

**USING SOCIAL MARKETING STRATEGY TO
PROMOTE RECYCLING
AMONG UNIVERSITY STUDENTS IN
A THAI UNIVERSITY**

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ABSTRACT

One of the suggested strategies to tackle global GHG emissions and reduce the total amount of waste production was to promote recycling worldwide (The World Bank report, 2015). Thailand committed to and signed the Paris Agreement in 2015, and the nation of Thailand also committed to reducing GHG emissions by 20 per cent by the year 2030 (The country report, 2015). According to the World Bank report (2015), only 4 per cent of GHG emissions was from M.S.W.; however, the reduction of waste generation and elimination would provide other benefits such as reducing health problems and reducing raw material consumption. However, the government discovered many barriers restricting the country reaching the targets, such as a lack of landfill sites, technology, budget, data and data sharing and a lack of the residents' awareness and participation in recycling as well as a low recycling rate at just 19 per cent in 2015 (UNDP, 2016: The country report, 2015). So, the World Bank (2015) suggested that promotion of recycling needs more parties to engage and work together with such as the private sector and other stakeholders to facilitate activities and to encourage residents to improve their recycling behaviour. This research aims to offer effective, practical, and innovative social marketing strategies to university teams to facilitate activities to promote young people to perform recycling and sustainably maintain the new behaviour. The university will gain multiple benefits, not only will there be a reduction in waste, but there will also be an improved reputation for producing students with a healthy attitude towards environmental protection and sustained recycling behaviour. This research was conducted at Chiang Mai University (C.M.U.) between January 2017 and January 2018 with undergrad students, C.M.U. staff and C.M.U. stakeholders, it examined the students' lifestyles and the needs of the students' concerning recycling promotion and how to explore further the effective promotion of recycling amongst students. A combination of qualitative and quantitative data collection was adopted, and the selected methods were questionnaire survey, semi-structured interviews, a focus group, informal conversations, observation and others. Thematic analysis methods were adopted via Excel and SPSS. This study is action research which consists of 5 key phases: the Problem Identification Phase; the Research Planning Phase; the Research Taking Phase; the Evaluation Phase and the Learning and Reporting Phase (Fourali, 2015). At the Research Planning Phase, the participants were 18 student volunteers, 394 student questionnaire respondents, 12 student interviewees, 13 C.M.U. staff interviewees, and 18 C.M.U. stakeholders. The participants, when divided into gender, consisted of 167 males

and 286 females. The findings exhibited that students believed that their awareness and behaviour towards recycling would be increased by participating in exciting activities, receiving incentives, having sufficient recycling facilities, and by following other students' suggestions. Moreover, students preferred Social Media Platforms for receiving messages promoting recycling. Ninety-nine per cent of the students used cell phones to access Social Media Platforms, with 88.6 per cent of respondents accessing Facebook every day. While the staff at C.M.U. believed that promoting recycling topics to the students could have a higher rate of success if a combination of student engagement, activities, rewards and improved university policies were utilised. C.M.U. stakeholders thought that encouraging students to participate in recycling activities could utilise target audience participation, strong commitment, volunteering, stakeholder engagement, incentives and others. At the Research Planning and Research Taking phases, this research adopted a Facebook Page, university notice boards, and student volunteers to facilitate recycling activities. Furthermore, this research adopted the establishment of a competition "C.M.U. Recycling Ambassador's Competition' to test the findings with an array of relevant psychology, management and social marketing models and theories. By utilising the Facebook Page, 26 ambassador teams promoted and encouraged students and families to participate in recycling behaviour and compete against each other. The contestants were 30 males and 55 females. They gained public interest and encouraged their peers to engage in the activities. The online participants provided comments and engaged with Facebook's social media tools such as clicking 'Like and Love', and Sharing the messages of the contestants online. The results showed that there were 70,299 'Like, Love, Share, and Comment' actions and 137,710 views by their peers during the competition duration of one month. At the Evaluation Phase, there were 135 satisfaction survey respondents (43 males and 92 females). The satisfaction survey discovered that 88.9 per cent of respondents supposed that they would participate in similar projects in the future because they believed that the activities provided them with better recycling knowledge and increased their understanding of recycling using innovative methods. They said that their recycling awareness was increased and that their new behaviour would become a new norm if the university continued to promote and encourage recycling.

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LIST OF ABBREVIATIONS

CMU	Chiang Mai University
COP	Conference of the Parties
GHG	Greenhouse Gases
HEFCE	Higher Education Funding Council for England
PESTEL	Politic, Economic, Social, Technology, Environment and Legal
PTT	Public Company Limited
TEI	Thai Environmental Institute Foundation
CWUR	The Center for World University Rankings
IPCC	The Intergovernmental Panel on Climate Change
ONEP	The Office of National Resources and Environment Policy and Planning
UNICA	Network of Universities from the Capitals of Europe
UN	United Nations
UNDP	The United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

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DECLARATIONS

I declare the followings:

(1) that the material contained in this thesis is the end result of my own work and that due acknowledgement has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

(2) the Word Count of this thesis is 8,1099 words

SIGNED.....Sariya Kruayim.....DATE.....04.....June....2020.

CHAPTER 1: GENERAL INTRODUCTION

1.1. Introduction

The study, 'Using Social Marketing Strategy to Promote Recycling among University Students in a Thai University', consists of six chapters. It is significantly relevant to three main critical areas which are 'Climate Change and The Paris Agreement', 'Waste and Recycling Management', and 'Social Marketing Adoption on Recycling in a Thai university' at global, international, and local level, respectively.

Chapter 1 is divided into eight sections (section 1.1-1.8), which are 'Introduction', 'Statement of the problem', 'Research Questions, Research Aims and Objectives', 'Reasons for the study and Research contributions', 'Significance of the study', 'Research Methodology', 'Context of study', and 'Conclusion'. Then, chapter 2 will revisit a relevant literature review. The chosen methodologies for this study will be presented in depth in chapter 3. Next, chapter 4 and 5 will describe the research design and the findings. Chapter 6 will show a summary of this study and the recommendations.

1.2. Statement of the problem

Section 1.2 consists of section 1.2.1-1.2.3 which are relevant to localised problems and global problems, in particular the negative impacts from climate change, the failures of waste and recycling management and the existing barriers at the international level, leading to high demand for this study aiming to fix the problems. So, section 1.3 will underline the research questions or the research aims and objectives. Section 1.4 will give an overview of the research methodology. Then, section 1.5 will mention the context of the study.

