# THE KEY DRIVERS OF GREEN HRM PRACTICES AND SUSTAINABLE PERFORMANCE: THE ROLES OF ENVIRONMENTAL ORIENTATION AND ORGANIZATIONAL INNOVATIVENESS IN THE MALAYSIAN MANUFACTURING INDUSTRY

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**by**

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| | |
|---|---|
| **GHRM** | Green Human Resource Management |
| **HRM** | Human Resource Management |
| **HR** | Human Resource |
| **ASEAN** | Association of South East Asian Nations |
| **GDP** | Gross Domestic Product |
| **EMS** | Environmental Management Systems |
| **CSR** | Corporate Social Responsibility |
| **RBV** | Resource Based View |
| **DOI** | Diffusion of Innovation Theory |
| **DCT** | Dynamic Capability Theory |
| **TOE** | Technology-Organization-Environment Framework |
| **GSCM** | Green Supply Chain Management |
| **AMO** | Ability-Motivation-Opportunity theory |
| **EO** | Environmental Orientation |
| **OI** | Organizational Innovativeness |
| **SP** | Sustainable Performance |
| **IT** | Information Technology |
| **SME** | Small and Medium sized Enterprises |
| **PLS-SEM** | Partial Least Squares -Structural Equation Model |
| **ISO** | International Organization for Standardization |
| **FMM** | Federation of Malaysian Manufacturers |
| **CEO** | Chief Executive Officer |
| **CMV** | Common Method Variance |
| **SPSS** | Statistical Package for Social Science |
| **SDG** | Sustainable Development Goals |

## LIST OF APPENDICES

# PEMACU UTAMA AMALAN HRM HIJAU DAN PRESTASI LESTARI: PERANAN ORIENTASI ALAM SEKITAR DAN INOVASI ORGANISASI DALAM INDUSTRI PEMBUATAN MALAYSIA

## ABSTRAK

Peningkatan kesedaran dan kepentingan kelestarian alam sekitar memberi tekanan kepada organisasi untuk menentukan tindakan yang dapat dilaksanakan untuk memerangi perubahan iklim. Tekanan ini lebih dirasai oleh negara-negara membangun kerana perindustrian melibatkan penggunaan tenaga secara besar-besaran dan perubahan dalam sumber semula jadi untuk mengeluarkan barangan perkilangan. Walaupun revolusi industri memberikan kemajuan dalam teknologi dan masyarakat, kerumitan dalam sistem perindustrian juga membawa keprihatinan serius terhadap alam sekitar yang menyumbang kepada perubahan iklim. Malaysia sebagai salah satu negara membangun juga menghadapi pencemaran alam sekitar kerana transformasi menjadi negara perindustrian dimana industry pembuatan merupakan penyumbang terbesar kepada indeks pencemaran negara. Oleh itu, sebarang usaha untuk mengurangkan kesan terhadap alam sekitar daripada industri ini akan menyumbang kepada penambahbaikan terhadap perlindungan alam sekitar dan pembangunan lestari. Amalan pengurusan sumber manusia hijau (GHRM) kini semakin popular sebagai satu pendekatan dalam menguruskan hal yang berkaitan isu-isu alam sekitar. Walau bagaimanapun, amalan GHRM masih kurang diterima pakai oleh firma pembuatan di Malaysia kerana ramai tidak menyedari tentang kepentingannya dalam membantu kelestarian perniagaan. Oleh yang demikian, kajian ini telah dijalankan di kalangan firma pembuatan yang mendapat pengiktirafan ISO 14001 dengan tujuan untuk mengkaji sejauh mana pendorongan pelaksanaan amalan GHRM dan hasil

pelaksanaanya dari sudut prestasi lestari. Kajian ini juga bertujuan untuk mengkaji peranan mediasi orientasi persekitaran dan kesan moderasi pengaruh innovasi terhadap pelaksanaan amalan GHRM. Bagi memenuhi objektif penyelidikan, 25 hipotesis yang berpandukan kepada lensa teori Penyebaran Inovasi (DOI), teori Institusi dan Keupayaan Dinamik (DCT) telah dicadangkan untuk menangani jurang dalam penyelidikan. Soal selidik menggunakan kaedah berasaskan laman web dan koleksi peribadi digunakan untuk pengumpulan data dan sejumlah 221 respons telah diterima dan digunakan dalam data analisis menggunakan SmartPLS 3.0. Keputusan daripada data analisis menunjukkan keserasian, tekanan paksaan, tekanan mimetik, keupayaan penginderaan, keupayaan pembelajaran, keupayaan pengintegrasian dan keupayaan koordinasi didapati memberi kesan positif kepada orientasi persekitaran. Juga, orientasi persekitaran didapati positif dengan penerapan amalan GHRM. Begitu juga, keputusan menunjukkan bahawa amalan GHRM memberikan sumbangan positif terhadap prestasi lestari iaitu ekonomi, persekitaran dan sosial. Untuk kesan mediasi orientasi persekitaran, keserasian, tekanan paksaan, tekanan mimetik, keupayaan penginderaan, keupayaan pembelajaran, keupayaan pengintegrasian dan keupayaan koordinasi mempengaruhi hubungan diantara orientasi persekitaran dan penerapan amalan GHRM. Untuk kesan moderasi pengaruh inovasi, hasilnya dinyatakan sebagai tidak menyokong diantara orientasi persekitaran dan amalan GHRM. Secara keseluruhannya, penemuan kajian ini memberikan petunjuk baru untuk penyelidikan masa depan dan menyumbang kepada implikasi yang signifikan terhadap aspek pengurusan dan teori. Kajian ini juga turut mengemukakan limitasi serta cadangan untuk kajian yang akan datang.

