Developing a roadmap to identify companies that can benefit from using bimodal freight transport.

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Abstract:

Background:

Long distance transport in South Africa is dominated by road transport (Van Eeden & Havenga, 2010). However, long distance freight is much better suited for rail transport. Ideally trucks would do the collection and distribution of freight and rail would be used for the high-density, long-distance transport segment (Van Eeden & Havenga, 2010). Furthermore "South Africa's logistics costs are higher than the global average". An effective way to lower these costs would be to shift road freight transport to rail (Havenga, 2010; Havenga, Simpson, Fourie, et al., 2011).

The implementation of a bimodal solution in South Africa would be beneficial in several ways. Less trucks on the road means that less money would have to be spent on road maintenance, less accidents would occur, and less congestion would result from increased traffic. Furthermore, the use of rail would result in less CO2 emissions. This study will also aim to confirm the reduced cost in freight transport when using bimodal technology.

RailRunner is a company that has found success in the bimodal transportation market in North America. RailRunner implements bimodal technology that makes use of compact specialized rail vehicles called bogies which connects specialised truck trailers to assemble a train that can be hauled by a locomotive. The truck wheels are raised by the bogie to clear the track, thus transforming the road trailer in to a rail wagon. RailRunner is one of the few companies that has successfully been able to provide a technology solution to enable road-to-rail bimodal freight distribution. RailRunner has now started work on implementing their solution on the narrower Cape gauge in South Africa (which has not seen a widely successful implementation of a road-to-rail solution in recent years (Havenga, Simpson & de Bod, 2012; Havenga et al., 2011)). RailRunner is now at a stage where they need to identify bimodal customers that would benefit from using their technology.

Purpose

The purpose of this study is to develop a roadmap that will allow companies interested in bimodal technology to determine the potential return on their investment. The study will focus on establishing the parameters and requirements from the perspectives of both the freight owners and the service provider. The roadmap will be developed for the Cape Town-Gauteng corridor but to also be useful to use on other corridors. Bimodal operators, like RailRunner or other logistics companies will be able to use the roadmap to conduct their own investigations and identify potential customers.

Research approach

Once a literature study has been done and selection criteria for potential companies has been defined, a preliminary roadmap will be formulated. This roadmap will be used to start conducting case studies on companies to see if they will benefit from the use of bimodal technology. Before the case studies

are done, the identification of bimodal-compatible commodities and stakeholder analysis will be done in preparation. The initial focus will be on companies with large transport volumes and that makes use of the Cape Town-Gauteng corridor. A number of case studies will be completed to validate and improve the roadmap. The case studies process will include the following:

- Research on the customer criteria for transport of their goods.
- A business model that will help justify the customer's investment through cost savings.
- Validating with potential customers whether they would be willing and able to use the bimodal system, providing insight into the accuracy and completeness of the roadmap.

A snowball approach will be followed with each case study contributing to the roadmap's information and steps. Once the roadmap reaches a saturation point, it will be finalised.

Findings and originality

This study is a work in progress, with the study to be finalised in June 2021. The aim for this presentation is a progress report, aiming to have a draft roadmap and one case study completed.

Since the Cape Town – Gauteng corridor sees the most freight movement in tonne-km, companies that use this corridor will be prioritised for case studies. Furthermore, the commodity groups of process foods and beverages will be considered first.

Research impact

Most studies done on road-to-rail solutions in South Africa focused on moving containers from flat deck trucks to rail flat cars. This method requires complex equipment that increase transit time and cost. Very little research has been done on implementing the bimodal technology that RailRunner provides in South Africa. Therefore, this study will aim to provide insight into the process of identifying companies that would benefit from the use of this specific bimodal technology. This study will also act as a building block for future research on road-to-rail bimodal technologies.

Practical impact

RailRunner and any other business interested in bimodal technology will be able to use this information to gain insight into customer decision factors to be considered when switching from road only or rail only transport to bimodal transport. The study will provide an example of a business model and financial model that can be adapted to accommodate different businesses based on unique attributes. The initial roadmap will be developed and tested on the Cape Town-Gauteng corridor, but will be developed generic such that it can be used for other corridors as well.

Bibliography

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