

Critical Factors in Respect of Managing the E-Toll Road Project in Gauteng, South Africa

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Abstract

The premise of this article is to analyse the critical factors involved in managing the Gauteng Freeway Improvement Project (GFIP), with particular emphasis on the e-toll road project in South Africa. Managing an infrastructure development project can be a complex exercise that involves different participants, with a range of implications regarding the diverse interests, costs and performance involved. The need to establish infrastructure projects requires the facilitating of transport interconnections aimed at expediting the movement of people across South Africa. Gauteng adopted the e-toll model to improve the infrastructure connecting major freeways throughout the province, in order to accelerate growth and development in the region. This study is based on the assumption that infrastructural projects that aim to support development initiatives are affected by socio-economic and political factors. Using existing literature, this paper examines which critical factors related to the organisation, the project and to external forces were considered in embarking on the e-toll project. Findings from the study should contribute to improving prevailing levels of participatory development and project management.

Keywords: Critical Factors, Development Projects, Tourism, Community, Participation, Project Management.

Introduction and Background to the Problem

The two-decade old South African democracy has been lauded with much expectation of the future progress of development efforts, for which the groundwork has already been laid in both urban and rural areas. The diverse citizenry demands satisfaction of their basic needs, including infrastructure development that is aimed at improving their socio-economic conditions. Currently, urban infrastructural development is plagued by such challenges as insufficient planning, limited participation and inclusion of stakeholders, inadequate financial management and costing, and limited technical support. Since the inception of a new democracy in 1994, the South African Government has formulated policy interventions that are intended to mitigate the poor provision of infrastructure and roads by improving existing freeways, using the system of electronic tolling.

Gauteng province embarked on an initiative to upgrade its major roads in 2007 as a development strategy that would strengthen the economy, while helping to prepare for international sport games hosted by South Africa, such as the 2010 FIFA World Cup™. The freeway network was targeted as being part of the plan for the Gauteng Freeway Improvement Project (GFIP) that was to be funded by e-tolling, which allows for tolls to be collected without the vehicles concerned, which travel in multiple lanes, having to stop or slow down (SANRAL, 2009). In 2009, the N1 highway linking Johannesburg and Pretoria was the busiest freeway in South Africa, with over 157 000 vehicles utilising the freeway each day (SANRAL, 2009). Thus, the possible introduction of 'boom tolling' was seen as being potentially catastrophic, with the strong likelihood of it leading to additional congestion and traffic delays to those that were already being experienced at the time (SANRAL, 2009).

Alternatively, funding the GFIP via fuel levies would have required eliciting the support of dedicated motorists. Obtaining the GFIP funds from the National Treasury, which is constantly optimising how to meet a diversity of demanding national and other needs, would have been difficult. Also, fuel levies would have billed those not using the national roads.

Consequently, the billing system ultimately chosen was that of the e-toll system, which has, so far, resulted in the construction of 49 gantries, spanning the length of national freeways in Gauteng. The gantries are fitted with sensors that read electronic tags (e-tags) installed within vehicles and with cameras to photograph vehicle number plates. In principle, the e-toll system was set up to ensure that all vehicles travelling on national roads are scanned and tolled correctly.

Even though the government and the South African National Roads Agency Limited (SANRAL) celebrated the adoption and implementation of the e-toll system as being a positive economic trajectory, mixed feelings have been recorded in relation to its socio-economic impact on users and other stakeholders in Gauteng. The implementation of this mega project has set the precedent for other similar projects that are due to be piloted in the other provinces in South Africa. This study argues that the value of certain critical aspects of the project were overlooked by both the Gauteng Provincial Government and the project manager (SANRAL) during its planning and implementation. This article is intended to assess how the critical factors were considered in relation to the management of the e-tolls.

