

GREEN MANAGEMENT ADOPTION FOR SUSTAINABLE BUSINESS
PERFORMANCE OF SMALL AND MEDIUM-SIZED COMPANIES

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DEDICATION

I dedicated the thesis especially to my beloved late parents, my wife, my daughter, my parents' in-law, and everyone who have belief in me. Thank you so much for everything. I will love you all always.

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ABSTRACT

The emergence of green management has become a big challenge for the survival of small and medium-sized companies in Malaysia to safeguard the environment, economic and social impacts. The small and medium-sized companies found difficulties to comply with green implementation due to lack of understanding, unavailability of specific guidelines, and financial limitation. Utilisation of internal resources and capabilities (other than financial source) are essential in order to adopt the green practices for small and medium-sized companies' transformation into green business. Thus, the study investigated the relationships of management strategy, product development, process technology, workplace resources, community obligation, and knowledge management on the sustainable business performance. As a quantitative research design, the 5-points Likert Scale survey questionnaires were distributed to middle management of the small and medium-sized companies who attended various trainings, seminars, workshops and expositions held in Melaka, Johor, Kuala Lumpur, and Selangor. The use of multistage sampling strategy was managed to collect 324 data, where only 281 responses were considered after screening for analysis using SPSS (version 23) and PLS-SEM (version 3.0). Results shown that management strategy, process technology, workplace resources, community obligation, and knowledge management were significantly related with sustainable business performance or the triple-bottom-line goals. However, the outcome also indicated that product development factor did not influence the sustainable business performance of the small and medium-sized companies. The study confirmed that internal resources of companies played an important role between the relationship of green management and sustainable business performance; and the result is achievable. Findings implied that the government through its relevant agencies should encourage small and medium-sized companies to explore and identify their internal resources and capabilities in order to enhance their sustainable performance. Besides, the ministries and agencies concerned could design suitable modules and train the small and medium-sized companies' management on relevant manufacturing tools to use for their problem-solving and decision-making purpose.

ABSTRAK

Kemunculan pengurusan hijau telah menjadi satu cabaran besar bagi kelangsungan syarikat kecil dan sederhana di Malaysia untuk melindungi impak alam sekitar, ekonomi dan sosial. Syarikat kecil dan sederhana menghadapi kesukaran untuk mematuhi pelaksanaan hijau disebabkan oleh kurang kefahaman, tiada garis panduan khusus, dan kekangan kewangan. Penggunaan sumber dan keupayaan dalaman (selain daripada punca kewangan) adalah penting untuk penerapan amalan hijau bagi transformasi syarikat kecil dan sederhana kepada bisnes hijau. Oleh itu, kajian ini menyiasat hubungan strategi pengurusan, pembangunan produk, teknologi proses, sumber tempat kerja, kewajipan komuniti, dan pengurusan pengetahuan terhadap prestasi perniagaan lestari. Sebagai reka bentuk penyelidikan kuantitatif, soalan kaji selidik dengan Skala Likert 5-mata diedarkan kepada pengurusan pertengahan syarikat-syarikat kecil dan sederhana yang menghadiri pelbagai sesi latihan, seminar, bengkel, dan ekspo yang diadakan di Melaka, Johor, Kuala Lumpur, dan Selangor. Penggunaan strategi persampelan secara bertahap berjaya mengumpulkan 324 data, di mana hanya 281 respon telah dipertimbangkan selepas ditapis untuk analisa menggunakan SPSS (versi 23) dan PLS-SEM (versi 3.0). Keputusan menunjukkan bahawa strategi pengurusan, teknologi proses, sumber tempat kerja, kewajipan komuniti, dan pengurusan pengetahuan mempunyai kaitan yang signifikan dengan prestasi perniagaan lestari atau sasaran *triple-bottom-line*. Bagaimanapun, hasil juga menunjukkan bahawa faktor pembangunan produk tidak mempengaruhi prestasi perniagaan syarikat kecil dan sederhana yang lestari. Kajian ini mengesahkan bahawa sumber dalaman syarikat memainkan peranan penting antara hubungan pengurusan hijau dan prestasi perniagaan lestari; dan hasilnya boleh dicapai. Dapatan menunjukkan bahawa kerajaan melalui agensi yang berkaitan harus menggalakkan syarikat kecil dan sederhana untuk meneroka dan mengenal pasti sumber dan kemampuan dalaman mereka bagi meningkatkan prestasi lestari. Selain itu, kementerian dan agensi yang berkenaan boleh merekabentuk modul yang sesuai dan melatih pengurusan syarikat kecil dan sederhana tentang alat pembuatan yang relevan untuk digunakan dalam penyelesaian masalah dan membuat keputusan.

