سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

سامية محمد مصطفى

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

سامية محمد مصطفى

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة

سامية محمد مصطفى

شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

ROAD ECONOMIC DECISION MAKING MODEL

By

Emad El din Nabil Ali Bayoumi

A Thesis Submitted to the
Faculty of Engineering, Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY

In
Civil Engineering

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Under the Supervision of

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Prof. of Highway & Airport Engineering
Faculty of Engineering, Cairo University

Prof. Dr. M.R. Elmitiny
Prof. of Highway & Traffic Engineering
Faculty of Engineering, Cairo University

Dr. Omar Osman
Assistant Prof. of Highway & Airport Engineering
Faculty of Engineering, Cairo University

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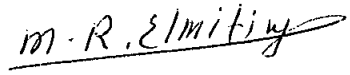
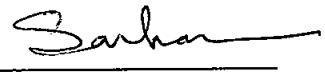
Examining Committee

Prof. Dr. Ahmed Atef Gadallah
Prof. of Highway and Airport Engineering
Faculty of Engineering, Cairo University

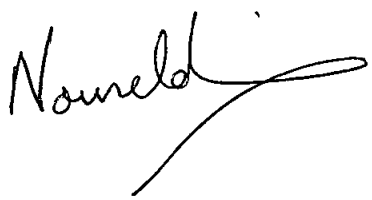


Prof. Dr. Mohamed Rashad ElMitiny
Prof. of Highway and Traffic Engineering
Faculty of Engineering, Cairo University



Prof. Dr. Eissa Abdelaah Sarhaan
Prof. of Highway and Airport Engineering
Faculty of Engineering, Ain Shams University

Prof. Dr. Laila Salah Radwan
Prof. of Highway and Airport Engineering
Faculty of Engineering, Cairo University



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ABSTRACT

In Egypt, roads are deteriorating under the excessive traffic loading. Expansion of the network is required to keep pace with economic development plans and the ever- increasing demand on road transport. The network must be maintained and operated up to a good level determined by road council. On the other hand, road funds are not enough for covering all required needs. There is no clear tool to help decision-makers examine the effect of their decisions on both technical and economic parameters. Due to the above mentioned, it is required to define another revenue resources and making it is available in an interacting system for better usage.

Public Road Agencies always face the need to take economic decisions related to the road sector including the road network technical and economical parameters. There are many aspects of the economic decision making such as the appropriate expenditure level of public resources, estimation of the actual expenditure needs, possible sources of revenue raising and creating a clear link among expenditures, revenues and road user charges in a manner that reflects actual market indicators.

This research aims mainly at introducing a Road Economic Decision Making Model that can help improving local road economic decision-making processes. The model integrates a set of modules that interact together to identify required actions for operating and maintaining the road network at a pre-defined target level. The model performs economic evaluation of road expenditures, revenues and road user charges.

The model takes into consideration many technical aspects including comprehensive representation of geometric and structural characteristics of the road network. Several Studies were carried out for each technical aspect related to pavement evaluation, maintenance identification and prioritization, cost allocation, traffic characterization including determination of axle loads and vehicle utilization

rates. Expenditure module includes analysis of direct and indirect agency costs, vehicle operation cost and load- damage costs.

The revenue module includes analysis of axle load charges; tolls fee, license fees, and fuel levy fees. The model introduces the future policy- checking tool for different time related aspects such as future traffic volumes, pavement condition, ESAL accumulation, and vehicle operation costs.

The developed Road Economic Decision Making Model "REDMM" is a series of visual basic programs connected to a data base program using a friendly user interfaces. The model encompasses an effective reporting module.

Egyptian toll roadways were examined using "REDMM" as a case study. Results reveal a clear imbalance between current expenditures and revenues based on road user charges. The model was then used to examine several feasible measures that can be considered for implementation to improve the required balance.

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