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**Rice Trading in Madagascar:  
Report on Rice Trader Survey 2011**

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# **Rice Trading in Madagascar: Report on Rice Trader Survey 2011**

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## 1. Introduction

Needless to say, rice is by far the most important staple food in Madagascar, and hence rice is produced, traded, and consumed everywhere in this country. According to FAOSTAT, Malagasy rice production stagnated at about 2 million tons per year during the 1990's, but since 2000 rice production has been increasing continuously reaching at 4.74 million tons per year in 2010. The amount should be sufficient to feed all the population assuming that 140 kg of milled rice is annually consumed per capita. Nevertheless, consumer price of milled rice shows very strong seasonality and rice has to be imported every year during the lean season to stabilize the rising price. These are the signs of inefficiency in rice market. If the market were more efficient, rice would be supplied to markets when its price is high and the market price would become lower quickly. An efficient market would also transmit a high price to producers, providing them with incentive to produce more rice.

Various forms of transactions costs in the market are considered to be the cause of the inefficiency. High transactions costs are often due to poor roads that increase transportation costs: time and fuel are consumed much and vehicles are worn out rapidly. But costs related with marketing should also take significant part of transactions costs, such as costs for searching sellers and buyers, getting price information of each market, enforcing contracts, protecting from robberies and thefts, etc. It depends on how significant the latter types of transactions costs are, but it is quite probable that the improvement of road infrastructure can have only a small impact on the reduction of transactions costs if other costs remain unchanged. Therefore, it is important to tackle the costs for marketing if we want to make the market more efficient.

Because of the perceived relevance, transactions costs in agricultural markets have been studied in many countries including Madagascar. In the case of Madagascar, transactions costs due to contract enforcement and the risk of thefts were already analyzed and the role of traders' network to reduce transactions costs was also investigated. However, it is still little known how traders behave in the markets with high transactions costs, for example, how they know the prices in the market, how they search buyers and/or sellers with whom they trade, how they examine the quality and quantity of rice before purchasing, what kind of informal arrangements or institutions that govern traders' conducts is existing, and so on. Of course there are many anecdotes about them, but there is no data systematically collected from all over the country. All the existing studies in Madagascar use data collected more than 10 years ago in selected a few regions. But as described at the beginning, rice production in Madagascar has increased significantly in the last 10 years, and in addition information technologies that may reduce some part of transactions costs such as cellular phone and Internet have developed tremendously during the same period. Therefore, if we are to develop strategies to enhance efficiency in rice market, we need to know the current situation of Malagasy rice market based on newly collected data from all the markets representing this country.

To gain information on the rice market in Madagascar, we conducted a survey in which we

interviewed as many rice traders as possible in 31 major cities all over Madagascar. This report characterizes all the important rice markets and the traders selling/buying rice in the markets. We gained general information regarding the rice market in Madagascar, such as the market institutions in each district capital as well as the characteristics and behavior of the rice traders. In particular, we attempted to collect information that would shed light on the behavior and decision making behind regional arbitrage of the rice traders. As far as we know, this is the first comprehensive rice market information in Madagascar and therefore, this is the essential first step to improve rice market in Madagascar.

The report is organized as follows. Section 2 describes the survey and data. Section 3 summarizes the institutional characteristics of the 31 markets surveyed. Section 5 and 6 reports the results of the characteristics and behaviors of retailer/wholesalers and inter-district traders. Section 6 describes the regional extent of rice trade using information on origin and destination of rice. Section 7 characterizes 31 markets based on factors affecting transaction costs in rice trading, and Section 7 concludes.

## 2. Survey and data

The objectives of the survey are to collect information to grasp the current situation of the rice market in Madagascar, and to unravel the behavior of the rice traders who are engaged in regional arbitrage. In particular, we collected information on price of rice in each district capital, regional flow of rice. As for the rice trading behavior, we paid attention to aspects that affect transaction costs of regional arbitrage, such as costs related to search and matching, product verification, and contract enforcement.

We conducted a preliminary survey for about two weeks in April 2011, covering 26 selected important rice markets in Madagascar. Then, during the whole month of August 2011, the research team were engaged in the preparation for the main survey, including the development of its design, the creation of its questionnaires by repeated interviews and testing in major markets in Sofia region, and the implementation of training session in Antananarivo for INSTAT (Institut National de la Statistique de Madagascar) staff who worked as enumerators. The main interviews were implemented in September 2011.

We selected 31 district capitals (cities) out of 111 district capitals in Madagascar: they include all the region capitals (22 cities) and 9 district capitals selected in Antsiranana and Mahajanga ex-provinces (see **Table 0** for the list of selected cities and **Figure 0** for the location of each region in Madagascar). Since all the region capitals are included, the sample covers most of populated cities in Madagascar. Another 9 district capitals are selected from rice surplus regions from which rice is exported to consumer markets.

The survey consists of four types of survey: market survey, retailer survey, wholesaler survey, and inter-district trader (truck) survey. The market survey collects general information about the main rice market in each district capitals from those who are in charge of market management such as the market head and the president of traders' organization. The retailer survey collects information from rice retailers/wholesalers in the main rice market. At the time of interview, we do not distinguish between retailers and wholesalers because quite often one trader has both functions. Wholesaler survey collects information from large wholesalers that are independently located outside the main rice market. Inter-district traders collect rice in producing districts, transport to consumer markets by trucks, and sell it to wholesalers and retailers, often at the parking place near the main rice market. Inter-district trader (truck) survey collects information from such truck traders.

One supervisor and three enumerators constitute a survey team. After arriving in an assigned city, the survey team has to identify the main rice market of the city, the location of rice retailer/wholesaler clusters in the market, the location of wholesalers outside the market, and the location of truck parking where inter-district traders sell rice. Then, within 3 days they are supposed to interview as many rice retailers, wholesalers, and truck traders.

As a result, we collected information from 1,142 retailers/wholesalers in the market and 102 wholesalers outside the market from 31 district capitals. We also interviewed 54 inter-district traders in 15 cities, who came from 23 different districts. **Table 1** summarizes the number of observations.

### 3. Summary of Market Survey

#### 3.1. Facilities of Main Rice Market

As shown in **Table 2** and **Table A1** in Appendix, the number of markets varies from 1 to 8 among the 31 cities with an average of 2.42. In each city, we selected only one market, which is considered to be the "main rice market of the city" according to the commune staff, local INSTAT staff, and rice traders. The number of market days per week of the selected main rice market also varies from 1 to 7 with an average of 3.35 days. As shown in **Table A1**, Thursday is the most popular for market day, and Tuesday follows. Although the mean of market area ( $m^2$ ) of the selected main rice market is  $11,728 m^2$  as shown in **Table 2**, it has a huge variation as shown in **Table A1**, among which some are officially documented at the commune level, while the others are estimated by commune staff at the time of interview. Although the area is supposed to be the whole area of the selected market, some markets seem to report the area of the cluster of rice traders and hence there is such a huge variation. But even if we correct it by eliminating too small ones (e.g. those less than  $1,000 m^2$ ), the physical size of the market place still differs a lot.

**Table 3** shows basic facilities in the 31 market. For detailed information, please refer to **Table A2** in Appendix. Even piped water supply and toilet are not found in all the market: 77% of the

markets are equipped with the former and 65% of the markets are equipped with the latter. Truck parking space and public warehouse will physically facilitate rice trading, but limited number of rice markets are equipped with them. Concerning price information, only 2 markets are collecting price information, and no market has a commodity price bulletin board, indicating that market administrators do not think that they are important public functions of the market.

All the markets we identified were established and administered by the respective commune, and therefore staff working in the market are hired by the commune. The mean number of staff is shown in **Figure 1** by function. It shows that on average, full time staff for market cleaning and fee collection are more than other staff. Then, in terms of average number of full time staff, market administration staff and police follow. On the other hand, part time staff seem to be used for facility maintenance according to **Figure 1**. **Tables A3 and A4** shows more detailed tendency. First, there are only two markets that have no full time staff for fee collection and five markets that have no full time staff for administration. Even in the case of “zero”, the commune collects fee and administers the market, and therefore “zero” implies that those staff are in charge of not only the selected market, but other markets or other tasks for the commune. On the other hand, there are a lot of markets that have no full time police or cleaning staff as shown in **Table A3**, which means that police and cleaning staff in the commune are not for the particular market but for the commune as a whole. Price monitoring staff is seldom available as expected from **Table 3**, and fire-fighting and security are not so common either. As for part time staff, although the average number of facility maintenance staff is much higher than others as shown in **Figure 1**, it is because of the market of Taolagnaro that hires 60 part time staff for facility maintenance as shown in **Table 4A**. Otherwise, the selected markets do not hire many part time staff for market management.

### 3.2. Shop Space and Fee Collection of Main Rice Market

As mentioned above, all the markets are under the management of commune government, and therefore, the respective commune government without exception collects fee from traders (**Table 4**). The amount of fee depends on the category of the shop space and the categorization differs in each market. Generally, there are two ways of categorization: one is based on shop location/structure and the other is based on the products traded. Among the 31 markets, 26 markets adopt the former type of categorization, and only 5 markets adopt the latter type (**Table 4**). The number of shop categories is generally smaller in the case of former type of markets than in the case of latter type of markets (**Table 4**). Please refer to **Table A5** for detailed information.

Shop space categories found in the 31 markets are classified and shown in **Table 5**. The most commonly found category is “pavillon”: there are 36 pavillon cases including product specific ones such as “pavillon for butcheries.” Pavillon (or pavilion in English) means a specific type of shop space that is fixed in a big market building. Out of 31 markets surveyed, there are only 4 markets

that do not have “pavillon” category. It means that some markets have several different pavillon categories like product specific ones mentioned above. Unlike pavillon, stalls and tables are not fixed structure. They can be established under a big roof or in an open space. Both stalls and tables should exist in every market in Madagascar, but the frequencies are less than 31 because in some markets they are categorized in “open space” or under product specific categories. Then, the fourth category is “on the floor.” In this case, traders do not have any shop, but put merchandise on the ground. “Big open space” is a category with different concept: it does not distinguish the type of structure, but specifies only the place. In fact, the “open space” can be either under a roof or under the sky, and traders may have stall, table, or nothing (i.e. on the floor).

The number of shop spaces is about 840 per market on average if we ignore the difference of shop space categories as shown in **Table 6**. The variation is quite large: from 61 to 6066. Table 6 indicates that the number of shop spaces and the number of traders permitted to use the shop space are the almost the same. It means that in almost all the cases, shop spaces are already full. On the other hand, the number of traders who pay the fee is less than the number of traders permitted. Namely, fee collection is not perfect. But since the difference is not so large, we can say that the fee collection is effective enough. If we look at **Table A5** in Appendix, we will know that 17 markets among 31 have 100 % of fee collection and that free-riding traders concentrate in some particular markets such as Ambatodrazaka and Ambilobe.

As noted, the amount of fee depends on the category of shop space and the frequency of fee payment. So instead of simply averaging the amount of fees of different categories, this report selects shop space categories that provide the largest and second largest number of shop spaces in each market. **Table 7** reports the cases of the largest number of shop spaces. Out of 31 markets, 12 markets provide the most number of shop spaces to “Stall” category. Then, it is “Pavillon” in 6 markets and it is “Table” in another 6 markets. **Table 8** is for shop space category giving the second largest number of shop spaces, where “Pavillon” is selected in 10 markets, and “Table” and “Stall” follow it. Thus, these three categories tend to be most of shop spaces in the market. As for fee payment, fix entry fee and annual fee are seldom applied as shown in **Tables 7 and 8**. It is clear that all the “Pavillon” require monthly fee, while “Table” tends to require daily fee. “Stall” is between them since monthly fee and daily fee are equally observed. In terms of the amount of fee, average monthly fee for pavillon is 14,333 Ar (**Table 7**) and 14,556 Ar (**Table 8**), that for stall is 8,750 Ar (**Table 7**) and 6,750 Ar (**Table 8**). The amount of fee clearly reflects the difference of the two categories in terms of size and quality. As for daily amount of fee, in the case of “Stall” average fee is 213 Ar/day in **Table 7** and 400 Ar/day in **Table 8**, and in the case of “Table” it is 400 Ar/day and 160 Ar/day respectively. Thus, the difference is not so clear. It means that unlike “Pavillon” category, “Stall” and “Table” may contain heterogeneous type of shop spaces depending on the market. For more detailed, market-wise information, please refer to **Tables A6 and A7** in Appendix.

As discussed above, available shop spaces seem to be almost fully occupied in each market. Hence, how to allocate the spaces should be an important issue. As shown in **Table 5**, there are 122 types of shop space in the 31 markets. Our survey asks about the rules of space allocation for each type of shop space, and finds that the rule does not differ much within one market even if shop space categories are different. So **Tables 9-13** summarize the allocation rules at the market level (Please refer to Tables A8-A12 for information at each market). **Table 9** shows that in most markets (27 among 31 markets) commune or market head (who is a staff of commune government) is responsible to identify available space. And in all the markets except for Farafangana, the space assignment must be approved by commune, even if available spaces are identified by traders themselves (**Table 10**). Space allocation does not take place regularly in most of the markets, but it is done when request comes and spaces are available on “first-come, first-served” basis (**Tables 11 and 12**). Considering that most spaces are already occupied, the allocation rules in most of the markets may be creating a rent for the traders who are currently occupying shop spaces. But officially speaking, private transfer or rental to other traders is not permitted in roughly two thirds of the markets (**Table 13**). We do not have information on the enforcement level of these regulations.

### 3.3. Traders' Organization and Traders' Activities

Most markets have a traders' organization. As shown in **Table 14**, 26 out of the 31 markets surveyed have a traders' organization, and 18 of them are formal. Even informal ones are recognized by the commune, but the formal ones are registered. Half of them have been established relatively recently (after 2008), and the other half of them were created before 2006 as shown in **Figure 2**. In the majority of the cases, traders themselves initiated to establish the organization (**Table 15**). It is because the main objective of the traders' organization is negotiation with the commune as show in **Figure 3**. **Figure 3** indicates that 12 out of 26 markets mention that negotiation with outside traders is also one of the objectives, but group activities and friendship seem to be equally or more important. In fact, as shown in **Figure 4**, most of the group activities observed in the markets are organized or conducted through the traders' organization. Particularly for our study, the existence of rice traders' group is interesting since it may affect the power of negotiation with the commune and/or traders coming from outside. In 16 markets among 26 markets with traders' organization have commodity specific traders' groups, and 10 out of 16 such markets have a rice traders' group (**Figure 4**). However, without trader' organization, very few group activities take place in the market (**Figure 4**). Among the 26 traders' organizations, 9 are membership organization (**Table 16**). The number of members per organization is about 160 on average and the amount of membership fee is about 350 Ar per month on average (**Table 17**). However, only one third of the members pay the membership fee (**Table 17**). On the other hand, even if the organization is not a membership organization, there are 7 traders' organizations out of 17 that collect money from traders for their activities (**Table 18**).

More detailed information on traders' organization is given in **Tables A13-A17** in Appendix.

In most markets (27 out of 31) traders have their president (**Table 19**). If we compare **Table A18** for traders' president with **Table A13** for traders' organization, we will find that 3 markets without traders' organization have a traders' president and that 2 markets having traders' organization lack a traders' president. It means that traders' president is not necessarily associated with traders' organization. In fact, about half of the presidents are appointed by the commune, although the other half are elected by traders (**Table 20**). **Figure 5** shows the roles of traders' president. In all the markets that have a traders' president, his/her role is mediation: both among traders and between traders and outsiders.

In some markets, traders are involved in market management such as cleaning. **Figure 6** shows the average number of traders participating in market management. In the case of "full time hired" and "part time hired", traders collect money to hire someone, although such cases are not so frequent. Among the market management activities, traders participate mainly in cleaning and facility maintenance. Particularly members of traders' organization participate in them much more than non-members. However, as shown in **Tables A22 and A23**, the average numbers are high due to the large number of members' participation in Antananarivo and Antsiranana. In other markets, traders' participation in cleaning and facility maintenance is not much different from that in security patrol, or even lower than that in security patrol. On the other hand, traders seldom participate in administration and fire-fighting, probably because they consider them as commune's responsibility. Particularly, there is no trader at all participating in fire-fighting even if voluntary basis. **Table 21** summarizes the type of participation. In most cases, the participation is voluntary. But market cleaning tend to require every one's participation; 4 out of 10 markets where traders are involved in cleaning require all traders' participation. Detailed data for each market is given in **Tables A19-A23** in Appendix.

### 3.4. Rice Traders and Rice Market Regulations

Now we focus on rice traders and rice trading in the market selected. As shown in **Table 22**, the number of rice traders in a market varies. On average, about 70 regular rice traders are working in a day with the minimum of 7 and the maximum of 500 traders. In addition, most markets have occasional rice traders with the mean of 31. Occasional traders include producers who come to the market on market day to sell their harvest. As for inter-district truck traders, only 13 markets report that they had at least one truck in a week in September 2011 (**Table A24**). Due to such a large number of zero, the average number shown in **Table 22** is only 3 per week. In September in which the survey was conducted, truck traders who bring rice from other districts were not so active in some markets because locally produced rice is still available. On the other hand the 31 markets have a representative of rice traders (**Table 23**).

Some commune and district governments impose regulations on rice market. As shown in **Figure 7**, taxes on inter-district rice trade are the most popular among such regulations. The tax revenue is shared among commune, district, and region. In addition, about 35 % of the markets surveyed, particularly those located in rice producing district, require local rice traders to have a license to collect rice from producers and/or sell rice in the markets. As for the regulations on quality, price, and quantity, only a few communes and districts control them. In terms of quality, only Morondava market has a regulation at district level (**Table A26**). They say “rotten rice is forbidden for sale.” This is the only quality regulation found in the 31 markets surveyed. Price regulation at the district level is found in 4 markets, and that at the commune level is found in 2 markets. They are the cases where the local government imposes a ceiling on consumer price. The quantity regulation found in only one market is also a similar idea that enforces local traders to supply a certain amount of rice to local market to lower the market price (**Table A26**).

There is no measurement standard at national level in Madagascar. And even at local level, measurement is not formally standardized. **Table 24** shows the conversion rates of between two units, according to rice traders. First of all, it is interesting that “cup” is used in almost all the market to measure the quantity of milled rice, and its conversion rate is the same in all the market: 3.5 cups make 1 kg of milled rice. In fact, a vacant tin of condense milk is universally used in the Malagasy rice market, and in this sense it is standardized although informally. However, it is not verified if 3.5 cups of milled rice really make 1 kg. On the other hand, bag size differs depending on the market. On average, as shown in **Table 24**, it is a little less than 60 kg/bag, which does not mean that most markets use 60 kg bag. Rather, 50 kg bag and 60 kg bag are used almost equally; as shown in **Table A27**, 13 markets use 50 kg bag and 12 market use 60 kg bag. Since one market uses 120 kg bag, and another market uses 80 kg bag, the average is close to 60 kg. The result tells us that rice bag is never standardized at the national level in Madagascar, which requires traders to weigh or measure quantity if the trade is beyond one district. **Table A27** shows detailed data.

### 3.5. Environment of Rice Market

In the interview, we ask the respondents to classify each month of the year into three in terms of local rice harvest: no harvest season, low harvest season, and high harvest season. We put value of 0 to no harvest season, 1 to low harvest season, and 2 to high harvest season. Then, total result is shown in **Figure 8**. There is a single peak in May and June for the high season, while low season seems to have two peaks: one is in December and the other is in March. The single peak of the high season means that the main harvest season is synchronized very much in Madagascar in spite of different agro-ecological zones. On the other hand, low season is relatively spread over a year although there seems to be two peaks. Please note that January is neither high season nor low season as shown in **Figure 8**, which means that there is almost no harvest in January. **Table A28** shows the

results for each market, and it shows that relatively big cities such as Toamasina, Mahajanga, and Toliar do not have rice harvest season within the district.

Cellular phone is considered to facilitate the flow of market information and mobile money is considered to facilitate payment in the long distance. As shown in **Figure 9**, in all the 31 cities except for one (Anbatondrazaka) has a cellular phone access, and on average since 2002. On the other hand, mobile money is less widely available but almost reaching 80 % and they have been available since 2010 on average. It means that only within a few years mobile money has become widely available. On the other hand, price information through radio broadcasting or newspapers are still very rare. Please refer to **Table A29** for detail.

## 4. Summary of retailer/wholesaler survey

### 4.1. Characteristics of the retailers/wholesalers

In this section “retailers” include both retailers and wholesalers who were found in the market and were subject to the retailer/wholesaler survey. On the other hand, “wholesalers” are those who were identified as “wholesalers outside the market” and were subject to the wholesaler survey. As already mentioned, the number of “retailers” interviewed is 1,142 and that of “wholesaler” interviewed is 102. As also described above, the estimated number of rice traders in a market varies a lot; its distribution is from 7 to 500 (Table A24), but the number of samples shown in Table 1 is more equally distributed over the 31 markets, particularly in the case of “retailers.” It is because the number of samples is largely determined by the maximum length of stay in one market (i.e. 3 days). Thus, we could say roughly that each market is equally weighted regardless of the number of “retailers” in a market. In other words, the number of “retailers” selected in each market is not proportional with the total number of “retailers” in each market, and as a consequence “retailers” selected from small markets are overrepresented in the sample. But as for “wholesalers” located outside the market, the number of samples in each city seems to be the maximum number the survey team could find, and so the numbers are considered to reflect more or less the distribution of “wholesalers.” In the following sections, we will sometimes show mean numbers of the whole sample of “retailers” such as characteristics (Table 25) and preferences (Table 26). It is important to know that those figures can be biased because of the oversampling of small markets as explained above.

**Table 25** reports the basic characteristics of the samples. The mean age of the retailers and wholesalers is 34.1 and 38.7 years old, respectively. They are predominantly female and only 20% among retailers and 36% among wholesalers are male. They are mostly literate: the literacy rate is 92.5% for retailers and 95.1% for wholesalers. On average, a retailer spent 6.8 years and a wholesaler spent 8.4 years at school. Thus, they are much more educated than the population

average: according to UNDP statistics, mean years schooling of the adults (above 25 years old) is 5.2 and literacy rate of the adults (above 15 years old) is 64.5%.

Majority (86%) of the retailers do their business inside the market but half of the wholesalers have their store outside the market. Sales of imported rice are not so common: 22% of retailers and 27% of wholesalers sell imported rice. Very few (at most 4%) retailers have traders license while 52% of the wholesalers hold an inter-district traders license and 39% hold an intra-district traders license. Almost none of the retailers operate rice milling but 10% of the wholesalers operate rice milling. The average years of experience in rice trading are 5.2 years for retailers and 8.4 years for wholesalers. The average number of employees is 0.2 persons for retailers and 1.6 persons for wholesalers. Wholesalers on average have 1.1 rice collectors to whom he/she pays in advance. 10% of the retailers and 20% of the wholesalers use a public storage.

Owning a vehicle or truck is uncommon. The percentage of retailers owning a vehicle or truck is only 3% and 2%, respectively. The same figures for wholesalers are 20% and 21%. The percentage of owning a mobile phone is 56% for retailers and 90% for wholesalers. The use of mobile money is very rare for retailers: only 3% used mobile money for general purpose and 1% used mobile money for rice trading. On the other hand, 10% of the wholesalers used mobile money for general purpose and 5% used it for rice trading.

#### 4.2. Most popular rice sold by the retailers

For retailers, we asked in detail about the most popular rice they were selling at the time of the interview. **Table 26** summarizes the information. The retailers were selling 2.1 kinds of rice on average. The average price of the most expensive rice sold is 1,143 Ar/kg, while the price of the cheapest rice sold is 1,079 Ar/kg.

The average price of the most popular rice is 1,121 Ar/kg. The rice is predominantly long variety (87%) and white-colored (84%) and machine milled (97%). The majority of the retailers classified the rice as “vary gasy” (62%), followed by “makalioka” (19%), “tsipala” (13%), and “imported rice” (4%).

To characterize the mode of matching of a seller and a buyer (retailer), we asked whether the retailer searched for a seller, or a seller searched for a retailer. In most of the cases, the retailer went to look for a seller (76%). A seller made search for the retailer in 22% of the cases, or phoned the retailer in 2% of the cases. In Antananarivo, Fenoarivo Antsinana, and Ambilobe, the percentage of a seller searching a retailer exceeds 60% and the search is driven by sellers rather than retailers.

On average, the sampled retailers compared price with 0.9 sellers. Mean purchasing price of milled rice was 1,037 Ar/kg, and 4% of the cases were mediated by an intermediary. More than half (52%) of the retailers verified the weight or quantity. 11% found shortage of weight or quantity, 73% claimed the seller, and 68% of those claims were compensated.

We classified the mode of purchase by place of purchase and seller (**Table 26**). The place of purchase is categorized into: inside the city, inside the district, and outside the district. The seller is categorized into: a seller in the city (typically a wholesaler), a seller in the district (typically a farmer or collector), and an inter-district trader (typically trucks at the market parking place). The major supplier of the most popular rice sold by the retailer was a seller based in the district (37%), followed by a seller based in the city (36%), and inter-district traders (26%). The rice was purchased in the city (47%), in the district (27%), and outside the district (26%).

Information on payment of the most popular rice is summarized in **Table 27**. Payment to the seller is almost completely (99.8%) dominated by cash and payment in check is observed in only two cases out of 1,141. The norm is to pay on the spot (59%), but payment on credit is also common. The payment due is: within a week (19%), at the end of the day (17%), within 1 to 2 weeks (2%). Dues longer than two weeks are rare.

#### 4.3. Modes of purchase

##### *Suppliers*

To gain an understanding of the general modes of purchase and changes of the modes over seasons, we asked how the retailers/wholesalers purchased rice in the past 12 months. **Table 28** reports the results. Retailers mainly purchase rice from local suppliers, while wholesalers tend to visit other districts for purchase in addition to purchasing locally. For retailers, the major supplier of rice is sellers in the city and 47% of the respondents purchased rice from such sellers in the past 12 months. Other sources such as sellers in the district (38%) and inter-district traders (30%) are also common. Note that in the case of “sellers in the district,” buyers go to rural areas of the district to buy rice, while in the case of inter-district traders,” buyers buy rice from trucks coming from other districts. However, only 4% of the retailers visited other districts for purchase. On the other hand, the major supplier for wholesalers is inter-district traders (64%), followed by visiting other districts to purchase (37%), seller in the district (25%), and seller in the city (15%). **Figure 0** describes the modes of purchase by month. During the lean months (Dec – March), purchase from rural area within the district or from other districts become less because is less available in these months, but inter-district traders and wholesalers in the cities who purchase from them have some rice to sell. We discuss about the regional variation of the modes of purchase later.

##### *Role of intermediaries*

Market parking place is the major marketplace for retailers to search and match with an inter-district trader. Among the retailers who purchased rice from inter-district traders, 78% have experience of purchasing rice at the parking place of the market. Intermediaries play an important role in matching the parties. We identified the presence of intermediaries at the parking place in the

following cities: Ambanja, Ambovombe, Antanarivo Renivohitra, Antsirabe I, Antsiranana I, Farafangana, Mahajanga I, Manakara, Port-Berge, Taolagnaro, and Toamasina I. Among these cities, we obtained detailed information about intermediaries in Antanarivo Renivohitra, Antsirabe I, Manakara, Farafangana, Toamasina I, Ambovombe, and Ambanja.

The services provided by the intermediaries are: announcing the arrival of truck (93%: “always” and “sometimes”), verifying quality (76%), arranging carriage (64%), helping claim any problem to the seller (56%), helping purchase on credit (50%), verifying weight (43%), and verifying quantity (14%) (**Figure 11**). When the trade is mediated, retailers usually pay to an intermediary (57%), but in other cases payment is made directly to the seller (**Figure 12**). When the payment is made to an intermediary, it is usually more expensive than to pay directly to the seller (**Figure 13**).

#### *Price comparison*

Comparing price to find the cheapest supplier is important for long-distance trade. However, we find that retailers or wholesalers seldom obtain price information and compare them. When a retailer/wholesaler visited other districts for purchase, only 13% of the retailers and 26% of the wholesalers compared prices with other districts (**Figure 14**). When they do compare price, mobile phone is often used. Price comparison is even less common in the trade with inter-district traders. Only 4% of the retailers and 28% of the wholesalers called an inter-district trader upon purchase and 6% and 20% compared price with other districts.

