



## Type of Transaction Costs to Different Business Scales on Nomadic Duck Breeding

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**ABSTRACT:** Duck breeding in Pinrang Regency, South Sulawesi Province, Indonesia was done traditionally including nomadic maintenance. Livestock transfers were done by following post-harvesting of paddy rice farming that raises transaction costs such as information, negotiation and adaptation costs. The amount of transaction costs associated with the scale of duck breeding. This study aimed to determine the type of transaction costs of duck livestock maintenance and its relation with different business scale on January to March 2016. The population was all duck farmers move from Pinrang Regency, South Sulawesi Province, Indonesia to Sidrap Regency, South Sulawesi Province, Indonesia then to Polman Regency, South Sulawesi Province, Indonesia. The number of samples used in present study included as many as 80 respondents. The research method was descriptive quantitative. Data analysis was based on frequency distribution and Rank Spearman analysis. The consequence of the examination acquired that in the principal move (Pinrang rule) the most noteworthy exchange cost was the adjustment cost IDR.7353250 on scale 2001-2500 tail, the subsequent exchange was for Sidrap Regency the most noteworthy exchange cost was the adjustment cost of IDR.7428250 on the 2000-2500 tail and on the third exchange (Polman Regency) the greatest expense of adjustment of IDR 8551447 on a business size of 500-100 tail. Exchange costs that were emphatically identified with business scale are arrangement expenses and adjustment costs.

**Keywords:** Adaptation, Duck, Information, Negotiation, Nomadic, Scale of business.

### I. INTRODUCTION

Raising ducks, although not as popular as chickens, had begun to be appreciated by the Indonesian public as a potential business development [1]. Currently, this means developing new business as well as meeting currently existing needs for duck meat and eggs. Along with the growing number of food stalls serving duck meat, the consumption of duck eggs had increased such that the business opportunity of raising laying ducks was not thought to be too large despite the need for intensive or extensive maintenance systems [2, 3].

In Indonesia, the shepherd system maintenance is generally applied to ducks over one month of age to adults. In the shepherd system maintenance, ducks are moved to seek pastures with widely available and abundant feed, for example, newly harvested rice fields. The shepherd system curbs to some extent the high cost of feed, mainly for breeding ducks. The system has been cultivated for generations by duck breeders in the northern coast of Central Java. They exploit the time slack between gather times and the rice planting season to keep up youthful ducks in the fields. In these conditions, scattered rice can serve as feed for grazing ducks, in addition to natural food in the form of worms, frogs, snails, aquatic insects, grasshoppers, and so on [4]. One weakness of this maintenance system is that the shepherd production of eggs depends on whether it is the rice harvest season. During the rice harvest, the

food supply is abundant, thus egg production will increase. Another drawback is the relative number of ducks that die of pesticide poisoning, leaving carcasses and potentially affecting rice crops. There are three main impact caused by human activities: 1) effects of the use of production inputs on the production of agriculture and the environment; 2) effects of the farming system on the emission of greenhouse gases, 3) effects of industrial activities and urban expansion in agricultural land [5].

In the traditional *shepherd* system, laying ducks are maintained with ducks grazing on feed sources such as paddy fields. Grazing starts around 5:00 to 6:00 in the morning; farmers usually harvest the eggs before grazing, but, egg harvesting is often carried out in the fields. After a day of grazing, in the afternoon at around 5:00 to 6:00 P.M. the ducks are herded back into their cage(s).

Duck farms initially maintained as semi-intensive, started turning to extensive or traditional maintenance with the problem of price changes for feed and food availability. One of the main sources of replacement feed the ducks had the rest of the crops or the rest of rice grains scattered during the process of harvesting rice. Ducklings also tended to destroy the small weeds in their paths. Manure dropped by the ducklings during exploration of the fields became very useful as a natural fertilizer. The ducks continued to function in the rice field until it was near the harvesting period [6]. To meet the

feed needs of livestock ducks, the farmers graze livestock on paddy fields during the post-harvest, although livestock must be moved from its original location. This method often called nomadic maintenance. Nomadic maintenance of livestock ducks is the displacement of livestock to several areas that have the potential for agriculture following the post-harvest of the paddy. Nomadic means moving from one place to another. As such, animal groups depend on what nature provides [7].