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LIST OF ABBREVIATIONS

GM	-	Green Management
SBP	-	Sustainable Business Performance
SME	-	Small Medium Enterprises / Small Medium Companies / Small and Medium-sized Companies
SF	-	Management Strategy
CI	-	Product Development
RU	-	Workplace Resources
TA	-	Process Technology
SR	-	Community Obligation
KM	-	Knowledge Management
PLS-SEM	-	Partial Least Squared – Structural Equation Modelling
SPSS	-	Statistical Package for the Social Sciences
ANOVA	-	Analysis of Variance
TBL	-	Triple Bottom Line
S.D.	-	Standard Deviation
S.E.	-	Standard Error
VIF	-	Variance Inflation Factor
TQM	-	Total Quality Management
PDCA	-	Plan-Do-Check-Action
TPM	-	Total Productive Maintenance
OECD	-	Organization for Economic Cooperation and Development
HRDF	-	Human Resources Development Fund

LIST OF SYMBOLS

α	-	Cronbach's Alpha
β	-	Path Coefficient
R^2	-	Coefficient of Determination
f^2	-	Effect Size
s	-	Sample
p	-	Significance Value

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Manufacturers' preference for green management around the world has increased over the years as a concern toward environmental issues indicated by the positive global outlook of green products (Schaper, 2002; Cohen and Winn, 2007; Shu *et al.*, 2016). According to the Central Bank of Malaysia report, green products currently valued at EUR2 trillion is estimated to create a EUR4.4 trillion of business by the year 2025, with an annual growth of 12% (BNM, 2013). Companies subsequently attempted for green manufacturing and to achieve the triple-bottom-line (TBL) performance of the sustainable business (Slater and Hall, 2011). However, in spite of the governments' support, small-medium enterprises (SME) claim they face some difficulties to implement green practices due to limited resources (Hall *et al.*, 2010). Therefore, to succeed a competitive advantage, these small and medium-sized companies would need to absorb new strategies to become green companies (Cohen and Winn, 2007; Farinelli *et al.*, 2011, Leonidou *et al.*, 2017).

Many studies have discussed current issues affecting business about natural resources depletion and global warming. The situation has encouraged companies (firms) to adopt green business (Schaltegger, 2002), in which SME in developing nations gradually set to implement green management like those SME in developed countries (Seth *et al.*, 2018; Bailey, 2011). In this sense, researchers diversified on other green aspects such as green human resources, green procurement, green accounting, green supply chain, etc. Since the Brundtland Report in 1987, sustainable development has become an important subject matter about the future of business (Goni *et al.*, 2017). They analyse how to align conventional business toward the triple-bottom-line goals (i.e. the environmental, social and economic sustainability goals)

(Flores *et al.*, 2017). Unfortunately, there were very few studies discussing common strategies to set-up a green business for SME sustainable performance.

Further, the emergence of green management is inevitable (Consoli *et al.*, 2016). It enhances new literature on the green business venture (Affolderbach and Krueger, 2017). The manufacturing industry now becomes very important in developing green products to satisfy the growing local green market (Nuttavuthisit and, 2017). The study of green management is vital for the small-medium companies (SME) since they cover more than 99% of the business entities in Malaysia (UNEP, 2013). Through agencies like the Ministry of International Trade and Industry (MITI) and the Malaysian Investment Development Authority (MIDA), the Malaysian government has established legal and institutional framework for environmental protection. Aspects of pollution control including possible modifications in the process lines to minimize waste generation, seeing pollution prevention as part of the production process, and focusing on recycling options can be emphasized at the early planning stage. The National Policy on the Environment (DASN) has been established by the Ministry of Energy, Science, Technology, Environment, and Climate Change (MESTECC) for continuous economic, social and cultural progress that would enhance the quality of life of Malaysians through environmentally sound and sustainable development (Paramasua *et al.*, 2019). Hence, it is arguably interesting to investigate the SME characteristics and their readiness to carry out green manufacturing.

