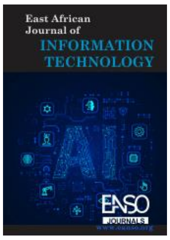


**East African Journal of Information Technology**
eajit.eanso.org
**Volume 6, Issue 1, 2023**
**Print ISSN: 2707-5346 | Online ISSN: 2707-5354**
Title DOI: https://doi.org/10.37284/2707-5354

EAST AFRICAN NATURE & SCIENCE ORGANIZATION

*Original Article*

# Assessment of the Role of Enterprise Resource Planning (ERP) Implementation on Machakos University's User Performance

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**Article DOI: https://doi.org/10.37284/eajit.6.1.1562**

**Date Published:**

*9 November 2023*

**Keywords**:

*Technology Utilisation, System Quality, Information Quality and User Performance*

## ABSTRACT

Enterprise resource planning (ERP) systems occupy one of the largest and most important areas of information systems implementation in organisations in the world today. This study assessed the role of ERP implementation on Machakos University's user performance. This study determined the relationship between enterprise resource planning system technology utilisation and user performance, system quality and user performance, and information quality and user performance. This study focused on user performance as compared to most studies that look into performance at the organisational level. The study made use of ICT models of adoption as its guidance. The implementation aspect was viewed from three perspectives, which include system technology utilisation, information quality, and finally, the system quality of the ERP system. Each aspect was analysed, and its effect on ERP system users was established in part and discussed. Data collection involved the use of questionnaires regarding the user performance of the ERP. Pearson's correlation analysis was the statistical tool analyse the quantitative data. Microsoft Excel was used to capture data and transferred later into SPSS for detailed analysis, while descriptive statistics was used to help understand the characteristics of the study population. Computations from quantitative analysis pointed out respectively that Pearson's correlation coefficient of technology utilisation = 0.686, system quality = 0.682, information quality = 0.757 and user performance (P-Value = 0.000) under the mediation of technology acceptance. This affirmed that for an ERP system, technology utilisation, system quality, information quality, respectively, and user performance have a statistically significant linear relationship ($p < .05$). Results also indicated that the magnitude or strength of the association is a strong one for each one of them since each of the aspects had its results within the range ($.5 < |r| < .9$). Characteristics of adopted technology, if well integrated together with the user tasks and abilities, and then coupled with appropriate system quality and information quality, resulted in enhanced user performance of an institution and by recommendation, such should form the backbone of an ERP as entails its design and implementation.

 

**APA CITATION**

Mauye, M. (2023). Assessment of the Role of Enterprise Resource Planning (ERP) Implementation on Machakos University's User Performance. *East African Journal of Information Technology*, *6*(1), 243-255. https://doi.org/10.37284/eajit.6.1.1562

**CHICAGO CITATION**

Mauye, Martin. 2023. "Assessment of the Role of Enterprise Resource Planning (ERP) Implementation on Machakos University's User Performance". *East African Journal of Information Technology* 6 (1), 243-255. https://doi.org/10.37284/eajit.6.1.1562.

**HARVARD CITATION**

Mauye, M. (2023) "Assessment of the Role of Enterprise Resource Planning (ERP) Implementation on Machakos University's User Performance", *East African Journal of Information Technology*, 6(1), pp. 243-255. doi: 10.37284/eajit.6.1.1562.

**IEEE CITATION**

M. Mauye. "Assessment of the Role of Enterprise Resource Planning (ERP) Implementation on Machakos University's User Performance", *EAJIT*, vol. 6, no. 1, pp. 243-255, Nov. 2023.

**MLA CITATION**

Mauye, Martin "Assessment of the Role of Enterprise Resource Planning (ERP) Implementation on Machakos University's User Performance". *East African Journal of Education Studies*, Vol. 6, no. 1, Nov. 2023, pp. 243-255, doi:10.37284/eajit.6.1.1562.

## INTRODUCTION

The Enterprise Resource Planning (ERP) system is a computer-based tool capable of merging various business processes and organising the information into an advanced data structure entity (Yu Chung Wang, Pauleen & Taskin, 2022). ERP implementation remains one of the largest and most important areas of information systems in organisations since their benefits are innumerable (Xulu& Suknunan, (2020). An ERP system can also be defined as a commercial and configurable software package that can manage and integrate all the information flowing through functional areas in an organisation (Simon, 2021). In other words, a system qualifies to be an ERP if it consists of a main database that is able to store data throughout numerous business functions and happenings regarding an organisation (Cruz-Torres, Alvarez-Risco & Del-Aguila-Arcentales, 2021) and information security issues such as potential loss of authorisation, confidentiality of data, safety in authentication, server downtime, or even to the worst, eventual failure of the system. Total failure of a system will mean the loss of large investment capital for a firm or competitive advantage becoming ruined (Sislian & Jaegler, 2020) or even lead to an eventual collapse of the system or the organisation's demise.

