

# Determining the Consistency in Implementing Rural Road Transport Development using PEST Analysis: The Case of Kilimanjaro Region, Tanzania

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**Abstract**—It cannot go unnoticed that the majority of poor people in the world live in rural areas where the level of public infrastructure especially roads is significantly low. One author referred rural transport as the step-child of infrastructure provision in developing countries and points out that nobody really feels responsible, but everybody claims it being of utmost importance. The inadequate roads and poor road access put the high cost of transportation; reduce ability to use access high quality inputs; limit the uses of local markets to the sales of their produces, the purchase of consumer goods and opportunities for off-farm employment. Poor road access has put nevertheless constraints for rural poor in terms of access to other social infrastructures such as education and health facilities [1]. Many researches have been done, and most if not all, consider the government and agencies' facet rather than the main users whom for this case are the rural community. This paper considers the down-up approach using PEST analysis to obtain the real picture from the rural community public point of view in terms of the different aspects of rural road development and their influence. The underlying objective is to determine the effect of road development in terms of politics, economics, social, and technological factors of the rural community.

A case study was carried in one of the regions in Tanzania, namely Kilimanjaro region and questionnaires were randomly distributed to the selected population. Data was analyzed using the Lindlof's framework and thereafter information and the obtained data were interpreted using the quasi-judicial method. It is observed that lack of transparency and political interest are the cause of an imbalance with the road project implementation thus widening the disparity in rural and urban income. Lack of education on government policies for infrastructure development and poor communication technology are other factors that result to the limping of a given rural society into the desired benefits of mobility and accessibility. Social attitude for such development is observed to be positive though, politics again plays part into this. Finally recommendations are given and areas for further research suggested.

**Index Terms**—Accessibility, mobility, PEST analysis, public infrastructure, rural road development, rural transport.

## I. SIGNIFICANCE OF RURAL ROAD DEVELOPMENT TO SOCIETY

It cannot go unnoticed that the majority of poor people in the world live in rural areas where the level of public infrastructure especially roads is significantly low.

Rural Transport is still to be called the step-child of infrastructure provision in developing countries: nobody really feels responsible, but everybody claims it being of utmost importance. This holds true in particular for Africa,

despite the fact that main focus of international co-operation is directed to this continent since many decades, but many countries in Asia and other parts of the world are concerned too. This state of affairs applies not only to the provision of roads and tracks, but also to the use of appropriate means of transport such as vehicles, ox-carts or bicycles [2].

A major issue for people living in rural areas is the availability of transport as a means of access to public and private services and places of work. Due to the centralization of service provision transport plays an important role in accessing services such as health care and in the social integration of people living away from the major centers of provision. Thus absence of public transport is one of the major determinants of social exclusion in rural areas [3].

The inadequate roads and poor road access put the high cost of transportation; reduce ability to use access high quality inputs; limit the uses of local markets to the sales of their produces, the purchase of consumer goods and opportunities for off-farm employment. Poor road access has put nevertheless constraints for rural poor in terms of access to other social infrastructures such as education and health facilities[4].

The isolated rural population has not fully benefited from the improved economic growth in Tanzania from the 1990s, resulting in widening urban and rural income inequalities.

Inadequate rural transport infrastructure and lack of mobility pose important constraints to rural development in Tanzania and much of Sub-Saharan Africa. During the last, few decades per capital incomes and food production of most of these countries have declined. Poor transport conditions are generally regarded as one of the main constraints against rural development. Without access to jobs, health, education and other amenities, the quality of life suffers, and without access to resources and markets, growth stagnates and poverty reduction cannot be sustained [5].

## II. COUNTRY PROFILE - TANZANIA

### A. Location and Regions

Tanzania is the largest of the East African countries and one of the poorest countries in the world. Shortly after independence, Tanganyika and Zanzibar merged to form the nation of Tanzania in 1964 [6].

According to the World Bank, Tanzania has a population of 43.74 million and an area of 947.3 square kilometers (Table I). Tanzania is divided into 26 regions, twenty-one on the mainland and five in Zanzibar (three on Unguja, two

on Pemba). Tanzania's regions are: Arusha, Dar-es-Salaam, Dodoma, Iringa, Kagera, Kigoma, Kilimanjaro, Lindi, Manyara, Mara, Mbeya, Morogoro, Mtwara, Mwanza, Pemba North, Pemba South, Pwani, Rukwa, Ruvuma, Shinyanga, Singida, Tabora, Tanga, Zanzibar Central/South, Zanzibar North, Zanzibar Urban/West [7].

