

Stakeholder Knowledge Transfer and Performance of Milk Processors in Nyeri and Laikipia Counties, Kenya

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Abstract

In stakeholder management, knowledge transfer is crucial as it facilitates mutual understanding, ensures that stakeholders are well-informed, and aligns expectations, thereby enhancing collaboration and decision-making processes. This study sought to assess the effect of knowledge transfer among stakeholders on performance of milk processors in Nyeri and Laikipia Counties in Kenya. The target population was the 22 milk processing firms in Nyeri and Laikipia Counties. The respondents to the study were the management staff of milk processing firms, farmers, transporters, marketers, and representatives of the regulators. Data was collected using self-administered structured questionnaires and data was analysed descriptively with the aid of a statistical package for social science software and presented using frequencies and percentages. Results showed an average implementation of knowledge transfer among stakeholders. Correlation analysis was also conducted. The results indicated a significant positive correlation between knowledge transfer and performance, $r(564) = .611, p < .001$. The study concluded that knowledge transfer among stakeholders significantly influenced performance of milk processors in Nyeri and Laikipia Counties, Kenya. The study underscores the importance of promoting stakeholder engagement practices such as knowledge transfer. Policies that incentivize knowledge transfer programs can be instrumental in enhancing overall industry performance. Milk processors therefore ought to enhance knowledge transfer, especially on quality feeds, artificial insemination, and other inputs as this has a direct impact on the quality of milk and therefore the performance of the processors.

Keywords: *Stakeholder engagement, knowledge transfer, dairy industry & performance of milk processors*

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1. Introduction

Performance is a measure of an organization's efficiency and effectiveness in achieving its goals. It encompasses various dimensions, including financial outcomes, market share, operational efficiency, and customer satisfaction (Taouab & Issor, 2019). Private firm performance is crucial as it underpins economic growth, job creation, and innovation. High-performing firms contribute significantly to tax revenues, foster competition, and enhance overall industry standards (Nguyen et al. 2021). In the dairy industry, milk processor performance is paramount as it influences the availability and quality of dairy products, farm-gate prices, and consumer welfare. Efficient processors ensure optimal utilization of milk, contribute to food security, and support the livelihoods of dairy farmers (Ding et al. 2019; Mor

et al., 2019). When optimally operating, milk processors are drivers of socio-economic prosperity through offering jobs and sustaining livelihoods of millions of farmers by buying the milk in bulk, processing, and marketing as they operate across the value chain. They are the most resourced, connected, and influential entity in the dairy value chain and are best placed to improve productivity of farmers through offering incentives, linkages, superior technical information, and regulating the standards in the industry (Nyokabi et al., 2018). The performance of milk processors is a complex concept that is determined by many actors and factors in the dairy value chain.

In any country, the key determinant of performance of milk processors is the per capita milk production or the productivity of an individual cow. Stakeholders' engagement has grown from a mere management fad to one of the drivers of organizational growth in diverse sectors. It refers to the developed framework and platform an organization develops for continuous engagement and collaboration with other organizations in its value chain. It has been globally acclaimed as the moral thing to do, a strategic, pragmatic, and sustainable way of adding value to business by connecting to the community (Kujala et al., 2022). Almost invariably, scholars and researchers from across the globe agree that stakeholders' engagement yields positive outcomes for organizations when taken beyond informing to consulting and supporting until it confers legitimacy to business as it happened to Agricultural firms in Ukraine (Pasko et al., 2021).

The key necessity for stakeholders' engagement among milk processors is borne out of the fact that the dairy sector is complex with a multiplicity of players such as farmers, co-operatives, transporters, agriculture technical experts, marketers, informal operators, regulators, and especially processors who are important because they operate across all the nodes in the dairy value chain that creates concerns on how to manage relations, quality, and standards. The stakeholders are involved in producing, handling, transporting, storing, packaging, and marketing the various dairy products (Chelimo, 2021; Nyokabi et al., 2018). The benefits of stakeholder' engagements across the world are legion for many organizations. In India, Singh and Rahman (2022) found that stakeholders' engagement provided a sustainable platform to develop and grow business ventures. Berebon and Subarinko (2020) reported that stakeholders' engagement was pivotal in improving decision-making among oil companies in Nigeria. This is because the firms got to know the policies and actions of firms in the same value chain. Olwando (2021) reported that stakeholders' engagement improved efficiency of systems such as communication and staffing in the Kenyan health systems. Sahel and Bell (2022) found that stakeholder engagement practices by Kenyan parliament improved expertise, boosted governance, and reduced risks and thus boosted the performance of parliament in meeting its obligations to the Kenyan populace.

