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The Geographical Analysis of Rural Market Location and Distribution in South Western Nigeria.

By

Dr J.A Ojekunle

Department of Transport Management Technology

Federal University of Technology, Minna, Nigeria

Abstract: This paper assess the place of rural market centres that play a very important role in the development of rural and urban economy in Nigeria. They are the major source of fresh agricultural products, points of exchange of goods and services, generator of rural employment opportunities, terminal for rural goods transportation and channel for rural goods distribution. The understanding of the underlying factors that affect the spatial location and distribution of these markets is very critical to effective formulation of rural and urban economic planning. The paper therefore, analyses the spatial pattern of rural market location and distribution in South Western Nigeria using spatial density index and neighbourhood analysis. It has been observed that accessibility is a major factor of location. In terms of spatial distribution, rural markets are randomly distributed. The analysis of hierarchical distribution however shows that there are three distinct hierarchical orders of rural market in Nigeria. The paper finally recommends that regional economic planners should consider the existing spatial distribution pattern of rural market and find ways of integrating them into regional economic planning in order to enhance the development of rural, regional and interregional trade in Nigeria.

Introduction

The crucial role of rural market to the development and sustenance of rural economy has long been acknowledged (Skinner 1964 and Adalemo 1974). The transaction, which takes place in the rural market centres and through which they interact with the hinterland as well as other places has an integrative function in the society (Skinner 1964 and Ojekunle 2006). The rural market centres play this role by being a major source of fresh agricultural products, point of exchange of goods and services, generator of rural employment opportunities, terminal for rural freight transportation and channel for rural goods distribution (Khan 2014).

The above perhaps is the reason for earlier interest among scholars to investigate different aspects of rural marketing. One of these scholars is Hodder (1969) who submitted that rural markets evolved through three-stage model; which he referred to as self sufficient economy, rudimentary division of labour economy and economic diversification. Also, Meilassoux (1971) in his study of market evolution in West Africa asserted that rural markets are primarily induced by external exchange of complementary products with an alien population. However, Adalemo (1974) observed that normal development of the economy calls for changes, which eventually require the establishment of an exchange system that leads to the development of market.

Apart from market evolution, the spatial and temporal organizational structure of rural market was another issue of concern (Fliani 1976; Gana 1976; Jackson 1977 and Khan and Khan, 2010). Previous studies on market location and distribution has been concerned with the relationship between temporal and spatial distribution of market centres. The main issue of concern has been to find out whether the temporal and spatial competitions of periodic market systems influence their location and distribution. For instance, Smith and Hill (1972) hypothesized that spatial proximity of rural market location is likely to be compensated for by temporal distance. The need to empirically confirm this hypothesis led Filani (1976) to examine time-space ordering distribution of rural market centres using neighbourhood analysis. He discovered that the maximum distance the local farmers in a rural community in South Western Nigerian are willing to travel is 11.1km while the minimum distance is 3km and this is not influenced by temporal sequencing of the market system. Further, Alan and Robert (1985) also observed that the pattern of periodic market space system in different societies is not a determinant of the market location and distribution.

As a matter of fact, the search for explanation to the observable pattern of rural market location and distribution still remain crucial in the study of rural market centres. This study is therefore an attempt to further contribute to this explanation and provide a spatial perspective to rural market location and distribution pattern in the rural South Western Nigeria.