The disillusionment of South African citizens and academics regarding the viability of the project has necessitated the undertaking of such research. It also does not come as a surprise that the South African government applied a top-down approach in deciding on the best alternative principle to follow to obviate the problem of congestion of traffic on Gauteng roads, which entailed them adopting a user pay principle for the project. After having considered the possibility of reducing congestion, vehicle kilometres, fuel consumption and air pollution through tolling or other fee systems, the levying of e-tolls and kilometre charges, determined in terms of varying amounts of space and time, was found to be the best way to go. Internationally, two e-toll systems have, so far, been successfully implemented, with others having been rejected (SANRAL, 2014). Given such a context, the lessons learned from the diverse cases already in existence should have been considered prior to the implementation of the system in South Africa. The study provides an overview of infrastructure development, the position of infrastructure projects, and the critical success factors that are involved in managing SANRAL in South Africa, ending with an indication as to the way forward.

Research Methodology

This study, which takes the form of a qualitative exploration by means of a literature review, is intended to analyse the critical factors involved in relation to the implementation of infrastructural projects, regarding the case of Gauteng. Data is drawn from electronic literature reviewed covers a variety of project industries, articles from accredited international and national journals, policy reports and legislation. The body of literature represents a significant contribution to the understanding of general management, project management success factors and failures to be considered as lessons for the management of public programmes and projects. The assumption of this study is that capital projects that are implemented in the form of public-private partnerships (PPPs) can hold both positive and negative implications for service delivery.

Conceptual and Theoretical Framework Development

Scholars in diverse disciplines use different lenses to conceptualise development and modernity, largely in economic terms (Davids et al., 2009). The conceptualisation of development underpins much of the work of such international organisations as the World Bank, the International Monetary Fund, the World Trade Organization (WTO), and other international organisations that participate in formulating policies regarding, and in respect of the governance of, the world's economic activities in both the Global North and the Global South. A case in point, the World Bank uses the gross domestic product per capita (GDP pc) to classify countries in terms of world development, as lower, middle and higher income countries that are located at different intervals (Bouille, 2011). Szirmai (2005) asserts that a historical study of economic growth reveals the significance of saving and investment in terms of the accumulation of factors of production. According to him, such a study leaves no illusions with regard to the human costs of economic growth, which has always, in the past, been coupled with an enormous increase in the capital-labour ratio.

Development is also linked to the environment in which it occurs, and to the resources that should be sustained for future generations, so as to provide a healthy human habitat. Sustainable development, rather than replacing the other ideas and theories on development, instead provides a holistic approach to development, taken from a radical stance. Davids et al. (2009) assert that development should be woven around people's diverse needs, changing circumstances, customs, values and knowledge systems. In recent years, we have seen an increasing amount of instability in the global economy, particularly in the light of the global financial crisis that has constrained global economic growth and the performance of individual countries (Szirmai, 2005). It has become imperative to look beyond economic growth in discourses of development, and to focus with increasing intensity on such other issues as the global environmental crisis, debt reduction and economic regionalisation. South Africans should also be at the forefront of providing direction by means of formulating policies to address the financial crisis, instead of providing infrastructure projects that are pro-poor and favourable to job creation. In the context of this study, development projects are seen as being implemented as part of the execution of socio-economic policies.

The New Public Management (NPM): In the 1990s, Osborn & Gaerber (1994) developed a rhetoric as to how the government could restructure its business by working together with the different markets, forming partnerships and collaborations. The new direction taken by the government was aimed at designing and producing responsive management by means of raising the standards of service within the existing resource levels, servicing the public by means of recognising employees as assets to be valued, establishing a mechanism for improving service quality, and responding to customers. Several deployments of such NPM elements in the South African public sector involved fusing private and public sector values. In the last few decades, global forces have necessitated adopting an evolutionary process in terms of knowledge production and interconnections across nation state boundaries (Boulle, 2011 PPPs and service collaborations, which are particularly visible in terms of infrastructure and road projects.

Infrastructure and Project Management: In the context of this study, infrastructure is the permanent foundational investment capital of a country that is the basis of all economic activity within national parameters. Such structure includes administration, telecommunications, transportation, utilities, and waste removal and processing facilities. Some definitions of infrastructure also include education, healthcare, research, and development and training facilities. A project is a temporary endeavour that is undertaken to create a unique product, service or result through the undertaking of a unique set of related tasks (Clements & Gudo). 'Temporary' means that every project has a defined beginning and end, with the latter being reached once the project's objectives have been achieved. The project's result is quantifiable, with the project managers being obliged to bring about change in the specific area where the project is undertaken (Oosthuizen & Venter, 2011).

