

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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





بعض الوثائق الأصلية تالفة





بالرسالة صفحات
لم ترد بالأصل





Ain Shams University
Faculty of Engineering
Department of Architecture

INVESTIGATING BARRIERS AND DRIVERS OF THE APPLICATION OF PREFABRICATED ARCHITECTURE IN EGYPT

A thesis Submitted as a part of requirements to obtain the degree of
Masters of Science in
Architectural Engineering

Submitted by

Ahmad Mohamed Hamdy Mostafa

Supervisor Committee

Prof. Dr. Morad Abdel Kader

Professor of Architecture & Environmental Control,

Faculty of Engineering, Ain Shams University

Dr. Mohammed Seteit

Assistant Professor - Architecture Engineering,

Faculty of Engineering, Ain Shams University

February 2020



Ain Shams University
Faculty of Engineering
Department of Architecture Engineering

INVESTIGATING BARRIERS AND DRIVERS OF THE APPLICATION OF PREFABRICATED ARCHITECTURE IN EGYPT

A thesis Submitted as a part of requirements to obtain the degree of
Masters of Science in Architectural Engineering

Submitted by

Ahmad Mohamed Hamdy Mostafa

Examiners Committee

Signature

Professor Dr. Mohamed Mamoud Eweida

Professor of Architecture-Architecture Department
Faculty of Engineering- Cairo University

Professor Dr. Akram Farouk

Professor of Architecture-Architecture Department
Faculty of Engineering- Ain Shams University

Professor Dr. Morad Abdelkader

Professor of Architecture & Environmental Control Faculty of Engineering-
Ain Shams University

Dr. Mohamed Metwally Steit

Assistant Professor of Architecture-Architecture Department
Faculty of Engineering- Ain Shams University

Thesis Defense Date: 23/11/2019

Graduate Studies:

Approval:

Date: / /

Approval of Faculty Council:

Date: / /

Approval of University Council

Date: / /

Acknowledgment

First of all, I thank God for enabling me to accomplish my goals.

I owe my sincere gratitude to my family; my dear mother Salwa Kamal, my dear father E. Mohamed Hamdy Mostafa, without you, I could never have reached this success. My caring, loving, and supportive sister Dr. Mona Mohamed Hamdy, my brothers Basem Mohamed Hamdy and Tarek Mohamed Hamdy, Aya Basem Hamdy, Ingy Basem Hamdy, and sereine Basem Hamdy who supported me with love and understanding.

This work would not have been possible without the support of my beloved wife Dr. Sara Samy who I share my success and life and of course my lovely daughters Mariam and Malak my strongest motivation.

I also want to thank my supervisor Prof. Dr. Morad Abdelkader for his support and guidance throughout the research work. I'm also deeply grateful to my examiners committee Prof. Dr. Mohamed Eweida and Prof. Dr. Akram Farouk for their valuable advices, comments, and notes.

Statement

This thesis is submitted to Ain Shams University for the degree of Masters of Science in Architecture.

The work included in the thesis was accomplished by the author at the Department of Architecture, Faculty of Engineering, Ain Shams University, during the period from 2016 to 2019.

No part of this thesis has been submitted for a degree or a qualification at any other university or institute.

Date: 18th February 2020

Signature:

Name: Ahmad Mohamad Hamdy Mostafa Sayed Ahmad

B.Sc. of Architecture-2001

Table of Contents

List of Figures	iv
List of Tables	viii
Introduction	x
Research Problem	xi
Research Objectives.....	xi
Research Methodology	xi
Research Structure.....	xii
Research Outline.....	xiii
Chapter 1. Characteristics of Prefabricated Architecture.....	1
1.1 Introduction.....	3
1.2 Prefabricated Architecture Terminologies.....	3
1.3 Scales of Prefabricated Architecture Practices	5
1.4 Sustainability Aspects.....	6
1.4.1 Environmental Aspect.....	9
1.4.2 Economic Aspect.....	12
1.4.3 Social Aspect	13
1.5 Structural Aspects	14
1.6 Selected Experiences of Prefabricated Architecture Practices.....	16
1.6.1 Application of Prefabricated Architecture Practices and Technology in USA	18

1.6.2	Application of Prefabricated Architecture Practices and Technology in UK	20
1.6.3	Application of Prefabricated Architecture Practices and Technology in Australia.....	21
1.6.4	Application of Prefabricated Architecture Practices and Technology in Germany	22
1.6.5	Application of Prefabricated Architecture Practices and Technology in Hong Kong	23
1.6.6	Application of Prefabricated Architecture Practices and Technology in Egypt.....	24
1.7	Summary	35
Chapter 2	Experiences of Prefabricated Architecture Practices	37
2.1	Introduction.....	39
2.2	Selection Criteria	39
2.2.1	Why Japan has been selected?	39
2.2.2	Evidences that Japan is a Leader in the Prefabricated Architecture	41
2.3	Analysis of the Context of Prefabricated Architecture Practices in Japan	43
2.3.1	Stakeholders of Prefabricated Architecture	43
2.3.2	Building Codes of Prefabricated Architecture	45
2.3.3	Supportive Bases that Encourage Adopting Prefabricated Architecture Approach.....	47