1.2.1 The Global Problems

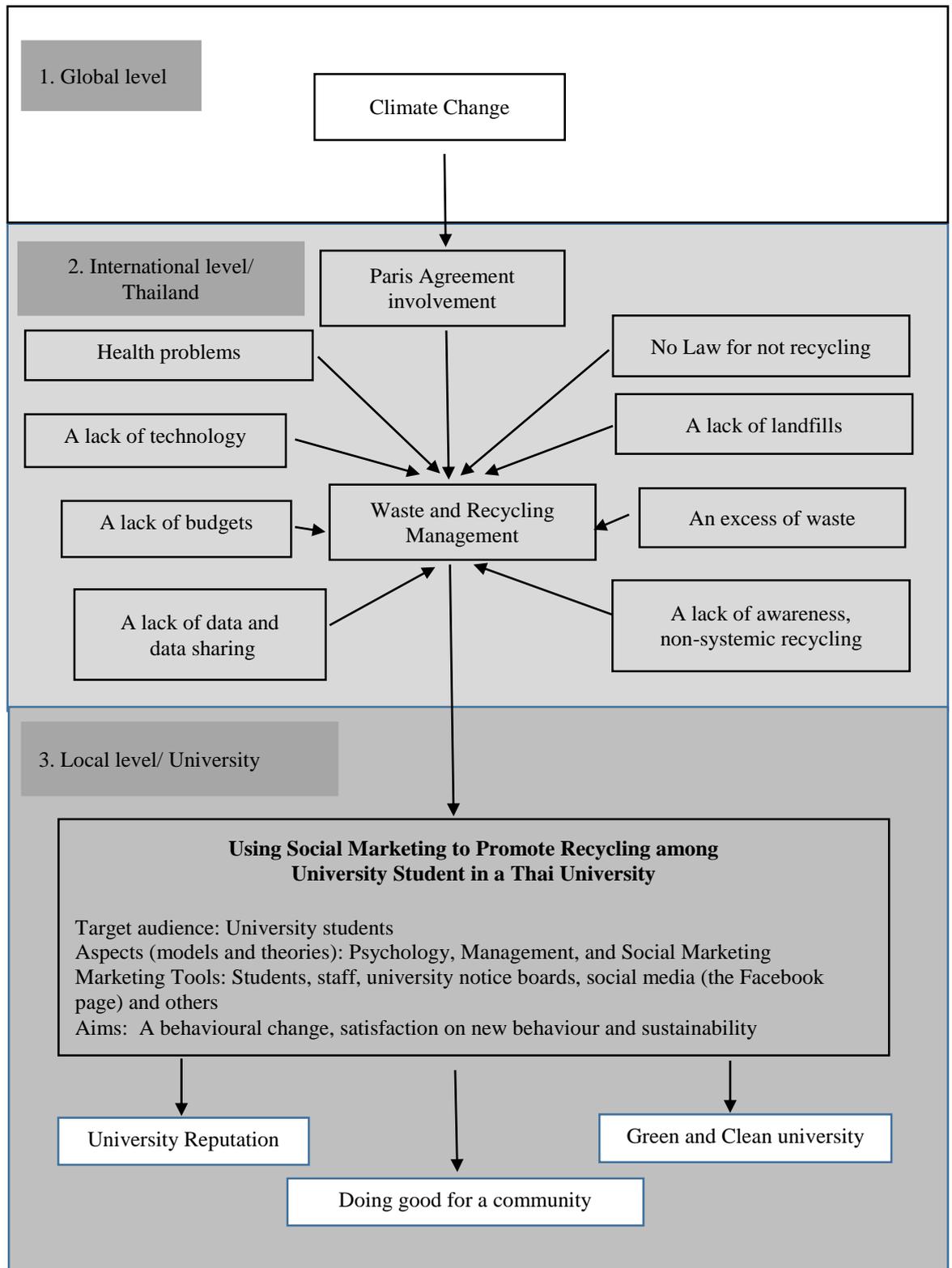


Figure 1.1: The Global Problems and International Problems leading to the action of this study
 Source: Adapted from United Nations Thailand report (2015) and CMU report (2015)

At the Global level, ‘Climate Change’ or ‘Global Warming’ has been one of the top world issues for more than a decade. For example, in 1992, there was the First Assessment Report (FAR) of the Intergovernmental Panel on Climate Change (IPCC), namely ‘The Earth Summit’; calling for nations to take severe actions on climate change at the United Nations (U.N.) conference in Rio de Janeiro, Brazil (UN, 2020). Secondly, in 1995, in Germany, there was the report at the first Conference of the Parties (COP) presenting commitments from many countries to reduce Greenhouse Gases (GHG) emissions from their business after the year 2000 to delay the Global Warming effects (UN, 2020). Lastly, in 2016, The United Nations Framework Convention on Climate Change (UNFCCC) presented that one hundred and seventy-five parties were ratifying The Paris Agreement to reduce the cause of the Climate Change; Thailand was included at number 154 (UNFCCC, 2019). Figure 1.1 shows a summary of the problems at the global level and the international level, and it leads to the action of this research.

As a result of involvement in The Paris Agreement, according to the United Nations Thailand report, Thailand officially started focusing on how to internationally and locally demonstrate its commitment to reduce GHG emissions by 20 per cent by the year 2030 (The Office of National Resources and Environment Policy and Planning (ONEP), 2015). It seems this goal is challenging for the government if the government does not take serious steps to use effective strategies. For example, if the government does not make a long-term master plan for sustaining the new policies or laws, the new norm will not be maintained. So, for this target, the government has to set up a specific team to follow up on the implementation of each organisation.

Thailand is addressing ‘Thailand Climate Change Master Plan’ between 2011 and 2050 and included key policies from the ‘11th National Development Plan’ from 2012 to 2016 aiming to reduce GHG emission and promote green technologies (Climate Thailand, 2019: Asia LEADS Partnership, 2020). However, the new policies do not focus on incentives or disincentives implementation as one of the essential tools like private sectors’ strategies. So if local municipalities do not achieve the goals, there would be nothing to be reported. As a consequence, this approach might show a weakness of the soft approach, which tends not to achieve rigid goals. At the same time, the 3Rs promotion and implementation from private sectors seem to gain success due to consistently paying attention to Corporate

Social Responsibility (CSR) implementation and giving incentives to impress customers or residents to gain more reputation and more income.

