educational needs of a new generation. The MADAR system is an enterprise system used in King Saud University (KSU) since 2007-2008 to deal with all the administrative software of the university (Alshamlan and Almudimigh, 2011). MADAR project is responsible for developing, implementing and maintaining ERP projects within KSU and has experience in implementing many projects in other organisations in Saudi Arabia. MADAR project is on integration and collaboration and it has been implemented and maintaining ERP projects in many organisations in the Kingdom and the results of integration in these organisations has been very successful (Al-mudimigh and Ullah, 2011).

4.2. Data collection and analysis

Data were collected from 60 users of the MADAR system in KSU. A structured questionnaire for the data collection was used. However, the content and the format of the questionnaire were developed from the literature review. The adapted questionnaire used the previously employed IS in general, but the researchers adapted it to fit with ERPs in particular. A pilot study was conducted by 6 users familiar with the MADAR system. Most measurement factors were adopted from previous studies (for IS and ERP system) to ensure the level of reliability and validity. Data collected through the ERP questionnaire were analysed using SPSS (version 19). The choice of statistical methods, in particular the use of non-parametric methods (Spearman correlation), was decided because: (a) data are not normally distributed; and (b) data are from ordinal Likert scales (Bernstein & Bernstein, 1999). Statistical methods and multiple regressions (which are more powerful tests) were used to test H1 and H2 to explore relationships between attitudes towards ERP systems’ quality, service quality and six outcomes of stakeholder performance. The difference between the significant result factors in the correlation and the regression is due to the small sample of the case study.

5. Findings

This section reports on key findings identified from the case study of KSU (MADAR systems)

Hypothesis 1: Higher MADAR systems quality automatically leads to higher Stakeholders’ performance in KSU

Correlation analysis:

Spearman rank order correlations between the 14 systems quality scales and 6 stakeholder performance scales are shown in (Table 2). Correlations between 69 of the 84 bivariate correlations were significant and ranged from -.28 (p < .05) to .62 (p <.01), indicating a mixture of small to large relationships amongst the scales. Given many significant correlations, only moderately/strong correlations (above .5) at the p<.01 level will be reported in this paper. Six of the systems quality scales correlated highly above .5 with stakeholder performance scales, as follows: Accessibility, correlated with five of the six stakeholder performance scales. suggesting that this factor has the strongest link with stakeholder performance, including correlations with time taken to complete task, immediate recall of information, stakeholder confidence and performance, ability to identify problem and solution, and computer awareness, with higher accessibility scores associated with higher efficiency, recall of information, confidence and performance, problem identification, and compute awareness. Ease of use, correlated with two stakeholder performance scales, including improve stakeholders' productivity, and immediate recall of information, with higher ease of use associated with higher productivity and recall of information. Accuracy, correlated with three of the stakeholder performance scales: time taken to complete task, ability to identify problem and solution, and computer awareness, with higher levels of accuracy associated with more efficiency, problem identification and computer awareness. Currency, correlated with computer awareness, with higher levels of currency associated with higher computer awareness. Content, similar to accuracy, correlated with time taken to complete task, ability to identify problem and solution, and computer awareness, with higher content scores associated with higher efficiency, problem identification and computer awareness. Finally, timeliness, correlated with two stakeholder performance scales, including time taken to complete task, and stakeholder confidence and performance, with higher timeliness scores associated with higher efficiency, stakeholder confidence and performance.

Multiple regression analysis:

