

THE ETHICAL EDGE: HOW POLICY INTEGRATION ENHANCES PERFORMANCE IN NAIROBI'S AGRI-TECH SECTOR

BY

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Abstract

This study investigated ethical data management practices supporting the success of platform-based Agri-tech cloud projects in Nairobi, Kenya. Guided by Stakeholder Theory, which addresses conflicting interests among stakeholders such as data managers, IT staff, and end users, the study examined how ethical data management impacts project performance. The specific objectives of this paper were to examine the influence of formal policy documents on project performance, to explore the role of stakeholder feedback mechanisms in enhancing project performance and to evaluate the impact of risk management frameworks on organizational excellence, sustainability and project performance. Using a qualitative case-study approach, the study focused on 150 Agri-tech projects in Nairobi, selecting two purposively as cases. A sample of 60 respondents including data managers, IT specialists, and project managers was drawn from the selected Agri-techs, using saturation. Data collection involved semi-structured interviews, document analysis, and observation checklists, with thematic analysis applied to identify ethical data management practices. Findings revealed that integrating ethical data management policies is vital for sustainable development, requiring data managers to uphold data privacy, labor justice, and environmental stewardship. Stakeholder involvement shifted governance from conventional to participatory models, although power imbalances favoring technical staff limited participation by some stakeholders. The operationalization of Stakeholder Theory occurred as ethical practices were embedded into technical workflows. To address power disparities and move from technically efficient to equitable projects, human-in-the-loop validation and transparent tools were necessary. The study concluded that data management practices in platform-based Agri-tech cloud projects must align with the ethical standards of all stakeholders involved to ensure project success and sustainability.

Keywords: Ethical policy integration (EPI), Cloud-based projects, Stakeholder trust, Stakeholder feedback, Project performance, Data sovereignty, Risk management, Platform-based systems

1.0 Background

Platform-based Agri-tech innovations utilizing cloud computing platforms are increasingly addressing real world problems in African agriculture and their application in Kenya is becoming a rapidly growing area of interest. As the tech capital of Africa, Nairobi is also the fintech and digital innovation hub and many of the new startups are keen to get involved when it comes to utilizing a wide range of data points including a farm's location and a farmer's performance. As the Kenya Data Protection Act (2019)

comes into effect, startups will need to seriously consider the ethical implications of their data protection policies and how they are implemented in practice.

Ethics must be built into cloud systems, not added on as an afterthought. Ethics is not the same thing as compliance. Privacy by design addresses issues of data sovereignty and consent requirements by making them core functional requirements for Agri-techs. Startups can avoid taking on tech debt that less agile startups do not even realize that they are taking on until it's too

late. It's much easier to design trust into a startup from the ground up than to retrofit it. This article takes a local perspective and explores best practices in policy integration and the ethical boundaries placed on project outcomes. In the highly competitive information technology ecosystem of the silicon savannah, ethical policy design is not only good for social good, it is good business. For Agri-tech startups to be profitable and efficient they need to address issues of algorithmic bias and create sustainable systems and ecosystems that protect the interest of the smallholder farmers whose data will be collected and used for innovation.

2.0 The problem statement

The Agri-tech sector has been growing at a breakneck pace. Yet most project managers are concerned that embedding a robust ethical policy integration (EPI) into their projects could stifle innovation. However, what is even more devastating to projects in the Agri-tech sector is data fatigue and a lack of trust from the farmer. The number one challenge to the Nairobi Agri-tech sector is how to translate these ethics into project performance. Current studies report data breaches, lack of social license, and unsustainable scaling, all of which could be alleviated with evidence. Therefore, the paper addresses this gap by also considering policy integration as one of the performance dimensions. This paradox is further confounded by the black box nature of most of the cloud platforms in use in Africa. Even as they maintain servers on the continent, there is very little that is known about the actual location and flow of data through these African cloud platforms. With no established methodology to calculate the ethical return on investment (ROI) of data driven investments in the digital economy, startups in Nairobi's tech hub treat data protection as a reactive afterthought important

mostly to satisfy the growing queries from auditors and customers. Until ethical policy integration (EPI) is treated as a basic architectural layer rather than a check list of regulatory compliance for data protection, Kenya's digital agrarian revolution will be stunted by an expiring social license to operate.