According to the Pollution Control Department (PDC) report in 2019 ‘Achieving Low Carbon Growth in Cities through Sustainable Urban Systems Management in Thailand’ in 2016, GHG in Thailand mainly emitted at 19 and 4 per cent from Transport and municipal solid waste (MSW), respectively. So, according to the country report at the Eighth Regional 3R Forum in Asia and the Pacific, the government set up the target for ‘Thailand Zero Waste Action Plan’ between 2016 and 2017 at 5 per cent of the amount of total waste reduction from the base of 2016. It leads to undertake the Master plan (the Year 2016 to 2021) to promote all stakeholders to reduce waste at the source and follow the 3Rs strategy. According to the United Nations Thailand report (2015), a law will be launched to promote waste separation in 2020. However, it is unlikely to show that the government will pay attention to preparing residents to start recycling practice or increasing waste segregation. So, this research will encourage university teams to prepare their students for the law.

1.2.2 The International Problems

At the international level, many limitations delay the waste and recycling management improvement in Thailand such as an excess of waste, non-systemic recycling, a lack of awareness, a lack of data and data sharing, a lack of landfills, a lack of technology and funds (the United Nations Thailand report, 2015). See figure 1.1. It can be said that due to the beginning point of reducing GHG emission, the government still struggles with its barriers. So, the management teams of the country fundamentally need knowledge and multiple tools, including support from other stakeholders at the beginning stage. So, it is the right time for universities to take responsibility to help the country to promote students to engage with this action.

Due to solving these problems and balancing the government’s other responsibilities, there has been criticism from other stakeholders for making wrong decisions on ‘the Five-year Management Masterplan’. The government has recently supported private sectors to run ‘Waste-to-Energy’ plants around the country to burn waste and generate electricity (Nation, 2018: Thai Paliament, 2018). Although the Masterplan consists of many projects

such as using Biogas from biodegradable waste and generating electricity from waste burning, experts were worried on how to find proper waste, because the plant needs plastic and Styrofoam to run the machines (Nation, 2018). However, according to the nation report in 2019, the waste from the country has not been appropriately segregated and then it has a high potential to import the waste from other countries and pushes the country to become a plastic waste bin. Whichever waste be it local waste or imported waste, experts stated that air pollutants and the residuals produce toxic substances and remain in soil and water. Therefore they suggested that the government should encourage people to adopt the '3Rs' scheme ('Reduce', 'Reuse', and 'Recycle') as a better solution (Thai Paliament, 2018). If the government does not encourage residents to reduce GHG at their homes or businesses, then Thailand will mostly rely on importing and burning the waste again. It can be said that not only the government but also Thai people should take responsibility to help each other to save their environment and their lives. It can be stated that this research does not support people to burn waste due to the production of air pollution and other harmful substances. So it will encourage waste generators to change their behaviour to recycle at source to reduce waste and also help the 'Waste-to-Energy' plants to reduce waste contamination.

1.2.3 The University problems and the action of this study

According to the previous study and the university report, the university students tended to have a high level of waste and recycling awareness, consciousness, and intentions. However, in practice, there was a failure in performing recycling (CMU report, 2015: Sriplakich, 2015). The waste segregation at CMU automatically fell into the responsibility of cleaning workers and waste collectors at the bins and in the waste collection lorries (Sriplakich, 2015). Although CMU's waste was partially segregated after disposal and before sending it to landfill sites, it seems promoting 3Rs would be better if waste generators perform recycling at source. One benefit of promoting students to recycle their waste is that they will have improved recycling behaviour and recycling habits. Then, the students who graduate from CMU will be leaders in their workplace and help the country to promote 3Rs. These consequences will help the government to tackle the barriers for the long term. According to UNDP (2019), there is a high demand for data and data sharing for waste and recycling management, so creating recycling behaviour at universities from this study will help the community to increase recycling rates. Another reason why this study is

critical is that there is a high demand for a study aiming to find out the practical strategies to encourage the students to perform recycling for sustainability.

For the university level, not only waste and recycling management teams are responsible for promoting students to change their behaviour, but also the staff from student development division and all the faculties. Ethically, it can be said that all teams should have the same direction to help the community to improve the quality of their lives. Similarly, this study aims to support the teams to achieve their goals by offering powerful social marketing strategies, consisting of ‘Psychology, Management, and Social Marketing aspects’ and new knowledge. Other important and positive points for the university is that encouraging target audiences or university students to make changes and do good things for the community can improve student skills and bring the university to have a better reputation for environmental protection. Furthermore, all universities should prepare their staff and students for the new law, which will be launched in the year 2020 to promote the 3Rs scheme (UNDP report, 2019: UNCRD, 2019). Lastly, it can help the university to promote itself as a green and clean university for sustainability.

This research will present ‘Reasons for the study and research contributions’, ‘Research Question, Aim and objectives of the study’, ‘Research Methodology’, and ‘Context of the study’ in 1.3, 1.4 and 1.5, respectively, to further support the reasons why this research can sustainably support some people’s actions as alternatives.

1.3. Reasons for the study and research contributions

This research is urgent and essential for university management teams who are creating or improving recycling projects in Thailand or other countries which have shared similar problems. There are many reasons why it is needed. Therefore, section 1.3.1-1.3.7 will describe the reasons and the research contributions

1.3.1. 'Prevention is essential.'

Prevention of the adverse effects of Climate Change is a global trend, and it needs all nations to work together. This research aims to help waste and recycling management teams to find new strategies to prevent an excess of waste and to reduce GHG emissions from MSW at CMU. It is believed that this study contributes new knowledge, and it would be shared among universities to help the community to reduce GHG emission and also prevent economic losses and poverty and improve quality of life.

'Climate Change' is a global trend, and 'The Paris Agreement' is involved; Thailand has recently committed to reducing the possible causes. So, it is unavoidable for universities to engage with this topic because all people have already received negative impacts caused by their activities. In an essential practice, recycling should be one of the solutions to reduce GHG emission, compared to throwing all types of waste into landfills.