Materials and Methods of Study

The nature and types of data required for the study is limited to only three states instead of six, which made up the entire South Western Nigeria because of their contiguity nature. The three states selected were randomly picked. These are Oyo, Ogun and Ondo States. A reconnaissance survey of the sample states was carried out to determine the name, number and the location of existing rural market centres. This survey was complemented with the review of available state government publications and local newspapers that carry information on market days in the area. The extract from the review and the outcome of the survey revealed that Ogun State has 78 rural market centres; Ondo States has 68 while Oyo State has 102 making a total 284 in the three States. The above figures do not include numerous urban market centres in the area of the study.
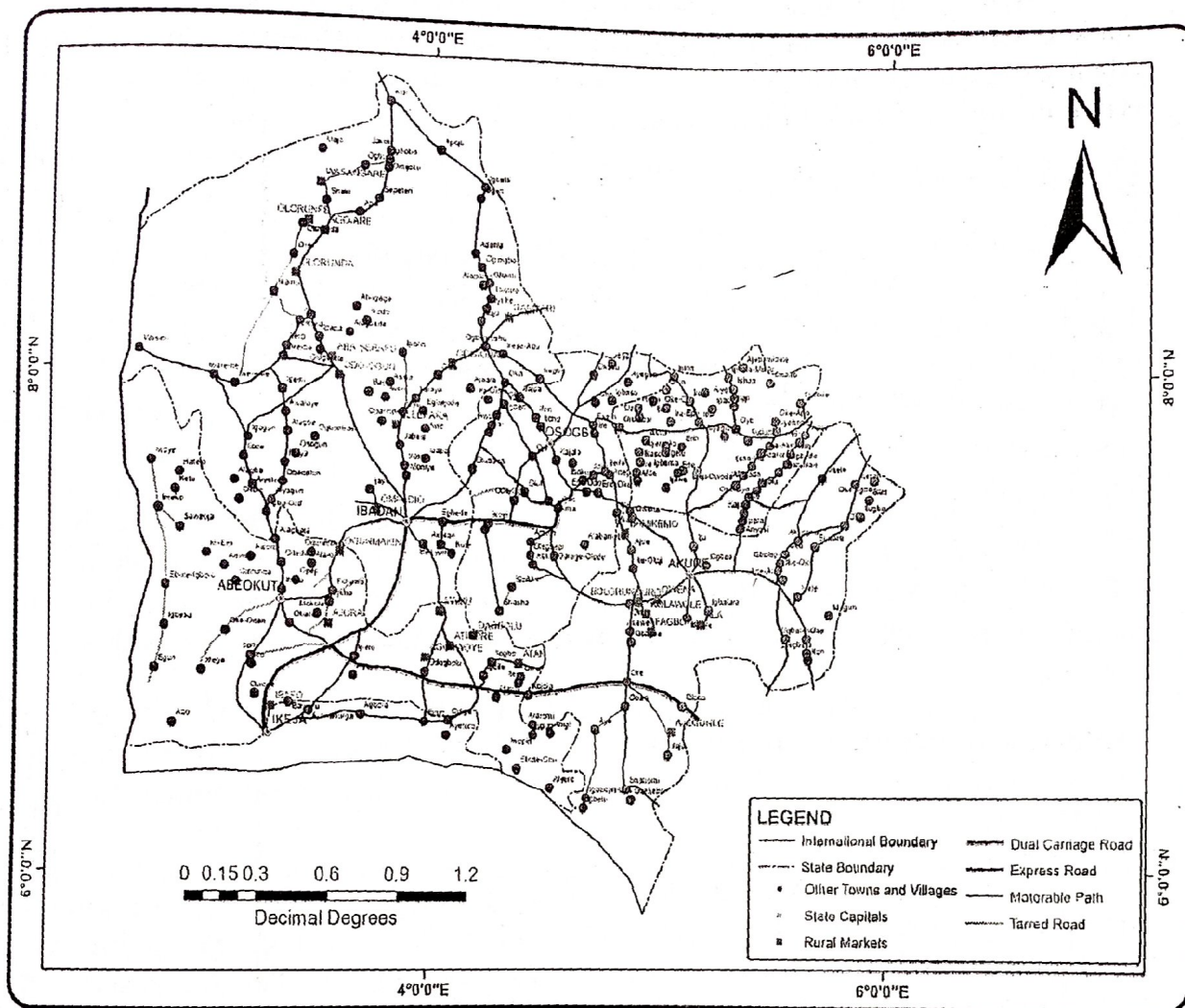
Figure 1 map of the study area

After the determination of the sample states, the next stage was the selection of rural markets for data collection. For the choice of the actual market, a stratified sampling using grid system would have been most appropriate because this sampling method would have given adequate consideration to spatial spread in the selection of the sample rural markets in the study area. This however, could not be adopted as actual location of some of the rural markets gathered during preliminary survey could be ascertained. A further attempt was also made to adopt systematic random sampling procedure but due to the same problem earlier encountered the sampling method could not be fully applied.