Information Technology Global Market Report 2023 edition indicated that the latest trends in information and communication technology entailed intensified use of open-source software and advancement of the internet (Report Linker, 2023). More and more diverse components are coming online, and hence, interconnecting more of our world, day by day and at an accelerating rate. The prediction by 2020 was of over 26 billion devices with internet connection and over 4 billion users (Baller, Dutta & Lanvin, 2016). Information technology (IT) has been incorporated into our modern way of life and continues to transform our economy, firms, work, and society. Digitisation as a phenomenon is creating new winners and losers within most industries and is hastening the gap between them. In their global study of the phenomenon of digitalisation of leadership in business, the MIT Sloan Management Review and Deloitte's 2022 (Schräge, Muttreja & Kwan, 2022) noted that their disruption of legacy business and now digital leadership defines business maturity, whereby businesses are tending to focus on amalgamating of digital technologies such as social, mobile, analytics and cloud, in the service of transforming how their businesses work.

Enterprise Resource Planning (ERP) systems have gained significant prominence in higher education institutions (HEIs), driven by the influence of global trends such as globalisation and the knowledge economy (Bamufleh, Almalki,

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

Almohammadi & Alharbi, 2021). HEIs have recognised the need to leverage Information and Communication Technology (ICT) to enhance performance and efficiency, aligning with the practices in the business and manufacturing sectors (Bamufleh et al., 2021). This shift towards ERP implementation in the academic sector has led to various benefits and challenges.

A review of 18 studies on ERP implementations in HEIs identified several advantages (Alloush & Mahendrawathi, 2020). These include the amalgamation of the entire campus system, improved communication efficiency, reduction of manual and repetitive operations, faster access to data, enhanced strategic decision-making, improved growth in follow-up and planning capabilities, integrated self-service environments for students, staff, and faculty, efficient administrative services, integration of educational and administrative processes, and improved quality of services to stakeholders (Alloush & Mahendrawathi, 2020).

The adoption of ERP systems in higher education institutions is on the rise, with universities investing significantly in their implementation (Soliman & Karia, 2017). However, it's important to note that ERP implementation can have a high failure rate (BBC, 2016), and there is ongoing debate regarding their contribution to performance, especially at the user level (Novikov & Sazonov, 2020). These systems are costly and demand substantial resources for proper implementation (Bamufleh et al., 2021).

Despite the significant investment, there has been relatively limited research on user performance in higher education compared to other sectors like manufacturing and business (Alloush & Mahendrawathi, 2020). Higher education institutions face challenges such as increased stakeholder expectations, declining government support, maintaining quality standards, and competitiveness in the educational environment (Andrianto, 2019). These challenges have pressured universities to adopt new strategies to improve their performance and relevance (Andrianto, 2019).

The adoption of ERP systems has become a response to these challenges, as they help higher education institutions cope with the changing environment and replace outdated and unintegrated computer-based systems (Bamufleh et al., 2021). Properly designed ERP systems can potentially improve service delivery and enhance organisational change and effectiveness (Santoso, Siagian, Tarigan & Jie, 2022).

ERP systems are particularly attractive to academic entities, including schools and departments, as they offer well-designed applications for research and teaching (Cruz-Torres et al., 2021). These systems are designed to automate and integrate various business processes in higher education, such as recruitment, admission, financial aid, student records, security, and academic and administrative services (Andrianto, 2019).

It is worth noting that ERP implementation in higher education institutions is not without its challenges (BBC, 2016). Research suggests a high failure rate of ERP systems, with some users expressing disappointment in their performance (Bamufleh et al., 2021). Thus, it is crucial to understand users' vulnerabilities that can impact ERP systems' effectiveness (Novikon & Sazonov, 2020). This entails the degree to which specified users can make a product used to accomplish specified goals with effectiveness, efficiency, and satisfaction in a specified context of use (ISO/IEC 25000:2014).

It has been pointed out by studies as many as 60% to 80% of all ERP systems do encounter failure due to their non-achievement of anticipated results (Ahmed, Eryilmaz & Alzahrani, 2022) and or lack of improving performance by users venting displeasure with the performance. Less research has been done regarding ERP systems in a university setting and specifically user performance (Alloush & Mahendrawathi, 2020). Commission for University Education in Kenya (CUE, 2019) indicates that 71 higher education institutions are accredited. These include fully-fledged universities (Machakos University included) and university colleges. Of these, 31

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

started are public chartered universities, and 6 are constituent colleges of public universities. There are 13 institutions with letters of interim authority.

This study uniquely assesses the implementation of an ERP in a university setup by use of a combination of three ICT models, which previous studies only indicate one or a combination of two models. The user aspect was viewed from three perspectives (verified models of assessing ERPs), which include system technology utilisation, information quality, and finally, the system quality of the ERP system.

