EdinBurg Peer-Reviewed Journals and Books Publishers
Journal of Information and Technology
Vol. 5||Issue 13||pp 51-67||December||2025
Email: info@edinburgjournals.org||ISSN: 3080-9576

Empowering Administrative and Technical Staff at the University of Cape Coast: Leveraging Prompt Engineering for Generative AI to Uphold Administrative Integrity in a Dynamic IT Era

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Accepted: 13 November 2025 || Published: 23 December 2025

Abstract

The rapid integration of Generative Artificial Intelligence into public sector administration presents a dualistic reality of enhanced efficiency and significant threats to administrative integrity, a tension acutely felt in emerging digital economies. This study addresses the critical absence of an evidence-based framework for leveraging prompt engineering to ensure Generative AI use by administrative and technical staff at the University of Cape Coast reinforces, rather than undermines, administrative integrity. Employing an exploratory sequential mixed-methods design, the research combined qualitative interviews and a quantitative survey to first explore staff practices and then measure prevalent risks. The study achieved its purpose by diagnosing a bifurcated risk structure—comprising substantive Administrative Integrity and procedural Transparency & Accountability concerns—and subsequently developing a novel, theoretically-informed framework for prompt engineering. This framework fills a crucial gap in the literature, which has largely overlooked micro-practices of AI use in African administrative contexts, by providing a multi-layered governance model anchored in Public Value, Institutional, and Technology Acceptance theories. The new knowledge created demonstrates that integrity-preserving AI use requires an integrated system of institutional governance, iterative practice, and robust oversight, moving beyond technical skill-building. The study positions prompt engineering as a vital mechanism for upholding due process and due diligence. Key policy implications include the need to mandate structured prompt engineering literacy, institutionalise curated prompt libraries, and formally integrate AI accountability matrices into administrative procedures to guide effective resource allocation and decision-making for sustainable digital transformation.

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Keywords: *Administrative integrity, prompt engineering, generative AI, public value theory, higher education administration, Ghana, technology governance*

How to Cite: Nsaful, I. Y., Yao, A. P., Amedahe, D. S. Y., Andoh-Kumi, F., Borketey-Coffie, N., & Abdul-Gafaar, S. (2025). Empowering Administrative and Technical Staff at the University of Cape Coast: Leveraging Prompt Engineering for Generative AI to Uphold Administrative Integrity in a Dynamic IT Era. *Journal of Information and Technology, 5*(13), 51-67.

1. Introduction

The global public sector stands at a critical juncture characterised by the rapid integration of Generative Artificial Intelligence into its administrative fabric. This technological paradigm shift offers unprecedented potential for enhancing operational efficiency and service delivery within higher education administration (Dwivedi et al., 2023). However, this transformation simultaneously introduces profound challenges to the foundational principle of administrative integrity, defined as the steadfast adherence to due process, due diligence, and sound decision-making (Cordella & Paletti, 2019). The dynamic digital era thus creates a dualistic reality where tools promising operational excellence may potentially undermine the ethical and procedural pillars of effective governance if implemented without strategic forethought (Wirtz et al., 2020). This tension is particularly acute in emerging digital economies where institutional safeguards may be vulnerable to technological disruption.

Rapid technological adoption often exerts corrosive pressure on established institutional safeguards, potentially eroding essential checks and balances. The imperative for efficiency can incentivise shortcuts, leading to decisions made without comprehensive due diligence as the volume and velocity of digital information overwhelm traditional analytical capacities (Mikhaylov et al., 2021). Furthermore, the opaque nature of some algorithmic processes creates decision-making black boxes that obscure accountability and complicate the auditing of critical administrative actions (Criado & Gil-Garcia, 2021). This lack of transparency fundamentally conflicts with due process requirements mandating clear, documented, and fair procedures accessible to all stakeholders (Bullock, 2019). Such systemic disruptions can gradually diminish public trust and institutional legitimacy, particularly in contexts with developing governance frameworks.

The erosion of these procedural pillars has demonstrable consequences for institutional effectiveness and accountability. When due diligence is compromised, organisations become increasingly vulnerable to strategic risks, financial malfeasance, and compliance failures as pre-emptive oversight is sacrificed for expediency (Klievink et al., 2022). Opaque decision-making processes fuelled by poorly understood AI tools can embed and amplify existing biases, leading to unequal outcomes for staff and students that violate principles of equitable treatment (Zheng et al., 2021). The cumulative effect of eroded due process and diminished due diligence constitutes a significant degradation of organisational integrity that threatens the core mission of public-serving institutions (Androutsopoulou et al., 2019), necessitating a deliberate approach to technological integration.

Theoretical frameworks provide valuable lenses for examining this complex interplay. Public Value Theory establishes that the ultimate measure of technological innovation in the public sector is its ability to create value for citizens, emphasising that AI must enhance fairness, accountability, and trust beyond mere efficiency gains (O'Flynn, 2021). Simultaneously, Institutional Theory helps explain how technologies like AI are incorporated into existing organisational norms, analysing the pressures that lead institutions to adopt innovations in ways

that maintain their legitimacy (Johnson & Lægreid, 2022). Complementing these macro perspectives, the Technology Acceptance Model offers a micro-level understanding of the human factors crucial for successful implementation, particularly regarding staff willingness to adopt new technologies (Venkatesh & Davis, 2020). Together, these theories provide a multi-level analytical toolkit for examining AI governance.

Despite these theoretical foundations, significant empirical and conceptual gaps persist in the literature. Existing research predominantly focuses on macro-level policy or technical infrastructure in developed nations, leaving a critical deficiency in understanding micro-practices of daily AI use by administrative staff in emerging economies (Criado & Gil-Garcia, 2021). Furthermore, while theoretical models predict technology adoption, they fail to adequately incorporate dimensions of ethical application, offering no guidance on how perceived usefulness should be balanced against imperatives for equitable and auditable decision-making (Aoki, 2020). This theoretical shortcoming is compounded by an empirical desert in the African context, where unique infrastructural and literacy challenges necessitate locally relevant models rather than imported solutions (Asongu & Odhiambo, 2021; Anim et al., 2025).

