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THE PERCEIVED EFFECT OF RURAL TRANSPORTATION ON AGRICULTURAL PRODUCE IN IGBARA-OKE, NIGERIA

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ABSTRACT

This study examines the perceived effects of rural transportation on agriculture produce in Igbara-Oke, Ifedore Local Government area Ondo State Nigeria. Case study research design was adopted while both primary and secondary data were utilized. Using a purposive multi-stage sampling technique, the total populations of farmers (2,139) at Igbara-oke, was determined and a 15% sample size was taken. Questionnaire was administered to 337 respondents. Focus Group Discussion (FGD) were held across the study area. Both descriptive and inferential statistics were used to analyzed the data at p value ≤ 0.05, while the qualitative data were content analyzed. Based on the ranking of the effect of transportation on agriculture, spoilage of farm produce was the highest (25.4%). Chi-square revealed a significant difference between the scale of agricultural engagement and transportation accessibility to farm locations (0.258). Transportation had a significant negative effect on agricultural produce, therefore, there should be rehabilitation of more rural feeder roads from farmlands to the markets is recommended.

KEY WORDS Agricultural Produce, Mode of conveyance, Rural Transportation, Rural; Igbara-Oke, DFRRI .

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1. INTRODUCTION

Globally, transportation has been regarded as a significant element convoluted in agricultural development. Transportation offers the farmers and the buyers of the farm produce an accessibility into market, given its nature as a factor of production. A resourceful transportation system gives a quick solution to the conveyance of goods within the cost and time constituency (Rodrigue, Comtois, and Slack,2009, Tunde and Adeniyi 2012). Transportation and agriculture are directly linked, because transportation is the only means by which farm produce is moved to different homes as well as markets. Transport creates market for agricultural produce, enhances interaction among geographical and economic regions and opens up new areas to economic focus (Yaro et al., 2014). Within the rural locations, transportation is so significant in transferring the farm produce from the farm site to the regional market which will in turn boost the income of the local agrarians. As one of the principal precursors to rural transformation, it is indispensable to give transportation a place of recognition in rural development, particularly how it interacts with other spot of development in shaping the rural community and its economy (Yaro et al., 2014).

As an agrarian society, Nigeria have well over 70 percent of her population domiciled in the rural areas (Egbe, 2014), where the majority of the people are engaged in the primary production, specializing in the production of palm oil, yam, gari, kola nut, rice, beans, cocoa and so on. Serving a dual purpose, those in the goods are conservatively expended by the cities dwellers as well as serving as a raw material for the industries. Characteristic of the goods also is that of been large, of low price and unpreserved.

Over the years now, particularly since 1958, little or no considerable attention have been given to agriculture, owing to the discovery of crude oil, pending the introduction of rural development policy which led to the actualization of Millennium Development Goal and vision 2020.

Meanwhile, in rural areas, roads constitute the most important infrastructure in the transportation of their agricultural produce. Due to poor or inadequate infrastructure planning such as road, the synergy between agriculture and transport are difficult to actualize. In Igbara-Oke, most of their highways navigates a region of different microclimate, soil and vegetation which are inimical to agricultural practices in nearly all the rural areas. Due to the geographical location of the study area the roads are inaccessible navigating an area of strident bonds in macroclimate, soil and vegetation that obstructs the growth of farming in some rural areas. Majority of the infrastructure that are useful in the conveyance of farm produce from the farmsteads to market are not easily come-by throughout the year. Furthermore, most of these infrastructures, mainly feeder roads are characteristically unpaved, narrow, meandering and poorly drained. This preclude informal access to neighborhood where the chunk of the farmers is domiciled. In addition, transportation charges are greater, and as such, potentials marketing are not realistic couple with low incentives to produce. Moreover, characteristic of the road transport are, inadequacies of highway linkage services are which were poorly finished, bad loading and offloading coupled with bumpy management of crops which result in excessive losses from damages and degeneration of farm yields

The literature on road and agriculture is huge, but majority of them have focused on the economics of transport, agriculture production and marketing. For instance, Ajiboye and Afolayan (2009) in their study of the impact of transportation on agriculture production in developing economy; a case of kolanut production in Nigeria observed that improved transportation will encourage farmers to work harder in the rural areas and increase their production. Also, the study of Gbam ((2017) carried out on the effects of transport on the marketing of agricultural products in Jos North revealed that transport remains a major contributor to the spreading of agricultural products which also help in crafting market place for farming and reduces waste and spoilage of farm crops.

