

# ICT Strategy Alignment Maturity for Effective IaaS Digital Transformation

Joram Kiptoo Mutai<sup>1</sup>, Yonah Etene<sup>2</sup>, Richard K. Ronoh<sup>2</sup>

<sup>1</sup>Department of Information Technology, Moi University, Kenya

<sup>2</sup>Department of Computer Science, Kibabii University, Kenya

## ARTICLE INFO

### Article History:

Accepted: 05 June 2025

Published: 23 July 2025

### Publication Issue :

Volume 12, Issue 4

July-August-2025

### Page Number :

223-241

## ABSTRACT

We argue for a more strategic approach to Infrastructure as a Service (IaaS) digital transformation, grounded in ICT strategy alignment maturity. Many organizations struggle to effectively maturely align their ICT strategies with IaaS technologies, limiting their transformation success. This research investigates the pivotal role of ICT strategy alignment maturity in driving effective IaaS adoption and transformation. A quantitative survey was conducted in two universities in Kenya, and the data were analysed using descriptive statistics, inferential tests, and regression analysis. The findings highlight that mature alignment in ICT planning significantly influences the success of IaaS digital transformation. In addition, well-established ICT governance structures and strong business-IT skills development emerged as essential enablers of both alignment maturity and transformation outcomes. This study offers empirical insights and a renewed perspective on the strategic alignment of ICT and IaaS cloud technology, contributing to both theory and practice by illustrating how alignment maturity serves as a foundation for successful digital transformation in organizations.

**Keywords:** ICT Strategy, Alignment Maturity, Cloud Computing, Infrastructure as a Service (IaaS), Digital Transformation

## INTRODUCTION

In today's world, technologies are evolving at an unprecedented and exponential rate [13]. Digital transformation is characterized by rapid adoption of cloud computing technologies, with huge potential of transforming the way institutions operate and innovate. There is need for mature alignment of

organization's ICT strategy and its broader IaaS cloud business objectives for effective cloud computing digital transformation. ICT strategy alignment maturity is a critical enabler of this transformation, ensuring that cloud technological capabilities support strategic goals.

As public Universities in Kenya increasingly adopt cloud computing particularly Infrastructure as a service (IaaS) to drive digital transformation, maturely aligning ICT strategy with cloud technology becomes imperative for maximizing the benefits of IaaS computing digital transformation. According to [24], digital transformation is currently the dominant type of business transformation, with IT at the center as a technology enabler and as a strategic driver. Cloud computing provides the flexibility to acquire or expand connectivity and computing power as needed for operations, business transactions, and communication [20]. According to [1], cloud computing eliminates the need for upfront investment in hardware and software, as well as the complexities associated with managing and maintaining physical infrastructure.

Whereas there is substantial research on ICT strategy alignment and cloud computing separately, the intersection of these areas, specifically, how ICT strategy alignment maturity influences the effectiveness of IaaS digital transformation, presents opportunities for further exploration. [17], argued for digital transformation as appropriate and a holistic view of strategy and employing new ways of thinking. Despite the huge potential of cloud computing, many public Universities in Kenya face challenges in maturely aligning ICT strategies with IaaS transformation goals. Immature ICT strategies habitually lead to inefficiencies, increased costs, and underutilized cloud resources. Addressing this gap, this study explored the intersection of ICT strategy alignment maturity and its role in successful IaaS cloud adoption, focusing on three key dimensions. These are: ICT strategic planning, governance infrastructure and business and IT skills development. [2], as cited in [15], acknowledged the need for aligning strategy and IT because of several reasons, such as using IT effectively to achieve business and strategic goals, capturing the ability of IT to create business value, bridging the gap between business and

IT or integrating IT to business strategy, mission, and goals.

This study was guided by two research objectives: To evaluate the maturity of ICT strategy alignment in public universities in Kenya undergoing IaaS transformation and to identify key dimensions influencing ICT strategy alignment maturity to IaaS.

## LITERATURE REVIEW

### A. Theoretical models

This study utilized two established models to offer direction: the Strategic Alignment Maturity Model (SAMM) proposed by [11], and the Cloud Maturity Model (CMM), proposed by the Open Alliance for Cloud Adoption [14]. SAMM provides a framework for assessing the maturity of business-IT alignment, ensuring that IT investments, governance, and competencies are aligned with organizational goals [11]. On the other hand, the [14]'s CMM evaluates cloud adoption maturity, offering a structured path for organizations to assess their cloud readiness, governance, and operational capabilities [14]. By combining these models, this study provides a comprehensive approach to guide institutions in leveraging their ICT strategy alignment maturity for effective IaaS digital transformation. This combined approach ensures that cloud adoption is not merely a technological upgrade but a strategically aligned endeavor that enhances business-IT collaboration. By leveraging insights from both models, organizations could systematically assess their current alignment and maturity levels, address identified gaps, and develop a roadmap that aligns IT capabilities with business strategies, thereby maximizing the benefits of IaaS digital transformation.

This article explores the collaborative application of SAMM and CMM, demonstrating how their mutual guidance and direction facilitates a structured and strategic approach to IaaS digital transformation in public Universities in Kenya. Through this integration, these institutions and others can navigate

the complexities of IaaS cloud adoption, ensuring that their technological advancements are in harmony with their cloud business strategies.

### **B. ICT Planning**

Effective ICT planning forms the basis for successful digital transformation, particularly when transitioning to Infrastructure as a Service (IaaS). Strategic planning ought to integrate legacy systems with modern cloud infrastructures including virtualization, networking, servers, and storage. According to [2], aligning ICT investments with business objectives creates a roadmap for digital innovation. [8] further emphasize that maturity models are essential tools for assessing current capabilities and identifying critical gaps, therefore facilitating informed decision-making. [3] highlight that strategic ICT planning should foster continuous improvement and adaptability, which is critical given the rapid pace of technological changes. [12] similarly asserts that robust planning enhances an organization's capacity to adapt its IT resources to support emerging business needs. Together, these studies illustrate that a comprehensive ICT plan is not only about technology acquisition but also about aligning technological capabilities with strategic business necessities to enable a smooth transition to cloud-based environments.

### **C. ICT Governance**

Robust ICT governance infrastructure is critical for managing the complexities and risks associated with cloud computing digital transformation initiatives. Effective ICT governance frameworks ensure that deployment and management of IaaS cloud technology, such as virtualization platforms, network configurations, server management, and storage solutions, are conducted systematically and in alignment with cloud business goals. [18] argued for strong ICT governance as critical for managing decision rights and mitigating associated risks, ensuring that every IT investment delivers strategic value. [6] underscores that integrating ICT

governance with maturity assessments enhances transparency and accountability. This is vital for managing dynamic cloud environments. [10] complement that agile governance models are appropriate for accommodating rapid technological advancements, thus enabling organizations to respond quickly to changing conditions. Additionally, [19] suggest that agile governance mechanisms play a critical role in facilitating digital choices that result in competitive advantage. Collectively, these insights emphasize that robust ICT governance is essential to oversee and sustain the effective implementation of IaaS digital transformation initiatives.