## Research Objectives

The study was guided by the following specific objectives:

- To determine the relationship between enterprise resource planning system technology utilisation and employee user performance at Machakos University.
- To investigate the relationship between enterprise resource planning system quality and employee user performance at Machakos University.
- To evaluate the relationship between enterprise resource planning system information quality and employee user performance at Machakos University.

## METHODOLOGY

A cross-sectional survey design using a mixed research approach was employed in this research. The cross-sectional survey design involves simultaneously assessing exposure and outcomes (Taris, Kessler & Kelloway, 2021). This type of survey is primarily concerned with examining relationships between different variables (Taris et al., 2021). The research focused on established constructs within various models of technology utilisation and aimed to establish their connection with the performance of users in an information system. Data collection was established via a questionnaire that the sampled respondents filled out and captured the parameters of the study as indicated in the attached questionnaire.

Machakos University, the place of the study, is situated about 65 Km east of Nairobi, Kenya, East Africa. At the time of the study, Machakos University (MksU) had a total of 397 staff members using the ERP and hence form the study population. The staff at MksU utilised a custom-designed premium software known as ABN UNISOL, which is an Enterprise Resource Planning (ERP) system tailored for universities and higher education institutions. This software was employed for tasks such as student admissions, registration, and academic management, among other administrative functions. The finance department staff frequently utilised the system to record financial data across various college departments and produce various financial documents. Additionally, the library and store personnel were frequent users of the system for issuing and inventory control activities. The study sample size for participants was determined by Yamane’s (1967:886) simplified sample size formula and reviewed by Glenn (2012), and a population of 397 gave a sample size of 80.

## Sample and Sampling Techniques

The sample size for participants was 80 respondents as determined by Yamane’s (1967:886) simplified sample size formula and reviewed by Israel Glenn (2012), a population of 397 gave a sample size of 80.

$$n = \frac{N}{1+N(e)^2}$$

Where $n$ is the sample size, $N$ is the size of the population, and $e$ is the level of precision, in this case being 90%. Therefore, the sample size, n = $\frac{397}{1+397(0.1)^2} = 80$

The sample size was purposively distributed, as indicated in the following table.

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

**Table 1: Sample size distribution**

| Section | No. of Participants |
|---|---|
| Stores/procurement | 10 |
| Academic | 47 |
| Library | 10 |
| Finance | 10 |
| Housekeeping | 3 |
| Total | 80 |

The research employed techniques that prioritise precision, generalizability, and descriptive capabilities while minimising administrative complexity. Data collection was facilitated through the use of questionnaire instruments, which were designed based on the study's objectives and drew heavily from constructs found in models like TAM, TFF, and the D&M success model, which are recognised models in the context of technology acceptance, utilisation, and user satisfaction.

### Questionnaires

Questionnaires in this study were derived majorly from the constructs in TAM, TFF and D&M success models, all being models of technology acceptance, utilisation, and satisfaction. *Table 2* shows the various constructs and their respective questionnaire items from validated past studies.

**Table 2: Measurement constructs and questionnaire items**

| Variable | Nature | Operational Definition | Source | Questionnaire Section |
|---|---|---|---|---|
| Technology Utilisation | Independent | Compatibility<br>Meaning<br>Adequacy<br>IT Support | (Al-Emran, 2021; Justino, Tengeh, & Twum-Darko, 2022; Mustafa et al., 2022) | 1.0 |
| ERP information quality | Independent | Accuracy<br>Relevance<br>Timeliness<br>Completeness<br>Accessibility | (Batada, Duang-Ek-Anong, & Achwarin, 2020; Çelik & Ayaz, 2022; DeLone & McLean, 2016) | 2.0 |
| ERP system quality | Independent | Reliable<br>Correctness<br>Response time<br>Integration<br>Designation<br>Experience<br>Level of education | (Batada et al., 2020; Çelik & Ayaz, 2022; DeLone & McLean, 2016; Jami Pour, Mesrabadi, & Asarian, 2022; Rokhman, Mukhibad, Bagas Hapsoro, & Nurkhin, 2022) | 3.0 |
| Perceived usefulness | Moderating | Work Usefulness<br>Objective Support | (Al-Adwan, 2020; Batada et al., 2020; Grandón, Magal, Pinzón, & Contreras, 2020; Uddin, Alam, Mamun, Khan, & Akter, 2019) | 4.0 |
| Perceived ease of use | Moderating | User-friendliness<br>Easy to learn<br>Easy to use | (Al-Adwan, 2020; Grandón et al., 2020; Uddin et al., 2019) | 4.0 |
| User performance | Depended | Effectiveness<br>Efficiency<br>Creativity | (Al-Adwan, 2020; Grandón et al., 2020; Uddin et al., 2019) | 5.0 |

**Source**: Researcher

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

To give the respondents enough scope of choice distribution, a 5-point Likert scale was used to design the study questionnaire.