In spite of the aforementioned studies, there is still paucity of empirical investigation regarding the micro conditions prevailing at the rural areas of Igbara- Oke . This study therefore, has been designed to examine the effects of rural transportation on agricultural produce in Igbara-Oke- Ifedore Local Government Area, of Ondo State. This is with the view of providing overall panacea to the existing transportation problem in the region.

2. STUDY AREA

Igbara-Oke town is the Headquarter of Ifedore Local Government Area of Ondo State, Nigeria. It is popularly called a Nodal Town. Igbara-Oke is a Yoruba town and the inhabitants are largely involved in Agriculture. It is situated between latitude 40N of the equator and longitude 4OE of the Greenwich meridian. Geographically Igbara-Oke town is within the tropical belt of rainforest of Ondo State. It serves as a gateway to Ondo State while coming from Osun and Ekiti State. with attendant influx of workers from the state and federal government. Associated to these are the artisans in area of carpentry, metal-welding, sawmilling, mechanic works and ready-made supply of labor to any prospective inventory interested in establishing a starch processing, vegetables/palm-oil industry, yam flour industry or wood-works industry. It has a land area of 295km² and the population of the town is 176,327 as at the 2006 census.

The people of Igbara-Oke are specialized majorly in the farming activities; the long rainy season supports vegetation and large agricultural activities. Their agricultural products include; cocoa,

palm-kernel, coffee, cassava, yam, kolanuts, plantain and fruits of various types. There is a formidable challenge to prospective investors to set up medium-scale industries which can specialize in cocoa, starch, palm-oil, and fruits/ vegetables processing in Igbara-Oke. River Owena, River owena, Akunrin and Owena dam, Igbara-Oke offer ample opportunities for the establishment of fishing industries, “Fadama” (dry season) farming and irrigation farming, especially the cultivation of different kinds of vegetables.

3. LITERATURE REVIEW

A number of studies have been carried on the impact of road infrastructure on agricultural produce. For instance, Dorosh et al. (2010) documented that three significant reasons were responsible for the impacts of road network on agricultural commodity in sub-Sahara Africa, which include its large share of gross domestic product (GDP), the poverty nature of rural dwellers resulting from low infrastructural facilities coupled with long average travel time that subsequently hamper agricultural growth and affecting the price of commodity. Also the land administration system and the continuous use of land without allowing it fallow so as to give room for fertility necessitated the introduction of modern farming techniques and improved seedlings in other to minimize farming risks.

In spite of heavy investment on highway construction, the interposition has not met the transportation obligation of rural dwellers for a widespread diversity of persistence, communal and economic activities to exploit their livings. This is evident in the study carried out by Barnwell, (2012) on transport and the village in sub-Saharan Africa. It was revealed that the available market has not given room for transportation service to region with short request and to the humblest and slightest mobile sections of the public. Majority of the rural populace, in particular, women and do travel a long distance all the time with heavy loads of water, firewood and grains and other agricultural crops for sale.

Agricultural boom, efficiency and growth are fastened to highway network facilities, owing to these poorly managed roads, the conveyance of farm produce to the marketplace has been negatively affected leading to an increase in starvation and food shortages (Adeniran and Yusuf 2016). Meanwhile, economic advantages will translate to areas that are interconnected with the good and highway network. According to Charles (2000), food shortage regions especially in the eastern part of the country are characterized with overpopulation, expansion ineffective transport and improvement program that accentuated cash and export crop production in lieu of food crops. However, Adeoye, (2003) contended that the road policy such as Directorate of Foods, Roads and Rural Infrastructure (DFRRI) was successful with construction of thousands of kilometers of roads so as to open up the far-off regions. The programme, though lofty, but was bewildered by shared poor planning, monitoring and execution.