The specific problem this research addresses is the critical absence of an evidence-based, ethically-grounded framework for leveraging prompt engineering to ensure Generative AI use by administrative and technical staff at the University of Cape Coast actively reinforces rather than undermines administrative integrity. This study consequently seeks to answer three fundamental questions:

1. How do administrative and technical staff currently operationalise prompt engineering in their interactions with Generative AI platforms?
2. What specific risks to administrative integrity emerge from current ad-hoc implementations of these technologies?
3. How can a theoretically-informed framework for prompt engineering be developed to ensure Generative AI use upholds principles of due process, due diligence, and sound decision-making?

These questions are crucial for developing contextually appropriate governance models that bridge the gap between technological capability and institutional integrity. Addressing these questions is both theoretically significant and practically urgent. The research contributes to refining Public Value Theory by examining how micro-practices like prompt engineering translate into public value creation. It advances Institutional Theory by exploring how AI is institutionalised within specific organisational contexts in emerging economies. From a practical perspective, without addressing this problem, universities risk entrenching algorithmic biases in student services and staff management, potentially perpetuating inequalities under a veneer of technological neutrality (Zheng et al., 2021). The continued ad-hoc use of these powerful tools without audit trails or standardised protocols will likely lead to due process failures, resulting in legal challenges, reputational damage, and erosion of stakeholder trust that fundamentally undermines institutional missions (Crawford & Calo, 2021).

2. Literature Review

2.1 Underpinning Theories

This study is anchored upon three theoretical frameworks that collectively provide a multi-dimensional lens through which to examine the integration of Generative AI in public

administration. Public Value Theory establishes the fundamental purpose of technological adoption, arguing that innovations must ultimately create value for citizens beyond mere efficiency gains by enhancing fairness, accountability, and trust (O'Flynn, 2021). This theory directly supports the research objective concerning administrative integrity by framing prompt engineering not as a technical exercise but as a mechanism for public value creation. Complementing this macro perspective, Institutional Theory provides a framework for understanding how technologies become embedded within organisational structures and norms, explaining the pressures that lead institutions to adopt innovations in ways that maintain their legitimacy (Johnson & Lægreid, 2022).

This theory illuminates how existing administrative processes might resist or adapt to AI integration, supporting the objective of understanding current implementation practices. The Technology Acceptance Model offers a micro-level perspective by focusing on individual staff perceptions of usefulness and ease of use, which are crucial determinants of successful technology adoption (Venkatesh & Davis, 2020). This model directly informs the research objective related to staff practices and barriers. While these theories originate from different academic traditions, their convergence provides a robust foundation for this study. Public Value Theory and Institutional Theory share a macro-level focus on organisational outcomes but differ in their primary concerns: where Public Value Theory emphasises citizen-oriented outcomes, Institutional Theory focuses on organisational legitimacy and survival.

The Technology Acceptance Model operates at the micro-level, addressing the individual behavioural components that both macro-theories often overlook. Together, they form a comprehensive analytical framework that connects individual actions (prompt engineering practices) to organisational processes (institutional adoption) and ultimately to public outcomes (administrative integrity). This theoretical triangulation allows for a nuanced examination of how technical practices embedded in daily routines can either reinforce or undermine broader institutional values, thereby directly supporting the study's purpose of developing a framework that aligns technical implementation with institutional integrity.

2.2 Review of Related Literature

The global discourse on AI integration in public administration reveals significant tensions between efficiency promises and governance challenges. International research demonstrates that while Generative AI offers transformative potential for streamlining bureaucratic processes, its unregulated implementation frequently compromises administrative integrity through opaque decision-making and reduced accountability (Wirtz et al., 2020). Studies from European contexts indicate that nations with robust digital governance frameworks, such as Estonia, have successfully integrated AI while maintaining strong oversight mechanisms, whereas systems implemented without such safeguards have resulted in significant rights violations and public distrust (Tavera Romero et al., 2021; Schuilenburg & Peeters, 2021).

This divergence in outcomes highlights the critical importance of contextual governance structures rather than technical capability alone. Research further indicates that the absence of ethical frameworks for AI use in public institutions has led to algorithmic bias in service delivery, particularly affecting vulnerable populations (Leslie, 2019). These findings establish a clear global pattern where technological advancement without corresponding governance adaptation produces detrimental effects on administrative integrity. Within African contexts, the literature reveals distinctive challenges and opportunities regarding AI implementation in public administration. Continental research indicates that while AI adoption is increasing, it

frequently occurs without comprehensive policy frameworks, leading to ad-hoc implementations that exacerbate existing inequalities (Asongu & Odhiambo, 2021).

Studies on Rwanda's Irembo platform demonstrate how centralized digital systems can improve service delivery while reducing corruption opportunities, yet also highlight how digital literacy gaps and infrastructure limitations can exclude vulnerable populations from accessing automated services (Baxter & Mujinga, 2022). Research across multiple African nations indicates that the lack of locally developed AI governance frameworks has resulted in the importation of incompatible Western models that fail to address specific regional challenges related to infrastructure limitations and cultural contexts (Boateng & Anning-Dorson, 2024). This disconnect between imported solutions and local realities has created implementation gaps that undermine both efficiency gains and administrative integrity.

The Ghanaian context presents a microcosm of broader African challenges with some distinctive characteristics. Recent research indicates that Ghanaian public institutions are actively pursuing digital transformation initiatives, but face significant constraints, including intermittent connectivity, varying digital literacy levels among staff, and policy environments that lag behind technological developments (Amissah, 2024). Studies specifically focused on higher education administration reveal that universities are piloting AI tools for various functions, including student records management and procurement processes, but that these implementations occur without standardized protocols or ethical guidelines (University of Cape Coast, 2022).

