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Original Research Article

Transaction Cost Analysis of Maize in Bangladesh

ABSTRACT

The present study analyzed the transaction cost in maize marketing this is the first and foremost study on transaction cost in Bangladesh which will help researchers and concerns to study further on it and helps farmers to consider transaction cost as separate cost. It identified five components (search cost, screening cost, bargaining cost, monitoring cost and enforcement cost) of transaction cost in channeling maize from framers to feed mills. It was found that, total transaction cost incurred by all the intermediaries was Tk. 33.02 per 100 kg of maize. Among these cost items monitoring cost was highest (31.78%) and search cost was the lowest (11.53%). Enforcement cost incurred by the intermediaries per 100 kg of maize was Tk. 0 (zero) because no intermediary was found who do business on contract with other intermediaries for transferring maize to the feed mills. Transaction cost incurred for trading 100 kg of maize by Farmers, *Farias*, wholesalers, *Aratdars* was Tk. 2.82, Tk. 9.95, Tk. 12.91 and Tk. 10.16, respectively. Among all intermediaries, transaction cost for *Farias* was lowest and highest for wholesalers.

Keywords: Search cost, screening cost, bargaining cost, monitoring cost, enforcement cost

1. INTRODUCTION

Maize is the third most important crop after rice and wheat among the cereals grown in Bangladesh. In 2013-14, it is grown on an estimated area of 759 thousand acres with an annual production of 2123 thousand metric tons (BBS, 2016). Maize has always been considered as a minor crop in Bangladesh which was always out of comprehensive research. But in recent times demand of maize has been increased for poultry feed industry and focus on maize was also enhanced. The farmers producing maize is not getting fair profit margin due to various reasons like poor transportation facilities, poor marketing facilities, presence of middlemen etc. is a well-known scenario of Bangladesh. To provide fair profit margin and to encourage them in maize production and marketing various researches have been conducted in Bangladesh. There is relatively new dimension in the research of maize is transaction cost analysis. Transaction costs which include search cost, screening cost, negotiation or bargaining cost, monitoring cost and enforcement cost in marketing process is generally unobserved by marketing functionaries. Market participants though incur this cost but sometime are not aware about this cost. When farmers or intermediaries calculate profit margin of their marketing activities they do not include this cost due lack of understanding. This study is little initiative which will help to identify and understand these costs.

1.1 Transaction Cost Concept

The cost incurred in the exchange of goods from the producers to consumers is the transaction cost. There are five components of transaction cost as search cost, screening cost, negotiation cost, monitoring cost and enforcement cost. It has various meanings and explanations. Some authors (for example, Kähkönen & Leathers, 1999; Holloway et al., 2000, Staal et al., 1997 cited in de Silva & Ratnadiwakara, 2008) defined it as all cost involved in transacting a product. Some authors (for example, Coase, 1937, Hobbs, 1997, Staal et al., 1997 cited in de Silva & Ratnadiwakara, 2008) defined it as negotiation, monitoring and information cost. More specifically, Singh (2008), cited in de Silva et al. (2008) proposed that transaction cost is costs which is associated with market exchange. In seven decades ago that Coase (1937), cited in de Silva et al. (2008) introduced the concept of transaction cost associated with information, negotiation, monitoring, coordination, and enforcement of contracts. Based

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on this transaction cost items faced by individual farms, Coase theorized the natural emergence of intermediary farms to reduce this cost.

Building on Coase, Hobbs (1997), cited in de Silva et al. (2008) had classified the components of transaction cost in relation to the transaction: information cost as arising before the transaction; negotiation cost as the cost of physically carrying out the transaction; and monitoring cost as cost of ensuring that the terms of the transaction are adhered. Again, from a different perspective, Key et al., (2000), cited in de Silva and Ratnadiwakara (2008) defined transaction cost as fixed and proportional or variable transaction cost. Fixed transaction cost included the original search, negotiation and enforcement cost that are invariant to the volume of input as well as output.

