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# ENTERPRISE RESOURCE PLANNING ADOPTION AND PERFORMANCE OF SELECTED MANUFACTURING COMPANIES IN NAIROBI CITY COUNTY, KENYA

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**ABSTRACT**

*This study aims to address the limited understanding of the factors that enable or challenge ERP adoption beyond the initial implementation in manufacturing firms in Kenya. The study's specific objectives are as follows; to determine the influence of user satisfaction, systems infrastructure, ERP post-implementation support and data security on the performance of manufacturing companies in Nairobi County, Kenya. The study is guided by five theories: Technology Acceptance Model, ADKAR Change Model, Kotter's Change Model, Illusion of Control Theory, and the Cognitive Fit Theory. The study targeted a population of 1300 staff from multiple departments in 40 selected manufacturing firms in Nairobi County who have had an ERP system for at least 10 years. A sample of 130 respondents was utilized, with stratified sampling enabling the random selection of ERP super users from different departments and various organizations. The findings indicate that user satisfaction (β=0.326; p<0.05) and system infrastructure (β=0.132; p<0.05) both have a significant effect on Performance of Manufacturing Companies. Similar observation was made with Management Support (β=0.520; p<0.05) and data security (β=0.091; p<0.05) that they both have a substantial effect on Performance of Manufacturing Companies. The study concluded that one of the most important steps in improving an organization's performance is including its users in new ERP implementations and adaptations. The study recommends that users in organizations need constant training and involvement on matters related to ERP implementation in order to enhance performance.*

***Key Words:*** *User Satisfaction, Systems Infrastructure, ERP Post-Implementation Support, Data Security*

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## INTRODUCTION

The manufacturing industry has undergone significant shifts and developments in recent decades, prompting changes in performance expectations and strategies for improving outcomes. Organizations in this sector have grown and performance expectations have a global focus. Upcoming technologies, labor mobility, and innovations to the production and fiscal management process have contributed to positive developments in this sector (Chopra, Sawant, Kodi, & Terkar, 2022). Notably, part of these developments included the introduction and growth of enterprise resource planning (ERP) systems into the sector, and their integration into operational planning. These capabilities facilitate the amalgamation of business processes with production, facilitating aspects of production and inventory management to create further internal efficiency. Nevertheless, conceptualizing the impact that these systems have on manufacturing companies' performance requires deliberate investigation and identification of any relationships.

Kenya's manufacturing industry has not managed to meet the robust growth and sizes expected of the sector on a global scale. According to the Kenya Association of Manufacturers (2018), the country has undergone premature de-industrialization, significantly dropping the sector's contribution to overall GDP by about 2.5% between 2016 and 2018. While this pattern improved slightly during the COVID-19 pandemic, owing to the declines in the service sector, this pattern also showed a decline beginning in 2020 to 2023 (Kenya Association of Manufacturers, 2018). Notably, the negative growth is contrary to the Vision 2030 goals, which focused on this sector being a major contributor to Kenya's economy. While the industry strives to contribute 20% of GDP by 2030, this goal has been continuously impeded by the slow expansion of the sector, weak export connection, and the contrary focus of the local economy on the service sector.

In Kenya, manufacturing has been on an upward trajectory in terms of output and performance measures. According to Macrotrends (2023), the total sectoral output experienced a 9.89% growth in 2022 from 2021, attesting to improving practices for sustaining positive outcomes. Similar growth is expected in upcoming years, both in the total output and the profitability patterns (Macrotrends, 2023). Nevertheless, the performance of the Kenyan manufacturing sector is remarkably below the same at the global and regional levels. Beyond the COVID-19 pandemic, there has been a significant shift in the overall presence of manufacturing firms, with multiple businesses leaving the country from unsuitable operating conditions (Okafor, 2022). Nevertheless, those that persist in the industry have to establish the most viable practices for determining or enhancing positive performance trends. These aspects have necessitated an understanding of the underlying perpetuating factors of performance, including an evaluation of ERP adoption as a potential influence.

ERP systems entered the market in the mid-1990s in response to business struggles with functional efficiency and the need for operational flexibility. The typical nature of ERP is as a system that integrates multiple business processes and functions, while also harmonizing information from within and beyond the organization (Alsurayyi & Alsughayer, 2021). Consequently, firms with ERP systems have the capacity to automate their processes, sharing data across the entity, and ensure faster implementation of target practices. In an early study of this practices, Lopes (1992) characterized ERP adoption as a more economical solution to presenting business challenges, and a source of efficiency in the information age.

### Statement of the Problem

Manufacturing companies in Nairobi County have a history of problematic performance relative to outcome expectations. As part of the country's contributors to total productivity, there have been notable negative trends relating to these organizations. Mainly, Kenyan manufacturing has contributed to less than 10% of the gross domestic product (GDP) over the last decade, failing to live up

to expectations of contributing significantly to growth and economic strength (Gitau, Nzuki, & Musau, 2022). Compared to the regional partners and competitors, Kenya's manufacturing sector has also been noted for dismal performance and a failure to perpetuate the expected progression or advancement toward a developed economy. These problems have been attributed to limited innovations and a continued reliance on traditional approaches to production (Gitau et al., 2022; Mageto, Prinsloo, & Luke, 2019). Technology diffusion remains limited among these entities, including those whose operations remain in the city's capital and the entire county. Consequently, these concerns surrounding technological integration and poor performance among the Nairobi-based entities highlight the limitations as possibly attributable to poor enterprise resource planning and ERP system adoption.