### *Validity of the Questionnaires*

In order to ascertain the validity of the instrument, a pretest was carried out on a sample population similar to the target population. Items which were not appropriate for measuring the variables were modified or discarded to improve the quality of the research instrument, thus increasing its validity. A small group of the population was given questionnaires to fill out. The group was later interrogated for the purpose of establishing any difficulties to do with the process. During the pilot testing study, the data gathered was set up, analysed and interpreted and then, based on the outcomes, the instruments were assessed further in readiness for data collection. The researcher also had the instruments appraised and amended by experts in the area of study.

### *Reliability of the Questionnaires*

Even though most items used in the study instrument were validated in previous studies, for the sake of further validity, the adopted instrument was verified to guarantee high content and construct validity within the ERP context through two phases as follows. To ensure that the study questionnaires were reliable, experts were first consulted to determine their suitability. The questionnaires were then pretested by distributing them to some respondents and making revisions based on the feedback received. Finally, Cronbach's alpha was used to measure the internal consistency of the model constructs. Cronbach's alpha values for the different model constructs are presented in *Table 3*. Since acceptable alpha values range from 0.7 to 0.95 (Rose & Johnson, 2020), the results in the table demonstrate that all constructs in the model exhibited an acceptable level of reliability.

**Table 3: Reliability Analysis of Constructs**

| Construct | Number of Questionnaire Items | Cronbach's Alpha |
|---|---|---|
| Task Technology Fit | 11 | 0.893 |
| ERP Information Quality | 9 | 0.903 |
| ERP System Quality | 9 | 0.822 |
| Technology Acceptance | 6 | 0.801 |
| Efficiency | 14 | 0.955 |

**Source:** Researcher

## RESULTS AND DISCUSSION

### Correlation Statistics

This section sought to establish how the ERP system user performance related to respondents' technology utilisation, system quality and information quality via correlation statistics. The study developed an ERP system user performance index through vigorous Likert-scaled questions to the respondents who cited the system as either having made them effective or ineffective in enhancing their chore duties. For the research analysis purposes, the ineffective was coded 1; otherwise, it was coded 0. Correlation statistics were used to assess the significance of the findings at a 95% confidence level. This was done by testing the independence of the paired observations (i.e., the group citing the system as ineffective and the group that upheld its performance) on the independent variables expressed in a contingency table. Pearson's correlation coefficient was appropriate since the study design had a categorical response variable from a single population.

Correlation statistics are commonly measured by the coefficient of correlation (denoted as r). The correlation coefficient entails the degree to which the change in a set of variables is associated. This implies that we are seeking to find out if the two variables have a correlation at all, and then how strong the correlation is and whether the correlation is positive or negative. It entails numerical values whose range is from -1.0 to

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

+1.0, which gives us an indication of the strength of the relationship upon interpretation.

In general, when the computed result $r > 0$, this signifies a positive relationship; when the computed result $r < 0$, this then signifies a negative relationship, but when the results $r = 0$, then this is an indication that there is no relationship (or that the variables are independent and not related). However, when the computed result $r = +1.0$, then this is described as a perfect positive correlation, and when $r = -1.0$, the condition is expressed as a perfect negative correlation. The closer the coefficients are to +1.0 and -1.0, the greater is the strength of the relationship between the variables.

Given a set of bivariate data represented by two variables, x and y, the Pearson's correlation coefficient between x and y denoted by $r_{xy,}$ is given by:

$$r_{xy} = \frac{\mathrm{cov}(x,y)}{\sqrt{\mathrm{var}(x)} X \sqrt{\mathrm{var}(y)}} = \frac{S_{xy}}{S_x S_y}$$

$$= \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\Sigma(x-\bar{x})^2}\ X\ \sqrt{\Sigma(y-\bar{y})^2}}$$

$$= \frac{\sum xy - n\bar{x}\bar{y}}{\sqrt{x^2 - n\bar{x}^2}\ X\ \sqrt{\Sigma y^2 - n\bar{y}^2}}$$

$$= \frac{n\sum xy - (n\bar{x})(n\bar{y})}{\sqrt{n\sum x^2 - (n\bar{x})^2}\ X\ \sqrt{n\sum y^2 - (n\bar{y})^2}}$$

$$r_{xy} = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{n\sum x^2 - (\sum x)^2}\ X\ \sqrt{n\sum y^2 - (\sum y)^2}}$$

**Table 4: Interpretation of size effect of the computed r**

| Coefficient Value (r) | Strength of Association |
|---|---|
| -0.9 to -0.5 or 0.9 to 0.5 | Strong |
| -0.5 to -0.3 or 0.3 to 0.5 | Moderate |
| -0.3 to -0.1 or 0.1 to 0.3 | Weak |
| -0.1 to 0.1 | None or very weak |
| -1 or +1 | Perfect |

**Source**: Cohen, L. (1992)

The implementation aspect was viewed from three perspectives: system technology utilisation (i.e. task technology fit (TTF)), information quality (IQ) and system quality (SQ) of the ERP system. Each aspect was analysed, and its effect on ERP system users was established in part and discussed.