Regarding the impact of transportation on agricultural output, particularly on kolanut production, Ajiboye and Afolayan (2009), observed that insufficient infrastructure has undesirable effects on price charged on kolanut but with positive impact on employment increase and in the lessening of poverty level. Similarly, it was asserted that transportation as a result of bad road played a double effect on the agriculture crops, thereby affecting the income of the farmers (Tunde, and Adeniyi, 2012). Furthermore, according to Usman et al (2013), poor transportation that hinders agricultural output can be interlinked with farm gate prices. The reason was that regions with high agricultural potentials are difficult to access in the state. In spite of all the aforementioned, effects of transportation on agriculture produce particularly in the study area have not been fully examined in the literature. This study therefore is design to examine the effects of transportation on agricultural produce in Igbara Oke, Ondo state.

4. METHODOLOGY

The study adopted a case study research design in which both primary and secondary data were sourced. Farmers within the study area formed the target population. Using a purposive multi-stage sampling technique, the study area was delineated into ten quarters where the total population of farmers (2,139), which constitute five per cent (5%) of the entire population of Igbara-oke, was determined as the sample, frame Allen and Adekola, (2015). The 15% of the sample size was taken proportionally across the ten quarters. Thereafter, houses that were inhabited by farmers were purposively selected after diligent inquiries from the residents of the areas through a snowball. It was these selected houses that the 337 questionnaires administered were based. However, 34 questionnaires were invalid after being administered, while only the 303 (14%) of the valid questionnaires returned were further analyzed

The variables investigated included; socio-demographic characteristics, level of effectiveness of the preferred transport mode for Farm Produce, the worst transport modes for the conveyance of various farm produce, factors that facilitate the availability of transport in the Study area, factors that influence transport cost, transportation challenges experienced by farmers and most serious challenges faced in the course of transporting farm produce, average waiting time experienced by the Respondents and Respondents on the effects of rural transport on agricultural produce. From the pilot surveys that preceded the study, six major effects of transportation on agricultural produce were established as: Spoilage of farm produce; damages of farm produce; bad loading and offloading; rough handling of goods; high costs of transport and uncertain market possibility. These six perceived effects were ranked in order to determine the severity of effect of transportation on agricultural produce. Focus Group Discussion (FGD) were also held across the study area. Both descriptive and inferential statistics were

used to analyzed the data at p value ≤ 0.05, while the qualitative data were content analyzed.

5. RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

Investigation on the socio-demographic characteristics of respondents, which include- sex, age, highest educational level, marital status, occupational status, level of income, religion, duration of stay and ethnicity are presented (see Table 1). In terms of sex distribution of the respondents, male accounted for 43.6% while more than half of the respondents were 56.4%. It can then imply that female respondents were more involved in agricultural related activities than their male counterpart. This is opposed to the general convention that male was more involved in agriculture than their female counterpart.

With respect to age distributions of the respondents, 13.9% were less than 20 years of age, 30.4% were between 20-39 years. Majority (45.2%) of the respondents were within 30-39 years age, accounting for the highest in the study area. Meanwhile, the remaining, being the lowest (within 40-49 years) accounted for 10.6%. However, this implied that higher percentage of farmers in the study area fall within the active age, due to the high rate of unemployment which necessitate the migration of these energetic group from urban areas in search of better opportunities in the agricultural sector, this singular act will have a positive impact on the both the local and national economy.

Nevertheless, the level of respondents' educational status revealed that 19.8% had no formal education, 24.1% had primary education, while, and 44.6% of the respondents had secondary

education. About 11.6% had tertiary education. It can be inferred that only very few of the massive unemployed youth engaged in agricultural related activities as a means of livelihood. Investigation on the marital status of the respondents indicated 29.0% of to be single while 56.1% were married. Meanwhile, divorced and widows/widowers accounted for 14.9% and 6.3% respectively. This implied that higher percentage of farmers in the area were married, which may be as a result of more hands required in agricultural activities which may necessitate them marrying more than one wife so as to be able to meet the ever-increasing demand for agricultural produce in Nigeria.

Table 1: Distribution of Respondents' Sex, Age, Educational Level and Marital Status

Variables	Categories	Number of Respondents	Per cent (%)
Sex	Male	132	43.6
	Female	171	56.4
	Total	303	100
Age (years)	<20	42	13.9
	20-39	92	30.4
	40-59	137	45.2
	60 and above	32	10.6
	Total	303	100
Educational Level	No education	60	19.8
	Primary	73	24.1
	Secondary	135	44.6
	Tertiary	35	11.6
	Total	303	100
Marital Status	Single	69	22.8
	Married	170	56.1
	Divorced	45	14.9
	Widow/widower	19	6.3
	Total	**303**	**100**

Source: Authors' Field Survey.