Knowledge transfer is the systematic process of sharing and applying expertise, skills, and information among individuals or groups. It comprises explicit knowledge, which is codifiable and easily transferable, and tacit knowledge, embedded in individual experience and difficult to articulate (Mazorodze & Buckley, 2020). Ahmad and Karim (2019) explain that effective knowledge transfer is pivotal in stakeholder management as it fosters collaboration, trust, and shared understanding. In the dairy industry, knowledge transfer encompasses sharing best practices in production, processing, and marketing, as well as disseminating research findings on animal health, nutrition, and consumer preferences. By facilitating the exchange of technical know-how, market intelligence, and regulatory updates, knowledge transfer empowers stakeholders to make informed decisions, enhance operational efficiency, and ultimately contribute to the industry's sustainability and growth (Bacon et al., 2019; Secundo et al., 2019).

Knowledge transfer is associated with firm performance. A study by Barbin and Masino (2017) in Italy found that firms in Europe were benefiting from sharing knowledge with producers of their raw materials with a focus on customizing knowledge for particular use and adapting to contingencies on the specific requirements of producers rather than avoiding the contingencies. A study by Ahmad and Karim (2019) established that not only was sharing of knowledge among firms in the same value chain a tradition of well-performing firms in diverse sectors of the economy globally, but it is also a fine art with set conventions and artistry. A stinging indictment of the knowledge transfer in the dairy sector came from a study by Ajak et al. (2020) who reported that on average the individual dairy farmer had inadequate skills for commercial dairy farming. The dearth of skills among farmers was corroborated by Maina et al. (2019) who reported that there was inadequate transfer of critical knowledge to farmers that had undermined the performance and efficiency of dairy farming in Kenya.

The milk processors in Kenya employ a diversity of engagement practices that involve sharing operational knowledge with actors below them in the value chain with a view of effectively implanting their operational strategies. However, the productivity of small-scale dairy farmers remains low and on average a cow produces less than four litres. The role of linkage to farmers has been left to co-operatives and transporters. Most of the dairy farmers who lack access to processors sell the milk to informal buyers who offer better farm gate prices and control over 85% of the market albeit with concerns about milk quality (Mwangangi et al., 2022; KDB, 2019). This scenario has had a devastating negative effect on milk processors who are inaccessible to farmers, indifferent to the plight of farmers by failing to be involved in determining prices and thus unable to influence productivity at farm level. It is not clear if the processors are using strident knowledge transfer to deal with the aforementioned challenges thus the need for empirical investigation. This study therefore sought to assess the effect of knowledge transfer among stakeholders on performance of milk processors in Nyeri and Laikipia Counties in Kenya.

H0₁ Knowledge transfer among stakeholders does not significantly influence performance of milk processors in Nyeri and Laikipia Counties, Kenya

2. Materials and Methods

The study adopted a descriptive survey design which is ideal for investigating a new phenomenon like stakeholders' engagement and performance of milk processing firms. The current study was carried out in Nyeri and Laikipia Counties in Kenya. Both counties have milk coolers and dairy processing plants to reduce spoilage and wastage. There are also cooperatives and farmer groups involved in small-scale dairy value addition, producing products like ghee and yoghurt. The target population in respect to cases was the active milk processing firms in operations in the counties of Nyeri and Laikipia of Kenya. There were twenty-two (22) such milk processing firms operating in both Nyeri and Laikipia County which were the unit of analysis for the study (KDB, 2023). The target respondents to the study was the management milk processing firms, farmers, transporters, marketers, and representatives of the regulator. A stratified random sampling of 30% was used to arrive at a sample of 617 respondents for the study from a population of 2,055 as shown in Table 1.

Table 1: Sample Size Distribution

Population	Number	Sample
Management staff	119	36
Farmers	1,819	546
Transporters	56	17
Marketers	49	15
Regulators	12	4
Total	2,055	617

Simple random sampling was used to draw respondents into the study. A list of all the members of each group was generated and then the desired sample was drawn using a random number generator. This ensured that each respondent had an equal chance of being selected. The study relied exclusively on primary data that was collected using questionnaires for both the staff and farmers. To ensure the feasibility of the instrument, the questionnaire was piloted in two milk processors in the neighbouring County of Nyandarua. Content validity ensured that the questionnaires had the right content equitably distributed to cover all the variables of the study. The face validity ensured that the tools are legible with a presentable layout to ensure the respondents understood the content. The reliability of the questionnaires was ascertained using the Cronbach Alpha Co-efficient (>0.7) to ensure that entire respondents responded in a similar way to the items in the questionnaire.