**Correlations multi-Collinearity**

**Table 5: P-value of ERP System Implementation and the User performance**

| | | User Perf. | Tech. Utility. | Infor. Quality. | Sys. Quality. |
|---|---|---|---|---|---|
| Pearson Correlation | User Perf. | 1.000 | .686 | .757 | .682 |
| | Tech Util. | .686 | 1.000 | .682 | .628 |
| | Infor Qual. | .757 | .682 | 1.000 | .830 |
| | Sys Qual. | .682 | .628 | .830 | 1.000 |
| Sig. (1-tailed) | User Perf. | - | .000 | .000 | .000 |
| | Tech Util. | .000 | - | .000 | .000 |
| | Infor Qual. | .000 | .000 | - | .000 |
| | Syst Qual. | .000 | .000 | .000 | - |
| N | User Perf. | 79 | 79 | 79 | 79 |
| | Tech Util. | 79 | 79 | 79 | 79 |
| | Infor Qual. | 79 | 79 | 79 | 79 |
| | Sys Qual. | 79 | 79 | 79 | 79 |

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

### ERP System Technology Utilization and User Performance

The research examined the implementation aspect from three different perspectives, one of which focused on how well the task technology aligned with the user's requirements, commonly referred to as technology utilisation. The outcomes of this analysis are presented in *Table 6* and *Table 7*.

**Table 6: ERP software system task technology fitness and the user effectiveness**

| Response | Count | Task Technology Utilisation | | Total |
|---|---|---|---|---|
| | | Task Tech. Fit | Task Technology Unfit | |
| Effective | Observed Count | 42 | 1 | 43 |
| | Expected Count | 38.6 | 4.4 | 43 |
| Ineffective | Observed Count | 29 | 7 | 36 |
| | Expected Count | 32.4 | 3.6 | 36 |
| | Total | 71 | 8 | 79 |

**Table 7: Pearson's value for ERP technology utilisation and user performance**

| | | User Performance | Technology Utilisation |
|---|---|---|---|
| Pearson Correlation | User performance | 1.000 | .686 |
| | Technology utilisation | .686 | 1.000 |
| Sig. (1-tailed) | User performance | - | .000 |
| | Technology utilisation | .000 | - |
| N | User performance | 79 | 79 |
| | Technology utilisation | 79 | 79 |

The data presented in the table indicates that there is a Pearson's correlation coefficient of 0.686 between technology utilisation and user performance, with a corresponding p-value of 0.000. These computed results confirm a statistically significant relationship ($p < .05$) between technology utilisation and user performance. The nature of this relationship is positive, signifying that higher technology utilisation is associated with enhanced user performance. The strength of this association falls within the range of ($.5 < | r | < .9$), indicating a robust correlation. Consequently, the suitability of the ERP system for users was statistically significant in determining user performance at a 95% confidence level. The study found that 42 out of 43 effective respondents (97.7%) reported that the task technology effectively addressed their needs. These results highlight a significant relationship between the fitness of the system's technology, user characteristics, and user performance, as depicted in *Table 6*. Recent research, exemplified by Mehta et al. (2022), has underscored the importance of the Task Technology Fit (TTF) model, emphasising the alignment between user needs, task requirements, and technology characteristics. The findings indicate that TTF, technology utilisation and technology acceptance all significantly and positively impact user performance in the context of ERP systems, aligning with previous research (Abugabah et al., 2015; Al-Emran, 2021; Alyoussef, 2021; Justino et al., 2022; Mustafa et al., 2022; Ratna et al., 2020) that arrived at similar conclusions.

### ERP Software System Quality and User Performance

System quality refers to the technical evaluation of how well a system performs from a technical standpoint. The responses were classified as effective or ineffective, as indicated and elaborated in *Tables 8* and *9*.

