

# GREEN TECHNOLOGY IMPLEMENTATION AT FAST FOOD RESTAURANTS IN SELANGOR

Norhayati Mat Yusoff<sup>1</sup>, Rosmaliza Muhammad<sup>2</sup>, Najiha Nazari<sup>3</sup>, Nurhamiza Zaidi<sup>4</sup>  
Mohamad Alif Akmar Sher Mohamad<sup>5</sup>, Faridah Hanim Ismail<sup>6</sup>

Universiti Teknologi MARA Faculty of Hotel and Tourism Management  
Puncak Alam Campus, 43200 Selangor, Malaysia. norhayati.my@uitm.edu.my<sup>1</sup>,  
rosmaliza35@uitm.edu.my<sup>2</sup>, najihanazari58@gmail.com<sup>3</sup>, amiezanurzaidi@gmail.com<sup>5</sup>,  
alifakmar96@gmail.com<sup>5</sup>, farid942@uitm.edu.my<sup>6</sup>

**Abstract:** *In the business social responsibility approach, building an energy-efficient restaurant is no longer just a trendy move. With a growing number of customers increasingly concerned with eco-friendliness, it is imperative for restaurant owners to make a change. Energy efficiency, recycling, health and safety concerns, renewable resources, green products or technology are aspects in green or environmentally friendly technology which preserve the environment to protect nature through appropriate elimination of waste. However, besides drivers and promotion strategies that can influence the implementation of green technology especially in fast food restaurants, many barriers or challenges also exist. As such, the aim of this study was to determine the challenges that influence the implementation of green technology at fast food restaurants and examine the relationship between them. A quantitative method through an administered questionnaire survey has been applied in this study. A total of 75 out of 94 managers from McDonald's fast food restaurants in Selangor responded to the online survey, which was distributed via a Google form link using electronic mail. The results indicate that technological readiness is the most challenging factor that influences the implementation of green technology in these restaurants. Thus to reap the benefits, organizations need to play the important role of ensuring that all employees have adequate relevant knowledge before the implementation of green technology. This includes employing the best mechanisms that can enhance employee readiness.*

**Keywords:** *Fast food, green technology, implementation.*

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## 1. Introduction

Foodservice is described as activities of food and beverage business that are served away from home. According to Egan (n.d), foodservice is a powerful sector of the hospitality industry that accounts for a large share of the economy. The global food and beverages market is expected to grow from \$5943.8 billion in 2019 to \$6111.1 billion in 2020 at a compound annual growth rate (CAGR) of 2.9% (Food & Beverages Industry Report, 2020). Based on this report, within the COVID-19 crisis, the global market for foodservice industry estimated at US\$3.5 Trillion in the year 2020. In 2019, restaurants and hotels (estimated at USD153.06 or 13.9%) remained as one of the significant expenditure components and contributed 13.9% to the total average monthly household expenditure in Malaysia. Over time, the food industry has changed and developed in order to satisfy customer needs and consumer behaviour. The industry is now characterized by a complex system of activities concerning supply, consumption and delivery of food products across the entire globe. Currently, individual lifestyles have changed as people get busier and have a limited time to prepare homecooked

meals. This has influenced their spending in the foodservice sector as there is an increase in restaurant dine-ins and takeaways. In addition, as mentioned by Booi and Peik (2012), with increasing incomes and cultural lifestyle changes, the practice of dining and purchasing takeaways has become more popular relative to eating at home.

Basically, the foodservice industry is divided into two categories: commercial and noncommercial foodservice establishments. A commercial foodservice establishment is an organization such as a restaurant that sells food and beverage products to make profit. In today's world, many people are interested to invest in opening a restaurant as it is an essential service that can be profitable. This is supported by the National Restaurant Association (1999, as cited in Charlotte, Friddle, Mangaraj & Jean, 2001) which claims that a commercial foodservice restaurant constitutes nearly 90 percent of the entire food service market. On the other hand, a non-commercial foodservice establishment is an organization such as the military, hospitals, educational institutions and transportation hubs that sell food and beverage products, but does not focus primarily on making profit

Fast food restaurants are always known to be less time consuming, affordable and family friendly. In tandem with the changes in individual lifestyles and patterns, they have also significantly transformed for the better. With technology advancement, several fast-food restaurants have introduced a self-service kiosk to minimize the queue waiting time. As the fast-food industry continues to expand, there are signs that casual dining restaurants are losing their market share. In Malaysia there are many options of fast-food restaurants available, such as McDonald's, Burger King, KFC, Texas Chicken, Domino's Pizza, A&W, and Mary Brown to name a few. It is common knowledge that McDonald's is a big player in the fast-food market because it is a pioneer in the fastfood industry with a strong emphasis on customer service, competition response, and early use of marketing strategies. In Malaysia, the McDonald's fast food restaurant chain continues to grow as they expand their franchise. This is supported by Harizah (2020), who stated that McDonald's Malaysia is expected to expand the number of their outlets to 450 nationwide by 2025. They have invested almost RM250 million for the last three years and plans to invest another RM1.2 billion in the next few years to open new restaurants.