Nowadays, 'Climate Change and its negative impacts' are problematic and complicated. Hence the challenges have become a core global issue because it may directly affect the food chain, energy, water and health. Which also applies to other consequences such as income, poverty, and education (Paris agreement, 2019). Consequently, it is projected that in 2100, the average world temperature will increase by over three or four degrees Celsius (UNFCC, 2019). These unusual changes affect Thai people in the same direction, for example, between 1955-2014, the temperature of Thailand increased by up to 1.45 degree Celsius, and Thai people faced a massive economic loss, such as less food production (ONEP, 2015).

Furthermore, Thailand lost approximately 33 billion pounds (approximate exchange rate; 1.21 US Dollar = 1 British Pound) from severe flooding that took place in the year 2011. The severe flooding was caused by irregular rainfall (ONEP, 2015). Recently, the capital city of Bangkok has suffered severe effects from the land sinking at a rate of 1-2 centimetres each year, extreme rainfall, frequent flooding, and the increasing rise of sea levels. The World Bank predicted that it has a high potential to partially sink by the year 2030 and cause a lot of problems (Bangkok Post, 2019). A similar case of the land sinking caused by Climate Change can be seen and learnt from Indonesia. Because Jakarta, the capital city, is sinking approximately 1-15 centimetres annually, and almost 50 per cent of

the capital has already submerged (BBC, 2018). Also, it is predicted that by the year 2050 North Jakarta will sink around 95 per cent. Consequently, the Prime Minister of Indonesia emphasised that the capital city will be moving (Live Science, 2018).

1.3.2. ‘Stakeholder’s collaboration is necessary.’

The government cannot work exclusively because working with other sectors, and sharing knowledge can help to reduce the barriers. A limit of budgets will not delay the improvement if stakeholders have strong networking practices. This research will offer opportunities for the university teams and stakeholders to work together.

After Thailand committed to reducing GHG emissions by 20% by the year 2030 in ‘The Paris Agreement’; GHG reduction from waste and recycling and 3Rs strategy play a crucial government role. (The Office of National Resources and Environment Policy and Planning (ONEP), 2015). According to the government report, Thailand must tackle many barriers and needs help from stakeholders because of multiple reasons, including a lack of landfills, budget, and awareness. See figure 1. The government has been promoting the 3R’s and the ‘Clean City and Happy People’ recycling project, in celebration of His Majesty the King’s 87th Birthday. The projects are intended to raise public consciousness at nine community learning centres and nine ‘waste-free schools around Thailand. However, the recycling rate is still low at 19 per cent, according to the One-Year Performance Report of the Government of General Prayut Chan-o-Cha, in 2015. Although it is traditionally believed that dealing with waste issues is the government’s responsibility, some people argue that dealing with waste and recycling is everyone’s responsibility (Chotthong, 2001). It is widely accepted that a university with many members of staff and students consume tremendous resources and consistently generate much waste as a community (Zhang et al., 2011). In a university, waste and recycling management teams and other teams can utilise the useful information and the findings from this study. Then they can promote recycling among university students, in particular, those who are interested in world issues and the impacts of Climate Change, and also those willing to save the environment for themselves and the next generation. Thus, it will help not only solve the university’s problems but also help solve the problems for communities and the world in general.

Even though the government plays a significant role in waste management, it still needs collaboration from stakeholders to increase success. Building a strong network and sharing knowledge and skills among the stakeholders is essential. So, this research will present essential recycling success factors, its barriers, and possible solutions from the stakeholders, and real practice. Besides, it will underline how the university teams and these stakeholders can help each other to increase recycling behaviour and sustainability.

A recycling project among students can be achieved if the management teams consider the powerful influencers, well-known as 'stakeholders' such as residents (staff and students), private sectors, government sectors, non-profit organisations, and others. Recycling issues are most relevant to four main aspects, namely politics, economics, social, and environmental (Gandy, 1994). Besides, Fourali (2015) suggests that critical external environmental factors for social marketing plans should consist of (politic, economic, social, technology, environment, and legal (PESTEL)). However, according to the government report at the 3R Forum in 2015, it discovered that there was little collaboration between the government and stakeholders. This study will fill the gap because it will show successful social marketing strategies from local government sectors and suggest how to build the connection between university teams and the stakeholders. Furthermore, the outstanding private sectors in Thailand are mainly big companies and recycling shops such as PTT (the Petroleum Company), Toyota (the car company), Wongpanit (the recycling company) and others. So this study will collect data from these stakeholders to present the university teams (PCD, 2019).

Moreover, many non-profit organisations are working with big companies to establish recycling projects such as the Thai Environmental Institute Foundation (TEI), Resources Management for Sustainability (3R) Foundation, and others. Each organisation adopts specific social marketing strategies and tools to meet their specific target audiences' needs. Therefore, this study will gather useful information from interviews of the marketing manager of PTT, the researchers or experts from T.E.I., and recycling shop owners (from both Wongpanit's franchisees and non-Wongpanit's franchisees). The aim is to share the unique knowledge to university teams to provide opportunities to build a network and make a better waste and recycling management plan in a university.

In terms of recycling practice, it can be said that Thai people have recycling methods that are not reflected in other countries. For example, they segregate their waste for some purposes, such as selling the items to recycling shops, giving the items to poor people to have a better life, their moral choices, and others. Based on the municipality responsibility, this study will gather some techniques on how to run recycling projects with residents successfully. Although there is no law for promoting recycling in 2019, some government staff have succeeded to encourage their residents by adopting many psychological, management, and social marketing aspects. For instance, some projects provide recycling bins, while others removed the waste bins to increase the recycling rate. It can be said that some people recycle without recycling bins, while other people need recycling bins to support their intentions. So, the university team will gain more understanding of how to adopt essential strategies efficiently from this study.

In terms of recycling promotion from private sectors such as providing recycling bins and promoting recycling, PTT was recently recognised as an outstanding company. PTT provides different types of recycling bins at all of their 17,000 gas stations around the country to support people's needs, and they also established the 'Yak-Lak-Yim' project for promoting recycling practice (Yaklakyim, 2019). For example, each gas station encourages its customers to donate recyclables to local schools to support student lunches and school activities (Yaklakyim, 2019). The next example of recycling awareness-raising is from Toyota who collaborated with TEI, local municipalities, schools, and villages running 153 Corporate Social Responsibility (CSR) projects on Climate Change topics. It has granted local schools and villages to have competitions on 'Stop Global Warming' project and set up Zero waste centres around Thailand for thirteen years (Toyota, 2019). Moreover, the winners will receive gold cups and certificates as prizes from the King of Thailand, as well as a trip to visit green cities in Japan to gain further knowledge and skills from several well-known Zero waste cities (Toyota, 2019).