**Table 8: ERP software system quality and the user performance**

| Response | Count | System Quality | | Total |
|---|---|---|---|---|
| | | High quality | Low quality | |
| Effective | Observed Count | 29 | 14 | 43 |
| | Expected Count | 18.5 | 24.5 | 43 |
| Ineffective | Observed Count | 5 | 31 | 36 |
| | Expected Count | 15.5 | 20.5 | 36 |
| | Total | 34 | 45 | 79 |

**Table 9: Pearson's value of ERP system quality and the user performance**

| | | User Performance | System Quality |
|---|---|---|---|
| Pearson Correlation | User Performance | 1.000 | .682 |
| | System Quality | .682 | 1.000 |
| Sig. (1-tailed) | User Performance | - | .000 |
| | System Quality | .000 | - |
| N | User Performance | 79 | 79 |
| | System Quality | 79 | 79 |

The Pearson's correlation coefficient between system quality and user performance was found to be 0.682, with a p-value of 0.000 (*Table 9*). The results show a statistically significant relationship ($p < .05$) between system quality and user performance. This relationship had a positive direction, indicating that higher system quality was associated with improved user performance. The strength of this association fell within the range of ($.5 < | r | < .9$), signifying a robust correlation. The findings underscored a significant relationship between these variables ($r = 0.682$), with the correlation coefficient significantly different from zero ($P < 0.001$) at a 95% confidence level. Therefore, based on these results, the system quality of the ERP system was a statistically significant determinant of user performance. Only 5 out of 36 ineffective respondents (13.8%) perceived the ERP software system as of high quality, in contrast to 29 out of 43 effective respondents (67.4%). System quality aligns with the desired characteristics of an ERP system, as emphasised by DeLone and McLean (2016) and Jami Pour et al. (2022). As Awad et al. (2022) noted, higher system quality enhances the system's utility to end-users, underscoring the importance of prioritising system quality to impact users positively. These findings are consistent with prior research (Abugabah et al., 2015; Awad et al., 2022; Çelik & Ayaz, 2022; DeLone & McLean, 2016; Jami Pour et al., 2022; Rokhman et al., 2022) indicating that perceived system quality, both directly and indirectly through technology acceptance, is positively linked to individual outcomes, including enhanced individual productivity and performance.

**ERP System Information Quality and User Performance**

The quality of information generated by an ICT system with the aim of enhancing the decision-making process represents another dimension of the system's implementation aspect. It stands as a crucial determinant of user performance, as outlined in *Tables 10* and *11* and subsequently discussed.

The data analysis from the tables above highlights the following: Pearson's correlation coefficient between ERP information quality and user performance was computed as 0.757, with a p-value of 0.000. These results confirm a statistically significant linear relationship ($p < .05$) between ERP system information quality and user performance. The direction of this relationship is positive, indicating that higher ERP system information quality is linked with improved user performance. The strength of this association falls within the range of ($.5 < | r | < .9$), demonstrating a robust correlation. The findings emphasise a significant relationship between

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

these variables (r = 0.757), with the correlation coefficient significantly different from zero ($P < 0.001$) at a 95% confidence level. Therefore, the information quality the ERP system provides is a statistically significant determinant of user performance. According to the study, 31 out of 36 effective respondents (86.1%) perceived the ERP system's information quality as high, in contrast to only 11 out of 43 ineffective respondents (25.5%) who regarded it as low.

**Table 10: ERP software system information quality and the user effectiveness**

| Response | Count | Information Quality | | Total |
|---|---|---|---|---|
| | | High quality | Low quality | |
| Effective | Observed Count | 32 | 11 | 43 |
| | Expected Count | 20.1 | 22.9 | 43 |
| Ineffective | Observed Count | 5 | 31 | 36 |
| | Expected Count | 16.9 | 19.1 | 36 |
| | Total | 37 | 42 | 79 |

**Table 11: Pearson's Value of ERP Information Quality and the User Performance**

| | | User Performance | Information Quality |
|---|---|---|---|
| Pearson Correlation | User Performance | 1.000 | .757 |
| | Information Quality | .757 | 1.000 |
| Sig. (1-tailed) | User Performance | - | .000 |
| | Information Quality | .000 | - |
| N | User Performance | 79 | 79 |
| | Information Quality | 79 | 79 |

These findings align with prior research, including studies by Abugabah et al. (2015), Awad et al. (2022), Çelik & Ayaz (2022), DeLone & McLean (2016), Jami Pour et al. (2022), and Rokhman et al. (2022), indicating that higher levels of Information Quality (IQ) and System Quality (SQ), either directly or indirectly through technology acceptance, enhance the system's utility to end-users.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

The primary objective of this study was to evaluate the impact of ERP system implementation on the user performance of employees in higher education institutions. Specifically, the study aimed to determine the relationship between technology utilisation, system quality, information quality, and user performance. Based on the study, it can be concluded that ERP software implementation, considering technology utilisation, system quality, and information quality, significantly influenced user performance at a 95% confidence level. The study revealed that a high percentage (97.7%) of effective respondents found that the ERP system effectively addressed their needs. This suggests that technology utilisation factors related to compatibility, meaning, adequacy, and IT support played a crucial role in enhancing user performance.