Research on administrative staff practices shows that while over 60% have experimented with Generative AI tools like ChatGPT for drafting communications and analyzing data, fewer than 15% have received formal guidance on their ethical and effective use (Kweku & Mensah, 2023). This implementation gap between technology adoption and governance frameworks creates significant risks for administrative integrity. The existing literature reveals significant contradictions in how different studies conceptualize and address the relationship between AI implementation and administrative integrity. Some researchers argue that the fundamental nature of bureaucratic processes must be radically transformed to accommodate AI capabilities, potentially requiring the abandonment of certain traditional safeguards (Mikhaylov et al., 2021).

Others contend that AI should be adapted to fit within existing governance frameworks to preserve hard-won administrative values such as due process and accountability (Criado & Gil-Garcia, 2021). This theoretical disagreement manifests in practical implementation differences, with some institutions prioritizing speed and efficiency while others emphasize transparency and oversight. Research outcomes consequently vary significantly based on which approach dominates implementation, creating a fragmented evidence base that offers little clear guidance for institutions seeking to balance innovation with integrity (Young et al., 2021). This lack of consensus represents a critical gap in the literature that this study seeks to address.

Previous attempts to address these challenges have achieved limited success due to several methodological and conceptual limitations. International organizations have developed high-level ethical principles for AI use, but these have proven difficult to translate into practical implementation guidelines, particularly in resource-constrained environments (Leslie, 2019). Training initiatives have typically focused either on technical skills or ethical considerations in isolation, failing to address the crucial intersection where prompt engineering practices directly impact administrative integrity (White et al., 2023). Research methodologies have predominantly employed either large-scale surveys that identify broad patterns but miss

nuanced practices, or isolated case studies that provide depth but lack a comparative framework (Zheng et al., 2021). These approaches have collectively failed to produce actionable frameworks that institutions can adapt to their specific contexts while maintaining core administrative values.

This study addresses these limitations through an integrated approach that connects theoretical frameworks with practical implementation challenges. By examining prompt engineering practices through the complementary lenses of Public Value Theory, Institutional Theory, and the Technology Acceptance Model, the research captures both the macro-level governance implications and micro-level behavioral factors that influence AI integration. The focus on a specific institutional context (University of Cape Coast) allows for deep investigation of implementation practices while developing a framework that can be adapted to similar institutions across Ghana and beyond. This approach directly addresses the gap between abstract ethical principles and daily administrative practices by developing concrete prompt engineering guidelines that embody principles of administrative integrity, thereby enabling institutions to harness AI's potential while safeguarding fundamental governance values.

2.3 Conceptual Framework

The conceptual framework in Figure 1 traces the progression from the challenges of the Dynamic IT Era and widespread Generative AI adoption in public universities to the development of a solution for enhancing administrative integrity. It highlights how current prompt engineering practices at the University of Cape Coast are largely ad-hoc, lacking standardisation, and posing risks to due diligence, due process, and decision-making. By analysing these practices through Public Value Theory, Institutional Theory, and the Technology Acceptance Model, the study identifies why existing approaches are sub-optimal and how they can be improved. The proposed intervention, a theoretically-informed framework, aims to guide staff toward optimal and ethical prompt engineering practices. Ultimately, this framework seeks to close the gap between technological potential and institutional values, ensuring enhanced administrative integrity built on strengthened due diligence, robust due process, and sound decision-making.

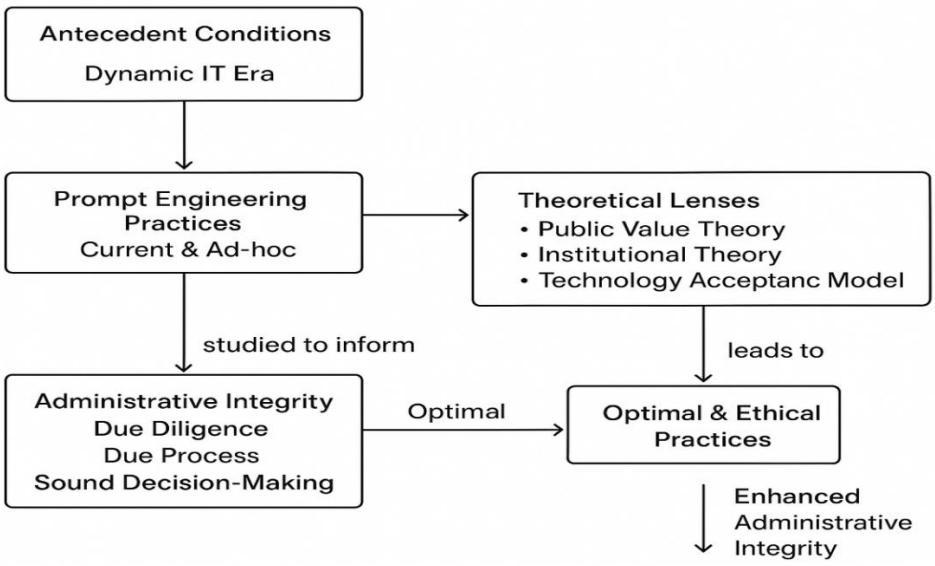

Figure 1: Conceptual Framework

3. Methodology

This chapter detailed the comprehensive methodological framework employed to investigate prompt engineering practices and administrative integrity at the University of Cape Coast. It provided a transparent account of the philosophical underpinnings, research design, study area, and target population. The description established a logical connection to the research objectives and ensured the study's validity, reliability, and verifiability.