#### *Purchase on credit*

**Figure 15** describes whether a retailer can purchase rice on credit with different types of suppliers. On average, more than half the retailers are able to purchase on credit from wholesalers and regular inter-district traders (65% and 69%). Purchase on credit from non-regular inter-district traders is not common (17%). However, this figure jumps to 26% when an intermediary mediates the trade. Thus, intermediaries seem to help non-regular sellers to sell on credit or retailers to purchase on credit from non-regular sellers. This role played by intermediaries is not found for regular sellers since substantial fraction (69%) of the retailers are able to purchase on credit even without an intermediary.

#### *Product verification*

**Figure 16** reports the verification of quality, weight, and quantity upon purchase by wholesalers, retailers, and consumers. The percentage of verifying the quality was higher in the downstream of the supply-chain: the percentages of respondents answering “always” verify quality is 96% for consumers, 95% for retailers, and 75% for wholesalers. On the other hand, upstream players care more in weight: 56% of the wholesalers verify weight while only 34% of the retailers and 9% of the

consumers do so. 32% of the retailers verify quantity but wholesalers (21%) and consumers (19%) are less concerned about it.

#### 4.4. Product quality

Consumers in Madagascar seem to care firstly about variety (red/white, long/short) and then quality (contamination, broken rate, old/new rice). We asked three characteristics of most preferred rice and two characteristics of most disliked rice. The first characteristics of most preferred rice mentioned by the retailers are: white variety (mentioned by 73% of the retailers), red variety (8%), long variety (7%), less contamination (6%), old rice (2%), less broken rice (1%), dry (0.4%), and others (**Table 29, Figure 17**).

The first characteristics of most disliked rice mentioned by the retailers are: contaminated (37%), red variety (22%), broken rice (19%), short variety (8%), new rice (3%), bad smell (3%), white variety (2%), moist (1%), long variety (0.4%), old rice (0.2%), and others (**Table 30, Figure 18**). It is interesting to find that the retailers care more about quality (contamination, broken rice, and bad smell), while the wholesalers care more about variety (red and short).

## 5. Summary of inter-district trader survey

### 5.1. Characteristics of the inter-district traders

**Table 31** reports the basic characteristics of the 54 inter-district traders we interviewed. The mean age of interviewed traders is 38.1 and 69% are male. All of them are literate and went to school for 9.5 years on average. 93% hold an inter-district trader's license and 66% hold an intra-district trader's license. 28% of the samples operate rice milling as well. They have on average, 7.8 years of experience in rice trading and 5.9 years of experience in the currently-visiting market (the market where we met with them). An average trader works with one family member, hires 2.2 non-family members, and contracts with 1.2 rice collectors to whom he advance the payment. The mean capacity of private storage is 6.8 ton and 19% use a public storage. Access to price information is uncommon: only 7% ever used price information service of rice broadcasted on radio and 2% ever heard of SMS price information service.

Turning to asset holding, 15% have a vehicle and 44% have a truck. 89% have a mobile phone. Mobile money is utilized but not common: 13% used mobile money for general purpose and 15% used mobile money for rice trading.

Finally, their major previous occupation was non-agricultural self-employment (37%), followed by agriculture (26%). For 16% of the sample, rice trading was their first job, and 15% were previously a student. Majority (59%) of the samples have no alternative job, but 24% are engaged in agriculture and 13% are studying as student.

## 5.2. Current visit

**Table 32** summarizes the information about the trader's current visit to the district. On average, the traders brought 8.7 ton of milled rice using the truck whose average capacity is 10.9 ton. At the district of shipment, traders can either purchase milled rice or purchase paddy and mill them. In our sample, 91 % purchased milled rice. The average transportation cost from district of shipment to the currently-visiting market is 93.9 Ar/kg (in September). Transportation is slightly higher in the rainy season, which costs 101.4 Ar/kg. The mean selling price of milled rice in the interviewed market is 1,044 Ar/kg. The traders expected 2.5 days to sell all the rice they brought before coming to the market. Before arrival, 35% of the interviewed traders informed on average 4.8 customers that they are visiting the market. 17% answered that they are asking an intermediary to mediate the trade and 89% informed the intermediaries of the visit prior to arrival. The average commission fee paid to the intermediary ranges from 3.3 to 17 Ar/kg with an average of 6.3 Ar/kg. In 77% of the samples who had already made a sale at the time of the interview, the last customer was a regular customer.

Since one of the causes of trouble in rice trading is the accuracy of weighing, we asked whether the trader verified the weight of the bags (**Figure 19**). About half (55%) of the sampled traders checked all the bags with the miller. If not with the miller, the traders checked all of the bags (19%) or some bags (9%) by themselves. 13% answered "No, the miller is responsible for weights", and 4% answered that neither miller nor the trader himself did not check the weight.

We asked two reasons of choosing this market (**Figure 20**). For the first reason, 32% reported that they are "used to the market", followed by "good price/low transportation costs" (26%), "quick sales" (19%), "have regular customers" (13%), "safe" (6%), and "stable price" (2%). The second reason is: "used to this market" (26%), "have regular customers" (21%), "stable price" (19%), "quick sales" (15%), "good price/low transportation cost" (6%), and "safe" (2%).

Checking prices in various destination markets is essential for arbitrage. However, only 50% of the samples checked the price in the interviewed market where they were selling, and only 20% checked the price in other markets (**Table 33**). **Table 24** reports the results by the traders' origin (district of residence). While the number of observations is too small to discuss the tendencies by their origin, we find that traders from the major production regions in Sofia (Port-Berge, Befandriana, Bealanana, and Ambanja) are more concerned about price.

**Figure 21** and **Table 35** summarize the reasons for not checking the price. Major reasons for not checking the price in the market they were selling are: "sell only in this market" (50%), "know price from experience" (46%), and "no one to ask price" (4%). The pattern is similar for not checking the price in other markets: "sell only in this market" (62%), "know price from experience" (21%), and "no one to ask price" (10%).

### 5.3. Sales

**Table 36** reports information about the sales in the interviewed market. Mean number of visits to the currently-visiting market in the past 12 months is 54.4 times, so on average, traders are visiting the market once a week. 25% of the volume brought to the market is for customers' orders. Sales by the inter-district traders at the destination city can be made in a random matching manner at the market parking place or by direct sales to regular customers. Half of the respondents do not know any customer who can visit directly to his/her shop or storage. Therefore, random-matching trades at the parking place are an important mode of sales.

Intermediaries play an important role in matching inter-district traders with retailers and wholesalers. Quarter (26%) of the sampled traders use an intermediary to sell rice, while 63% of them answered never used an intermediary, and 11% were in a market without intermediaries (**Figure 22**). **Table 37** and **Figure 23** summarize the role played by the intermediaries for inter-district traders. They are: find customers, help investigate credit-worthiness of customers, help arrange carriage, and help collect payment. Half of the samples informed the intermediaries that they are visiting the market before arrival (**Figure 24**). During this prior communication, traders obtained information about price and demand and supply in the market (**Figure 24**).

**Table 38** reports whether the traders sell on credit. Sales on credit is common with trade with regular customers but not for non-regular customers: 82% of the samples reported to “always” or “sometimes” sell on credit to regular customers but the same figure drops to 13% for non-regular customers. On average, the traders know 6.1 customers to whom they can sell on credit. The role of intermediaries in investigating credit-worthiness of customers can also be seen from the result that, among samples that used intermediaries, while only 21% of the traders sell on credit to non-regular customers, the figure jumps to 57% if an intermediary mediates the trade (**Figure 25** and **Figure 26**).

### 5.4. Contract enforcement

**Table 39** reports the information on contract enforcement. 26% of the samples had an experience of payment trouble in the currently-visiting market (Antananarivo, Antsirabe I, Ihosy, Mahajanga I, Morondava, and Ambanja). 8% had experience in other markets. 9% had experience of a trouble asking for a third party for mediation.

## 6. Regional extent of rice trading

To understand the regional extent of rice trading, we first look at the origin of rice sold in each market.

**Table 40** reports the district of production of the most popular rice sold by the retailer at the time of the interview. 52 districts were named. The table confirms that the rice mostly come from

local or surrounding districts. In 11 out of 31 markets, Ambatondrazaka (known as the major producing district of *makalioka* rice) is named as the district of production of the most popular rice. Befandriana and Bealanana, the large producing districts in Northern Madagascar, are named in 6 markets. Import rice is also popular and named in 6 districts. Ihosy, Mandritsara, and Antsohihy are named in 5 markets.

**Table 41** summarizes the district of production of rice purchased from inter-district traders. 58 districts were named, where the three large producing regions in Northern Madagascar (Mandritsara, Befandriana, and Bealanana) leads the list, each being quoted by 8 or 9 markets out of 32, followed by Antananarivo and Ambatondrazaka (6 districts), and Ihosy and Andapa (5 districts).

**Table 42** reports the districts where retailer/wholesalers visited (other than their local district) for purchase. It suggests that retailers/wholesalers are visiting a relatively large city nearby, where it functions as a regional hub in collecting and distributing the produce. It is interesting that Antananarivo is quoted as the destination for purchase in seven markets (including Ambatondrazaka) out of 32. Mahajanga, Maevatanana, and Antsiranana are also noted in five markets.

We can also view the regional extent of trade from the inter-district traders' activity. **Table 43** reports the destination districts where the traders from each origin visited to sell rice. Bealanana traders (traders based/living in Bealanana) are most active in expanding the market visiting 10 different districts. The followers are Manakara traders and Port-Berg traders (5 districts), Antsirabe II traders and Marovoay traders (4 districts), Antananarivo traders, Befandriana traders, and Morondava traders (3 districts). **Table 44** reports the districts where the inter-district traders visited to purchase rice. Traders from (based/living) in Antananarivo visit 6 different districts to purchase rice, followed by traders from Port-Berge and Mampikony (5 districts), traders from Arivonimano and Fianarantsoa II (4 districts), and traders from Manakara, Ihosy, Marovoay (3 districts).

## 7. Characterizing the markets

This section attempts to characteristics the markets with respect to some factors that affect transactions costs in rice trading because high transactions costs would make the market difficult to be integrated with other markets. For example, if inter-district traders find it difficult to sell in a market due to difficulty in searching a retailer or facing high risk of collecting bills, then such market would become isolated from other markets. We select three market characteristics influencing the transactions costs to consider: search and matching, payment customs, and quantity and quality verification.

### 7.1. Search and matching

In order to establish smooth trading linkages between producers and consumers, it is important

for foreign sellers (who export rice from producers' markets to consumers' market) to identify buyers efficiently in the market of destination (i.e. efficient search and matching). There will be three ways in the search and matching between foreign sellers and local buyers. (1) Direct Random Matching, where foreign sellers directly search for buyers to match; (2) Indirect Random Matching, where foreign sellers use intermediaries to search for buyers to match; and (3) Direct Fixed Matching, where foreign sellers have long-term trading relationship with wholesalers. Transactions costs incurred by search and matching will be decreasing in this order, while entrance barrier to new rice exporters will become high in the same order. We will reveal which matching method dominates in each market.

We first look at who initiates the search, sellers (rice exporters) or buyers (retailers/wholesalers). **Figure 18** indicates that, in most of the markets, it is the retailers who make search for sellers. However, in Antananarivo, Fenoarivo Atsinanana, and Ambilobe, in more than half of the cases, the sellers search for retailers.

**Table 45** reports the modes of purchase by market. An interesting question is whether wholesalers' function is a hub to link sellers and retailers. Markets such as Fianarantsoa I, Ihosy, Toliara I, and Ambovombe show high proportion of retailers purchasing from sellers in the city, who are typically wholesalers. In these markets, because the matching is centralized at a few core wholesalers, and because both foreign sellers and retailers can build a long term relationship with the wholesalers, the transactions costs of search and matching seem to be small (though markup or commission paid to wholesalers may be high).

On the other hand, many retailers in Antananarivo, Manakara, Farafanga, and Ambanja purchase from inter-district traders rather than from sellers in the city, implying that a random matching market at the parking place is well developed. In these markets, the place for matching is highly centralized so the cost to search for trading partners is minimized. However, since transactions might take place with new trading partners, there is a risk of contract enforcement.

For other markets such as Tsiroanomandidy, Miarinarivo, Ambatondrazaka, Port-Berge, Mandritsara, Befandriana, Belanana, Maintirano, and Mampikony, neither wholesalers nor centralized matching market is well developed. Therefore, retailers make search for sellers in neighboring rural villages in the district. The centralized markets (wholesalers or centralized matching market) are underdeveloped because retailers can easily find sellers (typically farmers) in neighboring rural villages. However, it could be the other way that because the centralized markets are underdeveloped, the retailers need to make their search for sellers.

## 7.2. Mode of Payment

Foreign sellers of rice would prefer selling rice in cash on the spot to selling rice on credit because cash transactions may involve less risk. However, the mode of payment depends on markets,

and in some markets credit transactions are considered to be the norm and buyers naturally demand for credit sales. Thus, here we will show the ratio of credit and cash sales in each market.

**Figure 28** and **Table 46** describe the variation of mode of payment by market. The norm is to pay in cash on the spot. However, more than half of the retailers in markets such as Antananarivo, Toamasina I, Toliara I, Ambovombe, Sambava, Antsiranana I, Ambilobe, and Ambanja, paid on credit.

### 7.3. Quantity and quality verification

In Madagascar, neither quality nor quantity measuring has been standardized well, traders have to verify quality and quantity of each time of trading, which is considered to lower efficiency of rice trading at each level. In this section we will show how Malagasy rice traders verify quantity and quality.

**Table 47** describes whether wholesalers/retailers/consumers verify quality, weight, and quantity upon purchase. We focus on retailers. In virtually all markets, quality is always verified. On the other hand, there is a regional variation on the verification of weight or quantity. Since weighing of the bags is burdensome and adds additional transaction cost in every transactions, this custom could inhibit smooth market integration.

### 7.4. Preferences on variety and quality

In big cities, consumers are more serious about the quality of rice and demand for high quality than in rural areas. On the other hand, however, the number of poor people is also large in big cities and hence demand for low price rice is also high even if the quality of such rice is low. For example, in spite of its low quality import rice is popular in Antananarivo because it swells a lot after cooking, and as a result its price is close to the high graded Makalioka. As such, if the spec is standardized, low quality itself is not necessarily disadvantage in selling in urban market. Keeping such characteristics of consumer rice market in mind, this section will show what kind of rice is preferred or disliked in each market.

**Table 48** and **Table 49** reports the first and second characteristics of the most preferred rice by market. In some markets, retailers prefer red rice rather than white rice. Other than preferences on rice varieties (red/white, long/short), rice quality is mentioned in some markets. Among others, “less contamination” is often cited in large cities (Antananarivo, Antsirabe I, Mahajanga, Maevatanana) but somewhat surprisingly, in major rice producing areas (Befandriana, Bealanana) as well.

**Table 50** and **Table 51** show the first and second characteristics of most disliked rice by district. Contaminated rice is generally disliked in most of the market. And broken rice and red rice come the second. It is interesting that while contaminated rice is disliked all the markets in Madagascar, broken and red rice is not disliked so much in the central highlands (e.g. Antananarivo, Antsirabe,

Fianarantsoa, etc.). Because they include big cities in Madagascar in terms of population, broken and red rice is not so unpopular in Madagascar as rice contaminated.

## 8. Conclusions

This report presents the findings from a rice trader survey conducted in September 2011 in 31 major cities in Madagascar including all the region capitals (22 cities) and 9 district capitals in the northern part of this country. The data were collected by means of 4 types of survey with different level: market survey, retailer/wholesaler survey for traders in the market, wholesaler survey for independent wholesalers, and inter-district trader survey for trucks coming from other districts.

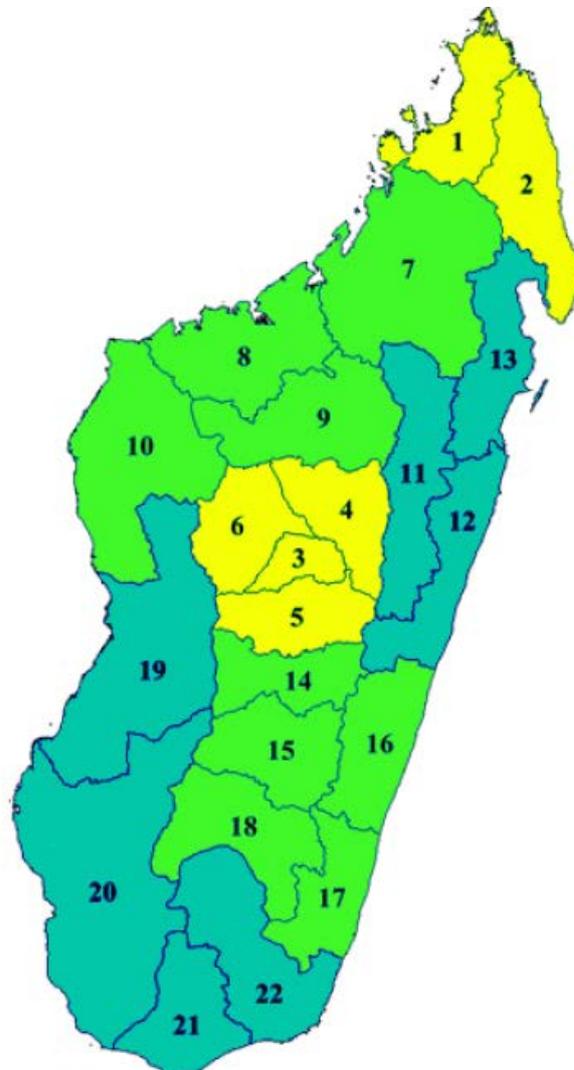
At the market level, the report shows that there is huge variation as to traders' activities particularly through traders' organization and the regulations imposed by commune/district. They should naturally affect the transactions costs and make some markets more attractive than others, although this report does not analyze transactions costs themselves. With respect to the rice market regulations, however, most of them are taxes on exportation or importation of rice. There is almost nothing whose objective is the facilitation of rice trading (i.e. the reduction of transactions costs) such as the standardization of quality grading, quantity measuring, price monitoring/information services, and so on.

However, rice traders may not want to have price information because, according to the inter-district trader survey, the majority of them visit only one market and do not check or compare the prices in the market. It means that many inter-district traders choose destination based on reasons other than prices; they seem to choose markets where they have regular customers. Having regular customers is important to reduce transactions costs to search for buyers and to enforce contracts. Particularly with respect to the mode of payment, in some markets buyers always request sales on credit, which may prohibit new foreign sellers to enter such markets. Our survey finds that there are intermediaries between foreign sellers and local buyers in some markets, who assist sellers to find buyers, to investigate buyers' creditworthiness, and to collect payment from buyers. With the help of intermediaries, sellers will be able to visit an unfamiliar market although sellers have to pay some commission. However, not all the markets have such intermediaries.

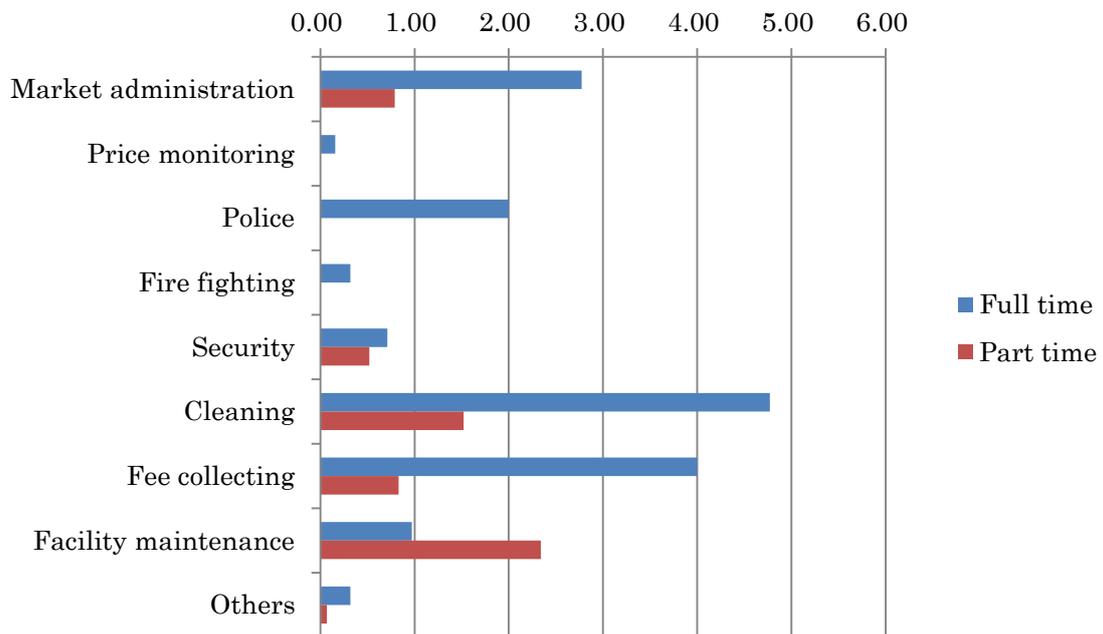
Another significant cause of transactions costs is product inspection. As mentioned above, there is no standard about product quality/quantity at the market level, and hence traders have to inspect the quality and quantity of each bag they purchase. The lack of standards not only incurs significant costs but also discourages traders to enter new market.

This report does not quantify the transactions costs summarized above, and does not estimate how much extent the transactions costs make the Malagasy rice market disintegrated. These are important issues in our future studies.

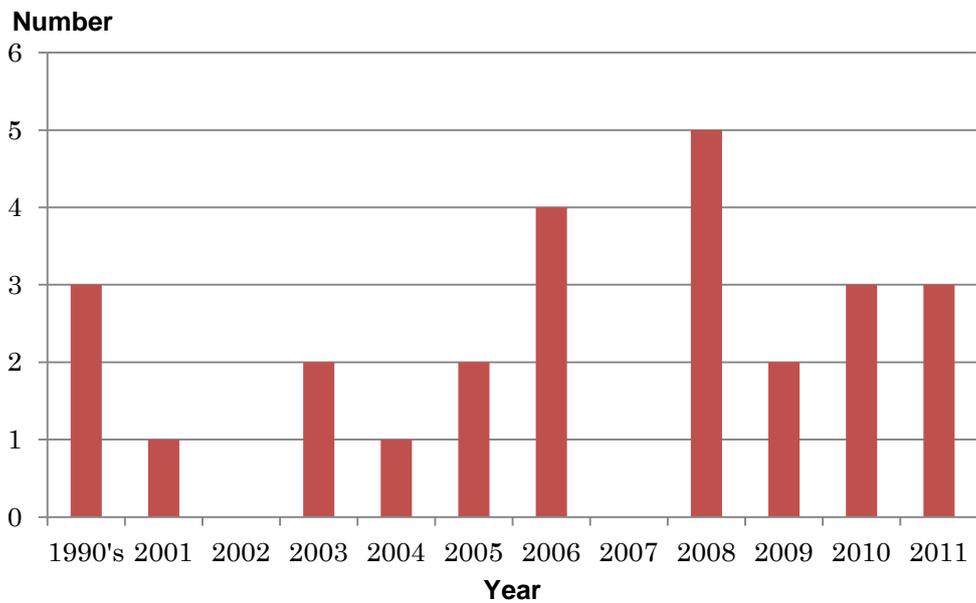
9. Figures



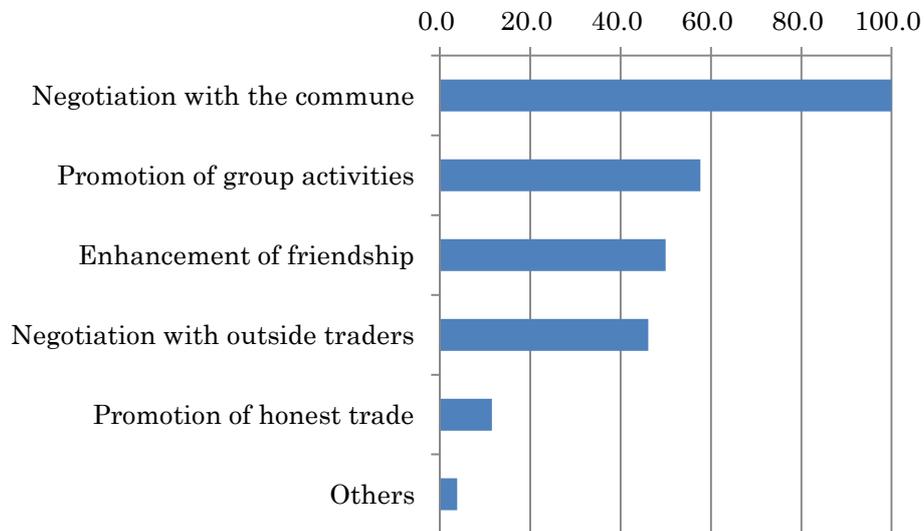
**Figure 0: Regions of Madagascar**  
(refer to Table 0 for the name of each region)



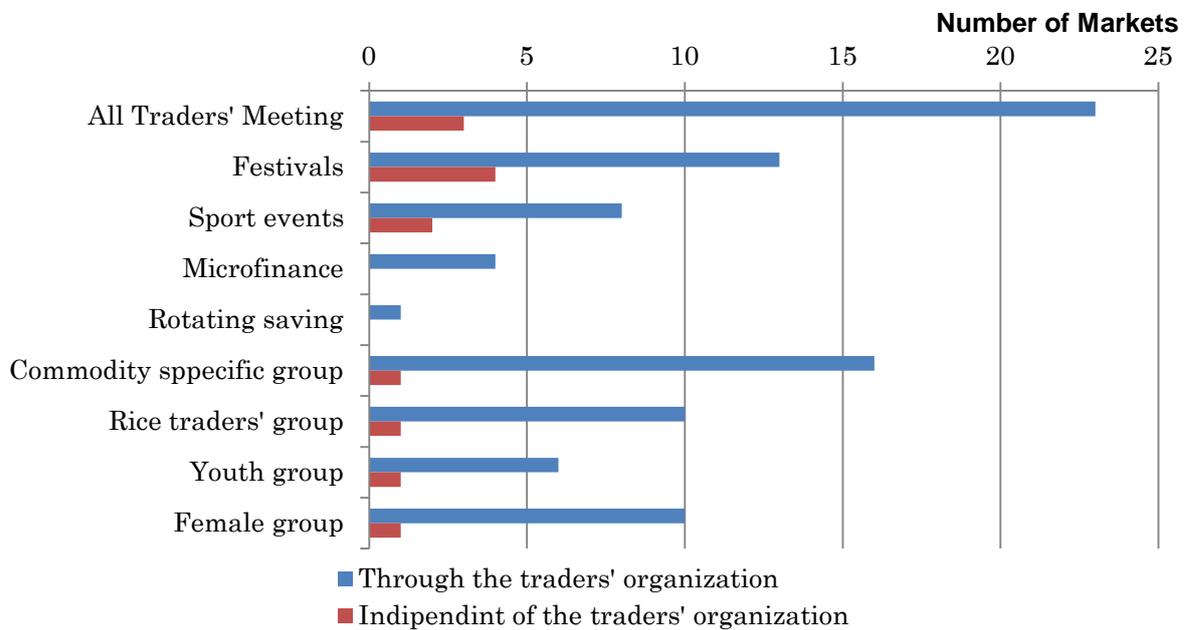
**Figure 1: Average Number of Staff in a Market by Function**



