

Structure and Efficiency of the Corn and KUB Chicken Value Chains in Central Lombok Regency, Indonesia

Windar Juliardi¹, Tajidan¹, Taslim Sjah¹

¹ *University of Mataram*

Jl. Majapahit No 62 Mataram, Nusa Tenggara Barat, Indonesia

DOI: [10.22178/pos.133-17](https://doi.org/10.22178/pos.133-17)

LCC Subject Category: PE1001-1693

Received 27.07.2026

Accepted 29.08.2026

Published online 31.08.2026

Corresponding Author:

Windar Juliardi

© 2026 The Authors. This article is licensed under a Creative Commons Attribution 4.0

License 

Abstract. Corn and KUB (Kampung Unggul Balitbangtan) chickens, a native breed developed by the Indonesian Agency for Agricultural Research and Development, are significant agricultural products for the rural economy of Central Lombok Regency, West Nusa Tenggara. Corn serves as both a food crop and poultry feed, while KUB chickens are valued for meat and eggs. Economic integration between the two products within the local value chain nevertheless remains limited. This study examines the structure of the corn and KUB chicken value chains, identifies the roles of the actors involved, and assesses how value is generated and how efficient the system is. The study combined qualitative and quantitative methods, gathering primary data through interviews, field observations, and questionnaires administered to corn farmers, KUB chicken breeders, collectors, market traders, and supporting institutions. The analysis applied Value Chain Analysis (VCA), the Value Added Ratio (VAR), Cycle Efficiency (CE), and the Efficiency Margin Fairness Ratio (EMFR). The corn value chain comprises farmers, collectors, wholesalers, and industrial consumers or livestock breeders. The KUB chicken value chain comprises breeders, collectors, market traders, and end consumers. Farmers and breeders are the main producers, with traders linking producers to the market. In the corn chain, farmers generated the highest added value in absolute terms, at IDR 4,743.75 per kg, against IDR 676.67 for collectors and IDR 369.33 for wholesalers. In the KUB chicken chain, breeders obtained IDR 7,578.95 per bird, collectors IDR 8,578.95, and market traders IDR 11,052.63. Production cycle efficiency was high in both the corn chain (94.3%) and the KUB chicken chain (94.9%), indicating that operational time is not the binding constraint in either system. The study recommends strengthening producer groups, improving direct market access, developing local feed, and building partnerships towards a more efficient, fair, and sustainable corn–KUB chicken agribusiness system.

Keywords: value chain; corn; KUB chicken; added value; efficiency; integrated farming; agribusiness; Central Lombok.

INTRODUCTION

Agriculture is central to food security, employment, and rural incomes in Indonesia. It spans production and processing as well as distribution, marketing, and value addition along the supply chain. Improving the agricultural value chain is therefore essential for rural development, and one route to that improvement is integrating subsectors. Integrated farming systems combine crop and livestock production so that byproducts of one become inputs to the other: crop residues can be used as animal feed, and

livestock manure as fertiliser. These systems aim to reduce dependence on external inputs, improve resource use, and support circular agriculture.

Central Lombok Regency is a strategic agricultural region in West Nusa Tenggara Province. Corn is a major commodity there, used both as food and as the main raw material for poultry feed, and its local availability creates an opportunity to strengthen the link between food crop production and the livestock sector.

The KUB chicken, developed by the Indonesian Agency for Agricultural Research and Development, is a native poultry breed with strong economic potential. It was bred from local Indonesian stock to raise productivity while retaining tolerance of tropical conditions [5], and it can serve as an important source of meat and eggs for rural households. Constraints remain, however: high feed costs, limited market access, and weaknesses in production management and marketing systems [3].

Combining corn and KUB chicken production is economically attractive: farmers can use corn as local feed and livestock manure as organic fertiliser. Yet a biological or economic connection between the two products does not, by itself, constitute an integrated value chain. Integration also depends on relationships among farmers, traders, breeders, consumers, government, and other actors, as well as on the problems encountered in production and marketing.

Earlier studies have identified structural problems in the agricultural value chain. Corn farmers face seasonal price fluctuations, limited market access, and dependence on intermediaries [4], which reduces their bargaining power and shapes how added value is shared. Small-scale KUB poultry farmers likewise face high feed costs and inadequate marketing systems. Most existing research treats corn and poultry farming separately; little work examines the corn and KUB chicken value chains together as a single regional system, and none does so for Central Lombok Regency. This study addresses that gap by analysing both products within one value chain framework and examining each actor's role, the value-creation process, production efficiency, and margin distribution.