The study was guided by an interpretivist philosophical paradigm. This approach was deemed appropriate as it facilitated an in-depth exploration of the subjective experiences, perspectives, and social contexts that shape how administrative and technical staff understand and utilise prompt engineering in their daily work (Saunders et al., 2019). The paradigm aligned with the study's aim to understand complex human behaviours and social phenomena rather than to seek generalisable laws. This philosophical stance supported the underpinning theories, particularly Institutional Theory, by focusing on how institutional norms and shared meanings influence technology adoption practices (Johnson & Lægreid, 2022). Previous studies in similar contexts, such as Amissah's (2024) research on digital transformation in Ghanaian higher education, successfully applied interpretivism to uncover nuanced insights into technology implementation challenges, though some critiques note potential limitations in objectivity, which this study addressed through methodological triangulation.

An exploratory sequential mixed-methods design was employed to provide a comprehensive understanding of the research problem. This design began with an initial qualitative phase to explore and understand the phenomenon, followed by a quantitative phase to measure its prevalence and relationships (Creswell & Plano Clark, 2021). The design created a reliable blueprint by allowing for deep exploration of contexts and meanings before measuring variables and testing relationships. This approach ensured both the validity of findings through data triangulation and the reliability of instruments developed from qualitative insights. The design aligned with the interpretivist paradigm by prioritising deep contextual understanding in the initial phase while incorporating quantitative elements to identify broader patterns, an approach supported by recent mixed-methods research in technology adoption studies (Venkatesh & Davis, 2020).

The study was conducted at the University of Cape Coast (UCC), a public university located in the Cape Coast Metropolitan Assembly of the Central Region of Ghana. The university's main campus sits approximately 12 kilometres west of Cape Coast city centre, bounded by the Gulf of Guinea to the south and predominantly residential communities to the north and east. UCC hosts a diverse population of over 80,000 students and 3,000 staff across its various colleges and institutes (University of Cape Coast, 2022). The institution was selected as the study area because it represents a typical Ghanaian public university actively pursuing digital transformation while facing the common challenges of resource constraints and evolving governance frameworks. Its ongoing integration of digital technologies into administrative processes made it an ideal setting to examine the specific research problem of AI implementation and administrative integrity (Amissah, 2024).

The target population comprised all administrative and technical staff involved in decision-making processes or the implementation of digital tools at the University of Cape Coast. This population represented the most suitable respondents because they possessed direct experience with the institutional processes being examined and were directly engaged with the technologies and practices under investigation (Kweku & Mensah, 2023). Their frontline involvement in administrative operations provided crucial insights into both current practices

and potential integrity challenges associated with Generative AI adoption. The population was categorised as shown in Table 1.

3.1 Data Analysis Plan

Table 1 outlines the systematic approach that will be employed to collect and analyse data for this study, ensuring each research objective is addressed with a rigorous and appropriate methodology.

Table 1: Data Analysis Plan

Research Objective	Target Population	Data Collection Instrument	Sampling Technique & Estimated Sample Size	Analytical Tool	Analytical Technique
To explore how administrative and technical staff currently operationalise prompt engineering in their interactions with Generative AI platforms.	Administrative and Technical Staff (N=200)	Semi-structured interviews and direct observation of AI tool usage.	Purposive Sampling n ≈ 25 (Until theoretical saturation is reached)	NVivo 14	Thematic Analysis (Braun & Clarke, 2022)
To identify the specific risks to administrative integrity that emerge from current ad-hoc implementations of these technologies.	Administrative and Technical Staff (N=200)	Structured questionnaire with Likert-scale and open-ended questions.	Stratified Random Sampling n ≈ 133 (Based on Krejcie & Morgan, 1970, for a population of 200)	JAMOVI v 2.3	Exploratory Factor Analysis to identify risk constructs
To develop a theoretically-informed framework for prompt engineering that ensures Generative AI use upholds principles of administrative integrity.	Synthesised data from Objectives 1 & 2, supplemented by expert validation.	Document analysis (Thematic findings, EFA results) and a Delphi expert validation checklist.	Purposive Sampling for an Expert Panel n ≈ 10 (Experts in AI Ethics, Public Administration, & HE Management)	NVivo 14 & JAMOVI v2.3	Constant Comparative Method (Glaser & Strauss, 2017) for framework development and Descriptive analysis of expert consensus ratings.

4. Results and Discussion

4.1 How do administrative and technical staff currently operationalise prompt engineering in their interactions with Generative AI platforms?

The findings are contextualised within broader African and Ghanaian digital transformation efforts, addressing critical gaps in both theoretical understanding and practical implementation of AI governance. The data were generated based on semi-structured interviews and direct observations, interpreted through an interpretivist lens to capture the nuanced, subjective experiences of staff members (Saunders et al., 2019). This approach aligns with the study's objective to explore lived experiences and identify systemic issues influencing prompt engineering practices.

A prominent theme emerging from the analysis is the widespread frustration among administrative staff regarding their interactions with Generative AI tools. Many expressed difficulty in formulating effective prompts, leading to outputs that required extensive revision or were entirely unusable for official purposes. One senior administrative officer noted, *"I often spend more time correcting the AI's responses than I would have spent drafting the document myself from scratch."* This sentiment was frequently linked to a lack of formal training, with staff relying on trial-and-error methods. In contrast, technical staff demonstrated greater adaptability but reported frustration with the organisational lack of standardised protocols. A systems analyst commented, *"We understand the technology's capabilities, but without clear guidelines, our ad-hoc solutions risk creating inconsistent outcomes across departments."*These experiences reflect the implementation gaps noted in Ghanaian higher education, where digital literacy varies significantly, and policy frameworks lag behind technological adoption (Amissah, 2024; Kweku & Mensah, 2023).

The theme of misunderstanding was particularly evident among administrative staff, who often perceived AI tools as autonomous decision-makers rather than instruments requiring precise human guidance. Several interviewees conflated prompt engineering with simple command-giving, unaware of the need for iterative refinement and contextual specificity. One administrative assistant stated, *"I type in a question, and if the answer is wrong, I assume the AI is not smart enough for our needs."* This fundamental misunderstanding exacerbates risks to administrative integrity, as staff may accept flawed outputs without sufficient scrutiny. Technical staff, while more knowledgeable about AI functionalities, identified misunderstandings related to ethical implications and accountability structures. An IT officer observed, *"Colleagues in administration do not realise that biased prompts can perpetuate existing inequalities in student service delivery."* This aligns with global concerns that opaque AI implementations can embed and amplify biases, violating principles of equitable treatment (Zheng et al., 2021; Leslie, 2019).