PTT and Toyota mainly promote recycling behaviour and awareness to residents; similarly, Wongpanit, the biggest recycling company in Thailand with 1,600 franchisees in Thailand and four international recycling shops in Japan and The USA also provide support to communities. Wongpanit tries different ways, such as changing people's attitude about waste by using the bright side of waste, which is 'Waste is Gold' as a slogan (Bangkok Post, 2017; Thairath, 2017). Then, it provides training courses for various groups, such as

government sectors and new recycling business owners to improve recycling trading (Wongpanit, 2019). Next, it has encouraged residents to donate recyclable items to support Buddhist activities at local temples as a new norm since the year 2000. Lastly, supporting schools in thirty-three provinces to establish 500 recycling banks around Thailand since 1999 (PCD, 2019). According to the Wongpanit report, school recycling banks reduce the amount of total waste between 18,000 and 30,000 tons per year (PCD, 2019).

In addition to the above, this research will present useful and practical primary data and secondary data sources from PTT, TEI and Toyota, Wongpanit, five local municipalities and other stakeholders and show possibilities to build recycling networks and improve recycling practice in universities.

1.3.3. ‘The New Trend of University Reputation and University Ranking’

A university serves multiple roles in a community, and it should be a leader or supporter for doing good for a community, including becoming a green university. This study will point out the fact that each university should take themselves to the ranking of a green and clean university of the world.

According to Kotler and Lee (2005), not only does an organisation do the best for itself, but it should also take responsibility in tackling social issues by developing and utilising activities in order to improve their communities. So, to encourage university students to have good practice in a green university, activities such as protecting the environment were recently included. In general, universities play a significant role in providing standard education for young adults. Furthermore, it is often said that universities will provide sufficient knowledge in order to prepare students to be the future leaders in society or excellent representatives of the new generation. Alternatively, to become politicians, scientists, researchers, environmental activists, entrepreneurs, consumers and others (Feo and Williams, 2013). It is essential to mention that academic institutions are playing multiple roles in households, local governments, and private sectors. Especially in non-profit organisations by providing information, stimulating the process of learning, and creating the collaboration of waste management in the 21st century (Higher Education Funding Council for England (HEFCE), 2008). Additionally, some university students will

possibly implement some behaviour or strategies from their universities into their workplaces and their new communities (HEFCE, 2008).

It can be said that most university rankings are fundamentally based on teaching, research, publication, and employability; the related indicators were found from the ‘Times Higher Education World University Ranking (THWUR)’ (THWUR, 2020). Also from the ‘The Q.S. World University Rankings’, and ‘The Centre for World University Rankings (CWUR)’(). However, new trends such as the underlying environment and social responsibility tend to influence university rankings. Because of the new trends, The Network of Universities from the Capitals of Europe (UNICA) created a ‘Green Your University’ competition. It encouraged students to run projects that focus on green practices and encourage student participation in socially responsible activities. The projects are intended to inspire other students, the staff and the community, to share knowledge and skills. A further example of green university ranking is from New Jersey Minority Educational Development (NJ MED), the critical indicators for the ranking consist of ‘Economics’ and ‘Social Affairs’; and the university’s engagement in ‘Environmental Awareness’ and ‘Volunteering’(NJ MED, 2019).

According to the CWUR ranking in 2019, the top five universities are Harvard University, Stanford University, Massachusetts Institute of Technology, University of Cambridge, and University of Oxford. Additionally, there are three Thai universities, Mahidol University, Chulalongkorn University, and Chiang Mai University (CMU) ranked at 471, 488, and 793 respectively, out of 1000 worldwide universities. General speaking from the findings comparing CMU to Mahidol University and Chulalongkorn University, the former followed the latter based on academic indicators from the world ranking. However, in the green campus competitions or ranking, CMU has hardly participated in the competition, while Mahidol University and Chulalongkorn University play dominant roles and became leaders for promoting students to engage with environmental activities, including raising awareness, zero waste projects and 3R practice (Bangkok Post, 2019: Chulazerowaste, 2020). Therefore, this research aims to encourage all Thai universities, including CMU, to gain a much better reputation in terms of green universities and share values to the new generations in the future. As a result of expecting to increase 3Rs or recycling practices at universities such as awareness-raising, this study will present a new upward trend for a green university or university sustainability activities.

1.3.4. ‘Innovative strategies are important tools for promoting young people to change their attitudes and behaviour.’

According to the key concepts for promoting marketing towards young people from the book, ‘Marketing 4.0- Moving from Traditional to Digital’, Kotler, Kartajaya, and Setiawan (2017) underline that mobile internet, peer-to-peer connectivity, empowered target audiences and need a new marketing approach. Also, young people need to be promoted to by integrating digital economy and online and offline interaction. Therefore, this study will offer a new approach which uses both online and offline interaction to promote recycling among CMU students. Utilising fun activities and with strategies likely to change their attitudes and behaviours to perform more recycling behaviour, influenced by student volunteers and student recycling Ambassadors.

It can be said that some young Thai people have similarly shared behaviour or lifestyles from other countries such as ‘playing computer games’ and ‘engaging with social media’. For instance, Thai people were ranked eighth on the Facebook user’s rankings around the world in the year 2017 with 49 million Facebook accounts, while the USA and India were at first and second in the ranking with 190 million and 124 million Facebook accounts (Statista Research Report, 2019). In other words, Thailand Facebook accounts have increased between the year 2012 and the year 2015 from 14.5 million to 35 million accounts with growth rates of 24%, 44%, and 34% (Zocial Rank, 2016). Also, it is projected that from the year 2015 to the year 2021, Thai people’s usage will grow from 17.4 million to 24.1 million accounts (Statista, 2016). The following exciting information is that the most Facebook users are at the age of 19, and the second level in the ranking were 18-20 years (except 19) from up-country areas (Zocial Rank, 2016). In a similar upward trend on Instagram a different social media platform, Thailand Instagram users in the year 2012 were recorded at 240 thousand and then went up to 1.5 million in the year 2013 (Zocial Rank, 2016). The growth rate of users hit a peak of 173 per cent between the year 2013 and the year 2014 (Zocial Rank, 2016). In April of the year 2019, users of Facebook among Thai people reached 2.9 million accounts per month (Socialbakers,2019). It can be said that Social media use is a powerful tool for young people. So, this study will adopt not only practical tools from the stakeholders such as volunteers, but also Facebook, and

university boards to meet the primary target audiences' lifestyles. Therefore, the team will have more alternatives for improving university projects.