Green technology is clean or environmentally friendly technology as it preserves the environment to protect nature. Moreover, it is also the production and introduction of natural environment and resource management items, services and systems to minimize and restrict the harmful effects of human activities. The implementation of green technology can bring a better environment as well as help the foodservice industry to eliminate waste appropriately instead of dumping indiscriminately. The use of harmful chemicals is also avoided as the industry will depend on locally produced agricultural products made to preserve nature. However, as stated by Sreeramana and Shubhrajyotsna (2016), in adopting green technology there are definite challenges in the food and food processing sector related to the use of technologies to minimize the development of processinduced toxins. There are also social factors affecting consumer perceptions of some of the latest and emerging agro-food technologies.

Green buildings are expected to continue to dominate the green technology and sustainability industry until 2030. This is because since buildings use a lot of electricity, resulting in air emissions, the emphasis on making them energy efficient is dire. By incorporating renewable technology during the design and operation of houses, electricity consumption and pollution can be greatly minimized. Thus, reducing electricity, water, and waste use was the central field of green approaches (Yusof & Jamaluddin, 2013). Unfortunately, the growth of the foodservice industry has also contributed to an increasing number of waste disposals, environmental issues and more pollution. The development of the food service industry also means increased amounts of waste, with the average restaurant generating 50,000 pounds of garbage annually (Nielsen, 2004, as cited in Azilah & Anida, 2011).

Hence, it is important to implement green technology in the food industry to conserve the natural environment for a better life in future. The procurement of environmentally friendly items such as

organic food, non-toxic cleaning and chemical products and bio-mass agriculture waste goods not only lets the restaurant create a positive corporate identity, it also extends the sustainability practices in the supply chain vertically (Tan & Yeap, 2012). Already there is a lot of research and development in good agricultural and environment friendly practices for the future generation. Essentially, to be environmentally friendly, a product or activity should be renewable, create the least waste and emission as possible and use recycling and reuse of materials where possible (Rogier, 2012). In fact, MacD has already stepped up their game to implement green technology. In 2020, McDonald's stopped using foam packaging that could eventually lead to deforestation and started to use certified material that is renewable and recyclable. Thus, we may look forward to more participation from the food and beverage industry to implement green technology for a better future.

### ***1.1. Problem statement***

Although the huge growth of the food industry has positively contributed to the economy, it has also had a negative impact on the environment and nature. Markets, restaurants and food stalls have caused river pollution through surface depletion sediments and unsatisfactory sewerage disposal. Industrial sewage and liquid waste have also contaminated drainage (Love Our River Campaign, 2017). Hence, green technology seems timely to save the environment for a better future ahead.

Abdullah (2018) stated that Sungai Klang has contaminated with oil, food and debris, causing floods in many neighbourhoods and this situation could be worse if the industry discards oil and food waste improperly. Perhaps, in Sungai Kinta case, one of the major causes for its pollution was high fat content in wastewater or effluent from the public market and restaurant. In addition, food premises are one of the major contributors to river pollution. Thus, pollution is being caused by fats, oils and grease that come from restaurant wastage. Clearly the restaurant owners should have an awareness of how continuous pollution will negatively impact the surroundings and the community and that using green technology will help to save the environment.

However, as mentioned by Azilah and Anida (2011), despite its use of energy, its upstream impact on agriculture and land use, and its downstream impact on waste disposal, the link between the foodservice and environmental responsibility and the concept of sustainable development appears to be limited. As the food industry has rapidly enlarged, it is possible that it would further worsen the environment and nature, where the development of the foodservice industry has implied greater waste management, with an average restaurant generating 50,000 pounds of trash per year. This can endanger the environment and the community because food waste releases methane gas that absorbs heat. Also, it can contribute to adverse climate change that is already happening with the rising of the sea level, and changes in weather. Thus, it is urgent for communities, especially restaurant owners, to reflect on greener options and to be aware of environmentally friendly products and technology that can help to conserve the natural environment.

Furthermore, different types of industrial pollution include suspended particulate emissions causing air pollution, biochemical oxygen demand (BOD) releases causing water pollution, and toxic waste discharges affecting all elements (Ishak, 2017). He added that more than 80 % of the total volume of industrial water discharges in Malaysia comes from four types of manufacturing activities, food and beverage production ranked in number one. This shows that food industry players should urgently consider to go green in their production. However, while there are many researches that focus on environmental problems, there is limited research on Malaysia's food industry and the use of green technology which may help to lessen pollution and ensuing environmental problems. To ensure a practical approach, it is important to identify the challenges that may affect the successful implementation of green technology.