**Figure 2: Number of Traders' Organization Established by Year**



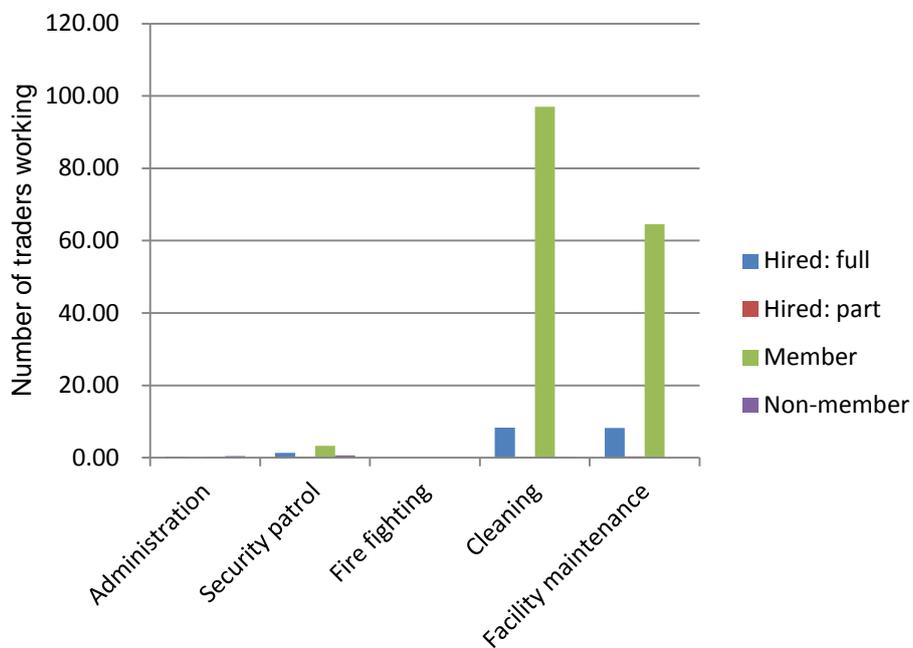
**Figure 3: Main objective of traders' organization (%)**



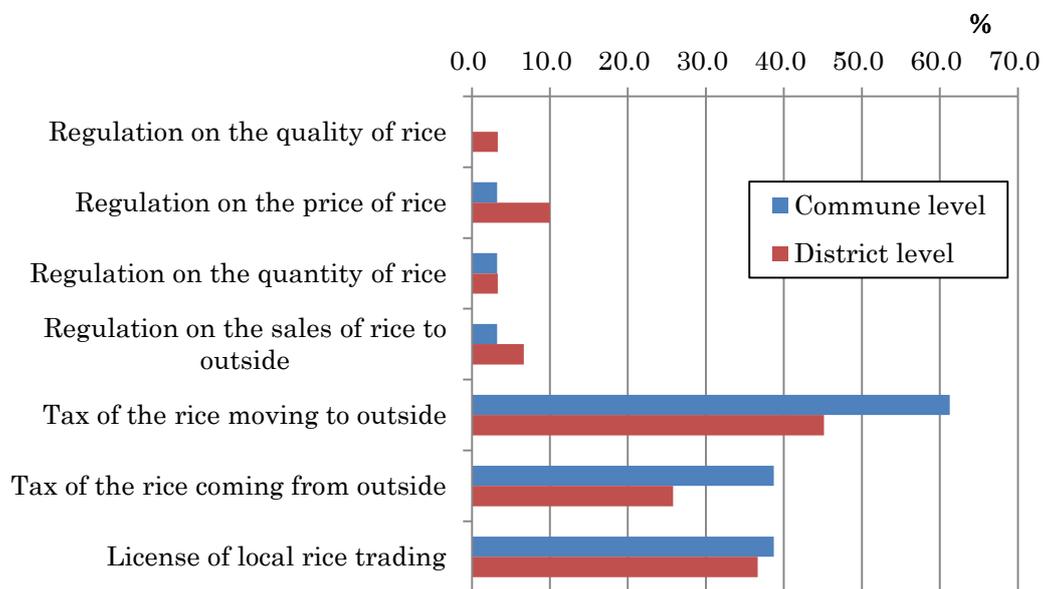
**Figure 4: Group activities in the market (number of markets)**



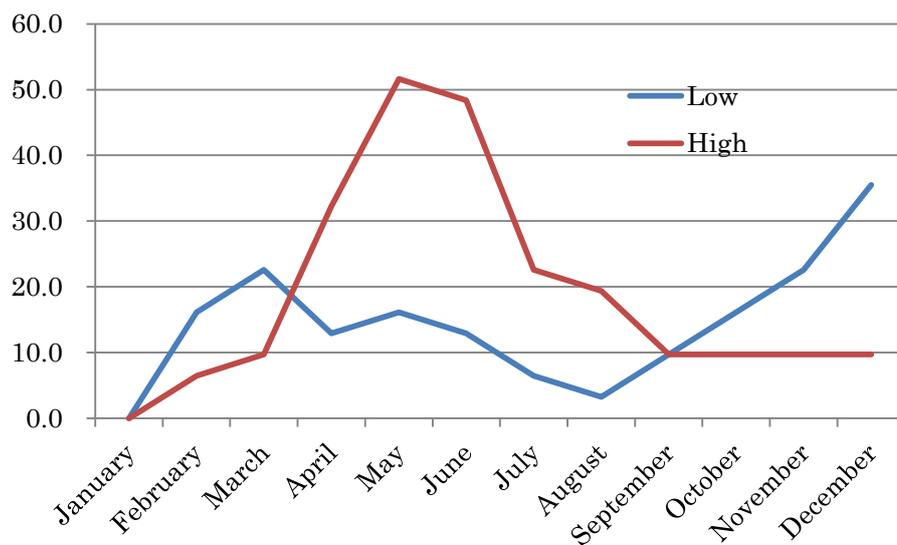
**Figure 5: Role of the president of traders**



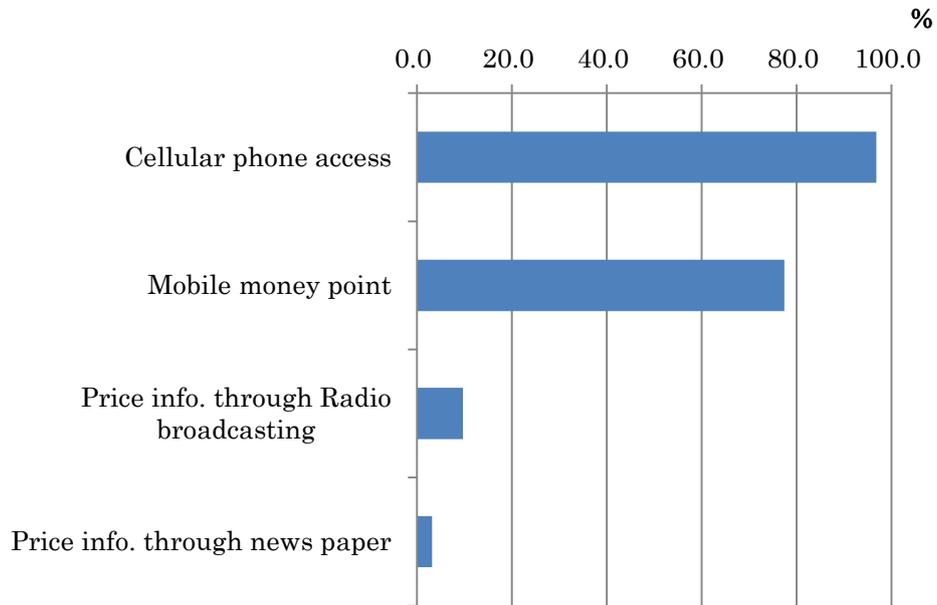
**Figure 6: Traders' participation in market management**



**Figure 7: Rice market regulations at commune and district levels**

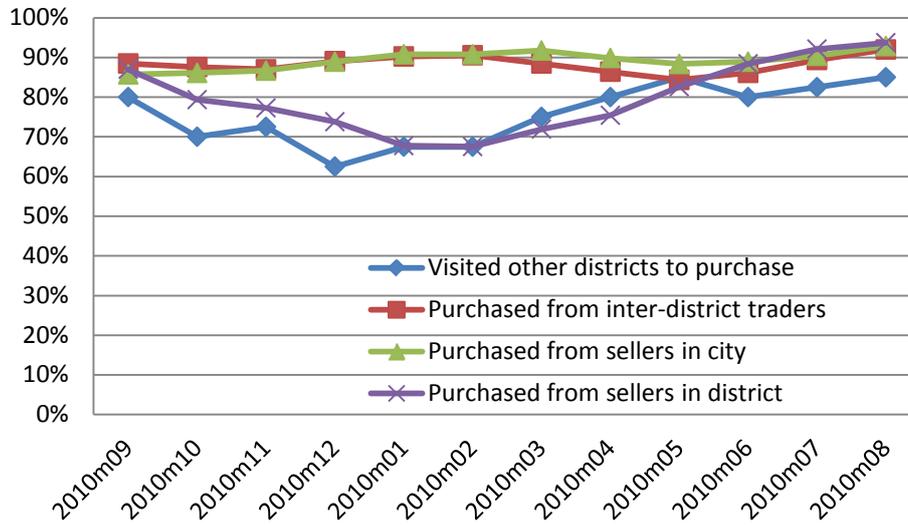


**Figure 8: Rice harvest season around the market**

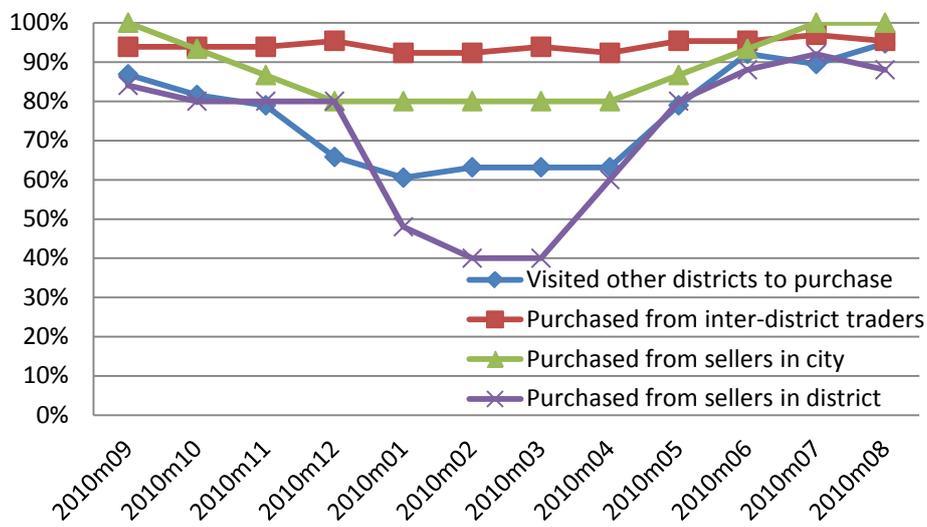


**Figure 9: Information technologies and service available in the city**

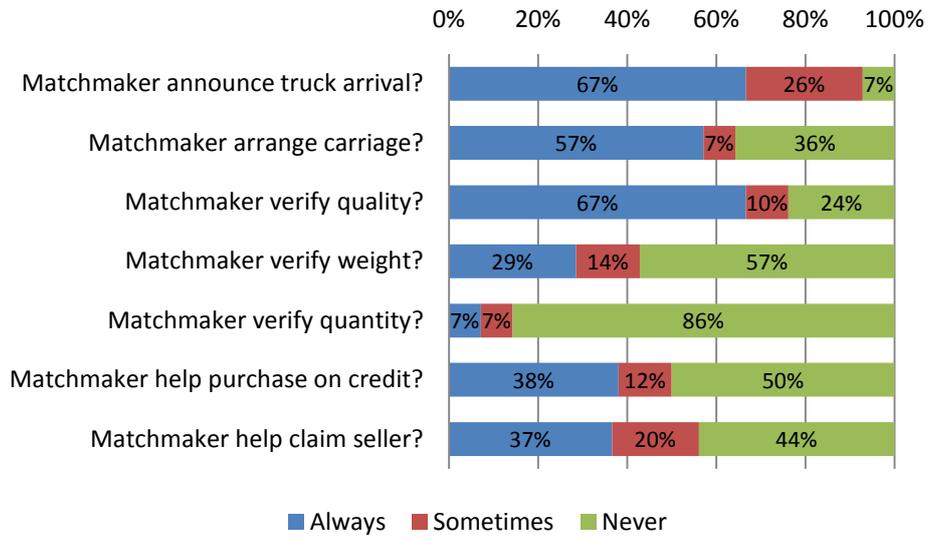
## Retailer



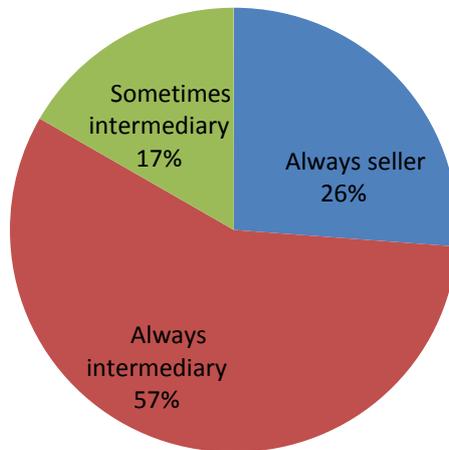
## Wholesaler



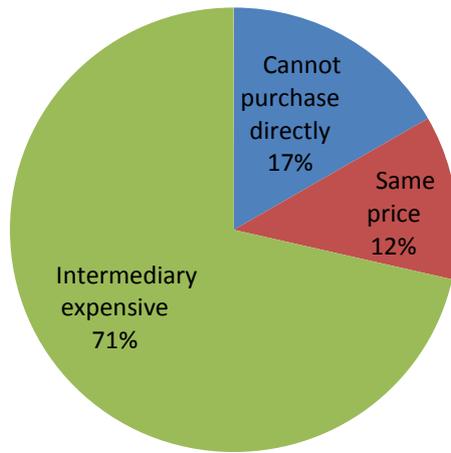
**Figure 10: Modes of purchase by month**



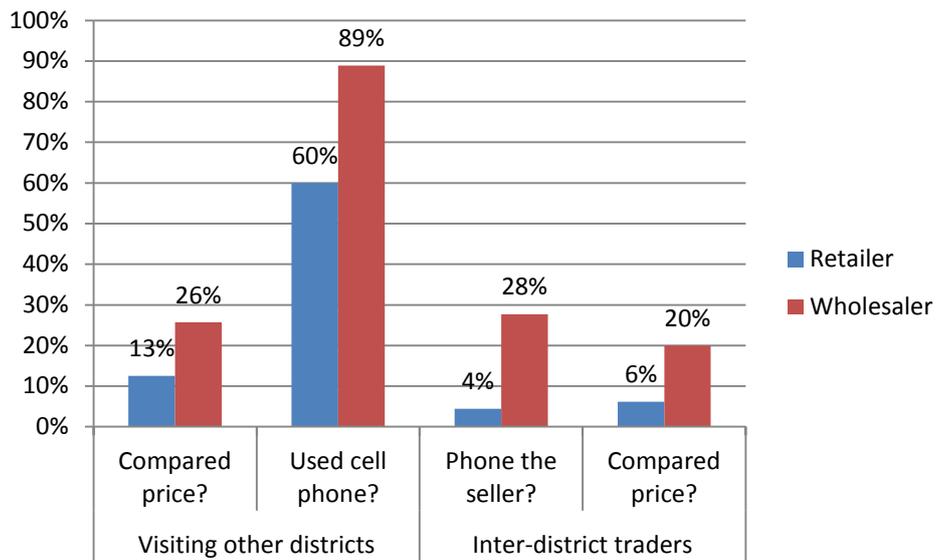
**Figure 11: The role of intermediaries**



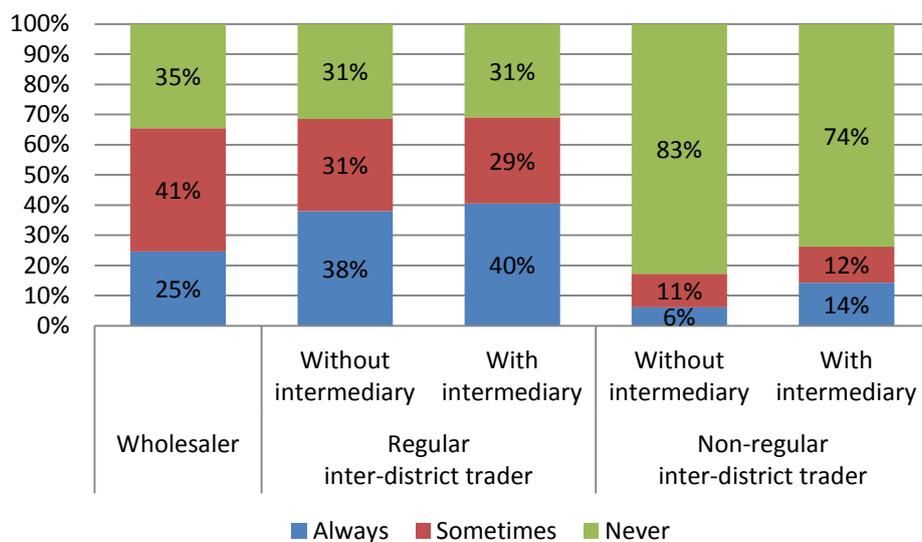
**Figure 12: Pay to seller or intermediary?**



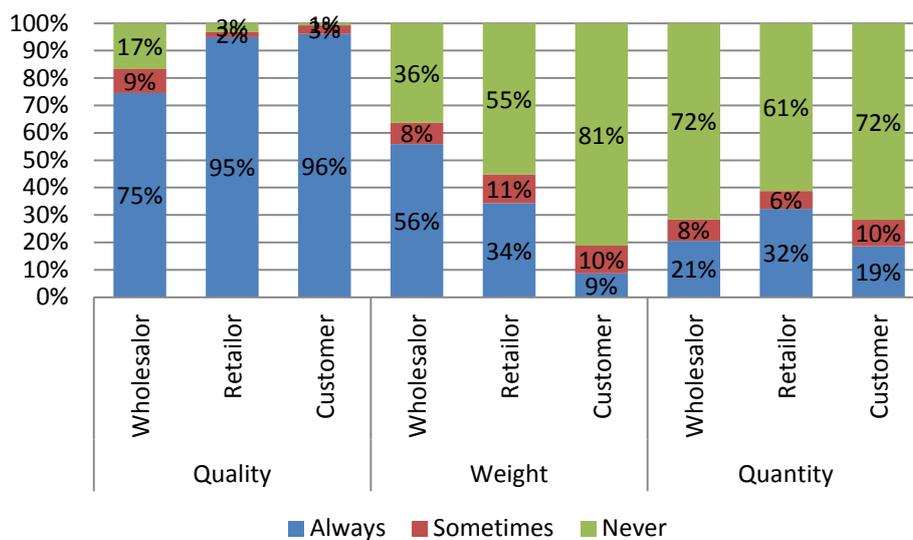
**Figure 13: Price paid to intermediary or seller**



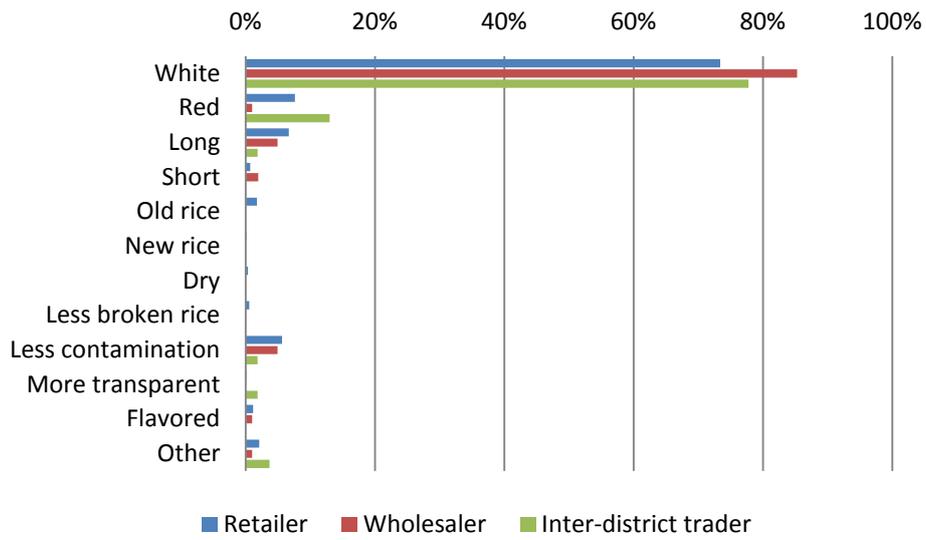
**Figure 14: Price comparison**



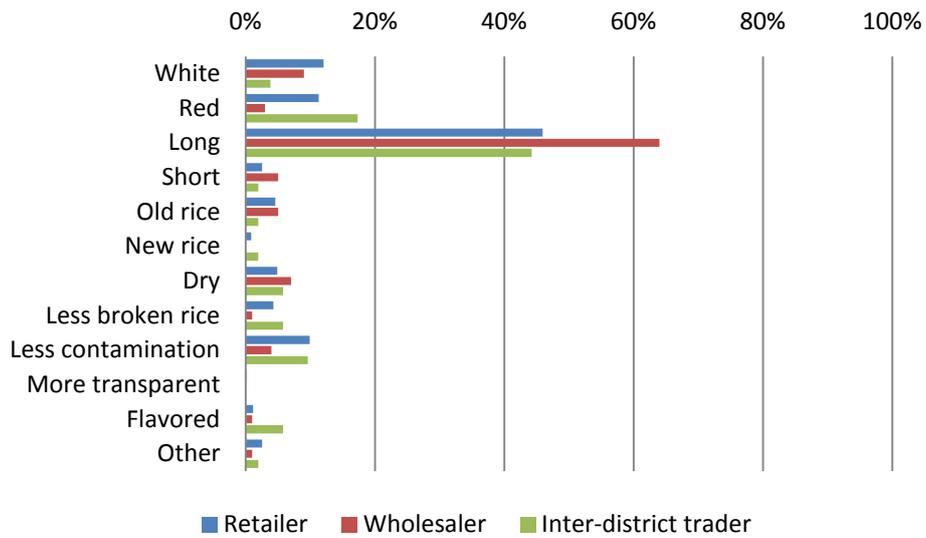
**Figure 15: Purchase on credit**



**Figure 16: Product verification during purchase**

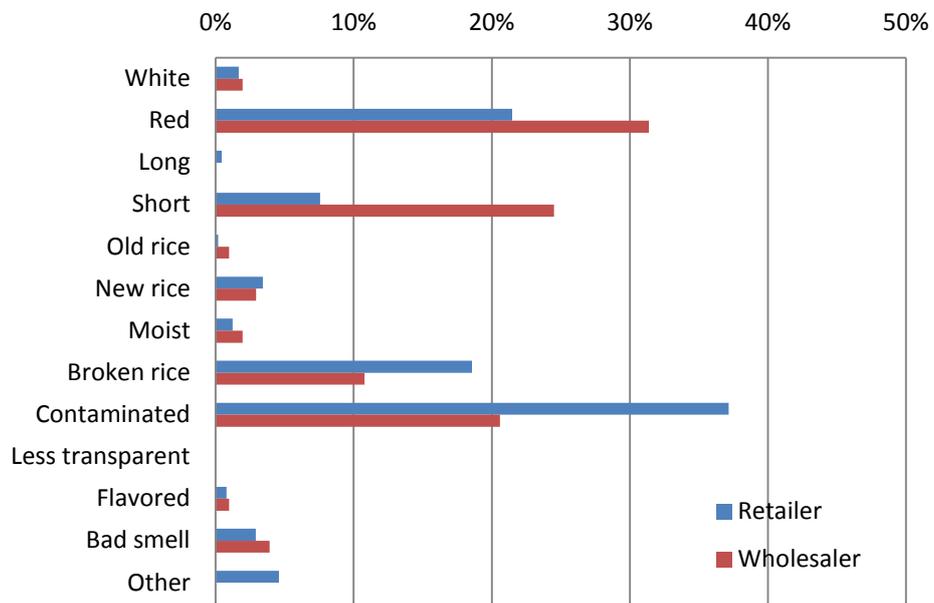


(a) First characteristics

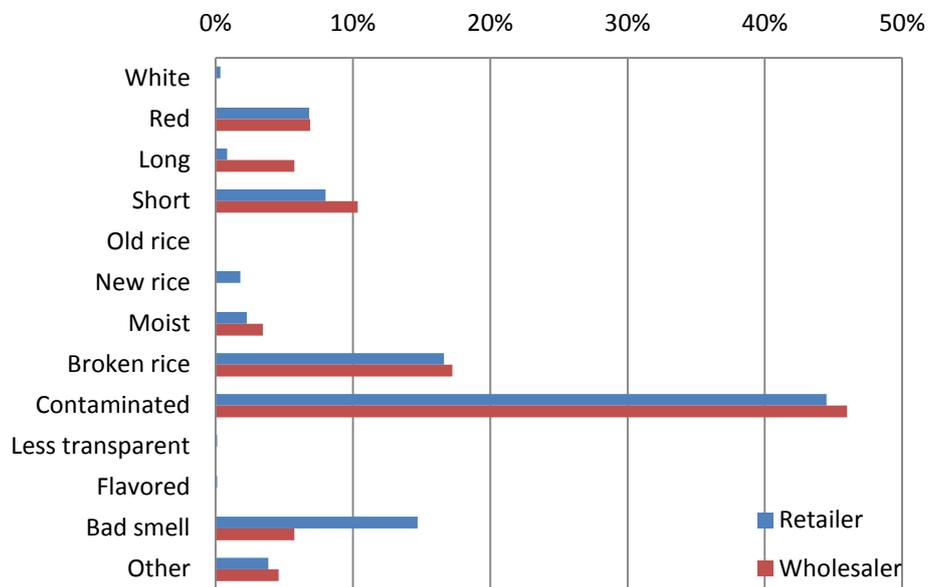


(b) Second characteristics

**Figure 17: Characteristics of the most preferred rice**

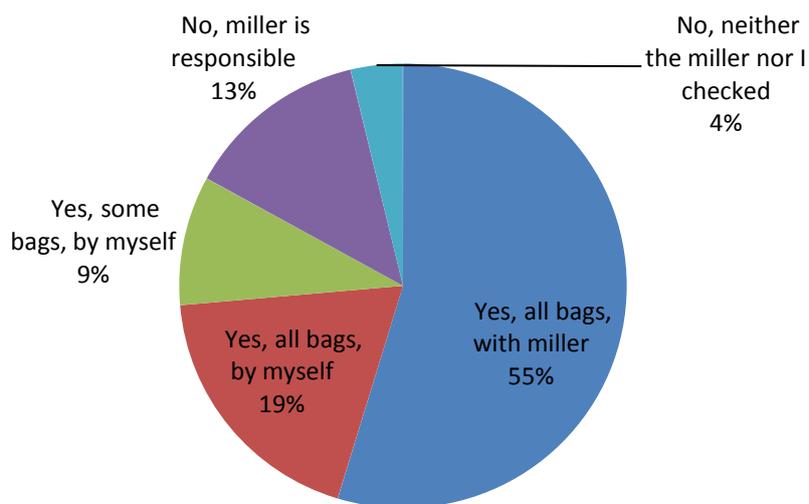


(a) First characteristics

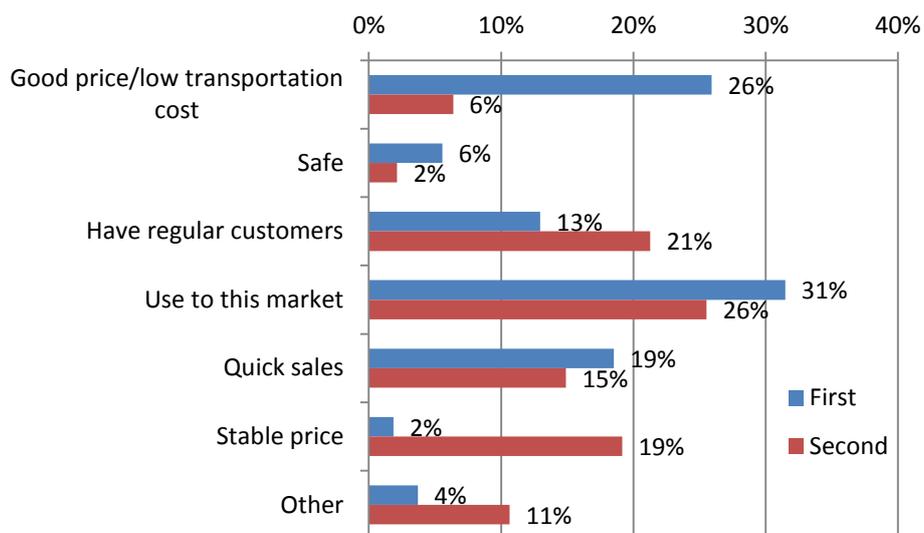


(b) Second characteristics

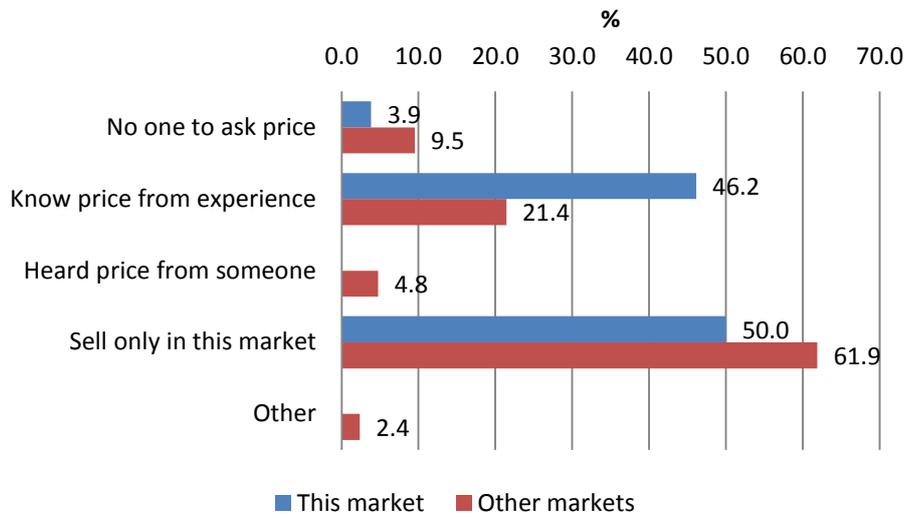
**Figure 18: Characteristics of most disliked rice**