5.1. Effects of Transportation Modes for the Conveyance of Various Farm Produce

Investigation on the perception of the respondents on the effects of transport modes on the conveyance of livestock to the market revealed that 56.0% of the respondents used head carriage, while those that used wheel-barrow accounted for 8.9%. The proportion of respondents who used bicycle for the conveyance of their livestock to the market was 8.3%. Only 10.9% of the respondents used motorcycle, while the remaining 6.9% of the respondents indicated motor-vehicle. This result corroborates the severe hardship that are inherent in developing economy agricultural sector in which majority of people still practice subsidence farming and transportation still remain a challenge. The long distance to be covered coupled with heavy nature of the load makes head- carriage difficult. The effect can be in the area of health.

With regards to transporting perishables goods, investigation revealed that 9.6% of the respondents used head carriage, while 11.3% used wheel-barrow. Majority (57.8%) of the respondents used bicycles while a lowest percentage (6.3) used motorcycle. Over 15.0% of the respondents indicated motor-vehicle (Table 2). The implication of the result is that farmers would suffer a great loss using bicycle in the conveyance of perishable goods especially where the condition of roads are bad and non-motorized.

Moreover, in terms of transporting other food crops from farm to the market, investigation revealed that 61.7% of the respondents being the highest indicated head carriage as a mode. Meanwhile, 8.6% of the respondents used wheel-barrow with the proportion of the respondents who used bicycle accounting for 9.9%. About, 10.9% of the respondents affirmed motorcycle as a mode, while the remaining 8.9% of them used motor-vehicle. The prevailing use of head carriage in the conveyance of food crop posed a lot of negative economic and health challenges in the study area especially when the food crops required a commercial quantity. With respect to transporting cash crops, study revealed that almost half (48.2%) of the respondents used head carriage. the proportion of those that used wheel-barrow accounted for 11.6%. About 11.2% of the respondents indicated bicycle, while those who used motorcycle accounted for 12.9%. Meanwhile, 16.2% indicated the use of motor-vehicle (table 2). The result generally indicates that only a few percent of the respondents used motor vehicle as a transport mode and most common made of conveying the farm produce was head carriage which has a lot of implication health and economic return of the farmers especially.

Table 2: Effects of Transport Modes for the Conveyance of Various Farm Produce

Transport Mode	Livestock (%)	Perishables (%)	Other Food Crops (%)	Cash Crops (%)
Head Carriage	56.0	9.6	61.7	48.2
Will-barrow	8.9	11.3	8.6	11.6
Bicycle	8.3	57.8	9.9	11.2
Motorcycle	10.9	6.3	10.9	12.9
Motor-vehicle	6.9	15.2	8.9	16.2
Total	**100**	**100**	**100**	**100**

Source: Authors' Field Survey.

5.2. Factors that Facilitate the Availability of Transport in the Study Area

Investigations were conducted on the factors that facilitated the availability of transport in the study area. Issues that were considered included the nature of road, farm location, nature of farm produce and bargaining power. The perception of the respondents on whether or not they agreed with the nature of road as factors that facilitate the availability of transportation in Igbara-oke revealed that 68.3% of them agreed, while the remaining 31.7% disagreed. It implied that nature of road in the area is a major factor that had inhibited transport availability. Also, the study revealed that majority (56.4%), agreed farm location as factors that could facilitate the availability of transport in the study area while 43.6% of them disagreed. Therefore, it can be inferred that farm location is one of the major factors that determine transportation availability in the study area (table 3).

Moreover, in terms of the nature of farm produce to be conveyed by farmers as factors that facilitate the availability of transportation in the study area, study revealed that only 2.1% of the respondents agreed as against majority (78.0%) of them being of a contrary opinion. It therefore implied that the nature of farm produces to be conveyed does not constitute a factor that could facilitate transport availability to farmers in the study area. In addition, respondents on the bargaining power of farmers in helping to hasten transport availability of farm produce to be conveyed accounted for 72.0% while 28.0% of them disagreed. This implied that inability of the respondent to reach a compromise on what the transporters should take could affect the produce negatively thereby constitute a hindrance to transport availability in the study area.

