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ELECTRONIC RECORD MANAGEMENT PRACTICES AND PERFORMANCE OF DAIRY FARMING IN TRANS NZOIA EAST SUB COUNTY, KENYA

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ABSTRACT

The storage of records is a fundamental aspect of information management, enabling organizations to effectively preserve and retrieve crucial data. In the rapidly evolving digital age, where information is generated at an unprecedented rate, the importance of record storage has become even more pronounced. It is in this perspective that the study sought to evaluate the effect of electronic record management practices and performance of dairy farming in Trans Nzoia East Sub County Kenya. It was based on the following objectives: effect of adoption of electronic record management systems and farmer data driven decision making on dairy farmers' performance in Trans Nzoia East sub-county. The significance of studying electronic record management practices within the dairy sector farming in Kenya cannot be overstated, particularly when considering the intricate network of stakeholders involved: policymakers, farmers, and creameries. This exploration is poised to reveal critical insights that could revolutionize the sector, enhancing efficiency, transparency, and overall productivity. The study was based on the Information Systems Theory and Diffusion of Innovations Theory. Since this study targeted to collect data which is quantitative in nature, it was adopt a survey design. The sample size was determined by Yamane (1967) hence, 372 respondents. Primary data will be collected through a questionnaire. A pilot study to help determine validity and reliability of the study was carried out in the neighboring Trans Nzoia County. Construct validity with factor index >0.5 was used to determine validity of the tool while the Cronbach Alpha coefficient reading of above 0.72 was used to determine the reliability of the tool. Before data collection, an authority letter was sought from the Graduate school to allow data collection. This enabled for the application for the research permit from the National Commission for Science, Technology and Innovation to allow for data collection. Authority for data collection will be sought from the cooperative societies which was provided accessibility of their farmers. An official request was made to farmers to request them to give information required. The collected data was sorted and coded, then entered into Statistical Package for Social Sciences to help in data processing. Data was analyzed descriptively in term of frequencies, means and standard deviations then presented in term of tables or figures where applicable. The study concludes and recommends that there was a strong relationship between the independent and dependent variable.

Key Words: Electronic Record Management Practices, Electronic Record Systems Usability, Data Retrieval Efficiency, Dairy Farmers' Performance, Trans Nzoia East Sub County

Background of the Study

The storage of records is a fundamental aspect of information management, enabling organizations to effectively preserve and retrieve crucial data. In the rapidly evolving digital age, where information is generated at an unprecedented rate, the importance of record storage has become even more pronounced (Aljawarneh, 2020). Records serve as a repository of history and cultural heritage. Proper storage of historical records, such as archival materials and manuscripts, ensures their longevity and accessibility for future generations.

The development of record management began in the late 19th and early 20th centuries (Access Record Management, 2019). During this period, there were no standardized rules or regulations for records retention. Businesses and governments managed documents based on their individual requirements (Access Record Management, 2019). Practical considerations such as finance, space, and resources significantly influenced how records were kept and the duration of their retention. In the UK, three government bodies were established in the late 19th century to enact laws regulating the management of records by firms and government entities (Corporate Storage Services, 2010).

In Africa, the development of record management dates back to the colonial era when colonial administrators were responsible for managing records, with minimal efforts made to educate the indigenous populations of various African countries (Archives & Manuscripts, 2015). In Ghana, as late as the 1930s, records management practices lacked formal programs. Both government and private businesses kept records in whatever form they deemed appropriate, without the benefit of retention schedules, disposition guidelines, or other formal information life-cycle procedures (Noko & Ngulube, 2013).

According to Wakumoya (2016), records management involves the professional handling of information in its physical form from the moment records are received or created, through their processing, distribution, and storage, until their eventual disposal or identification for permanent retention in archives. Hounsome (2018) describes records management as the practice of controlling records from their creation or receipt through their processing, distribution, organization, storage, and retrieval, ultimately leading to their disposal. Most organizations incorporate components of records management such as filing, retention, and retrieval (Salamatu & Muhammad, 2021).