# THE KEY DRIVERS OF GREEN HRM PRACTICES AND SUSTAINABLE PERFORMANCE: THE ROLES OF ENVIRONMENTAL ORIENTATION AND ORGANIZATIONAL INNOVATIVENESS IN THE MALAYSIAN MANUFACTURING INDUSTRY

## ABSTRACT

The increasing awareness in environmental sustainability has created pressure on organizations to define viable actions to combat climate change. This pressure felt intensely by the developing countries as rapid industrialization involved massive use of energy and alteration of natural resources for large-scale production of manufactured goods. Although the industrial revolution provides advancements in technology and society, the complexity in the industrial system has also brought serious concerns to the environment and ultimately contributes to the climate change. Malaysia as one of the developing nations also facing environmental challenges due to the transformation into industrialized nation which the manufacturing industry is known as the largest contributor to the country's pollution index. Therefore, any efforts to reduce ecological footprint of this industry helps in accomplishing resource efficient economy. Green Human Resource Management (GHRM) practices is now gaining popularity as a management approach in facilitating environmental related matters. However, GHRM practices are still less adopted by manufacturing firms in Malaysia as many are uncertain on the environmental benefits in their business approach. Thus, this study was conducted among ISO 14001 certified manufacturing sector with the aim to examine the key drivers that induce the adoption and the outcomes of its implementation to the sustainable performance. This study also sought to ascertain the mediating effect of environmental orientation and the moderating effect of

organizational innovativeness on the adoption of GHRM practices. To meet the research objectives, 25 hypotheses were developed using combinatory theoretical approach and the theorized relationship were tailored by the theoretical lenses of Diffusion of Innovation Theory (DOI), Institutional Theory and Dynamic Capability Theory (DCT) to address the empirical gaps in the research. This study applied web-based and self-administered questionnaire method for data collection and a total of 221 responses were used for data analysis using Smart PLS version 3.0. The results from data analysis showed compatibility, coercive pressure, mimetic pressure, sensing capacity, learning capacity, integrating capacity and coordinating capacity were found to have positive relationship with environmental orientation. Also, environmental orientation was found to positively related to the adoption of GHRM practices. Similarly, the outcome indicated that GHRM practices contributed positively to the environmental, economic and social performance. For the mediation effect, compatibility, coercive pressure, mimetic pressure, sensing capacity, learning capacity, integrating capacity and coordinating capacity were found to have mediation effect between environmental orientation and adoption of GHRM practices. For the moderating effect of organizational innovativeness, the results specified insignificant result between environmental orientation and adoption of GHRM practices. Overall, the findings of this study provide new directions for future research and contributed to significant implications to both theoretical and practical aspects of management. This study also highlights the limitations underlying this study and postulate recommendations for future research.

# CHAPTER 1 INTRODUCTION

## 1.1 Introduction

This chapter presents the background of the study which establishes the overall context of the research and further highlights the issues of sustainability in Malaysia. This is followed by the problem statement, research questions and research objectives which emphasis on the importance of the present study. The next section of this chapter illustrates the significance of the study that contributes to the theoretical and practical relevance. The definition of key terms used in this study are summarized before concluded with the organization of the thesis at the end of this chapter.

## 1.2 Background of the Study

In recent years, environmental sustainability is rapidly becoming one of the evolving prominence areas to scholars, policy makers and practicing managers. Key environmental issues related to global warming, air/water pollution, ecosystem destruction, natural resources depletion, deforestation, waste production/disposal and loss of biodiversity have pushed the organizations, governments and cross-national bodies to seriously concern about their investment in meeting the sustainability values.

Therefore, sustainability conversation among business communities have led to the evolution of the new notion called as “sustainable development” to guide the community in decision making process related to the economic expansion, social inclusion and environmental protection without neglecting the needs of future generations (Cheam, 2017). Simultaneously, sustainability development is largely

focused on many organizations to achieve environmental, economic and social growth rather than these elements are being treated as “trade-offs” (Song, Yu & Xu, 2020).

The organizations that proactively putting long term sustainability goals into actions will gain numerous benefits such as improvement in the corporate brand reputation as a responsible, progressive and dynamic organization, enhance organizational ability to attract, recruit and retain top talents, build trust and loyalty of the customers, maintain critical stakeholders relationship with potential equity investors to gradually improve capital access, gain better financial and operational performance, improvement in risk management by building longer term capacity and develop adaptive strategies, enhance organizational culture by promoting positive wellbeing and social benefits that provide long-term competitive advantage (Ahmed et al., 2021; Mousa & Othman, 2020).

Additionally, the adoption of sustainability solution goes beyond business-as-usual factors as many leading companies have started treating sustainability as an innovation new frontier to reinvent products and services to achieve massive market advantages (Forbes, 2020). Recently, researchers and practitioners have found that sustainability can be achieved through Human Resource Management (HRM) functions which is also called as Green Human Resource Management (GHRM) and the evolving concept have started to garner increasing attention across disparate contexts in developed and emerging countries in the past decade (Saleem et al., 2021; Jeronimo et al., 2020; Pham et al., 2019).

GHRM supports the concept of “triple bottom line” which comprises of HR policies and procedures that are connected to three main sustainability parameters known as economic, social and environment (Amjad et al., 2021; Yong et al., 2019; Yusoff, Ramayah & Othman, 2015). Generally, HRM plays an important role in

shaping the organizational culture and maximize employee's performance to achieve organizational strategies whereas GHRM is forming an integrated bond between HR policies and environmental sustainability practices to optimize the balance between economic and ecological performance (Jeronimo et al., 2020).

Previous scholars broadly specified that recruitment and selection, training and development, performance management and appraisal, reward and compensation, organizational culture and employee empowerment and participation are considered as key components of sustainability to align with organizational environmental strategies (Ojo et al., 2020; Ghouri et al., 2020; Mousa & Othman, 2020; Masri & Jaaron, 2017). Indeed, transforming an organization as a forward-thinking business requires contribution from HRM functions that facilitate the implementation and maintenance of sustainable business practices in the organization (Rubel et al., 2021; Jeronimo et al., 2020; Yong et al., 2019).

GHRM involves activities such as design environmental protection related duties and responsibilities when communicating recruitment messages to the external talents, interview and selection process tailored to gauge potential compatibility of the candidate with company's green goals, develop induction programs to encourage green interpersonal citizenship behavior, cultivate green awareness/eco-values by providing environmental related trainings to promote green personal skills development, assess individual performance based on green targets and implement reward/recognition programs collective efforts towards environmental performance, establish company-wide dialogue sessions to review and discuss on green matters, encourage employee's participation when formulating environmental strategies and strive for continuous improvement that help the organizations to reduce carbon footprints (Mousa & Othman, 2020; Renwick et al., 2016).