Table 3: Factors that Facilitate the Availability of Transport in the Study Area

Factor	Agreed		Disagreed		Total
	Number of Respondents	Per cent (%)	Number of Respondents	Per cent (%)	
Nature of roads	207	68.3	96	31.7	**100**
Farm location	171	56.4	132	43.6	**100**
Nature of farm produce	64	21.1	239	78.9	**100**
Bargaining power	218	71.9	85	28.1	**100**

Source: Authors' Field Survey.

5.3. Respondents on whether or not Agreed that these Factors Influence Transport Cost

Since bargaining power could be a product of high transport cost, investigation was conducted on the factors that could also be responsible for the high transportation cost and the issues that were raised included the state of road, type of produce and the season of the year (Table 4) investigation revealed that available road in the area and the type of farm produce to be conveyed are major determinants of cost of transportation which accounted for 66.3% and 56.4% respectively. Meanwhile, 78.9% of the respondents disagreed that season of the year was responsible for such influence.

Table 4: Respondents on Factors that Influence Transport Cost

Factor	Agreed		Disagreed		Total
	Number of Respondents	Per cent (%)	Number of Respondents	Per cent (%)	
State of the road	201	66.3	102	33.7	**100**
Type of produce	171	56.4	132	43.6	**100**
Season of the year	64	21.1	239	78.9	**100**

Source: Authors' Field Survey.

5.4. Investigation of Transportation Challenges Experienced by Farmers

Other issues that were investigated included waiting time as part of transportation challenges that farmers experienced in the course of their agricultural practices. The study revealed that the respondents' whose average waiting time was less than I hour accounted for 13.2%. The proportion of the respondents whose average waiting time was between 1 and 2 hours accounted for 8.3%. Over one quarter (32.0%) of the respondents waited between 3 and 4 hours (table 5). Meanwhile, the remaining 46.9% of them had to wait for more than 4 hours. This generally implied that the waiting time experienced among farmers across Igbara-Oke is 4 hours. This may be as a result of low transport patronage and lack of defined accessibility among other factors.

Table 5: Average Waiting Time Experienced by Respondents

Time (hour)	Number of Respondents	Per cent (%)
<1	40	13.2
1-2	25	8.3
3-4	96	31.7
Above 4	142	46.9
Total	**303**	**100**

Source: Authors' Field Survey.

5.5. Respondents on the effects of rural transport on agricultural produce

Investigation on the perceived effects of rural transportation on agricultural produce revealed that high cost of transport was 13.2%, uncertain market possibility accounted for as low as 6.9%, bad loading and offloading were 16.5%, rough handling of goods accounted for 13.2%, damages of farm produce were 24.8% while spoilage of farm produce accounted for the largest percentage (25.4%) (See table 5). In order to determine the severity of the effects of the effects of transport on agricultural produce, ranking of the results of the investigation was computed. In order to distinguish the level of severity among the variables, the result of frequency earlier reported were ranked in ascending base on the order of the magnitude (see table 6 and 7).

From the computation, spoilage of farm produce was identified as effects mostly posed by transportation. This was followed by 'damages of agricultural produce'. The results of FGD presented a case of people who were affected in the area Adegbenro, (a cocoa farmer) said 'transportation challenge is one of the issues we are faced with here in Igbara-oke, most cocoa merchant risk the bad nature of the road to our farm here only to buy at a ridiculously cheap price at times, they find it difficult to reach this area thereby losing some of our produce and even to a tune of an average of 20bags per season. With this situation I have find it difficult to pay my children school fees with the money I eventually got from the little one I carried on head portage. Although, in terms of yam tuber, we have suffered tremendous loss to the extent that we must cut off the damaged part of halfway-decayed-yam and then use the remaining part for domestic consumption. Bad loading and offloading were ranked the third most sever effects on the respondent while rough handling of farm produce by the drivers' conductors too had a negative effect on their farm produce.