Some projects differ in both size and purpose. Infrastructural projects are mega projects that involve much planning and funding, as well as a reasonable project team. As the project proceeds, it develops unique attributes, depending on its scope and on the interrelated tasks performed (Clements & Gudo, 2011). Project management is the application of knowledge, skills, tools and techniques to project activities in such a way as to meet project requirements. Project management is accomplished through the application and integration of the different project management stages of initiating, planning, executing, controlling and closing (Oosthuizen & Venter, 2011). In the context of this study, project management is seen as the application of knowledge, skills, tools and techniques to meet project requirements (Oosthuizen & Venter, 2011). The project manager and team are directly responsible for operationalising the project plan, which helps to ensure that the project objectives are achieved. Little literature currently exists regarding project management theory, as such management tends to be seen more as a tool and method than as a theory.

Critical Success Factors for Managing Projects: A project is a temporary endeavour that is undertaken to create a unique product, service or result. A project result, which is quantifiable, is obliged to bring about change in the particular area in which the project is undertaken (Clements & Gido, 2011). Project implementation is complex, with it usually requiring paying attention simultaneously to a wide variety of human, budgetary and technical variables. As a result, the organisational project manager is faced with a

difficult job that is characterised by fragmentation and superficial outcomes. Cook-Davies (2002) argues that often success factors are associated with hard and soft data, some of them are not directly concerned with “human factors”, although it is fast becoming accepted that it is people who deliver projects, not processes and systems. Infrastructure projects in South Africa are implemented at local, provincial and national level. Critical project factors relating to the e-tolls project are indicated in Table 1 below.

Table 1: Critical Factors Involved in the E-Tolls Project

Critical Factors	As Experienced in the Case of the E-Tolls Project
1. Mission	Critically clearly defined goals and general directions
2. Top management support	The willingness of top management and the government to provide the project with a no-risk analysis and with contingency planning
3. Project schedule plan	A detailed specification of the individual actions steps indicated by SANRAL for project implementation without the stakeholders' involvement
4. Client consultation and participation	Less consultation with the stakeholders, and communication with, as well as active listening to, all impacted parties
5. Human resource aspects	Recruitment, selection, and training of the necessary personnel for the project team undertaken by the Gauteng government
6. Technical tasks	Availability of the required technology and expertise to accomplish the project undertaken by the Gauteng government
7. Client acceptance	The clients rejected the e-toll project.
8. Monitoring and feedback	Timely provision of comprehensive control information at each stage in the implementation process
9. Communication	The creation of an infrastructure for the provision of an appropriate network and necessary data to all key actors involved in the project implementation
10. Troubleshooting	Difficulties experienced by SANRAL and the Gauteng government in the handling of unexpected crises and deviations from plan, resulting in clients still being required to pay a minimum e-toll fee

Table 1 above indicates the critical factors that should be considered when managing a project, as well as how they have panned out in terms of the Gauteng e-tolls project. However, the impact and the velocity of these factors depends on the nature of the project at hand.

Critical Factors Involved in Managing the E-Tolls Project

Leadership and Management Support: According to Belassi & Tukel (1996), leadership and top management support is imperative for the success of a project, as it relates to the performing organisation. The Department of Transport (DoT) and the Gauteng provincial government were tasked with planning and further operationalising the GFIP that was earmarked to run over a 5-year period. Eventually, in terms of suitable world developments in respect of appropriate tolling systems for congested multilane freeways, the e-tolling system was identified as being a suitable strategy for responding to the congested multilane freeways in existence in South Africa (Pacariz, 2014).

SANRAL is a public company that operates according to the South African National Roads Agency Limited and National Roads Act (1998). SANRAL, which is the custodian of the Transaction Clearing House (TCH), provides this service to concessionaires (Bakwena) that are responsible for e-toll account management, through the e-toll Call Centre and the Violation Processing Centre (VPC). The e-toll Account Management Centre (AMC) administers the revenue collection involved, whereas the VPC deals with the management of e-toll violations and outstanding payments. The limited funds for the much needed, and hence economically justifiable, improvements to the freeways were directed by SANRAL, after much debate and consultation had occurred at various levels of decision-making. The government

used a politically motivated rationale for implementing the e-toll system, by contending that the roads infrastructure projects supported the economic development of not only South Africa, but also of the various Southern African Development Community countries.