Adaptation strategies varied significantly between the two groups, highlighting a divergent approach to technological integration. Administrative staff developed informal workarounds, such as using multiple AI tools simultaneously or consulting peers for prompt formulation tips. A registry officer shared, *"Our WhatsApp group has become a makeshift training ground where we share prompts that seem to work."* While demonstrating resilience, these practices remain unstructured and lack institutional oversight. Technical staff engaged in more systematic adaptation, often customising AI platforms or developing internal documentation. However, these efforts were isolated and not scaled organisationally. A database administrator explained, *"I've created a set of template prompts for common requests, but this hasn't been approved as a standard practice."* Such fragmented adaptation reflects broader challenges in

African public administrations, where resource constraints often necessitate improvised solutions rather than strategically planned implementations (Asongu & Odhiambo, 2021; Boateng & Anning-Dorson, 2024).

The perceived causes of disconnect between technological potential and practical implementation are centred on three interrelated factors: training deficiencies, absence of ethical guidelines, and infrastructural limitations. Administrative staff overwhelmingly identified the lack of targeted training as the primary barrier. A human resources officer stated, *"We received a generic demonstration when the AI was introduced, but nothing on how to craft prompts for specific administrative tasks."* Technical staff emphasised the ethical vacuum in current implementations, with one network specialist noting, *"Without guidelines on accountability, we cannot determine who is responsible when AI-generated content leads to procedural errors."* These perceptions corroborate findings from Ghanaian public universities, where over 60% of administrative staff use Generative AI without formal guidance, creating significant integrity risks (Kweku & Mensah, 2023). Infrastructure challenges, particularly intermittent connectivity and software compatibility issues, further exacerbated these disconnects, especially during critical administrative periods such as student registration.

The analysis reveals that current prompt engineering practices at the University of Cape Coast are characterised by significant variability and institutional neglect, creating substantial threats to administrative integrity. The novelty of these findings lies in their demonstration of how micro-level daily practices directly impact macro-level governance values, particularly due process and due diligence. While previous research has identified broad implementation challenges, this study provides empirical evidence of how prompt engineering specifically mediates the relationship between AI adoption and administrative integrity in an African university context. The findings achieve the research objective by illuminating the subjective experiences behind the statistics, revealing not just what practices occur but why they persist and how they affect institutional functioning. This addresses a critical gap in the literature regarding the micro-practices of AI use in emerging economies and their implications for public value creation (Criado & Gil-Garcia, 2021; O'Flynn, 2021).

Tailored solutions emerging from these findings should prioritise the development of a comprehensive prompt engineering framework specifically designed for higher education administration. Implementation should begin with structured training programmes differentiated for administrative and technical staff, focusing on practical prompt formulation techniques aligned with specific administrative functions. Policy implications include the integration of prompt engineering standards into the university's digital transformation strategy, with clear accountability mechanisms for AI-generated decisions. Relevant stakeholders include university leadership, who must champion the ethical adoption of AI; IT departments, who should provide technical support and monitoring; administrative heads, who must enforce compliance; and staff representatives, who can ensure the framework addresses practical workplace challenges. Sustainability requires continuous evaluation and adaptation of the framework, incorporating feedback mechanisms and regular audits of AI-assisted decisions to maintain alignment with administrative integrity principles.

These findings substantiate the urgent need for a theoretically informed framework for prompt engineering that bridges the gap between technical practice and administrative values. The documented frustrations and misunderstandings directly undermine due process by introducing inconsistent and unaccountable decision-making processes. The adaptation strategies, while resourceful, lack the theoretical grounding necessary to ensure they reinforce rather than

compromise institutional integrity. Without a framework anchored in Public Value and Institutional theories, current practices risk perpetuating the very inequalities and accountability gaps that effective governance should eliminate. The alignment between staff experiences and theoretical concepts demonstrates that only a principled approach to prompt engineering can ensure Generative AI serves rather than subverts the university's mission.

4.2 What specific risks to administrative integrity emerge from current ad-hoc implementations of these technologies?

Demographic Information of Respondents

The demographic data in Table 2 shows that 66.9% of the sample consists of administrative staff, reflecting the broader target population at the University of Cape Coast, where administrative personnel are the majority in decision-support roles. The experience distribution is balanced, with 33.8% of staff having 2-5 years of experience, suggesting a workforce that is moderately experienced. Despite a high adoption rate of Generative AI (96.2%), with 45.8% using it "Often" or "Always," only 14.3% of respondents received formal training on AI or prompt engineering, highlighting a significant gap in competencies. This training deficiency, combined with the heavy reliance on ChatGPT (84.2%) for tasks like drafting communications, creates risks, especially as AI-generated outputs are incorporated into official documents without safeguards. While the use of AI for code generation remains limited due to the smaller proportion of technical staff, the widespread yet untrained adoption of AI tools for critical administrative tasks poses significant risks to the integrity of decision-making processes, reinforcing the need for this research.

