

TRANSPORT – A CATALYST FOR SOCIO-ECONOMIC GROWTH AND DEVELOPMENT OPPORTUNITIES TO IMPROVE QUALITY OF LIFE

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ABSTRACT

This essay examines the role of transport in creating socio-economic growth and development opportunities to improve the quality of life South Africans live. It explores the nature of transport in society in general as a background to what should be expected locally, and then inspects the national setting with regards to policies, user requirements and technologies that have been implemented to satisfy these requirements. It then makes suggestions as to how transport itself can be developed to have a more effective influence on socio-economic growth and development, with the focus on refining current strategies and implementations, expanding research, and the possibility of procuring funding from both the private and public sector.

1. INTRODUCTION

“You can't understand a city without using its public transportation system.” Erol Ozan (Novelist).

Transport progress can greatly influence the organisation of a society and consequently the development thereof and the lifestyle of its populace (Mathew & Kirshna Rao, 2007).

One could argue that the need for advances in transport is as primal and basic as that of food and shelter. Early societal strategies already expose the two coping extremes of human nature: either settle and adapt to the surroundings or migrate to greener pastures. From this need to either move goods to where people are or people to where goods are, evolved what we know today as a very complicated interaction between socio-economic growth and development opportunities and transport systems.

Key aspects that dictate the nature of a transport system is the place, time, quality and utility of resources and produce, the location of activities of people and the distance between the locations of both the aforementioned (Mathew & Kirshna Rao, 2007). From these aspects we can deduce the influence spheres and the key stakeholders of these systems.

Transport influences economic growth and trade by regulating the interaction between supply and demand, impacting social development aspects of a society by

providing people with access to opportunities and goods, and affecting the environmental context of a society mainly due to the resources required and waste produced during the implementation of a transport system.

The essential mechanisms of transport influences the society in its entirety, whether by the presence or absence thereof. Stakeholders can be categorised based on the role they play, i.e. those who are dependent on the everyday workings of the system (users), provide and maintain the system (financers) and those who implement the constituents of the system (middlemen). Where users encompass the individuals accessing work or goods, or companies transporting resources or produce, financers cover government or private entities and the middlemen include all those in the production line ranging from designers to constructors and maintainers.

When contemplating the extent of transport in society, it is difficult to envision an argument in which the growth-interaction between transport and the socio-economic context of a society can be called into question.

It is with the above viewpoint that this essay explores transport within a South African context and how it can develop and be utilised as a catalyst to contribute to opportunities for stakeholders across all influence spheres in order to improve socio-economic status (SES) related to quality of life.

2. CURRENT SOUTH AFRICAN TRANSPORT CONTEXT

The functioning of the transport system is without doubt influenced and regulated by political authorities. This is due to a variety of factors, including the inherent role of Government towards policies and legislation. The appeal transport creates to exert unethical political influence should be acknowledged and greatly discouraged.

Nevertheless, *The Local Government White Paper* (1998) “puts forward a vision of a developmental local government, which centres on working with local communities to find sustainable ways to meet their needs and improve the quality of their lives”. As this essay aims to contribute to defining the role of transport in creating opportunities to improve quality of life, it cannot be denied that transport can be a useful tool in the hands of Government to address the needs of communities.

2.1 Strategies and policies

Acknowledging the Department of Transport (DoT) as the highest national authority in transport, it would be useful to peruse their perspective towards the role of transport in South Africa. In the *White Paper for Transport Policy* (1996), the DoT highlights its stance on the priorities of transport policies:

“The broad goal of transport is the smooth and efficient interaction that allows society and the economy to assume their preferred form. To play this role, policies in the transport sector must be outward looking, shaped by the needs of society in general, of the users or customers of transport, and of the economy that transport has to support. Transport can also play a leadership role, for example in

acting as a catalyst for development or in correcting spatial distortions. It follows from these that the priorities in providing and using the transport system should be consistent with those that have been set for the country as a whole. These priorities are summed up in the elements of the Reconstruction and Development Programme, namely meeting basic needs, growing the economy, developing human resources, and democratising the state and society.

The vision for South African transport is of a system which will:

‘Provide safe, reliable, effective, efficient, and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable’.”

From the above, it appears that Government also views transport as a means to improve the SES of individuals by meeting user and industry needs and guiding the greater development of society, specifically in correcting slanted access to economic opportunity and wealth. The reference to safety and efficiency should be noted and regarded as key concepts, as they encompass other concepts like effectiveness, integration and lower costs.