Staal, Delgado and Nicholson (1997), cited in de Silva et al. (2008) classified the transaction cost into observable and unobservable transaction cost. The observable transaction cost included marketing cost such as transport, handling, packaging, storage, spoilage etc. that were visible when a transaction takes place. Unobservable transaction cost includes cost of information search, bargaining, and enforcement of contracts etc. Holloway et al. (2000), cited in de Silva and Ratnadiwakara (2008) distinguish transaction cost between tangible (transportation cost, communication cost, legal cost, etc.) and intangible (uncertainty, moral hazard, etc.) cost. Holden and Ghebru (2005) supposed that transaction cost in the land rental market may depend on many factors; Trust among (potential) partners in the land rental market. Trust may depend on cultural norms (for control of moral hazard), kinship relations among partners, previous trading experience, and information available about the (potential) partner (reputation). Transaction cost is likely to be reduced as trust increases and trust may increase with knowledge and experience from earlier contracts with the partner (as long as contracts are renewed) and may be higher among kin than non-kin. Search, screening and negotiation cost are related to finding a partner (matching process). These may be seen as fixed up-front cost that may be especially high the first time a potential landlord or tenants attempt to enter the market and find a partner. These costs are therefore not likely to be affected much by the size of the land transaction although the loss from not doing a good job first will be larger in the case when the transaction is large. The cost per unit of land will decline with the size of the land transacted. Monitoring and enforcement cost related to following up the contract agreement may depend on the type of contract chosen, the distance between the homes of the partners and the land subject to contract, the level of trust among partners and the determinants of trust. This transaction cost may be non-convex (the cost per unit of land tend to decrease with the size of the land transacted).

North (1990), cited in Cormier (2001) defined ‘transaction cost’ as the cost involved in exchange or trade (E.g. marketing cost), cost of intangibles (e.g. search for exchange partners), contract monitoring and enforcement. Transaction cost can be explicit and/or implicit. Explicit transaction cost includes transport cost, for example bus fares, while implicit transaction cost includes the opportunity cost of time spent searching for new partners or customers, gathering market information, travelling and waiting time. The implicit cost is usually higher, suggesting that proximity to institutions such as markets and banking facilities is crucial.

Jaffee and Morton (1994), cited in Kähkönen & Leathers (1999) listed following categories to apply transaction cost concept in agriculture:

• Search cost is the cost associated with identifying and contacting potential buyers and sellers.

• Screening cost is the cost associated with gathering information about the reliability of a particular buyer or seller, and the quality of the goods being transacted.

• Bargaining cost is the cost of gathering information on prices in other transactions, on factors that might influence the willingness to bargain by the other parties to the transaction, on implications of contract terms, etc.

• Monitoring cost includes the cost associated with monitoring contract performance.

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• Enforcement cost is the cost incurred in insuring that contract provisions are met. This includes the cost associated with default provisions in contracts.

• Transfer cost includes transport, storage, processing, retailing, and wholesaling cost. This also includes the cost associated with commodity losses in storage and transport.

From the above discussions, the author identified following items for measuring the transaction cost in maize marketing:

i. Search cost which is associated with identifying and contacting potential buyers and sellers.

ii. Screening cost which is associated with gathering information about the reliability of a particular buyer or seller, and the quality of the goods being transacted.

iii. Negotiating or bargaining cost is the cost of gathering information on prices in other transactions, on factors that might influence the willingness to bargain by the other party to the transaction, on implications of contract terms, etc.

iv. Monitoring cost includes the cost associated with monitoring contract performance and cost of labor that monitors the delivery of the product.

v. Enforcement cost is the cost incurred in insuring that contract provisions are met. This includes the cost associated with default provisions in contracts.

2. METHODOLOGY

Selection of study area is an important step for any study. Sughatta and Fuchhari upazilas of Gaibandha district were selected for this study on the basis of potential area for maize production and marketing. By using the same criteria two unions from each upazila were purposively selected for collecting primary data. The selected unions of the upazilas were Bonarpara, Vorotkhali (Sughatta upazilla), Gojaria, Fulchhari (Fulchhari upazilla). Both the maize farmers and intermediaries (*Farias*[1], wholesalers and *Aratdars*[2]) from each upazila were selected purposively. A number of 13 farmers (7 from Sughatta and 6 from Fulchhari upazila, respectively), 10 *Farias* (5 from Sughatta and 5 from Fulchhari upazila, respectively), 15 wholesalers (8 from Sughatta and 7 from Fulchhari upazila, respectively) and 12 *Aratdars* (6 from Sughatta and 6 from Fulchhari upazila, respectively) were interviewed through a structured interview schedule for collecting primary data for the study during August of 2012. Secondary data were collected from different published and unpublished sources during October 2012.

