GREEN PURCHASING ADOPTION OF CONSTRUCTION COMPANIES IN MALAYSIA

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GREEN PURCHASING ADOPTION OF CONSTRUCTION COMPANIES IN MALAYSIA

by

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LIST OF ABBREVIATIONS

GP	Green purchasing
OC	Organisational Culture
GSCM	Green Supply Chain Management
SCM	Supply Chain Management
GHG	Greenhouse Gas
CO^2	Carbon Dioxide
CIDB	Construction Industry Development Board
MCO	Movement Control Order
HVAC	Heating, Ventilation and Air Conditioning
GR	Government Regulation
SP	Stakeholder Pressure
TMS	Top Management Support
CF	Corporate Factor
MS	Material Supplier
SR	Subcontractor Relationship
EBB	Expected Business Benefit
GPA	Green Purchasing Adoption
PLS-SEM	Partial Least Squares Structural Equation Modelling
CB-SEM	Covariance Based Structural Equation Modelling
IV	Independent Variable
DV	Dependent Variable
MV	Moderator Variable
CFA	Confirmatory Factor Analysis

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PENERIMAAN PEMBELIAN HIJAU SYARIKAT PEMBINAAN DI MALAYSIA

ABSTRAK

Pembelian hijau merujuk kepada pembelian barangan dan perkhidmatan yang bertujuan untuk mengurangkan impak alam sekitar dan mencapai kesan jangka panjang yang diingini. Dalam sektor pembinaan, pembelian hijau merujuk kepada pembelian barangan dan perkhidmatan mesra alam yang dikhususkan untuk aktiviti pembinaan. Pembelian hijau semakin mendapat perhatian di Malaysia kerana syarikat-syarikat menyedari tanggungjawab mereka untuk mempromosikan kemampanan alam sekitar, selari dengan peningkatan kesedaran pengguna yang mendorong penggunaan yang lebih mesra alam. Penyelidikan ini bertujuan untuk mewujudkan rangka kerja penerimaan pembelian hijau bagi syarikat pembinaan di Malaysia dengan menentukan faktor-faktor yang mempengaruhi penerimaan pembelian hijau , meneliti faktor-faktor ini serta hubungannya dengan penerimaan, dan mengkaji kesan penyederhana budaya organisasi terhadap hubungan ini. Kajian ini menguji empat belas hipotesis dalam model berdasarkan kajian literatur. Penilaian empirikal telah dijalankan melalui kaji selidik terhadap 187 responden di Semenanjung Malaysia, dan dianalisis menggunakan perisian IBM SPSS 27 dan SmartPLS 4. Lima hipotesis diterima. Faktor korporat, pembekal bahan, dan jangkaan manfaat perniagaan memberi kesan yang ketara terhadap penerimaan pembelian hijau, manakala peraturan kerajaan, tekanan pihak berkepentingan, sokongan pengurusan tertinggi, dan hubungan dengan subkontraktor tidak menunjukkan kesan yang signifikan. Terdapat sebahagian bukti yang menunjukkan bahawa budaya organisasi memainkan peranan penyederhana di mana hubungan

antara kerajaan dan subkontraktor mempengaruhi budaya organisasi. Walaupun terdapat cabaran seperti kekurangan maklumat dan kos produk hijau yang tinggi, program kelestarian kerajaan Malaysia dijangka dapat mempromosikan pembelian hijau dalam industri pembinaan.

GREEN PURCHASING ADOPTION OF CONSTRUCTION COMPANIES IN MALAYSIA

ABSTRACT

Green purchasing is when goods and services are purchased to decrease environmental impact and achieve desired long-term goals. In the construction sector, green purchasing refers to purchase environmentally friendly items and services for construction activities. Green purchasing is gaining traction in Malaysia as companies recognise their responsibility to promote sustainability, with increasing consumer awareness driving environmentally conscious consumption. This research aims to establish a green purchasing adoption framework for Malaysian construction companies by determining factors influencing green purchasing (GP) adoption, examining these factors and their relationship with adoption, and investigating the moderating effect of organisational culture on this relationship. This study tested fourteen hypotheses within a model based on a literature review. An empirical assessment was conducted through a survey of 187 respondents in Peninsular Malaysia, analysed using IBM SPSS 27 and SmartPLS 4 software. Five of the examined hypotheses were accepted. Corporate factors, material suppliers, and expected business benefits significantly predicted green purchasing adoption, while government regulations, stakeholder pressure, top management support, and subcontractor relationships did not lead to its adoption. Partial evidence suggests that organisational culture moderates the effect of government-subcontractor relationships on organisational culture. Despite challenges like limited information and high costs, the Malaysian government's sustainability programs are expected to promote green purchasing further in the construction industry.