TABLE I: TANZANIA STATISTICS

World View	2000	2005	2008	2009
Population, total (millions)	34.13	39.01	42.48	43.74
Population Growth (Annual %)	2.5	2.8	2.9	2.9
Surface area (sq. km) (thousands)	947.3	947.3	947.3	...
GNI, Atlas method (current US\$) (billions)	8.94	13.38	18.88	21.34
GNI per capita, Atlas method (current US\$)	270	350	460	500
GNI, PPP (current international \$) (billions)	25.58	39.95	53.80	57.38
GNI per capita, PPP (current international \$)	770	1,050	1,300	1,350

Source: The World Bank, Data & Statistics 2009

The isolated rural population has not fully benefited from the improved economic growth in Tanzania from the 1990s, resulting in widening urban and rural income inequalities. Inadequate rural transport infrastructure and lack of mobility pose important constraints to rural development in Tanzania and much of Sub-Saharan Africa. During the last, few decades per capital incomes and food production of most of these countries have declined. Poor transport conditions are generally regarded as one of the main constraints against rural development. Without access to jobs, health, education and other amenities, the quality of life suffers, and without access to resources and markets, growth stagnates and poverty reduction cannot be sustained [8].

### B. Road Classification, Condition and Administration in Tanzania

Roads have a special position in integration of the national economy due to Tanzania's geography, size and dispersion. In Tanzania roads particularly serve rural areas, where the majority of people live, more effectively than any other mode of transport. Road transport is the dominant mode in carrying over 80% of passengers and more than 75% of freight traffic.

The public road network in Tanzania is classified into National roads and District roads [9]:

The National road includes:

- 1) A trunk road which is mainly:
  - A national route that links two or more regional headquarters; or
  - An international through route that links regional headquarters and another major or important city or town or major port outside Tanzania
- 2) A Regional road is a secondary road that connects:
  - A trunk road and a district or regional headquarters;
  - A regional headquarters and district headquarters

The District road shall include:

- 3) A collector road which is:
  - A road linking a district headquarters and a division centre;

- A road linking a division centre with any other division centre;
- A route linking a division centre with a ward centre;
- A road within an urban area carrying through traffic which predominantly originates from and destined out of the town and links with either regional or trunk road.

4) A feeder road which shall be:

- A road within urban area that links a collector road and other minor roads within the vicinity and collects or distributes traffic between residential, industrial and principal business centers of the town;
- A village access road linking wards to other ward centers.

5) A community road within the village or a road which links a village to a village.

The respective length of these networks as per the data available is as follows:

- Trunk roads 9,934 km
- Regional roads 18,934 km
- District roads 20,000 km
- Feeder roads 27,550 km
- Urban roads 2,450 km

### C. The Network Condition

The trunk and regional road condition has steadily improved due to the various maintenance interventions and development activities, which are carried out on the road network. The overall road condition assessment at the end of December 2009 indicated that 73% were good, 23% were fair and 4% were poor compared to 25% good, 40% fair and 35% poor in December 2001 [10].

TABLE II: OVERALL ROAD CONDITION ASSESSMENT BETWEEN 2001 AND 2009

Year	Good	Fair	Poor
2001	25%	40%	35%
2009	73%	23%	4%

Source: Ministry of Transport 2010

Between the periods extending from June 2000 to June 2009, a total of 912 km of trunk and regional roads were upgraded or rehabilitated to bitumen standard [11].

### D. The Road Administration and Funding

The Ministry of Infrastructure is responsible for the development of the transport sector in Tanzania. Its goal is to facilitate the provision of an economic, safe and reliable transport industry that meets the needs of the public through the development and implementation of appropriate sector policies, strategies and standards. In supporting economic growth, various reforms have been made in transforming into semi autonomous agencies whose functions are of operational or service delivery nature. The operational agencies include Tanzania National Roads Agency (TANROADS), Tanzania Airports Authority (TAA), Tanzania Meteorological Agency (TMA), Tanzania Government Flight Agency (TGFA), and Tanzania Electrical, Mechanical and Electronic Services Agency (TEMESA). Established transport regulatory authority that also resulted from the reforms includes the Surface and

Marine Transport Regulatory Authority (SUMATRA) and the Tanzania Civil Aviation Authority (TCAA).