The study therefore sets out to: (1) examine the structure of the corn and KUB chicken value chains in Central Lombok Regency; (2) identify the key actors in each chain; and (3) assess value creation and efficiency by means of the Value Added Ratio, Cycle Efficiency, and Efficiency Margin Fairness Ratio.

METHODS

Research design and study area. The study uses a mixed-methods approach combining qualitative and quantitative value chain analysis, which allows relationships among actors to be analysed

while added value and operational efficiency are measured [2, 6].

Data sources and respondents. Primary data were obtained through field interviews, direct observation, and questionnaires. Respondents included corn farmers, KUB chicken breeders, collectors, market traders, and institutions supporting the agricultural system.

Qualitative data cover the value chain structure, actor roles, product flows, marketing relationships, and institutional links. Quantitative data are used to calculate value added, the Value Added Ratio (VAR), Cycle Efficiency (CE), and the Efficiency Margin Fairness Ratio (EMFR).

Value chain analysis. Value chain analysis identifies the key actors and activities from production through final consumption. The analysis covers actors involved at each stage; production and marketing activities; product flow; information and financial flows; marketing relationships; institutional relations; and value added at every stage.

The framework follows Porter [6] and its application to agribusiness systems.

Value added analysis. Value added is the difference between output value and intermediate input costs:

$$\text{Value Added} = \text{Output Value} - \text{Intermediate Input Costs}$$

The Value Added Ratio is then:

$$\text{VAR} (\%) = \text{Value Added} / \text{Output Value} \times 100$$

A higher VAR means a larger share of an actor's output value consists of newly created economic value. VAR is informative within a single stage; it is not directly comparable across stages, because an intermediary's output value is dominated by the purchase price of the goods it resells, which mechanically depresses the ratio. Absolute value added is therefore used here for comparison across stages.

Cycle efficiency. Cycle Efficiency measures the share of production time that directly contributes to value creation:

$$\text{CE} (\%) = \text{Value-Added Time} / \text{Total Lead Time} \times 100$$

In corn production, cultivation is value-added, while waiting for harvest and transportation are not. In KUB chicken production, rearing is the value-added activity, whereas coop preparation

and marketing or distribution are supporting activities.

Efficiency Margin Fairness Ratio. The EMFR (RKME in the Indonesian literature) describes how economic margins are distributed among actors:

$$EMFR (\%) = \text{Lowest Margin} / \text{Highest Margin} \times 100$$

A value closer to 100 % indicates a more balanced distribution; a lower value indicates greater inequality.

RESULTS AND DISCUSSION

Structure of the corn value chain. The corn value chain in Central Lombok Regency comprises corn farmers, collectors, wholesalers, and industrial consumers or livestock farmers:

Corn Farmers → Collectors → Wholesalers → Industrial Consumers / Livestock Farmers

Farmers prepare the land, plant, fertilise, tend, harvest, and handle the crop after harvest. These activities transform inputs—seed, fertiliser, herbicides, labour, and other resources—into marketable corn, which downstream actors use as raw material. Collectors purchase corn from farmers and consolidate small volumes; although their percentage contribution to added value is small, they link dispersed producers to wider markets. Wholesalers dry, store, grade, and distribute the corn, maintaining product quality and supply continuity for industrial consumers.

Farmers thus create most of the value at the production stage, yet they remain dependent on downstream actors for market access. This is consistent with earlier findings that limited direct market access and reliance on intermediaries weaken corn farmers' bargaining power [1].

Structure of the KUB chicken value chain. The KUB chicken value chain is structured as follows:

KUB Chicken Breeders → Collectors → Market Traders → End Consumers

Breeders feed the birds, manage their health, maintain the coops, and prepare the birds for sale. Collectors act as intermediaries between breeders and the wider market, and market traders sell directly to consumers. Because market traders have direct access to consumers, they can command relatively high marketing margins.

Intermediaries matter because each breeder produces only small volumes; by pooling output, collectors support distribution and help breeders reach markets. Reliance on intermediaries nevertheless reduces breeders' bargaining power and shapes how profits are shared.

Both chains share two features. First, they move products effectively from producers to consumers. Second, several intermediaries can distribute economic benefits unevenly. Value creation and market power are not necessarily aligned: an actor may add little value yet be indispensable to logistics. In contrast, an actor with direct consumer access can capture a higher margin.

Added value in the corn value chain. At the farmer level, added value was IDR 4,743.75 per kg against an output value of IDR 5,500 per kg, giving a VAR of 86.25 %. At the collector level, added value was IDR 676.67 per kg against an output value of IDR 6,300 per kg (VAR 10.74 %). At the wholesale level, added value was IDR 369.33 per kg against an output value of IDR 7,300 per kg (VAR 5.06 %).