CHAPTER 1
INTRODUCTION

1.1 Overview

The current chapter introduces the background of the research, a statement of the problem, and the basis for the study. It also provides the aim and purpose of the research, an outline of the methodologies used in the study, and an overview of the study.

1.2 Background

Over the last decade, there has probably been an increase in environmental and ecological dangers. They can be expressed by industrial pollution, shortage of natural sources, climate change, and various carbon emissions which threaten the stability of the ecosystem. Around the world, economic and population development are the most important factors for raising Carbon Dioxide (CO^2) emissions from burning fossil fuels (IPCC, 2014). Despite scientific warnings, political dedication and other measures, the dangerous emissions of greenhouse gases (GHGs) are increasing (UNEP-EGR, 2019). The emission of fossil CO^2 from energy and manufacturing, which took the largest share of the total GHG emissions in 2018, had the largest increase of all the shares to touch a record level of 37.5 GtCO2 per year (UNEP-EGR, 2019). Globally, fossil CO^2 emissions from 2019 fell by 5.3% in 2020 from the previous year. However, according to Crippa et al. (2022), worldwide emissions reached the 2019 level in 2021 (the year before the COVID-19 pandemic peaked at 37.9 Gt.). Furthermore, total energy-related CO_2 emissions increased by 1.1% in 2023 (IEA, 2024).

Despite the increase in CO^2 emissions in 2018, the joint activities of the world community are still not comprehensive enough to solve the problem (UNEP-

EGR, 2018). The industry directly affects the project and the country's economy by generating employment and the actual construction process. The construction of buildings and other infrastructures, notably like many human activities, has many environmental effects and results in carbon emission in a significant amount (UNEP, 2017). In the construction and building sector alone, 36% of global final energy consumption and 39% of the CO^2 energy-related emissions are used when power generation is included (UNEP, 2017). As such, the sector is a key step in counteracting emissions and powering green growth.

The construction sector significantly influences the environment through its material and energy use in new construction (Wong et al., 2016). This is mainly due to the extensive use of non-renewable materials and energy during the manufacture and transport of construction materials and the installation and construction of buildings (Ho et al., 2010; Li et al., 2023). Whilst the role of a construction contractor is to turn architectural plans into structures, they also play a critical role in reducing the emissions under their control (Wong et al., 2013). Moreover, Alaloul et al. (2021) added that the construction sector experienced growth as a result of the decrease in inflation; however, this has adverse effects on sustainability and poses a threat to the environment.

These pressures will compel companies to formulate strategic plans to alleviate their environmental footprints in product and service purchasing, manufacturing, and marketing (Yen & Yen, 2012). As consumers become more aware that the environmental impacts associated with purchasing practices carry much weight, they start to pay attention to the quality and health of the environment (Ho et al., 2010). According to Min and Galle (1997), purchasing can greatly affect the environment by implementing source reduction strategies such as recycling, reuse

and waste management strategies, including scraping, non-toxic incineration, sorting and biodegradable packaging. Purchasing will be the most innovative corporate function compared to any other corporate function (Preuss, 2001; Zsidisin & Hendrick, 1998). Consequently, organisations aiming for green supply chains are concerned with green purchasing (Björklund, 2011; Raj et al., 2020)

Green purchasing has been an essential concept in the supply chain. It is the involvement of the purchasing role in supply chain management activities to promote the recycling and reduction of assets. (Carter et al., 1998; Carter & Carter, 1998). It also stated that green purchasing in private organisations could reduce environmental risks and cost savings by reducing waste, energy, and material usage (Varnäs et al., 2009). Green purchasing is a strategic approach that can provide firms with various benefits, including financial savings, an enhanced brand image, risk management, eco-efficiency, better supplier partnerships and environmental sustainability. Thus, green purchasing will substantially benefit its practitioners, such as contractors.

The contractor mostly makes construction purchases. The client selects the contractor for most projects, who then chooses the suppliers of goods and services (Mokhlesian, 2014). In the earlier stages of construction, contractors must manage green purchasing to maintain a healthy environment. This is supported by statements from Carter and Carter (1998a) and Preuss (2001), in which purchasing plays a crucial role in supply chains at the front end of an organisation's forward flow of materials, often offering an excellent environment for implementing resource reduction practices. This shows that the study of green purchasing adoption in construction companies is vital for a vigorous environment.

Organisational culture significantly affects the selection of environmentally friendly purchasing methods (Bonn et al., 2021). A supportive organisational culture

can be created to aid and support the decision to implement green purchasing policies. A strong culture that values sustainability can create a feeling of commitment and sharing among everyone working on eco-friendly activities. However, a culture that does not support green initiatives can result in resistance, discouraging green purchasing programming. Influenced by the values, beliefs, and norms, the corporate culture either catalyses or impedes the adoption of green purchasing.