3.0 Main objective

The purpose of this article is to examine how ethical policy integration influences the performance of selected platform-based Agri-tech cloud projects.

3.1 Specific objectives

- i. To examine the influence of formal policy documents on project performance.
- ii. To explore the role of stakeholder feedback mechanisms in enhancing project performance.
- iii. To evaluate the impact of risk management frameworks on organizational excellence, sustainability and project performance.

4.0 Theoretical framework

This section discusses the theory underpinning the article.

4.1 Stakeholder theory in project management

The research applies Stakeholder Theory in Project Management as proposed by Freeman (1984). The theory demonstrates that project success requires organizations to identify all stakeholders and understand their needs and levels of influence. The theory provides essential guidance for ethical project management that includes inclusive practices and risk management through transparent ethical collaboration between stakeholders. The theory consists of three essential elements which include stakeholder identification and prioritization and continuous

engagement and value creation; ethical decision-making, transparency and accountability serve as the established models and concepts relevant to the researcher's topic.

5.0 Empirical review

This section reviews existing research on the integration of ethical policies and the performance of platform-based Agri-techs.

5.1 Ethical policy integration and performance

The robustness and accessibility of policy documents such as project charters, codes of conduct, and particular ethical guidelines are empirically related to the performance of certain platform-based Agri-tech cloud projects. Yang et al. (2018) found that formalized documents create a solid foundation for decision-making and conflict settlement that significantly alleviate project risks. Embedding ethical code principles into the central processes of planning, these documents keep the cloud-based operations compliant with the laws and standards governing businesses.

Stakeholder feedback mechanisms are instrumental in optimizing project outcomes, as they help mitigate ethical dilemmas before they become a threat. Civera et al. (2019) found that project managers who are good at identifying and utilizing feedback in appropriate ways receive better stakeholder support and they avoid opposition to digital interventions. That being said, true ethical engagement as opposed to merely information dissemination is the cornerstone which would facilitate sharing an ethical perception that is critical for successful project delivery.

Ethics as part of the risk management system: an example of a proactive impact on the project activity and on dealing with reputation risk and social

responsibility risk in the cloud environment. Prevention of disputes and proactivity with increased transparency in the cloud culture (Iandolo et al., 2025; Bourne et al., 2020). Stakeholder consensus guidance systematically applied to all project activity stages. An ethical policy is one of the essential elements that a project needs to achieve success and sustainability.

Today an ethical policy is not limited to mere compliance with laws and regulations. Rather, it is intended that an ethical approach is established as a foundation for projects. So that the ethical policy affects the decisions from the initial to the final stage of the project and the strategies of organizations are based on social responsibility (Rajablu et al., 2017, Musawir et al., 2019).

6.0 Research methodology

The paper was anchored on constructivist philosophy (Dörnyei, 2007). Constructivism is a synthesis of multiple theories diffused into one form. It is the assimilation of both behavior list and cognitive ideals. The constructivist stance maintains that learning is a process of constructing meaning. It is how people make sense of their experience (Merriam and Caffarella, 1999, p. 260). In this paper, performance is viewed as a social construct influenced by trust and local adoption, rather than just technical efficiency. Ethical data management ensures privacy and transparency which is essential for building trust, which directly correlates to higher platform usage and project performance.

The article relied on open and flexible original data (primary as well as secondary data) that were collected and used from the field, enabling the researcher to adapt to new information as new possibilities have emerged during the exploration process (Dörnyei, 2007). The article

also employed secondary data via document analysis from online sources, the Agri-tech platforms, and CUEA library. The research utilized case paper design, as advocated by Yin (2014), with qualitative methodology being adopted in the case paper design. He argued that the case paper research design investigated, in more detail, a contemporary phenomenon such as on an individual or business level, in its real-world context.