The main research problem for this study is that, while many organizations have continued adopting ERP in manufacturing, the factors that determine successful adoption in this industry and their impact on company performance are unclear. Some organizations adopt and implement ERP successfully, while others utilize it minimally with no positive transformations visible in practice. This perspective highlights the need to understand individual factors during adoption, specific to the organizations and to the ERP, which may influence subsequent performance. Factors like the levels of user satisfaction often vary across individual businesses and managers attitudes may change over time (Kemboi et al., 2019; Gitau et al., 2022). Therefore, while organizations may migrate to ERP systems for operational support, changes in performance may be contingent to specific conditions within the workplace, or the type of ERP each organization implements. Based on this uncertainty surrounding ERP adoption, there is a need to evaluate how adopting these ERP systems may affect performance in the manufacturing sector.

Besides, existing studies have highlighted the possible positive impacts of ERP on various sectors, including small and medium enterprises and even manufacturing firms. However, there are some indications that most of these evaluations often occur during implementation, failing to assess similar impacts with continued usage. Consequently, the relationship between ERP adoption and positive performance in manufacturing firms may be ambiguous, constraining adoption (AlMuhayfith & Shaiti, 2020). Additionally, the case for ERP systems adoption and implications for performance has often relied on findings from developed or emerging economies, as well as perspectives from other sectors beyond manufacturing (Lopes, 1992; Chopra, Sawant, Kodi, & Terkar, 2022). This approach may overlook some intricacies that are only relevant to the developing countries and the manufacturing industry, such as differences in costs of implementation. Therefore, this study seeks to resolve this gap, providing current and relevant findings that explain ERP implications for manufacturing countries in Nairobi. It may also resolve some of the contextual ambiguity in the current studies, exploring the interactions between ERP adoption and performance with continued use.

**Objectives of the Study**

This research aims to investigate the relationship between enterprise resource planning adoption and the performance of manufacturing companies in Nairobi County, Kenya. The study was guided by the following specific objectives;

- To examine the effect of user satisfaction on performance of manufacturing companies in Nairobi County, Kenya.
- To evaluate the effect of systems infrastructure on performance of manufacturing companies in Nairobi County, Kenya.
- To establish the influence of Management support on performance of manufacturing companies in Nairobi County, Kenya.

- To determine the influence of data security on performance of manufacturing companies in Nairobi County, Kenya.

## LITERATURE REVIEW

### Theoretical Literature Review

#### Technology Acceptance Model

The Technology Acceptance Model by Davis (1989) recognizes that the implementation and adoption of new technology is contingent to various factors. Specifically, the theory posits three stages in the implementation of new technology. The first phase involves external factors, which are the design characteristics, which trigger cognitive reactions, and eventually determine the affective response to said technology (Davis, 1989). Notably, the perceived usefulness and perceived ease of use are crucial determinants of the extent to which people accept new technology. These factors are from the user's perspective, and even if the creator thinks that the product is useful and the users do not feel the same, its acceptance may be diminished (Bradley, 2012; Utami, 2021). Ultimately, if users expect an application will be easy to use, the more likely it will be considered useful for the user, and the more likely they are to accept it.

#### ADKAR Change Model

One of the more contemporary theories of change is the ADKAR model developed by Hiatt (1996). ADKAR is an acronym for awareness, desire, knowledge, ability, and reinforcement aspects acting as a gradual building framework for executing change. According to Hiatt and Creasy (2012), the ADKAR model must be implemented in sequence to significantly influence the change process and the people's willingness to adopt proposals. The model can facilitate identifying the basis for change failure, and the actions that can yield the greatest change process. The ADKAR model can be used to evaluate the processes of ERP adoption within the manufacturing sector. One of the critical variables is systems infrastructure which encompasses internal infrastructure and user interface as a critical component of the long-term usability of a new technology. Introducing a new system is a substantial change in an organization whose users may have been used to dealing with completely different infrastructure. Under ADKAR, feedback on the availability, understanding, and adaptability of the system and its infrastructure could ultimately influence the software's survival in a new enterprise. Besides, system infrastructure features are part of the critical information regarding a new technology in the organization, and their ability to be utilized successfully can influence adoption.

#### Kotter's Change Model

John Kotter proposed the eight-stage change model in 1995 in his book, 'Leading Change'. Relying on research from 100 organizations, the study postulated that change occurs in eight phases, beginning with the urgency to introduce change and making the transformation stick. The organization must begin with creating a sense of urgency, which identifies potential threats and enlists industry support to pursue the change issue (Kotter, 1996). Kotter's change model is built on the realization that 70% of organizational change fails. This failure follows the problematic approach where organizations fail to execute broad strategies required to achieve effective transformation (Laig & Abocejo, 2021). Practices like creating a clear vision should not be misleading, but it is expected that the vision be feasible, communicable, and focused. Besides, communication is integral to this transformation process, considering its use in minimizing distrust and creating a warm environment sufficient to create more positive reactions (Appelbaum et al., 2012). Ultimately, this communication process should be continuous, ensuring the sustenance of urgency and providing feedback on whether the new system is effective.

Nevertheless, critiques targeting Kotter's change model include that it is overly structured and rigid. This aspect makes it inherently unsuitable for the highly dynamic environment of contemporary business and sectors like manufacturing (Rajan &

Ganesan, 2017). Additionally, this model fails to consider the need for the change during initiation. The implication is that organizations may adopt new technologies even where there was no need, leading to an unnecessary use of resources and elevating the possibilities of failure.