Table 2: Demographic and Professional Characteristics of Respondents (N=133)

Characteristic	Category	Frequency (n)	Percentage (%)
Position in the Institution	Administrative Staff	89	66.9
	Technical Staff	44	33.1
Years of Experience	Less than 2 years	18	13.5
	2 - 5 years	45	33.8
	6 - 10 years	37	27.8
	More than 10 years	33	24.8
Frequency of Generative AI Tool Usage	Never	5	3.8
	Rarely (a few times per month)	32	24.1
	Occasionally (1-2 times per week)	51	38.3
	Often (3-5 times per week)	35	26.3
	Always (Daily)	10	7.5
Primary Generative AI Platform Used	ChatGPT	112	84.2
	Google Bard/Gemini	12	9
	Microsoft Bing Chat/Copilot	7	5.3
	Other (e.g., Claude)	2	1.5
Primary Task for AI Use	Drafting Communications/Reports	71	53.4
	Data Analysis and Summarisation	29	21.8

	Information Retrieval/Research	25	18.8
	Code Generation/Scripting	8	6
Received Formal AI/Prompt Engineering Training	Yes	19	14.3
	No	114	85.7

4.3 Perceived Risks to Administrative Integrity

This section presents a synthesised interpretation of the study's findings, achieved through methodological triangulation of the quantitative factor analysis (*See Table 3*) and the qualitative analysis of open-ended responses. The integration of these distinct datasets provides a comprehensive and validated understanding of how Generative AI poses risks to administrative integrity at the University of Cape Coast. This approach moves beyond the limitations of single-method studies, which, as noted by Criado and Gil-Garcia (2021), often provide either breadth without depth or depth without generalisability. The convergence of statistical patterns with rich, contextual narratives offers a robust evidence base from which to develop a targeted intervention, directly fulfilling the research objective to identify specific risks and inform a contextually appropriate framework for prompt engineering.

A significant point of convergence between the quantitative and qualitative data is the clear identification of a bifurcated risk structure. The factor analysis statistically validated two distinct components: Administrative Integrity and Transparency and Accountability. This empirical structure finds strong resonance in the qualitative responses, where staff separately lamented substantive decision flaws and procedural breakdowns. For instance, the quantitative loading (0.879) on the item "AI-generated recommendations are not subject to proper review" under the Transparency and Accountability component is vividly illustrated by the qualitative quotation, *"When a report contains errors from an AI, who is at fault? ...Currently, nobody knows."* Similarly, the high loading for "increases the potential for biased decisions" (0.739) is given real-world context through concerns about automated historical biases. This convergence powerfully confirms that the theoretical distinction between outcome-oriented and process-oriented integrity, discussed in global literature (Cordella & Paletti, 2019; Bullock, 2019), is a lived reality for administrative staff in Ghana, thereby lending strong empirical support to the study's conceptual framework.

However, a critical divergence also emerges, enriching the findings. The quantitative factor analysis presents these two components as statistically separate constructs, suggesting staff cognitively distinguish between them. The qualitative data, conversely, reveals that in practice, these risks are deeply intertwined and mutually reinforcing in their erosion of trust. A staff member's observation that *"If students and staff suspect that decisions are made by a 'black box,' their faith in the fairness... will disappear"* demonstrates how a transparency failure (a procedural issue) directly fuels a perception of substantive unfairness. This nuanced interplay, where procedural opacity undermines confidence in substantive integrity, is a subtlety that factor analysis alone could not capture. It indicates that while the risks are conceptually distinct, mitigation strategies cannot address them in isolation, an insight often missing from narrower, technically-focused risk assessments (Leslie, 2019; Young et al., 2021).

The triangulation of these convergent and divergent insights generates unique knowledge for the pertinent literature. It produces a finely textured model of AI risk perception that is both statistically robust and contextually grounded. This model advances the study's theoretical underpinnings by showing how Public Value Theory and Institutional Theory are

simultaneously at play. The concern for unbiased, ethical outcomes aligns with the public value mandate (O'Flynn, 2021), while the focus on due process and accountability reflects the institutional need to maintain legitimacy (Johnson & Lægreid, 2022). The finding that these are perceived as two sides of the same coin by end-users resolves a theoretical tension, suggesting that for a technology to be fully institutionalised and create public value, it must satisfy demands for both substantive justice and procedural fairness. This integrated perspective addresses a critical gap in technology adoption models, which have historically underplayed these governance dimensions (Venkatesh & Davis, 2020).

Based on this synthesised understanding, a tailored solution is proposed: a dual-track Prompt Engineering Governance Framework. The first track, the "Integrity Assurance" protocol, directly addresses the first factor by establishing mandatory bias mitigation checks and a university-curated prompt library for high-stakes administrative tasks to ensure decision quality and ethical alignment. The second track, the "Oversight and Accountability" protocol, responds to the second factor by implementing a transparent logging system for significant AI interactions and defining a clear "Human-in-the-Loop" accountability matrix that specifies staff responsibility for AI-assisted outputs. For sustainability, this framework would be embedded into annual staff performance and development reviews, with continuous improvement driven by a standing committee on AI governance. Policy support would require an update to the university's digital transformation strategy and ICT policy, mandating adherence to this framework. This comprehensive approach, derived directly from the triangulated findings, offers a sustainable pathway for the University of Cape Coast to harness AI's potential while decisively safeguarding the administrative integrity that underpins its institutional mission and public trust.

Table 3: Risk of Using AI-Tools

	Component		
	Administrative Integrity	**Transparency and Accountability**	**Uniqueness**
increases the potential for biased decisions	0.739		0.304
Undermines due process.		0.758	0.263
Lacks transparency in their decision-making processes	0.83		0.279
AI-generated recommendations are not subject to proper review.		0.879	0.205
Misalignment with the institution's ethical standards for decision-making	0.845		0.273
Decreased accountability among staff.		0.873	0.18
Bartlett's Test of Sphericity	$X^2 = 26274$	Df = 21	P < 0.001
KMO Measure of Sampling Adequacy	Overall = 0.801		
Cronbach's Alpha	0.781		

4.4 Theoretically-Informed Framework for Prompt Engineering to Uphold Administrative Integrity

This study highlights the risks posed by the ad-hoc use of Generative AI by administrative staff, particularly the threats to administrative integrity, including due process, due diligence, and sound decision-making. In response, the framework in Figure 1 is proposed, grounded in

EdinBurg Peer-Reviewed Journals and Books Publishers
Journal of Information and Technology
Vol. 5||Issue 13||pp 51-67||December||2025
Email: info@edinburgjournals.org||ISSN: 3080-9576

three key theories: Institutional Theory, Public Value Theory, and the Technology Acceptance Model. This framework aims to integrate prompt engineering into institutional governance, ensuring that AI use reinforces administrative values rather than undermines them. It is not a one-off solution but a continuous process that requires foundational support, iterative practice, and strong institutional oversight to ensure ethical AI application. The framework's focus is to institutionalize best practices, shifting from risky individual experimentation to standardized, accountable actions.