7.0 Findings on ethical policy integration and project performance

This section presents data that aims to investigate the relationships between ethical policy integration and performance on selected Agri-tech platform-based cloud projects. The findings are categorized into three thematic areas, namely, policy documents, stakeholder feedback, and risk management frameworks to demonstrate how these indicators drive organizational excellence and project sustainability.

7.1 Interview schedule

Data management practices in the Agri-tech sector constitute a critical area of focus for the Organizational Excellence (OE) initiative. Through a series of structured interviews with data managers, IT specialists and project managers at Apollo Agriculture and SunCulture, the study found that ethical policy integration is a key performance driver. This implies that business outcomes are closely linked to ethics in order to achieve Organizational Excellence. Most data management practices are not about the end results of the work that is being done, but also the way in which data is managed in relation to ethical issues such as data privacy, fair labour practices and environmental stewardship.

7.1.1 Ethical policy documents

Based on the interview schedule, the study found that the process of institutional alignment that leads to the formalization of ethics in the form of policy documents has the highest influence. At Apollo Agriculture and SunCulture, such documents are viewed as a proactive strategic enabler, rather than a reactive device of legal compliance (Floridi 2016). The respondents observed that through recording practices regarding data anonymization and fair labor standards, the companies don't just react to the challenges of compliance as standard procedures that characterize the bulk of the literature in ICT and move towards taking a stakeholder-sensitive attitude towards all parties. These are policies that are written into the project's operational design from the start to address labor rights and data protection. It is therefore these formal guidelines that make the organizations follow an ethical management theory, the theory of the leader that leads organizations focusing on stable and fair long-term values and sustainability above immediate gain in efficiency. This is in concert with the result of the Ministry of Agriculture in Kenya (2025).

7.1.2 Stakeholders' feedback

Data from the interview schedules showed that stakeholder feedback played a central role in assessing how ethical attitudes impact project adoption and performance. Stakeholder input was found to be of importance for informing the adoption of the program. According to Freeman's (1984) stakeholder theory, the study reveals that the efficacy of these platforms is determined by the trust established among the farmer community and employees. Interviewees indicated that, when farmers share feedback about how their data is used, the organizations are able to take privacy preserving actions which, however, restrict the

understanding of the accuracy of the machine learning model. Feedback about fair wages and safety has contributed to high worker morale as well as to lower job loss. As a result of their response to these stakeholder demands, Apollo Agriculture and SunCulture achieve legitimacy and user appreciation that conventional, efficiency-driven models frequently can't accomplish, (Zambon et al., 2021; Wibowo & Setyaningsih, 2019).

7.1.3 Risk management frameworks

The practical use of ethical policies also comes from how we deploy robust risk management frameworks to address high-level strategic trade-offs. From the evidence provided, these frameworks enable the selected Agri-techs to preempt security threats and breaches of ethics that jeopardize organisational reputation. For example, the risk management systems applied at both Apollo Agriculture and SunCulture help keep both a high level of scientific rigour and innovation within difficult and demanding moral limits, where huge amounts of data must be used with protection. Moreover, these frameworks help the organizations bring together the farmer's current demand for high yields and that of the community, whose ecological responsibility is also an ethic in action. Through integrating their platform designs with sustainability and ethical risk assessments, they reduce the risks of longer-term environmental damage and erosion of trust from stakeholders that could otherwise be severe (Burg et al., 2019; Wolfert et al., 2017).

7.1.4 Comparative insights of interview schedule

Compared to prior scholarly literature, ethical policies of Apollo Agriculture and SunCulture are characterized by forward-looking incorporation. While literature often depicts ethical policies as barriers that

raise costs or stifle innovation, the narratives of these two organisations reveal that such trade-offs are strategically advantageous investments. Agri-tech models have traditionally made ethics a secondary legal obligation, but what is already here shows that embedding ethics directly into a firm's platform decision-making process can strengthen adoption and agility, as do Apollo Agriculture and SunCulture. In the end, their proactive stance shows that ethical considerations are not hurdles to achieve but instead key drivers of value, characterizing high impact projects in the Kenyan Agri-tech environment.