### **D. Business and IT Skills Development**

Effective transition to IaaS digital transformation relies heavily on the development of both business and IT competencies within organizations. The integration of sophisticated IaaS cloud technologies, ranging from virtualization and network management to administration of servers and storage, requires proficiency in both technical and strategic domains. [23] emphasizes the need for continuous skill development to keep pace with rapid digital innovations. [22] further notes that bridging the gap between business strategy and IT capabilities is crucial for achieving sustainable digital transformation. [5], argue that fostering a culture of learning and innovation is essential for aligning IT initiatives with strategic business outcomes. This deliberate focus on technical proficiency and strategic insight potentially ensures that ICT professionals and business leaders could collaboratively steer cloud computing digital transformation efforts for cloud transformation success. In the context of IaaS, targeted training programs and continuous professional development are critical to mastering both the technical aspects of cloud infrastructure and the strategic frameworks that drive successful digital initiatives.

## METHODS AND MATERIAL

This section outlines the methods and procedures used to examine the alignment maturity of ICT strategy and IaaS cloud computing digital transformation. A Quantitative research approach was adopted. This approach was concerned with deductively testing and examining associations affecting ICT strategy independent variables alignment maturity with IaaS digital transformation outcome variables. According to [16], quantitative research approach emphasizes seeking to generalize and approach methods with goals of objectivity and standardization.

A cross-sectional survey design was adopted to analyze trends in ICT strategy alignment maturity to IaaS digital transformation. Research design provides a plan or a framework for data collection and analysis [7]. Primary data was collected through structured online surveys distributed among 124 public university ICT staff. Structured online surveys are inexpensive, fast and provide many of the traditional benefits of self-completion measures, with advantages over conventional methods, and all combine to make survey delivery online attractive [21].

Purposive sampling was used to select two public universities i.e. the University of Nairobi and Moi University in Kenya. Random sampling technique ensured unbiased participant selection. Participants were first provided with an orientation on the study's purpose, followed by a 30-minute task to complete an online questionnaire. Data was analyzed using R 4.4.0 for statistical analysis software. Descriptive, Spearman's correlation, logistic regression and random forest techniques were employed. Accuracy and precision metrics guided the choice between logistic regression and random forest methods. The questionnaire was pre-tested with a small focus group to ensure clarity and reliability of responses. The sample size was limited to 124 participants due to resource constraints, which may affect the generalizability of findings. The selected research

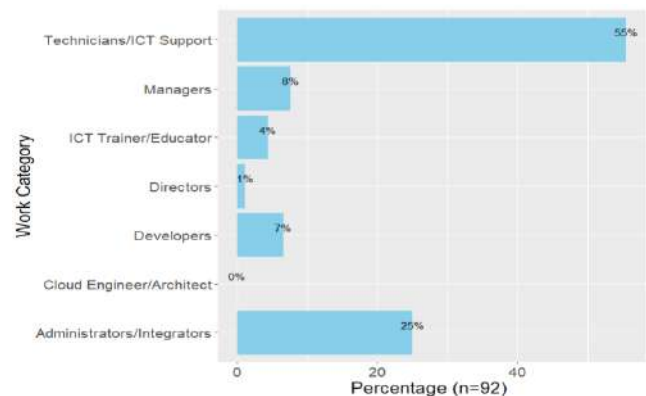
design provided the researchers with a plan to guide data collection, analysis and reporting results [4].

## RESULTS

This section presents study findings based on primary data collected from surveys. The study investigated the alignment maturity of ICT strategy aspects of planning, governance infrastructure and business and IT skills development (independent variables) and the infrastructure as a service (IaaS) aspect of networking, servers, virtualization and storage (dependent variables).

### A. Descriptive Findings

Figure 1 shows results of respondents' job/work category, that best described their responsibilities, together with the percentage distribution of each category.



**Figure 1:** Respondents Job/Work Category

As indicated figure 1, it is the finding of the study that majority of respondents at 55% (n=51) were technicians / ICT support officers. Respondents that fell under the category of managers were 8% (n=7) and those that fell under the category; ICT trainers/educators were at 4% (n=4). Directors formed the lowest category of staff at 1% (n=1) while developers formed 7% (n=6). Technology administrators/integrators formed the second largest category at 25% (n=23) of the respondents.

It was interesting to find that, sampled institutions were yet to adopt employee job/work categories/roles related to cloud computing, such as cloud

engineer/architect which ranked at zero percent (0%),

1) *ICT Strategic Planning:* Results indicating respondent's level of agreement with statements on ICT strategic planning are shown in Figure 2.

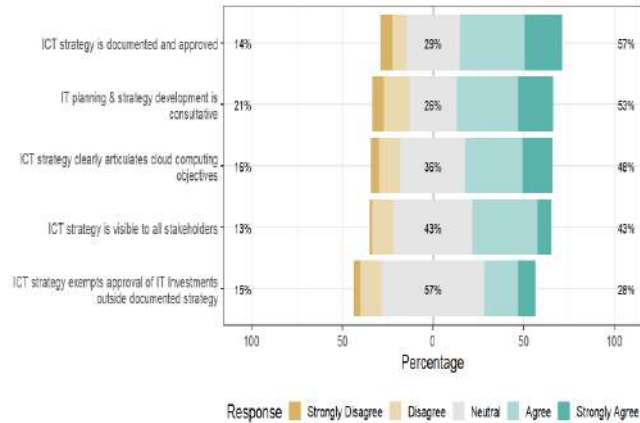


Figure 2: Likert plot for ICT Strategy Planning

The study found that the majority of respondents (57%) agree that ICT strategy was documented and approved, while only 14% disagreed (Figure 2). 53% of the respondents agreed that IT planning and strategy development is consultative, with some (21%) disagreeing. On ICT strategy clearly articulating cloud computing objectives, majority of respondents (48%) agreed by selecting either agree or strongly agree while some at 16% registered a disagreement. Concerning the statement on visibility of ICT strategy to all stakeholders, opinions were split, with 43% agreeing, 43% remaining neutral, and some (40%) disagreeing. Majority of respondents remained neutral at 57%, while some at 28% agreed and few at 15% disagreed when they were asked to indicate their opinion on whether ICT strategy exempts approval of IT Investments outside documented strategy.

2) *ICT Governance Infrastructure:* Figure 3, reveals the results of ICT governance infrastructure input variables. Respondents indicated their level of agreement with six statements concerning institutional ICT governance infrastructure.

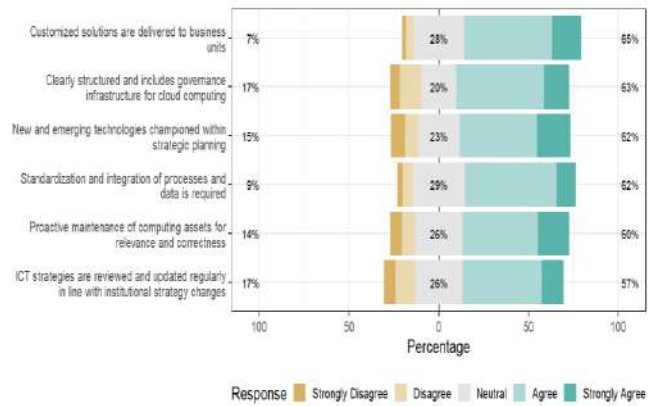
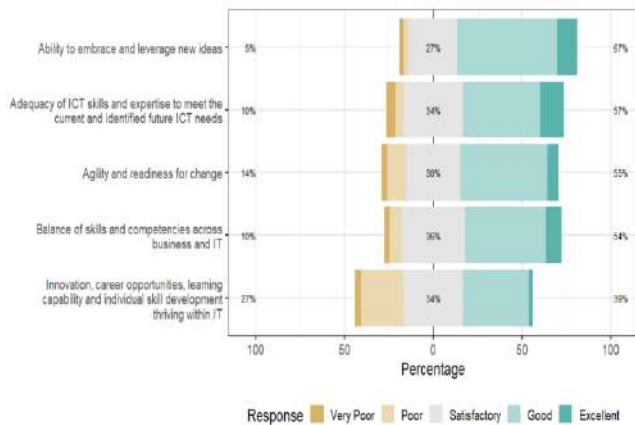