The White Paper for Transport Policy mainly focuses on the functions of Government, but its influence is notable in several official documents including the South African Report for the Eighteenth Session of the United Nations Commission on Sustainable Development (CSD-18) (Department of Environmental Affairs, 2010), the National Transport Master Plan Synopsis Update (NATMAP 2050) (Department of Transport, 2015) and the National Land Transport Strategic Framework (Department of Transport, 2015).

These policy documents all set the scene for the national approach toward transport and its function in society. They stress the need for transport planning and implementation to achieve sustainable, equitable and efficient service delivery. However, in *The Contribution of Transport Governance to Socio-Economic Development* (2009), Chakwizira & Mashiri argue that transport governance is a key aspect of policy that has been neglected. Although aspects of governance can be observed in NATMAP 2050 (Department of Transport, 2015), governance according to Chakwizira & Mashiri (2009) should place an emphasis on optimising processes and systems pertaining to networks, access, safety, operating costs and maintenance.

Without the correct governance strategy, the goals of sustainability, integration and efficiency would be highly unlikely within a limited budget scenario.

Furthermore, the broader South African and international context should also be taken into account. National strategies that influence current transport policies include Broad-Based Black Economic Empowerment (BBBEE) policies and health, safety and environmental acts. Internationally, South Africa has commitments in

place with regards to reducing carbon emissions that perpetuate climate change, and expanding trade to promote development in the Southern African community. These commitments and strategies all influence how transport develops.

2.2 User requirements

“Transportation is the centre of the world! It is the glue of our daily lives. When it goes well, we don't see it. When it goes wrong, it negatively colours our day, makes us feel angry and impotent, curtails our possibilities.” Robin Chase (Businesswomen)

The principle means of transport in South Africa are roads, with commuters and freight largely relying on vehicle transport (Department of Environmental Affairs, 2010). Thus a very high strain and demand on road infrastructure exists, creating a need for these to be in faultless condition, providing user comfort and optimised traffic flow.

In urban areas, overcoming the effects of spatial distortion is proving to be a challenge. In South Africa it is common that lower income households are on the outskirts of economic activity and the furthest from work opportunities. The need for integrated, time-efficient and low cost transport from low-income communities are greater than that of most middle-class households. According to the Department of Environmental Affairs report to the United Nations (2010), state-sponsored, public bus and railway systems are supplemented by privately owned mini-bus taxis, with the latter being the mode of choice for low-income households due to its ease of access. Thus, to profit from subsidies, those with the furthest distance to travel to business centres must either use more than one mode of transport (which is not time-effective), or forfeit the benefit of it altogether. Transport costs of low-income households can exceed 20% of gross income (Chakwizira & Mashiri, 2009).

The above can also greatly influence the access to education (Chakwizira & Mashiri, 2009), as scholars from low-income households do not have access to the most affordable, effective transport. Education is perhaps the single most important way to empower people and sustainably improve the quality of life they can attain for themselves.

Rural commuters draw the shortest straw and possibly have the least access to both public and private transport (Department of Environmental Affairs, 2010). Access to economic opportunities, schools, health care, and other public services and places of trade all provide hurdles.

Wealthy commuters rely mostly on privately owned vehicles for transport (Department of Environmental Affairs, 2010). Their needs would have mostly to do with time and direct cost of travel, which is sensitive to traffic congestion, fuel prices and other costs such as tolling.

Industry requires transport systems to have the capacity for their trade needs. As roads are more widely used, axle load limits are high. With capital investment this traffic load could be distributed to the rail network. 42% of South Africa's railway network is not part of the core network and 15% is either decommissioned or not in

service, despite the network being 10th longest globally. Other freight transport modes include maritime transport, aviation and pipeline networks, the latter two leaning greatly on road and rail to aid resource transport. (Department of Environmental Affairs, 2010)

Generally speaking, user requirements relate to socio-economic development opportunities and improving SES. Various modes of transport aim to meet these needs, be it for industry or individuals. The current degree and extent of user needs in South Africa are however great as the development of transport has frequently taken the backseat for other developmental goals. With limited government subsidies and funding, it will require meticulous planning and continued innovative effort to bridge the gap between requirement and reality.