**Illusion of Control Theory**

Langer (1975) proposed the Illusion of Control Theory, which refers to people's tendency to overestimate their control ability because of the individual factors or contextual issues presenting in the situation. This pattern often yields lower perceptions of risk, influencing decision-making regarding a new scenario or a potentially risky experience (Langer, 1975). Such phenomenon can exist in the typical existence, in school, or in work, affecting people's responses to diverse offers or situations and ultimately determining their behavior.

The Illusion of Control Theory has been expanded over time, reflecting inner interpretations of situations and the processes that yield given decisions. Specifically, the mistaken thought that there is a connection between people's behavior and their consequences is based on the strength of the stimuli and reinforcement (Stefan & David, 2013). This view includes convictions that positive outcomes from the use of a given approach are evidence of its viability, and support for its continued application in the future.

**Cognitive Fit Theory**

Cognitive fit theory (CFT) by Vessey (1991) postulates that better performance results from an improved match between the cognitive processes of the user and the demands of the information system. Essentially, information presentation should correspond with the given task to enable easier and superior performance among the users. To achieve the most efficient processes of problem-solving, the requirement is that the given tools or capabilities support the decision-making strategies (Vessey, 1991). Therefore, users should not be required to induce mental representations or formulate solutions using capabilities not appearing or featuring in the aids present on the given information system.

**Empirical Literature Review**

**User satisfaction and Performance of Manufacturing companies**

The discourse on user satisfaction in management information systems' adoption is as extensive as it is intriguing. According to Grover, Kar, Janssen, and Ilavarasan (2019), user satisfaction comprising of user acceptance, usefulness and ease of use is the willingness of individuals or groups to utilize technology for the purposes or tasks for which it was intended. It implies a degree of choice and deliberateness, diminishing the significance of unintentional or mandatory usage. Hossain and de Silva (2019) and Mosweu, Bwalya, and Mutshewa (2017) posited that a lack of user satisfaction in ERP adoption runs the risk of losing organizations some money and inconsistencies in resource utilization. Consequently, the success of information systems is perceived from diverse factors, user satisfaction being one of them. user satisfaction is measured by attributes such as user involvement, user training and availability of feedback mechanisms. Components like user attitudes and perceptions of the systems may vary. Nevertheless, there is consensus that variations in the acceptance levels could exert an overall effect on the viability of a new information system.

**Systems Infrastructure and Performance of Manufacturing companies**

Critical differences exist in the infrastructure of ERP systems, with the primary variations manifesting in the structure and the platforms on which they are implemented. Kiarie and Wanyama's (2017) study highlighted the implications of existing IT infrastructure in the subsequent application of ERP platforms in small and medium enterprises in Kenya. The infrastructural features provide the foundation for perpetuating further improvements, and more flexible frameworks may ease this transition relative to more rigid ones. Additionally, infrastructural influences manifest in Tobie,

Etoundi, and Zoa's (2016) study, where existing technological infrastructure is a critical determinant of the organization's ability to adopt and adapt a new ERP infrastructure. The research highlights that ERP adoption in African countries is significantly affected by the alignment with information technology, allowing customization or influencing aspects such as the staff's ability to learn and adapt to the new system (Tobie et al., 2016). Systems infrastructure is quantified on the basis of hardware and software compatibility, network reliability and software integration capabilities.

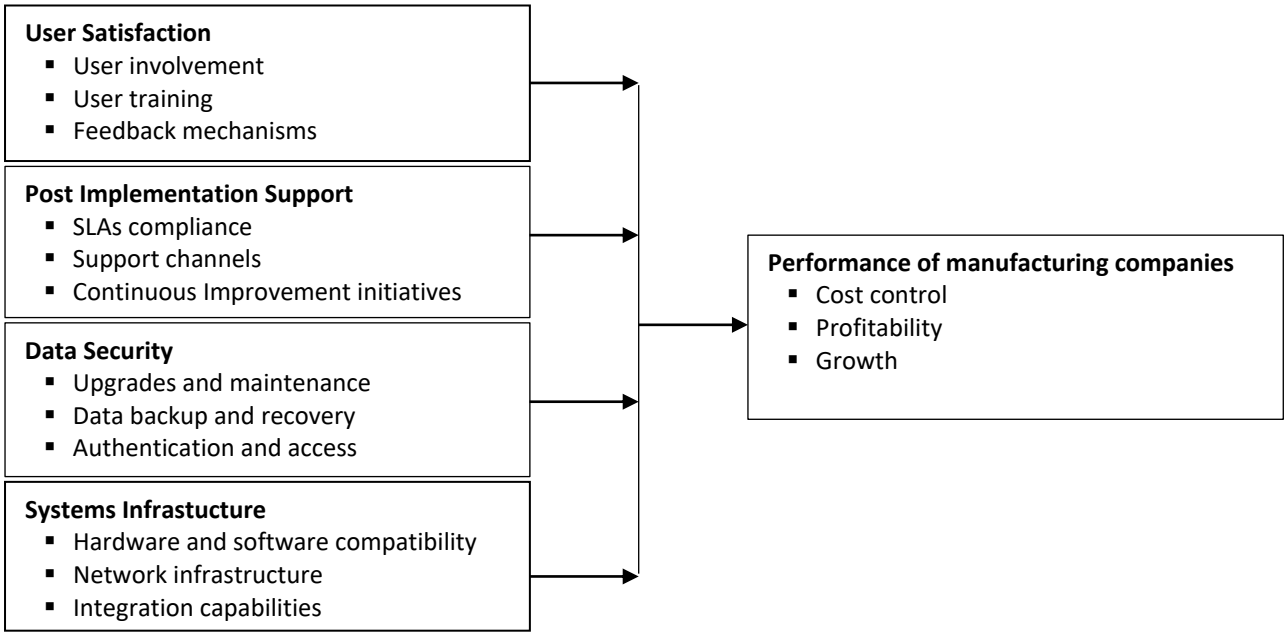
**ERP Post-Implementation Support and Performance**