Thus, we resulted to the use of purposive sampling method in which selection of sample rural markets was carried out among those rural markets that are located not more than 10 kilometres from motorable road. By doing this, ten (10) rural markets were selected in Oyo State, eight (8) were selected in Ogun State and seven (7) were selected in Ondo State making a total of twenty-five (25) sampled rural markets)

To elicit the data needed, a structure questionnaire was designed and administered on rural marketers using a systematic random sampling procedure of one out of every ten marketers. The marketers in this context are those who came to the rural market-eentres to buy or sell goods. The

total number of questionnaires administered in each rural market depends on the size of the market and the number of marketers encountered during the time of survey. On a whole, a total number of 1375 questionnaires were administered, after removing the defectives ones only 1138 questionnaires were used for the analysis.

The Study Area

The study area is a part of South-Western Nigeria, which is one of the six geo-political zones of Nigeria. The area of study comprises of Ogun, Ondo, and Oyo States. The area extends from Latitude 6.5^0 to 9^0 North of the equator. It also stretches from longitude 2.5^0 to 5^0 East of Greenwich meridian. The area has a geographical extent of 55,744 square kilometers representing 61.8% and 65 of the total area of South-Western Nigeria and the entire country respectively. (see fig.1.2)

With a population of over 27million, the area has about 20% of the Nigerian population (2006 census). Out of this, close to 60% of the inhabitants of the area live in rural areas, while the remaining 40% live in urban centres. Available records also show that the entire South Western Nigeria has over 45% of Nigeria manufacturing industries (MITI 2002).

The major occupations of the people in the area are farming, trading, arts and crafts. Trading, and industrial activities are very common in major cities like Lagos, Ibadan, Osogbo, Akure, Abeokuta e.t.c., while in the rural areas farming activities dominate the occupation of the people.

The crops grown range from tuber to tree crops. Since the region lies within the equatorial rainforest, rainfall and humidity is high. This type of climate allows for the cultivation of tree crops such as plantain, cocoa, kolanut, palm tree, rubber and cashew. Apart from tree crops, food crops like maize, yam, cocoyam, rice, plantain and cassava are also cultivated particularly by the rural inhabitants. The goods produced are distributed for sales in rural market centres. The market centres play very important role in the social and economic lives of the people of the area.

The place of Road on the location of Rural Market

Roads in terms of their availability and 'usability' are crucial in rural market locations. Even where markets exist in small and inaccessible rural settlements, such markets are small and their range of goods is also limited. In the study area, the availability and effectiveness of roads are important in market location and patronage (Yusuf 2004, Mijinyawa and Adetunji 2005). The category of roads also determines the number of markets and the size. Table 1 shows the number of markets located on different categories of roads in the study.

Table 1: Location of Market Along Different Classes of Roads

State	No of market on Express way (double Carriage)	%	NO of market on Trunk A	%	No of market on Trunk B	%	No of market on Minor Rural Road	%	NO of markets on non-motorable road	%	Total No of market
Ogun	3	3.8	2	2.6	38	48.7	16	20.5	19	24.4	78
Ondo	3	4.4	19	27.9	13	19.1	17	25	16	23.5	68
Oyo	1	1	8	7.8	48	47.1	35	34.3	10	9.8	102
Total	7	2.8	29	52	99	39.9	68	27.4	45	18.2	248

Source: Field Survey 2006

The rural market centres are mainly located on trunk 'B' and minor-rural road (trunk 'C'). For example, 48.8% of the rural markets in the study are located along trunk 'B' roads while 33.5% are found on trunk 'C' minor-rural roads. The least number is found on the express road, while no market is located in rural area without motorable roads. By our earlier postulation, where we associate the number and size of markets to the quality and efficiency of roads, expressways should attract more markets than other roads. But this is not this study.

The locational pattern observed therefore may be due to a number of reasons. First, the trunk B and trunk C roads are primarily constructed to serve the rural areas and provide links for intra-regional movement. It is therefore expected that rural market centres will be located on transport routes that provide accessibility to the rural areas.

Secondly, trunk 'A' roads, which include double carriage, are meant to provide link for inter-city movement. Thus, this class of road does not favour the location of rural market centres on it because most of the marketing activities that should take-place on them are likely to pass them by in favour of a nearby town or city along the same route (Filani and Richard 1796 and Oluwarewaju 1992). This confirms to the central place theory where higher order market centre absorbs the lower order market centre through the presence of intervening opportunities. This similar pattern of market distribution was observed by Filani and Richard (1976) in Ibarapa area Oyo State.