Statement of the Problem

The integration of electronic record management practices in the milk sector farming in Kenya would enhance efficiency, transparency, and productivity. Electronic record systems promise streamlined data collection, real time monitoring, and improved decision making capabilities Erdem and Hasan (2024). Farmers and stakeholders would benefit from accurate data analysis, leading to optimized production processes, better resource management, and increased profitability. The adoption of these technologies would also ensure compliance with industry standards and facilitate access to local and international markets (Aljawarneh, 2020).

However, the real situation presents a stark contrast. Many milk sector farmers in Kenya still rely on traditional, manual record keeping methods. These outdated practices are prone to errors, data loss, and inefficiencies. The lack of technological infrastructure, limited access to digital tools, and insufficient training among farmers further exacerbate the problem. Consequently, data management is fragmented and unreliable, hindering the ability of farmers to make informed decisions. This disconnect between potential and practice results in suboptimal production processes, resource wastage, and financial losses (Erdem & Hasan, 2024).The consequence of this disparity is significant. Inefficient record management leads to inaccurate tracking of production metrics, poor herd management, and compromised product quality. Farmers face difficulties in maintaining consistent supply chains and meeting market

demands. Additionally, the inability to effectively manage and analyze data limits opportunities for growth and innovation within the sector. The overall productivity and competitiveness of Kenya's milk sector are adversely affected, impacting both local economies and the livelihoods of farmers (Aljawarneh, 2020).

Addressing this issue requires a comprehensive understanding of the research gap (Erdem & Hasan, 2024). There is a notable lack of empirical studies that investigate the adoption and impact of electronic record management practices in the milk sector farming in Kenya. Existing research tends to focus on broader agricultural contexts, without delving into the specific challenges and opportunities within the dairy industry. Furthermore, there is a need for detailed analysis of the barriers to adoption, such as technological constraints, financial limitations, and socio cultural factors (Aljawarneh, 2020). By exploring these dimensions, future research can provide targeted recommendations and strategies to facilitate the transition towards effective electronic record management systems in Kenya's milk sector.

Objective of the Study

The general objective was to evaluate the effect of electronic record management practices and performance of dairy farming in Trans Nzoia East Sub Count, Kenya.

Objectives of the Study

i. To determine the effect of electronic record systems usability on dairy farmers' performance in Trans Nzoia East Sub Count, Kenya.
ii. The establish the effect of data retrieval efficiency on dairy farmers' performance in Trans Nzoia East Sub Count, Kenya.

LITERATURE REVIEW

Theoretical Framework

Information Systems Theory

Information Systems Theory, particularly the Information Systems Success Model by DeLone and McLean (1992), provides a robust framework for understanding the impact of information systems on organizational performance. The theory posits that the quality of information systems, including system quality, information quality, and service quality, directly influences user satisfaction and system use, which in turn affect individual and organizational performance.

In the context of dairy farming, the implementation of electronic record management systems (ERMU) can be analyzed through this framework. The quality of the ERMU—how well it captures, stores, and retrieves data (system quality); the accuracy, relevance, and timeliness of the information it provides (information quality); and the support services available for its users (service quality)—can significantly affect farmers' satisfaction and usage levels. This increased use and satisfaction can lead to improved decision-making, operational efficiency, and overall farm performance.

Diffusion of Innovations Theory

Rogers' Diffusion of Innovations Theory (1962) explains how, why, and at what rate new ideas and technology spread through cultures. The theory identifies factors that influence the adoption of an innovation, including the innovation itself, communication channels, time, and the social system.

Understanding the diffusion of ERMU in the dairy farming community can help identify barriers and facilitators to its adoption. Factors such as the relative advantage of the system over traditional record-keeping methods, its compatibility with existing practices, the

complexity of the system, and the observability of its benefits can influence how quickly and widely ERMU are adopted among dairy farmers.