2.1 Transaction Cost Measurement

The data on following items of transaction cost were collected from the farmers and intermediaries.

[1] *Farias were found in the study area who purchased maize from producers at the farm gate or in the local village market and sold to the wholesalers and Aratdars. They did their business independently and were self-financed in maize trading. Apart from maize trading most of the Farias were engaged in trading of other agricultural commodities such as paddy, jute, wheat etc. They had no permanent staff.*

[2] *Aratdars were the last intermediary in the channel before feed mills or ultimate users of maize of the study. They had permanent business premises in the upazila market. They purchased maize from Farias and wholesalers. Sometimes, they bought wet maize from the farmers on the understanding that the farmers could ask them for immediate cash any time. They supplied dry maize to the feed mills within one to two days of taking an order. Generally, the agent of feed mills came to the Aratdars' premises for taking maize and sometimes sent purchase volume through truck or pick-up along with the buying receipt and the feed mills paid money later. Then the Aratdars sent maize to the feed mills as their purchase volume and collected money at the notified date. The Aratdars stored maize for some days, if undelivered, at their business premise. The average period of storage varies from three to four months.*

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• Search cost information was obtained from farmers by measuring their mobile cost only for contacting to the buyers. For buying party this cost was measured as their mobile cost only used for buying maize from farmers or other intermediaries.

• Screening cost was measured by the cost of personal visit to the expected or potential buyers.

• Negotiating or bargaining cost was measured by the entertainment cost incurred in the time of bargaining price or other terms between buying and selling parties. The entertainment cost was collected as the bargaining cost.

• Monitoring cost was obtained by cost of labor that monitors the delivery of the product. When two parties negotiated they decided about transport cost and price. Generally, the buying parties, who bore the transport cost, bore that monitoring responsibility or cost.

• Enforcement cost was collected by the cost of contracting.

Total transaction cost of farmer or middlemen was computed by the following formula:

Ct = Cs + Cs+ Cn + Cm + Ce

Where,
Ct = Total transaction cost
Cs = Search cost
Cs = Screening cost
Cn = Negotiation or bargaining cost
Cm = Monitoring cost
Ce = Enforcement cost

3. RESULTS AND DISCUSSION

The cost incurred in the exchange of goods from the producers to consumers is the transaction cost. This section presents the results of different components of transaction cost in maize marketing.

3.1 Transaction cost of farmers

3.1.1 Search cost

Total transaction cost incurred by the farmers was Tk. 2.82 for exchanging 100 kg of maize. They had to incur Tk. 0.91 per 100 kg of maize for searching potential buyers in the study area which was 32.12% of total transaction cost (Table 1). The buyers of maize were *Farias*, wholesalers and *Aratdars* who were familiar to farmers as they were from the same locality. For this reason, the search cost was very little. Many of the farmers were actually reluctant to acknowledge this as a separate cost. Only the mobile cost was found as search cost because the mobile phone was often used to search the potential buyers.

3.1.2 Screening cost

Screening cost incurred by farmers was Tk. 0.96 per 100 kg of maize (33.94% total transaction cost) (Table 1). Farmers sold their maize to more or less reliable buyers like *Farias*, wholesalers, *Aratdars* in their nearest market. This reliability or trust was created because they transact with them from many years or past experience. When they sold their maize to distant buyers they had to incur some cost for knowing about their reliability through personal visit to other farmers or buyers.

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Table 1. Transaction cost of farmers (Tk. per 100 kg)

Cost items	Average cost	Percentage of total cost
Search cost	0.91	32.12
Screening cost	0.96	33.94
Bargaining cost	0.96	33.94
Monitoring cost	0	0
Enforcement cost	0	0
Total	2.82	100

Source: Field Survey, 2012.

3.1.3 Bargaining cost

Bargaining cost incurred by farmers was Tk.0.96 per 100 kg of maize (33.94% total transaction cost) (Table 1). Bargaining between farmers and *Farias* was done at farmers' residence or Bazar. Bargaining between farmers and *Aratdars* or *Farias* or wholesalers was done at farmers' residence. So, farmers had to incur some cost for their entertainment like Pan, Bidi, cigarette etc.