1.3.5. 'There is no perfect models, theories or tools for all people, so there is a high demand for exploring new concepts, models, theories or tools to raise awareness's'.

In Thailand, there is no law for recycling until 2020, according to the UNDP report (2015). So, adopting social marketing strategy has been a prime tool for encouraging waste generators. This study aims to offer social marketing strategies to change recycling attitudes and trends so that it becomes a habit among the students, which in turn helps the university teams. It will use a set of models and theories to adopt the strategies, and then it will test the new knowledge and the students' attitudes at the end of the recycling project.

Dealing with waste and recycling is more manageable by laws and regulations for residents. However, it is not frequently seen in universities, so adopting social marketing to university students is essential because recycling is a choice. However, there are plenty of international recycling findings from residential areas, unlike universities. It can be concluded that there is still a massive demand for further research on recycling in universities. 3Rs and recycling practices from the projects in Thai communities can help policymakers to see the whole picture but underlining young adults as a target needs further research. In general, Thai university students may participate in recycling programmes that have a similar message to programmes abroad. Especially programmes that focus on 'Global Warming or Climate Change Issues'. However, some students may not be interested in this message because they may be in favour of incentives such as feelings of pride and enjoy getting money from recycling trade. Another group may be interested in competitions or activities to raise their awareness. So, exploring that fact is still needed, and this study will discover possible success factors for a university project which the management teams could consider.

1.3.6. 'It is a lack of research for integrating models and theories from psychology, management and social marketing aspects'

It can be said that the findings from this study will provide new knowledge while using many dimensions and perspectives from psychology, management and social marketing. It aims to fill the gap between global and local demand.

According to the extensive review of Social Marketing as the subject of Doctoral Dissertations between 1971 and 2013, it discovered only 93 theses (Truong et al., 2014). U.S., U.K., Australia, Canada, and others produced the pieces of doctoral theses at 56, 23, 5, 5, and 4, accordingly (Truong et al., 2014). Furthermore, on the topic of environmental protection, waste and recycling, there were only five dissertations from 1995 to 2013. The categorisation of the 93 theses was divided into seven key groups; 15.1% Health science, 15.1% Education, 12.9% of Business administration, 11.8% of Marketing, 5.5% of Applied Psychology, 29.0% of others. Moreover, social marketing research's trend will focus on Business Administration, Marketing, and Education (ResearchGate, 2019).

Based on the review from Truong et al. (2014), this study will present a new trend with an innovative approach because the disciplinary context of this study consists of the integration of Business Administration (Management), Social Marketing, and Applied Psychology. As a result of a lack of research on recycling promotion, this study will distinguish the three significant main aspects from several projects in Thai villages. This study will help the teams to take advantages from real practices in Thai communities in the North of Thailand, based on international relevant models and theories.

At the applied psychology, for example, when a university must apply a new recycling concept, it will discover that it is challenging to change everyone because people are different. So, it also needs different approaches, such as combining the techniques from management to change their behaviour. Seik's survey in 1997, shows that young adults and adults had significantly more recycling awareness than others. It is argued that teenagers tend to be less interested in recycling than other age groups (Ferrara and Missios, 2012). Among these findings, there is a lack of reporting on university students and their recycling practice in Thailand, so it can be said that this research is necessary for the policymakers to provide new information from a young adult's point of view.

There are gaps from some theories which can be answered by this research.

This research provides three core fundamental theories from Psychology (including scientific aspect), Management, and Social marketing perspectives or 'PMS'. Due to dealing with a variety of people, a recycling project cannot be done successfully with only one theory or one model. So, this study will revisit concepts from relevant models and theories and then show the possible solutions, based on the target audiences and stakeholders' point of views to increase success.

According to the previous study, there is a piece of research from Sriplakich in 2015 conducted at CMU. which showed there was a significant correlation between student's environmental awareness and consciousness on waste management from all faculties. However, in real practice, recycling at CMU was still unclear. Based on the findings and comparison to the theory of Planned Behaviour, if the teams raise only recycling awareness and consciousness, students could increase recycling, because the teams already adopted the marketing tools and public relation to students. However, many students failed to perform recycling. So, it can be said that adopting only one theory may not show success in CMU.

1.3.7. 'Each organisation is unique, so it is crucial to discover specific strategies to handles with problems'.

CMU has many activities, such as promoting students to have unity by using annual events such as 'The CMU. Trekking to Doi Suthep' every September (CMU, 2020). Moreover, there are many student clubs offering students to engage with activities all year (CMU, 2019). This study aims to encourage the university team to promote 3Rs or to recycle during all activities, in particular, during famous events, because it will create awareness amongst CMU Stakeholders and other people will see the new norm (the recycling practice) and spread the word. Then, the new green and clean university projects will be replicated as a new trend.

Each university is unique, and it needs a specific project to increase recycling awareness and behaviour due to the difference between social norms and other factors. Although gathering plenty of potential information to run a university project, it may not show a success if it ignores the cultures of each university. For example, CMU has its annual programmes to encourage new students to participate in, such as 'The CMU. Trekking to

Doi Suthep' each September. All the new students, categorised by faculty, attend the walk for 12.4 kilometres from CMU to Doi Suthep temple to pay respect at the local Buddhist temple and build unity. Senior students and the staff provide support to the new students so that they can reach the top of the hill together (CMU student council Facebook, 2020). Usually, CMU has three semesters, the first begins between June and July, and so senior students provide a training course for the trekking ceremony to new students after the formal student registration until the trekking participation (CMU, 2019). It can be said that this event is unique and well-known for decades and helped build the reputation of CMU; however, CMU must deal with massive waste and needs an effective plan to maintain its reputation. So, this study will explore how to raise awareness with new students to gain more successful waste and recycling management, in the findings and recommendations from the staff's and students' interviews. The interview findings will give more precious strategies to the CMU teams.