7.2 Document checklist

In order to validate the main data extracted through interviews, a document checklist was used to analyze internal documents, official reports, and performance data from Apollo Agriculture and SunCulture. Secondary data analysis like this, which provides empirical data, enabled the researcher to analyze the relationship between documented ethical practices and measurable project outcomes from that history and objectivity. The outcomes are then distilled below into the three priority issues: ethical policy integration.

7.2.1 Policy documents

According to the documentary review, formal policy documents for Apollo Agriculture and SunCulture are the template for their respective digital ecosystems. Analysis of privacy policies, training manuals, and internal charters exposed intent in putting ethical safeguards into the fabric of cloud-based systems (Donaldson & Preston, 1995; Scherer & Palazzo, 2007). Farmer data is collected transparently, including user rights and data sharing with responsible means of sharing. Secondly, the analysis of supplier codes of conduct further showed that both

organizations require labour laws and anti-corruption compliance at every step in their supply chain. The organizations ensure that the trajectory of digital agriculture and its evolution alongside technology including but not limited to machine learning and satellite imagery is regulated as a regulated endeavor with an unambiguous mandate to protect workers' rights and farmers' information because they enshrined these expectations.

7.2.2 Stakeholders' feedback

Using secondary data (user adoption indicators, outreach data, training data), the study found operational evidence of the responsiveness to stakeholder requirements. A review of Freeman's (1984) stakeholder theory suggested that the environment and marginalized communities are, in itself, legitimate stakeholders, the researcher was able to identify documented evidence of this, and reviewed training materials on the topic of sustainable farming and inclusivity reports. These records showed that the project teams are being systematically trained to deliver financing and insurance to marginalized groups fairly. Performance reports provided high user adoption rates and farmer retention data, evidence of the positive feedback of stakeholders, confirming that these are the stakeholders that the smallholder farmers trust and value. Additionally, the use of climate resilient input bundles, partnered with organisations such as Swedfund, showed that we have a concern for our ecological partners in the fact that we make efficient use of resources and reduce waste, (Ebube, 2025; Waseem et al., 2024).

7.2.3 Risk management frameworks

Strategic ethical inclusion was also confirmed by the organised application, as in compliance reporting and

supplier audit, of risk management frameworks. These papers followed up on the compliance with data privacy protections and labor codes, demonstrating conforming to regulations and it was a living embodiment of the fact that ethical codes of conduct exist and can be controlled. In detail, the study also examined cost-effectiveness reports and project efficiency reports which revealed how risk management processes reconcile between profitability and social accountability. Through recording financial results, in conjunction with their environmental and social cost assessments, the institutions are employing the frameworks to overcome risks from data misuse and labour exploitation. Such a correlation between audit outcomes and operating results means that adherence to ethical standards of risk assessment is critical in driving supplier reliability and operational efficiency, and ultimately long-term performance of the project and organizational resilience.

7.2.4 Comparative insights of document checklist

This systematic review of documentary evidence suggests that the integration of ethics policy is intimately connected with performance outcomes in the case of Apollo Agriculture and SunCulture. According to stakeholder theory, these records illustrate a clear dedication to balancing the interests of farmers, staff, suppliers and investors. Integration of performance analysis (from project efficiency reports to sustainability audits) shows that ethical behaviour is not merely compliance, but instead strategically building trust and legitimacy in the project. Finally, the inculcation of ethics within Agri-tech digital ecosystem will help cloud projects work technically, socially and ecologically, and the three are critical requirements for long-term financial success and sustainability of the project.

7.3 Observation checklist

Drawing further insight from interviews and documentary reviews, the researcher employed an observation checklist to provide visibility of the visible cues and patterns of practice operating within the Apollo Agriculture and SunCulture operations systems. It was a process that addressed how ethical practices are implemented at project level and at system level in each day.

