THE DETERMINANTS OF FIRMS’ INNOVATIVENESS ON CONSTRUCTION TECHNOLOGY IN MALAYSIAN HEAVY CONSTRUCTION SECTOR

NG WENG SENG

DOCTOR OF BUSINESS ADMINISTRATION
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THE DETERMINANTS OF FIRMS’ INNOVATIVENESS ON CONSTRUCTION TECHNOLOGY IN MALAYSIAN HEAVY CONSTRUCTION SECTOR

By

NG WENG SENG

Dissertation Submitted to Othman Yeop Abdullah Graduate School of Business Universiti Utara Malaysia in Partial Fulfillment of the Requirement for the Degree of Doctor of Business Administration
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ABSTRACT

The peculiar characteristics of constructed products significantly differentiate construction from manufacturing. Past researches seem have been given greatest attention and concentration to the innovation in manufacturing sector. This research assesses the determinants of firm’s innovativeness in construction sector, which has been neglected by researchers despite its immense importance to the technological advancement in affecting the degree of innovation implementation and adoption. A total of fourteen hypotheses were developed and tested. These hypotheses are established within the context of heavy construction sector characteristics that are consistently suggested to be significant determinants of firm innovativeness. These characteristics include (1) market structure characteristics, (2) organisation and task characteristics, (3) adopter industry competitive environment, and (4) external cooperation linkage. This study has reviewed the problem of determinants of firms’ innovativeness in technological innovation the Malaysian heavy construction sector to meet the three outlined objectives. Hypotheses were tested utilising survey data collect from Malaysia Construction Industry Development Board, CIDB Grade 7 construction firms throughout the Malaysia. The relationships of the identified four domains were discussed in this research. The results indicate that adopter industry competitive environment and external cooperation linkage are among the variables that significantly affect the degree of innovation implementation and adoption. Results also indicate that 13 out of 14 hypotheses are supported and positively affecting the degree of innovation implementation and adoption. Lastly, a new model closely reflects the essence of the determinants of firm’s innovativeness in heavy construction sector was formulated. Therefore, the results suggest that increasing the rate of innovation implementation and adoption may be enhanced to a greater degree by increasing adopter industry competitive environment and external linkage rather than implementing market structure environment characteristics or organisation and task characteristics. This research has value and has advanced knowledge in construction industry, especially, and hence the aim has successfully attained.

Keywords: Innovation, Construction Technological Innovation, Determinants of Firms’ Innovativeness, Heavy Construction Sectors, Modeling
ABSTRAK


Kata kunci: Inovasi, Inovasi Teknologi Pembinaan, Penentu Kadar Inovasi Firma-firma, Sektor Pembinaan Berat, Model
PUBLICATIONS FROM THIS RESEARCH

The following papers have been produced from the research reported in this dissertation:


DEDICATION

I dedicated this dissertation to my Mum and Dad for nursing me with affections and their dedicated partnership for success in my life.

This Dissertation is also in debt to my wife, Tan Mee Teng. Her hours of work in loving our children, enabled the hours of research, contemplation, and writing necessary to complete this research. She is my “excellent wife, worth more than jewels”. Please continue to help me to care and deliver more lovely children.

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CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION
This chapter provides an overview of the background of the study, problem statement, research question, research objective, scope of work, definition of terms used in this study and organisation of the dissertation.

1.2 BACKGROUND OF THE STUDY
Malaysia has been experiencing a massive surge of construction activity with the construction boom reaching its climax at the turn of the 2010s. Examples of heavy construction projects delivered includes, but not limited to, North-South Highway, Kuala Lumpur International Airport (KLIA), Malaysia-Singapore Second Link, Electrified Double Tracking Project (EDTP), Second Penang Bridge, Mechanical Railway Transit Project (MRT), Light Railway Transit Project (LRT) and many more. The Malaysian construction industry has been one of the greatest contributors to the Gross Domestic Product (GDP). Advancement in technology is an integral part of Malaysia's growth as an industrialised country. However, the firms’ innovativeness in technological innovation in construction has virtually been given relatively less attention and neglected as a viable area for investigation and research in most of the countries (Holt, 2010). In contrast, the firms’ innovativeness in technological change in manufacturing industries has received more attention from the industry and the research communities.

Budiawan & Sidwell (2004), Manley (2006), Brochner (2008), Kristian (2010), Hardie (2010), and Aouad, Ozorhon, & Abbott. (2010) are few examples of the
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