However, since the concept of green purchasing is considered new to construction companies, implementing the practices in companies may require a change in the organisational culture. According to Samad (2018), companies must react to dynamic environmental changes, and strategic planning must align with organisational policies, particularly human resource policy. The company's organisational culture establishes its identity (Cheung et al., 2011). In order to reduce the detrimental effect on the environment, contractors must create a culture that will stimulate and encourage strategy towards green purchasing adoption (Hartmann, 2006; Wong et al., 2013).

1.3 Problem Statement

Malaysia set a voluntary goal in 2009 to reduce its Gross Domestic Product (GDP) emission rate of greenhouse gases (GHGs) by up to 40% relative to the rates of 2005 by 2020 (Eleventh Malaysia Plan, 2015). To achieve this, the Green Technology Master Plan targeted the number of registered green products and services under the MyHIJAU Mark by 2020, 2025, and 2030 (GTMP 2017). The goal was to register 5,000 green products and services by 2020, 7,500 by 2025, and 10,000 by 2030. This would help Malaysia reduce its carbon footprint or greenhouse

gas emissions. Malaysia has made some progress towards this goal by improving environmental sustainability. At the end of 2016, Malaysia had lowered the intensity of greenhouse gas (GHG) emissions to GDP by 29.4% compared to the intensity of emissions in 2005 (Twelfth Malaysia Plan, 2021). Moreover, the government has also made green procurement obligatory for all ministries and agencies, encouraging local industries, particularly small and medium-sized enterprises, to develop green products and services and ultimately green the supply chain.

Thus, the circular economy concept will be implemented throughout the products and services value chain, and industries will be encouraged to develop and apply green techniques, especially in sustainable consumption and production. Green purchasing strategies will enhance demand for green products and services and catalyse industry greening (Twelfth Malaysia Plan, 2021). The private sector will also be encouraged to emulate government efforts in green procurement, and the nation needs to achieve at least 20% government procurement to be green (Eleventh Malaysia Plan, 2015).

The major part of Malaysia's economy is built and driven by the construction industry (Alaloul et al., 2021; CIDB, 2015). However, the construction sector has witnessed a 0.7% yearly decline during the Eleventh Plan period, primarily due to decelerator construction activity. Additionally, several critical civil engineering projects were postponed and examined. Besides that, the construction sector had to confront the Movement Control Order (MCO), which came into effect in March 2020, and the primary purpose is to contain the spread of the COVID-19 virus (Twelfth Malaysia Plan, 2021). Despite a decrease in carbon emissions, lifting the MCO resulted in a subsequent increase in carbon emissions (Crippa et al., 2022).

Buildings are responsible for consuming up to 40% of the total global energy (Hassan et al., 2024) . By 2030, it is anticipated that consumption will reach 50%. Residential and commercial buildings in Malaysia consume 15% of total energy and are a key contributor to greenhouse gas emissions (Energy Commission, 2014; Shaikh et al., 2017). This occurrence contributes to the prevalence of inefficient and environmentally hazardous construction practices. One of the reasons is the construction industry's lack of green purchasing practices (CIDB, 2015). Therefore, new guidelines on government green procurement (GGP) and short-term action plans for the construction industry will be implemented to promote green purchasing practices. The application of the GGP on works, including the acquisition of green-labelled materials, will lead to a shift in construction practices that are more environmentally friendly (Twelfth Malaysia Plan, 2021). Further research must be carried out to clarify the best green purchasing practices, as more green purchasing studies are on the manufacturing industry (Appolloni et al., 2014). Additionally, a study by Cui et al. (2019) suggests that green purchasing regulations for the construction sector should be established.

In Malaysia's construction industry, this principle is currently lacking in raising awareness among industry practitioners of the green purchasing ability to deliver green projects (Bohari et al., 2017). Nonetheless, green purchasing is hampered by a lack of reliable information about green materials, systems, services, design, suitable green specifications, assessing green requirements, and the availability of green suppliers (Mokhlesian, 2014). Moreover, studies from Yap et al. (2024) found that barriers of green purchasing are high initial cost, lack of expertise and guidelines, lack of government regulations, lack of top management commitment, and lack of construction stakeholder awareness.

Main contractors have generally led supply chain management in construction by developing long-term relationships with major construction clients, with the advantages to main contractors comprising managing economic uncertainty and increasing profitability. The first major policy shift should be for the government to take the lead in implementing green procurement requirements and to examine its operations for possible places to include environmentally friendly practices, systems, and products (GTMP, 2017).

Among the challenges Malaysian construction companies encounter in adopting green purchasing are limited promotion, guidance, monitoring and enforcement, and a lack of regulation and mandate from the authorities (CIDB, 2015). Furthermore, operating with multiple hindrances is Malaysian construction companies' main challenge in adopting green purchasing practices. In particular, the following challenges were noticed.