Particularly in the Malaysian context, a study conducted by Yusoff et al. (2015) revealed that Multinational Companies (MNC) in Malaysia actively engaging in electronic recruitment methods to review and screen resumes. These electronic methods include the process of finding active and passive candidates through the use of social media, social platforms and social networks for recruiting purpose. An applicant tracking system (ATS) is being leveraged to handle electronic job application, job posting distribution, resume storage/parsing, tracking/selecting applicants for an interview and automated email communication to optimize end-to-end recruitment process for the staffing operations. Video interview platform are also often integrated to facilitate interviewing and assessment process which is considered as more efficient and socially responsible solutions.

In addition, the organizations have implemented e-training as a tool for the learning and development of their employees which typically the learning activities are executed through electronic technologies such as web-based, webinars/virtual classrooms, video-based, collaborative, mobile and micro-learning. Besides, the recognition and incentive programs are also applied via online platform. The organizations have developed reward system to encourage eco-friendly initiatives by maximizing employee's participation in corporate social responsibility, office waste reduction, leverage on carpooling commuting, utilize online award catalogs as a central hub for the recognition redemption.

Although GHRM has received notable attention in recent years, the researchers have consistently found that many HR personnel are left in confusion and uncertainty about the facilitating factors that influence the adoption of GHRM practices and how these practices can support sustainable competitive advantage (Song, Yu & Xu, 2020; Amrutha & Geetha, 2020; Chams & Garcia-Blandon, 2019). Furthermore, HR

management has been criticized for taking little efforts in embracing sustainability practices and frequently takes the blame for not incorporating sustainability practices in the HRM functions (Hameed et al., 2020; Chaudhary, 2019).

A survey conducted by Asian Institute of Finance (2017) revealed that 90% of HR practitioners perceived GHRM as being important but only 26% of HR professionals are ready to embrace GHRM practices in their organization. This is aligned with a recent study conducted by Harvard Business Review (2019) showed that most of the global companies still failed to engage in sustainable business and available findings disclosed that majority of businesses are not yet acting in sustainable development strategies which causing trust problems among millennial consumers.

The evidence from the research literatures also indicated that GHRM initiatives are not widespread among the organizations especially in developing countries as most of the GHRM studies were conducted largely on western societies and less known in Asian countries (Saleem, Qureshi & Malik, 2021; Mousa & Othman, 2020; Pham, Hoang & Phan, 2019; Chaudhary, 2019). In Malaysia, GHRM is considered as a novel concept and still under researched area (Gim et al., 2021; Yong et al., 2020; Yong, Yusoff & Fawehinmi, 2019).

A study conducted by Lok and Chin (2019) claimed that there are a lot of organizations in Malaysia are still at the rear and yet to adopt green practices in their business approach. Given the prominence of Malaysia's economic development for environmental management, this is an important gap to be addressed by future studies (Rehman et al., 2021; Shafaei, Nejati & Yusoff, 2020; Yong et al., 2020; Yong, Yusoff & Fawehinmi, 2019). Besides, manufacturing industry plays an important role in addressing sustainability challenges as shareholders, activists, suppliers, competitors, consumers and regulators demanding greater focus in shifting the business to integrate

environmental friendly practices, systems and policies into manufactured products (Business for Social Responsibility, 2019). Market expectations are also forcing the industry to be more accountable and transparent to the quality of products and their corporate culture (Guerci et al., 2015).

The researchers showed that manufacturing industry assigned less importance to the environmental and social issues than financial profits (Yong et al., 2020; Stefanelli et al., 2019). This industry must take actions to learn and adapt to the changes triggered by the internal and external environments to enable sustainability strategies in the organization (Haddock-Millar, Sanyal & Muller-Camen, 2016). Furthermore, the implementation of the Environmental Management System (EMS) and adoption of certification such as ISO 14001 will act as a sustainable evaluation tool to provide guidance to the manufacturing industry to integrate environmental values into their business operations and incorporate environmental principles into their decision-making process.

According to Green Technology Master Plan Malaysia 2017-2030, manufacturers that registered under ISO 14001 certification were able to reduce the negative impact on the environment via adherence to a prescribed environmental management system framework which leads towards a sound environmental management (Prime Minister's Office of Malaysia Official Website, 2019). It is believed that any efforts in improving environmental performance of this sector is crucial to promote continuous development on Malaysian economy.

Therefore, the manufacturing sector has been chosen as a context of the current study since this sector is one of the largest contributors to the Gross Domestic Product (GDP) and any productivity and efficiency enhancement of this sector will eventually produce substantial benefits to the environmental performance and sustainability

development. Past studies related to the environmental management showed that environmental orientation represents an important facet of HRM and proven its effectiveness in improving organizational outcome and performance (Coskun, Vocino & Polonsky, 2017).

Correspondingly, Gabler, Richey and Rapp (2015) also indicated that environmental orientation significantly stimulate organization's intention to adopt green practices among the decision makers by improving ecological commitment on sustainable development. Indeed, environmental orientation and HR factors are closely linked and holistic approach is required to understand the interaction between the key drivers and the adoption of GHRM practices (Iqbal, 2020; Wang & Feng, 2019). Yet, studies striving to investigate the interrelationship between antecedent factors and organizational outcomes have not recognized in GHRM (Saleem, Qureshi & Malik, 2021; Easa & Orra, 2020; Song, Yu & Xu, 2020).

Recently, organizational innovativeness has received greater attention as a crucial factor in the implementation of innovations in the organization and many studies in the marketing and supply chain field have confirmed the linked to the environmental performance but the relevancy to the GHRM adoption is still lacking and require empirical research to address the gap (Easa & Orra, 2020). Furthermore, Gabler, Richey and Rapp (2015) disclosed that organizational innovativeness should interact with environmental orientation to facilitate innovation adoption process as the environmental orientation is seen as a static construct which it conveys natural environmental priorities but innovative organization matches the needs and priorities with active focus of embracing green practices.