Figure 2: ICT governance Infrastructure

Each bar in Figure 3 shows the proportion of responses in each category i.e., Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree. The study found that the majority of respondents agreed at 65% that, customized solutions were delivered to business units, while a paltry (7%) disagreed. Majority of the respondents agreed (63%) that their governance infrastructure was clearly structured and includes governance infrastructure for cloud computing, while few at 17% disagreed. For the statement 'championing of new and emerging technologies within strategic planning', majority agreed at 62%, while 15% disagreed even as some (23%) remained neutral. 62% of respondents agreed that standardization and integration of processes and data was required, while very few (9%) disagreed. Proactive maintenance of computing assets for relevance and correctness was indicated by majority (60%) as true while few disagreed at 14%. Lastly, majority at 57% agreed that ICT strategies are reviewed and updated regularly in line with institutional strategy changes. Few at 17% disagreed with this statement as some at 26% remained neutral.

3) *Business and IT Skills Development:* Result of data gathered on the variable; 'business and IT skills development' are shown in Figure 4. Respondents rated their satisfaction with the applicability of five statements concerning

business and IT skill development in their institutions.

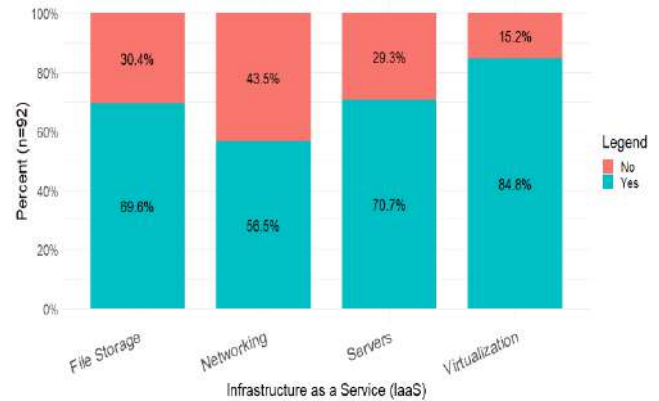


**Figure 4:** Business and IT skills development

The proportion of responses in each category i.e., very poor, poor, satisfactory, good and excellent are indicated (Figure 4). The study found that the majority of respondents agree at 67% that, they embraced and leveraged new ideas by selecting either “good” or “excellent”. Some at 27% opined that it was satisfactory and very few (5%) disagreed by selecting either ‘poor’ or ‘very poor’. Majority of the respondents agreed (57%) that ICT skills and expertise to meet the current and identified future ICT needs were adequate. While few at 10% disagreed, many at 34% held satisfactory opinion. For the statement on agility and readiness for change, majority agreed at 55%, while 14% disagreed even as many (23%) opined that it was satisfactory. 54% of respondents agreed that a balance of skills and competencies across business and IT exist, while very few (10%) disagreed. However, many (36%) indicated that it was satisfactory. Lastly, on innovation, career opportunities, learning capability and individual skill development thriving within IT, opinions were split, with 39% agreeing, 34% indicated satisfactory, and 27% disagreeing.

4) *Implementation of ICT IaaS:* The output variables under IaaS focused in the study were; file storage, networking, servers and virtualization. Figure 5, shows the result of the

implementation of IaaS in the sampled institutions.



**Figure 5:** Segmented bar chart for IaaS Implementation

As indicated in Figure 5, the study found that majority of the respondent at 70% indicated that they had implemented cloud storage in their technology operations, while 30% indicated or were not aware of its implementation. For cloud networking infrastructure, 57% agreed that it is actively implemented while 44% registered a contrary opinion. For server infrastructure, 71% agreed to its implementation while 29% indicated that they had not. On virtualization, 85% of respondents resoundingly indicated their opinion as being implemented with few at 52% held a contrary opinion.

## B. Inferential Results

Bivariate statistical testing and analysis for associations/relationships between the study independent and dependent variables was performed. Pairwise Spearman correlation ( $\rho$ ) tests were performed to determine the monotonic relationships between the variables under study. This step proofed useful in providing insights on the magnitude and directions of the associations and their statistical significance based on the probability values (P-Values). The associated p-values were used to determine maturity alignments or otherwise to IaaS digital transformation components.

The interpretation of Spearman's Correlation coefficient ( $\rho$ ) was based on values ranging from -1 to 1, where values close to this range indicated a very strong negative or positive relationship respectively. Values around  $\pm 0.5$  indicated a moderate relationship between the variables. Values near zero (0) suggested a very weak or no monotonic associations/relationships between the correlation variables. P-Values associated with the correlation coefficients, was interpreted based on a significance level of less than 0.05 ( $P < 0.05$ ) indicating evidence of association/relationship between the predictor and the outcome variable. Alternatively,  $P > 0.05$  indicated evidence of no association between the variables.

Table 1, Table 2 and Table 3 displays specific interpretations of correlations of input and output variables of the study. Paired independent and dependent variables with resulting correlations strengths ( $\rho > \pm 0.3$ ) ranging from moderate to very strong with statistical significance ( $P < 0.05$ ) were inferred to be sufficiently associated / correlated and thus, considered as maturely aligned. On the

contrary, correlation analyses resulting in strengths ( $\rho < \pm 0.3$ ) ranging from very weak to weak with statistical insignificance ( $P > 0.05$ ) were deduced to have negligible to no associations / correlations and thus, ineligible as maturely aligned.

The following three subsections presents results of Spearman correlation analysis of ICT strategy components i.e. ICT strategy planning, ICT governance infrastructure and business and IT skills development as correlated to components of IaaS i.e. network, servers, storage and virtualization. Foremost are the results of ICT strategy planning in relation to IaaS.

1. *ICT Strategy Planning and IaaS Correlation Analysis:* Findings of bivariate correlation analysis between the attributes of the predictor variable ICT strategy planning in relation to the outcome variables are shown in Table 1. The spearman correlation coefficient, the P-value and the results are shown.