2.3 Transport technology

“If transport technology was moving along as fast as microprocessor technology, then the day after tomorrow I would be able to get in a taxi cab and be in Tokyo in 30 seconds.” W. Daniel Hillis (Inventor)

In 2015, urban areas constituted 64.8% of the South African population and it is estimated that this will increase to 69.4% by 2025 (Geohive, 2014). It therefore seems justified that in recent years, new transport systems, such as Rapid Bus Transport (BRT), the Gautrain and Non-Motorised Transport (NMT), have been developed for and introduced in urban and semi-urban South Africa.

These systems have all decreased transport time and contributed to the economy in various ways, the Gautrain alone was estimated to have contributed to 33 000 jobs by 2009 (Chakwizira & Mashiri, 2009); challenges as to their efficiency in addressing core user needs have not been overcome.

The BRT has contributed to lowered congestion and fuel emissions, but falls short of some marginalised communities' expectations as terminals are not located in these communities. Therefore, access and social cohesion between lower income areas and business centres have benefited less directly than middle class households (Jennings, 2012). Execution has specifically fallen short in the Nelson Mandela Bay Municipality where the R2-billion project, which was to be fully operational by 2010, is yet to be properly implemented. It is reported that the busses were not acquired within South African specification and occurred due to poor planning and decision-making (Eye Witness News, 2016).

NMT initiatives have also contributed to lowered traffic congestion and fuel emissions. The initiative for example included a bicycle drive (Shova Kalula Programme) in townships, medium-sized cities and rural areas. 800 000 school children walking in excess of 3 km per day and 573 000 and 472 000 urban and rural workers respectively walking in excess of 20 minutes a day were targeted (Department of Environmental Affairs, 2010). Sufficient subsidies have however proven to be a challenge, and the pursuits of private endorsements have been encouraged to ensure sustainable financing (Shova Kalula, 2014).

Policies have most certainly aimed to address user and economic needs through implementing new technologies, the process is however not complete and continuous re-evaluation should be applied to ensure efficiency; governance must not be neglected.

As funding is generally an issue for these technologies, Public-Private Partnerships (further discussed in Section 3.3) are prevalent. The available funding should however be spent wisely. Priority should be given to the projects that will create the most economic growth first, this will in turn create a synergy between transport and trade.

3. LEADING TRANSPORT INTO THE FUTURE

Moving forward, the South African transport community must reconcile the needs of commuters and industry with the greater national agenda of improving the equality of socio-economic status. This can be achieved by focussing on improving access to and the efficiency of the transport system as a whole.

3.1 Socio-economic growth and development opportunities

Sustainable development is fundamental for achieving economic growth (Department of Environmental Affairs, 2010), therefore chasing targets quantitatively instead of qualitatively would mean that we are chasing form without substance and creating a workforce that cannot stand on its own.

The national unemployment rate was 24.5% in 2014. This is among the highest in the world and considerably higher than other BRICS countries with emerging economies. (Brazil: 10.9%, Russia: 6%, India: 4.9% and China: 4.1%). (Trading Economics, 2016)

To utilise transport to improve these figures and positively impact the SES of individuals, job creation initiatives such as local and youth labour targets should be reassessed. Instead of these figures forming part of a checklist for businesses to avoid penalties, these concepts, together with training target expenditure, can be utilised to create a formative, long-term imprint on communities in terms of skills development (i.e. practical education).

The same could be said for BBBEE targets and initiatives for women in transport. When these concepts are approached with animosity, they serve no purpose in creating a sustainable, skilled labour force. However, if we approach targets as a means to transfer knowledge skills, we empower people to create more economic opportunities.

Corruption in transport has to be addressed. It is estimated that corruption can be as high as 20% of project expenditure (Chakwizira & Mashiri, 2009). This means, that we could be completing a quarter more projects than we currently are or increasing subsidies to decrease user cost, *simply* by eliminating corruption. More work and opportunities are being engulfed by corruption.

The African Press Organisation (2015) reported on the Third Financing for Development conference in Addis Ababa on July 15, 2015 where “large-scale investments in trans-national infrastructure projects” was encouraged. Rail infrastructure development could greatly contribute to regional trade within the Southern African Development Community (SADC). Rail could in fact be the most underutilised mode of transportation when its potential carrying capacity is considered and capital investment would be well spent to expand this network once more.