Corsi, Prencipe and Capriotti (2019) explained that organizational innovativeness helps the companies to reframe threats from external markets into

opportunities and convey genuine environmental concerns to the stakeholders to drive green adoption across the organization. As the previous studies in the GHRM seen mixed results on the interrelationship between drivers, practices and performance (Jeronimo et al., 2020; Song, Yu & Xu, 2020), organizational innovativeness was introduced as a moderator in the current study to strengthen the relationship.

This study intends to examine the drivers behind the adoption of GHRM practices among the ISO 14001 certified manufacturing industry in Malaysia and whether the relationship is mediated by environmental orientation. In addition, the current study intends to determine if the relationship between environmental orientation and GHRM practices is moderated by organizational innovativeness. Lastly, this study also addresses if there is any relationship between GHRM practices and sustainable performance.

### 1.2.1 Sustainability Issues in Malaysia

Located in South East Asia, Malaysia is a rapidly developing country with the population of 32.73 million (Department of Statistics Malaysia, 2020). As an upper-middle income country, Malaysia is considered as one of the fastest growing economies amongst ASEAN countries with an average growth of more than 7% per year (World Bank, 2019). According to the Global Competitiveness Report, Malaysia is now in 27$^{th}$ place out of 141 countries as top emerging economy in 2019 (World Economic Forum, 2019). The growth rate is attributed mainly by the nation ability to exploit environmental resource bases that is readily available in the country. From an economy dominated by material production, Malaysia has transformed into an

industrialized nation and become a leading exporter of electronic components, palm oil and rubber and natural gas.

According to the Environmental Quality Report in 2019, disposal of solid waste, water and air pollution are the main environmental issues in Malaysia (Department of Environment Malaysia, 2020). In line with the National Solid Waste Management Policy that targeted national recycling rate of 22% in 2020, Malaysia recycling rate has exceeded the set target at 28.1% in 2019 and 24.6% in 2018. The statistics showed that the power plant, metal refinery, chemical industry, electrical and electronics contributed 57.1% (2.3 million tons) to the scheduled wastes and these industrial wastes becoming biggest source of concerns to the environmental vulnerability.

In 2019, a total of 4,013,189 metric tons of scheduled wastes were generated which represented an overall increase of 41.32% as compared to 2,355,085 tons reported in 2018. As evident in Figure 1.1, the generation of hazardous wastes are keep increasing over the years, therefore addressing the environmental issues require serious attention from multiple stakeholders specifically in the sector that contributes substantial damages to the natural environment.

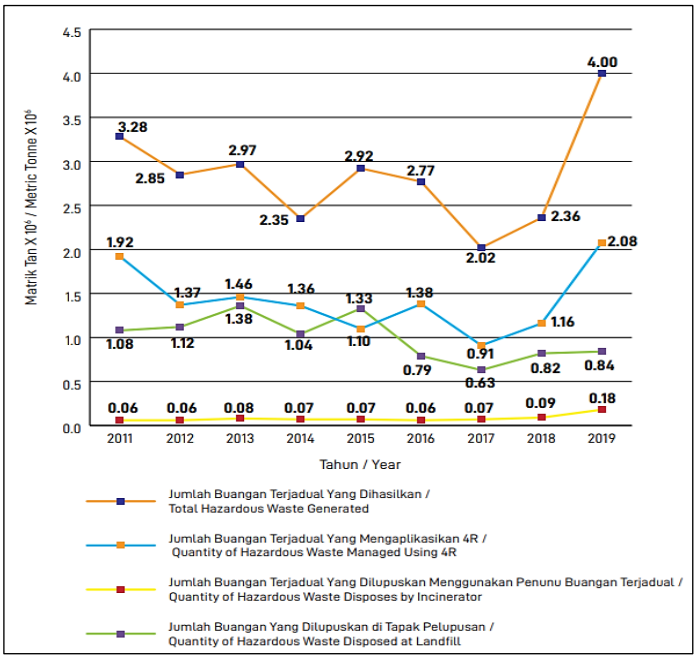



Figure 1.1 Scheduled Waste Management Trend, 2011-2019

*(Source: Environmental Quality Report, 2019)*

Moreover, data from Environmental Quality Report (2019) showed that landfill is a major portion of waste in Malaysia which contributes 58.7% in overall categories as shown in Figure 1.2. There are many negative effects associated with waste decompose which resulted in the production of leachate and releases of methane gas known as a potent greenhouse gas that absorbs heat and contributes to the climate change. According to Waste Management Association Chairman Ho De Leong, there are many dumpsites with little or no treatment for leachate and destruction of waste releases 50% methane gas which negatively impact human health and ecological condition in Malaysia (The Star, 2019).

Additionally, the cost of managing landfill sites is extremely high and take millions of years to decompose and proper facilities are needed to manage groundwater contamination for a long term (The Star, 2019). With the limited space for landfill and rising costs of disposal, there is an increased pressure to tackle the waste management

issue to reduce the impact on the environment and wellbeing of a population. This indication has posed a new challenge for the country to put forward solid waste approach to promote effective ways of waste management by encouraging reuse and reduce method which ultimately contributes to the efficient resource allocation.