To more thoroughly test H1, multiple regressions were used to assess the relative importance of the
systems quality variables in explaining differences in towards stakeholder performance. Standard multiple regression (Enter method) was conducted, with the six stakeholder performance scales posited as the dependent variables, and the fourteen ERP systems quality scales posited as the independent variables. The analysis (see table 3) shows the unique effect of each system’s quality predictor on stakeholder performance. The standardised Beta coefficient (β) for each of the variables in the table indicates the amount of change one could expect in stakeholder performance given a one standard deviation increase in a predictor variable, given that all other variables in the model are held constant. The results reveal that seven of the fourteen systems’ quality scales are significant predictors at the .05 to .01 level, including right data, ease of use, flexibility, compatibility, currency, format, and timeliness, while eight of the fourteen variables have no influence on stakeholder performance. Timeliness has the largest Beta values overall, indicating that this factor is the most important systems quality predictor of stakeholder performance. In particular, timeliness positively predicted improves stakeholder productivity, time taken to complete task, and stakeholder confidence and performance. Currency is the second-most important predictor, as it positively predicted computer awareness, and ability to identify problem and solution. Furthermore, ease of use is the third-most important predictor, as it positively predicted improve stakeholders productivity, and immediate recall of information. Right data is the fourth-most important predictor, as it positively predicted time taken to complete task, and stakeholder confidence and performance. Compatibility positively improves stakeholders’ productivity only. Flexibility predicted ability to identify problem and solution.

Hypothesis 2: Higher MADAR systems service support quality results in higher levels of stakeholders’ performance at KSU

Correlation analysis:

This study anticipated that better service support quality would be associated with stakeholders reporting higher levels of stakeholder performance. To test H2, correlations between the four service support quality scales and six stakeholder performance scales were performed. The results are presented in (Table 4). Tangible correlated positively and strongly with improve stakeholders’ productivity, stakeholder confidence and performance, computer awareness, and ability to identify problem and solution, with higher levels of tangibility associated with higher productivity, confidence and performance, computer awareness, and problem identification. Reliability correlated positively and strongly with time taken to complete task, stakeholder confidence and performance, computer awareness, and ability to identify problem and solution, with higher levels of reliability associated with higher efficiency, confidence and performance, computer awareness, and problem identification. Responsiveness correlated positively and strongly with time taken to complete task, stakeholder confidence and performance, computer awareness, and ability to identify problem and solution, with higher levels of responsiveness associated with higher efficiency, confidence and performance, computer awareness, and problem identification. Finally, Assurance correlated positively and highly with ability to identify problem and solution, with higher levels of assurance associated with better problem identification.

Multiple regression analysis:

To more thoroughly test H2, six multiple regression models were determined using the six stakeholder performance scales as the outcome variables and four service quality variables (tangible, reliability, responsiveness, and assurance) as the predictors. (Table 5) displays the standardised regression coefficients (β), the F-statistic, the R² and adjusted R². Tangible significantly and positively predicted improved stakeholder confidence and performance, and computer awareness. Reliability significantly and positively predicted improves stakeholders’ productivity, time taken to complete task, confidence and performance, and ability to identify a problem and solution. Responsiveness significantly and positively predicted stakeholder confidence and performance, and computer awareness. Finally, assurance significantly and positively predicted ability to identify problem and solution.

6. Discussion

The selection factors from previous models proved to provide effective evaluation of stakeholders’ performance. KSU is a pioneer in implementing local ERP systems among the KSA universities. Not surprisingly, the results show that 6 out of 14 quality system factors were positively significant (flexibility, compatibility, right data, currency, ease of use, and timeliness). 4 service quality factors (tangible, reliability, responsiveness, and assurance) were found to have a significant impact on the stakeholder
performance. None of the remaining eight variables predicted stakeholder performance, including lack of confusion, accessibility, assistance, authorisation, format, training, accuracy, and content. However, results of the significant factors (system quality and service quality) were expected. According to Rabaa’i et al. (2009), the main aims of ERP system implementation in HE are to integrate different administrative functions into a more systematic and effective approach, improve information access for planning and managing the institution, improve service for the faculty, students and employees, increased income and decreased expenses due to improve efficiency. In contrast, the result of insignificant factors (e.g. accuracy, content, and accessibility) is unexpected, as they are not consistent with the correlation analysis. Possible reasons for this result include that the MADAR system is new local ERP system which was implemented in KSU (2007-2008). MADAR system was implemented in limited departments in KSU; therefore, the system is only being used for the administrative and finance tasks of employees at the institution. However, a more likely reason for the factors being insignificant in multiple regressions is to do with the sample size of the study, and the fact that the data is not normally distributed (this sample is part of bigger sample which covers three universities in KSA).