Performance of milk processors in Nyeri and Laikipia Counties in Kenya was the dependent variable whereas knowledge transfer among stakeholders was the independent variable. The performance of the milk processors was measured using a timely payment of farmers, a quantity of milk processed, success of joint activities, and frequency of training of each of the milk processors. Knowledge transfer was measured on the knowledge shared to improve productivity, the best practices of operations shared, and the use of various technologies in milk production and processing shared. Data was analysed using descriptive and correlation analysis through the aid of statistical Package for Social Science (SPSS, (Version 24) software and presented using tables.

3. Results and Discussion

3.1 Response Rate

A total of 566 questionnaires were sent to staff and stakeholders of milk processing firms sampled in the study. The response rate in the study is outlined in Table 2.

Table 2: Response Rate

Population	Sample	Response	Response Rate
Management staff	36	33	92.4
Farmers	546	503	92.2
Transporters	17	14	83.3
Marketers	15	13	88.4
Regulators	4	3	83.3
Total	617	566	91.8

The study registered a response rate of 91.8%. These results demonstrate a high response rate as it is higher than 70% recommended for descriptive surveys (Kothari, 2017). The high response rate in this study increases the likelihood that the sample accurately reflects the target

population of milk processors and farmers. The study's findings are therefore more generalizable to the wider population of milk processors.

3.2 Demographic Characteristics of Respondents

The researcher collected demographic data of respondents in the study. This data was useful to describe the sample in the study as well as the milk processing firms. The results are presented in Table 3.

Table 3: Demographic Characteristics of Respondents

Demographic	Categories	Frequency	Percent
Education	KCSE	121	21.4
	Diploma	314	55.5
	Degree	96	17.0
	Masters	33	5.8
	PHD	2	0.4
Experience with milk processor (years)	<1	22	3.9
	1-3	181	32.0
	3-5	222	39.2
	>5	141	24.9

Results show that most (55.5%) of the respondents had acquired a diploma as their highest level of education. In addition, the results show that 39.2% and 32.2% of the participants have between 3 and 5 years and 1 and 3 years of experience with milk processors in the study. These results show that the sample in this study was well educated and experienced and were therefore resourceful persons in matters regarding knowledge transfer and performance of their firms which are of interest to this study.

3.3 Knowledge Transfer

Staff Responses on Knowledge Transfer

Staff in the study were asked to rate the extent to which their milk processing firm trains stakeholders on various aspects of milk production. A summary of the analysis of responses is provided in Table 4.

Table 4: Staff Responses on Knowledge Transfer

	N	Min	Max	Mean	Std. Dev
Stakeholders are trained on milk production	33	4	5	4.4	0.303
Stakeholders are trained on artificial insemination	33	4	5	4.1	0.517
Stakeholders are trained on veterinary services	33	3	5	4.0	0.609
Stakeholders are trained on quality feeds	33	3	5	4.0	0.818
Stakeholders are trained on best milk handling practices	33	3	5	4.2	0.660
Average				4.14	0.581

There was widespread agreement among respondents that stakeholders were trained on milk production (M=4.4, SD=0.303), and artificial insemination (M=4.1, SD=0.517). There was also agreement that stakeholders were trained on veterinary services (M=4.0, SD=0.818) and quality feeds (M=4.0, SD=0.818). The average mean (4.14+0.581) was high demonstrating a high concurrence with items in Table 4.5. This suggests that milk processors shared the knowledge with farmers and other actors in the dairy value chain to a large extent. This finding concurs with results of Chelimo (2021) where processors were found to be keen on sharing

knowledge on production and storage of quality milk by farmers in the Rift Valley region of Kenya to enable the firm to create and retain a competitive advantage over rivals based on quality dairy products. Training by dairy cooperative societies was also satisfactory and positively and significantly related to performance in a study by Mwebia et al. (2019). Staff in the study were also asked to rate the extent to which their milk processor shared the knowledge with farmers and other actors in the dairy value chain.

Stakeholders’ Responses on Knowledge Transfer

Stakeholders in the study were asked to indicate the training received by their milk processors. Data was analysed using descriptive statistics and results are presented in Table 5.