In terms of administrative responsibility Trunk and Regional roads are under the management of the Tanzania Roads Agency (TANROADS), while the rest of the classified network is under the management of the President's Office Regional Administration and Local Government (PMO-RALG) [12].

The funding for roads comes from four sources mentioned as [13]:

- Fuel levies on diesel and petrol;
- Transit fees;
- Vehicle overloading fees; and
- Monies from any other source at the rate to be determined by parliament from time to time

The revenue collected for the past nine years is shown in table 3.

TABLE III: ROAD REVENUE COLLECTED FOR THE PERIOD 2002-2011

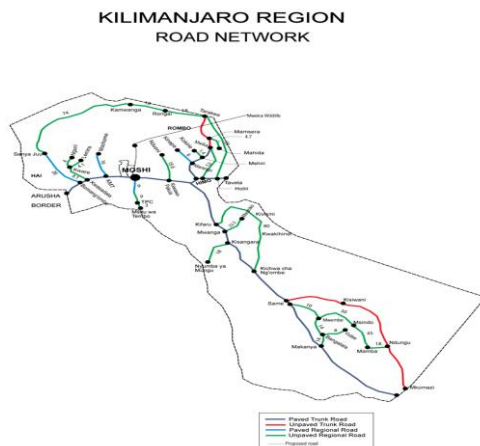
Tanzania Revenue collected per Financial Year (Tanzania Shillings billion)									
2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	
59.390	67.342	73.204	73.082	101.215	207.768	255.600	266.550	325.770	

Source: Tanzania Roads Fund Board 2010

### III. STUDY CONTEXT – KILIMANJARO REGION: MOSHI DISTRICT

Kilimanjaro region is located in the North-eastern part of Tanzania. It has a population of 1,376,702 and an area of 13,309 sq. km. Moshi district is the regional capital. The Moshi municipality has a total population of 401,369 [13]. Moshi is in the race for city status and has been praised so far, by having better roads and good maintenance of roads around Tanzania. The Kilimanjaro region road network consists of paved trunk roads, unpaved trunk roads, paved regional roads, unpaved regional roads as well as proposed roads (Figure 1).

Fig. 1. Killimanjaro region road network



Source: TANROADS Road Statistics, 2009

### IV. RESEARCH METHODOLOGY

The research is a case study and favors a qualitative approach. Qualitative approach or the method of phenomenological inquiry is where the emphasis has been

in qualitative and naturalistic approaches to inductively and holistically understand human experience in context-specific settings [14].

### V. DATA COLLECTION

For case studies data can be collected from six sources; documents, archival records, interviews, direct observation, participant observation, and physical artifacts. Each of these sources has its strengths and weaknesses and no source has a complete advantage over all the others [15]. For this case study, questionnaires were distributed randomly by email, and documents, as well as archival records were used.

### VI. DATA ANALYSIS

Data was interpreted into charts using the Microsoft Excel program. And following steps were found most suitable for this study:

For data analysis, the process will follow the Lindlof's Framework [16]. Lindlof (1995) mentioned four (4) steps in analyzing the data and information which are:

- 1) Process – the analyzing of data and information take place throughout the research. During the process the initial thoughts are compared with new data and information as it arises and are progressively modified and improved.
- 2) Data reduction – all the structuring, systemizing, categorizing and prioritizing of the data and information is done at this stage. Thereafter the data and information are displayed in accordance with the research objective(s).
- 3) Explaining – this refers to as the understanding of the coherence meaning and action in the case(s) under consideration.
- 4) Theory – this is where the research findings are converted into statements or an understanding. It offers explanations of the results of the research context and events

For data and information interpretation the quasi-judicial method was used. A quasi-judicial method is involved in applying rational argument to interpret empirical evidence [17]. Data was analyzed continuously from the beginning to the end of the study. Everything in terms of issues, factors and event were examined and assessed in light of the following frame of questions:

- 1) What is the issue?
- 2) What other relevant evidence might be there?
- 3) Who else might make sense of the data?
- 4) How were the data obtained?
- 5) How did the events take place?
- 6) What are the consequences or results of the events?