1.2 The Green Business Concept

The word “green” is commonly used nowadays and paired with other words to create a new discipline. According to TerraChoice, green simply means products that claimed to offer environmental benefits. Researchers hardly find the difference between “green”, “sustainable” and “environmentally friendly” (Yanarella *et al.*, 2009). Green is used to describe small and medium business sustainability compliance. It refers to a single product, process or its attribute concerning environmentally friendly outcomes. Due to the vague meaning of green, the

terminology was used by researchers based on the subject matter (context) under study (Bauman *et al.*, 2002). Some of the examples are green technology (Borup, 2003; Wang *et al.*, 2008; Hasper, 2009), green business (Schaper, 2016), green economy (Ciocoiu, 2011; Jackson, *et al.*, 2011; Chapple *et al.*, 2011), among others would be used throughout this study.

A green business concept popularized by Berle (1991) and associated with the smaller-scale companies suggested that business future activities would preserve the environmental benefits and sustainable performance. As it was sometimes called green entrepreneurship, it transformed small-medium companies to achieve green business growth (Isaak, 2002; De Bruin and Lewis, 2010). Presently, the global SME business strategy requires comprehensive green knowledge integration with other resources due to their financial constraints (Sriram and Mersha, 2010). The management usually have multiple skills and abilities to manage organizational input-output, process, and logistics. Therefore, SME strategies of the green business are designed relevance to the green economy. Based on green practices in large organizations, the SME would have to formulate and share their business strategies with the stakeholders on the green management systems.

Successful companies must brave all challenges with new ideas to resolve their problems using their organization resources and implemented systems. The process is known as “creative destruction” (Schumpeter, 1939; Isaak, 2002). Hence, SME could also develop environmentally friendly products by adapting quality and environmental requirements such as the ISO9001, ISO14001, and OHSAS18001 that provided operational standards on sustainable business performance. Literatures asserted that sustainable practices could also happen in small and medium-sized companies (Peterson, 2005; Farinelli *et al.*, 2011). Existing SME might get feedback from their communities and make changes to penetrate the competitive green market (SMEECorp, 2013). Since the concept of green business was introduced in 2009 to the Malaysian SME, the management must upgrade their green knowledge to understand the process and impacts on their business and environment that they are lacking. So, the study has identified the variables and latent components of the green business and analyzed their relationships toward the sustainable business performance of the SME.

1.3 The Green Products Characteristics

Green products were recognized from a range of typical characteristics such as environmentally friendly, less harmful to health, recyclable materials, energy savings, less packaging; etc. Previous literatures defined green products from various perspectives and views. Nevertheless, none of these definitions has been universally accepted (Hohenstein *et al.*, 20015). Further exploration had only created ambiguous descriptions of what green products are (Albertini, 2017). Accordingly, Chen and Hung (2016) suggested researchers to be realistic and concentrate their discussions on green product features and development for the benefits of the business communities.

In this regard, green product development knowledge should provide relevant and dominant strategies for companies (Chen, 2008). The right business strategy is required to face business competition and more importantly to manage the internal changes necessary to integrate their resources involving the employees, machines, equipment, and material. Previous findings showed that a new business largely depended on its capacity, customers' demand and potential marketplace (Hunt, 2018). Apart from that, green product attributes must consider effective socio-economic and environmental protection responsibilities. Thus, the green products manufactured need to go through comprehensive consumer analysis to be able to meet the communities' needs and wants (Kolk and Tulder, 2006; El-Kafafi and Liddle, 2010).

A business would require immediate feedback from the consumers. Creative and innovative thinking were inclined toward technological product development (Teresko, 2006; Jones *et al.*, 2008; Albino *et al.*, 2009). Companies obtained new ideas from mergers, joint ventures, and partnerships to acquire extensive green technology. During the uncertain economic situation, consumers' demand for affordable green products from the market place was higher (Khanna, 2011). Hence, manufacturers had the opportunity to provide worthy and safe products of reliable technology. Malaysian companies could develop their technological capability by transforming the existing equipment to one that is not causing pollution and hazards due to high investment in new technology. The trend of green product acceptance has become the catalyst for sustainable development that leads toward a green economy (BNM, 2013).