Duck farms in the province of South Sulawesi are still dominated by farmers using the traditional maintenance system their ducks still graze in the fields or in places that have a lot of water. Similarly, in Pinrang Regency, South Sulawesi Province, Indonesia farmers keeping ducks move from one place to another within the county region of Pinrang Regency, South Sulawesi Province itself and even among districts, with the aim of looking for food and a place to graze their ducks. The areas commonly used by farmers have already harvested fields; this was done where breeders anticipate feed shortages and where feed prices were expensive.

This Integration of Rice and Duck, where ducks feed on insects and weeds in rice fields and cultivate rice crops, had become the flagship of the sustainable agriculture movement in Asia. Ducks are also reared under integration with crop-livestock, *Colocasia* field and fish ponds in Chhattisgarh and Bhubaneswar respectively. Nomadic duck rearing is a dominant traditional system prevailing in Puducherry region since many decades but did not get attention from the policy makers. The changing trends of the duck rearing from natural hatching to purchasing of laying ducks directly from the hatcheries and selling the spent ducks to the places where there is a demand for duck meat and the role of the middlemen in the marketing of the duck eggs and meat remain unexplored. The only job of these nomads is to forage the ducks and collect the eggs. The duck flocks often migrated to nearby districts in search of fresh forage and water resources as each district in Tami different cropping patterns and rainfall distribution [8]. Alimentary induced Muscular Dystrophy (MD) in mule ducks under comfort or stress had a subclinical course and was manifested by reduced locomotor activity [9].

Rearing nomad's one-way maintenance is performed by farmers in an effort to increase revenue. But to achieve was not very easy [10]. The farmers did not realize that certain costs to farmers were not factored into the cost of production, for example: the cost of information to find suitable places to transfer livestock, which are expenses incurred to search for location of fields of post-harvest paddy rice farming; transportation costs; and costs to monitor livestock during a trip to the location to transfer are also required. All of these were transaction costs that were not included transaction costs when calculating income necessary for the maintenance of nomadic duck stocks, or the costs associated with economic transactions between farmers and landowners. Transaction cost economics, though initially to study economic organization of the industrial sectors in developed countries, was very relevant in tackling problems being experienced in agricultural development such as low participation in emerging

markets and reduced uptake of new technologies [11, 12]. Existence of transaction costs renders the analysis of household behavior complex and results in market failures that were household specific markets fail to exist for those who had prohibitive costs of transaction [13]. Cost incurred before the transaction is information cost, incurred during the transaction is negotiation cost, cost incurred after the transaction is monitoring and enforcement cost [14].

That in order to determine the level of the problems of a business is not enough to approach factors of production but also non-productivity factors because the transaction costs are one of the components that cause inefficiencies in business for farmers. Activities should be made to minimize the transaction costs between farmers and others with increased education and an increased scale of business [15]. The farm size of duck farming had never increased since farmers started their farming. This was due to land constraints as a result of increasing human population and lack of capital. Duck is reared since Day Old Duck (DOD) at a starter period, then farmers sell ducks at the age of 2 months. Ducks were reared intensively close to their house with dry systems [16]. Average duck ownership in Indonesia consists of small, medium and large scale [17]. There were different results between different economic size classification different farm types. Therefore, it seemed that farmers should determine optimal size of farms on different region and farm types in order to use agricultural production factor efficiently. For this reason, it is required to keep and analyze statistical data related to agricultural sector and farms in macro and micro level [18].

On the nomadic maintenance of the facts contribute to the provision of free feed, but on the other hand one of the problems that farmers are farming technology that causes increased frequency of breeders. This causes the farmers to spend in the process of moving livestock breeders that until now breeders are not aware of it. The cost in question is Transaction cost which includes information cost, Negotiation and Adaptation. The following study was designed as a descriptive study (Descriptive research), a form of research that aimed to describe the phenomena that exist, whether a natural phenomenon or man-made. Thus, the purpose of descriptive research was to make a systematic description, factual and accurate information on the facts and the properties of populations or specific areas, here nomadic duck-raising in the Pinrang Regency, South Sulawesi, Sidrap Regency and Polewali Mandar Regency, West Sulawesi, Indonesia.