**TABLE 1 PAIRWISE CORRELATION FOR ICT STRATEGY PLANNING AND IAAS**

| Predictor                                                   | IaaS Outcome   | Spearman Corr. | P-Value | Result                   |
|-------------------------------------------------------------|----------------|----------------|---------|--------------------------|
| Consultative development of IT planning and strategy (ISA1) | Network        | 0.315          | 0.049   | Moderate and Significant |
|                                                             | Servers        | 0.610          | 0.007   | Strong and Significant   |
|                                                             | Storage        | 0.553          | 0.009   | Strong and Significant   |
|                                                             | Virtualization | 0.360          | 0.042   | Moderate and Significant |
| Documentation and approval of ICT strategy (ISA2)           | Network        | 0.403          | 0.034   | Moderate and Significant |
|                                                             | Servers        | 0.615          | 0.024   | Strong and Significant   |
|                                                             | Storage        | 0.236          | 0.070   | Weak and Insignificant   |

| Predictor                                                                  | IaaS Outcome   | Spearman Corr. | P-Value | Result      |                   |
|----------------------------------------------------------------------------|----------------|----------------|---------|-------------|-------------------|
| Visibility of ICTNetwork strategy to all stakeholders (ISA3)               | Virtualization | -0.249         | 0.071   | Weak        | and Insignificant |
|                                                                            | Servers        | 0.395          | 0.039   | Moderate    | and Significant   |
|                                                                            | Storage        | 0.615          | 0.007   | Strong      | and Significant   |
|                                                                            | Virtualization | 0.260          | 0.062   | Weak        | and Insignificant |
| Clear articulation of cloud computing objectives (ISA4)                    | Network        | 0.150          | 0.091   | Weak        | and Insignificant |
|                                                                            | Servers        | 0.735          | 0.001   | Very Strong | / Significant     |
|                                                                            | Storage        | 0.745          | 0.009   | Very Strong | / Significant     |
|                                                                            | Virtualization | 0.580          | 0.005   | Strong      | /Significant      |
| Exemption of approval of IT investments outside documented strategy (ISA5) | Network        | -0.075         | 0.300   | Very Weak   | /insignificant    |
|                                                                            | Servers        | 0.330          | 0.038   | Moderate    | and Significant   |
|                                                                            | Storage        | 0.110          | 0.135   | Weak        | and Insignificant |
|                                                                            | Virtualization | 0.555          | 0.043   | Strong      | and Significant   |
|                                                                            | Network        | -0.018         | 0.325   | Very Weak   | / insignificant   |
|                                                                            | Servers        |                |         |             |                   |
|                                                                            | Storage        |                |         |             |                   |
|                                                                            | Virtualization |                |         |             |                   |

From Table 1, results show that different predictor variables under the ICT strategy approach correlated with varying degrees of magnitude with different aspects of IaaS.

2. *ICT Governance Infrastructure and IaaS Correlation Analysis:* The ICT governance

infrastructure attribute was assessed for its association/relationships and alignment maturity with IaaS. Table 2, displays results of correlation analysis between the aspects of ‘ICT Governance Infrastructure’ predictor variable and the specific aspects of IaaS.

TABLE 2 PAIRWISE CORRELATION FOR ICT GOVERNANCE AND IAAS

| Predictor                                                                          | IaaS Outcome | Spearman Corr. | P-Value | Result |              |
|------------------------------------------------------------------------------------|--------------|----------------|---------|--------|--------------|
| Clear structure that includes governance infrastructure for cloud computing (ITG1) | Network      | 0.626          | 0.003   | Strong | /Significant |

| Predictor                                                                                       | IaaS Outcome   | SpearmanP-Corr. | P-Value | Result        |              |
|-------------------------------------------------------------------------------------------------|----------------|-----------------|---------|---------------|--------------|
|                                                                                                 | Servers        | 0.234           | 0.068   | Weak          | /            |
|                                                                                                 | Storage        | 0.591           | 0.012   | Strong        | /            |
|                                                                                                 | Virtualization | 0.495           | 0.017   | Moderate      | /significant |
| Regular review and updates of ICT strategies in line with institutional strategy changes (ITG2) | Network        | 0.421           | 0.011   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Servers        | 0.176           | 0.066   | Weak          | and          |
|                                                                                                 |                |                 |         | insignificant |              |
|                                                                                                 | Storage        | 0.335           | 0.032   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Virtualization | 0.450           | 0.014   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
| Proactive maintenance of computing assets for relevance and correctness (ITG3)                  | Network        | 0.692           | 0.009   | Strong        | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Servers        | 0.450           | 0.029   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Storage        | 0.522           | 0.006   | Strong        | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Virtualization | 0.375           | 0.030   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
| Requirement for standardization and integration (ITG4)                                          | Network        | 0.275           | 0.043   | Weak          | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Servers        | 0.414           | 0.032   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Storage        | 0.247           | 0.059   | Weak          | and          |
|                                                                                                 |                |                 |         | insignificant |              |
|                                                                                                 | Virtualization | 0.417           | 0.030   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
| Championing of new and emerging technologies within strategic planning (ITG5)                   | Network        | 0.226           | 0.054   | Weak          | and          |
|                                                                                                 |                |                 |         | insignificant |              |
|                                                                                                 | Servers        | 0.635           | 0.008   | Strong        | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Storage        | 0.328           | 0.034   | Moderate      | and          |
|                                                                                                 |                |                 |         | Significant   |              |
|                                                                                                 | Virtualization | -0.057          | 0.091   | V. Weak       | /            |
|                                                                                                 |                |                 |         | insignificant |              |

| Predictor                                                 | IaaS Outcome   | SpearmanP-Corr. | P-Value | Result                 |      |
|-----------------------------------------------------------|----------------|-----------------|---------|------------------------|------|
| Delivery of customized solutions to business units (ITG6) | Network        | 0.064           | 0.805   | Very /insignificant    | Weak |
|                                                           | Servers        | 0.313           | 0.053   | Moderate /significant  |      |
|                                                           | Storage        | 0.514           | 0.018   | Strong Significant     | and  |
|                                                           | Virtualization | 0.102           | 0.075   | Weak and insignificant |      |

The pairwise correlation analysis findings (Table 2) shows that different predictor variables under the ICT governance infrastructure correlated with varying degrees of magnitude with different aspects of IaaS as indicated in Table 2.

3. *Business and IT Skills Development and IaaS Correlation Analysis:* Table 3 shows results of correlation between attributes of Business and IT skills development and IaaS.

**TABLE 3 PAIRWISE CORRELATION FOR BUSINESS AND IT SKILLS DEVELOPMENT AND IAAS**

| Predictor                                                                               | IaaS Outcome   | SpearmanP-Corr. | P-Value | Result                    |     |
|-----------------------------------------------------------------------------------------|----------------|-----------------|---------|---------------------------|-----|
| Adequacy of ICT skills and expertise to meet current and identified future needs (BIS1) | Network        | 0.534           | 0.011   | Strong Significant        | and |
|                                                                                         | Servers        | 0.426           | 0.028   | Moderate Significant      | and |
|                                                                                         | Storage        | 0.317           | 0.035   | Moderate Significant      | and |
|                                                                                         | Virtualization | 0.185           | 0.060   | Weak Insignificant        | and |
| Balance of skills and competencies across business and IT (BIS2)                        | Network        | 0.242           | 0.053   | Weak Insignificant        | and |
|                                                                                         | Servers        | 0.360           | 0.034   | Moderate Significant      | and |
|                                                                                         | Storage        | 0.714           | 0.003   | Very Strong / Significant | /   |
|                                                                                         | Virtualization | 0.433           | 0.026   | Moderate Significant      | and |
| Development of innovation, career opportunities, learning capability within IT (BIS3)   | Network        | 0.552           | 0.010   | Strong Significant        | and |
|                                                                                         | Servers        | 0.118           | 0.065   | Weak Insignificant        | and |

| Predictor                                | IaaS Outcome   | SpearmanP-Corr. | P-Value | Result   |                   |
|------------------------------------------|----------------|-----------------|---------|----------|-------------------|
| Agility and readiness for change (BIS4)  | Storage        | 0.220           | 0.057   | Weak     | and Insignificant |
|                                          | Virtualization | 0.310           | 0.036   | Moderate | and Significant   |
|                                          | Network        | 0.377           | 0.023   | Moderate | and Significant   |
|                                          | Servers        | 0.204           | 0.097   | Weak     | and Insignificant |
| Embrace and leverage of new ideas (BIS5) | Storage        | 0.370           | 0.025   | Moderate | and Significant   |
|                                          | Virtualization | 0.183           | 0.066   | Weak     | and Insignificant |
|                                          | Network        | 0.549           | 0.008   | Strong   | and Significant   |
|                                          | Servers        | 0.213           | 0.053   | Weak     | and Insignificant |
|                                          | Storage        | 0.448           | 0.027   | Moderate | and Significant   |
|                                          | Virtualization | 0.237           | 0.054   | Weak     | and Insignificant |