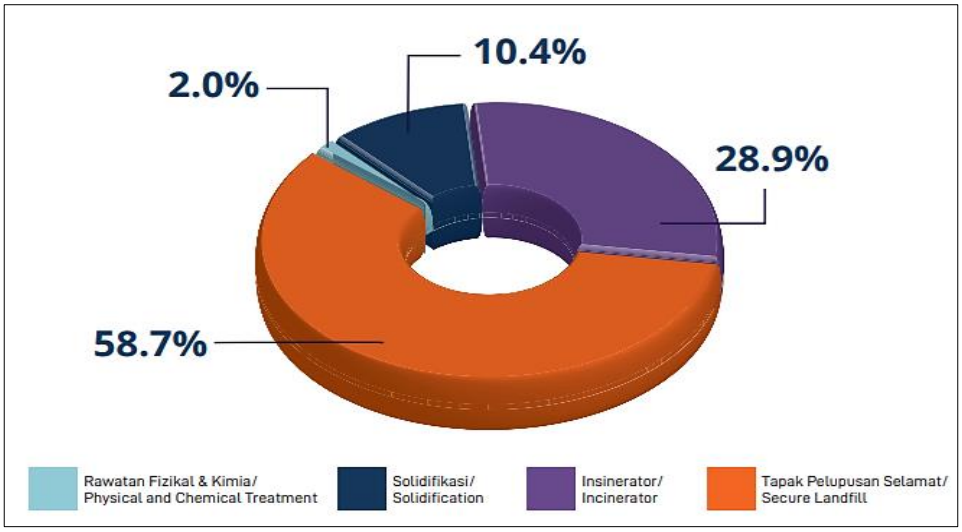


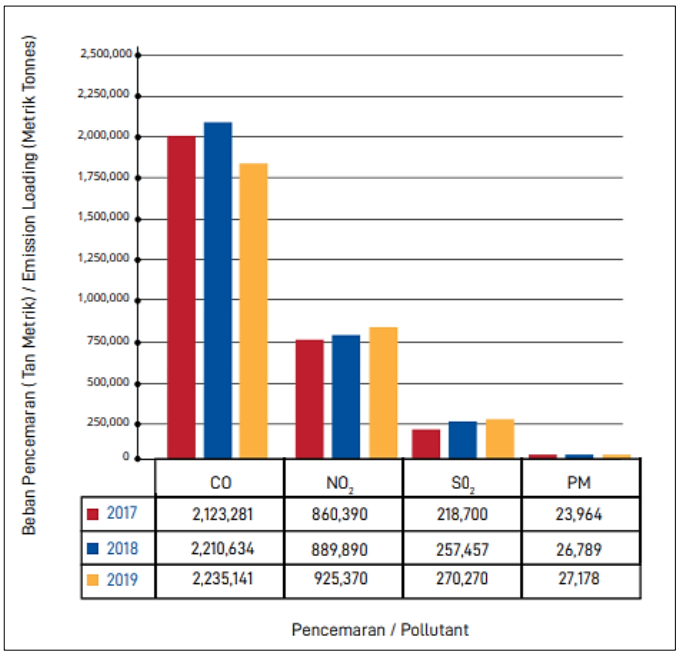

Figure 1.2 Types of Treatment and Disposal of Water, 2019

*(Source: Environmental Quality Report, 2019)*

Aside from this, water and air pollution are also significantly contributing to the environmental deterioration. It was estimated that in 2019 the overall accumulation of air pollutant emission load was 2,235,141 metric tons of carbon monoxide (CO), 925,370 metric tons of nitrogen oxides (NO2), 270,270 metric tons of Sulphur dioxide (SO2) and 27,178 metric tons of particulate matter (PM) which indicated that the total emission load have increased compared to 2018 as shown in Figure 1.3.

As of December 2019, a total of 11,126 industrial sources were emitting air pollutants which causing severe air pollution if the emission is not effectively controlled (Department of Environment, 2020). In 2018, CO2 emissions per capita for Malaysia was 7.67 metric tons and this has increased from 1.32 metric tons in 1970 to

7.67 metric tons in 2019 with an average annual growth rate of 3.79%. In 2019, Malaysia was the 24th largest source of greenhouse gas emitter among the industrialized nations in the world (World Bank, 2020).




| | CO | $NO_2$ | $SO_2$ | PM |
|---|---|---|---|---|
| 2017 | 2,123,281 | 860,390 | 218,700 | 23,964 |
| 2018 | 2,210,634 | 889,890 | 257,457 | 26,789 |
| 2019 | 2,235,141 | 925,370 | 270,270 | 27,178 |

Figure 1.3 Air Pollutant Emission Load from All Sources, 2017-2019

*(Source: Environmental Quality Report, 2019)*

The demand for water supply is rapidly growing in line with the population growth, urbanization, industrialization and development of economic sectors which contribute to the severe water pollution in Malaysia. According to the statistics released by the Department of Environment in 2020, the major causes of pollutions are related to the manufacturing industries, agricultural-based industries, sewage treatment plant, piggery and wet market.

In 2019, 40.9% of water consumption is solely recorded for the industrial usage. Water pollution has been frequently cited as the main reason for the water disruption as the water treatment plants are unable to cope with the high level of pollution in the raw water. 53% of the river's water quality in Malaysia was categorized

as slightly polluted or polluted and high level of water pollutions are concentrated in the states where large numbers of industrial areas and factories are located such as Selangor, Johor, Penang and Perak (Department of Environment, 2020).

In the year of 2019, a total estimation of 30.30 tones/day of Biochemical Oxygen Demand pollution load, 32.63 tons/day of Suspended Solids load and 3.49 tons/day of Ammoniacal Nitrogen load were released by the manufacturing industries (Department of Environment, 2020). Hence, it is equally important for the manufacturing industries to implement actions for pollution prevention and control to enhance the quality of river water and sustain the ecological needs.

Generally, manufacturing sector plays a pivotal role in the transformation of Malaysian economic as it has the most significant multiplier effect on the nation's development and continue to be the mainstay of the economy. In the fourth quarter of 2020, this sector was the second largest contributor to the gross domestic product (GDP) at 23.6% after service sector. The performance of this industry is mainly supported by electrical, electronic & optical products, petroleum, chemical, rubber & plastic products, transport equipment, other manufacturing and repair (Department of Statistics Malaysia, 2020).

This sector led the way for total investments approved in 2020, recording RM91.3 billion followed by the services sector at RM66.7 billion and other sectors with RM6.0 billion which showed that manufacturing sector remains as an important source of growth to the nation's economy which directly contributes to the positive economic benefits such as job opportunities, exports and businesses for local suppliers (Malaysian Investment Development Authority, 2021).

However, the growth of the manufacturing sector has significantly imposed negative impacts on environment by causing massive rise on the pollution level, industrial waste and depletion of natural resources (International Trade Administration, 2020). In 2017, industrial has contributed 2.9% emission of pollutants to the atmosphere as their global supply chain use vast amounts of labor and raw materials to support Malaysian economy (Department of Statistics Malaysia, 2020).