## **2. Literature review**

### **2.1 *Green Technology at Fast Food Restaurants***

Fast food is very popular in Malaysia as many multinational franchises have either jointly or independently opened their outlets here. The fast-food idea came to Malaysia when Jalan Tunku Abdul Rahman, Kuala Lumpur, opened its A&W Restaurant in 1961 (Bougoure & Neu, 2010). Since then, several other multinational fast-food players have developed their businesses locally. Almost eight hundred percent of the market share in the fast-food sector is dominated by global market players, such as McDonald's, KFC, Burger King, A&W, Wendy's, Kenny Rogers, Marry brown, Nando's, Pizza Huts, Domino's Pizza, Subway, Dunkin Donuts, Big Apple and Krispy Crème. Consequently, Malaysia's fast-food industry has become the best choice for most consumers due to the instant meal preparation that allows them to eat in a short time (Aiyun, Shaohua & Qaisar, 2018). Green Technology is an environmental healing technology that reduces the environment damage caused by the products and technologies for the convenience of the people. It is a branch of science which seeks to preserve and maintain the natural environment and reduce the negative impacts of human activity (Abhijeet & Rahul, 2014). The key goal of this technology and process is to reduce the adverse future environmental effects of energy use and emissions (Iravani, Akbari & Zohoori, 2017).

Green technology is environment-friendly and it includes the use of technology by renewable forms of energy in production processes. It can also apply to the output of renewable energy (Sweta, 2021). Thermal oil systems are used for cooking at temperatures above 250°C. Most restaurants would have enormous cost savings opportunities through upgrades to energy efficiency and investment in renewable energy. It is important to begin with the development of a comprehensive energy management plan, which should include the use of the Energy Management System (EMS) to enable the monitoring and monitoring of energy use across installations in real time. According to Ben Geier (2017), McDonald's vowed previously that packaging that leads to deforestation will not be used. Roughly 64% of its goods currently meet the standard quality and it expected to hit 100% by 2020. In recent years, the company has worked on a range of other environmental targets. In 2016 McD started to buy organic beef and now plans to remove foam packaging entirely. Half the McD boxes come from products that are organic, recycled, or approved.

### **2.2 *Challenges of implementation green technology***

According to Chan (2008), there are three obstacles to the implementation of green practices. The first obstacle is the lack of knowledge, understanding and availability of advice. The second obstacle is the lack of resources, and the third obstacle is the high implementation and maintenance cost. The main achievements in encouraging the introduction of green technologies would be the awareness of such obstacles, drivers and marketing approaches. According to Chan, Darko, Ameyaw and Olanipekun (2017), there are also numerous experiments performed to examine the obstacles and marketing methods. Barriers may be understood as obstacles that slow down the organization's path to performance. In fact, there are several obstacles, that affect green technology adoption (Chin Yee, Radzi & Terh Jing, 2020). In order to implement green technology in a restaurant, there are many barriers to go through which may be financial, technological and organizational. A stronger and deeper understanding of these drivers is required to promote the widespread adoption of green technologies.

#### **2.2.1 *Implementing green technology on Financial Aspect***

Many owners have the perception that green technology would require additional costs and would be seen as a major obstacle. This statement is in accordance with previous environmental research

on lodgings, small businesses and the business sector which needed higher costs (Vernon, Essex, Pinder, & Curry, 2003). Normally, the company always consider the financial aspect as the biggest barrier to practicing green technology as generating income in the organization's main goal (Chin Yee, Radzi & Terh Jing, 2020). The most crucial barrier to green technology adoption is the cost-effective economic barrier (Chan, Qian, & Lam, 2009). According Zeenat & Mariam (2014) the first barrier is the high cost of implementation and maintenance due to green products and equipment, which is generally very expensive. For example, chiller saving energy is costly than traditional chiller. Financing and investment mechanisms of green finance are different from those of non-green finance, because green finance needs to take account of green value in its financial activities (Noh, 2018). A lot of capital needs to be expended in order to implement the green technology. The organization who lacks of financial capital will meet the task of introducing sustainable development. Emir (2019) proved that the organizations experienced insufficiency of capital that need an intervention from the private sector to solve financial problems. In fact, there would be a long-term return on investment, and the investor or the company can think about their productivity goal (Chin Yee, Radzi & Terh Jing, 2020). Therefore, green finance requires a variety of financial instruments, and governments should create capital market environments and green finance support systems.