Table 5: Stakeholders’ Responses on Knowledge Transfer

	N	Min	Max	Mean	Std. Dev
The milk processor provides regular training	533	1	5	3.6	0.871
Farmers are provided with training on milk production	503	2	5	3.9	0.717
Farmers are provided with training on artificial insemination	503	3	5	4.0	0.560
Farmers are provided with training on veterinary services	503	1	5	3.7	0.661
Farmers are provided with training on quality feeds	503	2	5	3.9	0.733
Transporters are trained on best milk handling practices	14	1	5	3.1	1.071
Marketers are trained on regulations for milk selling	13	2	5	3.8	0.691
The milk processor conducts a needs assessment before training	533	1	5	3.5	1.113
The training provided by the milk processor is appropriate	533	1	5	3.9	0.911
Stakeholders are consulted on training content	533	1	5	2.8	1.109
Stakeholders are evaluated on training content	533	1	5	1.9	1.414
Average				3.46	0.896

Stakeholders in the study indicated that the milk processor provides regular training (M=3.6, SD=0.871). There was an agreement among stakeholders that farmers are provided with training on artificial insemination (M=4.0, SD=0.560), milk production (M=3.9, SD=0.717), quality feeds (M= 3.9, SD=0.733) AND veterinary services (M=3.7, SD=0.661). There was also agreement that marketers are trained on regulations on milk selling (M=3.8, SD=0.691) and transporters are trained on best milk handling practices (M=3.1, SD=1.071). Stakeholders indicated that training provided by the milk processor is appropriate (M= 3.9, SD=0.911) and a moderate agreement was noted as to whether the milk processor provides conducts needs assessment before training (M=3.5, SD=1.113). However, the stakeholders disagreed that stakeholders are consulted on training content (M=2.8, SD=1.109) nor evaluated on training content (M=1.9, SD=1.414). The average mean (3.46+0.896) demonstrated an average agreement with the items in the table. This signifies average implementation of knowledge transfer among the stakeholders. This agrees with results of Mwebia et al. (2019) where findings from the staff also indicated that members received frequent training. It also agrees with Maina et al. (2019) findings that there was inadequate transfer of critical knowledge to farmers that had undermined the performance and efficiency of dairy farming in Kenya. The finding lends support to Maina et al. (2019) who recommended organization of dairy training and workshops to increase the efficiency of milk production in small-scale farms in the study area and other parts of Kenya with similar agroecological and cultural conditions.

3.4 Performance of Milk Processing Firms

Results on the performance of milk processors in Nyeri and Laikipia Counties in Kenya which is the dependent variable in the study are presented in this section.

Staff Responses on Performance of Milk Processing Firms

Staff in the study were asked to rate the extent to which their milk processing firm had achieved various performance measures in the previous year. The results are summarized in Table 6.

Table 6: Staff Responses on Performance of Milk Processing Firms

	N	Min	Max	Mean	Std. Dev
There is timely payment from milk suppliers	33	3	5	4.1	0.303
The milk processor has increased the quantity of milk processed	33	4	5	4.4	0.616
The milk processor has increased the number of suppliers of milk	33	3	5	4.4	0.571
The capacity to process has been upgraded	33	2	5	3.9	0.818
Joint activities with stakeholders have been successful	33	1	5	3.7	1.001
There are frequent trainings with stakeholders	33	2	5	4.0	0.606
Sales of processed dairy products have risen	33	3	5	4.1	0.444
Average					

There was a high agreement among respondents that there is timely payment of milk suppliers (M=4.1, SD=0.303). Similarly, a high agreement was registered among respondents that the milk processor had increased the quantity of milk processed (M=4.4, SD= 0.616) and the milk processor had increased the number of suppliers of milk (M=4.4, SD=0.571). Results show that the capacity to process has been upgraded according to most of the respondents (M=3.9, SD=0.818). Similarly, most of the respondents agreed that joint activities with stakeholders have been successful (M=3.7, SD=1.001). A high agreement was also registered on the items regarding frequent trainings with stakeholders (M=4.0, SD=0.606) and an increase in sales of processed dairy products (M=4.1, SD=0.444). The average mean (4.09±0.623) demonstrates a high agreement with the items in the study suggesting a high performance of milk processors in the study. This agrees with findings of Ajak et al. (2020) that milk processors were suffering from effects of declining productivity because the farmers lack the wherewithal to feed the cows with quality feeds in preference for roughages, still endure low farm gate prices and many still sell to informal dealers. This finding also agrees with Wairimu's (2021) assertion that there is a need to strengthen cooperative societies to boost adoption of artificial insemination through arrangements in which milk is sold and payment of services offered on credit is settled from milk sale and ensure milk market availability throughout the year.

Stakeholders' Responses on Performance of Milk Processing Firms

Stakeholders in the study were also asked to rate the extent to which their milk processing firm had achieved various performance measures in the previous year. A summary of analysed data is presented in Table 7.