Adopting ERP extends beyond placement of the system into the user's hands, usually involving gradual learning and acceptance among users. One of the essential features of this transformation is post-implementation support, which could prove instrumental to determining how efficiently the system integrates with existing functions. According to Al-Mashari, Al-Mudimigh, and Zairi, (2003), post-implementation success occurs when organizations can see clear benefits from adopting and implementing the system. Reviews, support practices, and maintenance pursuits are essential components of this phase, which predictably has an influence on eventual performance (Al-Mashari et al., 2003).

**Data Security and Performance of Manufacturing companies**

As technology adoption within various organizational functions continues expanding, research into the significance and concerns surrounding data security continues growing. Sneesl et al. (2022) note that data security issues are common sources of uncertainty among individual and group users involved in emerging technologies and systems intended to enhance efficiency. Data security's crucial components, also known as the CIA Triad, is Confidentiality, Integrity, and Availability. While functionality may be easy to accomplish, the structural characteristics could diminish overall user data security or compromise the welfare of the providing organization. Such uncertainties exist in the context of simplistic technologies or more advanced networks like frameworks utilizing the internet of things (Sneesl et al., 2022).

**Conceptual Framework**




**Independent Variables** **Dependent Variable**

**Source: Author (2023)**

**Figure 1: Conceptual Framework**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## METHODOLOGY

The study applied a descriptive research design. There are 40 selected manufacturing companies in Nairobi with a total population of 1300 super users who have had an implemented ERP system for more than 10 years. This study adopted a stratified random sampling approach. A total of 130 participants were involved in the data collection process, with each department having a specific number of respondents.

This research utilized a structured questionnaire as the primary tool for acquiring data. The researcher implemented a pilot study before engaging the target population's sample in the research process. The researcher utilized correlation scores to determine this feature, ultimately assessing its reliability in the data collection process.

This study applied descriptive and inferential analyses as the data analysis approaches. The approach adopted a multiple regression approach intended to determine the relationship between the dependent and independent variables. Based on the existing variables, the equation for this analysis was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where

Y= Performance of manufacturing companies

$X_1$= user satisfaction

$X_2$ = Systems Infrastructure

$X_3$ = Management Commitment

$X_4$ = Data Security

$\beta_0$, $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$= coefficients of determination

ε= Error Term

The researcher utilized SPSS for the processes of descriptive analyses, inferential statistics, and correlations, and executing the regression model.

## FINDINGS AND DISCUSSIONS

### Response Rate

130 questionnaires were administered out of which 106 were filled and returned. The overall response rate of the study was 82%. This shows that a high response rate designates that the data offer a complete, precise picture of the sample. Mellahi and Harris (2016) state that response rate is frequently utilized as the main metric for assessing the validity and quality of data gathered via questionnaires and surveys.

### Descriptive Analysis

**User satisfaction and performance of manufacturing companies in Nairobi County, Kenya.**

The first objective of the study was to examine the effect of user satisfaction on performance of manufacturing companies in Nairobi County, Kenya. The section analyzed data using percentages, means and standard deviation.

**Table 1: User satisfaction and performance of manufacturing companies**

| Statement | SD | D | N | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Frontline users are aware of the presence of an ERP system in this organization | 8% | 22% | 13% | 37% | 21% | 3.41 | 1.24 |
| Users have been involved in implementation, upgrade and customization changes related to the existing ERP in the organization | 13% | 11% | 33% | 25% | 17% | 3.21 | 1.24 |
| There have been positive responses to ERP training in the organization. | 8% | 19% | 28% | 25% | 20% | 3.31 | 1.20 |
| There is a feedback mechanism put in place for users to report challenges and issues they are encountering as they are using the ERP system | 13% | 18% | 27% | 29% | 12% | 3.09 | 1.22 |
| Users are informed whenever there is a change related to the ERP system. | 17% | 11% | 18% | 32% | 22% | 3.30 | 1.38 |

It is believed that user satisfaction was critical to successful ERP adoption. According to the study, 58% of the sampled participants indicated that frontline users are aware of the presence of an ERP system in this organization. This suggests that when a business implements ERP software, it needs to know what to reasonably anticipate from the vendor. The present study aligns with the findings of Jo and Park (2023), who found a correlation between student teachers' adoption of computer technology and its perceived ease of use. This, in turn, accounts for the persistence of these information systems in learning and practice environments.

Implementing ERP requires major adjustments to an organization's technology, culture, and procedures. According to 42% of the participants, users have been involved in implementation, upgrade and customization changes related to the existing ERP in the organization. Ali and Miller (2017) assert that ERP software guarantees smooth data flow and connectivity inside the company, which is a prerequisite for effective teamwork and communication. All employees will likely need to devote a significant amount of time and attention to the long-term effort of implementing ERP systems.