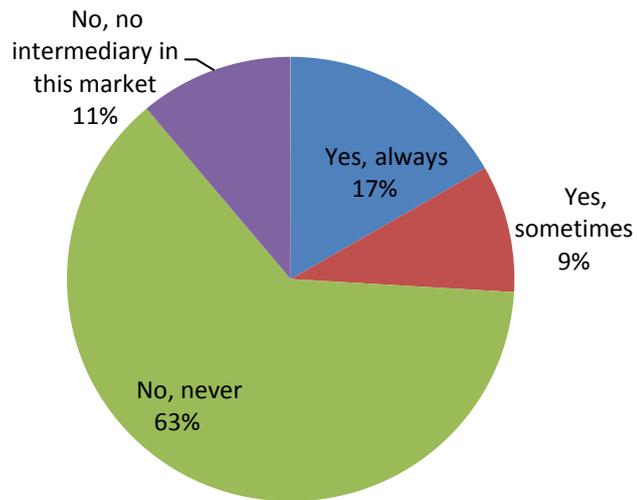
**Figure 19: Checked that all bags are of the same weight?**



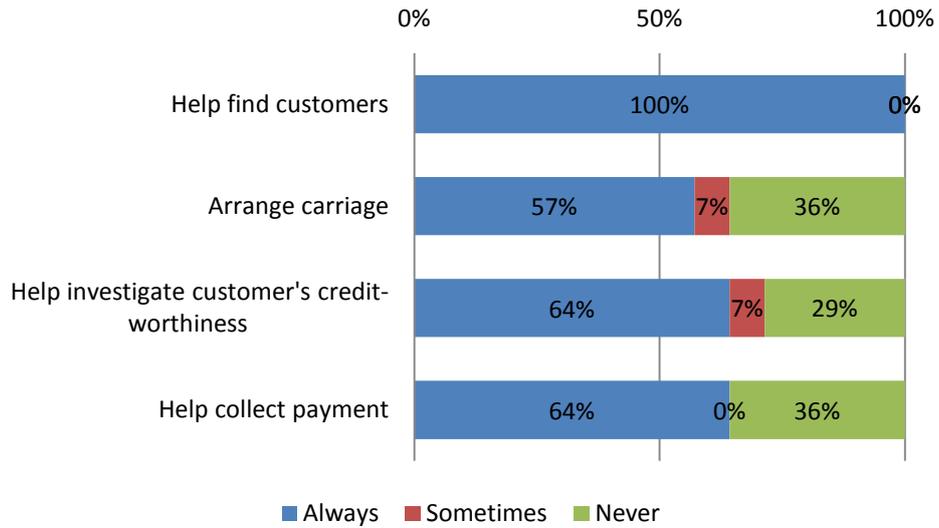
**Figure 20: First and second reasons choosing to come to this market**



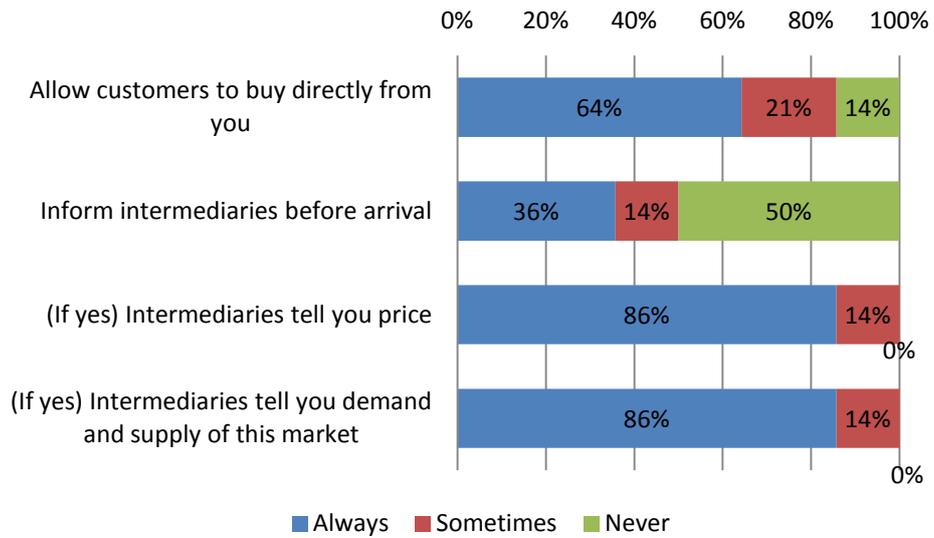
**Figure 21: Reasons for not checking the price**



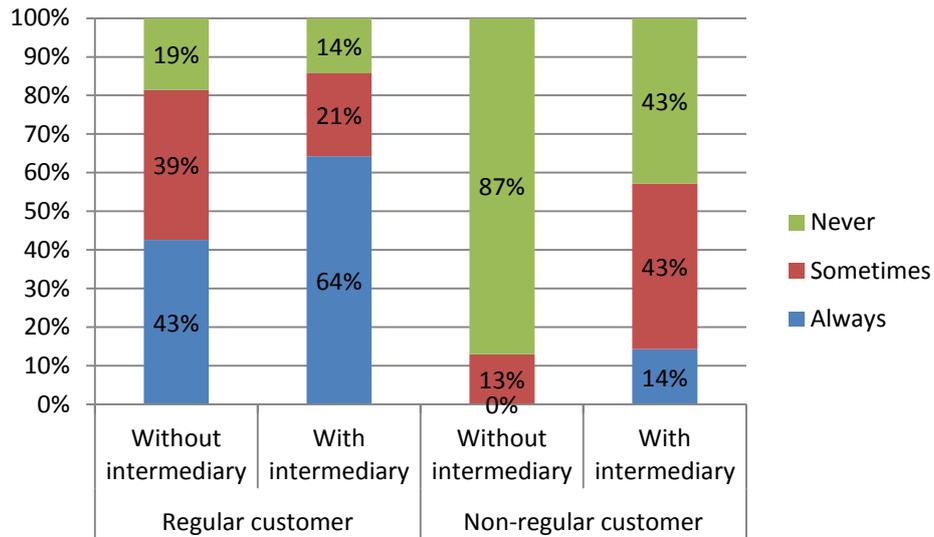
**Figure 22: Use of intermediaries by inter-district traders**



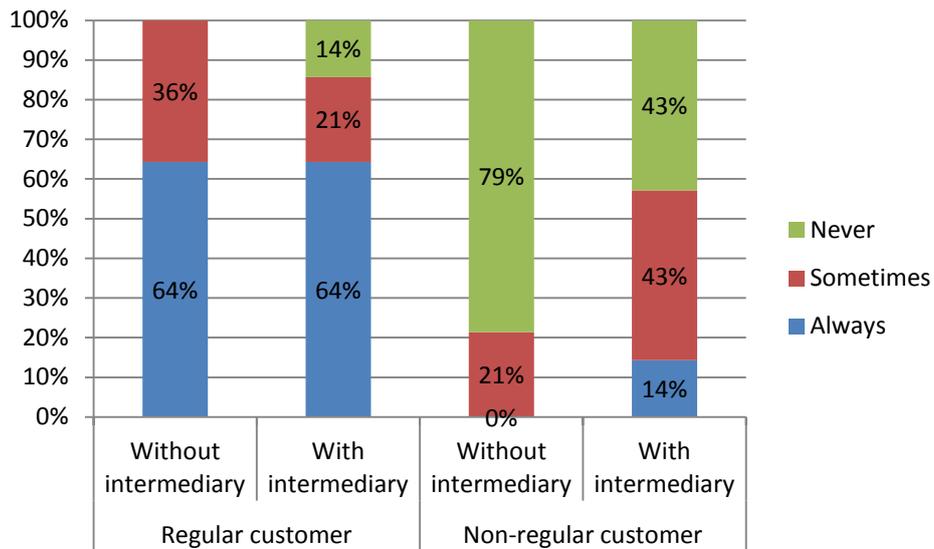
**Figure 23: The roles of intermediaries played for inter-district traders**



**Figure 24: Trade with intermediaries**



**Figure 25: Sales on credit (full sample)**



**Figure 26: Sales on credit (samples using intermediaries)**

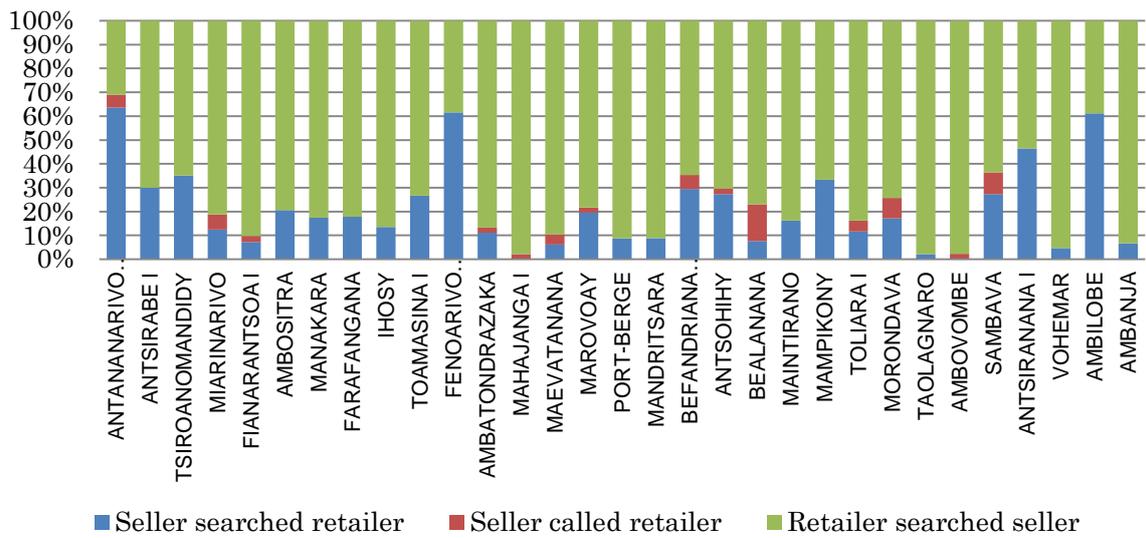


Figure 1: Mode of search by market

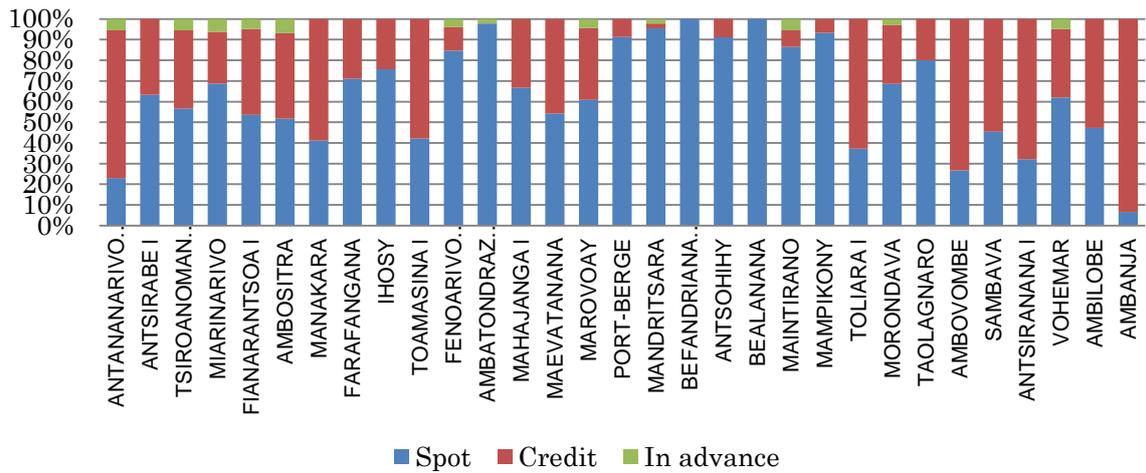


Figure 2: Mode of payment (spot vs. credit) by market

## 10. Tables

**Table 0: List of Selected Cities for Trader Census**

Number	Region Name	District Capital	Region capital ?
1	Diana	Antsiranana	Yes
		Ambilobe	No
		Ambanja	No
2	Sava	Sambava	Yes
		Voohemar	No
3	Itasy	Miarinarivo	Yes
4	Analamanga	Antananarivo-Renivohitra	Yes
5	Vakinankaratra	Antsirabe I	Yes
6	Bongolava	Tsiroanomandidy	Yes
7	Sofia	Antsohihy	Yes
		Bealanana	No
		Mandritsara	No
		Mampikony	No
		Port Berge	No
		Befandriana	No
8	Boeny	Mahajanga I	Yes
		Marovoay	No
9	Betsiboka	Maevatanana	Yes
10	Melaky	Maintirano	Yes
11	Alaotra-Mangoro	Ambatondrazaka	Yes
12	Atsinanana	Toamasina I	Yes
13	Analanjirifo	Fenerive Est	Yes
14	Amoron'i Mania	Ambositra	Yes
15	Haute Matsiatra	Fianarantsoa I	Yes
16	Vatovavy-Fitovinany	Manakara	Yes
17	Atsimo-Atsinanana	Farafangana	Yes
18	Ihorombe	Ihosal	Yes
19	Menabe	Morondava	Yes
20	Atsimo-Andrefana	Toliara I	Yes
21	Androy	Ambovombe Androy	Yes
22	Anosy	Taalagnaro	Yes

Please refer to Figure 0 for the location of each region.

**Table 1: Number of observations**

Markets	Retailer/Wholesaler		Wholesaler		Inter-district trader	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
ANTANANARIVO RENIVOHI	74	6.5%	0	0.0%	15	27.8%
ANTSIRABE I	30	2.6%	3	2.9%	6	11.1%
TSIROANOMANDIDY	37	3.2%	0	0.0%	0	0.0%
MIARINARIVO	16	1.4%	0	0.0%	0	0.0%
FIANARANTSOA I	41	3.6%	7	6.9%	1	1.9%
AMBOSITRA	29	2.5%	4	3.9%	1	1.9%
MANAKARA	46	4.0%	4	3.9%	5	9.3%
FARAFANGANA	45	3.9%	0	0.0%	3	5.6%
IHOSY	37	3.2%	12	11.8%	1	1.9%
TOAMASINA I	45	3.9%	3	2.9%	0	0.0%
FENOARIVO ATSIANANA	26	2.3%	2	2.0%	0	0.0%
AMBATONDRAZAKA	45	3.9%	0	0.0%	0	0.0%
MAHAJANGA I	45	3.9%	10	9.8%	5	9.3%
MAEVATANANA	48	4.2%	9	8.8%	3	5.6%
MAROVOAY	46	4.0%	6	5.9%	1	1.9%
PORT-BERGE	23	2.0%	0	0.0%	1	1.9%
MANDRITSARA	45	3.9%	3	2.9%	0	0.0%
BEFANDRIANA AVARATRA	17	1.5%	2	2.0%	0	0.0%
ANTSOHIHY	45	3.9%	1	1.0%	0	0.0%
BEALANANA	13	1.1%	0	0.0%	0	0.0%
MAINTIRANO	37	3.2%	1	1.0%	0	0.0%
MAMPIKONY	15	1.3%	0	0.0%	0	0.0%
TOLIARA I	43	3.8%	13	12.7%	0	0.0%
MORONDAVA	35	3.1%	3	2.9%	3	5.6%
TAOLAGNARO	45	3.9%	4	3.9%	1	1.9%
AMBOVOMBE	45	3.9%	6	5.9%	0	0.0%
SAMBAVA	11	1.0%	1	1.0%	0	0.0%
ANTSIRANANA I	56	4.9%	7	6.9%	0	0.0%
VOHEMAR	21	1.8%	0	0.0%	0	0.0%
AMBILOBE	36	3.2%	1	1.0%	2	3.7%
AMBANJA	45	3.9%	0	0.0%	6	11.1%
Total	1,142	100.0%	102	100.0%	54	100.0%

**Table 2: Main rice market of the city**

	Obs.	Mean	Std. Dev.	Min	Max
Number of markets in the city	31	2.42	1.77	1	8
Number of market days per week of the selected market	31	3.50	2.77	1	7
Market area of the selected market (m <sup>2</sup> )	31	11,728	14,330	100	60,000

**Table 3: Facilities in the market**

	Frequency			Percent		
	Yes	No	Total	Yes	No	Total
Parking space for trucks	14	17	31	45.2	54.8	100.0
Water pipe	24	7	31	77.4	22.6	100.0
Toilet	20	11	31	64.5	35.5	100.0
Public warehouse	8	23	31	25.8	74.2	100.0
Price data collection	2	29	31	6.5	93.5	100.0
Commodity price bulletin board	0	31	31	0.0	100.0	100.0

**Table 4: Fee collection and Shop Category**

	# of Obs.	Mean	Std. Dev.	Min	Max
# of markets collecting fee from traders	31				
# of markets whose shop categories are based on location/structure?	26				
If yes, mean number of shop categories	26	3.9	1.1	2	6
If no, mean number of shop categories	5	6.6	1.7	4	8

**Table 5: Shop Space Categories**

	Freq.	Percent	Cum.
Pavillon	36	29.5	29.5
Stall	20	16.4	45.9
Table	17	13.9	59.8
On the floor (without structure)	10	8.2	68.0
Big open space (either roofed or not)	11	9.0	77.0
Product specific categories	27	22.1	99.2
Warehouse	1	0.8	100.0
<b>Total</b>	<b>122</b>	<b>100</b>	

**Table 6: Number of shop spaces and traders**

	# of Obs.	Mean	Std. Dev.	Min	Max
# of spaces available in the market	30	844.8	1166.7	61	6066
# of traders permitted to use the space	30	848.4	1164.4	61	6066
# of traders paying fee for the space	29	799.2	1139.0	61	6066

**Table 7: Shop space category providing the largest number of shop spaces**

Category of Shop Space	# of Markets	Mean # of Spaces	Average Amount of Fee (Ar) by Frequency of Payment			
			Fixed Entry (N)	Annual Fee (N)	Monthly Fee (N)	Daily Fee (N)
Pavillon	6	388	0	0	14,333 (6)	200 (1) <sup>c</sup>
Stall	12	413	11,000 (1) <sup>a</sup>	2,000 (1) <sup>b</sup>	8,750 (6)	213 (8)
Table	6	739	0	0	0	400 (6)
Floor	3	370	0	0	0	133 (3)
Open space	3	253	0	0	0	300 (3)
Rice	1	1000	0	0	0	700 (1)
<b>Mean</b>		<b>459</b>	<b>11,000 (1)</b>	<b>2,000 (1)</b>	<b>11,542 (12)</b>	<b>287 (22)</b>

<sup>a</sup> In addition to the fixed entry fee, 5,000 Ar/month need to be paid as monthly fee.

<sup>b</sup> In addition to the annual fee, 200 Ar/day need to be paid as daily fee.

<sup>c</sup> This daily fee is additional to monthly fee of 2,000 Ar/month.

**Table 8: Shop space category providing the second largest number of shop spaces**

Category of Shop Space	# of Markets	Mean # of Spaces	Average Amount of Fee (Ar) by Frequency of Payment			
			Fixed Entry (N)	Annual Fee (N)	Monthly Fee (N)	Daily Fee (N)
Pavillon	10	101	5,000 (1) <sup>a</sup>	220,000 (1)	14,556 (9)	0
Stall	6	296		0	6,750 (3)	400 (3)
Table	7	610	25,000 (1) <sup>b</sup>	0	4,500 (3)	160 (5)
Floor	3	125	0	0	0	140 (3)
Open space	4	242	0	0	5,000 (1)	300 (3)
Rice	1	12	0	0	3,000 (1)	200 (1)
Mean		276	15,000 (2)	220,000 (1)	9,972 (16)	235 (15)

<sup>a</sup> In addition to the fixed entry fee, 14,000 Ar/month need to be paid as monthly fee.

<sup>b</sup> In addition to the fixed entry fee, 6,000 Ar/month need to be paid as daily fee.

**Table 9: Who identifies available space?**

	Freq.	Percent
Commune	19	61.3
Market head (commune)	8	25.8
President of organization	3	9.7
By the trader himself	2	6.5
Others	1	3.2
Total number of observations (31 markets)	33	100.0

\*There are two markets where both commune and president do it.

**Table 10: Who approves the assignment?**

	Freq.	Percent
Commune	27	87.1
Market head (commune)	4	12.9
No approval is necessary	1	3.2
Total number of observations (31 markets)	32	100.0

\*There is one market where both commune and market head do it.

**Table 11: How often does the space allocation take place?**

	Freq.	Percent
Anytime when a request comes	10	32.3
Anytime if a space is available	13	41.9
During a specific period	1	3.2
Yearly	3	9.7
Monthly	1	3.2
Daily	3	9.7
Other	1	3.2
Total number of observations (31 markets)	32	100.0

\*There is one market where it takes place either when a space is available or during a specific period.

**Table 12 What if more than one request falls in the same space?**

	Freq.	Percent
First-come, first-served	26	83.9
Lottery	3	9.7
Bidding	1	3.2
Other, specify	2	6.5
Total number of observations (31 markets)	32	100.0

**Table 13 Regulations on private allocation of shop spaces**

	Private transfer of allocated place allowed?	Rental of allocated place allowed?
No	20	22
Yes	11	9
Total	31	31

**Table 14: Traders' organization in the market?**

	Freq.	Percent
Yes, formal one	18	58.1
Yes, informal one	8	25.8
No	5	16.1
Total	31	100.0

**Table 15: Who initiated to form the traders' org.?**

	Freq.	Percent
Commune	4	15.4
NGO	1	3.9
Traders themselves	19	73.1
Traders & Commune	1	3.9
Businessman	1	3.9
Total	26	100.0

**Table 16: Is traders' organization a membership organization?**

	Freq.	Percent
No	17	65.38
Yes	9	34.62
Total	26	100

**Table 17: On the membership of traders' organization**

	Obs.	Mean	Std. Dev.	Min	Max
Num. of members	9	160.6	98.8	38	300
Freq. of a general assembly in a year	9	2.0	1.1	1	4
Membership fee (Ar/month)	9	347.2	292.3	42	1000
Num. of members paying the fee	9	102.1	90.7	0	300

\*In the case of annual membership fee, the amount is converted to monthly payment.

**Table 18: Collecting money if the organization is not a membership organization?**

	Freq.	Percent
No	7	41.2
Yes	10	58.8
Total	17	100.0

**Table 19: Does the market have president of traders?**

	Freq.	Percent
No	4	12.9
Yes	27	87.1
Total	31	100.0

**Table 20: How do they select the president?**

	Freq.	Percent
Appointed by commune	13	48.2
Elected by traders	14	51.9
Total	27	100.0

**Table 21: Who participates in market management activity?**

Activity	Number of Markets				# of markets applicable
	Every one	Only members	Voluntary	Unknown	
Security patrol	1	0	10	3	14
Fire fighting	NA	NA	NA	NA	0
Cleaning	4	1	4	1	10
Facility maintenance	1	0	3	0	5

**Table 22: Number of rice traders in the market in September 2011**

	Obs.	Mean	Std. Dev.	Min	Max
Average num. of regular traders in a day	28	69.7	100.5	7	500
Max. num. of occasional traders in a day	25	30.7	31.0	0	100
Total num. of inter-district traders using truck in a week	29	3.1	4.9	0	20

**Table 23: Does the market have a representative of rice traders?**

	Freq.	Percent
No	18	60
Yes	12	40
Total	30	100

**Table 24: Common conversion rates of milled rice in the market**

	Obs.	Mean	Std. Dev.	Min	Max
1 BAG of milled rice = how many kgs?	28	58.2	13.9	50	120
1 TIN of milled rice = how many kgs?	3	14.8	3.8	10.5	17
1 BAG of milled rice = how many cups?	29	198.9	47.2	168	420
1 TIN of milled rice = how many cups?	4	31.0	8.7	18	36
1 KG of milled rice = how many cups?	29	3.5	0.0	3.5	3.5

**Table 25: Characteristics of retailer/wholesalers**

Variable	Retailer					Wholesaler				
	Obs.	Mean	S. D.	Min	Max	Obs.	Mean	S. D.	Min	Max
Age	1,136	34.12	10.26	13	69	102	38.67	9.34	16	77
Male (dummy)	1,142	0.201	dummy	0	1	102	0.363	dummy	0	1
Literate (dummy)	1,139	0.925	dummy	0	1	102	0.951	dummy	0	1
Years of schooling	1,134	6.81	3.32	0	15	101	8.35	3.70	0	16
Main business is wholesale (dummy)	1,142	0.039	0.193	0	1					
Stall inside market (dummy)	1,140	0.864	dummy	0	1	102	0.471	dummy	0	1
Sell imported rice (dummy)	1,132	0.222	dummy	0	1	102	0.265	dummy	0	1
Have inter-district trader's license (dummy)	1,142	0.039	dummy	0	1	102	0.520	dummy	0	1
Have intra-district trader's license (dummy)	1,142	0.036	dummy	0	1	102	0.392	dummy	0	1
Operate rice milling (dummy)	1,140	0.007	dummy	0	1	102	0.098	dummy	0	1
Years of experience in rice trading	1,140	5.19	5.59	0	40	101	8.43	6.50	0	36
Number of family members working in business	1,141	0.33	0.71	0	6	102	0.79	1.24	0	7
Number of employees	1,141	0.22	0.57	0	4	102	1.62	2.10	0	10
Number of collectors paying in advance	1,141	0.03	0.24	0	5	101	1.05	2.29	0	15
Use public storage (dummy)	1,139	0.101	dummy	0	1	102	0.196	dummy	0	1
<b>Asset</b>										
Own a vehicle (dummy)	1,118	0.030	dummy	0	1	99	0.202	dummy	0	1
Own a truck (dummy)	1,117	0.017	dummy	0	1	99	0.212	dummy	0	1
Number of vehicles owned	1,118	0.033	0.198	0	2	99	0.242	0.536	0	3
Number of trucks owned	1,117	0.019	0.148	0	2	99	0.333	0.756	0	4
Own cell phone (dummy)	1,142	0.560	dummy	0	1	102	0.902	dummy	0	1
Use mobile money for general purpose (dummy)	1,142	0.029	dummy	0	1	102	0.098	dummy	0	1
Use mobile money for rice trading (dummy)	1,142	0.008	dummy	0	1	102	0.049	dummy	0	1
<i>(If yes)</i>										
Years owned vehicle	32	4.53	3.37	0	12	19	5.37	4.41	0	20
Years owned truck	18	5.67	5.91	1	21	20	6.45	3.38	1	15
Years owned cell phone	638	3.85	2.91	0	16	88	6.01	3.14	0	15
Years using mobile money for general purpose	33	1.27	1.28	0	5	10	0.40	0.52	0	1
Years using mobile money for rice trading	9	0.67	0.50	0	1	5	0.80	0.84	0	2