In absolute terms, farmers create roughly seven times as much value per kilogram as collectors and thirteen times as much as wholesalers. The ratios move in the same direction but overstate the gap, since the purchase price of corn accounts for most of the output value of both downstream actors.

Table 1 – Added value and value added ratio of actors in the corn value chain

Actor	Value added, IDR/kg	Output value, IDR/kg	VAR, %
Corn farmer	4,743.75	5,500	86.25
Collector	676.67	6,300	10.74
Wholesaler	369.33	7,300	5.06

Most value is generated in production; downstream actors nevertheless remain necessary for aggregation, quality control, transport, and market access. Better direct market access would allow farmers to capture a larger share of final market value, which is consistent with research stressing institutional strengthening and market transparency in agricultural value chains [1].

Added value in the KUB chicken value chain. The KUB chicken chain shows a different pattern.

At the breeder level, added value was IDR 7,578.95 per bird against an output value of IDR 40,000, giving a VAR of 18.95 %. Although positive, this is a modest share: most of the output value is absorbed by production costs—day-old chicks, feed, supplements, medicines, sanitation, coop depreciation, transport, and other operating expenses.

Collectors obtained added value of IDR 8,578.95 per bird against an output value of IDR 55,000 (VAR 15.60 %). Market traders obtained an added value of IDR 11,052.63 per bird against an output value of IDR 62,000 (VAR 17.83 %).

Table 2 – Added value and value added ratio of actors in the KUB chicken value chain

Actor	Value added, IDR/head	Output value, IDR/head	VAR, %
KUB chicken breeder	7,578.95	40,000	18.95
Collector	8,578.95	55,000	15.60
Market trader	11,052.63	62,000	17.83

Production costs are thus the main determinant of value creation in KUB chicken rearing, which points to feed efficiency, higher productivity, lower mortality, and better selling prices as the levers available to breeders. The added value captured by market traders underlines the importance of direct consumer access: actors with direct links to end consumers obtain better prices. Channelling breeders towards institutional buyers, restaurants, hotels, and organised markets would reduce their dependence on intermediaries.

Cycle efficiency. Both systems show high production-time efficiency. For corn, value-added activities last 100 days, while the waiting period before harvest takes 5 days and transportation 1 day—6 days of non-value-added time—for a total lead time of 106 days. Cycle efficiency is therefore 94.3 %.

For KUB chickens, rearing lasts 75 days, coop preparation 3 days, and marketing and distribution about 1 day, for a total lead time of 79 days. Cycle efficiency is 94.9 %.

Table 3 – Cycle efficiency of corn and KUB chicken production

Production system	Value-added time, days	Total lead time, days	CE, %
Corn	100	106	94.3
KUB chicken	75	79	94.9

The high CE values show that operational time is not a major source of inefficiency in either system. Attention should instead focus on market access, pricing, production costs, and margin distribution. For KUB chicken production in particular, a CE of 94.9% means nearly all production time is spent on activities that help the birds grow and add economic value; further gains therefore lie in margin distribution and cost reduction rather than in shortening the production cycle.

Distribution of the economic margin. The Efficiency Margin Fairness Ratio offers a complementary perspective, since high value creation does not, by itself, mean economic benefits are shared fairly. In this study, the lowest margin recorded was IDR 1,000 and the highest IDR 2,000, giving an EMFR of 50%.

Table 4 – Efficiency margin fairness ratio

Indicator	Value
Lowest margin, IDR	1,000
Highest margin, IDR	2,000
EMFR, %	50

An EMFR of 50 % would mean that the actor with the smallest margin receives half of what the actor with the largest margin receives—that is, that margins are not yet shared evenly across the chain. That efficiency cannot be judged by generated value alone. An efficient value chain must also distribute benefits reasonably among the actors who produce and move the goods.

On this reading, the findings point to a need for stronger producer institutions, better access to market information, and greater bargaining power for farmers and breeders. Stronger farmer groups or cooperatives would improve their ability to negotiate prices, pool output, and reach markets [8].

Integration of the corn and KUB chicken value chains. This study treats corn and KUB chicken as two closely related parts of one regional

agricultural system rather than as separate commodities. Corn can be used as feed for KUB chickens, and livestock manure as organic fertiliser in corn farming — the principle of the integrated crop–livestock system, in which resources circulate among agricultural activities.

The chains as currently organised, however, operate separately: corn moves from farmers through traders to industrial users or livestock farmers, and KUB chickens move from breeders through traders to end consumers. The present data describe this separation but do not measure the extent of any existing integration—the share of the corn harvest actually used as local feed, the proportion of breeders applying manure to corn plots, and the volume of locally produced feed were not recorded. The potential described above is therefore established in principle rather than demonstrated in the field, and quantifying it requires further research.