Companies should consider implementing an ERP system because it facilitates the integration of business activities. The study found that 45% of the participants indicated that there have been positive responses to ERP training in the organization. An organization undergoes a dramatic transformation when an enterprise resource planning (ERP) system is implemented. This study supports the findings of Kumara, Gunawardana, and Halwatura (2013) in that certain employees are open to taking on additional tasks, while others are not. As a result, there is a disconnect between the attitudes of the employees involved in the ERP systems and the system's intended goals. Various user training programs can be conducted to enhance staff communication.

Monitoring the application of the ERP is not feasible without suitable feedback mechanisms. According to the study, 41% of the respondents indicated that there is a feedback mechanism put in place for users to report challenges and issues they are encountering as they are using the ERP system. The results are consistent with those of Rajan and Baral (2015), who highlight the challenge of implementing ERP due to the variety of end users involved. According to the analysis's findings, computer self-efficacy, organizational support, training, and compatibility all positively impact ERP usage, which in turn significantly affects empowerment and individual performance.

ERP (enterprise resource planning) systems are now considered essential in businesses because of their many features and advantages. In this research, 54% of the participants restated that users are informed whenever there is a change related to the ERP system. This implies that users are less likely to think about migrating to a different ERP system if they are pleased with their existing one. The outcomes align with the perspective of Chang (2020), who maintained that managing perceived utility and simplicity of use should happen concurrently with ERP implementation, since these factors are critical to guaranteeing user happiness.

**Systems infrastructure and Performance of Manufacturing Companies in Nairobi County, Kenya**

The second objective of the study was to evaluate the effect of systems infrastructure on performance of manufacturing companies in Nairobi County, Kenya. In this section, proportions, averages, and standard deviation were used to examine the data.

**Table 2: Systems infrastructure and Performance of Manufacturing Companies**

| Statement | SD | D | N | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| The organization's ERP is compatible to the users' hardware such as the computers and smartphones | 8% | 28% | 19% | 38% | 8% | 3.09 | 1.12 |
| There has been no serious network outage since the ERP's implementation. | 9% | 20% | 32% | 30% | 8% | 3.08 | 1.10 |
| The ERP system has undergone a recent upgrade. | 18% | 20% | 22% | 34% | 7% | 2.91 | 1.23 |
| The speed and bandwidth of the organization supports efficient usage of the ERP system. | 18% | 13% | 26% | 23% | 20% | 3.13 | 1.36 |
| The ERP in place has been integrated to the other systems in place including the Operating system | 10% | 21% | 32% | 25% | 12% | 3.07 | 1.16 |

ERP's infrastructure features give the business the base upon which to continuously improve. According to the findings, 56% of the participants agreed that the organization's ERP is compatible to the users' hardware such as the computers and smartphones. This suggests that ERP offers a central platform that facilitates real-time data access and sharing across all departments and functions. The outcomes support the findings of Tobie, Etoundi, and Zoa (2016), who reiterate that an organization's capacity to implement and adjust a new ERP architecture is significantly influenced by its current technology infrastructure. The study shows that the alignment of ERP adoption with information technology has a major impact on African countries, allowing customization or affecting factors like staff members' capacity to pick up and adjust to the new system.

ERP systems boost productivity and promote operational efficiency, which are two of their main advantages. In this study, 38% of the study indicated that there has been no serious network outage since the ERP's implementation. This suggests that companies might increase productivity and save operating expenses by doing away with manual labor and minimizing errors. Adopting ERP allows firms to better allocate resources and uncover bottlenecks for improved performance. The significance of several ERP systems' infrastructure features has been emphasized by other study, nevertheless. The findings of Hadidi, El-Rashdan, Hadidi, and Soubhi (2020) who highlighted the significant distinctions between traditional and cloud ERP are in line with our findings. Important differences were found in things like the traditional ERP's requirement for a physical installation of new modules, whereas cloud versions just need a brief period of time.

ERP systems provide companies with an effective way to streamline and automate their operations. According to the participants, 41% indicated that the ERP system has undergone a recent upgrade. According to Dempsey, Vance, and Sheehan (2013), one of the main advantages of ERP upgrades is the consolidation of resources inside an organization. These findings are consistent with their findings. For huge firms with numerous national and international divisions, it makes sense to consolidate as much as possible in order to conserve resources and facilitate the integration of the company's activities. Taking advantage of modern technology and gaining a competitive edge should be the primary reasons for upgrading ERP software.

An enterprise resource planning (ERP) system offers a complete management framework that facilitates the integration of business transactions. According to 43% of the respondents, the speed and bandwidth of the organization supports efficient usage of the ERP system. Furthermore, 37% of the participants affirmed that the ERP in place has been integrated to the other systems in place including the Operating system This result is consistent with that of Harun, Dorasamy, and Ahmad (2022), who highlight the fact that enterprise resource planning (ERP) enhances the control of commercial activities and offers a competitive advantage when paired

with preexisting advantages. End users, however, are against ERP adoption since it upsets the established order. It is also not simple to make sure that every operational unit uses the same ERP system. Consequently, ERP failure is caused by a lack of adaptability.