### **2.2.2 Implementing green technology on Technological Readiness**

According to (Kordi, 2018), there are several barriers to the development of green technology in technical, economic and financial terms, as well as in political and institutional terms, which slow down the development of green technology in Malaysia. Green technology encompasses various aspects of technology that help us reduce the human impact on the environment and create ways to achieve sustainable development (Soni, 2015). Likewise, these technologies would either reduce the impact on the environment through the development of more environmentally sustainable materials and products or through the generation and conservation of resources such as energy and water. According to (Purwasasmita, 2016), green materials offer unique characteristics and properties, including abundance in nature, less toxic, economically affordable and versatility in terms of physical and chemical properties. Green materials can be applied to a wide range of fields in science and technology applications, including energy, construction, construction and infrastructure, materials science and engineering applications and pollution management and technology. Some of the green technology and materials in Malaysia are difficult to access. For starters, equipment used to create solar panels and grey water systems has to be imported from overseas. As a consequence, the challenge in implement green technology is growing (Chen Goh, Wee Seow and Hwang Goh, n.d). Besides, the difference and intricacy of green technologies are major challenges compared to conventional technologies (Tagaza, et al., 2004). Moreover, the lack of professionals and traders with adequate skill, competence and experience in this field is an additional reason. The shortage of skilled or qualified personnel would contribute to a loss of trust among stakeholders and clients in the adoption of green technology (Chin Yee, Radzi & Terh Jing, 2020).

### **2.2.3 Implementing green technology on Organizational Culture**

Organizational culture serves as the driving force, philosophy, ideology, and values of people in an organization that communicates what they represent (Ibokette, June, 2020). Organization plays an important role in order to give a large knowledge to their employee and need to ensure the employee capable to implement the green technology. Pinar (2015), stated that organizational culture is increasingly important and has proven to be one of the key elements in the performance and strategic competitive advantage of firms by enhancing environmental adaptability, guiding procedures, providing solutions to existing problems and facilitating goal achievement. He added that effective environmental management depends on the successful integration of greener values across the organization and requires a greener corporate culture. Added to that, lack of knowledge and expertise is another barrier

to implement sustainable green technology (Williams and Dair, 2007). In the view of employees, lack of knowledge and awareness would be a major obstacle in the implementation of green technology practices. Certain workers are not exposed to this activity by their managers and it will also be difficult for them to completely adopt the practices. However, younger workers and trained generation are more mindful of green practices with the exposure they gain through their school or university learning process (Goodman, 2000). Even employees have a lack of awareness, the benefits of green practices can still be achieved if management makes more effort to communicate the objectives of green practice to employees (Deraman, Ismail, Arifin, Mostafa, 2017).

However, on top of all the challenges and barriers in implementing green technology, lack of top management commitment and undeveloped organizational culture and absence of inspiration and support is the main obstacles of implementing the green technology (Talib, 2020). This statement supported by Worku (2000) identified that the key barriers to the implementing the green technology is the lack of top-level management commitment in adopting green supply chain. Top management need to give a fully commitment to their employee and need to make sure their employee having an enough knowledge in order to implement the green technology concept. Furthermore, top level management will play an important responsible to influence their team to implement the green technology and need to supervise all activates that has been done in order to implement the green technology.

### **3. Research Methodology**

This research was carried out at the McDonald's Selangor outlets and all the managers in each outlet were asked to respond to the questionnaire. The managers were chosen instead of the staff because a manager has detailed knowledge about the organization of the restaurant and its problems. Since McDonald's is a big player in fast food industry in Malaysia, this study was focused on identifying the challenges in implementing green technology at McDonald's Selangor as perceived by its managers. The population has been taken from the list of McDonald's branches in Selangor with total of 94 McDonald's outlets which comprise 9 districts. However, only a total of 75 McDonald's outlet managers were randomly selected for this study.

This survey took 10 days to be completed, from 20 - 30 January 2020 via google form using the email. This method was necessary as the pandemic situation was ongoing and it would ease the process of the managers filling in the questionnaire within a short time. With permission from the McDonald's Human Resource Department, the researchers managed to obtain cooperation from all 75 McDonald's Selangor managers to respond to the questionnaires via Google Form. Each questionnaire is divided into 3 sections which comprise Sections A, B and C. Section A is a demographic profile with four items to assess their personal background: gender, age, education background and years of experience in the foodservice industry. Section B consists of 30 questions examining the factors of challenges in implementing green technology. The factors focus on financial aspects, technological readiness and organizational culture with 10 questions for each. Then, Section C consists of 5 questions on how to implement green technology in the organization. Sections B and C solicit responses to statements using a Likert-scale ranging from 1 "Strongly Disagree", 2 "Disagree", 3 "Neutral", 4 "Agree" and 5 "Strongly Agree".

### **4. Results and discussion**

#### **4.1 Respondent's Profile**

Using descriptive statistics, the overall dimensions of the respondents' profiles were analysed. The results are reported in Table 4.1.

**Table 4.1:** Respondent's Profile

Items	Frequencies (N = 75)	Percentage (%)
<b>Gender</b>		
Male	34	
Female	41	45.3 54.7
<b>Age</b>		
25-30	59	78.7
31-36	6	8.0 5.3
37- 42	4	5.3
43-48	4	2.7
49 and above	2	
<b>Educational level</b>		
High school	5	6.7
MCE	5	6.7
Certificate (in related field)	3	4.0
Diploma	24	32.0
Degree	34	45.3
Master	4	5.3
<b>Years of experience (foodservice industry) 1</b>		
years – 5 years		
6 years – 10 years	54	72.0 13.3
11 years and above	10	14.7
	11	

It is interesting to note that most of the managers were 34 Degree holders (45.3%) as compared to Diploma holders with only 24 (32%) and Master holders with 4 persons (5.3%).