## II. MATERIALS AND METHODS

This study was conducted on January 2016 to March 2016 in Pinrang Regency, Sidrap Regency, South Sulawesi Province Indonesia and Polman Regency, West Sulawesi Province, Indonesia. Locations were selected intentionally (purposive sampling) to include areas of a nomadic duck rising. The study population was all the farmers who maintained post-harvest ducks in Pinrang, Sidrap and Polman districts, a total of 412 breeders. The population in this study was all duck farmers. To calculate the sample size, we used the formula as

Follows [20]:  $n = N/1 + Ne^2$

Where:

N = Number of unit in the population

n = Sample size

e = Acceptable error term (10%)

The number of samples used in this study included as many as 80 respondents. Data used in this study was the quantitative data that was in the form of numbers or figures relating to research, such as the number of farmers as a whole, the scale of the business, the number of livestock facilities and infrastructure. The data used in this study were primary data and secondary data, both quantitative and qualitative.

The collected data were tabulated, and analyzed by using SPSS program. A descriptive approach was used to identify the type of transaction costs incurred on the maintenance of nomadic duck breeding in the Pinrang Regency, Sidrapregency, South Sulawesi Province and Polman Regency, West Sulawesi Province Indonesia for different scale enterprises. The analysis of the relationship between transaction costs and business scale in the maintenance of duck moves used Spearman rank analysis.

#### Transaction costs and scale of business

##### Transaction costs on first displacement

The transaction costs first studied were for the removal in Pinrang Regency, South Sulawesi where initially ducks were in Sub district Mattiro Sompe and moved to Mattiro Bulu. Switching between these districts is due to

the fact that the process of rice harvest is not simultaneous across Pinrang Regency, so duck breeders in the district can more fully utilize the leftover rice yields to feed their ducks. The transaction costs for the first removal in the district Mattirosompe, Pinrang Regency indicated Table 1.

Table 1 indicates the expenses of data on a scale of 500-1000 tail sufficiently high on the primary uprooting brought about by the expulsion of the main compensation data for the obtainment of virgin and reproducer ducks before relocating for the most part look for data previously gathered rice field. Exchange costs vary as indicated by the size of business that was expanding and the most elevated in the business scale of 2001-2500 tail, which were IDR 5310000. The expense of adjustment had likewise expanded alongside the size of business which was additionally expanding and the most elevated adjustment rate on the business size of 2001-2500 tail, specifically IDR 7353250.

##### Transaction costs on second displacement

After conducting the business of duck at location which was in the Pinrang Regency then duck farmers will know that in the area Sidrap Regency farmers will harvest in the fields based on the knowledge acquired hereditary cycle rice harvest so that farmers will be negotiated in advance with the owner of land had been harvested before switching and will prepare alternative feed for duck livestock. The type of transaction costs determined for the removal of both obtained in Table 2.

**Table 1: Transaction costs at different scale enterprises in the Pinrang regency.**

Transaction Cost (IDR)	Scale Enterprises (tail)			
	500-1000	1001-1500	1501-2000	2001-2500
Information cost	48185,63	44322,73	43995	48250
Negotiation cost	1636800	3187727	4301500	5310000
Adaptation cost	2781554	4920232	6037495	7353250

**Table 2: Transaction costs in Sidrap Regency.**

Transaction cost (IDR)	Scale Enterprises (tail)			
	500-1000	1001-1500	1501-2000	2001-2500
Information cost	15562,36	16140,91	15745	13250
Negotiation cost	2264051	2955455	3921250	4755000
Adaptation cost	3720585	5517050	6306995	7428250

Table 2 indicates the removal of two flocks of ducks from the Pinrang Regency to Sidrap Regency decrease the cost of information on any scale of business was different, this was due to the removal of ducks did not issue the communication cost of procurement of duck virgin while the costs of negotiation and adaptation costs have increased with the scale are also increasingly increased. Coggan (2013) [21] reported that the information searching costs, the key of transaction costs, consist of costs to work—the measurement of completeness (attributes) was interchangeable. The main attributes of a transaction that create transaction costs were environmental uncertainties associated with a lack of information about the market. Costs incurred at the time of issuing the negotiations will move duck breeder from one district to another district including the provision of fodder to meet the needs of ducks at the age of 1-14 days, or the equivalent of two weeks.