**Management support and performance of manufacturing companies in Nairobi County, Kenya**

The third objective was to establish the influence of Management support on performance of manufacturing companies in Nairobi County, Kenya. In this subsection, the data were examined using percentages, averages, and standard deviation.

**Table 3: Management support and performance of Manufacturing Companies**

| Statement | SD | D | N | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Consultants and experts in the ERP system meet their Service Level Agreements. | 12% | 17% | 21% | 38% | 12% | 3.20 | 1.22 |
| There are support channels in place such as a help desk ticketing tool | 12% | 14% | 25% | 36% | 12% | 3.21 | 1.20 |
| Managers encourage continuous improvement initiatives such as additional training to the users. | 16% | 17% | 22% | 26% | 19% | 3.15 | 1.35 |
| Monitoring and evaluation of the ERP system performance is still being done by management. | 17% | 13% | 16% | 28% | 25% | 3.32 | 1.42 |
| There are clear escalation procedures in place for issues that cannot be resolved quickly related to the ERP system. | 11% | 17% | 22% | 30% | 20% | 3.31 | 1.28 |

The attainment of project goals and objectives within an organization is contingent upon the support and commitment of management. In this study, 50% of the respondents affirmed that consultants and experts in the ERP system meet their Service Level Agreements. This research supports the findings of Lapiedra, Alegre, and Chiva (2011), who contend that senior management should prioritize providing managerial support to staff members during their learning process. All things considered, these results advance knowledge about the best organizational environments in which to deploy ERP.

ERP adoption often entails users' growing acceptance and learning of the system. The study found that 48% of the respondents agreed that there are support channels in place such as a help desk ticketing tool. This suggests that enterprise resource planning systems, or ERPs, provide businesses with an effective and efficient integrative tool by storing and exchanging business processes and information in real-time throughout the entire organization. According to Ifinedo and Nahar (2009), the effectiveness of ERP adoption and implementation depends on the caliber of external provider or vendor support. It is expected that the vendor or service provider would be able to offer the business reliable technical support, high-quality services, credibility, and experience in order to continue consulting for long-term advantages and great ERP performance.

ERP post-implementation support is essential to the operation of the firm. This is due to the fact that it establishes how well the system fits with current features. It was observed that 45% of the respondents indicates that managers encourage continuous improvement initiatives such as additional training to the users. According to Moussa Nejib (2013), having qualified vendors providing support at all phases of the implementation is integral to achieving successful adoption and expected performance improvements. This perspective accompanies the recognition that implementation is a combination of continuous improvement and learning, which

occurs among the organizational employees and the support contractor.

An effective ERP implementation depends critically on strong managerial direction and support. According to the study,53 % of the participants agreed that monitoring and evaluation of the ERP system performance is still being done by management. This demonstrates how important it is for senior executives to be involved and committed to the project in order for it to succeed and be in line with the organization's strategic goals. This result concurs with that of Gupta et al (2018) who emphasizes that where indications were that maintenance and support were essential features, post-implementation, to preserve the security of the system and ensure a continuously flexible and customer-tailored experience. Notably, regular maintenance and vendor involvement will motivate the renewal of SLAs among users and vendors to guarantee continued standards and methods of work.

The firm's decision-making processes and boundaries are made clearer through an escalation procedure, which facilitates prompt and efficient problem-solving. In this study, 50% of the participants affirmed that there are clear escalation procedures in place for issues that cannot be resolved quickly related to the ERP system. Seethamraju (2015) asserts that SMEs implementing ERP may profit from thorough post-implementation support, which frequently results from the reliability of offered providers or the existence of strong SLAs. These requirements can provide support in the form of ongoing training for staff members on how to use the ERP, the availability of substitute services in the event of an outage, and the opportunity for infrastructure upgrades and expansions to accommodate changing organizational needs.

**Data Security and Performance of Manufacturing companies in Nairobi County, Kenya.**

The fourth objective was to determine the influence of data security on performance of manufacturing companies in Nairobi County, Kenya. The data were analyzed using averages, proportions, as well as standard deviation in this chapter.

**Table 4: Data Security and Performance of Manufacturing Companies**

| Statement | SD | D | N | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| The organization's ERP in integrated to systems that support data backup and recovery | 6% | 28% | 22% | 37% | 8% | 3.12 | 1.08 |
| The organization's internal network has a firewall for internet security | 9% | 25% | 36% | 24% | 7% | 2.93 | 1.06 |
| There are strong user authentication and access control mechanisms in place for the ERP system | 11% | 21% | 22% | 27% | 19% | 3.21 | 1.28 |
| The ERP has undergone periodic security upgrades and maintenance. | 10% | 22% | 31% | 28% | 8% | 3.02 | 1.12 |
| There has been a security awareness training done for ERP users. | 13% | 22% | 35% | 24% | 7% | 2.88 | 1.11 |

Data protection against cyber attacks can be ensured by an organization through a strong data security management and strategy process. In this study, 45% of the participants affirmed that the organization's ERP in integrated to systems that support data backup and recovery. However, 28% of the participants disagreed with the assertion. This result is consistent with the findings of Sneesl et al. (2022), who observe that data security concerns are frequently cited as causes of ambiguity by both individual and group users of emerging technologies and systems meant to increase productivity. The CIA Triad—confidentiality, integrity, and availability—are essential elements of data security.