**Table 26: Characteristics of rice sold by retailers at the time of the interview**

Variable	Obs.	Mean	Std. Dev.	Min	Max
Number of varieties sold	1,142	2.1	1.2	1	12
Price (most expensive) (Ar/kg)	1,142	1143.4	131.9	875	1925
Price (cheapest) (Ar/kg)	1,141	1079.2	111.1	721	1400
<b><i>Most popular rice</i></b>					
Price of most popular rice (Ar/kg)	1,142	1121.5	121.1	875	1750
Long variety (dummy)	1,142	0.873	0.333	0	1
Color=white (dummy)	1,142	0.841	0.366	0	1
Hand milled (dummy)	1,137	0.029	0.168	0	1
Category of rice	<u>Freq.</u>	<u>%</u>			
Vary gasy	708	62%			
Tsipala	146	13%			
Makalioka	219	19%			
Import	49	4%			
Don't know	20	2%			
Total	1,142	100%			
Seller searched the buyer? (respondent is seller)	<u>Freq.</u>	<u>%</u>			
Seller came here for sales	248	22%			
Seller phoned me	22	2%			
Respondent went to look for seller	870	76%			
Total	1,140	100%			
Number of sellers compared price with	1,136	0.9	2.2	0	30
Purchase price in milled rice	1,141	1037.2	140.4	190	1680
Purchase intermediated? (dummy)	1,130	0.039	0.194	0	1
Quantity of purchase (kg)	1,112	4894.5	10650.7	2.5	1.75E+05
Verified weight or quantity? (dummy)	1,142	0.521	0.500	0	1
Bags short of weight or quantity	446	0.5	2.7	0	40
Claimed seller short bags (dummy)	68	0.735	0.444	0	1
Compensated short bags (dummy)	52	0.692	0.466	0	1

**Table 26: Modes of purchase of the most popular rice**

	Freq.	Percentage
Purchased from:		
Seller based in this city	408	36%
Seller based in this district	420	37%
Inter-district trader	300	26%
Don't know	13	1%
Total	1,141	100%
Place of purchase:		
In this city	535	47%
In this district	305	27%
Outside this district	300	26%
Total	1,140	100%

**Table 27: Mode of payment of the most popular rice**

	Freq.	Percentage
Mode of payment:		
Cash	1,139	99.8%
Check	2	0.2%
Total	1,141	100%
Payment due:		
In advance	20	2%
On the spot	678	59%
At the end of the day	191	17%
Within 1 week	222	19%
Within 1-2 week	21	2%
More than 2 weeks	2	0%
Before the seller leaves here	6	1%
Next time when the seller comes back	2	0%
Total	1,142	100%

**Table 28: Modes of purchase in the past 12 months**

	Retailer			Wholesaler		
	Obs.	Freq.	Percentage	Obs.	Freq.	Percentage
Visited other districts to purchase	1,142	40	4%	102	38	37%
Purchased from inter-district traders	1,142	338	30%	102	65	64%
Purchased from sellers in city	1,142	532	47%	102	15	15%
Purchased from sellers in district	1,142	431	38%	102	25	25%

**Table 29: Characteristics of the most preferred rice**

	Retailer			Wholesaler			Inter-district trader		
	First	Second	Third	First	Second	Third	First	Second	Third
<i>Frequency</i>									
White	838	129	30	87	9	3	42	2	0
Red	87	121	16	1	3	1	7	9	1
Long	76	492	89	5	64	4	1	23	2
Short	8	27	18	2	5	3	0	1	0
Old rice	20	49	66	0	5	8	0	1	4
New rice	1	9	6	0	0	0	0	1	1
Dry	4	52	82	0	7	4	0	3	6
Less broken rice	6	46	125	0	1	5	0	3	10
Less contamination	64	106	298	5	4	23	1	5	15
More transparent	1	1	3	0	0	0	1	0	0
Flavored	13	12	28	1	1	5	0	3	0
Other	24	27	36	1	1	1	2	1	1
Total	1,142	1,071	797	102	100	57	54	52	40
<i>Percentage</i>									
White	73%	12%	4%	85%	9%	5%	78%	4%	0%
Red	8%	11%	2%	1%	3%	2%	13%	17%	3%
Long	7%	46%	11%	5%	64%	7%	2%	44%	5%
Short	1%	3%	2%	2%	5%	5%	0%	2%	0%
Old rice	2%	5%	8%	0%	5%	14%	0%	2%	10%
New rice	0%	1%	1%	0%	0%	0%	0%	2%	3%
Dry	0%	5%	10%	0%	7%	7%	0%	6%	15%
Less broken rice	1%	4%	16%	0%	1%	9%	0%	6%	25%
Less contamination	6%	10%	37%	5%	4%	40%	2%	10%	38%
More transparent	0%	0%	0%	0%	0%	0%	2%	0%	0%
Flavored	1%	1%	4%	1%	1%	9%	0%	6%	0%
Other	2%	3%	5%	1%	1%	2%	4%	2%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Table 30: Characteristics of the most disliked rice**

	Retailer				Wholesaler			
	Frequency		Percentage		Frequency		Percentage	
	First	Second	First	Second	First	Second	First	Second
White	19	3	2%	0%	2	0	2%	0%
Red	244	57	21%	7%	32	6	31%	7%
Long	5	7	0%	1%	0	5	0%	6%
Short	86	67	8%	8%	25	9	25%	10%
Old rice	2	0	0%	0%	1	0	1%	0%
New rice	39	15	3%	2%	3	0	3%	0%
Moist	14	19	1%	2%	2	3	2%	3%
Broken rice	211	139	19%	17%	11	15	11%	17%
Contaminated	422	372	37%	44%	21	40	21%	46%
Less transparent	0	1	0%	0%	0	0	0%	0%
Flavored	9	1	1%	0%	1	0	1%	0%
Bad smell	33	123	3%	15%	4	5	4%	6%
Other	52	32	5%	4%	0	4	0%	5%
Total	1,136	836	100%	100%	102	87	100%	100%

**Table 31: Characteristics of the inter-district traders**

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	54	38.07	8.31	20	60
Male (dummy)	54	0.685	dummy	0	1
Literate (dummy)	54	1.000	dummy	1	1
Years of schooling	54	9.48	3.17	3	16
Have inter-district trader's license (dummy)	54	0.926	dummy	0	1
Have intra-district trader's license (dummy)	53	0.660	dummy	0	1
Operate rice milling (dummy)	54	0.278	dummy	0	1
Years of experience in rice trading	54	7.76	6.40	0	25
Years of experience in rice trading in this market	54	5.93	5.72	0	24
Number of family members working in business	54	1.04	1.57	0	8
Number of employees	54	2.19	2.46	0	10
Number of collectors paying in advance	54	1.19	4.24	0	30
Capacity of private storage (ton)	37	6.76	41.10	0	250
Use public storage (dummy)	54	0.185	dummy	0	1
Used radio price info (dummy)	54	0.074	dummy	0	1
Heard of SMS price info (dummy)	54	0.019	dummy	0	1
<b>Asset</b>					
Own a vehicle (dummy)	54	0.148	dummy	0	1
Own a truck (dummy)	54	0.444	dummy	0	1
Number of vehicles owned	54	0.185	0.479	0	2
Number of trucks owned	54	0.963	2.000	0	12
Own cell phone (dummy)	54	0.889	dummy	0	1
Use mobile money for general purpose (dummy)	54	0.130	dummy	0	1
Use mobile money for rice trading (dummy)	54	0.148	dummy	0	1
<i>(If yes)</i>					
Years owned vehicle	8	4.88	3.72	1	11
Years owned truck	22	6.27	3.71	2	15
Years owned cell phone	48	7.60	3.71	0	15
Years using mobile money for general purpose	7	1.00	0.00	1	1
Years using mobile money for rice trading	8	1.00	0.00	1	1

**Table 32: Summary statistics of the traders' current visit to the interviewed market**

Variable	Obs	Mean	S. D.	Min	Max
Quantity of milled rice brought (kg)	54	8669.4	4399.5	600	23,000
Purchased milled rice in the district of shipment? (dummy)	54	0.907	dummy	0	1
Size of truck (ton)	54	10.9	5.9	2	30
Transportation cost (September) (Ar/kg)	54	93.9	187.8	5	1,400
Transportation cost (rainy season) (Ar/kg)	50	101.4	197.4	0	1,400
Selling price of milled rice (Ar/kg)	54	1044.0	96.0	845	1,400
Expected days to sell all the rice brought	54	2.5	2.3	1	14
Informed your visit before arrival to customers? (dummy)	54	0.352	dummy	0	1
<i>(If yes)</i>					
Number of customers informed	19	4.8	3.3	2	15
Do you usually do so?	<u>Freq.</u>	<u>Percent</u>			
Always	41	87%			
Sometimes	6	13%			
Total	47	100%			
Sales intermediated? (dummy)	53	0.170	dummy	0	1
<i>(If yes)</i>					
Called intermediary before arrival? (dummy)	9	0.889	dummy	0	1
Commission fee (Ar/kg)	8	6.3	4.7	3.3	17
Did the intermediary mediate the last customer?	<u>Freq.</u>	<u>Percent</u>			
Yes	7	78%			
No	1	11%			
Not sold yet	1	11%			
Total	9	100%			
Was the last customer a regular customer?	<u>Freq.</u>	<u>Percent</u>			
Yes	17	65%			
No	5	19%			
Not sold yet	4	15%			
Total	26	100%			

**Table 33: Price check**

	Obs.	Obs. (yes)	Percentage
Checked price in this market?	54	27	50%
<i>(If yes)</i> Used mobile phone?	27	20	74%
Checked price in other markets?	54	11	20%
<i>(If yes)</i> Number of markets checked	<u>Freq</u>	<u>Percent</u>	
	1	1	10%
	2	5	50%
	3	3	30%
	4	1	10%
Total	10	100%	<i>(1 missing)</i>
Mean	2.4		
S. D.	0.843		

**Table 34: Price check by origin of traders**

District of residence of trader	Obs.	Price check in this market			Price check in other markets		
		Checked price		Used mobile phone	Checked price		Number of markets checked
		Freq.	Percentage		Freq.	Percentage	
ANTANANARIVO RENIVOHITRA	6	3	50%	0.667	0	0%	
ARIVONIMAMO	5	1	20%	1.000	0	0%	
ANTSIRABE I	2	1	50%	1.000	0	0%	
SOAVINANDRIANA	1	1	100%	1.000	0	0%	
FARATSIHO	4	3	75%	0.333	0	0%	
ANTSIRABE II	1	1	100%	1.000	0	0%	
FIANARANTSOA I	2	1	50%	0.000	1	50%	1
AMBATOFINANDRAHANA	1	1	100%	0.000	0	0%	
MANAKARA	1	0	0%		0	0%	
FARAFANGANA	2	0	0%		0	0%	
IHOSY	2	1	50%	0.000	0	0%	
IVOHIBE	1	1	100%	0.000	0	0%	
FIANARANTSOA II	2	0	0%		0	0%	
MAHAJANGA I	2	1	50%	1.000	0	0%	
MAROVOAY	4	3	75%	1.000	1	25%	3
PORT-BERGE	1	1	100%	1.000	1	100%	4
BEFANDRIANA AVARATRA	4	2	50%	1.000	2	50%	2.5
BEALANANA	3	2	67%	1.000	2	67%	3
MAMPIKONY	1	0	0%		0	0%	
MORONDAVA	3	1	33%	1.000	0	0%	
SAMBAVA	1	1	100%	1.000	1	100%	2
AMBILOBE	1	0	0%		0	0%	
AMBANJA	4	2	50%	1.000	3	75%	2
<b>Total</b>	<b>54</b>	<b>27</b>	<b>50%</b>		<b>11</b>	<b>20%</b>	

**Table 35: Reason not checking the price**

District of residence of trader	This market						Other markets					
	I have no one to ask the prices	I know the prices from experience	I heard the prices from someone	I sell only in this market	Other	Total	I have no one to ask the prices	I know the prices from experience	I heard the prices from someone	I sell only in this market	Other	Total
ANTANANARIVO RENIVOHI	0	2	0	1	0	3	0	2	0	4	0	6
ARIVONIMAMO	0	1	0	3	0	4	1	1	0	2	1	5
ANTSIRABE I	0	0	0	1	0	1	0	0	0	2	0	2
SOAVINANDRIANA							0	1	0	0	0	1
FARATSIHO	0	0	0	2	0	2	0	0	0	4	0	4
ANTSIRABE II							0	0	1	0	0	1
FIANARANTSOA I	0	1	0	0	0	1	0	0	0	1	0	1
AMBATOFINANDRAHANA	0	0	0	0	1	1	0	0	0	1	0	1
MANAKARA	0	0	0	1	0	1	0	0	0	1	0	1
FARAFANGANA	0	1	0	1	0	2	0	0	0	2	0	2
IHOSY	0	1	0	0	0	1	0	0	0	2	0	2
IVOHIBE	0	0	0	1	0	1	0	0	1	0	0	1
FIANARANTSOA II	0	1	0	1	0	2	0	1	0	1	0	2
MAHAJANGA I	0	1	0	0	0	1	0	1	0	1	0	2
MAROVOAY	0	1	0	0	0	1	0	2	0	0	0	2
PORT-BERGE												
BEFANDRIANA AVARATRA	0	2	0	0	0	2	2	0	0	0	0	2
BEALANANA	1	0	0	0	0	1	0	1	0	0	0	1
MAMPIKONY	0	0	0	1	0	1	0	0	0	1	0	1
MORONDAVA	0	0	0	2	0	2	1	0	0	2	0	3
SAMBAVA												
AMBILOBE	0	0	0	1	0	1	0	0	0	1	0	1
AMBANJA	0	1	0	0	0	1	0	0	0	1	0	1
<b>Total</b>	<b>1</b>	<b>12</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>29</b>	<b>4</b>	<b>9</b>	<b>2</b>	<b>26</b>	<b>1</b>	<b>42</b>

**Table 36: Sales in the interviewed market**

	Obs.	Mean	S. D.	Min	Max
Times bringing rice to this market in the past 12 months	53	54.4	89.8	1	550
Percentage in volume sold by <i>order</i> in this city (%) ( <i>If &lt; 100</i> )	54	24.6	33.9	0	100
Number of customers (out of 10) selling on credit if <i>not</i> ordered	47	2.7	3.1	0	10
Number of customers trader can visit directly (outside the market parking place)	51	2.647	3.773	0	14

	Freq.	Percent
0	26	51%
1	2	4%
2	5	10%
3	5	10%
4	2	4%
5	1	2%
6	1	2%
7	1	2%
8	1	2%
10	6	12%
14	1	2%
Total	51	100%

**Table 37: Role of intermediaries by market**

district	N	announce truck arrival	arrange carriage	verify quality	verify weight	verify quantity	help purchase on credit	help claim seller
ANTANANARIVO RENIVOHITRA	10	1.000	0.400	1.000	0.700	0.300	0.800	0.800
ANTSIRABE I	1	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MANAKARA	12	1.000	1.000	0.917	0.250	0.167	0.000	0.167
FARAFANGANA	7	1.000	1.000	0.857	0.714	0.000	0.571	0.429
TOAMASINA I	1	1.000	1.000	1.000	0.000	0.000	0.000	1.000
AMBOVOMBE	2	1.000	0.000	1.000	0.500	0.000	0.500	0.500
AMBANJA	9	0.667	0.222	0.111	0.111	0.000	0.778	0.778

**Table 38: Sales on credit**

Sell on credit to ... customer?	Freq.		Percentage	
	Regular	Non-regular	Regular	Non-regular
Always	23	0	43%	0%
Sometimes	21	7	39%	13%
Never	10	47	19%	87%
Total	54	54	100%	100%

Number of customers the trader can sell on credit	
Obs.	52
Mean	6.08
Std. Dev.	5.54
Min	0
Max	22

**Table 39: Experiences of payment troubles**

	Obs.	Mean	S. D.	Min	Max
Experienced payment troubles in this market? (dummy)	54	0.259	dummy	0	1
Experienced payment troubles in other markets? (dummy)	51	0.078	dummy	0	1
Experienced payment troubles asking for third party mediation (dummy)	53	0.094	dummy	0	1
Number of times experienced payment troubles in this market	54	0.56	1.11	0	4
Number of times experienced payment troubles in other markets	51	0.51	2.39	0	16
Number of incidents asking for third party mediation	53	0.15	0.50	0	2





**Table 42: District visited to purchase rice (retailers and wholesalers)**

District visited to purchase rice:	ANKAZOBE	ARIVONIMA	BETAFO	TSIROANOM	FENOARIVO	FIANARANT	AMBATOFIN	AMBALAVAO	IHOSY	IVOHIBE	FIANARANT	IAKORA	MANANDRIA	TOAMASINA	MAROANTSE	AMPARAFAR	AMBATONDR	AMBATO	MAROVAY	TSARATANA	PORT-BERG	MANDRITSA	ANALAVA	BEFANDRIA	ANTSOHIHY	BEALANANA	MAMPIKONY	MOROMBE	MAHABO	BETROKA	ANDAPA	ANTSIRANA	AMBLOBE	Total	
<i>District of consumption:</i>																																			
ANTANANARIVO RENIVOHI	0	7	0	1	1	0	0	0	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	21
ANTSIRABE I	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
MIARINARIVO	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FIANARANTSOA I	0	0	0	0	0	0	0	2	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
AMBOSITRA	0	0	0	0	0	0	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	9
MANAKARA	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
IHOSY	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5
TOAMASINA I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FENOARIVO ATSIANANA	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
MAHAJANGA I	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	2	2	0	0	0	0	0	0	0	10
MAEVATANANA	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	5
MAROVOAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	2	0	5	0	0	0	0	0	0	0	0	0	12
PORT-BERGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
MANDRITSARA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	4
BEFANDRIANA AVARATRA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
ANTSOHIHY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3
TOLIARA I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
MORONDAVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5
AMBOVOMBE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	
SAMBAVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	
ANTSIRANANA I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	7	0	0	0	0	0	7	3	20	
VOHEMAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	
AMBANJA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Total	2	7	1	2	1	1	4	2	1	2	4	2	4	2	1	1	9	1	5	1	1	8	4	7	1	21	2	2	5	2	8	7	4	125	
0>	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	5	2	6	2	9	2	2	2	3	3	2	3		

**Table 43: District visited for sales in the past 12 months**

<i>District visited for sales:</i>	ANTANANAR	ANJZOROB	ANTSIRABE	BETAFO	ANTANIFOT	ANTSIRABE	MANAKARA	FARAFANGA	VANGAINDR	IHOSY	FIANARANT	MAHAJANGA	MAEVATANA	MAROVOAY	PORT-BERG	ANTSOHIHY	MAHAJANGA	MAINTIRAN	MAMPIKONY	TOLIARA I	MORONDAVA	TAOLAGNAR	AMBOVOMBE	AMBOASARY	ANTSIRANA	ANTSIRANA	AMBILOBE	NOSYBE	AMBANJA	Total	0>	
<i>District of residence of the trader:</i>																																
ANTANANARIVO RENIVOHY	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	3
ANTSIRABE I	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
FARATSIHO	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	
ANTSIRABE II	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	4	
FIANARANTSOA I	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
MANAKARA	0	0	0	0	0	1	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	6	5	
FARAFANGANA	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
IHOSY	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
IVOHIBE	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
FIANARANTSOA II	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	
MAROVOAY	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	4	4
PORT-BERGE	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	5
BEFANDRIANA AVARATRA	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	3	
BEALANANA	3	1	0	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0	1	0	0	0	0	0	1	0	1	1	1	14	10	
MORONDAVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	4	3	
SAMBAVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
AMBILOBE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
AMBANJA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	1	1	
Total	11	1	5	1	1	1	4	4	2	3	3	3	4	1	1	1	1	1	1	1	3	1	1	1	4	1	1	1	6	69		

**Table 44: District visited for purchase in the past 12 months**

<i>District visited for purchase:</i>	ARIVONIMA	BETAFO	TSIROANOM	MIARINARI	SOAVINAND	FARATSIHO	ANTSIRABE	FENOARIVO	AMBATOFIN	IHOSY	IVOHIBE	IKALAMAVO	FIANARANT	IAKORA	AMPARAFAR	AMBATONDR	MAROVOAY	TSARATANA	PORT-BERG	MANDRITSA	BEFANDRIA	BEALANANA	MAHAJANGA	MAMPIKONY	MORONDAVA	MAHABO	BETROKA	Total	0>	
<i>District of residence of the trader:</i>																														
ANTANANARIVO RENIVOHI	3	0	2	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	0	0	0	0	1	10	6
ARIVONIMAMO	4	0	2	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	4
ANTSIRABE I	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	2	
SOAVINANANDRIANA	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
FARATSIHO	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	
ANTSIRABE II	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	
FIANARANTSOA I	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	
AMBATOFINANDRAHANA	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
MANAKARA	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
FARAFANGANA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
IHOSY	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	
IVOHIBE	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
FIANARANTSOA II	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	
MAHAJANGA I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	1	
MAROVOAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	1	0	0	0	5	3	
PORT-BERGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	0	0	5	5	
BEFANDRIANA AVARATRA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	1	
BEALANANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	1	
MAMPIKONY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	5	5	
MORONDAVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	2	
SAMBAVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	
AMBILOBE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	
AMBANJA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	6	2	
Total	7	6	4	2	1	4	1	1	1	6	5	1	4	1	1	2	5	1	2	2	7	13	1	2	1	3	1	85		

**Table 45: Modes of purchase by district**

	Retailer				Wholesaler			
	Visited other districts	inter-district traders	seller in city	seller in district	Visited other districts	inter-district traders	seller in city	seller in district
ANTANANARIVO RENIVOHI	0.135	0.743	0.257	0.014				
ANTSIRABE I	0.000	0.267	0.667	0.133	0.333	1.000	0.333	0.000
TSIROANOMANDIDY	0.000	0.000	0.162	0.838				
MIARINARIVO	0.063	0.000	0.000	0.938				
FIANARANTSOA I	0.098	0.049	0.902	0.000	0.000	1.000	0.143	0.000
AMBOSITRA	0.000	0.034	0.759	0.207	1.000	1.000	0.000	0.000
MANAKARA	0.000	0.848	0.326	0.283	0.250	0.750	0.000	0.500
FARAFANGANA	0.000	0.978	0.022	0.156				
IHOSY	0.027	0.000	0.973	0.081	0.250	0.417	0.167	0.333
TOAMASINA I	0.000	0.311	0.800	0.022	0.333	0.333	0.667	0.000
FENOARIVO ATSIANANA	0.000	0.077	0.423	0.846	1.000	0.000	0.000	0.000
AMBATONDRAZAKA	0.000	0.000	0.000	1.000				
MAHAJANGA I	0.044	0.378	0.844	0.000	0.200	0.900	0.100	0.200
MAEVATANANA	0.000	0.583	0.854	0.208	0.333	0.889	0.222	0.222
MAROVOAY	0.000	0.130	0.609	0.717	1.000	0.167	0.000	0.833
PORT-BERGE	0.174	0.087	0.087	0.739				
MANDRITSARA	0.000	0.000	0.311	0.956	0.667	0.000	0.000	1.000
BEFANDRIANA AVARATRA	0.000	0.000	0.235	1.000	1.000	0.000	0.000	1.000
ANTSOHIHY	0.022	0.244	0.556	0.867	0.000	1.000	0.000	1.000
BEALANANA	0.000	0.000	0.000	1.000				
MAINTIRANO	0.000	0.000	0.027	0.973	0.000	0.000	0.000	1.000
MAMPIKONY	0.000	0.000	0.200	0.867				
TOLIARA I	0.000	0.023	0.953	0.023	0.154	0.692	0.231	0.077
MORONDAVA	0.086	0.086	0.629	0.200	0.333	1.000	0.000	0.000
TAOLAGNARO	0.000	0.200	0.756	0.311	0.000	0.500	0.500	0.250
AMBOVOMBE	0.022	0.067	0.933	0.000	0.000	1.000	0.000	0.000
SAMBAVA	0.182	0.091	0.364	0.364	1.000	0.000	0.000	0.000
ANTSIRANANA I	0.089	0.554	0.250	0.161	1.000	0.429	0.000	0.143
VOHEMAR	0.238	0.048	0.619	0.333				
AMBILOBE	0.000	0.444	0.056	0.556	0.000	0.000	1.000	0.000
AMBANJA	0.022	0.978	0.022	0.000				

**Table 46: Purchase on credit by retailers by market**

	Wholesaler		Regular inter-district trader		Non-regular inter-district trader	
			Without intermediary	With intermediary	Without intermediary	With intermediary
ANTANANARIVO RENIVOHITRA		0.526	0.875	1.000	0.275	0.400
ANTSIRABE I		0.333	0.667	1.000	0.167	0.000
TSIROANOMANDIDY		0.667				
MIARINARIVO						
FIANARANTSOA I		0.730				
AMBOSITRA		0.545				
MANAKARA		0.000	0.903	0.167	0.161	0.000
FARAFANGANA			0.419	0.857	0.000	0.000
IHOSY		0.658				
TOAMASINA I		0.730	0.625	1.000	0.000	1.000
FENOARIVO ATSIANANA		0.455				
AMBATONDRAZAKA						
MAHAJANGA I		0.795	0.867		0.133	
MAEVATANANA		0.738	0.429		0.000	
MAROVOAY		0.964	0.400		0.000	
PORT-BERGE		0.500	0.500		0.000	
MANDRITSARA		0.364				
BEFANDRIANA AVARATRA		0.000				
ANTSOHIHY		0.875	0.400		0.000	
BEALANANA						
MAINTIRANO		0.000				
MAMPIKONY		0.333				
TOLIARA I		0.636				
MORONDAVA		0.636				
TAOLAGNARO		0.444	0.000		0.000	
AMBOVOMBE		0.805	0.667	0.500	0.333	0.500
SAMBAVA		1.000	0.000		0.000	
ANTSIRANANA I		0.929	0.750		0.292	
VOHEMAR		0.692				
AMBILOBE		0.000	0.750		0.417	
AMBANJA		1.000	0.892	0.889	0.351	0.556

**Table 47: Product verification by district**

	Wholesaler			Retailer			Consumer		
	Quality	Weight	Quantity	Quality	Weight	Quantity	Quality	Weight	Quantity
ANTANANARIVO RENIVOHITRA				0.986	0.892	0.608	0.986	0.685	0.405
ANTSIRABE I	1.000	1.000	1.000	0.967	0.933	0.400	1.000	0.400	0.300
TSIROANOMANDIDY				0.919	0.649	0.378	1.000	0.027	0.351
MIARINARIVO				0.938	0.625	0.625	1.000	0.000	0.375
FIANARANTSOA I	0.286	1.000	0.143	1.000	0.317	0.244	1.000	0.171	0.220
AMBOSITRA	1.000	1.000	1.000	0.931	0.552	0.138	1.000	0.000	0.414
MANAKARA	1.000	0.500	0.500	1.000	0.174	0.326	1.000	0.043	0.478
FARAFANGANA				1.000	0.444	0.444	1.000	0.133	0.689
IHOSY	0.917	0.583	0.417	0.946	0.029	0.108	1.000	0.000	0.000
TOAMASINA I	0.667	0.000	0.000	1.000	0.111	0.111	1.000	0.578	0.600
FENOARIVO ATSIANANA	0.500	0.000	0.000	1.000	0.115	0.500	1.000	0.192	0.423
AMBATONDRAZAKA				1.000	1.000	1.000	1.000	0.600	0.844
MAHAJANGA I	0.900	0.800	0.400	1.000	0.533	0.178	1.000	0.311	0.133
MAEVATANANA	1.000	1.000	0.111	1.000	0.521	0.271	1.000	0.042	0.000
MAROVOAY	0.500	1.000	0.167	1.000	0.565	0.478	1.000	0.196	0.043
PORT-BERGE				0.957	0.043	0.348	1.000	0.217	0.522
MANDRITSARA	0.667	1.000	0.000	1.000	0.911	0.578	1.000	0.244	0.044
BEFANDRIANA AVARATRA	0.500	1.000	0.000	0.882	0.765	0.647	1.000	0.059	0.059
ANTSOHIHY	1.000	0.000	0.000	0.978	0.622	0.644	1.000	0.133	0.044
BEALANANA				1.000	0.769	0.846	1.000	0.231	0.154
MAINTIRANO	1.000	1.000	1.000	0.919	0.324	0.676	1.000	0.000	0.378
MAMPIKONY				1.000	0.333	0.667	1.000	0.200	0.600
TOLIARA I	1.000	0.231	0.231	1.000	0.095	0.093	1.000	0.000	0.000
MORONDAVA	1.000	1.000	0.000	1.000	0.800	0.457	1.000	0.057	0.400
TAOLAGNARO	0.750	0.000	0.000	0.689	0.182	0.089	0.933	0.000	0.000
AMBOVOMBE	1.000	0.167	0.000	1.000	0.067	0.022	1.000	0.000	0.067
SAMBAVA	0.000	1.000	1.000	0.909	0.545	0.455	1.000	0.727	0.545
ANTSIRANANA I	0.857	0.714	0.429	1.000	0.286	0.339	1.000	0.054	0.232
VOHEMAR				0.952	0.476	0.429	0.905	0.333	0.238
AMBILOBE	1.000	0.000	0.000	0.972	0.222	0.417	0.972	0.000	0.222
AMBANJA				0.978	0.067	0.200	0.978	0.089	0.356