A notable majority of Malaysian companies working within the construction industry are inopportunely ignorant of the benefits of green purchasing in general terms and concerning its options. The negligence of the green purchasing practices could be traceable to the inadequacy on hand and poor funding for educating businesses about how to adopt green purchasing practices (Kanapathy et al., 2016; Khan et al., 2018; Ojo et al., 2014; Ruparathna & Hewage, 2015d; Sourani & Sohail, 2011).

The high cost of green products is one of the most significant barriers to adopting green purchasing practices (Baily et al., 2005; Carter et al., 2000; Hwang et al., 2013; Roman, 2017; Ruparathna & Hewage, 2015d). Since environmentally friendly materials and services are more expensive than traditional products, many

construction companies are hesitant to switch (Burke & King, 2015; Eltayeb & Zailani, 2009; Sourani & Sohail, 2011)

Furthermore, the construction industry has gained a reputation for its notable resistance to change (Iles & Ryall, 2016; Ojo et al., 2014; Sourani & Sohail, 2011; Teräväinen et al., 2021; Tuomela-Pyykkönen et al., 2015). This resistance is evident in numerous businesses' reluctance to adopt new practices even if they are environmentally friendly (Hsu et al., 2014; Mokhlesian, 2014). Another concern is the constrained accessibility of environmentally sustainable products within the market (Fischer, 2011; Simcoe & Toffel, 2014). According to Mojumder et al. (2022), the current supply of green products and services is inadequate to satisfy the increasing demand from construction companies.

While the Malaysian government has launched several initiatives to promote sustainability in the construction sector, there is still a lack of incentives for businesses to adopt green purchasing practices (Abidin et al., 2013; Adham & Siwar, 2012; Ahsan & Rahman, 2017; Bohari et al., 2022; Chua & Oh, 2011; Mojumder et al., 2022; Pitt et al., 2009; Shen, Zhang, & Long, 2017). Malaysian construction companies have notable obstacles while adopting green procurement practices. It is crucial to tackle these problems to advance building industry sustainability and decrease the ecological consequences of construction activities. **Error! Reference source not found.** explains the problem statement operational testing of the study.

Table 1.1 Problem Statement Operational Testing (PSOT)

PROBLEM STATEMENT OPERATIONAL TESTING (PSOT)

1. **The current issue** (problem) leading to the need (addressed) for the study:
   - Reduce Malaysia's carbon footprint or greenhouse gas emissions (GTMP, 2017)
   - In Malaysia, residential and commercial buildings consume 15 per cent of total energy and are a key contributor to greenhouse gas emissions (Energy Commission, 2014)
   - Lack of green purchasing practices in the construction industry (CIDB, 2015)
   - Lacking familiarity, lack of available standard guidelines and awareness among stakeholders (Bohari et al., 2022)

2. **The importance** of the problem:

At least 20% of government procurement is green, and concurrently, the private sector will also be encouraged to emulate Government efforts in green purchasing (GTMP, 2017). In the Green Technology Master Plan (GTMP) 2017, the number of registered green products and services under the MyHIJAU Mark was targeted by the year 2020 (5,000), year 2025 (7,500) and year 2030 (10,000). Registered green products and services will be listed in the MyHIJAU Directory as a reference for green purchasing. Since government green procurement will be made mandatory for all government ministries and agencies. A government-driven push will encourage local industries, especially small and medium enterprises, to develop green products and services, eventually leading to further supply chain greening.

3. **The statement** of the problem:

In reducing Malaysia's carbon footprint or greenhouse gas emissions and lack of green purchasing practices, the nation needs to achieve at least 20% government procurement to be green and concurrently, the private sector will also be encouraged to emulate government efforts in green procurement. Industry players will also be encouraged to obtain green certification for private buildings, such as GreenPASS and the Green Building Index. Besides ensuring efficient use of resources, particularly energy and water use, green buildings will also reduce GHG emissions.

4. **The specific problem with evidence** from the literature and actual situation:

Lit: More research must be conducted to understand the best green purchasing practices because more studies are being conducted in the manufacturing industry (Appolloni et al., 2014). The policy implications of the findings include that cleaner technology for cement providers should be supported, and green purchasing regulations for the construction sector should be established (Cui et al., 2019). Nonetheless, the literature on organisational culture in the construction sector suffers from deficiency, especially in developing countries. (Low et al., 2020)

Actual: This concept is currently lacking in Malaysia's construction industry in terms of raising industry practitioners' awareness of the potential for green purchasing to deliver green projects. (Bohari et al., 2017). Experts in the construction industry indicated that the government should take a proactive role in pushing for the adoption of green purchasing (Wong et al., 2016). Organisational culture affects the implementation of green practices (Elbaz & Iddik, 2020). However, the impact of cultural influences on greening supply chains is not examined in the reviewed literature (Elbaz & Iddik, 2020). The study was done by exploring the behaviour of Malaysian international contractors by revealing their specific organisational culture (Low et al., 2020)