The findings indicated that 75% of respondents who reported high technology acceptance of the ERP system also experienced improved user performance. This highlights the importance of the system's availability, ease of learning and use, and user-friendliness in achieving better user performance. Effective respondents were more likely (67.4%) to perceive the ERP software system as high quality compared to ineffective respondents (13.8%). Thus, the study concludes that system quality attributes such as reliability, correctness, response time, and integration positively impacted user productivity.

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

The information quality of the ERP system was perceived as high by 86.1% of effective respondents, while only 25.5% of ineffective respondents shared this perception. This led to the conclusion that information quality factors like accuracy, relevance, timeliness, completeness, and accessibility contributed to enhanced user performance. The study demonstrated a significant positive impact of the ERP system on user performance, including increased effectiveness, efficiency, and creativity in the workplace. Users reported enhanced productivity, reduced task completion times, and the generation of innovative ideas.

This research primarily focused on assessing the role of ERP system implementation on user performance, drawing from theoretical frameworks that consider the relationships between these systems and user performance. The study incorporated concepts like the Technology Acceptance Model (TAM), Task Technology Fit (TTF), and the Delone and McLean Information Systems Success Model to explore the influence of ERP system implementation. The study's results supported previous findings that user performance tends to improve when users perceive a system as useful and easy to use.

System quality, technology utilisation, information quality, and technology acceptance were identified as critical factors in determining the success of ERP system implementation. The study concludes that a well-implemented ERP system, when aligned with user needs, capabilities, and industry-specific requirements, positively impacts user performance. It also emphasised the importance of change management and user acceptance in successful ERP implementation.

## Recommendations

In this era of computerisation, the study recommends that organisations and institutions pay close attention to the implementation of software systems and their influence on user-level performance. The following recommendations are made based on the study's findings:

- ERP implementation should ensure that user needs are clearly defined and aligned with the technology's characteristics. Frameworks like Task Technology Fit (TTF), Technology Acceptance, and the Delone and McLean IS Success Model can guide successful ERP implementation by matching technology with user needs and capabilities.
- It is crucial to assess user technology acceptance before implementing an ERP system. Users are more likely to perform well with technology they find easy to use and perceive as beneficial. Pre-implementation acceptance testing can help determine the suitability and acceptance level of a system.
- Users should be informed about the benefits of technology changes, emphasising ease of use, user-friendliness, and overall usefulness. Close collaboration between the ICT team (vendors, implementers, and support) and users is essential for effective training, support, and guidance for all ERP system users.

## Recommendations for Future Studies

The following recommendations are made: Future studies should investigate other user characteristics beyond designation, education level, and experience to assess their relationship with user performance.

- Replicating the study in different institutions can validate the reliability and applicability of the findings across various settings.
- Similar studies can be conducted in different industries, such as agriculture or medicine, to determine the consistency of the findings in various organisational contexts.

The study provides valuable insights into the impact of ERP system implementation on user performance and underscores the importance of considering user needs, system quality, technology utilisation, and information quality for successful implementation. It also highlights the

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

significance of user acceptance and change management in ERP projects.

## REFERENCES


Abugabah, A., Sanzogni, L., & Alfarraj, O. (2015). Evaluating the impact of ERP systems in higher education. *The International Journal of Information and Learning Technology*.

Ahmed, Z., Eryilmaz, E., & Alzahrani, A. I. (2022). IS diffusion: A dynamic control and stakeholder perspective. *Information & management, 59*(1), 103572.

Al-Emran, M. (2021). Evaluating the use of smartwatches for learning purposes through the integration of the technology acceptance model and task-technology fit. *International Journal of Human-Computer Interaction, 37*(19), 1874-1882.

Alloush, O. A. A., & Mahendrawathi, E. (2020). ERP Systems in Higher Education: A Systematic Literature Review. *SISFO VOL 9 NO 2, 9*.

Alyoussef, I. Y. (2021). E-Learning acceptance: The role of task–technology fit as sustainability in higher education. *Sustainability, 13*(11), 6450.

Andrianto, A. (2019). Impact of Enterprise Resource Planning (ERP) implementation on user performance: studies at University of Jember. Paper presented at the Journal of Physics: Conference Series.

Awad, R., Aljaafreh, A., & Salameh, A. (2022). Factors Affecting Students' Continued Usage Intention of E-Learning During COVID-19 Pandemic: Extending Delone & Mclean IS Success Model. *International Journal of Emerging Technologies in Learning, 17*(10).

Baller, S., Dutta, S., & Lanvin, B. (2016). *Global information technology report 2016*: Ouranos Geneva.

Bamufleh, D., Almalki, M. A., Almohammadi, R., & Alharbi, E. (2021). User acceptance of Enterprise Resource Planning (ERP) systems in higher education institutions: A conceptual model. *International Journal of Enterprise Information Systems (IJEIS), 17*(1), 144-163.