Digital security and breaches of personal data are not the only hazards associated with increased access and sharing. According to the study, 34% of

the respondents disagreed that the organization's internal network has a firewall for internet security. This perspective is in line with Haddara et al.'s (2022) investigation of the situations in which data security is a pertinent worry when implementing ERP systems. The sensitive data in cloud-based ERP is under the control of the cloud service provider, which poses a risk to the client organization's security and privacy. Notably, entrusting the vendor with client data and internal details for financial management and operations puts the organization's long-term stability and welfare in jeopardy, which encourages even more caution when deciding whether to implement and incorporate the systems into the day-to-day operations of the business.

It is imperative that businesses take into account the security ramifications of adopting ERP Cloud Solutions because sensitive company information is at risk. According to 46% of the sampled respondents, there are strong user authentication and access control mechanisms in place for the ERP system. Similar observation was put forward by 36% of those who restated that the ERP has undergone periodic security upgrades and maintenance. This suggests that an important risk to ERP security is unfettered access to sensitive data. By limiting system access to data unique to particular jobs, role-based access control helps mitigate this risk. This finding aligns with that of Shetty and Panda (2021), who stress that the particular data security problems would naturally dictate the kind of ERP the company chooses to use. Since there is less uncertainty regarding data security in this context than there is in larger entities with more consequences, smaller businesses are more inclined to implement cloud-based ERP.

Employees with security awareness training are more equipped to identify and reduce cyberthreats, which promotes a vigilant and resilient culture. In this research, 31% of the participants indicated that there has been a security awareness training done for ERP users. It is widely acknowledged that security awareness training reduces human error, lessens security breaches, and protects confidential information and resources. This result aligns with the findings of Mahmood, Khan, and Bokhari (2019), who investigated the role of data security in the overall ERP adoption procedures and functionality constraints that could complicate integration. Comparing the cloud ERP to its conventional counterpart, the results highlight how much more risk there is.

**Performance of Manufacturing Companies**

The performance of manufacturing companies in Nairobi County, Kenya was analyzed using descriptive statistics such as percentages, means and standard deviations. In this variable, cost, profitability, and growth were the main indicators. The finding was presented in Table 5.

**Table 5: Performance of Manufacturing Companies**

| Statement | SD | D | N | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Customer satisfaction levels have increased since the ERP's implementation | 9% | 22% | 14% | 43% | 11% | 3.25 | 1.19 |
| Wastage has declined in the manufacturing process. | 17% | 12% | 34% | 23% | 14% | 3.04 | 1.26 |
| It is easier to control financial movements and fluctuations internally with the ERP. | 16% | 14% | 22% | 42% | 7% | 3.08 | 1.21 |
| Collaboration across various functions has improved | 13% | 16% | 25% | 19% | 26% | 3.29 | 1.36 |
| Time spent on each production activity has diminished significantly. | 14% | 11% | 32% | 35% | 8% | 3.10 | 1.15 |

Utilizing ERP is recognized to improve performance by increasing customer satisfaction. In this study, 54% of the participants indicated that customer satisfaction levels have increased since the ERP's implementation. These results are consistent with those of Bawa (2023), who suggests that ERP

software can assist your business increase customer satisfaction and provide a positive customer service experience with proper implementation and usage. ERP can give businesses a competitive edge, especially those in the wholesale and distribution sectors, by helping them better understand their clients' businesses and providing them with more individualized service.

Adoption of ERP streamlines information availability for instantaneous decision-making. According to the study, 37% avowed that wastage has declined in the manufacturing process. Similar views were restated by 43% of the participants who asserted that time spent on each production activity has diminished significantly. This perspective is consistent with that of Vargas and Comuzzi (2020), who note that synchronized monitoring makes processes like batch ordering and reporting more efficient, leading to the widespread adoption of such databases in practice. Adopting an ERP that complies with the variety of needs and traits of the company will require the organization to make significant changes. In addition, the company needs to plan ahead and implement procedures to reduce or eliminate any risks that might arise.

Empirical evidence suggests that ERP is widely acknowledged as a critical component of efficient industry procedures. In this study, 49% affirmed that it is easier to control financial movements and fluctuations internally with the ERP. A similar opinion was expressed by 45% of participants who said that there had been an improvement in collaboration across different functions. This suggests that ERP improves supply chain coordination, production planning, and inventory management, resulting in more efficient operations, lower expenses, and better decision-making. This perspective corroborates with that of AlMuhayfith and Shaiti (2020) who established that ERP has been shown to create system value and diminish costs, following the merging of different jobs and functionalities into one. Providing the correct information to the appropriate people and in a timely manner ensures proper organization and task execution. These changes are fundamental to accomplishing positive improvements in performance.

**Inferential Analysis**

**Pearson Correlation.**

The most popular method for calculating a linear correlation between two variables is to use the Pearson correlation coefficient (r). The degree and direction of the association between two continuous variables are assessed using this statistical metric. Table 6 presents the findings.