#### 4.2 Challenges in Implementing Green Technology on Financial Aspects

**Table 4.2:** Mean Score of Challenges in Implementing Green Technology on Financial Aspect

No.	Items	N	Mean	Std. Deviation
1	Green products, materials, green technologies and system will involve higher cost.	75	4.03	0.752
2	Complexity of design and modelling costs of green technology will increase the final cost.	75	3.91	1.016
3	Changes of design may lead to different variation and increase the overall project cost.	75	3.89	0.894
4	It is significant that financial issue is a challenge to implement green technology.	75	4.00	0.870
5	I would consider spending on advertising to promote the restaurant if I decide to be environmentally friendly.	75	4.08	0.941
6	I would consider purchasing higher-priced organic products as ingredients or items at this restaurant.	75	3.93	0.868
7	High cost of investing in implementation will lead to increase in prices of products & items sold.	75	3.95	0.990
8	Initial cost for green technology is high.	75 75	3.79	0.915
9	Green technology system is more expensive than conventional system.		3.81	0.9683
10	Risk of investment will increase due to uncertain payback period.	75	3.91	0.841

From the results, most managers agree that green products, materials, green technologies and system will involve higher cost (M = 4.03; SD = 0.752). They feel that the financial issue is a significant challenge to implement green technology (M = 4.00; SD = 0.870) while most managers would consider

spending on advertising to promote the restaurant if the manager decides to be environmentally friendly ( $M = 4.08$ ;  $SD = 0.941$ ). There are 2 questions which gain a neutral in perception, which are “green technology system is more expensive than conventional system” ( $M = 3.81$ ;  $SD = 0.968$ ) and “risk of investment will increase due to uncertain payback period” ( $M = 3.91$ ,  $SD = 0.841$ ).

#### 4.3 Challenges in Implementing Green Technology on Technological Readiness

**Table 4.3:** Mean Score of Challenges in Implementing Green Technology on Technological Readiness

No.	Items	N	Mean	Std. Deviation
1	Green technologies are usually more complicated and a lot different than the conventional fast food restaurant buildings.	75	3.91	0.989
2	Green technologies are difficult to obtain in developing countries. It often requires green technologies to be imported from foreign countries.	75	3.78	1.094
3	Unfamiliar with the materials and performance of green technologies will affect the performance of the restaurant	75	3.76	0.984
4	The work force employed in the organization faces problems when the technology changes.	75	3.79	1.106
5	Many employee practitioners are not professionally qualified in the context of practices on green technology.	75	3.64	1.111
6	The skills and information on green technology frequently depends on expertise from the developed country.	75	3.63	0.955
7	Lack of professional skills about green technology will cause delays and also increase the initial cost of the restaurant.	75	3.79	0.919
8	Most of the workers on site refuse to learn the new things and they feel that the new technology is a mission impossible to them.	75	3.80	0.915
9	The training at this establishment includes environmental awareness programs on green technology.	75	3.57	1.093
10	Older workers are not capable of working on new technology	75	3.79	1.106 machine.

The mean score for difficulty on operating green technology than conventional technology is ( $M = 3.91$ ;  $SD = 0.989$ ) which means most of the respondents agree that green technology is complicated and a lot different than the conventional fast-food restaurant building and green technologies are difficult to obtain in developing countries and required to be imported from foreign countries with the mean score ( $M = 3.78$ ;  $SD = 1.094$ ). The changes of technology create barriers for the work force employed in the organization ( $M = 3.79$ ;  $SD = 1.106$ ) and most of the workers in site refuse to learn the new things and they feel that the new technology is a mission impossible to them ( $M = 3.80$ ;  $SD = 0.915$ ). However, this proves that the organization has promoted and introduced green technology among the employees for the establishment and includes environmental awareness programme in the training programme ( $M = 3.57$ ;  $SD = 1.093$ ).