In Table 3, paired correlation tests between the attributes of predictor 'business and IT skills development' and outcome variables; network, servers, storage and virtualization show varying degrees of correlation coefficients and associated p-values. Correlation magnitudes ranging from weak to strong with most correlations being significant and some exhibiting levels of insignificance

## DISCUSSION

Informed by the preliminary correlation analyses performed, independent variables that exhibited substantial correlation magnitudes ( $\geq \pm 0.3$ ) with statistical significance ( $p < 0.05$ ) were deemed to be maturely aligned and were selected for advanced multivariate analysis and discussion. Logistic regression and random forest analysis techniques

were applied. Correlations that exhibited magnitudes below  $\pm 0.3$ , i.e., weak to very weak associations, with statistical insignificance ( $p > 0.05$ ), were excluded from the analysis. This guaranteed that only variables with meaningful and robust associations/correlations were utilised.

Each of the two advanced analysis methods offered unique strengths and capabilities. Logistic regression was used to quantify the likelihood and effect sizes of predictors (ICT strategy components) on the binary outcomes (IaaS). This method was particularly effective in determining the impact of distinct predictors on the likelihood of a particular outcome, and offered clear interpretability through resultant exponentiated coefficients i.e., the odds Ratio (OR). Random forest analysis proved useful for enhancing accuracy and robustness of results. Two key metrics

of evaluation i.e., accuracy and precision were used to guide the choice of better results between logistic regression and random forest analysis. The results of the two analysis techniques were compared and the analysis that exhibited better performance was selected for reporting, interpretation and discussion. The significance of employing these two techniques was to capture the strengths of each approach, ensuring a balance of interpretability, accuracy and robustness of the results.

#### A. ICT Planning

Logistic regression analysis for ICT strategy planning and IaaS alignment maturity comparatively showed better results for 'virtualization' and 'network' outcomes, while random forest analysis showed better results for 'servers' and 'storage' outcomes.

Results indicate that for the outcome variable 'virtualization' the estimated effect for the independent variable identified i.e., 'consultative development of IT planning and strategy (ISA1)' was regression coefficient ( $\beta$ ) = 0.27, standard error (SE) = 0.12. This variable is associated with 1.31 times higher odds of digital transformation to 'virtualization' IaaS occurring. The 95% confidence interval (CI) for this estimate ranged from 1.04 to 1.66, signifying a statistically significant effect. This suggests that 'consultative development of IT planning and strategy' is linked to a 31% higher likelihood of digital transformation to 'virtualization'. For the outcome variable 'network' using several predictors identified (ISA1-ISA5), the estimated effect for the predictor 'consultative development of IT planning and strategy' was  $\beta$  = 0.34 (SE = 0.09), associated with 1.40 times higher odds of digital transformation to 'network' IaaS occurring. The 95% CI for this estimate ranged from 1.17 to 1.67, signifying a statistically significant effect, and imply that 'consultative development of IT planning and strategy' is linked to a 40% higher likelihood of digital transformation to 'network' IaaS.

Other predictor variables selected include: 'Documentation and approval of ICT strategy' (ISA2):  $\beta$  = 0.37 (SE = 0.12), associated with 1.45 times higher odds of digital transformation to 'network' IaaS, with 95% confidence interval ranging from 1.15 to 1.84 and signifying a statistically substantial effect. This suggests that 'documentation and approval of ICT strategy' is linked to a 45% higher likelihood of digital transformation to 'network' IaaS in cloud computing; visibility of ICT strategy to all stakeholders (ISA3):  $\beta$  = 0.34 (SE = 0.13), associated with 1.40 times higher odds of digital transformation to 'network' IaaS, with 95% confidence interval ranging from 1.08 to 1.80. This suggests that 'documentation and approval of ICT strategy' is linked to a 40% likelihood of digital transformation to 'network' IaaS in cloud computing; clear articulation of cloud computing objectives (ISA4):  $\beta$  = 0.54 (SE = 0.14), associated with 1.71 times higher odds of digital transformation to 'network' IaaS, with 95% confidence interval ranging from 1.30 to 2.25, suggesting a statistically significant effect. This imply that 'clear articulation of cloud computing objectives' is linked to a 71% higher likelihood of digital transformation to 'network' IaaS in cloud computing; exemption of approval of IT investments outside documented strategy (ISA5):  $\beta$  = 0.39 (SE = 0.02) associated with 1.48 times higher odds of digital transformation to 'network'. The 95% confidence interval for this estimate ranged from 1.42 to 1.54, signifying a statistically significant effect. This suggests that 'exemption of approval of IT investments outside documented strategy' is linked to a 48% higher likelihood of digital transformation to 'network' in cloud computing.

For random forest analysis, the outcome variable 'Servers' yielded several predictor variables (ISA1-ISA4) as significant contributors based on their feature importance (FI) scores. The variable 'visibility of ICT strategy to all stakeholders' had a feature importance score of 0.271 indicating it played the most critical role in contributing to digital

transformation to 'Servers' IaaS in cloud computing. Other key predictors, are 'clear articulation of cloud computing objectives' (FI = 0.269), 'consultative development of IT planning and strategy' (FI = 0.234), and 'documentation and approval of ICT strategy' (FI = 0.226) also contributed meaningfully.

For the random forest analysis for the outcome variable 'Storage', the variable 'consultative development of IT planning and strategy' had a feature importance score of 0.36 indicating it plays the most critical role in digital transformation to 'Storage' IaaS in cloud computing. Other key variables, such as 'documentation and approval of ICT strategy' (FI = 0.33), 'exemption of approval of IT investments outside documented strategy' (FI = 0.31) also contributed meaningfully.