Spatial Distribution of Rural Market Centres

The foregoing has described qualitatively the distribution of market centres in the South Western Nigeria. It is however important to examine this quantitatively for a more objective description

and explanation of the distribution of rural market pattern. For example, Alokan (1987) used quadratic analysis to determine the pattern of distribution of haulage companies in Nigeria. In this section, we examine the distribution of market centres by using the following techniques:

1. Density index and

2. Nearest neighbourhood method.

Rural Market Density

One of the indices for measuring the intensity of distribution of phenomenon across space is the density index, which is measured by relating the population of the area with its geographical extent. An attempt is made in this subsection to examine the spatial distribution of rural markets through an analysis of its density. The density measure relates the number of markets to the area (in km). Density as a measure has been used variously in the literature and it shows the intensity of distribution. The higher the density the greater is the intensity of distribution. A major advantage of this technique is that it provides the opportunity to compare the distribution of an area with the other.

Table 2: Rural Market Density

State	No. of Markets	Area in Square Km	Market Density Per 1000sq. Km
Ogun	78	16,369	5
Oyo	92	28,125	3
Ondo	68	11,250	6
Total	238	55,744	14

Source: Field Survey

Table 2 shows that Oyo state has the highest number of rural market centres and also the largest geographical area but records the lowest market density of 3 markets per 1000square kilometers. The same pattern is applicable to Ogun with second largest area and second highest number of rural market centres but records second lowest market density of 5. Ondo state that records the least number of rural market centres has the highest rural market density of 6 rural markets per 1000 square kilometers. Many factors may have been responsible for this; one of them is the ruralistic nature of the three states. For example, Ondo state that records the highest rural market density is well known as one of the most ruralistic state after Ekiti sate in the South-Western Nigeria (Idachaba 1985).

The distribution and the condition of transport network particularly, road as earlier discussed also influenced the location and development of rural market. Therefore, since the density of road network is not likely to be the same across the three states; this may also affect their distribution pattern. The above observation is based on the assertion that there are clear correlations between the distribution of village settlements/bush market and occurrence of rural roads (Filani and Richards 1976). Furthermore, the compactness of the state (i.e population density) is another factor that accounts for the distribution of market in the area.

Analysis of the Neighbourhood

Nearest neighbourhood analysis (NNA) is a test of statistics, which compares observed point patterns against theoretically derived random patterns. The averages of the distances between each point and its nearest statistics Rn whose value ranges from 0 (clustered) through 1 (random) and 2 (uniform grid) to 2.14 (uniform triangular). The formula for theoretical mean distance of a randomly distributed set of points is given as.

$$(re) = (\tfrac{1}{2_\pi})^{\tfrac{1}{2}} = 1/2$$

Where} e = theoretical means distance

π = the density of points (i.e number of points divided by area in square kilometers or meters). The Observed mean distance to nearest neighbood formula is given as (r a)

N= total number of points in the area of study the nearest neighbourhood statistics, in this case, 'N' represents the total number of markets in each sampled state.

r = distance of every point to its nearest neighbour, that is the straight line distance separating any point from its near neighbour.

Nearest neighbourhood (Rn) = ratio of re and ra (i.e re/ra)

The calculated values using the neighbourhood analysis of the sampled rural market for the three states are as indicated in Table 3.

Table 3: Nearest Neighbourhood Analysis of the Rural Markets' Spatial Distribution

State	Re	Ra	R	Remarks
Ondo	6.45	7.27	1.1	Randomly distribution
Ogun	7.25	7.27	0.95	Fairly randomly distribution
Oyo	7.87	7.87	1.0	Purely random distribution

Source: Field survey

The results show that the pattern of rural market distribution in the study is generally random with little variation from one state to another. Ondo state has the highest level of randomness (R =1.1) while Ogun state has the lowest level (R=0.95) it is somewhat difficult to classify Ogun state as having pure random distribution of rural market centres because its 'R' value is less than one. Ondo state too has 'R'> 1, which also makes it difficult to categorically conclude that the state state has complete random distribution pattern of rural market centres. This problem of interpretation has been earlier acknowledged in literature as it was observed that the value of 'R' is not a linear progression from 0 to 2.149 which make interpretation difficult (April, 1983).