#### 4.4 Challenges in Implementing Green Technology on Organization Culture

**Table 4.4:** Mean Score of Challenges in Implementing Green Technology on Organizational Culture.

No.	Items	N	Mean	Std. Deviation
1	I have lack of knowledge on green technologies and materials.	75	3.29	1.075
2	I misunderstanding of green technological operations.	75	3.12	1.115
3	I am unfamiliarity with green technology.	75	3.17	1.070
4	Most of the developers have no knowledge about the green building and their workers prefer the conventional construction method.	75	3.41	1.187
5	The top management have lack of enforcement on the subject of mandatory regulations, standard or guidelines for green technology	75	3.75	0.839
6	Lack of support on implementation green technology from senior management.	75	3.88	0.853



7	Top management would consider establishing an environmental management system (EMS) at my premise.	75	3.81	0.940
8	Top management is concerned about the preservation of the environment.	75	3.91	0.825
9	Top management would consider implementation of environmentally friendly practices to be in the top-three priority list in company policy.	75	3.95	0.914
10	Top management in this organization restaurants will approve if the company adopted green technology.	75	3.92	0.850

From the results obtained in Table 4.4, most of the respondents agree that the top management have a lack of enforcement on the subject of mandatory regulations, standard or guidelines for green technology with the mean score ( $M = 3.75$ ;  $SD = 0.839$ ) and lack of support on implementation of green technology from senior management ( $M = 3.88$ ;  $SD = 0.853$ ). Nevertheless, the top management is concerned about the preservation of the environment ( $M = 3.91$ ;  $SD = 0.825$ ) and consider implementation of environmentally friendly practices to be in the top-three priority list in company policy ( $M = 3.95$ ;  $SD = 0.914$ ). This organization will approve if the company adopts green technology as the mean score is ( $M = 3.92$ ;  $SD = 0.850$ ).

#### 4.5 Implementation of Green Technology in Organization

**Table 4.5:** Mean Score of Implementation of Green Technology in Organization.

No.	Items	N	Mean	Std. Deviation
1	Increased maintenance expenses due to the induction of new and additional machinery for the recycling plants, the maintenance expenses shall also contribute factor of challenges on implementing green technology.	75	3.93	0.811
2	The implementation of new technology the organizations need to train their workers or educate their workers to implement the newer and eco-friendly technology that also needs some economic burden on the organization.	75	4.19	0.766
3	Lack of financial justification is a big constraint to implement green technology as the organization have to bear the cost of acquisition of new technology.	75	3.91	0.841
4	Inability to devote staff to projects due to the shortage of staff non-availability of qualified worker.	75	3.93	0.844 or due to

The results show that it is true that there will be increased maintenance expenses due to the induction of new and additional machinery for the recycling plants, the maintenance expenses shall also contribute challenges on implementing green technology ( $M = 3.93$ ;  $SD = 0.811$ ) and the implementation of new technology does need an organization to train the workers and educate them to implement the newer and eco-friendly technology that also gives some economic burden on the organization ( $M = 4.19$ ;  $SD = 0.766$ ). Lack of financial justification is a big constraint to implement green technology as the organization has to bear the cost of acquisition of new technology ( $M = 3.91$ ;  $SD = 0.841$ ). Based on the mean score obtained, it shows that most of the managers agree that lack of financial justification is an obstacle in order to implement green technology in the organization.

#### 4.6 Hypotheses Testing

**Table 4.6:** The Hypotheses of the Financial Aspect, Technological Readiness and Organizations Culture.

Indicator	Hypothesis	Pearson Correlation	p-value ( $p < 0.05$ )	Remarks
H1a	The financial aspect has a significant relationship toward the implementing of Green Technology in fast food restaurant.	0.463	0.000	Supported

H1b	The technological readiness has a significant relationship towards the implementing of green technology in fast food restaurant.	0.562	0.000	Supported
H1c	The organizational culture has a significant relationship towards the implementing of green technology in fast food restaurant.	0.273	0.018	Supported

All hypotheses are supported and there is a medium correlation between the financial aspect towards implementing green technology in fast food restaurant as given by the r value ( $r = 0.463$ ) which indicates there is a quite strong relationship between the financial aspect with implementing green technology in the fast food restaurant. Referring to the table, the significant value of the financial aspect is  $p = 0.000 < 0.05$ . Obviously, it shows that hypothesis H1a has a significant relationship with implementing green technology in fast food restaurant. There is a large correlation between the technological readiness aspect towards implementing green technology in the fast food restaurant as given by the r value ( $r = 0.562$ ) which indicates there is a strong relationship between the technological readiness with implementing green technology in a fast food restaurant. Referring to the table, the significant value of the technological readiness is  $p = 0.000 < 0.05$ . Therefore, it shows that hypothesis H1b has a significant relationship with implementing green technology in a fast food restaurant. Lastly, the results show there is a small correlation between the organization's culture towards the implementing green technology in a fast food restaurant ( $r = 0.273$ ) which indicates a weak relationship between the organization's culture and implementing green technology in a fast food restaurant. As stated in the table above, the significant value of the organizations culture is  $p = 0.018 < 0.05$ . It reflects that hypothesis H1c has a significant relationship on implementing green technology in fast food restaurant.

#### 4.7 Multiple Linear Regression Analysis

**Table 4.7: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	<u>.580<sup>a</sup></u>	<u>.337</u>	<u>.308</u>	<u>.54302<sub>1</sub></u>

- a. Predictors: (Constant), organization\_factor, technology\_factor, financial\_factor  
 b. Dependent Variable: Implementation

For this analysis, the R square ( $R^2$ ) value of 0.337 which is 33.7% of the variation in implementation of green technology in fast food restaurant (DV) can be explained by the factors of challenges (IV) which are financial aspects, technological readiness and organizational culture.