1.4 Challenges to Green Business Development

Strategic management was defined as “an ongoing process that evaluates and controls the business and industries in which the company is involved” (Lamb *et al.*, 1984). According to traditional management, a company is no more than a “black box” and its success is determined by the performance of its inputs and outputs. This resulted in ignorance of the managerial decision process although strategy formulation is vital in modern strategic management practice (Pitt and Koufopoulos, 2012). Literature proposed the adoption of strategic organizational resources in business and management research (Porter, 1974; Allen and Helms, 2006). Besides, generic strategies namely cost leadership, differentiation and focus strategies can determine companies positioning to outperform business competitors (Porter, 1980). The choice of the best strategies to competitive advantage is critically necessary. The setting of the right goals and strategies can help to organize resources to face competition (Kattuman *et al.*, 2017). However, a company must not over-dependent on outside resources as studies argue the various resources of competitive advantage are always available internally. Due to this, the current study finds it interesting to determine what makes good management strategies for small-medium companies based on their internal strengths. These strengths will be utilized to form the company’s capabilities. The capabilities relationship with the company’s resources will be developed as the variables construct. Hence, the Resource-Based-View (RBV) has been considered to explore and analyze the resources-capabilities components and analyze the relevant effective strategies to adopt.

In this regard, RBV theory has been influential to the study of management and strategy research (Barney, 1991; Barney *et al.*, 2001; Barney, 2001). Findings indicated that the RBV model can be collaborated with the economics, organizations and business policy theories and developed into strategic relationship studies (Hoopes *et al.*, 2003). As RBV focuses on stakeholders’ relationships, it critically stresses on the company’s internal resources within the industrial structure relationships. Nonetheless, companies can also explore their values and integrate them to achieve sustainable business performance (Tokuda, 2005; Asher *et al.*, 2005). The resources-capabilities constructs can be linked with the sustainability goals for extensive analysis

(DeSarbo *et al.*, 2007; Ferreira *et al.*, 2011; Cardeal and Antonio, 2012). According to Investopedia US Dictionary, a business model can be drawn from relevance organizational components and functions. As such, the current study has shown the establishment of the SME green business model and the interactions between all the companies' variables. It shall reflect the small-medium companies understanding of their green business transformation process in sustainable manufacturing.

The organizational practice can change due to the emergence of new technology (Hosking and Anderson, 2018) or because organizational communication becomes ineffective (Bauman *et al.*, 2002; Bourne, 2015). Likewise, the middle management roles are crucial to ensure that the strategies impact will be understood by the employees and the stakeholders, which enhances the decision making the process of strategic actions by the organization management (Elbanna *et al.*, 2016). Resources-capabilities add values to the company's strategy to form the strengths to achieve environmental goals and objectives (Glavas and Mish, 2015; Grant, 2016). In this sense, the companies' capacity to explore creative and innovative strategy becomes crucial while trying to improve on the business performance (Rajapathirana and Hui, 2018; Prajogo, 2016). Employees must be committed toward the common goals set by the management since the new process implemented can be integrated from the existing process (Elbanna *et al.*, 2016; El-Halwagi, 2017). Hence, the green business model depicting the resources-capabilities relationship must be viable and sustainable to all levels in the organization.

1.5 Operational Definitions

The current study focused on the green management (GM) and the sustainable business performance (SBP) of the SME manufacturers. It depicts resources-capabilities relationship of the operationalized variables of interest and clear understanding of the concepts.

1.5.1 Green Management

Green management (GM) is a conceptual framework describing the strategic management internal process of the environmentally friendly manufacturing activities (Leonidou *et al.*, 2017). It depicts common approach to transform the SME by redesigning the green process for the sustainable organization (Leonidou *et al.*, 2017; Marshall, 2015). The current study operationalized the GM construct based on large organizations' sustainable practice of green manufacturing process.

1.5.2 Sustainable Business Performance

Sustainable business is a manufacturing process of small and medium-sized companies that must meet the future needs of sustainable development (OECD, 2010). Sustainable business performance refers to the manufacturing operations that are friendly to the environment, economic and society throughout the product life cycle (Qureshi *et al.*, 2015). The current study operationalized sustainable business performance construct as an approach to achieve environmentally friendly products by implementing green process that runs at optimized costs and protect pollution to the environment and safe to societies. The measurement of the SBP refers to the social performance, environmental performance and economic performance also known as triple bottom line (TBL) for the manufacturing industry.

1.6 Problem Statement

Large manufacturers were pressured to achieve sustainable business performance due to environmental issues. The global companies making an immediate move to “go green” as their new business course. These companies emphasize on green management to ensure that their business operation protects natural resources depletion and mitigate the global warming effects. It has been critical for all types of companies to transform from conventional business to green business. Manufacturing companies made new investments to accommodate the workplace with green

processes. The top management was serious, systematic and organized in implementing policies, standards and procedures to be effective and environmentally and people-friendly. Hence, every company in the world is adopting green strategies as a business trend and they need to support their business partners into green management.