**Table 48: Characteristics of most preferred rice by district (retailers): first reason**

	White	Red	Long	Short	Old rice	New rice	Dry	Less broken rice	Less contamination	More transparent	Flavored	Other	Total
ANTANANARIVO RENIVOHI	0.730	0.081	0.068	0.000	0.027	0.000	0.000	0.000	0.095	0.000	0.000	0.000	1.000
ANTSIRABE I	0.600	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.133	1.000
TSIROANOMANDIDY	0.703	0.081	0.081	0.108	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
MIARINARIVO	0.563	0.250	0.000	0.063	0.000	0.063	0.000	0.000	0.063	0.000	0.000	0.000	1.000
FIANARANTSOA I	0.683	0.122	0.122	0.000	0.000	0.000	0.000	0.000	0.073	0.000	0.000	0.000	1.000
AMBOSITRA	0.897	0.000	0.034	0.000	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.034	1.000
MANAKARA	0.413	0.543	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
FARAFANGANA	0.622	0.267	0.089	0.000	0.000	0.000	0.022	0.000	0.000	0.000	0.000	0.000	1.000
IHOSY	0.676	0.054	0.216	0.000	0.000	0.000	0.000	0.000	0.054	0.000	0.000	0.000	1.000
TOAMASINA I	0.889	0.022	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.000	0.000	0.022	1.000
FENOARIVO ATSIANANA	0.538	0.423	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.038	1.000
AMBATONDRAZAKA	0.733	0.000	0.178	0.000	0.067	0.000	0.000	0.022	0.000	0.000	0.000	0.000	1.000
MAHAJANGA I	0.800	0.000	0.000	0.000	0.044	0.000	0.022	0.000	0.133	0.000	0.000	0.000	1.000
MAEVATANANA	0.771	0.000	0.000	0.000	0.042	0.000	0.000	0.042	0.146	0.000	0.000	0.000	1.000
MAROVOAY	0.891	0.022	0.000	0.000	0.043	0.000	0.000	0.000	0.043	0.000	0.000	0.000	1.000
PORT-BERGE	0.826	0.000	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043	1.000
MANDRITSARA	0.822	0.000	0.067	0.000	0.022	0.000	0.000	0.022	0.067	0.000	0.000	0.000	1.000
BEFANDRIANA AVARATRA	0.529	0.000	0.118	0.000	0.059	0.000	0.000	0.059	0.235	0.000	0.000	0.000	1.000
ANTSOHIHY	0.844	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.044	0.000	0.067	0.000	1.000
BEALANANA	0.538	0.000	0.154	0.000	0.000	0.000	0.000	0.000	0.308	0.000	0.000	0.000	1.000
MAINTIRANO	0.946	0.000	0.027	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	1.000
MAMPIKONY	0.800	0.000	0.133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.000	1.000
TOLIARA I	0.674	0.000	0.209	0.000	0.000	0.000	0.000	0.000	0.070	0.000	0.000	0.047	1.000
MORONDAVA	0.800	0.000	0.057	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.086	1.000
TAOLAGNARO	0.378	0.267	0.089	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.200	1.000
AMBOVOMBE	0.956	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.044	1.000
SAMBAVA	0.727	0.000	0.273	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
ANTSIRANANA I	0.643	0.000	0.054	0.018	0.036	0.000	0.036	0.018	0.071	0.018	0.107	0.000	1.000
VOHEMAR	0.952	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
AMBILOBE	0.778	0.000	0.028	0.000	0.028	0.000	0.000	0.000	0.083	0.000	0.083	0.000	1.000
AMBANJA	0.844	0.000	0.044	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	1.000
<b>Total</b>	<b>0.734</b>	<b>0.076</b>	<b>0.067</b>	<b>0.007</b>	<b>0.018</b>	<b>0.001</b>	<b>0.004</b>	<b>0.005</b>	<b>0.056</b>	<b>0.001</b>	<b>0.011</b>	<b>0.021</b>	<b>1.000</b>

**Table 49: Characteristics of most preferred rice by district (retailers): second reason**

	White	Red	Long	Short	Old rice	New rice	Dry	Less broken rice	Less contamination	More transparent	Flavored	Other	Total
ANTANANARIVO RENIVOHI	0.111	0.333	0.278	0.000	0.042	0.028	0.014	0.028	0.111	0.000	0.000	0.056	1.000
ANTSIRABE I	0.133	0.100	0.400	0.033	0.000	0.000	0.067	0.033	0.133	0.000	0.000	0.100	1.000
TSIROANOMANDIDY	0.216	0.108	0.351	0.135	0.135	0.000	0.000	0.000	0.027	0.000	0.000	0.027	1.000
MIARINARIVO	0.000	0.133	0.067	0.067	0.200	0.000	0.067	0.267	0.200	0.000	0.000	0.000	1.000
FIANARANTSOA I	0.132	0.263	0.474	0.026	0.000	0.000	0.053	0.000	0.026	0.000	0.026	0.000	1.000
AMBOSITRA	0.103	0.172	0.552	0.034	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.103	1.000
MANAKARA	0.293	0.341	0.171	0.049	0.000	0.000	0.024	0.024	0.098	0.000	0.000	0.000	1.000
FARAFANGANA	0.146	0.415	0.317	0.000	0.024	0.000	0.073	0.024	0.000	0.000	0.000	0.000	1.000
IHOSY	0.270	0.135	0.568	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.000	0.000	1.000
TOAMASINA I	0.000	0.417	0.333	0.000	0.000	0.000	0.000	0.056	0.056	0.000	0.000	0.139	1.000
FENOARIVO ATSIANANA	0.000	0.500	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	1.000
AMBATONDRAZAKA	0.022	0.000	0.467	0.000	0.156	0.000	0.333	0.022	0.000	0.000	0.000	0.000	1.000
MAHAJANGA I	0.093	0.000	0.674	0.000	0.047	0.000	0.000	0.023	0.140	0.000	0.023	0.000	1.000
MAEVATANANA	0.065	0.000	0.565	0.000	0.065	0.000	0.022	0.065	0.217	0.000	0.000	0.000	1.000
MAROVOAY	0.000	0.044	0.600	0.000	0.178	0.000	0.000	0.111	0.067	0.000	0.000	0.000	1.000
PORT-BERGE	0.130	0.000	0.652	0.000	0.000	0.000	0.000	0.043	0.130	0.000	0.000	0.043	1.000
MANDRITSARA	0.171	0.049	0.439	0.000	0.024	0.000	0.024	0.073	0.220	0.000	0.000	0.000	1.000
BEFANDRIANA AVARATRA	0.308	0.077	0.308	0.000	0.154	0.000	0.000	0.000	0.154	0.000	0.000	0.000	1.000
ANTSOHIHY	0.116	0.000	0.558	0.000	0.047	0.047	0.023	0.023	0.093	0.000	0.093	0.000	1.000
BEALANANA	0.182	0.000	0.182	0.000	0.000	0.000	0.273	0.000	0.364	0.000	0.000	0.000	1.000
MAINTIRANO	0.135	0.000	0.676	0.108	0.000	0.000	0.000	0.027	0.027	0.000	0.000	0.027	1.000
MAMPIKONY	0.067	0.000	0.200	0.000	0.200	0.000	0.067	0.400	0.067	0.000	0.000	0.000	1.000
TOLIARA I	0.143	0.024	0.690	0.071	0.000	0.000	0.000	0.000	0.048	0.000	0.000	0.024	1.000
MORONDAVA	0.143	0.000	0.514	0.229	0.000	0.000	0.029	0.029	0.000	0.000	0.000	0.057	1.000
TAOLAGNARO	0.053	0.184	0.632	0.000	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.105	1.000
AMBOVOMBE	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
SAMBAVA	0.000	0.000	0.273	0.091	0.182	0.000	0.455	0.000	0.000	0.000	0.000	0.000	1.000
ANTSIRANANA I	0.250	0.018	0.268	0.000	0.036	0.000	0.036	0.089	0.232	0.018	0.054	0.000	1.000
VOHEMAR	0.048	0.190	0.476	0.000	0.000	0.095	0.048	0.048	0.095	0.000	0.000	0.000	1.000
AMBILOBE	0.139	0.028	0.278	0.000	0.111	0.028	0.167	0.111	0.083	0.000	0.056	0.000	1.000
AMBANJA	0.111	0.000	0.267	0.000	0.000	0.044	0.089	0.044	0.422	0.000	0.022	0.000	1.000
Total	0.120	0.113	0.459	0.025	0.046	0.008	0.049	0.043	0.099	0.001	0.011	0.025	1.000

**Table 50: Characteristics of most disliked rice by district (retailers): first reason**

	White	Red	Long	Short	Old rice	New rice	Moist	Broken rice	Contami-nated	Less transparent	Flavored	Bad smell	Other	Total
ANTANANARIVO RENIVOHI	0.029	0.057	0.000	0.000	0.000	0.129	0.014	0.086	0.571	0.000	0.000	0.086	0.029	1.000
ANTSIRABE I	0.000	0.067	0.000	0.033	0.000	0.100	0.033	0.167	0.500	0.000	0.033	0.000	0.067	1.000
TSIROANOMANDIDY	0.000	0.270	0.000	0.027	0.000	0.351	0.000	0.108	0.108	0.000	0.000	0.027	0.108	1.000
MIARINARIVO	0.000	0.063	0.063	0.063	0.000	0.000	0.125	0.125	0.438	0.000	0.000	0.125	0.000	1.000
FIANARANTSOA I	0.000	0.073	0.024	0.146	0.000	0.024	0.049	0.073	0.512	0.000	0.000	0.024	0.073	1.000
AMBOSITRA	0.034	0.069	0.000	0.069	0.000	0.069	0.034	0.103	0.310	0.000	0.000	0.000	0.310	1.000
MANAKARA	0.065	0.000	0.000	0.022	0.000	0.000	0.022	0.000	0.783	0.000	0.000	0.000	0.109	1.000
FARAFANGANA	0.000	0.000	0.000	0.022	0.000	0.044	0.000	0.044	0.778	0.000	0.000	0.022	0.089	1.000
IHOSY	0.000	0.162	0.000	0.324	0.000	0.000	0.000	0.081	0.432	0.000	0.000	0.000	0.000	1.000
TOAMASINA I	0.000	0.222	0.000	0.000	0.000	0.000	0.000	0.156	0.422	0.000	0.067	0.022	0.111	1.000
FENOARIVO ATSIANANA	0.077	0.154	0.000	0.000	0.038	0.000	0.000	0.038	0.154	0.000	0.154	0.038	0.346	1.000
AMBATONDRAZAKA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.600	0.000	0.000	0.000	0.000	1.000
MAHAJANGA I	0.000	0.333	0.022	0.022	0.000	0.022	0.000	0.289	0.222	0.000	0.000	0.067	0.022	1.000
MAEVATANANA	0.000	0.146	0.000	0.146	0.000	0.000	0.021	0.354	0.333	0.000	0.000	0.000	0.000	1.000
MAROVOAY	0.000	0.152	0.000	0.109	0.000	0.043	0.043	0.370	0.261	0.000	0.000	0.022	0.000	1.000
PORT-BERGE	0.087	0.478	0.000	0.000	0.000	0.000	0.000	0.130	0.304	0.000	0.000	0.000	0.000	1.000
MANDRITSARA	0.000	0.400	0.000	0.022	0.000	0.000	0.000	0.267	0.289	0.000	0.000	0.022	0.000	1.000
BEFANDRIANA AVARATRA	0.000	0.118	0.000	0.000	0.000	0.000	0.000	0.412	0.294	0.000	0.059	0.059	0.059	1.000
ANTSOHIHY	0.022	0.356	0.000	0.133	0.000	0.000	0.000	0.111	0.378	0.000	0.000	0.000	0.000	1.000
BEALANANA	0.077	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.923	0.000	0.000	0.000	0.000	1.000
MAINTIRANO	0.000	0.297	0.000	0.324	0.000	0.000	0.027	0.243	0.108	0.000	0.000	0.000	0.000	1.000
MAMPIKONY	0.000	0.200	0.000	0.267	0.000	0.067	0.000	0.467	0.000	0.000	0.000	0.000	0.000	1.000
TOLIARA I	0.023	0.302	0.000	0.093	0.000	0.047	0.000	0.023	0.512	0.000	0.000	0.000	0.000	1.000
MORONDAVA	0.029	0.629	0.029	0.029	0.000	0.000	0.000	0.057	0.114	0.000	0.000	0.057	0.057	1.000
TAOLAGNARO	0.023	0.000	0.000	0.000	0.023	0.000	0.000	0.318	0.477	0.000	0.000	0.068	0.091	1.000
AMBOVOMBE	0.000	0.341	0.023	0.341	0.000	0.000	0.000	0.182	0.091	0.000	0.000	0.000	0.023	1.000
SAMBAVA	0.000	0.273	0.000	0.091	0.000	0.000	0.000	0.364	0.091	0.000	0.000	0.182	0.000	1.000
ANTSIRANANA I	0.000	0.214	0.000	0.036	0.000	0.000	0.036	0.357	0.268	0.000	0.000	0.089	0.000	1.000
VOHEMAR	0.000	0.238	0.000	0.048	0.000	0.048	0.000	0.238	0.333	0.000	0.000	0.095	0.000	1.000
AMBILOBE	0.028	0.611	0.000	0.000	0.000	0.056	0.000	0.167	0.139	0.000	0.000	0.000	0.000	1.000
AMBANJA	0.067	0.444	0.000	0.022	0.000	0.000	0.000	0.156	0.311	0.000	0.000	0.000	0.000	1.000
Total	0.017	0.215	0.004	0.076	0.002	0.034	0.012	0.186	0.371	0.000	0.008	0.029	0.046	1.000

**Table 51: Characteristics of most disliked rice by district (retailers): second reason**

	White	Red	Long	Short	Old rice	New rice	Moist	Broken rice	Contaminated	Less transparent	Flavored	Bad smell	Other	Total
ANTANANARIVO RENIVOHI	0.000	0.033	0.000	0.049	0.000	0.033	0.000	0.164	0.246	0.000	0.000	0.426	0.049	1.000
ANTSIRABE I	0.000	0.125	0.000	0.042	0.000	0.000	0.000	0.042	0.542	0.000	0.000	0.250	0.000	1.000
TSIROANOMANDIDY	0.000	0.074	0.000	0.000	0.000	0.074	0.148	0.333	0.259	0.000	0.000	0.074	0.037	1.000
MIARINARIVO	0.000	0.067	0.000	0.000	0.000	0.133	0.000	0.000	0.467	0.000	0.000	0.333	0.000	1.000
FIANARANTSOA I	0.000	0.031	0.031	0.125	0.000	0.031	0.031	0.156	0.250	0.000	0.000	0.188	0.156	1.000
AMBOSITRA	0.000	0.160	0.000	0.080	0.000	0.000	0.000	0.080	0.200	0.040	0.000	0.240	0.200	1.000
MANAKARA	0.143	0.000	0.000	0.000	0.000	0.000	0.143	0.286	0.286	0.000	0.000	0.143	0.000	1.000
FARAFANGANA	0.095	0.000	0.000	0.000	0.000	0.000	0.143	0.143	0.190	0.000	0.000	0.429	0.000	1.000
IHOSY	0.000	0.188	0.000	0.125	0.000	0.000	0.063	0.125	0.250	0.000	0.000	0.156	0.094	1.000
TOAMASINA I	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.167	0.000	0.333	1.000
FENOARIVO ATSINANANA														
AMBATONDRAZAKA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.276	0.621	0.000	0.000	0.103	0.000	1.000
MAHAJANGA I	0.000	0.000	0.000	0.162	0.000	0.054	0.000	0.162	0.595	0.000	0.000	0.027	0.000	1.000
MAEVATANANA	0.000	0.026	0.000	0.205	0.000	0.026	0.026	0.154	0.462	0.000	0.000	0.103	0.000	1.000
MAROVOAY	0.000	0.000	0.000	0.075	0.000	0.025	0.000	0.150	0.700	0.000	0.000	0.050	0.000	1.000
PORT-BERGE	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.348	0.565	0.000	0.000	0.043	0.000	1.000
MANDRITSARA	0.000	0.108	0.000	0.027	0.000	0.027	0.000	0.324	0.351	0.000	0.000	0.162	0.000	1.000
BEFANDRIANA AVARATRA	0.000	0.071	0.000	0.071	0.000	0.143	0.000	0.143	0.571	0.000	0.000	0.000	0.000	1.000
ANTSOHIHY	0.000	0.143	0.000	0.114	0.000	0.000	0.057	0.114	0.486	0.000	0.000	0.086	0.000	1.000
BEALANANA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.750	1.000
MAINTIRANO	0.000	0.114	0.000	0.229	0.000	0.000	0.000	0.229	0.286	0.000	0.000	0.143	0.000	1.000
MAMPIKONY	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.133	0.867	0.000	0.000	0.000	0.000	1.000
TOLIARA I	0.000	0.000	0.040	0.320	0.000	0.000	0.000	0.080	0.520	0.000	0.000	0.000	0.040	1.000
MORONDAVA	0.000	0.121	0.000	0.030	0.000	0.000	0.000	0.061	0.424	0.000	0.000	0.212	0.152	1.000
TAOLAGNARO	0.000	0.042	0.000	0.042	0.000	0.000	0.000	0.208	0.458	0.000	0.000	0.125	0.125	1.000
AMBOVOMBE	0.000	0.037	0.000	0.333	0.000	0.000	0.000	0.185	0.407	0.000	0.000	0.000	0.037	1.000
SAMBAVA	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.273	0.545	0.000	0.000	0.091	0.000	1.000
ANTSIRANANA I	0.000	0.036	0.000	0.000	0.000	0.000	0.054	0.143	0.554	0.000	0.000	0.214	0.000	1.000
VOHEMAR	0.000	0.048	0.000	0.000	0.000	0.048	0.000	0.190	0.429	0.000	0.000	0.286	0.000	1.000
AMBILOBE	0.000	0.111	0.056	0.000	0.000	0.000	0.000	0.167	0.667	0.000	0.000	0.000	0.000	1.000
AMBANJA	0.000	0.222	0.067	0.044	0.000	0.000	0.022	0.111	0.467	0.000	0.000	0.067	0.000	1.000
Total	0.004	0.068	0.008	0.080	0.000	0.018	0.023	0.166	0.445	0.001	0.001	0.147	0.038	1.000

## 11. Appendix

**Table A1: Market Day and Market Area**

Name of City	# of Markets	Main market day of the Selected Rice Market							# of Market days	Market area (m <sup>2</sup> )	Area Reported?
		Mon	Tue	Wed	Thu	Fri	Sat	Sun			
ANTANANARIVO RENIVOHITRA	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	30,000	Yes
ANTSIRABE I	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	48,600	Yes
TSIROANOMANDIDY	1	No	No	No	No	Yes	No	No	1	3,600	
MIARINARIVO	1	No	No	Yes	No	No	No	No	1	10,000	
FIANARANTSOA I	3	No	Yes	No	No	Yes	No	No	2	9,000	
AMBOSITRA	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	2,400	
MANAKARA	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	15,690	Yes
FARAFANGANA	1	No	Yes	No	No	No	No	No	1	8,000	Yes
IHOSY	2	Yes	No	No	No	No	No	No	1	8,000	
TOAMASINA I	8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	24,694	Yes
FENOARIVO ATSINANANA	1	No	Yes	No	Yes	No	No	No	2	1,500	
AMBATONDRAZAKA	2	No	No	No	Yes	Yes	No	No	2	10,000	Yes
MAHAJANGA I	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	18,000	Yes
MAEVATANANA	1	Yes	No	No	Yes	No	No	No	2	300	Yes
MAROVOAY	1	No	Yes	No	No	Yes	No	No	2	250	Yes
PORT-BERGE	1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	2,500	Yes
MANDRITSARA	3	No	No	No	Yes	No	No	No	1	200	Yes
BEFANDRIANA AVARATRA	2	No	No	No	Yes	No	No	No	1	120	Yes
ANTSOHIHY	5	No	No	No	Yes	No	No	Yes	2	2,625	
BEALANANA	1	No	No	No	Yes	No	No	No	1	600	Yes
MAINTIRANO	1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	5,000	
MAMPIKONY	1	Yes	No	No	Yes	No	No	No	2	14,400	
TOLIARA I	6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	30,000	
MORONDAVA	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	6,400	
TAOLAGNARO	4	No	No	No	No	No	Yes	No	1	60,000	
AMBOVOMBE	1	Yes	No	No	No	No	No	No	1	200	Yes
SAMBAVA	4	No	Yes	No	No	No	No	No	1	100	Yes
ANTSIRANANA I	1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7	20,000	Yes
VOHEMAR	1	No	No	Yes	No	No	No	No	1	15,000	
AMBILOBE	2	No	No	No	Yes	No	No	No	1	10,000	Yes
AMBANJA	2	No	No	No	Yes	No	No	No	1	6,400	Yes
Mean	2.42	0.48	0.52	0.42	0.68	0.48	0.39	0.39	3.35	11,728	0.58
Sum	75	15	16	13	21	15	12	12	104	363,579	18
N	31	31	31	31	31	31	31	31	31	31	31

**Table A2: Market Facilities**

Name of City	Parking space for trucks	Water pipe	Toilet	Public warehouse	Price data collection	Commodity price bulletin board
ANTANANARIVO RENIVOHITRA	Yes	Yes	Yes	No	No	No
ANTSIRABE I	No	Yes	Yes	Yes	No	No
TSIROANOMANDIDY	No	No	Yes	No	No	No
MIARINARIVO	No	Yes	No	No	No	No
FIANARANTSOA I	Yes	Yes	Yes	No	No	No
AMBOSITRA	No	Yes	Yes	No	No	No
MANAKARA	No	Yes	Yes	Yes	No	No
FARAFANGANA	Yes	Yes	Yes	No	No	No
IHOSY	No	No	No	Yes	No	No
TOAMASINA I	No	Yes	Yes	No	No	No
FENOARIVO ATSINANANA	Yes	No	Yes	No	No	No
AMBATONDRAZAKA	No	Yes	No	No	No	No
MAHAJANGA I	Yes	Yes	Yes	Yes	No	No
MAEVATANANA	No	Yes	Yes	No	No	No
MAROVOAY	No	Yes	No	No	No	No
PORT-BERGE	Yes	Yes	Yes	No	No	No
MANDRITSARA	No	No	Yes	No	No	No
BEFANDRIANA AVARATRA	No	Yes	No	No	Yes	No
ANTSOHIHY	No	Yes	No	Yes	Yes	No
BEALANANA	Yes	No	Yes	No	No	No
MAINTIRANO	No	Yes	No	No	No	No
MAMPIKONY	Yes	Yes	No	Yes	No	No
TOLIARA I	Yes	Yes	Yes	No	No	No
MORONDAVA	Yes	No	Yes	Yes	No	No
TAOLAGNARO	No	Yes	No	No	No	No
AMBOVOMBE	Yes	No	Yes	No	No	No
SAMBAVA	No	Yes	No	No	No	No
ANTSIRANANA I	Yes	Yes	Yes	No	No	No
VOHEMAR	No	Yes	No	No	No	No
AMBILOBE	Yes	Yes	Yes	Yes	No	No
AMBANJA	Yes	Yes	Yes	No	No	No
Mean	0.45	0.77	0.65	0.26	0.06	0.00
Sum	14	24	20	8	2	0
N	31	31	31	31	31	31

**Table A3: Number of commune staff hired by the commune: Full time**

Name of City	Market admin.	Price monitoring	Police	Fire-fighting	Security	Cleaning	Fee collecting	Facility maintenance	Others	Total
ANTANANARIVO RENIVOHITRA	5	0	0	0	0	0	2	0	0	7
ANTSIRABE I	1	0	0	0	2	4	14	0	0	21
TSIROANOMANDIDY	4	0	3	0	1	4	4	12	3	31
MIARINARIVO	2	0	0	0	0	1	2	1	0	6
FIANARANTSOA I	4	0	0	0	0	12	0	0	0	16
AMBOSITRA	0	0	0	0	0	1	5	0	0	6
MANAKARA	1	0	0	0	1	6	3	0	0	11
FARAFANGANA	2	0	3	0	0	0	4	0	0	9
IHOSY	4	0	6	0	0	6	3	0	0	19
TOAMASINA I	14	0	0	0	1	0	8	5	0	28
FENOARIVO ATSIANANA	2	0	0	0	1	3	9	0	0	15
AMBATONDRAZAKA	2	0	0	0	0	11	4	0	7	24
MAHAJANGA I	7	0	0	8	10	8	6	0	0	39
MAEVATANANA	1	0	2	0	0	4	2	0	0	9
MAROVOAY	1	0	5	0	1	6	6	0	0	19
PORT-BERGE	0	0	2	0	0	0	2	0	0	4
MANDRITSARA	3	2	7	0	0	4	3	1	0	20
BEFANDRIANA AVARATRA	5	2	3	0	0	5	3	3	0	21
ANTSOHIHY	0	0	4	0	0	0	3	0	0	7
BEALANANA	3	0	2	0	0	0	4	0	0	9
MAINTIRANO	1	0	2	0	0	4	1	0	0	8
MAMPIKONY	0	0	0	0	1	4	3	2	0	10
TOLIARA I	1	0	0	0	0	5	4	0	0	10
MORONDAVA	4	0	2	0	0	6	4	1	0	17
TAOLAGNARO	3	1	10	0	2	20	1	0	0	37
AMBOVOMBE	0	0	7	0	0	7	9	5	0	28
SAMBAVA	0	0	0	0	0	0	0	0	0	0
ANTSIRANANA I	10	0	0	0	0	6	6	0	0	22
VOHEMAR	1	0	0	0	0	1	1	0	0	3
AMBILOBE	1	0	4	2	1	20	4	0	0	32
AMBANJA	4	0	0	0	1	0	4	0	0	9
Mean	2.77	0.16	2.00	0.32	0.71	4.77	4.00	0.97	0.32	16.03
Sum	86	5	62	10	22	148	124	30	10	497
N	31	31	31	31	31	31	31	31	31	31