Conceptual Framework

By equipping farmers with the necessary skills and knowledge to effectively utilize electronic tools and software, we can empower them to embrace the digital age and unlock the full potential of their farms. Ultimately, electronic farm record keeping is not just a tool but a transformative practice that paves the way for a more sustainable, productive, and profitable agricultural sector.

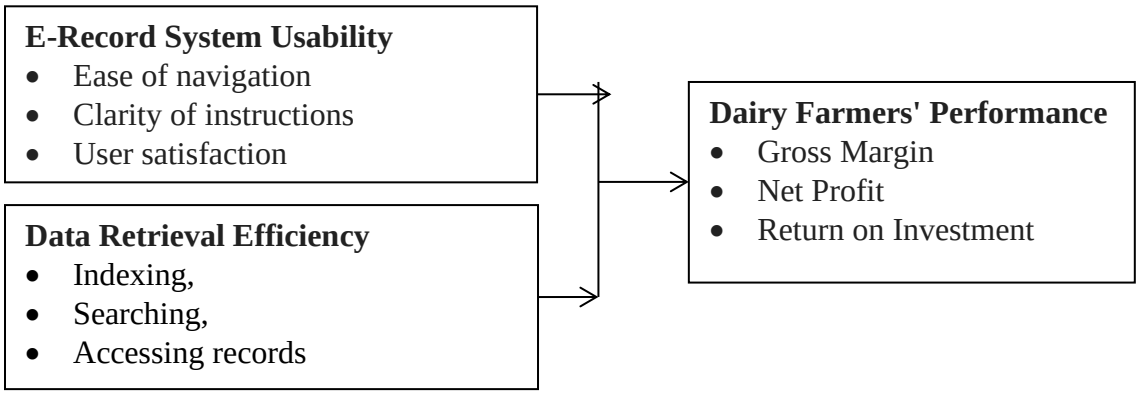

Figure 2.1: Conceptual Framework

E-Record System Usability

A study by Mukred et al. (2016) reveals that electronic records (e-records) serve as evidence of organizational activities. E-records play a vital role in supporting business functions, evaluating organizational performance, and underpinning good governance. In Higher Professional Education (HPE) institutions, e-records hold valuable information that is essential for efficiently managing the educational business, consistently delivering services, and supporting effective performance evaluation and decision-making. If administrators of HPE institutions neglect to base their decisions on e-records, they face significant risks and consequences. Effective and informed decision-making is hindered when e-records are not efficiently and effectively managed using a system. The study concluded that there is a significant positive effect between Electronic Records Management Systems (ERMU) and organizational performance.

A study conducted by Erdem and Hasan (2024) in Turkey, specifically in Kahramanmaraş Province, explored how technology adoption impacts dairy farm welfare. The research found that factors such as income, household size, investment, ownership of improved cattle breeds, Chamber of Agriculture membership, interaction with private veterinarians and fellow farmers, perceived ease of use, perceived usefulness, and technical efficiency all affect technology adoption levels on dairy farms. Farms that adopted advanced technologies exhibited higher profitability and efficiency, indicating a strong positive link between technology use and farm performance. To enhance technology utilization and farm efficiency, policymakers should implement training and support programs for dairy farmers. Additionally, promoting resource-efficient practices and offering financial incentives for sustainable farming and dairy technologies would be beneficial.

Data Retrieval Efficiency

Analytics-based resources, when effectively utilized and integrated with other related resources and capabilities; enable enterprises to make more informed, faster decisions. This makes them

essential for achieving organizational success (Olszak, 2016). By leveraging data, managers can base their decisions on evidence rather than intuition (McAfee & Brynjolfsson, 2012). Data empowers managers to gain a deeper understanding of their business, transform insights into efficient decisions, and enhance overall performance throughout the decision-making process (Gupta & George, 2016). Furthermore, data has the potential to revolutionize traditional business practices, especially given the decreasing cost and increased availability of technology for collecting large amounts of data.