Rural Market Hierarchical Distribution

The spatial hierarchical distribution of the rural market is examined through the analysis of market area of influence. Table 4 shows the distribution of marketer's origins. From Table 2 and Figure 2, rural market centres can be grouped into three based on their areas of influence using the structure of distribution of their marketers. These are:

i.   Local rural market,
ii.   Regional rural market,
iii. Inter-regional rural market.

The analysis in table 4 and figure 2 reveals that Omi-Adio, Aba-Serafu Olorunda and Olorunfe in Oyo state can be regarded as local rural markets. This is because the marketers in these markets come from within the state where they are located. Their influence in terms of patronage is limited to their immediate localities. The same situation is applicable to Atikori and Ago-Iwoye in Ogun state as well as all rural markets in Ondo state with exception of Owena and Bamikemo markets.

Regional rural markets are those markets that attract marketers outside their state where they are located but not beyond the South West (i.e regional boundary). The following rural markets fall into this category Odo-Ogun, Ogunmakin, Ajura, Ibafo, Mamu, Atan, Dagbolu, Owena and Bamikemo markets.

Table 4: Number of Marketers and their Origins to the Different Rural Market Centres

D-O	Eki ti	Lag os	Ogu n	Oy o	Ond o	Kwar a	Kan o	Osu n	Kadu na	C/Riv er	Imo	Total
Eleekara				75		1	1					77
Gambari				68		12		7				87
Omi-Adio				54								54
Aba-Serafu				34								34
Olorunda				7								7

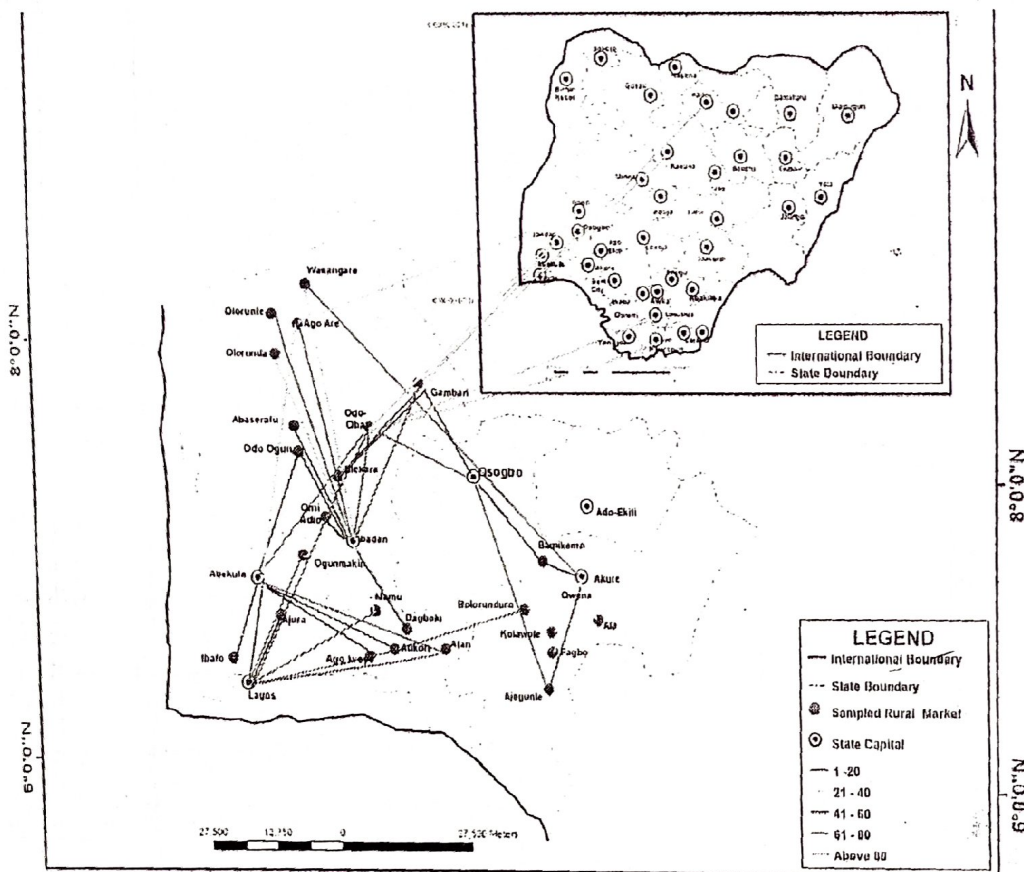|												
Odo-Oba		9	6	55		4		13	4	3	3	95
Ago-Are		2		16		1						19
Olorunfe				16								16
Odo-Ogun			1	44								45
Wasangare		7		25		3						35
Ajura		2	10									12
Ibafo		9	8									17
Ogunmakin		5	38	19								62
Mamu		1	15	14								30
Atikori			30									30
Atan		2	38									40
Dagbolu			41	4								45
Ago-Iwoye			31									31
Kolawole					150							150
Bolorunduro					42							42
Owena		1			53							54
Ajegunle					24							24
Bmikemo					32			8				40
Fagbo					37							37
Ala					45							45
Total		29	218	431	383	21	1	28	4	3	3	1128
%		2.6	19.5	38.5	34.2	1.9	.01	2.5	.04	.03	.03	100