**Table A4: Number of commune staff hired by the commune: Part time**

Name of City	Market admin.	Price monitoring	Police	Fire-fighting	Security	Cleaning	Fee collecting	Facility maintenance	Others	Total
ANTANANARIVO RENIVOHITRA	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
ANTSIRABE I	0	0	0	0	0	0	0	0	0	0
TSIROANOMANDIDY	0	0	0	0	0	0	0	0	0	0
MIARINARIVO	0	0	0	0	0	6	0	0	0	6
FIANARANTSOA I	0	0	0	0	0	0	17	8	0	25
AMBOSITRA	0	0	0	0	0	0	0	0	0	0
MANAKARA	0	0	0	0	0	3	0	0	0	3
FARAFANGANA	0	0	0	0	0	0	0	0	0	0
IHOSY	0	0	0	0	0	0	0	0	0	0
TOAMASINA I	14	0	0	0	1	0	0	0	0	15
FENOARIVO ATSIANANA	0	0	0	0	0	0	0	0	0	0
AMBATONDRAZAKA	0	0	0	0	7	20	5	0	0	32
MAHAJANGA I	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
MAEVATANANA	0	0	0	0	0	0	0	0	0	0
MAROVOAY	0	0	0	0	0	0	0	0	0	0
PORT-BERGE	0	0	0	0	0	0	0	0	0	0
MANDRITSARA	6	0	0	0	5	0	0	0	0	11
BEFANDRIANA AVARATRA	0	0	0	0	0	0	0	0	0	0
ANTSOHIHY	0	0	0	0	1	4	0	0	0	5
BEALANANA	1	0	0	0	1	3	0	0	0	5
MAINTIRANO	0	0	0	0	0	0	0	0	0	0
MAMPIKONY	0	0	0	0	0	2	0	0	0	2
TOLIARA I	0	0	0	0	0	2	0	0	0	2
MORONDAVA	0	0	0	0	0	0	0	0	0	0
TAOLAGNARO	0	0	0	0	0	0	0	60	0	60
AMBOVOMBE	0	0	0	0	0	0	0	0	0	0
SAMBAVA	0	0	0	0	0	0	0	0	2	2
ANTSIRANANA I	0	0	0	0	0	0	0	0	0	0
VOHEMAR	0	0	0	0	0	0	0	0	0	0
AMBILOBE	0	0	0	0	0	0	0	0	0	0
AMBANJA	2	0	0	0	0	4	2	0	0	8
Mean	0.79	0.00	0.00	0.00	0.52	1.52	0.83	2.34	0.07	6.07
Sum	23	0	0	0	15	44	24	68	2	176
N	29	29	29	29	29	29	29	29	29	29

**Table A5: Number of Spaces and Traders Permitted in the Market**

Name of City	Fee collecting	Product specific categories	# of space Categories	# of spaces available	# of traders permitted	# of traders paying fee
ANTANANARIVO RENIVOHITRA	Yes		2	1771	1771	1345
ANTSIRABE I	Yes	Yes	4	2197	2197	2197
TSIROANOMANDIDY	Yes	Yes	8	61	61	61
MIARINARIVO	Yes		5	150	138	138
FIANARANTSOA I	Yes		2	680	680	689
AMBOSITRA	Yes		2	129	129	NI
MANAKARA	Yes		3	467	467	467
FARAFANGANA	Yes		2	NI	NI	NI
IHOSY	Yes		4	220	220	150
TOAMASINA I	Yes		5	1046	1046	1046
FENOARIVO ATSIANANA	Yes		2	531	531	372
AMBATONDRAZAKA	Yes	Yes	6	2400	2370	1670
MAHAJANGA I	Yes		4	776	776	776
MAEVATANANA	Yes		3	464	464	464
MAROVOAY	Yes		3	250	250	250
PORT-BERGE	Yes		3	380	380	264
MANDRITSARA	Yes		3	224	224	224
BEFANDRIANA AVARATRA	Yes		4	346	346	346
ANTSOHIHY	Yes		4	343	614	616
BEALANANA	Yes		3	425	366	366
MAINTIRANO	Yes	Yes	7	68	68	68
MAMPIKONY	Yes		4	488	488	330
TOLIARA I	Yes		5	777	777	663
MORONDAVA	Yes		4	346	303	303
TAOLAGNARO	Yes	Yes	8	645	645	645
AMBOVOMBE	Yes		3	960	960	1320
SAMBAVA	Yes		3	200	200	200
ANTSIRANANA I	Yes		3	6066	6066	6066
VOHEMAR	Yes		3	350	330	330
AMBILOBE	Yes		6	1970	1970	1370
AMBANJA	Yes		4	614	614	440
Mean	1.00	0.16	3.94	844.80	848.37	799.17
Sum	31	5	122	25344	25451	23176
N	31	31	31	30	30	29

**Table A6: Most numerous type of shop space in the market**

Name of City	Shop Type	# of spaces	# of Traders	Fixed Entry Fee (Ar)	Annual Fee (Ar)	Monthly Fee (Ar)	Daily Fee (Ar)	# of Traders Paying Fee
ANTANANARIVO RENIVOHITRA	Pavillon	1,236	1,236	0	0	32,000	0	927
ANTSIRABE I	Stall (roof)	1,671	1,671	0	0	3,000	0	1,671
TSIROANOMANDIDY	Stall*	15	15	0	0	3,000	100	15
MIARINARIVO	Pavillon	80	68	0	0	12,000	0	68
FIANARANTSOA I	Pavillon	446	446	0	0	10,000	0	446
AMBOSITRA	Stall	80	80	0	0	20,000	200	NI
MANAKARA	Floor	210	210	0	0	0	100	210
FARAFANGANA	Stall	NI	NI	0	0	0	100	NI
IHOSY	Pavillon (fix)	70	70	0	0	10,000	0	70
TOAMASINA I	Stall	616	616	0	0	0	300	616
FENOARIVO ATSIANANANA	Pavillon	471	471	0	0	2,000	100	330
AMBATONDRAZAKA	Rice*	1,000	1,000	0	0	0	700	400
MAHAJANGA I	Stall	370	370	0	0	18,500	0	370
MAEVATANANA	Open Space	400	400	0	0	0	200	400
MAROVOAY	Stall (roof)	210	210	11,000	0	5,000	0	210
PORT-BERGE	Table	200	200	0	0	0	400	120
MANDRITSARA	Open Space	110	110	0	0	0	500	110
BEFANDRIANA AVARATRA	Stall	251	251	0	0	0	200	251
ANTSOHIHY	Stall	50	323	0	0	3,000	0	323
BEALANANA	Open Space	250	250	0	0	0	200	250
MAINTIRANO	Pavillon	22	22	0	0	20,000	0	22
MAMPIKONY	Stall	250	250	0	2,000	0	200	200
TOLIARA I	Stall	432	432	0	0	0	400	432
MORONDAVA	Stall	200	200	0	0	0	200	200
TAOLAGNARO	Table*	155	155	0	0	0	200	155
AMBOVOMBE	Floor	800	800	0	0	0	100	800
SAMBAVA	Floor	100	100	0	0	0	200	100
ANTSIRANANA I	Table	3,000	3,000	0	0	0	500	3,000
VOHEMAR	Table	200	200	0	0	0	500	200
AMBILOBE	Table	500	500	0	0	0	500	300
AMBANJA	Table	380	380	0	0	0	300	300
Mean	* means product specific category	459	468	355	65	4,468	200	431
Sum		13,775	14,036	11,000	2,000	138,500	6,200	12,496
N		30	30	31	31	31	31	29

**Table A7: Secondly most numerous type of shop space in the market**

Name of City	Shop Type	# of spaces	# of Traders	Fixed Entry Fee (Ar)	Annual Fee (Ar)	Monthly Fee (Ar)	Daily Fee (Ar)	# of Traders Paying Fee
ANTANANARIVO RENIVOHITRA	Open Space	535	535	0	0	0	500	418
ANTSIRABE I	Stall*	353	353	0	0	3,500	0	353
TSIROANOMANDIDY	Rice*	12	12	0	0	3,000	200	12
MIARINARIVO	Stall	36	36	0	0	0	200	36
FIANARANTSOA I	Stall	234	234	0	0	4,750	0	243
AMBOSITRA	Pavillon	49	49	0	0	15,000	0	0
MANAKARA	Pavillon	192	192	0	0	15,000	0	192
FARAFANGANA	Floor	NI	NI	0	0	0	100	NI
IHOSY	Pavillon (free)	70	70	0	0	10,000	0	NI
TOAMASINA I	Open Space	352	352	0	0	0	200	352
FENOARIVO ATSIANANANA	Table	60	60	0	0	2,000	100	42
AMBATONDRAZAKA	Stall*	1,000	1,000	0	0	0	800	900
MAHAJANGA I	Open Space	360	360	25,000	0	6,000	0	360
MAEVATANANA	Pavillon	39	39	0	0	5,000	0	39
MAROVOAY	Table	30	30	0	0	5,000	0	30
PORT-BERGE	Pavillon	120	120	0	0	20,000	0	96
MANDRITSARA	Pavillon	64	64	0	0	12,000	0	64
BEFANDRIANA AVARATRA	Open Space	50	50	0	0	0	200	50
ANTSOHIHY	Table	193	193	0	0	3,000	0	193
BEALANANA	Pvillon	160	100	5,000	0	14,000	0	100
MAINTIRANO	Stall*	20	20	0	0	12,000	0	20
MAMPIKONY	Floor	130	130	0	0	0	20	30
TOLIARA I	Pavillon	179	179	0	0	20,000	0	154
MORONDAVA	Pavillon	73	30	0	0	20,000	0	30
TAOLAGNARO	Stall*	130	130	0	0	0	200	130
AMBOVOMBE	Table	140	140	0	0	0	100	500
SAMBAVA	Pavillon	60	60	0	220,000	0	0	60
ANTSIRANANA I	Table	2,920	2,920	0	0	0	200	2,920
VOHEMAR	Table	100	100	0	0	0	200	100
AMBILOBE	Table	500	500	0	0	0	200	300
AMBANJA	Floor	120	120	0	0	0	300	50
Mean	* means product specific category	276	273	968	7,097	5,492	114	268
Sum		8,281	8,178	30,000	220,000	170,250	3,520	7,774
N		30	30	31	31	31	31	29

**Table A8: Who Identifies Available Space in the Market**

Name of City	Commune	Market head	Traders' org.	President of org.	Trader him/herself	Others
ANTANANARIVO RENIVOHITRA	0	1	0	0	0	0
ANTSIRABE I	0	1	0	0	0	0
TSIROANOMANDIDY	0	1	0	0	0	0
MIARINARIVO	0	1	0	0	0	0
FIANARANTSOA I	1	0	0	0	0	0
AMBOSITRA	1	0	0	0	0	0
MANAKARA	0	0	0	0	1	0
FARAFANGANA	0	0	0	1	0	0
IHOSY	1	0	0	0	0	0
TOAMASINA I	0	0	0	0	1	0
FENOARIVO AT SINANANA	0	1	0	0	0	0
AMBATONDRAZAKA	0	1	0	1	0	0
MAHAJANGA I	0	1	0	0	0	0
MAEVATANANA	1	0	0	0	0	0
MAROVOAY	1	0	0	0	0	0
PORT-BERGE	1	0	0	0	0	0
MANDRITSARA	1	0	0	0	0	0
BEFANDRIANA AVARATRA	1	0	0	0	0	0
ANTSOHIHY	1	0	0	1	0	0
BEALANANA	1	0	0	0	0	0
MAINTIRANO	1	0	0	0	0	0
MAMPIKONY	1	0	0	0	0	0
TOLIARA I	0	0	0	0	0	1
MORONDAVA	0	1	0	0	0	0
TAOLAGNARO	1	0	0	0	0	0
AMBOVOMBE	1	0	0	0	0	0
SAMBAVA	1	0	0	0	0	0
ANTSIRANANA I	1	0	0	0	0	0
VOHEMAR	1	0	0	0	0	0
AMBILOBE	1	0	0	0	0	0
AMBANJA	1	0	0	0	0	0
Mean	0.61	0.26	0.00	0.10	0.06	0.03
Sum	19	8	0	3	2	1
N	31	31	31	31	31	31

**Table A9: Who approves the space assignment?**

Name of City	Commune	Market head	Traders' org.	President of org.	No need	Others
ANTANANARIVO RENIVOHITRA	1	0	0	0	0	0
ANTSIRABE I	0	1	0	0	0	0
TSIROANOMANDIDY	1	0	0	0	0	0
MIARINARIVO	1	0	0	0	0	0
FIANARANTSOA I	1	0	0	0	0	0
AMBOSITRA	1	0	0	0	0	0
MANAKARA	1	0	0	0	0	0
FARAFANGANA	0	0	0	0	1	0
IHOSY	1	0	0	0	0	0
TOAMASINA I	0	1	0	0	0	0
FENOARIVO ATSIANANA	1	0	0	0	0	0
AMBATONDRAZAKA	1	1	0	0	0	0
MAHAJANGA I	1	0	0	0	0	0
MAEVATANANA	1	0	0	0	0	0
MAROVOAY	1	0	0	0	0	0
PORT-BERGE	1	0	0	0	0	0
MANDRITSARA	1	0	0	0	0	0
BEFANDRIANA AVARATRA	0	1	0	0	0	0
ANTSOHIHY	1	0	0	0	0	0
BEALANANA	1	0	0	0	0	0
MAINTIRANO	1	0	0	0	0	0
MAMPIKONY	1	0	0	0	0	0
TOLIARA I	1	0	0	0	0	0
MORONDAVA	1	0	0	0	0	0
TAOLAGNARO	1	0	0	0	0	0
AMBOVOMBE	1	0	0	0	0	0
SAMBAVA	1	0	0	0	0	0
ANTSIRANANA I	1	0	0	0	0	0
VOHEMAR	1	0	0	0	0	0
AMBILOBE	1	0	0	0	0	0
AMBANJA	1	0	0	0	0	0
Mean	0.87	0.13	0.00	0.00	0.03	0.00
Sum	27	4	0	0	1	0
N	31	31	31	31	31	31

**Table A10: Frequency of the space allocation**

Name of City	When request comes	When spaces are available	During a specific period	Yearly	Monthly	Daily	Others
ANTANANARIVO RENIVOHITRA	0	1	0	0	0	0	0
ANTSIRABE I	1	0	0	0	0	0	0
TSIROANOMANDIDY	0	0	0	1	0	0	0
MIARINARIVO	0	1	0	0	0	0	0
FIANARANTSOA I	0	0	0	1	0	0	0
AMBOSITRA	0	0	0	0	0	1	0
MANAKARA	0	1	0	0	0	0	0
FARAFANGANA	0	0	0	0	0	1	0
IHOSY	1	0	0	0	0	0	0
TOAMASINA I	0	1	0	0	0	0	0
FENOARIVO ATSIANANA	1	0	0	0	0	0	0
AMBATONDRAZAKA	1	0	0	0	0	0	0
MAHAJANGA I	0	0	0	0	1	0	0
MAEVATANANA	0	1	0	0	0	0	0
MAROVOAY	0	1	0	0	0	0	0
PORT-BERGE	1	0	0	0	0	0	0
MANDRITSARA	0	1	1	0	0	0	0
BEFANDRIANA AVARATRA	0	0	0	1	0	0	0
ANTSOHIHY	0	1	0	0	0	0	0
BEALANANA	1	0	0	0	0	0	0
MAINTIRANO	1	0	0	0	0	0	0
MAMPIKONY	1	0	0	0	0	0	0
TOLIARA I	0	1	0	0	0	0	0
MORONDAVA	0	0	0	0	0	1	0
TAOLAGNARO	0	1	0	0	0	0	0
AMBOVOMBE	0	1	0	0	0	0	0
SAMBAVA	0	1	0	0	0	0	0
ANTSIRANANA I	0	0	0	0	0	0	1
VOHEMAR	0	1	0	0	0	0	0
AMBILOBE	1	0	0	0	0	0	0
AMBANJA	1	0	0	0	0	0	0
Mean	0.32	0.42	0.03	0.10	0.03	0.10	0.03
Sum	10	13	1	3	1	3	1
N	31	31	31	31	31	31	31

**Table A11: How to allocate if more than 1 request falls in the same space?**

Name of City	First-come first-served	Lottery	Bidding	Others
ANTANANARIVO RENIVOHITRA	1	0	0	0
ANTSIRABE I	1	0	0	0
TSIROANOMANDIDY	1	0	0	0
MIARINARIVO	1	0	0	0
FIANARANTSOA I	1	0	0	0
AMBOSITRA	0	1	0	1
MANAKARA	1	0	0	0
FARAFANGANA		No Rule		
IHOSY	1	0	0	0
TOAMASINA I	0	1	0	0
FENOARIVO ATSIANANA	1	0	0	0
AMBATONDRAZAKA	1	0	0	1
MAHAJANGA I	1	0	0	0
MAEVATANANA	1	0	0	0
MAROVOAY	1	0	0	0
PORT-BERGE	1	0	0	0
MANDRITSARA	1	0	0	0
BEFANDRIANA AVARATRA	1	0	0	0
ANTSOHIHY	1	0	0	0
BEALANANA	1	0	0	0
MAINTIRANO	1	0	0	0
MAMPIKONY	1	0	0	0
TOLIARA I	1	0	0	0
MORONDAVA	1	0	0	0
TAOLAGNARO	1	0	0	0
AMBOVOMBE	1	0	0	0
SAMBAVA	0	0	1	0
ANTSIRANANA I	1	0	0	0
VOHEMAR	0	1	0	0
AMBILOBE	1	0	0	0
AMBANJA	1	0	0	0
Mean	0.84	0.10	0.03	0.06
Sum	26	3	1	2
N	31	31	31	31

**Table A12: Is it possible to transfer or rent the space assigned to others?**

Name of City	Private transfer	Rental
ANTANANARIVO RENIVOHITRA	No	No
ANTSIRABE I	No	No
TSIROANOMANDIDY	No	No
MIARINARIVO	No	No
FIANARANTSOA I	No	No
AMBOSITRA	No	No
MANAKARA	No	No
FARAFANGANA	Yes	Yes
IHOSY	Yes	No
TOAMASINA I	Yes	No
FENOARIVO ATSIANANA	No	No
AMBATONDRAZAKA	Yes	Yes
MAHAJANGA I	No	No
MAEVATANANA	Yes	Yes
MAROVOAY	Yes	No
PORT-BERGE	No	No
MANDRITSARA	No	No
BEFANDRIANA AVARATRA	Yes	Yes
ANTSOHIHY	Yes	No
BEALANANA	No	Yes
MAINTIRANO	No	No
MAMPIKONY	Yes	No
TOLIARA I	Yes	Yes
MORONDAVA	No	No
TAOLAGNARO	Yes	Yes
AMBOVOMBE	No	No
SAMBAVA	No	Yes
ANTSIRANANA I	No	No
VOHEMAR	No	Yes
AMBILOBE	No	No
AMBANJA	No	No
Mean	0.35	0.29
Sum	11 (Yes)	9 (Yes)
N	31	31

**Table A13: Traders' Organization in the Market**

Name of City	Any traders' organization?	If Yes, formal?	Who initiated?	When?
ANTANANARIVO RENIVOHITRA	Yes	Formal	Traders	2010
ANTSIRABE I	Yes	Formal	Traders	2001
TSIROANOMANDIDY	Yes	Formal	Traders	2006
MIARINARIVO	No	-	-	-
FIANARANTSOA I	Yes	Informal	Traders	1983
AMBOSITRA	Yes	Formal	Commune	2011
MANAKARA	Yes	Informal	Traders	2008
FARAFANGANA	Yes	Informal	Traders	2010
IHOSY	Yes	Formal	Commune	2004
TOAMASINA I	Yes	Formal	Traders	2008
FENOARIVO ATSIANANA	No	-	-	-
AMBATONDRAZAKA	Yes	Formal	Traders	2005
MAHAJANGA I	Yes	Formal	NGO	2006
MAEVATANANA	Yes	Informal	Traders	2006
MAROVOAY	Yes	Informal	Traders	2011
PORT-BERGE	Yes	Formal	Traders	2005
MANDRITSARA	Yes	Informal	Commune	2011
BEFANDRIANA AVARATRA	Yes	Formal	Businessman	2008
ANTSOHIHY	Yes	Formal	Traders	2010
BEALANANA	Yes	Formal	Commune	2008
MAINTIRANO	No	-	-	-
MAMPIKONY	Yes	Formal	Traders	1996
TOLIARA I	Yes	Informal	Traders	2003
MORONDAVA	Yes	Formal	Traders	2006
TAOLAGNARO	Yes	Formal	Traders and Commune	2008
AMBOVOMBE	No	-	-	-
SAMBAVA	Yes	Formal	Traders	2009
ANTSIRANANA I	Yes	Formal	Traders	2003
VOHEMAR	Yes	Informal	Traders	2009
AMBILOBE	No	-	-	-
AMBANJA	Yes	Formal	Traders	1998
Mean	0.84	0.69	0.77	2005.5
Sum	26	18 (formal)	20 (traders)	-
N	31	26	26	26

**Table A14: Main Objectives of Traders' Organization (according to traders)**

Name of City	Main objective (multiple choice up to 3)					
	Negotiation with the commune	Negotiation with outside traders	Promotion of group activities	Promotion of honest trade	Enhancement of friendship	Others
ANTANANARIVO RENIVOHITRA	Yes	No	Yes	No	Yes	No
ANTSIRABE I	Yes	Yes	Yes	No	No	No
TSIROANOMANDIDY	Yes	No	Yes	No	No	Yes
MIARINARIVO	-	-	-	-	-	-
FIANARANTSOA I	Yes	Yes	No	No	No	No
AMBOSITRA	Yes	Yes	Yes	No	No	No
MANAKARA	Yes	Yes	Yes	No	No	No
FARAFANGANA	Yes	Yes	No	No	No	No
IHOSY	Yes	No	No	No	Yes	No
TOAMASINA I	Yes	No	No	No	Yes	No
FENOARIVO ATSIANANA	-	-	-	-	-	-
AMBATONDRAZAKA	Yes	No	Yes	No	No	No
MAHAJANGA I	Yes	No	Yes	No	Yes	No
MAEVATANANA	Yes	Yes	No	No	Yes	No
MAROVOAY	Yes	No	Yes	Yes	No	No
PORT-BERGE	Yes	No	No	No	No	No
MANDRITSARA	Yes	No	Yes	No	Yes	No
BEFANDRIANA AVARATRA	Yes	No	No	Yes	Yes	No
ANTSOHIHY	Yes	No	Yes	No	Yes	No
BEALANANA	Yes	No	Yes	No	Yes	No
MAINTIRANO	-	-	-	-	-	-
MAMPIKONY	Yes	Yes	Yes	No	No	No
TOLIARA I	Yes	Yes	No	No	Yes	No
MORONDAVA	Yes	No	Yes	Yes	No	No
TAOLAGNARO	Yes	No	No	No	Yes	No
AMBOVOMBE	-	-	-	-	-	-
SAMBAVA	Yes	Yes	No	No	Yes	No
ANTSIRANANA I	Yes	Yes	Yes	No	No	No
VOHEMAR	Yes	Yes	No	No	Yes	No
AMBILOBE	-	-	-	-	-	-
AMBANJA	Yes	Yes	Yes	No	No	No
Mean	1.00	0.46	0.58	0.12	0.50	0.04
Sum	26	12	15	3	13	1
N	26	26	26	26	26	26

**Table A15: Group activities through the traders' organization**

Name of City	Meeting of all the traders	Organizing festivals	Organizing sports events	Microfinance	Rotating saving and credit	Commodity specific traders' group	If yes, rice Traders' group	Youth group	Female group
ANTANANARIVO RENIVOHITRA	Yes	Yes	Yes	No	No	Yes	Yes	No	No
ANTSIRABE I	Yes	Yes	No	No	No	Yes	No	Yes	Yes
TSIROANOMANDIDY	No	No	No	No	No	No		No	No
MIARINARIVO	No organization								
FIANARANTSOA I	Yes	No	No	No	No	No		NI	NI.
AMBOSITRA	Yes	No	No	No	No	Yes	No	No	No
MANAKARA	Yes	Yes	No	No	No	No		No	No
FARAFANGANA	Yes	Yes	No	No	No	Yes	Yes	No	Yes
IHOSY	Yes	No	No	No	No	No		No	No
TOAMASINA I	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes
FENOARIVO ATSIANANANA	No organization								
AMBATONDRAZAKA	Yes	No	No	No	No	Yes	No	No	No
MAHAJANGA I	Yes	No	No	Yes	No	Yes	Yes	No	No
MAEVATANANA	Yes	Yes	No	Yes	No	Yes	No	No	Yes
MAROVOAY	No	No	No	No	No	No		No	No
PORT-BERGE	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes
MANDRITSARA	Yes	No	Yes	No	No	No		No	No
BEFANDRIANA AVARATRA	Yes	Yes	No	No	No	No		No	Yes
ANTSOHIHY	Yes	Yes	No	No	No	Yes	Yes	No	Yes
BEALANANA	Yes	Yes	No	Yes	No	Yes	No	No	No
MAINTIRANO	No organization								
MAMPIKONY	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
TOLIARA I	Yes	No	Yes	No	No	Yes	Yes	Yes	No
MORONDAVA	Yes	No	No	No	No	No		No	No
TAOLAGNARO	Yes	No	No	No	No	No		No	No
AMBOVOMBE	No organization								
SAMBAVA	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
ANTSIRANANA I	Yes	No	Yes	No	Yes	Yes	Yes	No	No
VOHEMAR	No	No	No	No	No	No		No	No
AMBILOBE	No organization								
AMBANJA	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes
Mean	0.88	0.50	0.31	0.15	0.04	0.62	0.63	0.24	0.40
Sum	23	13	8	4	1	16	10	6	10
N	26	26	26	26	26	26	16	25	25

**Table A16: Group activities independent of the traders' organization**

Name of City	Meeting of all the traders	Organizing festivals	Organizing sports events	Microfinance	Rotating saving and credit	Commodity specific traders' group	If yes, rice Traders' group	Youth group	Female group
ANTANANARIVO RENIVOHITRA	Yes	Yes	Yes	No	No	Yes	Yes	No	No
ANTSIRABE I	Yes	Yes	No	No	No	NI		No	No
TSIROANOMANDIDY	No	No	No	No	No	No		No	No
MIARINARIVO	No	No	No	No	No	No		No	No
FIANARANTSOA I	No	No	No	No	No	No		NI	NI
AMBOSITRA	No	No	No	No	No	No		No	No
MANAKARA	No	No	No	No	No	No		No	No
FARAFANGANA	No	No	No	No	No	No		No	No
IHOSY	Yes	Yes	No	No	No	No		No	No
TOAMASINA I	No	No	No	No	No	No		No	No
FENOARIVO ATSIANANANA	No	No	No	No	No	No		No	No
AMBATONDRAZAKA	No	Yes	Yes	No	No	No		Yes	Yes
MAHAJANGA I	No	No	No	No	No	No		No	No
MAEVATANANA	No	No	No	No	No	No		No	No
MAROVOAY	No	No	No	No	No	No		No	No
PORT-BERGE	No	No	No	No	No	No		No	No
MANDRITSARA	No	No	No	No	No	No		No	No
BEFANDRIANA AVARATRA	No	No	No	No	No	No		No	No
ANTSOHIHY	No	No	No	No	No	No		No	No
BEALANANA	No	No	No	No	No	No		No	No
MAINTIRANO	No	No	No	No	No	No		No	No
MAMPIKONY	No	No	No	No	No	No		No	No
TOLIARA I	No	No	No	No	No	No		No	No
MORONDAVA	No	No	No	No	No	No		No	No
TAOLAGNARO	No	No	No	No	No	No		No	No
AMBOVOMBE	No	No	No	No	No	No		No	No
SAMBAVA	No	No	No	No	No	No		No	No
ANTSIRANANA I	No	No	No	No	No	No		No	No
VOHEMAR	No	No	No	No	No	No		No	No
AMBILOBE	No	No	No	No	No	No		No	No
AMBANJA	No	No	No	No	No	No		No	No
Mean	0.10	0.13	0.06	0.00	0.00	0.03	100	0.03	0.03
Sum	3	4	2	0	0	1	1	1	1
N	31	31	31	31	31	30	1	30	30

**Table A17: Membership of Traders' Organization**

Name of City	Membe rship	If it is a membership organization					Non-membe rship org., collecting money?
		# of membe rs	General assembly (times/year)	Membership fee (Ar/month or year)		# of members paying fee	
ANTANANARIVO RENIVOHITRA	No	-	-	-	-	-	Yes
ANTSIRABE I	Yes	300	2	500	month	20	-
TSIROANOMANDIDY	No	-	-	-	-	-	Yes
MIARINARIVO	No organization						
FIANARANTSOA I	No	-	-	-	-	-	Yes
AMBOSITRA	No	-	-	-	-	-	No
MANAKARA	Yes	90	4	500	month	60	-
FARAFANGANA	Yes	38	2	200	month	0	-
IHOSY	No	-	-	-	-	-	No
TOAMASINA I	Yes	152	3	200	month	120	-
FENOARIVO ATSIANANANA	No organization						
AMBATONDRAZAKA	Yes	70	1	300	month	60	-
MAHAJANGA I	No	-	-	-	-	-	Yes
MAEVATANANA	No	-	-	-	-	-	Yes
MAROVOAY	No	-	-	-	-	-	No
PORT-BERGE	No	-	-	-	-	-	Yes
MANDRITSARA	No	-	-	-	-	-	No
BEFANDRIANA AVARATRA	Yes	300	3	1000	year	300	-
ANTSOHIHY	No	-	-	-	-	-	No
BEALANANA	Yes	125	1	500	year	100	-
MAINTIRANO	No organization						
MAMPIKONY	No	-	-	-	-	-	Yes
TOLIARA I	Yes	250	1	300	month	175	-
MORONDAVA	Yes	120	1	1000	month	84	-
TAOLAGNARO	No	-	-	-	-	-	No
AMBOVOMBE	No organization						
SAMBAVA	No	-	-	-	-	-	Yes
ANTSIRANANA I	No	-	-	-	-	-	Yes
VOHEMAR	No	-	-	-	-	-	No
AMBILOBE	No organization						
AMBANJA	No	-	-	-	-	-	Yes
Mean	0.31	160.6	2.00	-	-	102.1	0.59
Sum	8	1445	18	-	-	919	10
N	26	9	9	9	9	9	17