With regard to ICT Strategic planning alignment maturity to IaaS, the study revealed that when ICT initiatives are well planned with clear IaaS cloud business outcomes, Universities could better leverage technology to drive better digital transformation outcomes. Institutions that embrace a consultative development approach in their ICT strategies by engaging stakeholders, demonstrated significantly higher levels of alignment maturity. This collaborative process implies all perspectives matter and this foster shared ownership of ICT strategies and is likely to result in comprehensive and resilient strategies. Of similar importance is the emphasis on documentation and formal approval of ICT strategies inferring guidelines and standards that enable organizations to track progress and ensure consistency. Additionally, increased visibility of ICT strategy among key stakeholders is highly likely to result in better communication and hence better alignment maturity between IT and business units, which in turn facilitate smoother IaaS cloud adoption. Additionally, clearly articulated cloud computing objectives further enhanced alignment maturity, as organizations that defined their cloud goals clearly were more adept at guiding investment of IaaS

adoption decisions. It was Interesting to note that exemption of approval of IT investments outside the documented strategy was associated with alignment maturity to IaaS digital transformation. This enables institutions to seize emerging opportunities without compromising overall strategic direction. Collectively, these integrated practices: consultative development, rigorous documentation, stakeholder visibility, clear goal articulation, and flexible investment controls, substantially enhance the maturity of ICT strategy alignment and contribute to more effective cloud computing digital transformation

This strategic planning approach benefits from using maturity models [8] that help identify gaps and chart a clear direction. As [3] noted, aligning ICT investments with business objectives not only streamlines the adoption of cloud-based infrastructures but also ensures that technical improvements support overall strategic goals. In this way, a well-crafted ICT plan becomes the bridge between legacy systems and the flexible, scalable solutions offered by IaaS cloud computing.

## **B. ICT Governance Infrastructure**

Logistic regression analysis for ICT Governance Infrastructure and IaaS alignment maturity showed better results for 'virtualization', 'network' and 'servers' outcomes, while random forest analysis showed better results for 'storage' outcome.

Results indicated that for the outcome variable 'virtualization' the estimated effect for the predictor 'clear structure that includes governance infrastructure for cloud computing (ITG1)' was  $\beta = 0.50$  (SE = 0.13). This signify that this predictor is associated with 1.64 times higher odds of digital transformation to 'virtualization' occurring. The 95% confidence interval ranged from 1.27 to 2.12, signifying a statistically significant effect. This suggests that this variable is linked to a 64% higher likelihood of digital transformation to 'virtualization' IaaS in cloud computing.

Other predictor variables accepted are: Regular review and updates of ICT strategies in line with institutional strategy changes:  $\beta = 0.42$  (SE = 0.21), linked with 1.52 times higher odds of digital transformation to 'virtualization' IaaS occurring, with 95% confidence interval ranging from 1.01 to 2.30, signifying a statistically significant effect. This suggests that 'regular review and updates of ICT strategies in line with institutional strategy changes' is linked to a 52% higher likelihood of digital transformation to 'virtualization' IaaS in cloud computing; proactive maintenance of computing assets for relevance and correctness:  $\beta = 0.41$  (SE = 0.22), associated with 1.50 times higher odds of digital transformation to 'virtualization' occurring. The 95% confidence interval ranged from 0.97 to 2.31, signifying a statistically significant effect. This may infer that 'proactive maintenance of computing assets for relevance and correctness' is linked to a 50% higher likelihood of digital transformation to 'virtualization' IaaS in cloud computing; requirement for standardization and integration:  $\beta = 0.42$  (SE = 0.28), associated with 1.52 times higher odds of digital transformation to 'virtualization' occurring. The 95% confidence interval for this estimate ranged from 0.88 to 2.63, suggesting a statistically significant effect. This means that 'requirement for standardization and integration' is linked to a 52% higher likelihood of digital transformation to 'virtualization' IaaS in cloud computing.

For the analysis of the outcome variable 'network', the estimated effect for the predictor 'clear structure that includes governance infrastructure for cloud computing' was  $\beta = 0.63$  (SE = 0.18). This indicates that this predictor is associated with 1.87 times higher odds of digital transformation to 'network' occurring. The 95% confidence interval for this estimate ranged from 1.31 to 2.66, signifying a statistically significant effect. This suggests that 'clear structure that includes governance infrastructure for cloud computing' is

linked to 87% higher likelihood of digital transformation to 'network' in cloud computing.

Two additional predictor variables accepted include: Regular review and updates of ICT strategies in line with institutional strategy changes:  $\beta = 0.44$  (SE = 0.14), associated with 1.55 times higher odds of digital transformation to 'network' IaaS occurring, with 95% confidence interval ranging from 1.18 to 2.05 signifying a statistically significant effect. This suggests that 'regular review and updates of ICT strategies in line with institutional strategy changes' is linked to a 55% higher likelihood of digital transformation to 'network' IaaS in cloud computing; proactive maintenance of computing assets for relevance and correctness:  $\beta = 0.59$  (SE = 0.31), associated with 1.81 times higher odds of digital transformation to 'network' occurring. The 95% confidence interval for this estimate ranged from 0.98 to 3.32, signifying a statistically significant effect. This suggests that 'proactive maintenance of computing assets for relevance and correctness' is linked to 81% higher likelihood of digital transformation to 'network' IaaS in cloud computing.

For the outcome variable 'servers', the estimated effect for the predictor 'proactive maintenance of computing assets for relevance and correctness' was  $\beta = 0.45$  (SE = 0.24). This indicates that this predictor is associated with 1.57 times higher odds of digital transformation to 'servers' IaaS occurring. The 95% confidence interval for this estimate ranged from 0.98 to 2.51, signifying a statistically significant effect. This suggests that 'proactive maintenance of computing assets for relevance and correctness' is linked to a 57% higher likelihood of digital transformation to 'servers' IaaS in cloud computing.

Other predictor variables acknowledged are: Requirement for standardization and integration:  $\beta = 0.45$  (SE = 0.23), associated with 1.58 times higher odds of digital transformation to 'servers' occurring, with 95% confidence interval ranging from 1.00 to 2.47, signifying a statistically significant effect and

suggests that 'requirement for standardization and integration' is linked to a 58% higher likelihood of digital transformation to 'servers' IaaS in cloud computing; championing of new and emerging technologies within strategic planning:  $\beta = 0.54$  (SE = 0.22), associated with 1.71 times higher odds of digital transformation to 'servers' occurring, with 95% confidence interval ranging from 1.11 to 2.63, signifying a statistically significant effect. This suggests that 'championing of new and emerging technologies within strategic planning' is linked to a 71% higher likelihood of digital transformation to 'servers' IaaS in cloud computing; delivery of customized solutions to business units:  $\beta = 0.33$  (SE = 0.49), associated with 1.39 times higher odds of digital transformation to 'servers' occurring. The 95% confidence interval for this estimate ranged from 0.53 to 3.64, signifying a statistically significant effect. This suggests that 'delivery of customized solutions to business units' is linked to a 39% higher likelihood of digital transformation to 'servers' in cloud computing. For random forest analysis, the variable 'clear structure that includes governance infrastructure for cloud computing (ITG1)' had a feature importance score of 0.35 indicating its most critical role in predicting digital transformation to 'storage' IaaS in cloud computing relative to other predictors. Other key predictors such as 'championing of new and emerging technologies within strategic planning' (FI = 0.21), 'proactive maintenance of computing assets for relevance and correctness' (FI = 0.15), 'regular review and updates of ICT strategies in line with institutional strategy changes' (FI = 0.15) and 'delivery of customized solutions to business units' (FI = 0.13) also contribute meaningfully.