Integrating the public transport system is a significant need that will forever be a work in progress. Due to spatial distortion, a greater effort has to be made in finding ways to assist low-income households. Although needs and resources may vary for income groups, it is neither acceptable nor ethical for there to be different outcomes for public service utilisation based on socio-economic status (Adapted from Vyas & Kumaranyake, 2006). Rural areas should also be included when socio-economic growth is deliberated.

As discussed in Section 2.1, governance principles should be widely incorporated into policies to ensure safe, reliable, effective, efficient, and integrated transport operations that are cost effective and sustainable (Department of Transport, 1996). It could be a valuable exercise to introduce more industrial engineering principles of optimisation to transport engineering circles. Furthermore, in *The Contribution of Transport Governance to Socio-Economic Development in South Africa* (Chakwizira & Mashiri, 2009) indicators for measuring governance are suggested. These could be refined if deemed necessary, and incorporated into review systems to ensure good-decision making policies are in place. Economic opportunities should not be missed due to ineffective policies and procedures.

In addition to the principles of industrial engineering mentioned above, the value of interdisciplinary communication and awareness is invaluable. As an example of the impact different sectors could have on each other, the tension in the resources and energy field between Nersa and Chevron can be mentioned. In recent years Chevron has experienced strain with lower oil prices. In 2014 they announced an asset sales programme and subsequently its exit from South Africa in early 2016 (Reuters, 2016). This also trails the need for billion-rand upgrades at the Cape Town refinery in order to conform to new clean fuel policies and Nersa awarding Burgan Cape Terminal (Pty) Ltd licences for the “construction and operation of a petroleum storage facility, a petroleum loading facility and a petroleum pipeline in the Western Cape” in an effort to decrease the petroleum product deficit in South Africa (Odendaal, 2015). Chevron, being the only refinery in the Western Cape, has aggressively opposed this endeavour, claiming it could be undermining local refining (Cape Talk, 2015).

Although potential buyers do exist, the situation should be monitored as it could affect the supply of bitumen (and therefore the construction cost of road surfacing).

3.2 Research areas

“The reality about transportation is that it's future-oriented. If we're planning for what we have, we're behind the curve.”
Anthony Foxx (Politician)

Although transport-related research and technology development in South Africa is underutilised (Department of Environmental Affairs, 2010), it is expanding with the help of corporate input and within the international context. The realities and challenges we face, although unique in context, are not all unfamiliar to the rest of the world. Numerous new transport technologies implemented in South Africa, like the BRT initiative, have been adapted from systems that have been successfully implemented elsewhere.

Intelligent Transport System (ITS) is one research area that could contribute greatly to good decision-making and governance. ITS aims to improve traffic flow and reduce congestion, boost road safety and communicate route-choice information to motorists. ITS also benefits law enforcement agencies to improve the response time of emergency services via monitoring capabilities. (ITSSA, 2016)

Resource depletion is a serious environmental issue that can be addressed by continuing research into alternative construction materials, such as using recycled material, and sustainable fuel sources.

Possible measures to integrate transport modes is a vast field that could be studied in combination with other aspects such as travel behaviour and user safety on public transport. Collaboration between transport and law enforcement authorities, such as the South African Police Service (SAPD), should be investigated.

As discussed in Section 3.1, the efficiency of labour targets could should be evaluated. It could be a worth-while endeavour to optimise the impact of projects with regards to local skills development.

Innovative rural solutions are shortfalls in the transport system. Although the Shova Kalula Programme has aimed to aid and alleviate mobility needs in this area, their targeted recipients are mostly vulnerable individuals who commute in unregulated areas without safety officials. Taking South Africa's high crime rates into consideration, it would be an interesting study to see if any of the recipients have fallen victim to assault or theft. That being said, doing nothing is not an ethical option.

Funding is a very controversial issue that requires meticulous perusal and research. Debate regarding this topic will be discussed in Section 3.3.

Lastly, social challenges to transport provision must not be accepted as absolute. Research into the technological side of transport must be combined with sociological, environmental, economic, political and legal research to resolve ineffective systems. Engineers cannot regard these field as afterthoughts, but should use them to strengthen technical research.

3.3 Public-Private Partnerships

“It has been said that democracy is the worst form of government except all the others than have been tried.” Winston Churchill

Public-Private Partnerships (PPPs) are not a new concept in transport in South Africa; the Gautrain and BRT systems are collaborations between the public and the private sectors with regards to implementation and operation.