Ikhsan and Arief's (2023) study on the decision-making performance of big data analytics capabilities, with a focus on the mediating effect of co-collaboration, emphasizes the importance for organizational leaders and managers to cultivate big data analytics capabilities and implement co-collaboration processes. This strategy is essential to maximize the business's utilization of big data. Achieving value from big data to enhance organizational decision-making performance necessitates collaboration between data science experts and business users. Furthermore, the study identifies opportunities for future research, including comparative analyses across different organizations, experimental studies on co-collaboration and decision-making performance, and the use of concurrent or sequential mixed methods to explore the relationships among variables in context and process.

Ghasemaghaeiet et al. (2018) discovered that enhancing big data analytics capabilities can aid organizations in improving their internal decision-making processes by leveraging data. Through data analytics, managers can gain insights that were previously unattainable by analyzing vast amounts of data to uncover patterns and relationships. Similarly, McAfee and Brynjolfsson (2012) found that companies that are more data-driven perform better on objective financial and operational measures. Specifically, firms in the top third of their industry that utilize data-driven decision-making achieve, on average, 5% higher productivity and 6% higher profitability than their competitors.

A study by Karijo, Otieno, and Mogere (2021) on the determinants of data use for decision-making in health facilities in Kitui County highlights the significance of meeting frequency, data storage and analysis methods, and continuous professional training. The organization of the district health system impacts routine data utilization through the frequency of support supervision, issues assessed during supervision and feedback reports from supervisors. The study revealed limited use of routine data for decision-making in health facilities and recommended capacity building for data utilization through on-the-job training and strengthening the curriculum in health training institutions in data-related areas. The Ministry of Health can standardize parallel reporting levels, unify reporting tools, and ensure districts hold structured meetings, provide support supervision, and give feedback to healthcare providers.

Empirical Review

E-Record System Usability on Dairy Farmers' Performance

Mukred et al. (2016) present a compelling case for the crucial role of electronic records (e-records) in supporting organizational activities, particularly in Higher Professional Education (HPE) institutions. The study effectively argues that e-records are integral to business operations, performance evaluation, and governance. However, the review could be critiqued for lacking depth in discussing the practical challenges of e-record management, such as implementation barriers or user resistance. Moreover, the linkage between e-records management and the specific context of dairy farmers' performance, as mentioned in the research gaps, appears disjointed and underexplored, suggesting a need for more focused investigation in that area.

Erdem and Hasan's (2024) study on technology adoption's impact on dairy farm welfare in Kahramanmaraş Province provides valuable insights but has several limitations. While the research identifies a range of factors influencing technology adoption—such as income, household size, and technical efficiency—it overlooks the potential variability in technology impacts across different farm scales and regional contexts. Additionally, the study's recommendation for training and financial incentives, although practical, may lack specificity in addressing the diverse needs of farmers. The call for further research on the Adoption of Electronic Record Management Systems highlights a significant gap, yet the review does not sufficiently explore how such systems might directly influence farm productivity and efficiency.

The literature review by Okello et al. (2021) provides a comprehensive analysis of factors influencing the adoption of dairy agricultural technologies among smallholder farmers in Kenya. While it effectively identifies key determinants such as education level, livestock type, and access to credit, the review lacks a critical evaluation of how these factors interact or their relative impact on technology adoption. Furthermore, the study does not address the dynamic nature of these determinants over time or in different socio-economic contexts, which could affect their relevance and significance. There is also an absence of discussion on the specific barriers faced by different groups of farmers, highlighting a research gap related to the adoption of Electronic Record Management Systems and their influence on dairy farming performance.