Table 1.1 (Continued)

PROBLEM STATEMENT OPERATIONAL TESTING (PSOT)
5. **The proposed solution** to the problem: There is a need to study green purchasing through construction companies to motivate and encourage them to adopt green purchasing practise. • To facilitate industry adoption of green practices. (CIDB, 2015)
6. **The justification of the research problem:** The importance of the study on green purchasing practices in the construction industry is crucial to ensure construction companies are committed to green compliance and have knowledge of green construction as they are part of the project enablers (Bohari et al., 2017). In order to maintain a competitive edge, it is evident that green purchasing is essential (Thoo et al., 2020).
7. **The contribution** to knowledge: It's about time to know how construction companies integrate green purchasing practices in order to match government efforts in green purchasing.

The importance of the study on green purchasing adoption in the construction industry is crucial to ensure construction companies are committed towards green compliance and have knowledge of green construction as they are part of the project enablers. (Bohari et al., 2017). Furthermore, Thoo et al. (2020) recommend adopting green purchasing practices to maintain competitiveness. Additionally, Alqadami et al. (2020) noted that GP implementation in Malaysia has not yet reached the required level, despite several studies highlighting its benefits and opportunities.

There are several studies on green purchasing adoption (ElTayeb et al., 2010; Foo et al., 2019; Hsu et al., 2014; Min & Galle, 2001; Ramakrishnan et al., 2015; Sajeewanie et al., 2019; Yang & Zhang, 2012; Yen & Yen, 2012; Zhu & Geng, 2006) but most of these studies did not provide enough empirical evidence on green purchasing adoption in construction industry specifically to the contractor companies. One study by Allal-Chérif (2015) focuses on road construction and corporate social responsibility rather than construction. Similarly, a study by Agbesi

et al. (2018) focuses on green purchasing in government institutions. Table 1.2 presents the gap in green purchasing practices by industry.

Table 1.2 Green purchasing practices by industry.

Authors	Year	Manufacturing industries	Automotive industry	Electronics industry	Chemical industry	Computer industry	Textile and apparel industry	Printing Industry	Food and beverage industry	Hotel Industry	Service industry	Consumer Product Industry	Furniture Industry	Mining industry	Construction industry
Carter & Carter	1998											*			
Zsidisin & Hendrick	1998	*		*							*				
Walton et al.	1998												*		
Carter et al.	1998											*			
Min & Galle	2001	*			*		*	*							
Carter & Dresner	2001				*				*		*			*	
Chen, 2005	2005	*													
Zhu & Geng	2006		*		*										
ElTayeb et al.	2010	*													
Björklund	2011		*												
Yen & Yen	2012			*											
Yang & Zhang	2012		*				*								
Tate et al.	2012	*		*	*	*					*	*			
Dubey et al.	2013	*													
Hsu et al.	2014	*	*	*											
Ramakrishnan et al.	2015	*													
Allal-Chérif	2015														*
Yang & Wong	2016		*												
Chkanikova	2016								*						
González-Benito et al.	2016	*									*				
Kanapathy et al.	2016				*										
Yook et al.	2018	*													
Agbesi et al.	2018														*
Ghosh	2019	*													
Foo et al.	2019	*													

Table 1.2 (Continued)

Authors	Year	Manufacturing industries	Automotive industry	Electronics industry	Chemical industry	Computer industry	Textile and apparel industry	Printing Industry	Food and beverage industry	Hotel Industry	Service industry	Consumer Product Industry	Furniture Industry	Mining industry	Construction industry
Morales-Contreras et al.	2019									*					
Mohamad & Koilpillai	2020	*													
Thoo et al.	2020	*													
Vörösmarty & Dobos	2020	*	*								*				
Foo, Shaharudin, et al.	2021	*													
Yang et al.	2022	*													

An organisation's identity is determined by its culture (Cheung et al., 2011). Organisational culture is also a vital instrument for managing changes. Changes in organisational culture are required when the organisation changes and evolves. When an organisation changes or adapts, it faces two fundamental obstacles: integrating an individual into a compelling whole and successfully adjusting to environmental changes (Omazic, 2020). In order to ensure the organisation adapts to the green environment, culture seems to be the potent instrument in managing the changes. However, the impact of cultural influences on greening supply chains is not examined in the reviewed literature (Elbaz & Iddik, 2020).

Nevertheless, there is a paucity of literature on organisational culture in the construction industry, particularly in developing nations (Low et al., 2020). Understanding an organisation's culture is critical for dealing with people, activities, actions, and changes and achieving shared objectives (Xuan et al., 2019). The study

conducted by Low et al. (2020) only focuses on investigating the behaviour of Malaysian international contractors and exposing their specific organisational culture. In contrast, there is no coverage of local contractors. Samad et al. (2015) believed that contingency factors such as organisational culture might mitigate organisational performance and its determinants.