Due to a limitation of the study, such as the short-term of the project (conducted from September to December of the year 2017), a lack of the recycling rates and involvement of official document requirements promoting recycling, this study will show the implications and the evaluations, and further recommendation for future projects. Overall, this study will answer the research questions and aims to offer a set of possible social marketing strategies for the teams to gain more success in university projects.

1.4. Research Question, Aims and objectives of the study

This research question is 'How to promote recycling among the students by using effective, practical and innovative social marketing strategies' and it aims to raise students' recycling awareness which tends to lead them to perform recycling.

To encourage the primary target, university students in Thailand, to do recycling in universities is both urgent and essential in the short term and the long term. Recycling has a high potential for preventing and solving community problems such as protection from environmental damage, minimising cost for total reliable waste elimination, decreasing community's conflicts, reducing greenhouse gas (GHG) emission, and others. Moreover, to change this behaviour is challenging because it consists of complicated methods, and it needs the university stakeholder's participation. So, this research aims to alternatively

explore the effective marketing strategies which are practical and affordable and can also be applied to other universities which have shared some similarities.

To change university recycling behaviour is challenging and needs 'Strategic Social Marketing'. Utilising marketing strategies as an approach, and it is mainly relevant to factors from psychology (including scientific perspective), management, and marketing aspects (French and Gordon, 2015; Fourali, 2016). Therefore, the aim, influenced by the research action concepts (Fourali, 2015), can be achieved by utilising five core steps, presenting in section 1.4.1-1.4.5. See figure 1.2.

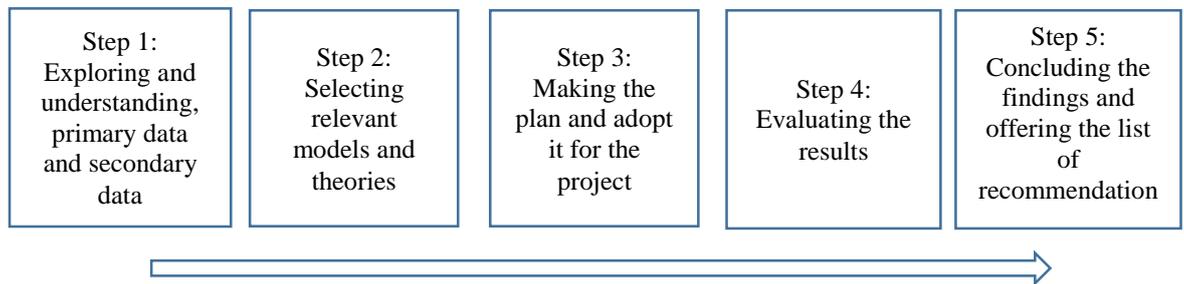


Figure 1.2: Five steps of the research objects
Source: Adapted from Fourali (2015)

1.4.1. Step 1:

Exploring primary data from target audiences and CMU. Stakeholders and collecting and understanding secondary data from other environmental factors such as PESTEL. In addition, learning and analysing on how to adopt previous findings to plan the recycling project to raise the students' awareness. Finally, understanding, attitudes and behaviour, including the lifestyles of university students because it can increase the possibility of the success of marketing strategies which should involve the leading university players.

1.4.2. Step 2:

Selecting relevant models and theories (from Psychology, Management, and Social Marketing) which likely link to promote recycling behaviour.

1.4.3. Step 3:

Creating the social marketing plan and applying it to the recycling project at CMU are utilised. Implementing the recycling promotion by using the Facebook Page, volunteers, university notice boards, and other tools.

1.4.3 Step 4:

After establishing the new recycling project and testing it, feedbacks from the participants are needed for evaluating the results.

1.4.4 Step 5:

Concluding the new findings in order to create marketing strategies to encourage the target group to partake in recycling effectively. Creating a list of recommendations and offering it to the management teams at CMU.

1.5. Significance of the study

This study is essential and comprehensive action research which consists of innovations, unlikely found in traditional research (McNiff, 2002). It encourages a change with a green marketing revolution which should allow ‘unlimited opportunities’ (Kotler and Keller, 2012, p.83). So, it adopts:

- New knowledge and new knowledge contribution which is the process of learning by acting on a recycling project;
- New methodology which does not begin with a theory hypothesis, but starts with the problematic issues-waste management and solutions and then goes through a new concept of recycling, that leads to alternative solutions for encouraging university students to change their behaviour to do, or do more, recycling practice by implementing potential social marketing strategies;
- New practice which approaches and engages with the target audiences and the stakeholders and offers opportunities to build a new network to share their experience with a reflective presentation.

It can be concluded that this research is broadly beneficial to everyone who has shared the negative effects of an increase in waste, and also by people who need to have a better quality of life by reducing the amount of total solid waste. Using the results from this research recycling projects, not only in universities but also in other places can be created.

1.6. Research methodology

In general, in terms of the type of data, this research focuses on both qualitative and quantitative data to serve different purposes. It can be said that each method has strengths and weaknesses an explanation will be provided in Chapter 3, 'Research methodology'.

In term of data collection methods, this research uses several methods for gathering the data which is based on the purpose of 'Triangulation', increasing validity and reliability (Crowther and Lancaster, 2009). Although questionnaires and semi-structured interviews play a significant role in this study, a focus group was also selected for residents' interviews because it was convenience, and it suited for the group of residents. In addition, informal conversation with students and staff and observation were adopted in this study. The reasons why each method was selected will be mentioned in chapter 3.

In term of data sampling method, 'Quota sampling' was used for the student questionnaire at the first step, then 'Convenience sampling' was adopted for the student satisfaction survey at the end of the project. 'Snowballing and Purposive sampling' was implemented for gathering the data from experts such as municipality authorities and NGOs. The details of each sampling will be discussed in chapter 4, 'Research Design'.

In terms of the data analysis and presentation, the findings will be demonstrated in terms of numbers and non-numeric data by showing the percentage or frequency of the results and the theme of the findings. Chapter 3 will show further details for the research design, and then chapter 5 will demonstrate the results' analysis.