**Table A17: President of Traders (according to traders)**

Name of City	President of traders	How to select the president	Current president, since when?	Roles of the president					
				Negotiation with the commune	Mediation among traders	Mediation between traders & outsiders	Allocation of the market places	Encourage to use standard weights & measures	Encourage to stop cheating
ANTANANARIVO RENIVOHITRA	Yes	Appointed	2009	Yes	Yes	Yes	Yes	No	Yes
ANTSIRABE I	Yes	Appointed	2011	Yes	Yes	Yes	Yes	Yes	Yes
TSIROANOMANDIDY	Yes	Appointed	2008	No	Yes	Yes	Yes	No	No
MIARINARIVO	Yes	Appointed	1999	Yes	Yes	Yes	Yes	Yes	Yes
FIANARANTSOA I	Yes	Elected	1983	Yes	Yes	Yes	Yes	No	No
AMBOSITRA	Yes	Elected	2011	Yes	Yes	Yes	Yes	Yes	Yes
MANAKARA	Yes	Appointed	2011	No	Yes	Yes	No	No	Yes
FARAFANGANA	Yes	Appointed	2008	No	Yes	Yes	Yes	Yes	Yes
IHOSY	Yes	Elected	2004	Yes	Yes	Yes	No	Yes	Yes
TOAMASINA I	Yes	Appointed	2010	No	Yes	Yes	Yes	No	Yes
FENOARIVO ATSIANANA	Yes	Appointed	2010	No	Yes	Yes	Yes	No	Yes
AMBATONDRAZAKA	Yes	Appointed	2005	Yes	Yes	Yes	No	No	Yes
MAHAJANGA I	Yes	Appointed	2008	No	Yes	Yes	No	No	Yes
MAEVATANANA	Yes	Appointed	2011	Yes	Yes	Yes	Yes	Yes	Yes
MAROVOAY	Yes	Elected	2011	Yes	Yes	Yes	Yes	Yes	Yes
PORT-BERGE	Yes	Elected	2002	Yes	Yes	Yes	No	Yes	Yes
MANDRITSARA	Yes	Elected	2011	Yes	Yes	Yes	Yes	Yes	Yes
BEFANDRIANA AVARATRA	Yes	Elected	2008	Yes	Yes	Yes	Yes	Yes	No
ANTSOHIHY	No	-	-	-	-	-	-	-	-
BEALANANA	Yes	Elected	2008	Yes	Yes	Yes	Yes	No	Yes
MAINTIRANO	Yes	Elected	2008	NI	Yes	Yes	Yes	Yes	Yes
MAMPIKONY	Yes	Elected	2009	Yes	Yes	Yes	No	Yes	Yes
TOLIARA I	Yes	Elected	2007	Yes	Yes	Yes	Yes	Yes	Yes
MORONDAVA	Yes	Appointed	2011	Yes	Yes	Yes	Yes	Yes	Yes
TAOLAGNARO	Yes	Appointed	2008	Yes	Yes	Yes	No	Yes	No
AMBOVOMBE	No	-	-	-	-	-	-	-	-
SAMBAVA	Yes	Elected	2000	Yes	Yes	Yes	No	Yes	Yes
ANTSIRANANA I	Yes	Elected	2003	Yes	Yes	Yes	No	No	Yes
VOHEMAR	No	-	-	-	-	-	-	-	-
AMBILOBE	No	-	-	-	-	-	-	-	-
AMBANJA	Yes	Elected	1998	Yes	Yes	Yes	Yes	Yes	Yes
Mean	0.87	0.52	2006.4	0.77	1.00	1.00	0.67	0.63	0.85
Sum	27	14 (elect.)	-	20	27	27	18	17	23
N	31	27	27	26	27	27	27	27	27

Appointed: appointed by commune; Elected: elected by traders

**Table A19: Traders' participation in market management, administration**

Name of City	Hired: full time	Hired: part time	Organization members' participation	Non-member traders' participation
ANTANANARIVO RENIVOHITRA	0	0	0	0
ANTSIRABE I	0	0	0	0
TSIROANOMANDIDY	1	0	0	0
MIARINARIVO	0	0	0	0
FIANARANTSOA I	0	0	0	0
AMBOSITRA	0	0	0	0
MANAKARA	0	0	0	0
FARAFANGANA	0	0	0	0
IHOSY	0	0	0	0
TOAMASINA I	0	0	0	0
FENOARIVO ATSIANANA	0	0	0	0
AMBATONDRAZAKA	0	0	0	0
MAHAJANGA I	0	0	0	0
MAEVATANANA	6	0	0	0
MAROVOAY	0	0	0	0
PORT-BERGE	0	0	4	9
MANDRITSARA	0	0	0	0
BEFANDRIANA AVARATRA	0	0	0	0
ANTSOHIHY	0	0	0	0
BEALANANA	0	0	0	0
MAINTIRANO	0	0	0	0
MAMPIKONY	3	2	5	5
TOLIARA I	0	0	0	0
MORONDAVA	0	0	0	0
TAOLAGNARO	0	0	0	0
AMBOVOMBE	0	0	0	0
SAMBAVA	0	2	0	0
ANTSIRANANA I	0	0	0	0
VOHEMAR	0	0	0	0
AMBILOBE	0	0	0	0
AMBANJA	0	0	0	0
Mean	0.32	0.13	0.29	0.45
Sum	10	4	9	14
N	31	31	31	31

**Table A20: Traders' participation in market management, security patrol**

Name of City	Hired: full time	Hired: part time	Organization members' participation	Non-member traders' participation	Traders' Participation
ANTANANARIVO RENIVOHITRA	0	0	100	0	Voluntary
ANTSIRABE I	0	0	0	0	NA
TSIROANOMANDIDY	1	0	0	0	Voluntary
MIARINARIVO	0	0	0	0	NA
FIANARANTSOA I	9	0	3	0	Voluntary
AMBOSITRA	0	0	0	0	NA
MANAKARA	0	0	0	0	NA
FARAFANGANA	0	0	0	0	NA
IHOSY	0	0	0	0	Voluntary
TOAMASINA I	0	0	0	0	NA
FENOARIVO ATSIANANA	0	0	0	0	NA
AMBATONDRAZAKA	0	0	0	0	NA
MAHAJANGA I	0	0	0	0	NA
MAEVATANANA	1	0	0	0	NI
MAROVOAY	0	0	0	0	NA
PORT-BERGE	2	0	0	0	Voluntary
MANDRITSARA	5	0	0	0	NI
BEFANDRIANA AVARATRA	0	0	0	0	Voluntary
ANTSOHIHY	2	0	0	2	NI
BEALANANA	0	0	0	0	Voluntary
MAINTIRANO	0	0	0	0	NA
MAMPIKONY	1	0	0	7	Voluntary
TOLIARA I	10	0	0	10	Everyone
MORONDAVA	4	0	0	0	Voluntary
TAOLAGNARO	0	0	0	0	NA
AMBOVOMBE	0	0	0	0	NA
SAMBAVA	0	0	0	0	NA
ANTSIRANANA I	8	8	0	0	Voluntary
VOHEMAR	0	0	0	0	NA
AMBILOBE	0	0	0	0	NA
AMBANJA	0	0	0	0	NA
Mean	1.39	0.26	3.32	0.61	0.07
Sum	43	8	103	19	1 (everyone)
N	31	31	31	31	14

**Table A21: Traders' participation in market management, fire-fighting**

Name of City	Hired: full time	Hired: part time	Organization members' participation	Non-member traders' participation	Traders' Participation
ANTANANARIVO RENIVOHITRA	0	0	0	0	NA
ANTSIRABE I	0	0	0	0	NA
TSIROANOMANDIDY	0	0	0	0	NA
MIARINARIVO	0	0	0	0	NA
FIANARANTSOA I	0	0	0	0	NA
AMBOSITRA	0	0	0	0	NA
MANAKARA	0	0	0	0	NA
FARAFANGANA	0	0	0	0	NA
IHOSY	0	0	0	0	NA
TOAMASINA I	0	0	0	0	NA
FENOARIVO ATSIANANA	0	0	0	0	NA
AMBATONDRAZAKA	0	0	0	0	NA
MAHAJANGA I	0	0	0	0	NA
MAEVATANANA	0	0	0	0	NA
MAROVOAY	0	0	0	0	NA
PORT-BERGE	0	0	0	0	NA
MANDRITSARA	0	0	0	0	NA
BEFANDRIANA AVARATRA	0	0	0	0	NA
ANTSOHIHY	0	0	0	0	NA
BEALANANA	0	0	0	0	NA
MAINTIRANO	0	0	0	0	NA
MAMPIKONY	0	0	0	0	NA
TOLIARA I	0	0	0	0	NA
MORONDAVA	0	0	0	0	NA
TAOLAGNARO	0	0	0	0	NA
AMBOVOMBE	0	0	0	0	NA
SAMBAVA	0	0	0	0	NA
ANTSIRANANA I	0	0	0	0	NA
VOHEMAR	0	0	0	0	NA
AMBILOBE	0	0	0	0	NA
AMBANJA	0	0	0	0	NA
Mean	0.00	0.00	0.00	0.00	-
Sum	0	0	0	0	-
N	31	31	31	31	0

**Table A22: Traders' participation in market management, cleaning**

Name of City	Hired: full time	Hired: part time	Organization members' participation	Non-member traders' participation	Traders' Participation	# of Days per year
ANTANANARIVO RENIVOHITRA	0	0	2000	0	Everyone	365
ANTSIRABE I	0	0	0	0	NA	0
TSIROANOMANDIDY	0	0	0	0	NA	0
MIARINARIVO	0	0	0	0	NA	0
FIANARANTSOA I	0	0	0	0	NA	0
AMBOSITRA	0	0	0	0	NA	0
MANAKARA	0	0	0	0	NA	0
FARAFANGANA	0	0	0	0	NA	0
IHOSY	0	0	0	0	NA	0
TOAMASINA I	0	0	0	0	NA	0
FENOARIVO ATSIANANA	0	0	0	0	NA	0
AMBATONDRAZAKA	0	0	0	0	NA	0
MAHAJANGA I	0	0	0	0	NA	0
MAEVATANANA	3	0	0	0	Voluntary	2
MAROVOAY	0	0	0	0	NA	0
PORT-BERGE	0	0	4	0	Everyone	360
MANDRITSARA	250	0	0	0	Voluntary	2
BEFANDRIANA AVARATRA	0	0	0	0	Voluntary	3
ANTSOHIHY	1	1	2	2	NI	NI
BEALANANA	0	0	0	0	NA	0
MAINTIRANO	0	0	0	0	NA	0
MAMPIKONY	4	1	0	0	Everyone	360
TOLIARA I	0	3	0	3	Members	365
MORONDAVA	0	0	0	0	NA	0
TAOLAGNARO	0	0	0	0	NA	0
AMBOVOMBE	0	0	0	0	NA	0
SAMBAVA	0	2	0	0	Voluntary	360
ANTSIRANANA I	0	0	1000	0	Everyone	360
VOHEMAR	0	0	0	0	NA	0
AMBILOBE	0	0	0	0	NA	0
AMBANJA	0	0	0	0	NA	0
Mean	8.32	0.23	96.97	0.16	0.40	72.57
Sum	258	7	3006	5	4 (everyone)	2177
N	31	31	31	31	10	30

**Table A23: Traders' participation in market management, facility maintenance**

Name of City	Hired: full time	Hired: part time	Organization members' participation	Non-member traders' participation	Traders' Participation	# of Days per year
ANTANANARIVO RENIVOHITRA	0	0	2000	0	Voluntary	NI
ANTSIRABE I	0	0	0	0	NA	0
TSIROANOMANDIDY	0	0	0	0	NA	0
MIARINARIVO	0	0	0	0	NA	0
FIANARANTSOA I	0	0	0	0	NA	0
AMBOSITRA	0	0	0	0	NA	0
MANAKARA	0	0	0	0	NA	0
FARAFANGANA	0	0	0	0	NA	0
IHOSY	0	0	0	0	NA	0
TOAMASINA I	0	0	0	0	NA	0
FENOARIVO ATSIANANA	0	0	0	0	NA	0
AMBATONDRAZAKA	0	0	0	0	NA	0
MAHAJANGA I	0	0	0	0	NA	0
MAEVATANANA	6	0	0	0	Everyone	0
MAROVOAY	0	0	0	0	NA	0
PORT-BERGE	0	0	0	0	NA	0
MANDRITSARA	250	0	0	0	Voluntary	1
BEFANDRIANA AVARATRA	0	0	0	0	NA	0
ANTSOHIHY	0	0	0	0	NA	0
BEALANANA	0	0	0	0	NA	0
MAINTIRANO	0	0	0	0	NA	0
MAMPIKONY	0	0	0	0	NA	0
TOLIARA I	0	0	0	0	NA	0
MORONDAVA	0	0	0	0	NA	0
TAOLAGNARO	0	0	0	0	NA	0
AMBOVOMBE	0	0	0	0	NA	0
SAMBAVA	0	2	0	0	Voluntary	4
ANTSIRANANA I	0	10	0	0	Voluntary	4
VOHEMAR	0	0	0	0	NA	0
AMBILOBE	0	0	0	0	NA	0
AMBANJA	0	0	0	0	NA	0
Mean	8.26	0.39	64.52	0.00	0.20	0.30
Sum	256	12	2000	0	1 (everyone)	9
N	31	31	31	31	5	30

**Table A24: Number of rice traders in the market in September**

Name of City	Representative of rice traders	Number of rice traders in September		
		Regular traders (average in a day)	Occasional traders (maximum in a day)	Inter-district traders (total in a week)
ANTANANARIVO RENIVOHITRA	Yes	80	0	10
ANTSIRABE I	NI	NI	NI	0
TSIROANOMANDIDY	No	20	9	0
MIARINARIVO	No	7	20	0
FIANARANTSOA I	No	50	0	4
AMBOSITRA	No	20	20	0
MANAKARA	No	50	NI	3
FARAFANGANA	Yes	38	38	10
IHOSY	No	113	NI	0
TOAMASINA I	No	NI	NI	NI
FENOARIVO ATSIANANA	No	30	0	2
AMBATONDRAZAKA	No	500	100	0
MAHAJANGA I	Yes	56	NI	10
MAEVATANANA	No	80	100	8
MAROVOAY	No	35	50	0
PORT-BERGE	Yes	30	10	3
MANDRITSARA	Yes	45	20	0
BEFANDRIANA AVARATRA	No	20	40	0
ANTSOHIHY	Yes	63	42	0
BEALANANA	No	10	30	0
MAINTIRANO	No	7	10	0
MAMPIKONY	Yes	20	20	3
TOLIARA I	Yes	30	40	0
MORONDAVA	No	30	10	0
TAOLAGNARO	Yes	70	5	2
AMBOVOMBE	No	NI	NI	NI
SAMBAVA	Yes	36	48	0
ANTSIRANANA I	Yes	200	100	4
VOHEMAR	No	20	5	0
AMBILOBE	No	40	50	10
AMBANJA	Yes	250	0	20
Mean	0.40	69.64	30.68	3.07
Sum	12	1950	767	89
N	30	28	25	29

**Table A25: Regulations on Rice Trading at the Commune Level**

Name of City	Regulation on			Tax on		License of local rice trading	
	quality	price	quantity	sales to outside	moving to outside		coming to inside
ANTANANARIVO RENIVOHITRA	No	No	No	No	No	No	No
ANTSIRABE I	No	No	No	No	Yes	No	No
TSIROANOMANDIDY	No	No	No	No	No	No	Yes
MIARINARIVO	No	No	No	No	Yes	No	No
FIANARANTSOA I	No	No	No	No	Yes	Yes	No
AMBOSITRA	No	No	No	No	No	No	No
MANAKARA	No	No	No	No	Yes	Yes	No
FARAFANGANA	No	No	No	No	No	No	No
IHOSY	No	No	No	No	No	No	Yes
TOAMASINA I	No	No	No	No	No	No	No
FENOARIVO ATSIANANA	No	No	No	No	No	No	No
AMBATONDRAZAKA	No	No	No	No	Yes	No	Yes
MAHAJANGA I	No	No	No	No	No	Yes	Yes
MAEVATANANA	No	No	No	Yes	Yes	No	No
MAROVOAY	No	No	No	No	Yes	No	No
PORT-BERGE	No	No	No	No	Yes	Yes	Yes
MANDRITSARA	No	No	No	No	Yes	Yes	Yes
BEFANDRIANA AVARATRA	No	No	Yes	No	Yes	No	Yes
ANTSOHIHY	No	No	No	No	Yes	No	Yes
BEALANANA	No	No	No	No	Yes	No	No
MAINTIRANO	No	No	No	No	Yes	No	No
MAMPIKONY	No	No	No	No	Yes	Yes	Yes
TOLIARA I	No	No	No	No	Yes	Yes	No
MORONDAVA	No	No	No	No	Yes	No	No
TAOLAGNARO	No	No	No	No	Yes	Yes	Yes
AMBOVOMBE	No	Yes	No	No	No	Yes	No
SAMBAVA	No	No	No	No	No	No	No
ANTSIRANANA I	No	No	No	No	No	Yes	No
VOHEMAR	No	No	No	No	No	No	No
AMBILOBE	No	No	No	No	Yes	Yes	Yes
AMBANJA	No	No	No	No	Yes	Yes	Yes
Mean	0	0.03	0.03	0.03	0.61	0.39	0.39
Sum	0	1	1	1	19	12	12
N	31	31	31	31	31	31	31

**Table A26: Regulations on Rice Trading at the District Level**

Name of City	Regulation on			Tax on			License of local rice trading
	quality	price	quantity	sales to outside	moving to outside	coming to inside	
ANTANANARIVO RENIVOHITRA	No	No	No	No	No	No	No
ANTSIRABE I	No	No	No	No	Yes	No	No
TSIROANOMANDIDY	No	No	No	Yes	Yes	Yes	Yes
MIARINARIVO	No	No	No	No	Yes	No	No
FIANARANTSOA I	No	No	No	No	No	No	No
AMBOSITRA	No	No	No	No	No	No	No
MANAKARA	No	No	No	No	No	No	No
FARAFANGANA	No	No	No	No	No	No	No
IHOSY	No	No	No	No	No	No	No
TOAMASINA I	No	No	No	No	No	No	No
FENOARIVO ATSIANANA	No	No	No	No	No	No	No
AMBATONDRAZAKA	No	No	No	No	Yes	No	Yes
MAHAJANGA I	No	No	No	No	No	No	Yes
MAEVATANANA	No	No	No	No	No	No	No
MAROVOAY	No	No	No	No	Yes	No	No
PORT-BERGE	No	No	No	No	Yes	Yes	Yes
MANDRITSARA	No	No	No	No	Yes	Yes	Yes
BEFANDRIANA AVARATRA	No	Yes	Yes	No	Yes	No	Yes
ANTSOHIHY	No	No	No	No	No	No	No
BEALANANA	No	No	No	No	Yes	No	No
MAINTIRANO	No	Yes	No	No	Yes	No	Yes
MAMPIKONY	No	No	No	No	Yes	Yes	No
TOLIARA I	No	No	No	No	No	No	No
MORONDAVA	Yes	Yes	No	Yes	Yes	Yes	Yes
TAOLAGNARO	No	No	No	No	No	No	No
AMBOVOMBE	No	No	No	No	No	No	No
SAMBAVA	No	No	No	No	No	No	No
ANTSIRANANA I	No	No	No	No	No	No	No
VOHEMAR	No	No	No	No	No	Yes	Yes
AMBILOBE	No	No	No	No	Yes	Yes	Yes
AMBANJA	No	No	No	No	Yes	Yes	Yes
Mean	0.03	0.10	0.03	0.06	0.45	0.26	0.35
Sum	1	3	1	2	14	8	11
N	31	31	31	31	31	31	31

**Table A27: Common conversion rates of milled rice used in the market**

Name of City	1 bag = (kg)	1 tin = (kg)	1 bag = (cups)	1 tin = (cups)	1 kg = (cups)
ANTANANARIVO RENIVOHITRA	50	.	174	.	3.5
ANTSIRABE I	50	.	175	.	3.5
TSIROANOMANDIDY	120	.	420	.	3.5
MIARINARIVO	50	.	175	.	3.5
FIANARANTSOA I	80	.	275	.	3.5
AMBOSITRA	50	.	175	.	3.5
MANAKARA	50	.	180	.	3.5
FARAFANGANA	50	.	175	.	3.5
IHOSY	.	.	200	.	3.5
TOAMASINA I	50	.	175	.	3.5
FENOARIVO ATSIANANA	50	.	175	.	3.5
AMBATONDRAZAKA	50	10.5	180	35	3.5
MAHAJANGA I	.	.	.	.	3.5
MAEVATANANA	60	.	200	.	3.5
MAROVOAY	50	.	170	.	.
PORT-BERGE	60	.	200	.	3.5
MANDRITSARA	60	17	200	35	3.5
BEFANDRIANA AVARATRA	60	.	200	36	3.5
ANTSOHIHY	60	.	200	.	3.5
BEALANANA	60	17	200	18	3.5
MAINTIRANO	50	.	175	.	3.5
MAMPIKONY	60	.	200	.	3.5
TOLIARA I	60	.	200	.	3.5
MORONDAVA	50	.	175	.	3.5
TAOLAGNARO	50	.	168	.	3.5
AMBOVOMBE	.	.	.	.	.
SAMBAVA	60	.	200	.	3.5
ANTSIRANANA I	60	.	200	.	3.5
VOHEMAR	60	.	200	.	3.5
AMBILOBE	60	.	200	.	3.5
AMBANJA	60	.	200	.	3.5
Mean	58.21	14.83	198.86	31.00	3.50
N	28	3	29	4	29

**Table A28: Rice harvest months around the market**

Name of City	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ANTANANARIVO RENIVOHITRA	1	1	1	2	2	1	0	0	0	0	0	1
ANTSIRABE I	0	1	1	2	2	1	1	0	0	0	0	0
TSIROANOMANDIDY	0	0	2	2	2	1	0	0	0	0	0	1
MIARINARIVO	0	0	0	1	2	2	2	1	0	0	0	0
FIANARANTSOA I	0	2	2	2	2	1	0	0	0	0	0	0
AMBOSITRA	1	1	1	2	2	1	0	0	0	0	0	0
MANAKARA	0	0	0	1	0	0	0	0	0	0	0	1
FARAFANGANA	0	0	0	0	0	1	1	0	0	0	0	2
IHOSY	0	0	0	0	2	1	1	0	0	0	2	2
TOAMASINA I	0	0	0	0	0	0	0	0	0	0	0	0
FENOARIVO ATSIANANA	0	0	0	0	2	1	0	0	0	0	0	0
AMBATONDRAZAKA	0	1	1	1	2	2	1	0	0	0	0	1
MAHAJANGA I	0	0	0	0	0	0	0	0	0	0	0	0
MAEVATANANA	0	0	0	1	1	2	2	2	1	1	1	1
MAROVOAY	0	1	1	1	1	1	0	0	2	1	0	0
PORT-BERGE	0	0	0	1	1	0	0	0	0	0	0	0
MANDRITSARA	0	0	0	0	1	1	2	2	2	2	2	2
BEFANDRIANA AVARATRA	1	1	1	2	2	1	0	0	0	0	2	0
ANTSOHIHY	1	1	1	2	2	1	0	0	0	0	0	1
BEALANANA	0	0	0	0	1	1	2	2	2	2	2	1
MAINTIRANO	0	0	0	0	2	2	2	1	0	1	1	0
MAMPIKONY	1	0	0	2	2	2	2	1	0	0	1	1
TOLIARA I	0	0	0	0	0	0	0	0	0	0	0	0
MORONDAVA	0	0	0	2	2	2	0	0	0	0	0	0
TAOLAGNARO	2	0	0	1	2	2	0	0	0	0	0	2
AMBOVOMBE	0	0	0	0	0	0	0	0	0	0	0	0
SAMBAVA	1	0	0	0	2	2	0	0	0	0	1	1
ANTSIRANANA I	0	0	0	0	1	2	0	0	1	0	1	1
VOHEMAR	2	2	2	0	0	0	0	0	0	1	1	1
AMBILOBE	0	0	0	0	0	0	2	2	1	0	0	0
AMBANJA	0	0	1	0	0	0	0	0	0	1	0	0
Mean	0.32	0.29	0.42	0.77	1.19	1.10	0.52	0.42	0.29	0.35	0.42	0.55
Sum	10	9	13	24	37	34	16	13	9	11	13	17
N	31	31	31	31	31	31	31	31	31	31	31	31

Color indicates as follows: High season = 2 Low season = 1 No harvest = 0

**Table A29: Information Technology and Services Available in the City**

Name of City	Cellular phone access		Mobile money point		Price info. by radio		Price info. by newspaper	
	Avail able?	first year	Avail able?	first year	Avail able?	first year	Avail able?	first year
ANTANANARIVO RENIVOHITRA	Yes	1998	Yes	2010	No	.	No	.
ANTSIRABE I	Yes	1995	Yes	2010	No	.	No	.
TSIROANOMANDIDY	Yes	2005	Yes	2011	No	.	No	.
MIARINARIVO	Yes	2007	Yes	2011	No	.	No	.
FIANARANTSOA I	Yes	1998	Yes	2010	No	.	No	.
AMBOSITRA	Yes	2000	Yes	2010	No	.	No	.
MANAKARA	Yes	2004	Yes	2011	No	.	No	.
FARAFANGANA	Yes	2007	No	.	No	.	No	.
IHOSY	Yes	2004	Yes	2011	No	.	No	.
TOAMASINA I	Yes	1996	Yes	2011	No	.	No	.
FENOARIVO ATSIANANA	Yes	1998	Yes	2011	No	.	No	.
AMBATONDRAZAKA	No	.	Yes	2010	No	.	No	.
MAHAJANGA I	Yes	2000	No	.	No	.	No	.
MAEVATANANA	Yes	2000	No	.	No	.	No	.
MAROVOAY	Yes	2000	Yes	2011	No	.	No	.
PORT-BERGE	Yes	2006	Yes	2011	No	.	No	.
MANDRITSARA	Yes	2008	No	.	No	.	No	.
BEFANDRIANA AVARATRA	Yes	2008	No	.	Yes	2010	No	.
ANTSOHIHY	Yes	2007	Yes	2010	No	.	No	.
BEALANANA	Yes	2007	No	.	No	.	No	.
MAINTIRANO	Yes	2005	Yes	2010	No	.	No	.
MAMPIKONY	Yes	2001	Yes	2010	No	.	No	.
TOLIARA I	Yes	2003	Yes	2009	No	.	No	.
MORONDAVA	Yes	1998	Yes	2010	No	.	No	.
TAOLAGNARO	Yes	1998	Yes	2010	No	.	No	.
AMBOVOMBE	Yes	2006	No	.	No	.	No	.
SAMBAVA	Yes	2003	Yes	2009	Yes	2002	No	.
ANTSIRANANA I	Yes	1996	Yes	2010	No	.	Yes	2009
VOHEMAR	Yes	2002	Yes	2010	No	.	No	.
AMBILOBE	Yes	2002	Yes	2010	No	.	No	.
AMBANJA	Yes	2002	Yes	2011	Yes	2005	No	.
Mean	0.97	2002.1	0.77	2010.3	0.10	2005.7	0.03	2009.0
Sum	30	-	24	-	3	-	1	-
N	31	30	31	24	31	3	31	1