Furthermore, a survey made by the Department of Statistics Malaysia (2019) showed that the manufacturing sector continues to dominate the environmental protection expenditure with the value of RM2,181.3 million (75.6%) to protect the environment (Department of Statistics Malaysia, 2020). This result indicated that the manufacturing industry is the highest sector that contributes to the environmental pollution that leads to the poor environmental and social performance.

To achieve economic empowerment and environmental sustainable on adoption of advanced green technology and accelerating the transition towards green growth, manufacturing industry plays a vital role in reducing the ecological footprint by changing the way they produce and consume goods and resources to accomplish resource efficient economy (New Straits Times, 2021).

Yet, the Shared Prosperity Vision 2030 (SPV 2030) report stated that premature deindustrialization has caused significant declined in the rate of high technology use in the manufacturing sector. As shown in the Figure 1.4 and Figure 1.5, the rate of high technology use in the manufacturing sector reached its peak of 52% in 1999 and subsequently declined to 32% by 2010. In 2018, the high technology adoption rate in the manufacturing sectors remains low at 37%.

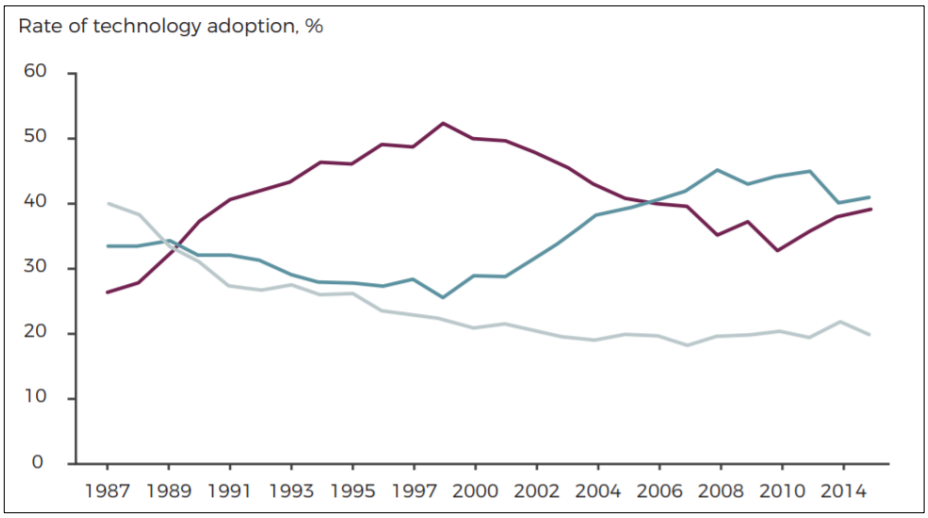



Figure 1.4 Rate of Technology Adoption in Output of Manufacturing Sector, 1987-2015

*(Source: Prime Minister's Office of Malaysia Official Website, 2019)*

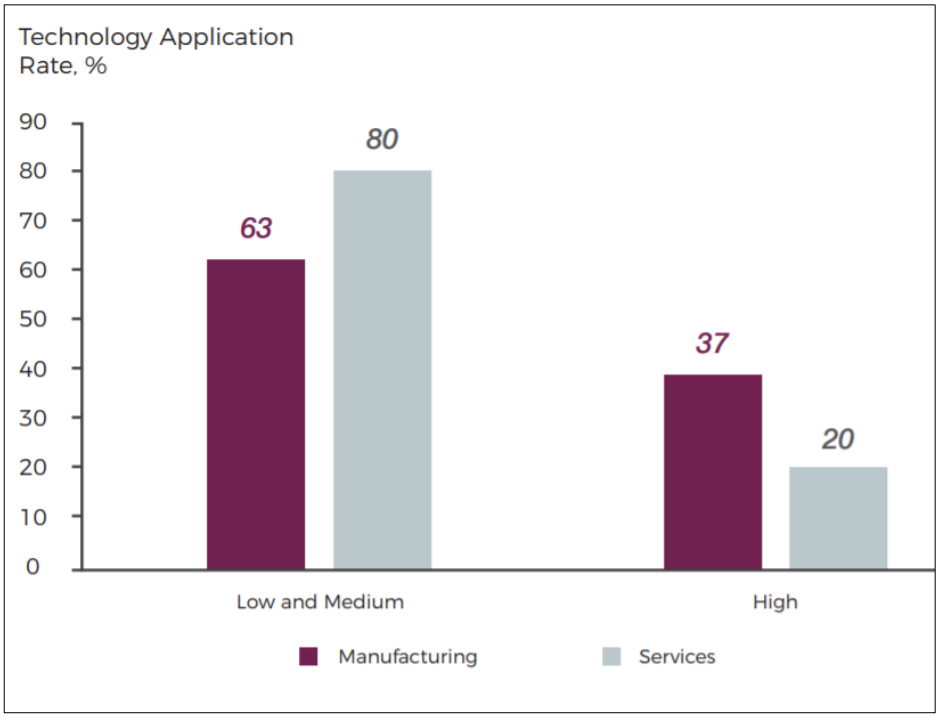



Figure 1.5 Rate of Technology use in Manufacturing and Services Sectors, 2018

*(Source: Prime Minister's Office of Malaysia Official Website, 2019)*

Moreover, a report by Green Technology Master Plan Malaysia 2017-2030 showed that adoption of Green Technology, Green Products and Green Processes among the manufacturing sector is still at unsatisfactory level (Prime Minister's Office of Malaysia Official Website, 2019). According to Khan, Saufi and Rasli (2019), most of the certified ISO 14001 Malaysian manufacturing firms are actively adopting green recruitment and selection, green training and development and green reward system. The rest of HRM functional such as performance management and appraisal, green employee involvement and empowerment are not commonly implemented and the adoption efforts remained low among the industries because of inadequate funding, low involvement of private sectors in Research and Development (R&D) and investment in human capital (The Star, 2017).