In addition, the procurement of feed is also done in order to meet the consumption needs of ducks at the time the new relocation site had not been harvested. The feed used commercial feed and bran obtained in stores selling animal feed; the intended use of additional feed is to maintain duck egg production. This was done by breeders when the condition of the land was in a crisis phase in terms of lack of feed. The addition of feed was made when the next transfer of the land was still being harvested. Agricultural technology also causes the post-harvest period to become shorter, forcing farmers to move. The second component of the transaction costs for land negotiations indicates that the transfer of the two was greater than the removal of the first and third. The difference was caused by the fact that the price of eggs had increased compared first and second displacement. The number of land owners was also one of the causes of the size of the cost of farmers.

There are more and more landowners, so more land negotiation costs incurred by each breeder. Mburu (2002) [22] looked at transaction costs such as the costs of land, labor, capital, and entrepreneurial skills (entrepreneurship) needed to transfer ownership rights (property rights) of one or a group of people to party to another. In other words, the transaction costs arise because of the transfer of ownership or, more generally, the rights of ownership. If extended to include the cost of the protection of property rights (protection of property rights), [23, 24] consider transaction costs as the costs arise from the creation and implementation of institutional arrangements. Therefore, the transaction

cost was the cost of land, labor, capital, and entrepreneurial skills needed to move (transfer) the physical inputs into outputs.

Negotiations farmers land was given to the board and land owners in the form of duck eggs. This was done so that a good relationship was established and maintained by the farmers, land owners and managers. Duck breeders sometimes give as many as 2-6 duck egg shelves at a price per egg crate around IDR. 50000. The number of eggs given farmers depends on how long the farmers living in the area and the number of farmers' land use (Table 3).

**Table 3: Transaction cost on Polman regency.**

Transaction Cost (IDR)	Scale Enterprises (tail)			
	500-1000	1001-1500	1501-2000	2001-2500
Information Cost	43987,36	21140,91	20745	18250
Negotiation Cost	1723333	2820000	3760000	4700000
Adaptation Cost	8551447	5564323	6282995	7418750

Table 3 indicates the costs of adaptation increases while the information costs and the cost of negotiations are on the wane, due to the transfer to a third no longer need additional information costs and the cost of negotiating components of the costs incurred by farmers before the transfer that the administrative costs in the form of license trip obtained from the local village. Later during the trip expenses such as distribution costs every post highway traffic. These fees were incurred farmers at the time of removal of duck out of the area Pinrang Regency. The cost of obtaining a travel document issued by the agency IDR. 20000, 00 Per car. Then contribute to the Department of Transportation, farmers pay IDR. 5000, 00Per post. The costs incurred breeders every transfer depends on the number of cars used in transfer and a large amount of mail that is passed on the way to a new location. The number of posts that passed until the relocation site on average four posts. In the course of the transfer, all the risks that arise are borne by the duck breeders.

Where the transaction costs for the necessities of life for the ducks were highest in the third removal of IDR. 958,125, while the lowest transaction costs for the necessities of life for the ducks was the first transfer of IDR. 383,250. A number of fees were due to how long a farmer was living in the area and number of family members who took part in the maintenance of duck. The magnitude of the cost of living does not affect the scale of the business, but it will be more efficient because of the larger scale of business, the smaller the cost of farmers.

The living cost was one component of substantial costs incurred when farmers occupy a site or area to maintain their ducks. Costs incurred for subsistence farmers among which amounted to IDR 15000,00/person in the territory of Pinrang Regency, while outside the territory of Pinrang Regency, they were IDR 20000,00 to 25000,00/person. The costs incurred depending on how many family members are involved in the maintenance of ducks and their move. Accompanying family members were at most two people and at least, one person. Large costs were also influenced by the old farmer was at Polman Regency.

For transporting in Pinrang Regency and Sidrap Regency, South Sulawesi Province Indonesia breeders were planted in 14 days, while for the third removal or Polman Regency, West Sulawesi Indonesia old breeders that were planted in 21 days. This is a factor for the cost of living differences in each location.

**The relationship between transaction costs with different duck transfer locations**

In the maintenance of ducks, shifting the ducks to different pieces of land is one of the main factors taken into consideration farmers in the transfer. The difficulty of the transfer to new land resulting in farmers seeking information before transferring the ducks. Different levels of information (asymmetric information) between parties resulted in farmers seeking more specific information in the transfer of ducks. In the process of moving the ducks, farmers surveyed point locations and tried to become well-informed concerning the land and paddy rice harvest information. Besides information on the transfer of land, farmers are also looking for information for purchasing fodder for the needs of 1–14-day-oldducks. Information required ranchers are buying location search of feed and feed prices.