In general, the result is considered a substantial achievement for KSU, since 14 system quality as a group explained approximately 54.9% of the variability in improved stakeholders’ productivity, 63.8% of the variability in time taken to complete task, 56.4% of stakeholder confidence and performance, 59.8% of computer awareness, 47.3 of immediate recall of information, and 52.4% of ability to identify problem and solution. According to Pallent (2010) these are acceptable levels of accuracy for academic research. Based on the significant factors result of the KSU case, the authors agreed that the results indicate that (system quality and service quality) factors are playing a major role in the stakeholders’ performance perspective. In addition, MADAR system meets stakeholders’ needs and expectations. For future work, the authors recommend that the MADAR managers should work on updating the system, expanding implementation for further departments and provide intensive training for the employees.

7. Conclusion

The aim of this study is to evaluate the impact of the ERP systems in HE from the perspective of stakeholders’ performance. The integration derived from three widely used models (D&M and IS success, TTF and EUCS), which measure different aspects of factors that have an impact on individual performance in an ERP system environment. Therefore, this study was conducted to evaluate the impact of MADAR system post-implementation on the KSU University stakeholders’ performance. A five-item Likert scale questionnaire was developed to test the proposed theoretical model. Two independent variables of system quality and service quality/technical support were anticipated to be positive factors in MADAR systems stakeholder performance in KSU University. As ERP system is a long-term program that may take several years to implement, evaluating such aspects is not an easy task, and sufficient time is needed after the implementation in order to gather meaningful data. Factors affecting the stakeholders’ performance are complex and plentiful; therefore, conducting a case study is appropriate and effective to help ascertain the specific factors which positively influence ERP system stakeholders’ performance. This study indicates that system quality and service quality have a significant impact on the stakeholders’ performance in general and in particular the system quality factors, namely flexibility, compatibility, right data, currency, ease of use, and timeliness. In addition, the service quality factors (tangible, reliability, responsiveness, and assurance) have a positive impact on stakeholders’ performance.

8. References


9. Appendix

### H1 - KSU: SPEARMAN CORRELATION

Table 2. KSU – H1: Spearman correlations among fourteen systems quality scales and six stakeholders’ performance scales (n=60)

<table>
<thead>
<tr>
<th>Scale</th>
<th>ISP</th>
<th>TCT</th>
<th>CP</th>
<th>CA</th>
<th>IMI</th>
<th>AIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Confusion</td>
<td>.293*</td>
<td>.302*</td>
<td>.283*</td>
<td>.236</td>
<td>.264*</td>
<td>.455**</td>
</tr>
<tr>
<td>Right Data</td>
<td>.364**</td>
<td>.429**</td>
<td>.410**</td>
<td>.325*</td>
<td>.125</td>
<td>.452**</td>
</tr>
<tr>
<td>Accessibility</td>
<td>.428**</td>
<td>.571**</td>
<td>.572**</td>
<td>.625**</td>
<td>.508**</td>
<td>.604**</td>
</tr>
<tr>
<td>Assistance</td>
<td>.284*</td>
<td>.422**</td>
<td>.391**</td>
<td>.398*</td>
<td>.345**</td>
<td>.483**</td>
</tr>
<tr>
<td>Flexibility</td>
<td>-0.006</td>
<td>0.058</td>
<td>0.092</td>
<td>0.114</td>
<td>0.047</td>
<td>0.239</td>
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<td>Authorisation</td>
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<td>-0.047</td>
<td>-0.092</td>
<td>-0.01</td>
<td>-0.05</td>
<td>-0.025</td>
</tr>
<tr>
<td>Ease of Use</td>
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<td>.482**</td>
<td>.473**</td>
<td>.478**</td>
<td>.514**</td>
<td>.450**</td>
</tr>
<tr>
<td>Training</td>
<td>.288*</td>
<td>.311*</td>
<td>.242</td>
<td>.195</td>
<td>-0.009</td>
<td>.278*</td>
</tr>
<tr>
<td>Accuracy</td>
<td>.469**</td>
<td>.524**</td>
<td>.455**</td>
<td>.562*</td>
<td>.422**</td>
<td>.543**</td>
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<tr>
<td>Compatibility</td>
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<td>-0.125</td>
<td>-0.069</td>
<td>0.068</td>
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<td>-0.128</td>
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<td>Currency</td>
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<td>.433**</td>
<td>.442**</td>
<td>.550**</td>
<td>.479**</td>
<td>.491**</td>
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<tr>
<td>Content</td>
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<td>.530**</td>
<td>.431**</td>
<td>.536**</td>
<td>.453**</td>
<td>.590**</td>
</tr>
<tr>
<td>Format</td>
<td>.327*</td>
<td>.440**</td>
<td>.393**</td>
<td>.339**</td>
<td>.352**</td>
<td>.495**</td>
</tr>
<tr>
<td>Timeliness</td>
<td>.493**</td>
<td>.555**</td>
<td>.543**</td>
<td>.472**</td>
<td>.470**</td>
<td>.432**</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01
ISP- Improve Stakeholders Productivity, TCT- Time Taken to Complete Task, CP- Confident and Performance, CA- Computer Awareness, IMI- Immediate Recall of Information, AIP- Ability to Identify Problem and Solution