7.3.1 Policy documents

Data was also collected and these observations confirmed that ethical policy documents are not just internal records, but are operationalized in visible digital interfaces. The platforms displayed clear privacy notices informing users on how data will be collected and used. Ethical disclaimers on user statements within user agreements which detailed ethical obligations of management decisions. But the analysis struck a note of major criticism about data dissemination, in terms of how these documents were presented. Many of the documents were written using technical terminology. The above cues have been developed under the umbrella of the principles of transparency considered the critical element for the building of trust in agricultural supply chains (Wang, Li, & Meng, 2025), while the complexity of language is not in line with Ministry of Agriculture's (2025) criteria which call for inclusive and direct communication. This implies that the structured nature of policy instruments is supported but could impede complete stakeholder understanding due to their technical feature.

7.3.2 Stakeholders' feedback

User engagement patterns were found to be a behavioural proxy of stakeholder input and trust by the

researcher. System performance was consistently high with a fairly reliable uptime indicating a system that is a good cloud infrastructure and can handle the typical requirements of a farming community. The research noted high levels of user engagement on these platforms, though there were times that users struggled to navigate complex analytical dashboards. These findings illustrate a tension between advanced digital capabilities and user-centric interface. In terms of Freeman's (1984) Stakeholder Theory, the results suggest that, although reliability is high, the feedback loop that comes from user behavior points to a stronger call for more natural interfaces that ensure that marginal or non-specialized parties can derive the benefits of ethical protections provided.

7.3.3 Risk management frameworks

The study saw risk management frameworks in action by integrating ethical deliberation via project workflows. Ethics in decision-making had received extensive documentation throughout, and this behaviour was evidenced through modules dealing with sensitive farmer information and predictive analytics. Despite ethical policies propelling the discussion in the group through the recorded group discussion when the teams were observed, the main behavioral insight observed was that these very policies were often thought of as a box to check for compliance rather than as strategic drivers to be taken on and integrated into the group process. Although strong system uptime rates and recorded system-level discussions reflect concern for risk mitigation and accountability, the points listed above demonstrate a best practice adoption of a perspective that emphasizes proactive rather than responsive ethical integration. Such subtleness of behavior shows that risk management frameworks are good, they are only

functional towards performance if when risk management frameworks evolve more than a strictly legal consideration, they become integrated into the operational part of the strategic project planning exercise.

7.3.4 Comparative insights of observation checklist

Observation of the systematic nature of Apollo Agriculture and SunCulture shows that ethically grounded behaviour is inherent in projects technical and operational strata. Visible privacy notices and the reliability of cloud infrastructure provide a foundation for stakeholder trust and organizational legitimacy (Crane and Matten 2016). But the integration shows that there is an important chasm between the existence of ethical cues and the visibility to stakeholders. Through the lens of the stakeholder theory perspective, ethical policy integration in projects must consider the tradeoff between robust risk management and documentation of policies with inclusive communication and user centered design to maximize project performance. Finally, the observations provide support to the argument that the selected Agri-techs exhibit strong levels of ethical governance, but the strategies needed to improve the message and practice of ethics need to be refined strategically to ensure long term stakeholder loyalty as well as project resilience.

8.0 Conclusion

The policy integration of ethical principles at Apollo Agriculture and SunCulture is seen as a proactive and strategic means to address and turn constraints into opportunities and to ensure that all activities are in line with the principle of stakeholder value creation. Preventive measures such as risk management procedures and codes of conduct have been put in place to ensure the legitimacy of the companies.

However, access to the regulations and codes for stakeholders has been hindered due to the complexity and technical language used. Therefore, ethical policy integration can be seen as a long-term solution to address the on-going social and environmental issues in the Agri-tech sector in Kenya. It is therefore important to ensure that all social and environmental concerns are addressed in the short term in order to ensure the long-term sustainability of these projects and for them to remain competitive in the Kenyan Agri-tech market in a fair and sustainable manner.

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