Thus, it is essential to investigate the factors influencing all construction companies' adoption of green purchasing and the organisational culture. Therefore, this study aimed to fill the literature gap by investigating factors influencing the adoption of green purchasing (GP) in Malaysian construction companies and the organisational culture as a moderating effect.

1.4 Aim of Research

To establish the green purchasing adoption framework for construction companies in Malaysia.

1.5 Research Questions

This study seeks to address the following questions.

i. What factors influence the adoption of Green Purchasing (GP) among construction companies in Malaysia?

ii. Does the influencing factor have a significant relationship towards Green Purchasing (GP) adoption for construction companies in Malaysia?

iii. Does organisational culture moderate the relationship between factors influencing green purchasing and adoption among construction companies in Malaysia?

1.6 Objectives

i. To determine the factors influencing green purchasing (GP) adoption among construction companies in Malaysia

ii. To examine the factors influencing green purchasing (GP) and its relationship with adoption among construction companies in Malaysia.

iii. To investigate the moderating effect of organisational culture on the relationship between factors influencing green purchasing and its adoption in Malaysian construction companies.

1.7 Research Hypothesis

The research hypotheses explore the relationships between various factors influencing green purchasing adoption in organisations, emphasising both direct and moderated effects. Together, these hypotheses provide a holistic view of the factors shaping green purchasing adoption, accounting for internal dynamics, external pressures, and perceived benefits.

i. **H1:** *Government Regulation and Green Purchasing Adoption*
This hypothesis posits that stringent government regulations and policies positively influence the adoption of green purchasing practices.

ii. **H2:** *Stakeholder Pressure and Green Purchasing Adoption*
This examines how external pressures from stakeholders, such as clients or community groups, drive organisations to adopt green purchasing practices.

iii. **H3:** *Top Management Support and Green Purchasing Adoption*

It suggests that active involvement and support from top management are crucial for implementing green purchasing initiatives successfully.

iv. **H4:** *Corporate Factor and Green Purchasing Adoption*

This hypothesis explores the role of internal organizational policies and strategies in fostering green purchasing adoption.

v. **H5:** *Material Supplier and Green Purchasing Adoption*

It tests the influence of eco-friendly and sustainable materials provided by suppliers on the organisation's green purchasing practices.

vi. **H6:** *Subcontractor Relationship and Green Purchasing Adoption*

This hypothesis examines whether strong relationships with subcontractors contribute to the adoption of green purchasing, though the effect appears weaker in the framework.

vii. **H7:** *Expected Business Benefit and Green Purchasing Adoption*

This hypothesis suggests that organisations are more likely to adopt green purchasing when they perceive tangible benefits, such as cost savings, enhanced reputation, or improved market competitiveness.

viii. **H8-H14:** *Organisational Culture Moderating Green Purchasing Adoption*

Organisational culture is hypothesized to moderate the relationship between the aforementioned factors (e.g., government regulation, stakeholder pressure top management support, corporate factor, material supplier, subcontractor relationship and expected business benefit) and green purchasing, amplifying or dampening their effects

that could impact green purchasing adoption, with some showing minimal or non-significant influence.

1.8 Scope of Research

This research examines green purchasing adoption from the perspective of G7 contractor companies in Peninsular Malaysia, focusing on their pivotal role in purchasing and mandatory compliance with ISO14001 environmental standards. These contractors are responsible for significant purchasing activities, with up to 90% of project turnover spent on materials and services. Their financial capacity for large-scale projects and their influence on supplier selection make them critical players in driving sustainable practices in the construction industry.

The study targets single respondents per company, such as project managers, procurement officers, and executives, who hold decision-making roles or are directly involved in purchasing processes. The geographical focus includes all major states in Peninsular Malaysia, as it is an economic hub for large-scale construction projects. The G7 classification ensures that only contractors with no financial tendering limits are considered, providing a focused analysis of high-impact projects. A detailed explanation of these criteria, sampling methods, and respondent profiles is provided in the Methodology section to ensure clarity and rigor in the research approach.

1.9 Significance of the Study

The study aims to make theoretical and practical contributions to the field by including numerous perspectives on factors influencing green purchasing towards green purchasing adoption. Based on the preceding discussion, the importance of this study can be succinctly explained from two perceptions;

1.9.1 Theoretical Significance

The proposed study is expected to supply a more solid theoretical understanding of green purchasing relevant to the factors influencing green purchasing adoption in construction firms. The previous studies mainly focused on challenges and the awareness of green purchasing, particularly those that influence companies' performance. Despite possible effects, most studies of sustainable studies mostly consider an organisational level and analyse the main determinants (benefits) or barriers (costs and concerns). The scope of research on green purchasing adoption is currently constrained.