A stronger integration model would require institutions linking corn farmers with KUB chicken breeders: farmer cooperatives, business partnerships, local feed production, joint marketing, and coordinated government programmes. Developing a corn–KUB chicken cluster in Central Lombok Regency should address not only production volumes but also stakeholder coordination, access to market information, local feed development, collective marketing, and more equitable margin sharing.

CONCLUSIONS

In Central Lombok Regency, the corn and KUB chicken chains link several actors from producers to final consumers. The corn chain consists of farmers, collectors, wholesalers, and industrial consumers or livestock breeders. The KUB chicken chain consists of breeders, collectors, market traders, and final consumers.

REFERENCES

1. Barrett, C. B., Ghezzi-Kopel, K., Hoddinott, J., Homami, N., Tennant, E., Upton, J., & Wu, T. (2021). A scoping review of the development resilience literature: Theory, methods and evidence. *World Development*, 146, 105612. doi: [10.1016/j.worlddev.2021.105612](https://doi.org/10.1016/j.worlddev.2021.105612)
2. Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Farmers and breeders are the principal creators of value in absolute terms. Corn farmers add IDR 4,743.75 per kg, against IDR 676.67 for collectors and IDR 369.33 for wholesalers. In the KUB chicken chain, breeders add IDR 7,578.95 per bird, collectors IDR 8,578.95, and market traders IDR 11,052.63 — here, unlike in the corn chain, the downstream actors capture more per unit than the producer, which reflects the weight of production costs in poultry rearing and the price advantage of direct consumer access.

Both production systems show high operational efficiency: 94.3% cycle efficiency for corn and 94.9% for KUB chickens. The binding constraints therefore lie not in production time but in market access, production costs, price volatility, and how economic benefits are shared.

Raising output alone will accordingly not resolve the problem. Stronger producer institutions, better direct market access, greater transparency of market information, local feed development, and closer partnerships among chain actors are the relevant directions.

Finally, corn and KUB chicken production are linked closely enough to support a regional agricultural cluster built on circular resource use. Closer institutional ties between crop and livestock producers would allow local corn to feed poultry production and livestock byproducts to return to crop production, contributing to a more efficient, equitable, and sustainable agricultural value chain in Central Lombok Regency.

Acknowledgements

The authors thank their academic supervisors, the respondents—farmers, livestock breeders, and traders—and the supporting institutions for the information they provided during the study. They also thank the Postgraduate Program of the University of Mataram for the academic assistance given throughout the research.

3. Effendi, S., Asikin, N., & Ahmad, I. (2024). Pemberdayaan masyarakat melalui pemeliharaan dan perkandangan ayam kampung unggul Balitnak (KUB) di Desa Pakatto Caddi Kabupaten Gowa Provinsi Sulawesi Selatan. *Jurnal Kemitraan Masyarakat*, 1(2), 61–67. doi: [10.62383/jkm.v1i2.198](https://doi.org/10.62383/jkm.v1i2.198)
4. Guterres, V. M. L., Correia, V. de P., Freitas, J. da C., & Ximenes, C. (2026). Farmers' interpretations of market uncertainty in shaping agricultural livelihood strategies. *Formosa Journal of Science and Technology*, 5(4), 955–968. doi: [10.55927/fjst.v5i4.39](https://doi.org/10.55927/fjst.v5i4.39)
5. Muslim, C., Agustian, A., Perdana, R. P., Aldillah, R., & Darwis, V. (2021). Constraints and benefits of KUB chicken cultivate in Central Java Province, Indonesia. *E3S Web of Conferences*, 306, 02027. doi: [10.1051/e3sconf/202130602027](https://doi.org/10.1051/e3sconf/202130602027)
6. Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. Free Press.
7. Semba, R. D., Ramsing, R., Rahman, N., Kraemer, K., & Bloem, M. W. (2021). Legumes as a sustainable source of protein in human diets. *Global Food Security*, 28, 100520. doi: [10.1016/j.gfs.2021.100520](https://doi.org/10.1016/j.gfs.2021.100520)
8. Tuoi, N. T., & Son, N. P. (2022). Review of agricultural value chain analysis. *Ho Chi Minh City Open University Journal of Science — Economics and Business Administration*, 13(1), 75–86. doi: [10.46223/HCMCOUJS.econ.en.13.1.1963.2023](https://doi.org/10.46223/HCMCOUJS.econ.en.13.1.1963.2023)