This imply that for ICT Governance Infrastructure alignment maturity with IaaS, robust ICT governance infrastructure is essential for supporting effective IaaS cloud computing digital transformation. Clearly structured governance frameworks, specifically designed to accommodate cloud computing,

demonstrated higher alignment maturity levels. Regular review and updating of ICT strategies in response to institutional changes ensures that governance remains relevant and adaptive, allowing organizations to quickly adjust to evolving cloud business needs. Moreover, proactive maintenance of computing assets is critical; ensuring that hardware, software, and cloud resources are continually updated for relevance and correctness minimizing disruptions and optimizing performance. Standardization and integration of processes and data further enhance the governance framework by promoting consistency and facilitating seamless data flows across the organization. Additionally, the proactive championing of new and emerging technologies within strategic planning enables organizations to stay ahead of industry trends, ensuring that the ICT infrastructure is both innovative and future-proof. Finally, the ability to deliver customized solutions tailored to the specific needs of various business units not only reinforces the overall governance strategy but also ensures that technology implementations are aligned with distinct operational requirements. Collectively, these governance dimensions create a comprehensive and dynamic framework that underpins effective IaaS cloud computing initiatives, driving the Universities toward successful IaaS digital transformation.

While planning sets the stage, robust ICT governance ensures that the transition to IaaS is managed effectively. Our findings highlight that strong governance mechanisms are essential for overseeing digital transformation projects that encompass virtualization, networking, servers, and storage. According to [18], comprehensive IT governance frameworks enable organizations to manage IT decision rights and risks effectively, ensuring that each technological investment delivers value and aligns with the broader business strategy. By integrating governance practices with maturity models, organizations can monitor and control the

implementation of IaaS components during cloud computing digital transformation.

### C. Business and IT Skills Development

Logistic regression analysis for business and IT skills development and IaaS alignment maturity showed better results for all outcomes i.e., virtualization, network, servers and storage.

For the outcome variable 'virtualization', the estimated effect for the predictor 'balance of skills and competencies across business and IT' was  $\beta = 0.43$  (SE = 0.13). This indicates that this predictor is associated with 1.54 times higher odds of digital transformation to 'virtualization' IaaS occurring. The 95% confidence interval for this estimate ranged from 1.47 to 1.62, signifying a statistically significant effect. This suggests that 'balance of skills and competencies across business and IT' is linked to a 54% higher likelihood of digital transformation to 'virtualization' IaaS in cloud computing.

The other predictor variable in the analysis is 'development of innovation, career opportunities, learning capability within IT' with  $\beta = 0.31$  (SE = 0.16), and associated with 1.36 times higher odds of digital transformation to 'virtualization' occurring. The 95% confidence interval for this estimate ranged from 1.27 to 1.46, signifying a statistically significant effect. This suggests that 'development of innovation, career opportunities, learning capability within IT' is linked to a 36% higher likelihood of digital transformation to 'virtualization' in cloud computing.

For the outcome variable 'network', the estimated effect for the predictor 'adequacy of ICT skills and expertise to meet current and identified future needs' was  $\beta = 0.53$  (SE = 0.11). This indicates that this predictor is associated with 1.71 times higher odds of digital transformation to 'network' occurring. The 95% confidence interval for this estimate ranged from 1.67 to 1.74, signifying a statistically significant effect. This suggests that 'adequacy of ICT skills and expertise to meet current and identified future needs'

is linked to a 71% higher likelihood of digital transformation to 'network' IaaS in cloud computing.

Other predictor variables identified include: Development of innovation, career opportunities, learning capability within IT' was  $\beta = 0.55$  (SE = 0.10), associated with 1.74 times higher odds of digital transformation to 'network' occurring. The 95% confidence interval ranged from 1.70 to 1.77, signifying a statistically significant effect. This suggests that 'development of innovation, career opportunities and learning capability within IT' is linked to a 74% higher likelihood of digital transformation to 'network' IaaS in cloud computing; agility and readiness for change:  $\beta = 0.38$  (SE = 0.21), associated with 1.46 times higher odds of digital transformation to 'network' occurring. The 95% confidence interval ranged from 1.39 to 1.52, signifying a statistically significant effect. This suggests that 'agility and readiness for change' is linked to a 46% higher likelihood of digital transformation to 'network' IaaS in cloud computing; embrace and leverage of new ideas:  $\beta = 0.55$  (SE = 0.11), associated with 1.73 times higher odds of digital transformation to 'network' occurring. The 95% confidence interval ranged from 1.70 to 1.76, signifying a statistically significant effect. This suggests that 'embrace and leverage of new ideas' is linked to a 73% higher likelihood of digital transformation to 'network' IaaS in cloud computing.

For the outcome variable 'servers', the estimated effect for the predictor 'adequacy of ICT skills and expertise to meet current and identified future needs' was  $\beta = 0.43$  (SE = 0.13). This indicates that this predictor is associated with 1.53 times higher odds of digital transformation to 'servers' occurring. The 95% confidence interval for this estimate ranged from 1.45 to 1.62, signifying a statistically significant effect. This suggests that 'adequacy of ICT skills and expertise to meet current and identified future needs' is linked to a 53% higher likelihood of digital transformation to 'servers' IaaS in cloud computing. The other

important predictor variable in the model include is 'balance of skills and competencies across business and IT' with  $\beta = 0.36$  (SE = 0.13), associated with 1.43 times higher odds of digital transformation to 'servers' occurring. The 95% confidence interval for this estimate ranged from 1.34 to 1.53, signifying a statistically significant effect. This suggests that 'balance of skills and competencies across business and IT' is linked to a 43% higher likelihood of digital transformation to 'servers' IaaS in cloud computing.

For the outcome variable 'storage' the estimated effect for the predictor 'adequacy of ICT skills and expertise to meet current and identified future needs' was  $\beta = 0.32$  (SE = 0.17). This indicates that this predictor is associated with 1.37 times higher odds of digital transformation to 'storage' occurring. The 95% confidence interval for this estimate ranged from 1.28 to 1.47, signifying a statistically significant effect. This suggests that 'adequacy of ICT skills and expertise to meet current and identified future needs' is linked to a 37% higher likelihood of digital transformation to 'storage' IaaS in cloud computing.

Other important predictor variables identified include: Balance of skills and competencies across business and IT' was  $\beta = 0.71$  (SE = 0.01), associated with 2.04 times higher odds of digital transformation to 'storage' occurring. The 95% confidence interval for this estimate ranged from 2.03 to 2.05, signifying a statistically significant effect. This suggests that 'balance of skills and competencies across business and IT' is linked to a 104% higher likelihood of digital transformation to 'storage' in cloud computing; agility and readiness for change' was  $\beta = 0.37$  (SE = 0.14), associated with 1.45 times higher odds of digital transformation to 'storage' occurring. The 95% confidence interval ranged from 1.38 to 1.52, signifying a statistically significant effect. This imply that 'agility and readiness for change' is linked to a 45% higher likelihood of digital transformation to 'storage' in cloud computing; embrace and leverage of new ideas:  $\beta = 0.45$  (SE = 0.13). This indicates that this

predictor is associated with 1.57 times higher odds of digital transformation to 'storage' occurring. The 95% confidence interval ranged from 1.48 to 1.65, signifying a statistically significant effect. This suggests that 'embrace and leverage of new ideas' is linked to a 57% higher likelihood of digital transformation to 'storage' in cloud computing.