Data Retrieval Efficiency and Dairy Farmers' Performance

The literature review provides a comprehensive overview of various studies on the role of big data analytics in decision-making performance, but it demonstrates several shortcomings in synthesis and focus. Ikhsan and Arief's (2023) emphasis on co-collaboration as a mediating factor is insightful; however, their recommendation for future research lacks depth in addressing methodological rigor and contextual diversity. Ghasemaghaeiet et al. (2018) and McAfee and Brynjolfsson (2012) offer valuable insights into the benefits of big data analytics, yet their findings are somewhat dated and fail to explore the evolving nature of data-driven strategies. Karijo, Otieno, and Mogere's (2021) focus on health facilities presents practical implications but lacks broader applicability beyond the healthcare sector. Lastly, Brynjolfsson, Hitt, and Kim's (2011) study supports the efficacy of data-driven decision-making but could benefit from a more critical examination of its applicability across different firm sizes and industries. Overall, while the reviewed studies collectively underscore the importance of big data in decision-making, there is a need for updated, cross-sectoral analyses and more nuanced investigations into the practical challenges of implementation.

RESEARCH METHODOLOGY

Since this study targeted to collect data which is quantitative in nature, it adopted descriptive research a survey design. The unit of observation therefore was the registered dairy farmers with Kenya Dairy Board a total unit observation 2317 as in Table 3.1.

Table 3.1: Target Population

No.	DFCS	Registered Dairy Farmers
1	Cherangany Dairy Ggroup	957
2	Dairy Farmers of Cherangany	840
5	Taito DFCS	520
	Total	**2317**

Source: Kenya Dairy Board, 2024

Since the study involves varied population characteristics, stratified sampling was used to stratify the sample population so as to give each cooperative society a chance to participate in

the study. Therefore, the sample size was determined by Yamane (1967) and distributed as shown in the sampling frame in Table 3.2.

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

Where;

N= Population;

e = margin of error or significance level at 0.05,

n = sample size hence,

= 2317/[1+2317 (0.05^2)]

= 2317/1+ 5.7925 =3015/ 6.7925

= 341.1 =341

Stratified Proportionate Sampling was used to determine the sample size in each cooperative society a chance to participate in the study. Hence, proportionate stratified sampling using the formula by Krejcie and Morgan (1970) to identify the sample then simple random sampling was used to get the assigned respondents from each stratum:

$$s = XS \div P$$

Where;

s = Sub-sample size for each sector

X = Population of staff in each sector

S = Total sample size for the study

P = Total population of all the sectors in the manufacturing firms.

Substituting the values in the above formulae gives the following sub sample size to participate in the study under each sector as in Table 3.2. Stratified random sampling techniques was used

Table 3.2: Sample frame

No.	DFCS	Total population	Sample
1	Cherangany Dairy Ggroup	957	140
2	Dairy Farmers of Cherangany	840	124
9	Taito DFCS	520	77
	Total	**2317**	**341**

Primary data was collected using the questionnaires. The questionnaire was used to collect data from the farmers through a designed survey Google form that will reach many farmers with a short period. The sample for the pilot study involved 10% (34) of the total sample size of the study (Kathuri & Pals, 1993) hence, 34 respondents from similar strata of the population will be used as a pilot study sample. Quantitative data collected was coded, entered into the Statistical Package for Social Sciences (SPSS) version 28 then analyzed using both descriptively, through frequencies, percentages, means and standard deviations, and through regression analysis. A multiple regression equation was used to measure the relationship between the dependent and independent variables

RESEARCH FINDINGS AND DISCUSSION

Out of 307 questionnaires that were circulated to the respondents, 259 of the respondents dully filled and retuned questionnaires; yielding a response of 79.32%. This was considered to be a very reliable response rate for the generalization of study findings is in line with Sharma (2015), states that a response rate of 70% and above is believed to be a reliable response rate. This was less 15 (10%) respondents who were pilot tested.