Likewise, a survey conducted by Harvard Business Review (2019) further revealed that manufacturing firms are still relying on traditional HR practices and not adjusting fast with advance technologies due to the lack of management commitment, lack of expertise/knowledge, cost involvement, unfamiliarity and unwillingness to depart from outdated way of doing business which purely dominated by economic performance. This have led the manufacturing sector feeling paralyzed about what actions should be taken to stay competitive in the market (Song, Yu & Xu, 2020).

As outlined in Key Economic Growth Activities (KEGA) under SPV 2030, Malaysia is progressing towards building resilient and sustainable economic growth to continuously expand toward high technology, high value-added and knowledge-based industries with the 50% target of high technology adoption among the manufacturing industry by 2030 (The Straits Times, 2019). As a preventive measurement, the government has implemented various environmental legislation in the form of Environmental Quality Act 1974 for controlling and regulating the industrial pollution,

wastewater, air pollution from factories and solid waste management issues in Malaysia. Pollution is controlled through the mechanisms or regulations issued by the Department of Environment to licensees. Licensees are responsible for exhausting or launching wastes that are not exceeding the acceptable requirement into the atmosphere or contributing to the pollution to any soil or surface of any land.

Environmental issues related to legislations and standards is also reviewed regularly and revised whenever necessary. According to the Minister of Environment and Water Datuk Seri Tuan Ibrahim Tuan Man, Department of Environment (DOE) is currently reviewing the compounds and penalties under the act and stern actions will be taken against the offenders (The Star, 2021). He further added that a fine up to RM15 mil is being proposed for those found guilty of committing scheduled waste pollution.

In addition, through the National Sustainable Development 2030 goals (SDG), the government has redoubled its efforts by aligning the country's development plans in three phases known as Eleventh Malaysia Plan (11MP) 2016-2020; Twelfth Malaysia Plan (12MP) 2021-2025 and Thirteenth Malaysia Plan (13MP) 2026-2030 to promote more sustainable, resilient and inclusive growth by 2030. Building on from the 11MP, the 12MP aims to design policies, strategies and initiatives to address prevailing socioeconomic issues, regenerate the economy and strengthen the human well-being without neglecting environmental sustainability.

Under the National Budget 2021, the government has adopted gradual approach to introduce SDG commitment in the national budget to introduce green initiatives (New Strait Times, 2021). The government has also introduced its first Sustainability Bond or Green Sukuk (Islamic Bonds) for environmental and social

initiatives that supports global demand for sustainable development projects (Capital Markets Malaysia, 2021).

Besides that, the government has implemented various programs under the National Green Technology Policy to promote the application and development of green technology including the establishment of Green Technology Financing Scheme 3.0 (GTFS) that offers 60% of guaranteed financing amount with 2% rebate on the interest rate to accelerate the expansion of green investment and growth of local businesses.

As an initiative to encourage the adoption of green technologies, the government has introduced Green Investment Tax Incentives that provides an Investment Tax Allowance (ITA) for purchasing green technology equipment or assets and Income Tax Exemption (ITE) for providing green technology services (Malaysian Green Technology Corporation, 2021). Under Net Energy Metering (NEM) Scheme, the adoption of solar power systems is accelerated through the financial assistances. Obviously, this indicates that the government is seriously concerning about the sustainable and inclusive development in Malaysia.

However, the sustainability commitment is not merely government responsibility. Malaysia's climate action is guided by the pledge made to the United Nations Framework Convention on Climate Change (UNFCCC) to achieve a 45% reduction in the emissions intensity of GDP by 2030 compared to 2005 levels (New Straits Times, 2020). It includes boosting energy efficiency, deploying renewable energy technologies in place of fossil fuels, greening transportation and developing a more circular economy.

The recent Sustainable Development Report (2021) showed that the pandemic has been a major setback for sustainable development which has impacted all three-dimension known as economic, social and environment. The findings showed that Malaysia ranked 65th out of 165 countries and the ranking has dropped from its 60th in 2020 (United Nations, 2021). According to New Straits Times (2021), the overall development showed that Malaysia is progressing unevenly across all indicators/goals and the growth towards "planet" has been more challenging which threaten the achievement of the Agenda 2030.

While improvements in certain areas have been made in protecting the environment such as an increase in the recycling rate from 15.7% in 2015 to 30.7% in 2020, key environmental indicators continue to deteriorate. The domestic water consumption continues to rise at 245 liters per capita/day which is higher than the United Nations (UN) recommendation at 165 liters/day. The score on climate action, life below water and life on land pose significant/major challenges towards meeting the SDGs (New Straits Times, 2021).

To make the 2030 agenda for sustainable development a reality, broad ownership and commitment should be demonstrated by all stakeholders to facilitate the path towards the global goals. According to the former Malaysian Prime Minister Tan Sri Muhyiddin Yassin, there must be a concerted effort by all stakeholders including government, industry players, academicians and the public to improve and facilitate sustainable living. Likewise, industrialization in Malaysia needs to be environmental-friendly with a sustainable consumption and production approach to promote green economy (The Star, 2021).

In the light of growing global need in dealing with climate changes, sustainable development and green technologies should be closely associated to expand high value-added green manufacturing activities and services to balance and harmonize the industrial ecosystem in Malaysia. To assist with green manufacturing transformation, Malaysian manufacturers should fully understand the key drivers, issues and sustainability values to their business and start adopting the green initiatives into their core strategies to gain long term sustainable benefits.

## 1.3 Problem Statement

In recent years, the concept of GHRM received increasing attention among the practitioners and researchers due to the adverse impact of traditional HRM approaches on the environment. The research related to the greening HRM functions has grown significantly over the past 14 years with the studies linked to various aspects of corporate environmental management and performance (Yong, Yusoff & Fawehinmi, 2019). According to Pham, Hoang and Phan (2019), most of the studies were carried out in developing countries and few were examined in developed countries. Although research related to GHRM is progressively on the rise and several studies have been devoted to the body of literature, there are many salient questions not yet studied in a broader perspective (Rubel et al., 2021; Amrutha & Geetha, 2020; Yong, Yusoff & Fawehinmi, 2019).