The analysis above infers that strong business and IT skills development is essential for effective ICT alignment maturity and successful IaaS digital transformation. Organizations keen on developing and maintaining the right mix of skills currently and in the future are better prepared for greater success in IaaS cloud computing digital transformation projects. This imply that when skills are balanced between business and IT, collaboration improves, making technology initiatives both technically sound and strategically aligned. A culture that values innovation, career growth, and ongoing learning also plays a key role in developing these skills. Environments that support these values enable IT professionals to thrive, driving creative problem-solving and the proactive adoption of new technologies. Organizations that invest in skill development and remain flexible to change are more agile in adapting to evolving technology landscapes. Finally, the ability to embrace and leverage new ideas is a defining characteristic of institutions with mature business and IT capabilities alignment. This openness to innovation ensures that emerging technologies and methodologies are effectively integrated into the ICT strategy, thereby enhancing overall digital transformation outcomes. In summary, having the right ICT skills, balanced competencies, a continuous learning culture, agility in change, and the ability to embrace new ideas creates a strong basis for aligning business and IT with IaaS. This alignment is critical for realizing the full benefits of cloud computing and achieving lasting success in IaaS digital transformation.

A successful IaaS digital transformation requires more than just technology, it demands convergence of

business and IT skills as well. Our study underscores that developing competency in both domains is pivotal for managing the intricacies of virtualization, networking, servers, and storage. [9] emphasize that design research in information systems should yield frameworks that are both actionable and grounded in real-world application. Additionally, [22] and [23] argues that the fusion of business strategy with IT expertise is essential for executing transformative initiatives such as digital transformation. Training programs and continuous skill development ensure that both IT professionals and business leaders understand not only the technical aspects of IaaS but also the strategic value it brings to the organization. This twofold focus helps in building a workforce that is capable of steering digital transformation initiatives and capitalizing on new opportunities presented by IaaS cloud computing.

## CONCLUSION

In conclusion, this study highlights the critical role that a holistic approach, combining forward-thinking ICT planning, clear and accountable ICT governance, and a continuous focus on developing technical and business skills, is essential for realizing the full benefits of IaaS cloud technology investment. Strategic planning provides the roadmap for leveraging cloud-based services, while ICT governance guarantees that decision-making is both transparent and agile. A well-equipped ICT workforce with a mix of ICT and business skills is key to adapting and innovating in the evolving digital landscape in public Universities in Kenya. Institutions/organizations implementing structured ICT planning, governance frameworks, while building strong workforce with a mix of business and IT skills and strategic alignment practices can enhance cloud transformation outcomes. Policies should emphasize alignment maturity as a benchmark for cloud adoption incentives.

This study makes important contributions to both theory and practice, enhancing the theoretical understanding and practical implementation of IaaS cloud computing digital transformation in public Universities in Kenya. The contribution offers insights that benefit both researchers and practitioners undertaking (or planning to) IaaS cloud computing digital transformation. Firstly, the study reveals how ICT strategy components work together in IaaS digital transformation in a complementary and integrated manner. This approach offers a renewed perspective of how ICT strategy align maturely with IaaS cloud technology to drive IaaS digital transformation success. Additionally, it sheds light on the critical factors that influence the alignment maturity of ICT strategy with IaaS cloud transformation goals. Secondly, by using primary data, this study supports theoretical ideas about ICT strategy and cloud computing digital transformation. The study offers empirical evidence of how alignment maturity between ICT strategy can lead to enhanced IaaS cloud transformation, contributing to both academic literature and industry practices.

Further studies should explore the impact of emerging technologies (e.g. AI and IoT) on alignment maturity towards IaaS cloud transformation. This direction could provide deeper insights and further broaden the scope to enhance the effectiveness of IaaS cloud computing digital transformation frameworks in this research area.

## REFERENCES

- [1]. Adora, N. (2024). *Confident Cloud: Uncover The Essentials of Cloud Computing*. Kogan Page
- [2]. Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2019). Digital business strategy: Toward a next-generation framework. *MIS Quarterly*, 43(1), 471–482. <https://doi.org/10.25300/MISQ/2019/43.1.06>
- [3]. Chan, Y. E., & Reich, B. H. (2007). IT alignment: What have we learned? *Journal of*

- Information Technology, 22(4), 297–315. <https://doi.org/10.1057/palgrave.jit.2000073>
- [4]. Clark, V., P. & Creswell, J. (2015). Understanding research: A consumer's guide. Pearson
- [5]. Coltman, T., Tallon, P., Sharma, R., & Queiroz, M. (2015). Strategic IT alignment: Twenty-five years on. *Journal of Information Technology*, 30(2), 91–100. <https://doi.org/10.1057/jit.2015.2>
- [6]. De Haes, S., & Van Grembergen, W. (2008). Analysing the relationship between IT governance and business/IT alignment maturity. *Information Systems Management*, 25(1), 37–48. <https://doi.org/10.1201/9781420095512.ch4>
- [7]. Ghauri P., Gronhaug, K. Strange R., (2020). Research methods in business studies. Cambridge university press.
- [8]. Gupta, S., & Misra, S. C. (2021). Maturity models for cloud computing: A review. *International Journal of Information Management*, 56, 102224. <https://doi.org/10.1016/j.ijinfomgt.2020.102224>
- [9]. Hevner, A., & Chatterjee, S. (2020). Design research in information systems (2nd ed.). Springer.
- [10]. Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review*, 14(1), 1–25. Retrieved from <https://sloanreview.mit.edu/article/strategy-not-technology-drives-digital-transformation/>
- [11]. Luftman, J. Lyytinen, K. & Zvi T.P (2017). Enhancing the measurement of information technology (IT) business alignment and its influence on company performance. 32, 26–46. doi:10.1057/jit.2015.23
- [12]. Luftman, J. (2003). Competing in the information age: Align in the sand. Oxford University Press.
- [13]. Marinescu, D.C (2023). Cloud Computing: Theory and Practice (3rd ed.). Elsevier
- [14]. Open Alliance for Cloud Adoption. (2025). Announcing Cloud Maturity Model (CMM) Version 4.9. Retrieved from <https://oaca-project.org/models/2025/01/16/CMM-4.9-AI-Models-domain-released.html>
- [15]. Ori, D. (2017). On exposing strategic and structural mismatches between business and information systems (Doctoral dissertation). Corvinus University of Budapest.
- [16]. Patten M. L. & Newhart M. (2018). Understanding research methods: An overview of essentials (10th ed.). Taylor and Francis.
- [17]. Rogers, D., L. (2016). The digital transformation playbook: Rethink your business for the digital age. Columbia University Press
- [18]. Ross, J. W., & Weill, P. (2020). IT Governance: How top performers manage IT decision rights for superior results. Harvard Business Review Press.
- [19]. Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms. *MIS Quarterly*, 27(2), 237–263. <https://doi.org/10.2307/30036518>
- [20]. Turban, E. et. al (2021). Information Technology for Management: Driving Digital Transformation to Increase Local and Global Performance, Growth and Sustainability. WILEY
- [21]. Vehovar, V. & Manfreda, K. L. (2017). Overview: Online Surveys. In Nigel G., Lee R. M & Blank G. (eds.) (2017). The sage handbook of online research (2nd ed.), SAGE
- [22]. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- [23]. Westerman, G., Bonnet, D., & McAfee, A. (2014). Leading digital: Turning technology into business transformation. Harvard Business Review Press.
- [24]. Zimmermann, A, et. al. (2021). Architecting the Digital Transformation: Digital Business, Technology, Decision Support and Management. Springer. [https://doi.org/10.1007/978-3-030-49640-1\\_1](https://doi.org/10.1007/978-3-030-49640-1_1)