A duck breeder in the transfer does not directly transfer to the site of the transfer of land. Breeders must first create the transfer permit obtained from local agencies. Then the means of transportation used in the transfer of farmers who were key requirements that must be prepared breeder before transfer.

A letter must be written and fees calculated based on the number of vehicles used in the transfer of breeder ducks. The function of the letter, based on the results of the research, is in order that breeders avoid raids conducted by the authorities. Then the cost of the other negotiating rental car rates into consideration before agreed. The adaptation cost breeders are also referred to as the cost of adjustment to maintenance during the duck move. When changes occur in cattle raising ducks will then give their consequences in the form of transaction costs of adaptation. The changes that occur in raising ducks are additional costs in the form of necessities of life due to changes in the place of domicile.

Then the breeder actual land used for free but with sustainability in land use farmers makes adjustments with the owner of the land site.

Adaptation costs in maintenance duck breeder move about are the cost of adjustment the environmental conditions that were occupied. Breeders incur additional costs in the form of the necessities of life as a result of changes in the area occupied in raising livestock breeder duck. Then the breeders sometimes give negotiations land to farmers or local residents to make adjustments to the residents, especially landowners and land administrators.

The transaction fee is the cost of information, the cost of negotiating and adaptation costs, which largely increase along with the size of the business scale of duck maintained by duck farmers nomadic (moving) and that have a relationship very closely, namely the cost of negotiation and adaptation costs with the scale for the removal of duck is different.

Duck farmers who undertake the removal of duck from the Pinrang Regency to Sidrap Regency and further to the Polman Regency, West Sulawesi Province Indonesia have costs including transaction costs. The relationship between the scale of business and transaction costs indicated in Table 4.

**Table 4: Relationships scale of business and transaction costs for the removal of duck.**

Sr. No.	Type of transaction costs	Spearman Rank Value on the business scale is different for each removal			Interpretation of correlation level (Guilford)
		Displacement 1 (Pinrang Regency)	Displacement 2 (Sidrap regency)	Displacement 3 (Polman regency)	
1.	Information cost	-0,123	-0,026	-0,026	Very weak
2.	Negotiation cost	0,960	0,937	0,949	Very strong
3	Adaptation cost	0,852	0,810	0,813	Very strong

Table 4 indicates the costs of negotiation and adaptation have a very strong relationship in the business scale, and are different between the removal of the Pinrang Regency then Sidrap Regency, South Sulawesi Province and subsequent removal of the latter to Polman Regency, West Sulawesi Province. Negotiation cost arises from the physical act of the transaction and were influenced by the way in which the transaction is carried out. Acharya [25] gave an example that opportunity cost of the time that procurement staff takes to locate supplies of cattle was negotiation cost. Dovie and Shackleton [26] observed that the long travel distances involved to reach a market was a disincentive for most producers with small surplus to sell. When the condition of the roads was poor, transporters increase fees to compensate for damages to their vehicles emanating from the use of such roads [27]. Rahman [28] presented the partnership broiler transaction costs highest was the cost of adaptation and affect the income of plasma breeders. That farms zise was positively related to economic, technical and profitabilitability criteria and negatively related to high sale prices [29, 30].

### III. CONCLUSION

The first transfer (Pinrangregency) the highest transaction cost was the adaptation cost IDR.7353250,00 on the scale 2001-2500 tail, the second transfer was for Sidrap Regency the highest transaction cost was the adaptation cost of IDR.7428250,00 on the scale 2000-2500 tail and on the third transfer (Polman Regency) the highest transaction costs was the adaptation cost of IDR 8551447 on a business scale of 500-100 tail. Transaction costs that are very strongly related to the scale of business are negotiation costs and the costs of adaptation while those that are associated with very weak business scale are information costs.

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Author's contribution Sitti Nurani Sirajuddin created the idea, designed the study and drafted the manuscript.

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Aslina Asnawi and St Rohani collected data and performed statistical analysis. Kasmiyati Kasim, Ilhamrasyid and Mahyuddin Rahman created the idea and designed the study.

**Conflict of Interest.** No.

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