The framework is built upon four key layers. The first is the Institutional Governance Layer, which ensures AI is embedded in the university's policies and mission, with the development of an AI Ethics Charter and a "Prompt Library for Administrative Integrity" to guide staff in their use of AI. The second is the Iterative Prompt Engineering Cycle, a four-stage process ensuring each AI interaction aligns with public value, mitigates bias, and ensures accountability through human verification. The third is the Oversight and Accountability Layer, which includes an accountability matrix, a transparent audit trail, and a standing AI Governance Committee. These layers ensure that prompt engineering becomes a visible, governed practice, sustaining its relevance and effectiveness over time, while safeguarding against the erosion of integrity in administrative decision-making.

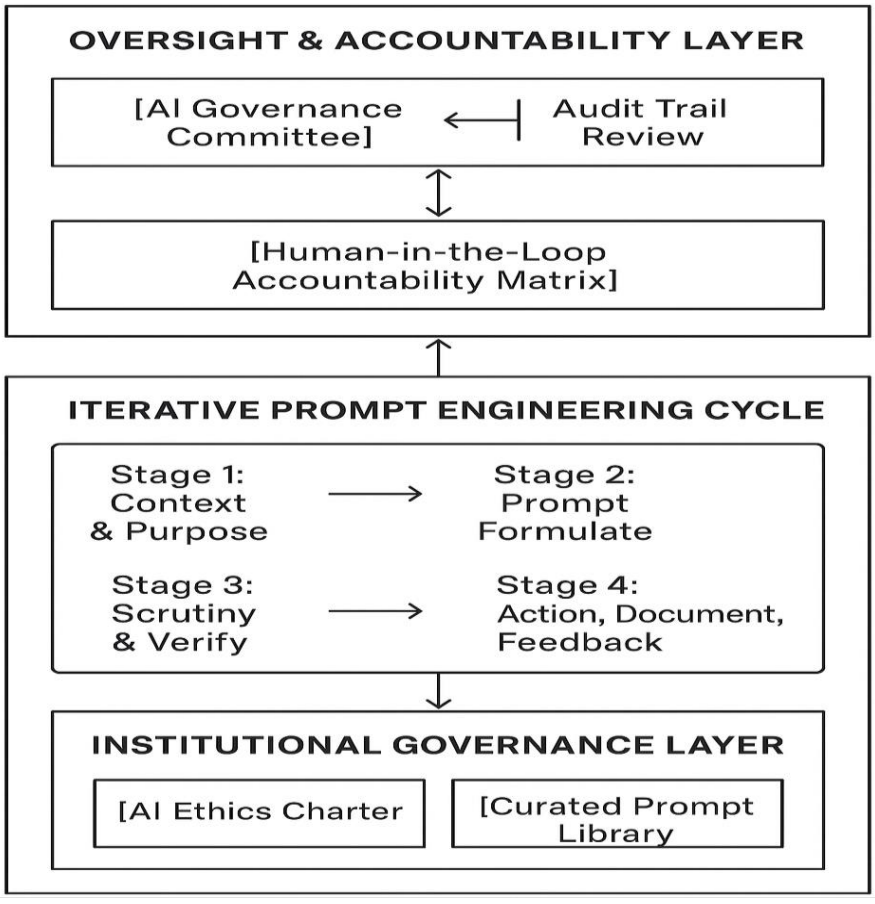

Figure 2: Proposed Theoretically-Informed Framework

5. Conclusion

This study has successfully developed a theoretically-informed framework for prompt engineering that addresses the critical gap between Generative AI adoption and administrative

integrity at the University of Cape Coast. The research employed robust mixed methods to diagnose the risks posed by ad-hoc AI implementations to due process, due diligence, and sound decision-making. The findings distinguished between threats to substantive administrative integrity and procedural transparency, offering a nuanced evidence base previously lacking in African higher education literature. The framework aligns with Public Value Theory, Institutional Theory, and the Technology Acceptance Model, translating abstract ethical principles into actionable mechanisms for ensuring fairness, embedding AI within legitimate governance structures, and promoting accountable and ethical AI use.

The practical contributions of this research offer tailored solutions for the Ghanaian context. The proposed framework provides the University of Cape Coast with a clear pathway to mitigate risks such as algorithmic bias and accountability deficits, safeguarding its legitimacy and stakeholder trust. To sustain these benefits, immediate steps include developing a curated prompt library, adopting the AI Ethics Charter, and establishing an AI governance task force. The framework also emphasizes integrating mandatory prompt engineering literacy into staff professional development plans, ensuring that competencies evolve alongside technology. The outcomes of this research are highly generalizable, offering a viable model for similar institutions across Ghana and Sub-Saharan Africa to balance innovation with integrity, making it a crucial tool for empowering administrative and technical staff in the digital era.

6. Policy-Oriented Recommendations

For the first research objective, which explored current prompt engineering practices, the recommended policy is to institutionalize a Mandatory Prompt Engineering Literacy Programme. This programme should feature tiered training modules for administrative and technical staff, incorporating the principles of the proposed framework and using case studies from the study's qualitative findings. To ensure sustainability, the programme's completion should be required for staff requesting access to advanced Generative AI licenses, and it should be refreshed annually to address new AI capabilities and emerging integrity challenges, maintaining continuous competency development.