**Table 4.8 : Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.401	.518		2.703	.009
1 financial_aspect	.152	.145	.138	1.049	.298
1 technology_readiness	.429	.128	.441	3.359	.001
1 organization_culture	.107	.123	.090	.868	.388

- a. Dependent Variable: implementation

This analysis was used with aim to explore the relationship between the variables. The beta ( $\beta$ ) coefficients provided relative importance where the factors with the highest coefficients represent the most challenges factors in implementation of green technology. It is seen from the beta values that technology readiness factor was the challenges factor on implementation the green technology followed by the financial aspect factor. All factors were found significant to the implementation of green technology in fast food restaurant. In short, the higher the beta coefficients, the higher the challenges in order to implement the green technology in fast food restaurant.

The results can be summarized as:

$$\text{Equation: } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_k + \varepsilon$$

The equation: 1.401 (Constant) + 0.152 (financial factor) + 0.429 (technology factor) + 0.107 (organization factor)

Thus, for every unit increase in financial aspect, technological readiness, and organization culture, challenges of implementing green technology will go up by 0.107, 0.152 and 0.429. Based on the unstandardized beta coefficients, the factor that challenges the implementing green technology was 0.429, which is higher than the other factor. The p-value of the technological readiness was 0.001, which is  $<0.05$ , therefore the technological readiness was a significant factor of challenges in implementing the green technology in fast food restaurant.

## 5. Conclusion

In implementing green technology, the technology readiness factor is found to be the main issue in every Mc Donald outlet in Selangor. However, green technology, or environmentally friendly technology, is developed to protect the environment and conserve natural resources. As part of the renewable energy sector of the environmental technology movement, the importance of green technology cannot be ignored. The onus is on every foodservice establishment to take responsible action and implement the system. Since technological readiness is the most challenging factor for restaurants like the McDonald's outlets in Selangor, fast food restaurants need to prioritise this challenge and work out appropriate mechanisms to deal with it in implementing green technology in their organization.

## 6. References

- Abdullah, N. I. (2 July, 2018). *Grease Trap Helps to Prevent Environmental Problems*. Retrieved from FOMCA: <http://www.fomca.org.my/v1/index.php/fomca-di-pentas-media/fomca-di-pentas-media-2018/268grease-trap-helps-to-prevent-environmental-problems>
- Aithal, P. S., & Aithal, S. (2016). Opportunities & Challenges for Green Technology in 21st Century. *International Journal of Current Research and Modern Education (IJCRME)*, ISSN (Online), 2455-5428.
- Aiyun Xiao, Shaohua Yang & Qaisar Iqbal (2018). Factors Affecting Purchase Intentions in Generation Y: An Empirical Evidence from Fast Food Industry in Malaysia. *Administrative Sciences, MDPI, Open Access Journal*, 9(1), 1-16.
- Azilah Kasim, Anida Ismail & Ashraf Jahmani Issa (2011). Regulatory Pressures Affecting the Restaurant Business's Responsible Behaviour in Penang, Malaysia. *Anatolia*, 22:3, 390-400.
- Bhowmik, A., & Dahekar, R. M. (2014). Green Technology for Sustainable Urban Life. *Recent Research in Science and Technology*, 6(1).