### VII. RESEARCH FINDINGS

The research involved questionnaires that had open-ended and closed ended questions that were in consistent with the PEST analysis factors. Specifically the questions were based the role of technology and infrastructure, political influence, change in wealth, and social influence. Due to time constraint 1,000 questionnaires were distributed randomly by email to people living in and out of Moshi district, 83.3% responded, 9.5% did not complete the questionnaire and 7.2% did not respond at all.

In terms of the role of technology and infrastructure (Figure 2), it was found that 62% of the respondents consider it to be most important in development, 36% find it important and 2% consider it not important.

In terms of political influence (Figure 3), 76% consider politics is likely to play an influential role in road development, 11% consider it most likely, 6% least likely and 7% consider it not to have any effect to road development.

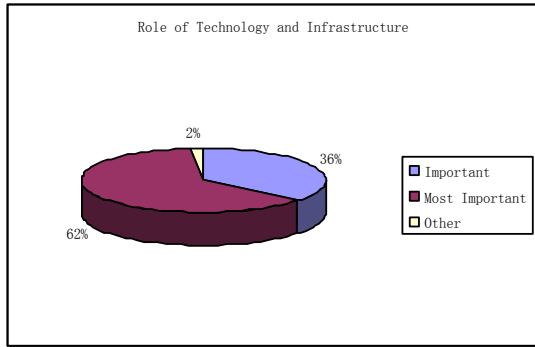


Fig. 2. Role of Technology and Infrastructure

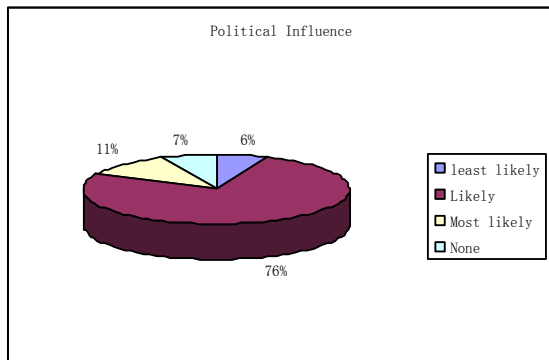


Fig. 3. Political Influence

In terms of the economical aspect (change in wealth) (Figure 4), 29% said they experienced big change in wealth after roads have been developed/improved, 28% said there was small change, 22% said they had great change, 15% said there was very small change and 6% said there was no change.

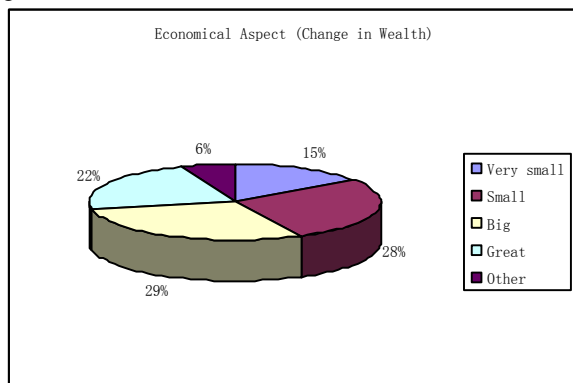


Fig. 4. Economical Aspect

Finally with respect to the social aspect mainly culture and religion (Figure 5), 47% said it had no influence in road development, 41% said there was a very low influence and 12% said it was just low influence.

## VIII. CONCLUSION

PEST analysis can be applied into other fields of study rather than limiting it to marketing and business organizations only. It is a useful tool into obtaining a clear picture of what is being done, what needs to be done and what direction to take.

The research carried has shown that it is inevitable that infrastructure plays a significant role to development however, lack of transparency and political interest are the cause of an imbalance with the road project implementation thus widening the disparity in rural and urban income. Lack of education on government policies for infrastructure development and poor communication technology are the other factors that need more attention and should be given a boost in developing countries since they result to the limping of a given rural society into the desired benefits of mobility and accessibility. Social attitude for such development is observed to be positive, though politics again plays part into this. Due to time and financial resource constraints, the research was very limited and more needs to be done to gain an even deeper understanding of the subject under consideration. It will be very useful indeed, if the research can be carried to a wider magnitude and determine whether it will yield the same results.

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