### H1 - KSU: MULTIPLE REGRESSIONS

Table 3. KSU – H1: Predicting Stakeholders’ Performance by Systems Quality

<table>
<thead>
<tr>
<th>Scale</th>
<th>ISP</th>
<th>TCT</th>
<th>CP</th>
<th>CA</th>
<th>IMI</th>
<th>AIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Confusion</td>
<td>0.085</td>
<td>-0.018</td>
<td>-0.062</td>
<td>-0.059</td>
<td>0.145</td>
<td>0.197</td>
</tr>
<tr>
<td>Right Data</td>
<td>0.119</td>
<td>.287*</td>
<td>.379*</td>
<td>.166</td>
<td>-0.184</td>
<td>0.121</td>
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<tr>
<td>Accessibility</td>
<td>-0.333</td>
<td>-0.07</td>
<td>0.07</td>
<td>0.347</td>
<td>-0.012</td>
<td>0.228</td>
</tr>
<tr>
<td>Assistance</td>
<td>-0.05</td>
<td>-0.12</td>
<td>-0.154</td>
<td>-0.145</td>
<td>-0.004</td>
<td>-0.084</td>
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<td>Authorisation</td>
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<tr>
<td>Ease of Use</td>
<td>.311*</td>
<td>-0.012</td>
<td>0.146</td>
<td>0.082</td>
<td>.313*</td>
<td>-0.088</td>
</tr>
<tr>
<td>Flexibility</td>
<td>0.044</td>
<td>0.001</td>
<td>0.102</td>
<td>0.113</td>
<td>0.02</td>
<td>.236*</td>
</tr>
<tr>
<td>Training</td>
<td>0.033</td>
<td>0.002</td>
<td>-0.032</td>
<td>-0.089</td>
<td>-0.171</td>
<td>0.116</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.274</td>
<td>0.171</td>
<td>0.016</td>
<td>0.208</td>
<td>0.154</td>
<td>0.045</td>
</tr>
<tr>
<td>Compatibility</td>
<td>.276*</td>
<td>-0.076</td>
<td>0.002</td>
<td>0.055</td>
<td>0.045</td>
<td>-0.111</td>
</tr>
<tr>
<td>Currency</td>
<td>0.118</td>
<td>0.161</td>
<td>0.263</td>
<td>.313*</td>
<td>0.198</td>
<td>.320*</td>
</tr>
<tr>
<td>Content</td>
<td>-0.125</td>
<td>0.299</td>
<td>0.117</td>
<td>.274</td>
<td>.274</td>
<td>0.22</td>
</tr>
<tr>
<td>Format</td>
<td>-0.015</td>
<td>-0.1</td>
<td>-0.098</td>
<td>-0.361*</td>
<td>-0.26</td>
<td>-0.067</td>
</tr>
<tr>
<td>Timeliness</td>
<td>.560**</td>
<td>.500**</td>
<td>.246*</td>
<td>.13</td>
<td>0.283</td>
<td>0.078</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.549</td>
<td>0.638</td>
<td>0.564</td>
<td>0.598</td>
<td>0.473</td>
<td>0.624</td>
</tr>
<tr>
<td>Adj. ( R^2 )</td>
<td>0.408</td>
<td>0.526</td>
<td>0.424</td>
<td>0.474</td>
<td>0.309</td>
<td>0.507</td>
</tr>
<tr>
<td>F-ratio</td>
<td>3.909***</td>
<td>5.677***</td>
<td>4.096***</td>
<td>4.791***</td>
<td>2.885***</td>
<td>5.339***</td>
</tr>
</tbody>
</table>

The figures in the table are standardized regression weights (\( \beta \)), the figures in parentheses are t-values.