In contrast to other PPPs, when the e-toll systems were implemented in Gauteng, it was met with controversy, receiving negative media coverage and public reaction, as well as leading to law suits in the Western Cape to oppose additional tolling projects.

Arguments for greater state involvement (as opposed to PPPs) in infrastructure, originate from the fact that GDP expenditure in South Africa is lower than compared to other countries (Department of Environmental Affairs, 2010), and questions regarding the allocation of fuel levies. Those in favour of PPPs argue that the deterioration in infrastructure provision has created a gap that requires private sector involvement (Chakwizira & Mashiri, 2009).

Both arguments appear to have valid opinions, but the reality that national transport grants are not sufficient to maintain the level of infrastructure that users expect or require, remains unchanged. The following actions are suggested:

- i. Change user expectations; or
- ii. Increase government transport grants; or
- iii. Increase private funding in the form of PPPs.

Each of these three options have positive and negative consequences. Changing user expectations implies lowering transport standards and thus economic opportunities, but will lower the demand on funds. Increasing government grants will place more strain on other government subsidised activities, but will lower the cost to the user. PPPs will increase the cost to the user, but will create economic opportunities and release government funds for other areas.

PPPs, and specifically e-tolls, are not a foreign concept internationally, in fact, in most first world countries tolling is the norm on highways. Nevertheless, until longitudinal local studies have been done over a sufficient period and in appropriate depth, certainty regarding the most economically viable solution for all parties involved, is debateable. As suggested in Section 3.2, current funding should be scrutinised, specifically funding from fuel levies, and the possibilities investigated.

A suggestion to make PPPs more attractive to users who are tax payers, would be to investigate whether making e-tolls paid tax-deductible is feasible, even if this is trivial in magnitude. Users may feel more like the user and less like the used, if transparency regarding fuel levies exists and they do not feel they are paying for the same service twice.

Wisdom from Winston Churchill can be helpful to assist in accepting that there is no perfect answer. It could be that, like democracy, the choice of the way in which to

move forward with funding might simply be the least suboptimal solution of all the suboptimal possibilities.

4. CONCLUSION

“There can be no doubt that the transportation sector is the most critical sector of our economy.” Robert Brady (Politician)

Transport mobilises a society and enables them to partake in economic activities which lead to economic growth and social development, and greatly influences society's interaction with their environment. It impacts society as a whole, from users, to financiers and to middlemen who are involved in the system delivery process. Access to transport can lead to improved quality of life by increased socio-economic status (SES).

Current South African policies focus on governmental roles with regards to service delivery that provides the user with safe, efficient and sustainable access to transport, as well as using transport as a tool to improve societal structures and aid other national and international agendas. Given that governance is a fundamental aspect of achieving efficiency and lowering long-term costs and expenditure, it has not received the necessary consideration with regards to decision-making, effective processes and sufficient maintenance.

Users, from individuals to industry, require a transport system that is low-cost, safe, efficient, and gives them access to economic opportunities and trade. Low-income users, from both urban and rural settings, specifically have a need for a more integrated, accessible transport system in order to benefit fully from government subsidies and improve their SES. These user requirements are eloquently construed by the DoT in their vision for transport in South Africa. The greatest challenge appears not to be identifying user needs, but in implementing the policies in an efficient, cost effective manner.

Current technologies implemented in South Africa have aimed to give users the required access to economic activities in an efficient manner, but these systems are not without flaws and require continued review and assessment in order to truly comply with the requirements of users.

In order for transport to be utilised as a catalyst for growth, processes should be developed to be sustainable and not self-undermining. Especially when targets with regards to other development agendas are introduced, as this will ensure long-term growth is achieved.

Research to continually ensure we are building the most efficient transport system we are capable of, is the backbone of progress in transport. In this regard the interdisciplinary nature of transport must especially not be neglected. Optimisation principles with regards to systems and technology research should be combined the sociological, environmental, economic, political and legal aspects that influence the transport system.

The deterioration of and limited government funding spent on transport infrastructure has led to debate whether the pre-eminent way forward would be to increase governmental grants or to introduce more public-private partnerships (PPPs), neither option being without advantage nor sacrifice.

Ultimately, transport can be used as a catalyst for socio-economic growth and development opportunities to improve quality of life for South Africans when its functioning is not suppressed by policies and inefficient systems, when the necessary resources are spent to continually develop transport in itself and related technologies, and when it is implemented in such a manner and environment that it serves society.

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