As far as the e-tolls project is concerned, the leadership involved has failed to justify the speculations made regarding the sustainability of the presence of an adequate quantum of funding in an earmarked fund as being of importance in the planning and implementing of the road network. In addition, broader society was not consulted during the planning of this network, with lack of government consultation mostly being visible when motorists and other stakeholders concerned refused to register for the e-toll system. The protests that were held to indicate their rejection of the e-toll system clearly showed that the leaders concerned had failed to consult with broader society during the planning phase of the project. Naidoo (2013), who blames Government for the lack of transparency regarding the e-toll system, further notes that the public managers concerned had also shown their reluctance to share important system-related information with the public. They saw "the information requested by Opposition to Urban Tolling Alliance (OUTA) ... [as being] the intellectual property of third party organisations" (OUTASAPA, 2014).

In essence, political office-bearers are expected to be custodians of accountability and transparency, especially when such important information regarding the cost implications of a wide-reaching project is required by the public. After a long battle with stakeholders and with OUTA, who refused to pay the stipulated toll, the Gauteng Government appointed a task team to investigate the matter. The report that was issued by the task team in November 2014 indicated that, in respect of the e-tolls, South Africa was moving towards a sound economic trajectory. User fees were then reduced by 50% so that motorists concerned could afford to pay the e-tolls levied.

Project Plan and Schedule: The government employed a user pay principle, with the idea that the toll funds that were raised on this specific project might be used to redeem the loan that had been taken out to build the project infrastructure. However, it is difficult to speculate on the time frames and the future costs that have still to be associated with the administering of the process of collecting revenue from the road users concerned (Belassi & Tukul, 1996). The e-tolls project was planned by the National DoT, using a top-down decision-making approach. Stakeholders' involvement in the planning phase was overlooked by the DoT, despite the high expectations that the project would receive support from private partners. In reality, the stakeholders evinced mixed feelings regarding the project, claiming their absence in planning and implementation of the project, and that the government had failed to facilitate meaningful consultation. As a result of such failings, the motorists and interest groups who were most affected by the implementation of the system had been excluded from participating in the decision-making process during the planning of the project (Khanyile, 2015).

The blueprint project plan was developed from the mandate of the National Transport Strategy (2008) and the Gauteng Transport Strategy, which left open little possibility of engaging, in terms of the planning, with the major stakeholders and the public who were most impacted on by the system. The immutability of public behaviour over time affected the project schedule. The gradual introduction of the system through the conducting of a pilot study would have served to reflect the choices of the commuters and the motorists regarding e-tolls. Projects can be constrained by various issues, including the cost of time, material, skills/labour, and handling fees, as well as by the need to procure specific project-related goods. The overall budget of a project is specified by the project manager, who estimates the costs associated with project start, implementation and completion expenditure (Oosthuizen & Venter, 2011).

The successful application of the Congestion Charge Zone is currently limited to a small number of cities and urban roads, with the most notable schemes concerned including the electronic road pricing system in Gauteng Province. The fact is that commuters were, at first, reluctant to become involved in such projects, which indicates a project failing. International experience with the revenue collection of e-tolls suggests that, if over 15% of the users default on their payments at start-up, the system is doomed to fail (OUTA, 2014). However, SANRAL ignored such warning signs of the risks associated with the project, continuing with their initial billing system for the e-tolls project. According to Oosthuizen and Venter (2011), negative project-related risks should be regarded as threats that are likely to have negative impacts on the project concerned. A case in point is indicated by what happened with the Portuguese

SCUT (*Sem Custos para utilizador* [cost-free for users]) e-tolled roads system, which was problematic from the first, with 19% non-compliance. The OUTA report (2014) also indicates that the article on the failing e-toll system in Portugal was tabled in the much-publicised OUTA response to SANRAL and the transport authorities in June 2013 (OUTA, 2014). The other unsustainable projects that are mentioned in the report are the rejected e-toll in the Greater Manchester Built-Up Area in 2008; the rejected Edinburgh Congestion Charge for e-tolls in 2002; the Hong Kong congestion charge using e-tags; and the closed-circuit television system that was rejected in the 1980s (OUTA, 2014).