**Table 6: Correlation Matrix**

| | | Performance | X1 | X2 | X3 | X4 |
|---|---|---|---|---|---|---|
| User satisfaction | Pearson Correlation | .920** | 1 | | | |
| | Sig. (2-tailed) | .000 | | | | |
| | N | 106 | 106 | | | |
| Systems Infrastructure | Pearson Correlation | .674** | .591** | 1 | | |
| | Sig. (2-tailed) | .000 | .000 | | | |
| | N | 106 | 106 | 106 | | |
| Management Support | Pearson Correlation | .942** | .912** | .616** | 1 | |
| | Sig. (2-tailed) | .000 | .000 | .000 | | |
| | N | 106 | 106 | 106 | 106 | |
| Data Security | Pearson Correlation | .530** | .458** | .324** | .476** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .001 | .000 | |
| | N | 106 | 106 | 106 | 106 | 106 |

****. Correlation is significant at the 0.01 level (2-tailed).**

X1= User satisfaction; X2= Systems Infrastructure; X3= Management Support; X4= Data Security

The study revealed that there is a statistically significant relationship between User satisfaction and Performance of Manufacturing Companies ($r=0.920^{**}$; $p<0.05$). This implies that when users are satisfied with ERP product, their organization performance will be enhanced.

Secondly, it was observed that Systems Infrastructure have a statistically and significant relationship with Performance of Manufacturing Companies ($r=0.674^{**}$; $p<0.05$). This implies that with a robust infrastructure related to ERP, performance of the organization could be enhanced.

Thirdly, it was found that there was a statistically significant relationship between Management Support and Performance of Manufacturing Companies ($r=0.942^{**}$; $p<0.05$). This implies that with constant management support to the initiative, ERP performance will be realized.

Finally, it was established that that there was a statistically and significant relationship between Data Security and Performance of Manufacturing Companies ($r=0.530^{**}$; $p<0.05$).

**Regression Analysis**

**Model Summary**

Regression modeling results in the creation of a model summary. Regression tables are useful for summarizing the results of linear regression. The table's contents include the estimate's standard error, corrected estimate, and r square.

**Table 7: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .962[a] | .926 | .923 | .29023 |

*a. Predictors: (Constant), Data Security, Systems Infrastructure, User satisfaction, Management Support*

According to the findings, 92.3% of the Performance of Manufacturing Companies could be explained using Data Security, Systems Infrastructure, User satisfaction and Management Support. The study's unexplained variation was 7.7%; this could be accounted for by additional variables not included in the analysis.

**Analysis of Variance**

A statistical method termed Analysis of Variance (ANOVA) is used to analyze variances among the means (or averages) of several groups. The finding is presented in Table 8.

**Table 8: ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 106.933 | 4 | 26.733 | 317.372 | .000[b] |
| | Residual | 8.508 | 101 | .084 | | |
| | Total | 115.440 | 105 | | | |

a. Dependent Variable: Performance of Manufacturing Companies

b. Predictors: (Constant), Data Security, Systems Infrastructure, User satisfaction, Management Support

The strength of the model is assessed using ANOVA. The results indicate that the model was highly significant at 0.05 alpha, adjusted r-square=0.923, $F(4,101) = 317.372$, $p<0.05$. This implies that the all the predictors (*User satisfaction; Systems Infrastructure; Management Support and Data*


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*Security*) have a substantial effect on Performance of Manufacturing Companies.

**Coefficients**

The link between a predictor variable and the response is described by regression coefficients, which are estimations of the unknown population parameters. The analysis's findings are presented in Table 9.

**Table 9: Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -.242 | .117 | | -2.074 | .041 | | |
| | User satisfaction | .322 | .065 | .326 | 4.920 | .000 | .166 | 6.012 |
| | Systems Infrastructure | .140 | .037 | .132 | 3.819 | .000 | .614 | 1.627 |
| | Management Support | .496 | .065 | .520 | 7.600 | .000 | .156 | 6.421 |
| | Data Security | .102 | .035 | .091 | 2.941 | .004 | .769 | 1.301 |

*a. Dependent Variable: Performance of Manufacturing Companies*

On the basis of standardized beta coefficients, user satisfaction (β=0.326; p<0.05) and system infrastructure (β=0.132; p<0.05) both have a significant effect on Performance of Manufacturing Companies. Similar observation was made with Management Support (β=0.520; p<0.05) and data security (β=0.091; p<0.05) that they both have a substantial effect on Performance of Manufacturing Companies.

**The Equation**

The equation for the model was established as follows:

Performance = -0.242 + (User satisfaction *0.326) + (System infrastructure *0.132) + (Management Support *0.520) +( data security*0.091)

## CONCLUSIONS

One of the most important steps in improving an organization's performance is including its users in new ERP implementations and adaptations. Secondly an enterprise resource planning system facilitates the integration of business transactions. This offers a thorough and practical structure for management. The accomplishment of project goals and objectives in an organization is dependent on the backing and dedication of management. Likewise, post-implementation ERP support is essential to the operation of the business. This is because it establishes how well the system works with the features that are already offered.

Finally, corporations can protect its data from attacks by implementing a strong management and strategy plan for data security. Therefore, it is widely acknowledged that security awareness training can reduce the likelihood of security breaches, reduce the rate of human error, and protect assets and confidential information.

## RECOMMENDATIONS

Users in organizations need constant training and involvement on matters related to ERP implementation in order to enhance performance.

Firms need a reliable ERP infrastructure in order to catalyze performance in their firms.

The organization's top management's backing is essential for the ERP adoption process. Because of this, organizations cannot fully profit from such a robust framework without their support.

In view of the current environment of cyberattacks and compromises, enterprises need to employ data security management to lower business risk and prevent major data loss.

**Recommendations for further Research**

A significant operational and cultural transformation occurs inside a company when an

Enterprise Resource Planning (ERP) system is implemented. As part of the ERP system deployment, the study suggests that research could be conducted to determine the factors that influence data quality and transfer.

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