This, he attributes to a long-standing stress the driver had to go through before getting to them. According to one of them (Kupolokun) 'We could not complain because the driver may decide not to carry our load since there were only few of them around'. High Costs of transport ranked the fifth effects in other of severity. Since there were few available drivers the cost off transport become high to the point that some of our people would have to result selling at cheap price to their disadvantage. The least effect of transportation is the uncertainty of the market for the produce. This may arise because of uncertain arrival of the vehicles in the farm and even at times late arrival. Speaking on this point an elderly woman who majored on tomato said 'sometime, we would have to wait endlessly without the vehicle showing up for days. This invariably affects my business you know the nature of tomato that perishable. With this factor we lack a predictive ability to forecast the expected market price of our produce. These corroborate the result work of, earlier Ajiboye and Afolayan (2009) and Gbam, B (2017) mentioned in this study.

Table 6: Perceived effects of rural transportation on agricultural produce

	Number of Respondents	Per cent (%)
High Costs of transport	40	13.2
Uncertain market possibility	21	6.9
Bad loading and offloading	50	16.5
Rough handling of goods	40	13.2
Damages of farm produce	75	24.8
Spoilage of farm produce	77	25.4
Total	**303**	**100**

Source: Authors' Field Survey.

Table 7: Perceived severity of the effects of rural transport on agricultural produce

Effects	No of the respondents	Percentage of the respondents	Ranking
Spoilage of farm produce	7	25.4	1st
Damages of farm produce	75	24.8	2nd
Bad loading and offloading	50	16.5	3rd
Rough handling of goods	40	13.2	4th
High Costs of transport	40	13.2	5th
Uncertain market possibility	21	6.9	6th
Total	**303**	**100**	

Source: Authors' Field Survey.

5.6. The test of hypothesis

Furthermore, hypothesis which tests the significant differences between motorized transport accessibility to farm location and the scale of agricultural engagement was carried out. Based on the parameters used, motorized transportation accessibility to location includes the area where the vehicle could reach, since there are areas that are not reachable, while the scale of engagement refers to the available use to which the farmers were able to derive from the use of transport. These two parameters will determine the extent of conveyance of produce to the final market. Using chi square analysis, the result shows that, the expected value (0.258) is greater than the observed p-value (0.05). Therefore, it shows that a significant difference between the two variables under test is independent; As a result, the null hypothesis is rejected, while the alternative hypothesis is accepted (see table 7 and 8). The result implied that, scale of agricultural engagement is not solely dependent on transport accessibility to farm locations, but on some other factors such as- distance covered, and transport cost (see Popoola et al., 2020).

Table 9: Combined Variable for Test of Hypothesis

		Scale of farming Subsistence	Commercial	Total
Level of motorized transport accessibility to farm locations	Accessible	28	73	101
	Not accessible	69	133	202
Total		**97**	**206**	**303**

Source: Authors' Field Survey.

Table 10: Chi-square Analysis Test between Motorized Transport Accessibility to Farm Locations and the Scale of Agricultural Engagement

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.281a	1	0.258		
Continuity Correctionb	1.003	1	0.317		
Likelihood Ratio	1.299	1	0.254		
Fisher's Exact Test				0.297	0.158
N of Valid Cases	303				
a) 0 cells (.0%) have expected count less than 5. The minimum expected count is 32.33					
b) Computed only for 2x2 table					

Source: Authors' Field Survey.

6. CONCLUSION

The study revealed that transportation and some associated factors like the distance, cost of transporting the farm produce to the ready market and the long time taken before the arrival of vehicles that will convey the produce by the farmers have a lot impact on the agricultural produce. Also, remoteness triggered by bad and worried state of highways lessens output. The study therefore indorses that, building of more rural feeder infrastructure to connect farmland to the marketplace and improvement of roads which are in bad state should be done. This will enhance easy conveyance of agricultural produce. Efforts should be made by all levels of government to improve all the existing roads through the engrossment of private investors under the public private partnership (PPP) arrangement that will ensure a constant maintenance of the roads.

7. SIGNIFICANCE STATEMENT

This study discovered the variables of distance, cost and time as elements of transportation having a significant negative effect on the agricultural produce in the rural areas. Such knowledge can be beneficial for further understanding of rural transportation. This will also help the researchers to uncover the critical areas of rural transportation that many researchers were not able to explore.

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Notes