Client Consultation and Participation: The e-toll managers, SANRAL and government leadership should have totally overcome the moral disengagement in the e-government context prior to the launch of the e-tolls project. According to [Naidoo \(2013\)](#), the use of moral disengagement mechanisms involves downplaying the ethical content in pursuit of decision-making that advances organisational and personal interests. Therefore, it is reasonable to assume that such mechanisms play an important role in explaining controversial project decisions made by e-government leaders and their subordinates. The OUTA submission to the Gauteng government and SANRAL (2014), recommended avoidance of the necessity to demand the payment of e-toll fees, in preference of waiting until the Intelligent Transportation Systems tolling system was in receipt of public support after their engagement had been assured. Accordingly, a process of obtaining approval should have been conducted to obtain the assurance that the project was widely regarded as being socially legitimate. In this way, certainty could have been obtained on whether the methodology that was set in place would be able to secure the effective management of any future related congestion. Until such time, however, both the Gauteng government and SANRAL should have refused to support the project. Clearly, no significant amount of research was conducted beforehand into the e-tolling international experience so as to enable the decision-makers to assess the strengths and weaknesses that would be involved in the rollout of the e-tolls project prior to its implementation. Another problem was that certain fixed measuring points were demarcated along the existing freeways, leaving no alternate route that might be used by motorists unable to afford to pay the e-toll. In addition, [Khanyile \(2015\)](#) disparages the lack of adequate public participation in the planning and implementation of the e-tolls project, which has resulted in lengthy protests, including marches, by the various stakeholders involved, such as OUTA, the Congress of South African Trade Unions (COSATU), and community members ([Pacariz, 2014](#)).

Resource Management: As far as the human resources management is concerned, recruitment, selection, and training of the necessary personnel for the project team was done by the Gauteng government.

Table 2: Cost Savings Due to the GFIP, With and Without E-Tolls (VoC plus VoT, with business breakeven)

	Vehicle Usage	GFIP Benefits	E-Toll Costs	E-Toll Benefits
Agriculture	0.029	138	137	0
Mining	0.033	153	153	0
Manufacture	0.642	3016	3007	8
Electricity	0.003	12	12	0
Construction	0.002	10	10	0
Trade	0.013	60	60	0
Transport	0.085	400	399	1
Finance	0.015	70	69	0
Community	0.179	839	837	2
Households		4126	1566	2560
Total		8823	6251	2572

Source: E-Toll Panel Report (2014).

According to the E-Toll Panel Report (2014), there would have been costs saved either with or without the implementation of the e-toll system. Table 2 above indicates that the GFIP, with the use of e-tolls, can

deliver a positive net benefit, which, when it is filtered throughout the economy, will nevertheless be capable of generating positive impacts in terms of output and employment, which might be sufficient to reverse the short-term costs involved (E-Toll Panel Report, 2014). However, the models on which policymakers rely might be fraught with technical and subjective challenges, leading to a disjuncture between lived experience and planned objectives. According to Marsay (2009), certain projects are not sustainable when those with poor economic prospects are perceived as a means of social gain, and when projects that are otherwise sound are set aside because they are likely not to benefit the target group. In terms of the GFIP, the delays that are currently being experienced in the payment of e-tolls by commuters are contributing to the project's loss of revenue, which has brought about uncertainty regarding the possible longevity of the project, in terms of the ability to recover the losses so incurred.