Reliability Test

Reliability is the extent to which results are consistent over time and are accurate representation of the total population under study (Crossman, 2020). Reliability of the research instrument was tested by use of Cronbach's alpha with an acceptance level of >.7 as guided by Castilio (2009) Reliability test results for the variables; E-record systems usability,

data retrieval efficiency and performance of daily farmers performance in Trans Nzoia East Sub Count County was .756; 753 and .713 respectively as shown in table 4.1 .All the variables recorded a Cronbach's alpha figure of >.7 which implies that internal consistency was adequate and the data can statistically be processed further.

Table 4.1 Reliability Test

Variables	Cronbach's Alpha	N of Items	Comments
E-record systems usability	.756	6	Acceptable
Data retrieval efficiency	.801	6	Acceptable
Performance of daily farmers performance	.713	6	Acceptable

Content Validity Test

Content validity assesses whether a test is representative of all features of the construct. To produce valid outcomes, the content of a test, measurement method must cover all relevant parts of the subject it aims to measure. To achieve construct validity, you have to ensure that your indicators and measurements are carefully developed based on relevant existing knowledge. The questionnaire must include only relevant questions that measure known indicators of depression. To ensure content validity your test should be based on known indicators of operationalization. On the other hand, content validity assesses how well the test represents all aspects of the construct. If some aspects are missing or irrelevant parts are included, the test has low content validity. This study subject the content analysis was proof ready by my supervisor and other senior researcher in this paradigm and they gave approval. Since the rating are over 0.5 it's adequate. These ratings was from my supervisor and other experts findings in this paradigm of electronic or IT management.

Table 4.2 Content Validity Test

Variables	Expertise/Supervisor	N of Items	Comments
E-record systems usability,	.572	6	Acceptable
Data retrieval efficiency	.545	6	Acceptable
Performance of daily farmers performance	.532	6	Acceptable

Construct content validity disquiets the extent to which your test or measure accurately assesses what it's supposed to. In research, it's important to operationalize constructs into concrete and measurable physiognomies based on your idea of the construct and its dimensions. Construct validity has three aspects or components: the substantive component, structural component, and external component. According to Kothari (2011) , there are Six unique aspects of

construct validity are highlighted as a means of addressing central issues implicit in the notion of validity as a unified concept. These are content, substantive, structural, generalizability, external, and consequential aspects of construct validity.

Regression Coefficients of Determination

To determine the relationship between the independent variables and the dependent variable and the respective strengths, the regression analysis produced coefficients of determination. Findings in table 4.3 reveal a positive relationship between the performances of Dairy farmers' in Trans Nzoia East sub-county, Kenya,

Table 4.3 Regression Coefficient Results

Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	**Std. Error**	**Beta**	
(constant)	-.134	.060	-1.144	4.004	.002
E-record systems usability	.413	.132	555	5.472	.003
Farmer data integration.	.256	.115	.321	2.657	0.001

a. predictors: (constants), E-record systems usability, Farmer data integration

b. Dependent Variable: performance of West Pokotin Dairy farmers' in Trans Nzoia East subcounty Uasin Gishi , Kenya

A unit change in E-record systems usability would thus lead to a .413 effect on performance of Dairy farmers' in Trans Nzoia East sub county, Kenya sector ceteris paribus; further unit change in farmer data integration would lead to .256 of sector change in performance of Dairy farmers' in Trans Nzoia East sub-county. This finding is in line with the findings of Ongeri and Osoro (2021). This implies that among other factors, E-record systems usability and Farmer data integration are significant determinants of performance of Dairy farmers' in Trans Nzoia East sub-county , Kenya.