Table 7: Stakeholders’ Responses on Performance of Milk Processing Firms

	N	Min	Max	Mean	Std. Dev
There is timely payment from milk suppliers	503	1	5	1.7	1.301
The quantity of milk transported has increased	14	3	5	4.1	0.319
The number of suppliers of milk has increased	14	3	5	4.3	0.201
Joint activities with stakeholders have been successful	530	1	5	3.4	0.871
There are frequent trainings with stakeholders	530	1	5	3.6	0.606
Sales of processed dairy products have risen	13	4	5	4.4	0.201
Average				3.58	0.583

There was a very high agreement among stakeholders that sales of processed dairy products have risen (M=4.4, SD=0.201), the milk processor has increased the number of suppliers of milk (M=4.3, SD=0.201) and the quantity of milk transported has increased (M=4.1, SD=0.319). There was moderate agreement that there are frequent trainings with stakeholders (M=3.6, SD=0.606) and that joint activities with stakeholders have been successful (M= 3.4, SD=0.871). However, there was disagreement that there is timely payment of milk suppliers (M=1.7, SD=1.301). The average mean (3.58±0.583) shows that according to the stakeholders, the performance of milk suppliers was moderate. In agreement with this result, Maina et al. (2019) recommended subsidized prices for concentrates, to increase the efficiency of milk production in small-scale farms in the study area and other parts of Kenya with similar agro-ecological and cultural conditions. Karanja (2023) also recommended that emphasis should be laid on the application of cost leadership strategy with main approaches being economies of scale, reduced cost of production, and stringent cost control. In agreement, Kimiti (2021) concluded that for firms in the milk processing industry to perform better, they need to pursue relevant approaches to lower costs in concurrence with the results of this study. Kingori (2022) also found that availability and cost of inputs and the adoption of technology influenced dairy milk productivity in agreement with the results of this study.

3.5 Correlation of Knowledge Transfer and Performance of Milk Processing Firms

Correlation analysis was conducted between scores of knowledge transfer and performance. The results are illustrated in Table 8.

Table 8: Correlation of Knowledge Transfer and Performance of Milk Processing Firms

		Knowledge	Performance
Knowledge	Pearson Correlation	1	.611**
	Sig. (2-tailed)		.000
	N	566	566
Performance	Pearson Correlation	.611**	1
	Sig. (2-tailed)	.000	
	N	566	566

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

The results indicated a significant positive correlation between knowledge transfer and performance, $r(564) = .611, p < .001$. These findings suggest that as knowledge transfer increases, so performs milk processors. The hypothesis of the study was therefore rejected and the study concluded that knowledge transfer among stakeholders significantly influenced performance of milk processors in Nyeri and Laikipia Counties, Kenya. This result is similar to findings of Barbin and Masino (2017) that firms in Europe were benefiting from sharing

knowledge with producers of their raw materials with a focus on customizing knowledge for particular use and adapting to contingencies on the specific requirements of producers rather than avoiding the contingencies. Training by dairy cooperative societies was also satisfactory and positively and significantly related to performance in a study by Mwebia et al (2019). It is also similar to findings of Ahmad and Karim (2019) who established that not only was sharing of knowledge among firms in the same value chain a tradition of well-performing firms in diverse sectors of the economy globally, but it is also a fine art with set conventions and artistry.

4. Conclusion

The study assessed the effect of knowledge transfer among stakeholders on performance of milk processors in Nyeri and Laikipia Counties in Kenya. Results showed an average implementation of knowledge transfer among stakeholders. Correlation analysis showed that knowledge transfer ($r = .559$, $p < .001$) was significantly and positively correlated with the performance of milk processors. The study therefore concludes that knowledge transfer among stakeholders significantly influenced performance of milk processors in Nyeri and Laikipia Counties, Kenya. Effective dissemination and sharing of knowledge among stakeholders likely lead to better practices, innovation, and overall improved performance of milk processors. The findings of this study hold significant implications for theory, policy, and practices within the dairy sector of developing countries. The strong positive correlation between stakeholder engagement practices and milk processor performance provides robust empirical support for the stakeholder theory. From a policy perspective, the study underscores the importance of promoting stakeholder engagement practices such as knowledge transfer. Policies that incentivize knowledge transfer programs can be instrumental in enhancing overall industry performance. Industry associations, government agencies, and development organizations can all play a role in facilitating knowledge exchange platforms, between processors and farmers.

5. Recommendations

Milk processors ought to enhance knowledge transfer, especially on quality feeds, artificial insemination, and other inputs as this has a direct impact on the quality of milk and therefore the performance of the processors. This study was limited to milk processors in Nyeri and Laikipia Counties, Kenya. There is a need to carry out similar studies in other counties for comparative purposes. Future studies also ought to include other stakeholders such as animal feed companies and consumers of milk to provide insights into the performance of milk processors.

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