The study outcome yielded several implications. The main purpose of this study is to provide empirical evidence which shows the different factors that influence the adoption of green purchasing practices. Furthermore, this research aims to fill a gap in the existing literature by focusing on construction companies' purchasing practices. This study proposes to add to the existing knowledge by analysing the variables of green purchasing practices in the Malaysian setting and their implications for the environment, especially their significance in sustainable consumption. Similarly, the research established that factors influencing green purchasing affect the adoption of green purchasing.

Second, this study can explain how organisational culture pressures companies to adopt green purchasing. There is little debate about the impact of organisational culture aspects on green purchasing adoption. Although the idea of organisational culture (OC) is intangible, the behaviour exhibited by an organisation that represents its culture may be seen and measured in tangible ways. ; nonetheless, experts have called for more research into the significance of organisational culture with green purchasing adoption (Bonn et al., 2021). This study also adds to the

growing body of knowledge in green purchasing by increasing the variables of organisational culture by establishing the association between organisational culture and factors influencing green purchasing as green purchasing adoption antecedents.

1.9.2 Practical Significance

As for the practical perspective, the factors influencing green purchasing and, accordingly, the construction companies are expected to be improved in the following ways by adopting green purchasing. From a more pragmatic point of view, adopting green purchasing is expected to improve the factors influencing green purchasing and, by extension, the organisation's culture. The first aspect of the research topic is the study's examination of the outcomes and significance of green purchasing adoption. Thus, it has increased construction companies' understanding of the issue's benefits. Therefore, this can be regarded as a vital contribution due to the increasing importance of the environment and green purchasing. The outcome of this study will provide an impetus for better adoption of the green purchasing framework in parallel with the government's green procurement efforts.

Secondly, the study has investigated the key practices for green purchasing. Contractors are highly recommended to know the results of factors influencing green purchasing. Companies or contractors in the construction industry can get assistance in estimating and evaluating the potential and the intensive level of green purchasing activities. This is to say that the idea of the holistic emission of the construction process will be encouraged. This will encourage the contributors in the construction industry to be involved in green purchasing practices and transform themselves into ‘green’ contractors; the intensive level of this practice will be checked. The result of this study would be the development of a framework strategy to educate the construction industry on green purchasing.

To the best of the researcher's knowledge, there is yet any study focusing on contractors' experience on green purchasing adoption practice. Within this context, the study's findings can serve as a valuable resource for gaining deeper insights into the contractors' level of practice. Both policymakers and top management would use the findings of this study to come up with a list of factors that can be used as guidelines for establishing appropriate policies that encourage companies to adopt green purchasing initiatives.

1.10 Organisation of Thesis

This thesis comprises six chapters. The following is a synopsis of every chapter:

Chapter 1: This chapter describes the introduction of this research study. Chapter One offers the background of the research, problem statement, research questions, objectives, limitations, proposed research methodology, and thesis outline.

Chapter 2: This chapter revealed the literature on green purchasing. It started with the concept of green purchasing, which covers its history and definition. Subsequently, an explanation of the breakdown of green purchasing practices establishes the independent, dependent, and moderating variables. An illustration of the conceptual framework and hypotheses will be presented.

Chapter 3: The methodology of this study will be deliberated in chapter three. This chapter highlights the research philosophy, design, sampling frame, data collection, and analytical technique. The questionnaire as the instrument will address the previous literature in detail.

Chapter 4: The results obtained are summarised in Chapter four. This chapter explains the data collected from surveys given to respondents. Also

addressed would be the compilation of data for descriptive, correlation, factor, and regression analyses.

Chapter 5: This chapter will deliberate the findings and outcome of the analysis. Discussion of findings from previous literature and practical explanation will be reviewed.

Chapter 6: This chapter concludes the thesis by identifying limitations and summarising recommendations for future research work.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter aims to provide an overview of the variables studied. It starts by defining purchasing and green purchasing, highlighting their significance to the contractor company, and explaining their conceptualisation. The independent variables that impact the adoption of green purchasing are also introduced. Additionally, the chapter sheds light on the moderating role of organisational culture in the relationship between green purchasing adoption and the influencing factor. Finally, the proposed conceptual framework, along with the hypotheses, will be presented in this chapter.

2.2 Operational Definition

The essential terms of the study are described and discussed in this section to provide a better understanding of the concepts and terms employed in the research.

Green Purchasing: Range of purchasing practices, actions taken and relationships formed in response to natural environment-related concerns where such issues relate to the purchasing of raw materials, including collection, assessment and production of suppliers; operations of suppliers; inbound distribution; packaging; recycling; reuse; reduction of resources; and final disposal of the company's products (Zsidisin & Siferd, 2001). The literature uses green purchasing interchangeably with green procurement, environmental purchasing, and sustainable purchasing. This study will use green purchasing as the construct as it is close to the green growth introduced by the Malaysian government (Eleventh Malaysia Plan, 2015).