3.1.4 Monitoring cost

Farmers did not incur monitoring cost because after selling the maize it was the responsibility of buyer to monitor the delivery of maize.

3.1.5 Enforcement cost

Farmers did not incur enforcement cost because they did not trade maize in contractual arrangement.

In case of farmers screening cost and bargaining cost was same and highest. Monitoring cost and enforcement cost was absent.

3.2 Transaction Cost of *Farias*

3.2.1 Search cost

Farias bought maize from farmers and sold those to wholesalers and *Aratdars*. Total transaction cost incurred by *Farias* was Tk. 9.95 for marketing of 100 kg maize. Average cost incurred by them was Tk. 1.42 for searching wholesalers and *Aratdars* which was 14.25% of total transaction cost (Table 2). In the study area the *Farias* were available at Vorotkhali (Sughatta upazilla) and Fulchhari (Fulchhari upazilla) market. The search cost was negligible in Vorotkhali and Fulchhari market. But when they tried to sell their maize in Bonarpara (Sughatta upazilla) market they had to incur little transaction cost because the buyers of Bonarpara were not familiar to them.

Table 2. Transaction cost of Farias (Tk. per 100 kg)

Cost items	Average cost	Percentage of total cost
Search cost	1.42	14.25
Screening cost	3.74	37.60
Bargaining cost	2.84	28.55
Monitoring cost	1.98	19.90
Enforcement cost	0	0
Total	9.95	100

Source: Field Survey, 2012.

3.2.1 Screening cost

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Farias incurred screening cost per 100 kg of maize was Tk. 3.74 which was 37.60% of total transaction cost (Table 2). *Farias* generally visit to wholesalers and *Aratdars* or other *Farias* to know about the buyers. During their personal visits, they had to incur this cost.

3.2.1 Bargaining cost

Bargaining cost incurred by *Farias* was Tk. 2.84 per 100 kg of maize (28.55%). When the buyers or wholesalers /*Aratdars* came to *Farias*' house, they bargained about the price and in that case the *Farias* arranged some entertainment like Pan, Bidi, cigarette, tea etc.

3.2.1 Monitoring cost

Farias incurred monitoring cost of Tk. 1.98 for per 100 kg of maize which was 19.90% of total transaction cost (Table 2). The *Farias* generally monitored the delivery of their maize. If there were damage or wastage of maize, they had to bear the responsibility of their own.

3.2.1 Enforcement Cost

Farias did not incur any enforcement cost because they did not trade maize in contractual arrangement with wholesalers or *Aratdars*. Contract farmers or contract businessmen were absent in the study area.

In case of *Farias*, screening cost was highest and the enforcement cost was zero, because they did not buy or sell maize in contract basis.

3.3 Transaction Cost of Wholesalers

3.3.1 Search cost

Wholesalers bought maize from farmers and *Farias* and sold those to *Aratdars* and feed mills. The feed mills were situated in Ghoraghat (Dinajpur district), Bogra and Dhaka. The *Aratdars* were situated in Vorokhali, Sughatta, Bonarpara and Fulchhari market. Wholesalers contacted with the feed mills over phone; with *Aratdars* over phone and personal visit. The search cost incurred by wholesalers per 100 kg of maize was Tk. 1.63 which was 12.62% of total transaction cost. It was mentioned earlier that wholesalers collected maize from various farmers and *Farias* from various places, for that reason they had to contact with them which increased their search cost.

Table 3. Transaction cost of wholesalers (Tk. per 100 kg)

Cost items	Average cost	Percentage of total cost
Search cost	1.63	12.62
Screening cost	3.46	26.80
Bargaining cost	3.36	26.02
Monitoring cost	4.47	34.57
Enforcement cost	0	0
Total	12.91	100

Source: Field Survey, 2012.

3.3.2 Screening cost

Screening cost incurred by wholesalers per 100 kg of maize was Tk. 3.46 which was 26.80% of total transaction cost.