BBC News 24. (2016, September 23). Grant Paling from Nebulas answers questions submitted for #BBCaskthis in relation to the Yahoo data breach announced today 23/09/2016 [Video]. YouTube. https://youtu.be/O32Pse_7W_I

Çelik, K., & Ayaz, A. (2022). Validation of the Delone and McLean information systems success model: a study on student information system. *Education and Information Technologies, 27*(4), 4709-4727.

Commission for University Education. (2019). Copyright© 2019 Commission for University Education. Nairobi; Printed in Kenya.

Cruz-Torres, W., Alvarez-Risco, A., & Del-Aguila-Arcentales, S. (2021). Impact of Enterprise Resource Planning (ERP) implementation on performance of an education enterprise: a Structural Equation Modeling (SEM).

DeLone, W. H., & McLean, E. R. (2016). Information systems success measurement. *Foundations and Trends® in Information Systems, 2*(1), 1-116.

Glenn, D. I. (2012). Determining Sample Size, PEOD6. *University of Florida*.

ISO/IEC. (2020). ISO/IEC 25000:2014 Systems and software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE).

Jami Pour, M., Mesrabadi, J., & Asarian, M. (2022). Meta-analysis of the DeLone and McLean models in e-learning success: the moderating role of user type. *Online Information Review, 46*(3), 590-615.

Justino, M. V., Tengeh, R. K., & Twum-Darko, M. (2022). Task-technology fit perspective of the use of m-commerce by retail businesses.

Article DOI: https://doi.org/10.37284/eajit.6.1.1562

*Entrepreneurship and Sustainability Issues, 9*(4), 320.

Mehta, N., Chauhan, S., & Kaur, I. (2022). Extending the story of IS success: a meta-analytic investigation of contingency factors at individual and organisational levels. *European Journal of Information Systems, 31*(5), 617-640.

Mustafa, A. S., Alkawsi, G. A., Ofosu-Ampong, K., Vanduhe, V. Z., Garcia, M. B., & Baashar, Y. (2022). Gamification of E-Learning in African Universities: Identifying Adoption Factors Through Task-Technology Fit and Technology Acceptance Model. In *Next-Generation Applications and Implementations of Gamification Systems* (pp. 73-96): IGI Global.

NOVIKOV, S. V., & SAZONOV, A. A. (2020). Improving the enterprise resource planning system based on digital modules of the industry 4.0 concept. *Revista ESPACIOS, 41*(05).

Ratna, S., Utami, H. N., Astuti, E. S., & Muflih, M. (2020). The technology tasks fit, its impact on the use of information system, performance and users' satisfaction. *VINE Journal of Information and Knowledge Management Systems*.

ReportLinker. (2023). Information Technology Global Market Report 2023. GlobeNewswire

Rokhman, F., Mukhibad, H., Bagas Hapsoro, B., & Nurkhin, A. (2022). E-learning evaluation during the COVID-19 pandemic era based on the updated of Delone and McLean information systems success model. *Cogent Education*, *9*(1), 2093490.

Santoso, R. W., Siagian, H., Tarigan, Z. J. H., & Jie, F. (2022). Assessing the benefit of adopting ERP technology and practicing green supply chain management toward operational performance: An evidence from Indonesia. *Sustainability*, *14*(9), 4944.

Schräge, M., Muttreja, V., & Kwan, A. (2022). How the Wrong KPIs Doom Digital Transformation. *MIT Sloan Management Review*, *63*(3), 35-40.

SIMON, K. G. (2021). Enterprises Resource Planning Implementation Aspects And Organisational Performance: A Case Of Egerton University, Kenya.

Sislian, L., & Jaegler, A. (2020). ERP implementation effects on sustainable maritime balanced scorecard: Evidence from major European ports. Paper presented at the Supply Chain Forum: An International Journal.

Soliman, M., & Karia, N. (2017). Antecedents for the success of the adoption of organisational ERP among higher education institutions and competitive advantage in Egypt. *Engineering, Technology & Applied Science Research, 7*(3), 1719-1724.

Taris, T. W., Kessler, S. R., & Kelloway, E. K. (2021). Strategies addressing the limitations of cross-sectional designs in occupational health psychology: What they are good for (and what not). In (Vol. 35, pp. 1-5): Taylor & Francis.

Xulu, V. C., & Suknunan, S. (2020). Enterprise Resource Planning (ERP) systems success: impact of employees' perceptions and satisfaction on expected benefits in a manufacturing setting. *Problems and Perspectives in Management, 18*(2), 466.

Yamane, T. (1967:886). Statistics, An Introductory Analysis, 2nd Ed. New York: Harper and Row.

Yu Chung Wang, W., Pauleen, D., & Taskin, N. (2022). Enterprise systems, emerging technologies, and the data-driven knowledge organisation. In (Vol. 20, pp. 1-13): Taylor & Francis.