However, small and medium-sized companies (SME) were doubtful and reluctant to transform into a green business. As of October 2017, Green Bank Network reported that the GreenTech Malaysia has approved 315 infrastructure projects mostly in renewable energy sector with a total cost of about USD 1.7 billion. Although it created more than 5,200 green jobs, unfortunately, no clear strategy was defined to help transformed manufacturing sector (our second biggest GDP contributor) into green companies for their sustainability. These companies have only limited financial sources to invest apart from their lack of awareness, knowledge, equipment, technology, and expertise to make changes. As the most significant business entities in Malaysia, SME owners claimed that their business size is not causing environmental damages. Instead, SME manufacturing processes continue to consume natural resources and create more wastes that are harmful to the environment. Unfortunately, our country enforcement has been very soft when it comes to taking action on those causing pollution and breaking environmental laws and regulations even though Malaysia has renewed its global commitment to reduce the impact of greenhouse gases.

As green business now becomes vital, the adoption of green management model will be the essence to help SME to implement green practices. Previous studies indicated that the majority of business owners including from Malaysia agreed that sustainable development should be the main priority of top management. The environmental issues prompted entrepreneurs to foster green strategies (Martinuzzi and Sedlacko, 2017). The impacts were increasingly important for developing nations particularly when their SME became the source for their economic growth and recovery. As the SME companies in developed nations and Asian have successfully penetrated the green business market, Yusuf and Nabeshima (2012) suggested that SME in country like Malaysia should also embark on green products manufacturing

and hence created green companies in order to remain sustainable. Therefore, the SME can look forward to transforming into a green business. They should know how the green management model could help them to achieve sustainable business performance similar to the large organizations. This study has proposed a common approach for all SME to adopt by way of utilizing companies' internal resources and capabilities. In this case, the research model would focus on the intangible factors of the companies and optimize the costs associated with it. However, due to mixed findings and time constraints to observe tangible investment performance, the current study would not consider a financial factor in the study analysis. Furthermore, it is more critical to ensure that the outcomes of green management would enable SME transformation into a sustainable business performance.

1.7 Research Questions

From a brief overview of the research, the study aims to answer the following research questions:

1. Do green management components influence sustainable business performance?
2. Is there an SME type more dominant in the green management process to achieve sustainable business performance?
3. Is there an SME middle management level more effective in leading the green management process to achieve sustainable business performance?
4. Do states (regions) progress effectively in the green management implementation to achieve sustainable business performance?

1.8 Research Objectives

There are three research objectives to achieve in the current study:

1. To assess the relationship between green management and sustainable business performance.
2. To determine the dominant type of SME in the green management process to achieve sustainable business performance.
3. To analyze the effectiveness of SME middle management designations in leading the green management process to achieve sustainable business performance.
4. To examine the effectiveness of states (regions) progress in the green management implementation to achieve sustainable business performance.

1.9 Research Significance

The study outcomes will be significant to academic research and business stakeholders in the following areas:

A substantial amount of time and effort would be spent to analyze the impacts of the environmental issues on the sustainability of business (Michael, 2010). Thus, the implementation of the green policy is indeed an important turning point for small-medium companies to move toward green management in line with the National Green Technology Policy, 2009 compliance (Bina, 2011). Conversely, it is interesting to see whether the intangible factors are effective to transform them into a green business. As such, a green management model of large organizations will become a useful guideline to assess the adoption of green manufacturing practices by the SME. The

empirical research will be very helpful to enhance manufacturing solutions through creative and innovative ideas of the employees (Mendes and Machado, 2015).

In a sustainable ecosystem, human boundaries may include organizations, suppliers or consumers' norms, processes, and applications. Companies must be able to identify their critical resources to claim competitive positioning (D'Souza *et al.*, 2006; Sriram and Mersha, 2010). Technology advantage will not automatically move other resources to work (Andersson *et al.*, 2010). It involves the application of a proven model of green management into the theory of resource-based view to obtaining synergy toward the environmental solution. By exploring the causal relationship, researchers shall help companies to get used to the implementation of green practice and achieve sustainable business performance. So, the green processes as shown by the green management model shall be used to manage the SME capabilities and resources to meet the desired business outcomes (Sriram and Mersha, 2010). The adoption of an appropriate green strategy shall be a common factor in realizing the SME transformation into green manufacturing.