3.3.3 Bargaining cost

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Bargaining cost incurred by wholesalers was Tk. 3.36 per 100 kg of maize which was 26.02% of total transaction cost. When the buying party or feed mills/*Aratdars* came to wholesalers' premises to buy wet or dry maize, they bargained about the price and in that case the wholesalers arranged some entertainment like Pan, Bidi, cigarette, tea, biscuits etc. The wholesalers also had to incur bargaining cost when the farmers and *Farias* came to their premises to sell their maize or to fix a price of maize.

3.3.4 Monitoring cost

Wholesalers incurred monitoring cost per 100 kg of maize was Tk. 4.47 which were 34.57% of total transaction cost. The wholesalers generally monitored the delivery of their maize by their own. Sometimes they had a person or labor to ensure the delivery of maize to the feed mills or *Aratdars*' premises. Who would bear the wastage cost was also determined during the bargaining period, if there any damage or wastage of maize after selling.

3.3.5 Enforcement cost

Wholesalers did not incur any enforcement cost because they did not trade maize in contract with feed mills or *Aratdars* in the study area. There was no contract business between wholesalers and other intermediaries.

In case of wholesalers screening cost was also highest and the enforcement cost was zero, because they did not buy or sell their maize in contract basis.

3.4 Transaction cost of *Aratdars*

3.4.1 Search cost

The search cost incurred by *Aratdars* for 100 kg of maize was Tk. 0.76 which was 7.46% of total transaction cost. That cost was negligible because the *Aratdars* were more familiar to feed mills and the feed mills were also familiar to *Aratdars*. The *Aratdars* were doing business with the feed mills for a number of years. Before selling maize to feed mills they generally contact with the feed mills over phone and fix a price. Since they sell huge volume of dry maize, then their average cost was decreased to negligible amount.

Table 4. Transaction cost of *Aratdars* (Tk. per 100 kg)

Cost items	Average cost	Percentage of total cost
Search cost	0.76	7.46
Screening cost	3.07	30.15
Bargaining cost	2.28	22.46
Monitoring cost	4.06	39.93
Enforcement cost	0	0
Total	10.16	100

Source: Field Survey, 2012.

3.4.2 Screening cost

Screening cost incurred by the *Aratdars* per 100 kg of maize was Tk. 3.06 was 30.15% of total transaction cost. *Aratdars* contacted to the feed mills for selling their maize over phone. Arartdars generally discuss with other *Aratdars* to know about the feed mills whether they were reliable or not. The *Aratdars* contacted to the farmers, *Farias* or wholesalers during buying maize. The *Aratdars* sometimes paid advance payment to the farmers, *Farias* or wholesalers to buy maize. Before advance payment to farmers

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or *Farias* or wholesalers, they knew about them through discussing with other *Aratdars* or through personal visit to them. In that purpose the *Aratdars* incurred screening cost. *Aratdars* had to maintain a good relationship with other Arartdars, farmers, *Farias* or wholesalers for their business and for that reason they had to incur some screening cost.

3.4.3 Bargaining cost

Bargaining cost incurred by *Aratdars* was Tk. 2.28 per 100 kg of maize which was 22.46% of total transaction cost. When the buying party or agent of feed mills came to *Aratdars*' place to buy dry maize, they bargained about the price and in that case the *Aratdars* arranged some entertainment like Pan, Bidi, cigarette, tea, biscuits etc. for refreshment of the agent of feed mills or buying parties.

3.4.4 Monitoring cost

Aratdars incurred monitoring cost per 100 kg of maize was Tk. 4.06 which was 39.93% of total transaction cost. The monitoring responsibility of the *Aratdars* was carried by salaried labors. After selling maize the monitoring responsibility handed over to the feed mills' agent or the buying party. Who will bear that cost, was also determined during pricing or bargaining time.

3.4.5 Enforcement cost

Aratdars did not incur any enforcement cost because they did not trade maize in contract with feed mills. Sometimes they sold their maize to feed mills on credit or by taking order but no cost was incurred. Again *Aratdars* paid advance payment for buying maize from farmers, but no cost was incurred for that.

Among the transaction cost items monitoring cost was highest and enforcement cost was lowest in the study area.