Figure 2: Rural Marketers - Origins and Areas of Sphere of Influence

The third groups are markets, which attracts traders beyond the regional boundary. These markets include Eleekara, Gambari Odo-Oba and Wasangare. Figure 2 shows graphic representation of the proportion of the number marketers that patronize each sampled rural markets from the different states in the country. Further, Hay (1976) in a similar study in Northern Nigeria identifies three distinctive spatial organizational structures of agricultural marketers namely; isolated rural markets, accessible rural markets and regional and inter-regional urban markets. According to him, isolated rural markets are mostly market centres that are not accessible to motor traffic, serve village and local community needs. This type of markets falls into the first classified as local rural markets in the study.

The second group, which is classified as a regional rural markets in the study, they are accessible rural markets. This type of rural markets serve the village and local community, in addition they are located on or near a motorable road. These types of market often serve as focal points for collecting products to be transported to urban area. It is through this type of markets that most agricultural produce are moved to the urban centres. This is similar to what Hays (1976) classified as accessible rural market.

The third group can be classified as inter-regional rural markets. This type of market is defined as those relatively big rural markets, which serve their immediate geographical region as well as other area outside the regions immediate of production. Apart from the geographical

distinction, the functions and features of the inter-regional rural markets are similar. Third group is similar to what Hays 1976 classified as regional and inter-regional urban markets.

Generally, the results from this study corroboratesd the work of Hay's identification of market structure in Northern Nigeria. However, his classification seems to limit the channel of regional and inter-regional flow of goods to only urban markets. This study has proved that, this is not entirely true. The analysis presented in this study shows that there are rural market centres that serve beyond the regional boundaries and serve other areas that are not producers of goods. This is the case with Odo-Oba, Eleekara and Gambari markets.

Recommendations

The analysis presented above has implications for rural policy and planning. One of these is that rural markets are very important in the nation's economy. An improvement in the rural markets will by implication improve the national economy. Therefore, government should promote the building or establishment of more rural markets in the area of study.

The study has shown that rural markets are spatially ordered by their sizes, the volume of freight and spatial area of influence. This can be a basis for the reorganization of markets for improved efficiency. Therefore, the concept of rural goods load centre can be introduced in the planning of market for regional development in Nigeria. Based on the classes of rural markets discovered in the study, some specific rural market centres can be designated by the government as 'load centres' where modern freight operational facilities are provided. This will serve as a major rural interchange point for goods distribution among rural and urban centres in the country. The rural market load centres serve as collection points for rural goods moved from other smaller rural market centres for interregional goods transportation.

Generally, market activities can be hindered if the transportation system is bad. At present many of the rural roads are very bad. These roads can be improved through communal efforts, local government efforts and special federal government intervention

Conclusion

The study has revealed the importance of rural markets in shaping spatial and economic development of the southwestern Nigeria. The paper has therefore helped us to understand the underlying factors of market location and distribution in the region. These factors can be harnessed in such a way that can improve the efficiency of rural market operation in order to enhance socio-economic development of both the rural and urban areas of the country.

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