* \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \)
ISP- Improve Stakeholders Productivity, TCT- Time Taken to Complete Task, CP- Confident and Performance, CA- Computer Awareness, IMI- Immediate Recall of Information, AIP- Ability to Identify Problem and Solution
### H2 - KSU: Spearman Correlations

Table 4. H2: KSU: Correlations among the four Service Support Quality Scales and six Stakeholders’ Performance Scales (n=60)

<table>
<thead>
<tr>
<th>Service Quality Scales</th>
<th>ISP</th>
<th>TCT</th>
<th>CP</th>
<th>CA</th>
<th>IMI</th>
<th>AIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>.500*</td>
<td>.432**</td>
<td>.577**</td>
<td>.578**</td>
<td>.346**</td>
<td>.531**</td>
</tr>
<tr>
<td>Reliability</td>
<td>.424**</td>
<td>.630**</td>
<td>.636**</td>
<td>.604**</td>
<td>.385**</td>
<td>.642**</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>.186</td>
<td>.528**</td>
<td>.526**</td>
<td>.559**</td>
<td>.283**</td>
<td>.511**</td>
</tr>
<tr>
<td>Assurance</td>
<td>.198</td>
<td>.356**</td>
<td>.336**</td>
<td>.387**</td>
<td>.267**</td>
<td>.554**</td>
</tr>
</tbody>
</table>

* *p < .05, **p < .01

ISP - Improve Stakeholders Productivity, TCT - Time Taken to Complete Task, CP - Confident and Performance, CA - Computer Awareness, IMI - Immediate Recall of Information, AIP - Ability to Identify Problem and Solution

### H2 - KSU: Multiple Regressions

Table 5. H2: KSU: Predicting Stakeholders’ Performance by Service Support Quality

<table>
<thead>
<tr>
<th>Service Quality Scales</th>
<th>ISP</th>
<th>TCT</th>
<th>CP</th>
<th>CA</th>
<th>IMI</th>
<th>AIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>.356*</td>
<td>.139</td>
<td>.345**</td>
<td>.265*</td>
<td>.178</td>
<td>.21</td>
</tr>
<tr>
<td>Reliability</td>
<td>.317*</td>
<td>.447**</td>
<td>.272*</td>
<td>.256</td>
<td>.217</td>
<td>.340*</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>-.084</td>
<td>.195</td>
<td>.287*</td>
<td>.304*</td>
<td>.009</td>
<td>-.037</td>
</tr>
<tr>
<td>Assurance</td>
<td>-.051</td>
<td>-.019</td>
<td>-.102</td>
<td>.001</td>
<td>.088</td>
<td>.364**</td>
</tr>
<tr>
<td>R²</td>
<td>.035</td>
<td>.444</td>
<td>.495</td>
<td>.47</td>
<td>.166</td>
<td>.502</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.254</td>
<td>.404</td>
<td>.458</td>
<td>.432</td>
<td>.105</td>
<td>.466</td>
</tr>
<tr>
<td>F-ratio</td>
<td>6.030***</td>
<td>10.990***</td>
<td>13.479***</td>
<td>12.204***</td>
<td>2.739***</td>
<td>13.885***</td>
</tr>
</tbody>
</table>

The figures in the table are standardized regression weights (β), the figures in parentheses are t-values.

* *p < .05, **p < .01, ***p < .001

ISP - Improve Stakeholders Productivity, TCT - Time Taken to Complete Task, CP - Confident and Performance, CA - Computer Awareness, IMI - Immediate Recall of Information, AIP - Ability to Identify Problem and Solution