- Bougoure, U. S., & Neu, M. K. (2010). Service quality in the Malaysian fast food industry: An examination using DINESERV. *Services Marketing Quarterly*, 31(2), 194-212.
- Chan, E. H., Qian, Q. K., & Lam, P. T. (2009). The market for green building in developed Asian cities—the perspectives of building designers. *Energy Policy*, 37(8), 3061-3070.
- Chan, R. Y., Wong, Y. H., & Leung, T. K. (2008). Applying Ethical Concepts to The Study of “Green” Consumer Behaviour: An Analysis of Chinese Consumers’ Intentions to Bring Their Own Shopping Bags. *Journal of Business Ethics*, 79(4), 469-481.
- Darko, A., Chan, A. P. C., Ameyaw, E. E., He, B. J., & Olanipekun, A. O. (2017). Examining issues influencing green building technologies adoption: The United States green building experts’ perspectives. *Energy and Buildings*, 144, 320-332.
- Deraman, F., Ismail, N., Mod Arifin, A. I., & Mostafa, M. I. (2017). Green practices in hotel industry: Factors influencing the implementation. *Journal of Tourism, Hospitality & Culinary Arts (JTHCA)*, 9, 1.
- Egan, B. (n.d). *Chapter 1: Foodservice Segments*. Creative Commons Attribution 4.0 International License. Retrieved from <https://psu.pb.unizin.org/hmd329/chapter/ch1/>
- Ern Rui, M. O. (2017). The Barriers of Adopting Green Supply Chain Management in Small Medium Enterprises: An Empirical Study On Food and Beverage Manufacturing Firms in Selangor, Malaysia. 1-120.
- Food & Beverages Industry Report (2020). Retrieved from Flanders Investment and Trade: [https://www.flandersinvestmentandtrade.com/export/sites/trade/files/market\\_studies/FB%20Industry%20Report.pdf](https://www.flandersinvestmentandtrade.com/export/sites/trade/files/market_studies/FB%20Industry%20Report.pdf)
- G, C., Friddle, Mangaraj, S., & Kinsey, J. D. (2001). The Food Service Industry: Trends And Changing Structure In The New Millenium. *The Retail Food Industry Center University of Minnesota*.
- Ha, Y. C., Ismail, R., & Khoo, J. T. (2020). The Barriers of Implementing Green Building in Penang Construction Industry. *Progress in Energy and Environment*, 2-3.
- Implementing Green Initiative In Malaysia Environmental Sciences Essay*. (November, 2018). Retrieved from UKEssays: <https://www.ukessays.com/essays/environmental-sciences/implementing-green-initiativein-malaysia-environmental-sciences-essay.php>
- Iravani, A., Akbari, M., & Zohoori, M. (2017). Advantages and Disadvantages of Green Technology; Goals, Challenges and Strengths. *International Journal of Science and Engineering Applications*, 6, 272-284.
- Ishak, I., Jamaludin, R., & Abu, N. H. (2017). Green Technology Concept and Implementation: A Brief Review of Current Development. *Advanced Science Letters*, 23(9), 8558-8561.
- Kasim, A., & Ismail, A. (2012). Environmentally Friendly Practices Among Restaurants: Drivers and barriers to Change. *Journal of Sustainable Tourism*, 2.
- Love Our River Campaign - How to get involved*. (9 January, 2017). Retrieved from Official Portal for Department of Irrigation Drainage Ministry of Environment and Water: <https://www.water.gov.my/index.php/pages/view/825>
- Malaysia – The Future Of Foodservice to 2021*. (12 August, 2017). Retrieved from Verdict Foodservice: <https://www.verdictfoodservice.com/market-data/malaysia-future-foodservice-2021/>

- MR Bin Esa, M. R., Marhani, M. A., Yaman, R., Noor, A. A. H. N. H., & Rashid, H. A. (2011). Obstacles in implementing green building projects in Malaysia. *Australian Journal of Basic and Applied Sciences*, 5(12), 1806-1812.
- N.E. Kordi, N. T. (2018). Challenges In Implementing Green Technology. *Green technology knowledge of workplace and empowerment in construction project*.
- Noh, H. J. (2018). Financial Strategy To Accelerate Green Growth. *ADB Institute*.
- Omar, I. H. (2017). National Report of Malaysia On the Formulation of a Transboundary Diagnostic Analysis and Preliminary Framework of a Strategic Action Programme for the Bay of Bengal. *United Nations Environment Programme East Asian Regional Coordinating Unit*, 24.
- Obstacles on Application of Green Technology in Malaysia. (n.d.). Retrieved August 16, 2020, from <https://ukdiss.com/examples/green-technology-obstacles.php>
- Pinar2, M. T. (2015). Go Green at Work: Environmental Organizational Culture . *Acedamic Star*.
- Purwasasmita, B. S. (2016). Green materials for sustainable development. *International Conference on Recent Trends in Physics 2016 (ICRTP)2*, 1.
- Soni, G. D. (2015). Advantages Of Green Technology. *International Journal of Research Granthaalaayah*.
- Talib, D. K. (2020). Ranking of Barriers to Green Manufacturing Implementation in SMEs Using Best-Worst Method. *IOP Conference Series: Materials Science and Engineering*.
- Tan, B. C., & Yeap, P. F. (2012). What Drives Green Restaurant Patronage Intention?. *International Journal of Business and Management*, 7(2), 215.
- Vernon, J., Essex, S., Pinder, D., & Curry, K. (2003). The 'greening' of tourism micro-businesses: outcomes of focus group investigations in South East Cornwall. *Business strategy and the environment*, 12(1), 4969.
- Worku, H. A. (2000). Barriers for Green Supply Chain Management Implementation. *green supply chain*.
- Yee, H. C., Ismail, R., & Jing, K. T. (2020). The Barriers of Implementing Green Building in Penang Construction Industry. *Progress in Energy and Environment*, 12, 1-10.
- Yusof, Z. B., & Jamaludin, M. (2014). Barriers of Malaysian green hotels and resorts. *Procedia-Social and Behavioral Sciences*, 153, 501-509.
- Yusof, Z. Y., & Jamaluddin, M. (2013). Green Approaches of Malaysian Green Hotels and Resorts. *Procedia - Social and Behavioral Sciences*, 423.