3.5 Total Transaction Cost of All Intermediaries

Different items of transaction cost for different intermediaries are presented in Table 5. Table showed that, total transaction cost incurred by all the intermediaries was Tk. 33.02 per 100 kg of maize. Search cost incurred by the intermediaries was Tk. 3.80 for 100 kg of maize which was 11.53% of total transaction cost incurred by the intermediaries. Screening cost incurred by the intermediaries was Tk. 10.26 for 100 kg of maize which was 31.08% of total transaction cost. Bargaining cost incurred by the intermediaries was Tk. 8.48 for 100 kg of maize which was 25.69% of total transaction cost incurred by them in maize trading. Monitoring cost incurred by the intermediaries was Tk. 10.50 for 100 kg of maize which was 31.78% of total transaction cost incurred by them. Enforcement cost incurred by the intermediaries per 100 kg of maize was Tk. 0 (zero) because no intermediary was found who do business with some other intermediaries for transferring maize to the feed mills.

Table 5. Transaction cost of maize for different intermediaries (Tk. per 100 kg)

Cost items	*Farias*	Wholesalers	*Aratdars*	Total Cost	Percentage
Search cost	1.42	1.63	0.76	3.80	11.52
Screening cost	3.74	3.46	3.06	10.26	31.08
Bargaining cost	2.84	3.36	2.28	8.48	25.67
Monitoring cost	1.98	4.46	4.06	10.50	31.80
Enforcement cost	0	0	0	0	0
Total	9.95	12.91	10.16	33.01	100
Percentage	30.13	39.10	30.76	100	

Source: Field Survey, 2012

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Average transaction cost incurred by all the wholesalers, *Aratdars*, and *Farias* for trading 100 kg of maize was Tk. 12.91, Tk. 10.16 and Tk. 9.95, respectively. Transaction cost for *Farias* was lowest among all intermediaries because during buying maize they had to contact only with the farmers. During selling of maize they contacted with *Aratdars* and wholesalers who were more familiar to them. In case of *Farias* the bargaining or entertainment cost to entertain the buyers was less since they did not have permanent shop or premise and they were temporary, as a result there was a little chance to bargain with the buyers or sellers of maize. Transaction cost for wholesalers was highest among all intermediaries. Wholesalers had to move to more participants like farmers and *Farias* for buying maize and *Aratdars* and feed mills for selling maize. They had to contact with more participants or bargain with for buying and selling maize than other intermediaries. Transaction cost for *Aratdars* was in between the transaction cost of *Farias* and wholesalers. They had to move to more participants or bargain to more intermediaries. But during maize selling they contacted only with the feed mills. In that case, they were in better position than wholesalers. They had to incur more transaction cost, but because of their high volume of buying and selling the average cost were very little.

4. CONCLUSION AND RECOMMENDATION

In Bangladesh, no study was conducted on transaction cost. The present study tries to analyze it for maize in a small area (Gaibandha) of the country. This may help in opening further scope of research on transaction cost. It was difficult to clearly separate the different cost items in measuring their influence in total transaction cost. Enforcement cost was zero (Tk. 0) for all intermediaries and farmers. Monitoring cost was highest for wholesalers and *Aratdars*. Screening cost was the highest cost item for *Farias*. Screening cost and bargaining cost was same in case of farmers. Wholesalers were the highest bearer of transaction cost in the study area and *Farias* and *Aratdars* were equal. Transaction costs incurred by farmers and intermediaries must be considered as a separate cost item in measuring farmers' profit margin which is not considered previously.

Based on these above discussions following recommendations can be made:

I. Screening cost was found to be highest cost item associated with gathering information about the reliability of a particular buyer or seller and the quality of the goods being transacted can be minimized by maintaining an accurate and complete database of maize framers and traders.

II. Marketing information should be available to the farmers and traders. For this purpose, Department of Agricultural Marketing (DAM), Ministry of Food and Disaster Management (MoFDM) as well as Ministry of Agriculture (MoA) and other concerned government organizations may be entrusted with more responsibilities of disseminating market and price information. An accurate and complete database of maize traders should be maintained which will help the farmers to lessen the cost of searching the potential buyers.

III. Transaction cost should be considered a separate cost item in the calculation of marketing cost and margin of maize farmers and intermediaries.

IV. A clear marketing rules should be maintained by Department of Agricultural Marketing (DAM) and there should be a clear provision about monitoring cost i.e. who will bear the cost either buyer or seller, who will bear the loss in case of any loss or damage of the product which may help to minimize negotiation and bargaining cost.

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