How the different costs will be recovered once commuters are given the forthcoming 50% discount from what should have been the initial payment made by SANRAL is still unknown. However, it is notable that the user fees and charges for the use of toll roads, including the practice of e-tolling, have direct cost and value-added tax implications for traders and other road users from Mozambique, Zimbabwe, and other neighbouring countries that use the N1 highway as an entry route to South Africa. Such road users, who tend to use the e-toll route as a connection point for entry to South Africa, are billed after they have used the N1. For a project to be viable, its benefits must outweigh its costs. In this case, SANRAL, as the project manager concerned, failed to consult the relevant stakeholders before they started to estimate the costs of the project that is now regarded as illegitimate by the broader society. As such, the e-tolls project is operating under severe constraints and is experiencing loss of capital due to the delays involved and the non-payment of the e-toll levied on users of the toll road. According to SANRAL (2009) communication with clients will be done through utilization of information technology, where increased communication and collaboration is possible to occur naturally as access via the web (internet and intranet) will be broadened when the exponential growth of electronic mail occur.

Lessons can be learnt from the prevailing situation, in the sense that the costs that are associated with mega-projects are especially difficult to manage when there are delays in their rollout and when skilled labour has to be imported from other countries through a procurement process. The e-toll system in the present instance has employed a PPP strategy to enhance the management of joint capital in relation to the available resources. Most of the approaches discussed have tended to focus on the symptoms of the challenges involved, while failing to identify the risks and threats in hand. According to Pienaar (2011), the immediate e-toll project successes can be heralded in as far as the upgraded and expanded roads have reduced congestion. The assumption is that the upgraded roads would automatically improve the safety of commuters and decrease accidents. In the study conducted by Venter & Jobuert (2014) on the GPS based assessment on the equity impacts of large scale electronic tolling in Gauteng,, the fuel tax is found to be more regressive (in terms of income) than electronic tolling: lowest-income users pay 20% of taxes while contributing only 13% of freeway kilometres.

Conclusion

The main purpose of this study was to assess the observations that were made regarding critical factors involved in the e-tolls project. Although the project evidently generated challenges in its incipient stage, the project manager (i.e. SANRAL) and the Gauteng Government continued with its administration that later was to place the project under dire constraints. The implementation of the GFIP project partly achieved its objectives relating to the need to increase the capacity of the economy through the levying of an e-toll on all road users, and the immediate effect on job creation. The setback of these objectives is demonstrated by refusal of motorists and stakeholders using the N1 highway to accept the project and pay the fees levied. The problem of congestion came about as a result of the rising levels of vehicle ownership, a phenomenon, at least in part, that was spurred on by the growth of the middle class. Such growth was coming to place ever more pressure on the existing infrastructure, resulting in the need to adopt a strategy that was to provide a user-friendly transport model. In conclusion, some of the critical factors that were overlooked and affected the E-Toll project's success enabled the prevailing threats to be seen as emanating from the decision taken by SANRAL and the Gauteng Government, lack of proper consultation, excessive project costs due to delays and rejection of the project by the stakeholders concerned. Even though the task team that was mandated to investigate the causes of this rejection

recommended that the initial e-toll rates be halved, the solution has not yet come to alter the status quo to any significant extent. SANRAL and the government had clearly used a top-down approach in decision-making relating to the project planning and implementation. Both bodies overlooked the warning signs in respect of the risk factors, hence leading to the overall rejection of the e-tolls project by its key stakeholders.

The overall administration of the project by SANRAL as the agency responsible for administering the billing system has been rejected by the major workers union (COSATU), as well as by OUTA. Consequently, those who oppose the e-tolling system have urged the non-payment of e-toll accounts by their members. The result has been the improper maintenance of records, and delays in the collection of revenue from the motorists concerned. Such delays have been exacerbated in the areas of cooperation and coordination between SANRAL and other agencies involved, in terms of information sharing and the provision of feedback, which might otherwise have facilitated effective decision-making regarding how their fund's revenue collections might have been improved. Whether the e-tolling system will, in the long run, benefit the commuters concerned, while also fostering the economic development of Gauteng, remains a moot point.

As a result of the above findings, it is recommended that both the national government and the Gauteng provincial government return to the drawing-board to work out a plan whereby they will be able to involve all the stakeholders in assessing the relevant risks, and in choosing an appropriate strategy that carries minimal risks and that encompasses the ability to respond to the needs and requirements of all the stakeholders concerned.

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