To address the second objective regarding identified risks to integrity, the recommended policy is the formal adoption of a Dual-Track AI Impact Assessment for all new AI tool deployments or significant use cases. This strategy involves creating a standardized checklist, focused on Administrative Integrity and Transparency & Accountability, which must be completed and signed off by department heads before AI-assisted processes are initiated. For sustainability, the AI Governance Committee should review the assessment results quarterly, and the checklist must be updated regularly based on audit trail findings and stakeholder feedback, ensuring responsive oversight.

For the third objective, focused on framework development, the paramount policy recommendation is the official integration of the Prompt Engineering for Administrative Integrity Framework into the University's ICT and Administrative Policies. Implementation involves a university-wide directive from the Vice-Chancellor's Office mandating the use of the curated prompt library and iterative prompt engineering cycle for all AI-related administrative tasks. To ensure sustainability, the Quality Assurance and Planning Unit should be responsible for monitoring compliance through periodic audits of transparent audit trails, with findings reported to the University Council, embedding the framework into the institution's core governance structures.

References

Amissah, G. (2024). *Digital transformation in Ghanaian higher education: A policy analysis* [Unpublished doctoral dissertation]. University of Ghana.

Androutsopoulou, A., Karacapilidis, N., Loukis, E., & Charalabidis, Y. (2019). Transforming the communication between citizens and government through AI-guided chatbots. *Government Information Quarterly, 36*(2), 358-367.

Aoki, N. (2020). The importance of the human element in the AI-based automated administrative state. *Public Performance & Management Review, 43*(5), 1124-1146.

Asongu, S. A., & Odhiambo, N. M. (2021). The digital divide and inclusive growth in Sub-Saharan Africa. *Sustainable Development, 29*(4), 756-765.

Baxter, J., & Mujinga, M. (2022). Irembo and the evolution of e-government in Rwanda: A platform for service delivery and anti-corruption. *The African Journal of Information and Communication, 29*, 1-21.

Anim, S., Onyame, E. A., Sayibu, A.-G., Mensah, E. A., Blankson-Austin, R., & Owusu, B. (2025). Leveraging AI for Administrative Excellence: Assessing the Digital Readiness of UCC's Tech-Savvy Administrators. *Journal of Information and Technology*, *5*(10), 37–67. https://doi.org/10.70619/vol5iss10pp37-67

Boateng, R., & Anning-Dorson, T. (2024). Digital innovation in African universities: A research agenda. *Information Technology for Development, 30*(1), 1-20.

Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE Publications.

Bullock, J. B. (2019). Artificial intelligence, discretion, and bureaucracy. *The American Review of Public Administration, 49*(7), 751-761.

Cordella, A., & Paletti, A. (2019). ICTs and value creation in the public sector: Manufacturing logic vs service logic. *Government Information Quarterly, 36*(2), 333-342.

Crawford, K., & Calo, R. (2021). There is a blind spot in AI research. *Nature, 538*(7625), 311-313.

Creswell, J. W., & Plano Clark, V. L. (2021). *Designing and conducting mixed methods research* (4th ed.). SAGE Publications.

Criado, J. I., & Gil-Garcia, J. R. (2021). Creating public value through smart technologies and strategies: From digital services to artificial intelligence and beyond. *International Journal of Public Sector Management, 34*(5), 438-450.

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2023). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice, and policy. *International Journal of Information Management, 57*, 102199.

Glaser, B. G., & Strauss, A. L. (2017). *The discovery of grounded theory: Strategies for qualitative research*. Routledge.

Johnson, G., & Lægreid, P. (2022). Digital transformation and public sector organizations: An institutional perspective. *Public Management Review, 24*(7), 1-22.

Klievink, B., Romijn, B. J., & Cunningham, S. (2022). The perils of algorithmic failure: A case study of the Dutch childcare benefits scandal. *Government Information Quarterly, 39*(4), 101717.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610.

Kweku, J., & Mensah, S. (2023). *Generative AI usage among administrative staff in Ghanaian public universities* [Unpublished manuscript]. Department of Information Technology, Kwame Nkrumah University of Science and Technology.

Leslie, D. (2019). Understanding artificial intelligence ethics and safety: A guide for the responsible design and implementation of AI systems in the public sector. *The Alan Turing Institute*.

Mikhaylov, S. J., Esteve, M., & Campion, A. (2021). Artificial intelligence for the public sector: Opportunities and challenges of cross-sector collaboration. *Public Administration Review, 81*(2), 278-282.

O'Flynn, J. (2021). From new public management to public value: Paradigmatic change and managerial implications. *Australian Journal of Public Administration, 80*(1), 23-34.

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Schuilenburg, M., & Peeters, R. (2021). *The algorithmic society: Technology, power, and knowledge*. Routledge.

Tavera Romero, C. A., Ortiz, J. H., Khalaf, O. I., & Prado, A. R. (2021). Business intelligence: Business evolution after Industry 4.0. *Sustainability, 13*(18), 10026.

University of Cape Coast. (2022). Strategic plan 2022-2026. Office of the Vice-Chancellor.

Venkatesh, V., & Davis, F. D. (2020). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186-204.

White, J., Fu, Q., Hays, S., Sandborn, M., Olea, C., Gilbert, H., ... & Schmidt, D. C. (2023). A prompt pattern catalog to enhance prompt engineering with ChatGPT. *arXiv preprint arXiv:2302.11382*.

Wirtz, B. W., Weyerer, J. C., & Geyer, C. (2020). Artificial intelligence and the public sector—Applications and challenges. *International Journal of Public Administration, 42*(7), 596-615.

Young, M. M., Bullock, J. B., & Lecy, J. D. (2021). Artificial discretion as a tool of governance: A framework for understanding the impact of artificial intelligence on public administration. *Perspectives on Public Management and Governance, 4*(1), 33-48.

Zheng, N., Liu, Z., Ren, P., Ma, Y., Chen, S., Yu, S., ... & Wang, F. (2021). Hybrid-augmented intelligence: collaboration and cognition. *Frontiers of Information Technology & Electronic Engineering, 22*(12), 1532-1546.