For the purpose of this study in Malaysian context, “green technology” shall refer to the definition given by the Ministry of Energy, Green Technology and Water in which it is “the development and application of products, equipment, and systems used to conserve the natural environment and resources, which minimizes and reduces the negative impact of human activities”. The terminology has since become generic in describing the expected outcomes of various green initiatives carried out in Malaysia. Likewise, in line with the ministry’s Green Technology Action Plan baseline, the study will stress the application of green technology in the green products manufacturing process by the small-medium companies. It will also be essential to assess the findings that can improve the green policies to help local businesses grow in the green economy. A change in business direction is inevitable. The environmental awareness issues are challenging and require stringent policy on the green manufacturers (D'Souza *et al.*, 2006). Similarly, green business findings can be important input on the diversification impacts.

1.10 Scope of Study

The study is confined by a few scopes of the research. First, it involves the small-medium enterprises from the highly-dense industrial areas in the states of Johor, Melaka, Kuala Lumpur, and Selangor. Second, it only comprises of the manufacturing sector producing green products. The Asian Development Bank reported in 2012 that manufacturing has been one of the top two sectors with the highest GDP contribution in this country since the year 1960. In term of high-technology products export, Malaysia recorded a significant percentage of 43.7% compared to China (42.55%), Singapore (45.3%), and Philippines (48.9%) that proved its capacity to undertake green business as reported by the Ministry of Energy, Green Technology and Water (KeTTHA). Third, top management must appreciate the managers' roles as they organize the company's resources and spearhead the production improvement to become more competitive (Tantalo and Priem, 2016). These factors are crucial for building a green business. The small-medium companies' establishment of 97.3% of the total number of organizations indicates that middle management must carry out multi-functions to ensure productivity and performance. These managers monitor environmental pollution-free activities from the use of reliable technology (SMECorp, 2011). With the emergence of green business, the recent stagnation period in the manufacturing sector has helped strengthened the SME productivity; complimenting the services sector (Cecere and Mazzanti, 2017; Hamann *et al.*, 2017). Fourth, since these companies are perceived to be more flexible in adapting the green journey, even small changes made will be regarded as the capabilities in carrying out the green process. This current study of green management and sustainable business performance makes the scope focus relevant due to the important findings that will determine the SME readiness for green manufacturing. Data analysis can be used to determine whether the resources and capabilities interaction is effective to achieve business performance in the green economy.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

A study by Ho *et al.* (2016) asserted that the Malaysian manufacturing competitive capabilities did not lead to satisfactory financial performance but there was indeed a significant nonfinancial performance shown. Hence, the study is to investigate whether a similar effect applies to SME. The exploitation of companies' resources could enhance green management capabilities among small-medium enterprises in Malaysia. The independent variables of the companies are deduced from the large organizations' best practices in green. This study also intended to find out how much of these green processes help the SME to achieve a sustainable business performance in the manufacturing sector. Therefore, the literature main theory describing the latent variables was the resources-based-view (RBV) and the triple bottom lines (TBL) theory based on the review of the previous researches. By taking advantage of the companies' resources, the study will determine these variables about management strategy, workplace resources, knowledge management, product development, process technology, community obligation, and sustainable business performance. The characterization of resources-capabilities variables of the study will represent the research constructs of a green management framework for the SME. Subsequently, an appropriate survey corresponding to the research literature was to be designed for data collection and testing purposes of the current study.

2.2 Small and Medium Enterprises (SME)

Entrepreneurs are the people who organize and operate companies. They are commonly called businessmen because they take the risks to invest in products or services to gain profits. The European Council (2006) has referred business as an

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LIST OF PUBLICATIONS

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1. **Kamarudin, A. B.**, Aslan, A. S., & Rajiani, I. (2018). CHARACTERIZING SME SUSTAINABLE (GREEN) PERFORMANCE IN THE GREEN ECONOMIC TRANSITION THROUGH THE ADOPTION OF GREEN MANAGEMENT. *Journal of Advanced Manufacturing Technology (JAMT)*, 12(1 (4)), 173-184. **(Q3, 1F: 0.12)**

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1. **Kamarudin Abu Bakar**, Aslan Amat Senin. (2016). MODELLING SUSTAINABILITY OF SMEs BUSINESS IN THE NEW ECONOMIC TRANSITION. *International Journal of Business, Economics and Law*, 11(2), ISSN 2289-1552.

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1. **Kamarudin, A. B.**, & Aslan, A. S. (2017). Modelling sustainable performance of SME through green management implementation in the new economic transition. *Proceeding of Mechanical Engineering Research*, 2017, 219-221. **(Indexed by WoS)**