Green Purchasing Adoption: The organisation's preference for purchasing products from environmentally conscious suppliers and its efforts to ensure that its products have environmentally friendly characteristics (Ramakrishnan et al., 2015).

Construction Company: A business enterprise constructing large objects such as buildings, bridges, roads and others. (Cambridge Dictionary, 2020). From a holistic point of view, it is described as a production unit with input and output of labour and materials (Bildsten, 2016).

Organisational Culture: Employees' shared knowledge of how things are done in an organisation, such as beliefs, values, norms, and philosophies, govern how things function (Wallach, 1983)

2.3 Purchasing Practice in the Construction Industry

Purchasing is acquiring products, services, or works from a third party (Lidegaard et al., 2015). It entails identifying an organization's needs, selecting and negotiating with suppliers, and finally getting the necessary goods or services at a reasonable cost, quality, and delivery (Baily et al., 2005; Ruparathna & Hewage, 2015b). The goal of purchasing is to ensure the timely and cost-effective acquisition of goods and services that meet an organization's requirements (Reck & Long, 1988).

Purchasing is a crucial aspect of external resource management that involves acquiring products, services, capabilities, and expertise necessary for a company's core business and financial activities (Bildsten, 2016; Van Weele, 2010). Van Weele's (2010) previous study suggests that purchasing involves a six-step process with a tactical component (specification, selection, and contracting) and an operational component (ordering, monitoring, and evaluation). On the other hand, Baily et al. (2005) and van Raaij (2016) divide purchasing into three processes: operational, strategic, and tactical. In a recent study by Schiele (2019), purchasing is

categorized into two functions: strategically oriented practices related to supplier selection and contracting and more operationally oriented practices to ensure that supplies and services are procured and distributed. The tactical component is an essential tool and has been merged into the strategic function. However, Bäckstrand et al. (2019) found that purchasing begins with an issue or request from an internal customer and ends with a purchased and provided solution. As such, purchasing is portrayed as a tactical and operational problem-solving process rather than being merged into the strategic function.

Several authors (Bäckstrand et al., 2019; Lidegaard et al., 2015; Schiele, 2019; Spina et al., 2013) have used purchasing, procurement, and supply management interchangeably, but purchasing is considered a subset of procurement and falls under the pretence of supply management. Dobler and Burt (1996) proposed a model showing that purchasing is a subset of procurement, which is a subset of supply management. Similarly, Green et al. (1998) support this model and suggest that organisations' responses to environmental challenges have increasingly played a significant role in purchasing and supply management. Procurement is a broader concept than purchasing and encompasses strategic planning, sourcing, intermediation, and purchasing activities (Kaufmann, 2002). Additionally, the procurement process considers the life cycle cost of a product (Ahsan & Rahman, 2017; Kornevs et al., 2014; Zailani et al., 2012). Appolloni et al. (2014) have included purchasing and purchase in their study since multiple authors use these terms with a meaning that is quite similar to procurement. This analysis also includes environmental factors since they are equivalent to green. Furthermore, green management issues are often linked to broader themes such as sustainability and ethics. Therefore, including these terms in the study will allow for a more

comprehensive examination of the relationship between procurement, green practices, and broader themes such as sustainability and ethics.

While purchasing and procurement are often used interchangeably, Mokhlesian (2014) argues that in terms of process and operation, purchasing practices are more specific than procurement, which is a broader concept. This can lead to confusion, particularly in the construction industry, where many procurement indications have also been used in manufacturing. However, Mokhlesian (2014) clarifies that construction procurement is a broader concept than purchasing and refers to the framework in which construction is created, attained, or gained. Procurement is defined as the process of acquiring external resources such as materials or labour following specified requirements such as quality, quantity, timing, and location (Ruparathna & Hewage, 2015b)

On the other hand, supply management is a systematic approach to preparing for and procuring an organization's present and future demands through efficient supply management (Monczka et al., 2010). However, supply chain management (SCM) takes a more comprehensive view than supply management. SCM is a systematic approach to managing product, information, and financial flows throughout the supply chain, from initial suppliers to end-users (Metz, 2006). However, the processes of planning, manufacturing, distribution, and logistics are not discussed by Spina et al. (2013) in their explanation of supply chain management, as they require specific tools and techniques. Most authors consider purchasing to be one of the activities in supply chain management (Baily et al., 2005; Chin et al., 2015; Meixell & Luoma, 2015). According to Baily et al. (2005), if the purchasing function is appropriately established, it can improve supply chain management. Purchasing and supply chain management is now recognized in large