AIN SHAMS UNIVERSITY

FACULTY OF ENGINEERING

Public Works

An Approach to Maximize Carpooling inside Organizations in Greater Cairo

A Thesis submitted in partial fulfillment of the requirements of the degree of

Master of Science in Civil Engineering (Public Works)

By: **Amr Mohamed Mohamed Ali**

Master of Science in Civil Engineering (Public Works)

Faculty of Engineering, Ain Shams University, 2016

Supervised By

Prof. Hatem Mohamed Abd El-Latif

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Dr. Alsayed Ahmed Mohamed Alsobky

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Date:21 July 2016

Statement

This thesis is submitted as a partial fulfilment of Master of Science in Civil Engineering Engineering, Faculty of Engineering, Ain shams University.

The author carried out the work included in this thesis, and no part of it has been submitted for a degree or a qualification at any other scientific entity.

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Thesis Summary

The traffic congestion is among the main problems facing the Greater Cairo Region. This problem leads to increase the travel time, fuel consumption, noise, and air pollution. One of the main reasons for the traffic congestions is the increasing numbers of private car usage and its low average occupancy. Car-pooling is considered an effective solution as it leads to decrease the private car usage and increase its average occupancy. The previous research mentioned that car-pooling implementation within the organizations gives more success comparing to on street carpooling, as the time schedules of the car-poolers are almost the same and the psychological barriers are minimized in addition to the high level of security for both the car owner and passengers.

The main objective of this research is to present an integrated approach to introduce the car-pooling service within the organizations in the Greater Cairo Region. The case study of this thesis is the faculty of Engineering in Ain Shams University (FOE-ASU); where a stated-preference survey has been conducted among all commuters including the academic staff, teaching assistants, administrative staff and students. The objectives of this survey were to identify the factors affecting the carpooling tendency and the best accepted carpooling attributes from the point of view for both carpool passengers and car owners. The survey was also exploited to calibrating a binary discrete-choice logit model aiming at predicting the share of using car-pooling service.

On the other hand, a carpooling website has been developed to facilitate the connection among different carpool users. This website is recommended to be under the supervision of FOE-ASU administration.

The results of this research concluded that the carpooling implementation within FOE-ASU will attract about 48% of the commuters, and it will have significant impact on the number of private cars commuting to the faculty, which can have a positive impact on alleviating the traffic congestion in the surrounding streets.

A road map for deploying the carpool service was also introduced in the thesis. The research proposed also some recommendations and related future works based on the results.

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Table of Contents

PAGE

List of Figures

PAGE

List of Tables

PAGE