For instance, past research on GHRM domain encompasses different types of national context including cultural values, political and regulations, patterns of economic development and state of civil society. Evidently, the competitive environment and social-cultural situation between developed and developing countries

can vary according to geography, sector, economic and financial system development (Ren, Tang & Jackson, 2018). Even, the studies conducted within the Asia Region poses significant country-level difference in environmental regulations, governance, cultural philosophical, legitimacy of ecological and moral perspectives which the research findings cannot be generalized in a cross-cultural setting.

Consequently, this justifies the need to conduct the current study relating to GHRM in the Malaysian context with the aim of investigating the key drivers that influence the adoption of GHRM practices among the manufacturing firms. Besides, the review of literatures related to GHRM have started since 2007 and most of the studies were centralized towards the use of technology in HRM (e-HRM) as the concept of GHRM was still in its early phase of development. Due to the growing environmental concerns and the organizations have started putting more emphasis on environmental management, massive spike on GHRM studies began in 2016 and continued as a popular academic area till date (Yong, Yusoff & Fawehinmi, 2019).

In Malaysia, the concept of GHRM is relatively new and several literatures were focused on conceptualization, implementation, determinants and outcomes of GHRM (Yong et al., 2020). However, most of the research were concentrated on conceptual development and performance outcomes of GHRM both at the organizational and individual level which provided inadequate contribution to the body of literature. This is an important gap to bridge as in an emerging market economy such as Malaysia, the nation's development activities will be inclined toward large-scale manufacturing industries which are accompanied by an increase usage of resources such as water, electricity and human activities that negatively impact the environment and damage to the eco-system (Yong, Yusoff & Fawehinmi, 2019).

An effective implementation of GHRM plays a major role in supporting positive economic activities and environmental growth for the nation. In addition, an extensive literatures review revealed that little empirical insights exist concerning decision-making processes that form the basis of an employer's HR strategy and it is often not clear on the determinants of environmental related HR actions (Amrutha & Geetha, 2020). Although it could be said that much of the HR literatures have examined organizational and economic sustainability, there are little HRM literatures that directly investigate environmental and societal aspects (Rizvi & Garg, 2021; Amrutha & Geetha, 2020; Chams & Garcia-Blandon, 2019).

Also, the contribution of HRM functions to the evolution of environmental management in the organization is considered thoroughly explored in terms of theory but less known empirically which created imbalance between practitioners and academic publications (Jeronimo et al., 2020; Amrutha & Geetha, 2020; Mousa & Othman, 2020). Similarly, most of the HRM research tend to focus on individual HR dimensions known as functional such as recruitment and selection, training and development, performance appraisal and rewards and often ignored the evolutionary focus of competitive dimensions recognized as organizational culture and employee empowerment and participation.

According to Amrutha and Geetha (2020), both functional and competitive dimensions of HRM are considered as a complementary and act within the dynamic of mutual influence that share the overall HRM systems in the organization. Specialized literature concerning the interface between HR practices and environmental management contributions were found to have very limited knowledge on organizational outcomes which led to less practical implications to the organization (Chaudhary, 2019). According to Hart (1995), operational activities in every step of

the HRM influences the environment and it is important for the organization to focus on the entire HRM system to minimize total environmental impact to the nature.

As a result, understanding the practices and recent developmental efforts in HRM which aimed at environmental initiatives is worth to be explored and developed through empirical research that contribute to the knowledge and literature (Amrutha & Geetha, 2020; Mousa & Othman, 2020). The evidence from the literatures also showed that there is lack of agreement on the impact of GHRM on sustainable performance. There are vast studies conducted on the link between GHRM practices and organizational outcomes and many scholars have admitted that greening HR practices increase sustainable competitive advantage.

However, most of the studies merely investigated the economic performance and ignored the collective sustainable performance which embraces the economic, environmental and social performance (Afum et al., 2021; Amrutha & Geetha, 2020; Iqbal, 2020; Chams & Garcia-Blandon, 2019). Understanding the impact of GHRM practices on enhancing the sustainable competitive advantage of organization will certainly be an eye opener to the manufacturing firms to adopt environmental practices in their corporate actions. This provides great supports for this study to investigate the effect of GHRM practices on organizational sustainable performance.

In recent studies in the marketing and supply chain fields, the researchers have consistently found environmental orientation as a critical factor that influence the adoption of innovation activities in the organization (Chaudhary, 2018). According to Lok and Chin (2019), the organization can increase the environmental performance through the inclusion of environmental sustainability values into the organizational philosophy. A lack of eco-oriented cultural values in the organization may lead to the limited awareness about the importance of the ecological concerns.

There is remain lack of studies which integrated environmental orientation to an organizational adoption of environmental practices (Chaudhary, 2018; Coskun, Vocino & Polonsky, 2017). Yang, Roh and Kang (2020) have called for an empirical study to investigate the potential mediating role of environmental orientation in the relationship between external drivers and the adoption of GHRM activities. Thus, this raises a question to be explored whether environmental orientation influences the organizational response towards the adoption of GHRM practices.

Lastly, previous studies have seen mixed results on the interrelationship between drivers, practices and performances (Cheema, Afsar & Javed, 2020). Even though the "win-win" argument has been used to rationalize the adoption of environmental practices in HRM, yet this result did not occur in all studies (Ren, Tang & Jackson, 2020). Several studies showed that there is a direct relationship between external drivers and adoption of GHRM practices (Song, Yu & Xu, 2020; Kim, Kim, Choi & Phetvaroon, 2019) whereas some studies have not revealed any connection (Yu & Choi, 2016). These disparate findings have resulted some researchers to further investigate for a suitable moderating variable that influences the adoption of GHRM in the organization.

In recent years, organizational innovativeness was recognized as a better predictor in implementing the green practices in the organization however very little research has addressed innovation within HRM functions (Song, Yu & Xu, 2020). Gabler, Richey and Rapp (2015) also added that organizational innovativeness should be able to strengthen the environmental orientation which helps in the adoption of green activities however the relevancy of innovativeness on GHRM adoption is still lacking and require empirical research to address the research gaps. Thus, there is a