Summary of Findings

E-record Systems Usability

In summary this study found that Dairy farmers' in Trans Nzoia East sub-county, Kenya through E-record systems usability review on viable evaluation was able to improve performance of Dairy farmers' in Trans Nzoia East sub-county. The study also found that through E-record systems usability the Trans Nzoia, Kenya has been able to make rational decisions on priority and non-priority evaluation E-record systems usability has further contributed to quality and innovation of the planning team. By using E-record systems usability and the implementation of strategic evaluation on performance of Dairy farmers' in Trans Nzoia East sub-county can lead to the prevention dispute resolutions. E-record systems usability enhances Performance of Dairy farmers' in Trans Nzoia East sub-county, Kenya. That can be explained that clear description of processes and setting E-record systems usability, suitable methods of using vital lessons from evaluating strategic 's goods, works or services, precise definition of roles evaluation team or committee 's knowledgeable enhance effective E-record systems usability process. The study established that Dairy farmers' in Trans Nzoia East sub-county, Kenya, have proper E-record systems usability in place. Early inspection of goods, works or services has resulted to cost reduction in supply chain practices.

Farmer Data Integration

The researcher established that: Dairy farmers' in Trans Nzoia East sub-county, Kenya implements Farmer data integration to ensure every party involved strategic evaluation follow

partnership responsibility in cases of any disputes, strategic enforcement policy hedges against breach of Farmer data integration in cases of disputes ensures both practices are satisfied and hence high performance of Trans Nzoia East sub-county, in cases of any strategic relationship disputes, the Trans nzoia,County, Kenya employs alternative dispute resolution processes so as to gain mutual agreement among partners, alternative dispute resolution process contributes to control of Farmer data integration and coordination The study further established that in order to enhance dispute resolution results, Dairy farmers' in Trans Nzoia East sub-county, Kenya has reacted a conducive environment that ensures each partnership is free to express its concerns. Farmer data integration resolution mechanisms are preferred for litigation, hence improve Farmer data integration. This is the culture globally for growth of Farmer data integration and prosperity. The problem resolution can be reached amicably related to farmer data integration in Dairy farmers' in Trans Nzoia East sub-county . If disputes are ignored outside the court it was reduce on the cost inured during court procedures hence impacting positively on supply chain practices.

Recommendations

E-record Systems Usability

The study recommend that E-record systems usability formalizes relations between practices within a robust legal framework, but is much more besides; it is an opportunity to define the arrangements that encompass every aspect of what outcomes the Dairy farmers' in Trans Nzoia East sub-county, Kenya wants from the strategic and how it wants the relationship to work. This means that needs to take an active role in the development of the quality mechanism early on; it should not be left as a supplementary activity post negotiation. At preparation of every quality management can contribute to strategic evaluation on performance of Dairy farmers' in Trans Nzoia East sub-county, Kenya. Proper E-record systems usability can result to high procurement in Dairy farmers' in Trans Nzoia East sub-county, Kenya.

Farmer Data Integration

This researcher recommends that farmer data integration had a strong relationship with performance of Dairy farmers' in Trans Nzoia East sub-county, Kenya. When relationship are not properly managed, they may cause strategic delays, undermine team spirit, increase delay costs, and, above all, damage business relationships. With the increase in the number of participants in a strategic management, it is obvious that more business interactions and arguments end up with an increase in the number of strategic relationship disputes. Research in preventing and resolving relationship disputes supports the effort for better understanding and harmonization of the different cultures. Therefore, this study recommends to the management of Dairy farmers' in Trans Nzoia East sub-county, Kenya to enhance and upgrade on the implementation of all applicable alternative disputes resolution mechanisms so to protect relationship with its stakeholders in the strategy practices.

Areas for Further Studies

This research focused on E-record systems usability and farmer data integration and performance of Dairy farmers' in Trans Nzoia East sub-county, Kenya. The study therefore recommends a further study to be conducted to other counties. Then get their findings and compare with this and agree or disagree. The study also recommends replication of the study in other sectors such as sub–Trans Nzoia East sub-county sector and public sector to allow comparison of research findings. Future researchers an investigate the factors affecting

strategy best practices broadly in all areas of concern in this profession on performance of Dairy farmers within the strategic practices.

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