1.7. Context of the study

In Chapter 1, the study has already explained the general background of the problematic global issues, Climate Change, waste and recycling in Thailand, and then narrowed down the reasons for promoting recycling project in CMU and the contributions of the study. The aims and objectives are included. Chapter 2: Literature Review, it will begin with reviews of 'The Climate Change and the Paris Agreement', backgrounds of waste and recycling and CMU. Then, the relevant models and theories will be presented in a group of

psychological, management, and social marketing aspects. Next, it will be followed by presenting a previous study and the examples of the application with the gaps. Chapter 3: Methodology, it will describe and categorise the types of philosophy, the research approaches, research strategy, and ethical considerations. Then, Chapter 4: Research Design, it will contribute new knowledge with a new presentation by demonstrating choices, representing the core of action research. Next, Chapter 5: Findings, it will explore the new perspectives of the target audience and the CMU Stakeholders. The findings also reflect the participants' understanding of recycling and the effectiveness of social marketing strategies. Next, conducting a recycling project which is based on data gathering and testing it in order to learn the process of the action research will offer possible, practical and affordable strategies for the CMU teams. Finally, Chapter 6: Conclusions for this study and the suggestions for further research will be provided.

1.8. Conclusion

Chapter 1 presented the general background of the study, and identified that global trends for preventing the causes of Climate Change and reducing GHG emissions, played a significant role in driving this study. This chapter began with the negative impacts of Climate Change, leading to discovering potential strategies to tackle the issues. The 3R's strategy was suggested by many World Organisations such as the World Bank and WHO. However, after Thailand had committed to reducing GHG emissions by five per cent of total waste for the Paris Agreement, it was found that achieving this goal was very challenging. Many barriers were delaying Thailand to reach the agreed-upon reduction in the amount of GHG emissions, such as a lack of data, data sharing, a lack of recycling awareness, and a lack of funds. This study aims to help the community by offering potential social marketing strategies to the university teams to encourage their students to have positive attitudes towards recycling and identify strategies for encouraging sustainability in changed behaviour amongst students.

Moreover, students need to be prepared for the new recycling laws being implemented in Thailand and encouraged to participate in recycling not only because it is an essential and necessary practice because of the law, but because it can improve quality of life and help to preserve the environment.

In a Thai context, 'Recycling' represents correct waste segregation which increases recycling rates and recycling behaviours. So, this study aims to help the teams to raise student awareness by using innovative, practical and affordable techniques.

This research aims to contribute new knowledge, new methodology, and new practices to the teams by offering potential social marketing strategies. The findings were from many data collection methods such as questionnaires, semi-structured interviews, focus groups and observations.

The data collection and sampling techniques mostly utilised quota sampling, convenience sampling, purposive sampling, and snowballing. The study was carried out for one year from January 2017 until January 2018 at CMU and across multiple provinces in Thailand. There were many types of participants, but the primary target audience for promoting recycling were undergrad students at CMU. The research was designed by following the five steps of action research and integrated many dimensions of the three core aspects from models and theories of psychology, management, and social marketing.

This research identified that each university should build a network to share the investment cost and share data to accelerate the process with effectiveness and efficiency. Also, the reputation of the university can be vastly improved if students graduate with an awareness and understanding of conserving the environment and caring for the community. This study will present each concept and each phase of the planning and the findings from chapter 2 to chapter 5. Offering a set of alternatives strategies will be presented in chapter 5 in the section of conclusion and recommendations.

Chapter 2: Literature Review

2.1. Introduction

This chapter consists of eight key sections which are ‘Introduction’, ‘Backgrounds of Global trend, Paris Agreement and Thailand relevance’, ‘Waste and Recycling Management’, ‘Chiang Mai University (CMU) backgrounds on waste and recycling management’ in section 2.1-2.4, accordingly. Section 2.1 provides general information for the complete relevant information. Then section 2.2 shows backgrounds on Global trends and the Paris agreement, Thailand’s commitment to Climate Change and the implementation, Waste and recycling management at global, international and local levels. Section 2.3, ‘Waste and Recycling Management’ consists of 2.3.1-2.3.6 explaining waste and recycling in terms of definition, types, waste generation, waste composition, the hierarchy of waste, waste collection, and recycling. Next, section 2.4 explains CMU backgrounds on waste and recycling management, such as demonstrating the structure of Executives, Administrators, and other staff who officially deal with waste and recycling issues in CMU.

Moreover, it presents Chiang Mai University’s waste collection, solid waste composition and weight of solid waste. Also, this study offers a possible recycling rate calculation for university projects in section 2.4.5. Then, ‘Relevant Psychology Models and Theories,’ which social marketers have widely used is displayed in section 2.5. Section 2.6 demonstrates examples of models and theories which social marketers have used for interventions, and they are mostly relevant to the jobs of management teams such as recycling facilities. Then section 2.7 explains how to make a social marketing plan and the adoption thereof. Section 2.8 is a summary of the chapter. Then, chapter 3 will show the Research Methodology aiming to explain the selected data collection and data analysing. Following this, chapter 4 will explain the research design. Finally, chapters 5-7 will explain the whole process of this action research, the implementation and evaluation finishing with a conclusion and recommendations.

2.2. Backgrounds

This study aims to explain the background of Climate change and the Paris Agreement because it links to Thailand's commitment and the CMU projects on waste and recycling management. It consists of section 2.2.1: Global trend and Paris agreement and section 2.2.2.: Thailand and the commitment to Climate Change and implementation.

2.2.1. The Global trend and Paris Agreement

Global warming or climate change, a controversial issue, has been demonstrated from a variety of different perspectives for example from a scientific angle, a political viewpoint and economic implications (Sarewitz and Pielke, 2000). This study aims to collect and present secondary data on global trends in general, and then lead more specifically to Thailand's involvement.

Firstly, according to scientific history during the nineteenth century, it was discovered that within the first half of the previous century burning fossil fuel had emitted about 150, 000 million tons of gas and that 75 per cent of the gas remained in the air. The presence of this gas led to world temperatures increasing by more than the average 0.003 degree Celsius (Callendar, 1938). Then warming weather water released carbon dioxide into the air, while the cold water receives the gas back, this might generate an increase in standard temperature at the North Pole over ten years (Callendar, 1940 and 1949). Next, Plass (1956) estimated that an increase of 10 per cent in carbon dioxide gas tended to raise the earth temperature by around 0.36 degree Celsius. If people continued focusing on burning fossil fuel, world temperature would increase abnormally; moreover, a massive carbon dioxide change could stimulate volcano eruptions and together with other adverse impacts causing economic crisis (Roger and Suess, 1957). Then, German researchers in Meteorology discovered that 95 per cent of climate change was caused by humans (Hasselmann, 1997).

Due to an increase in negative impacts, some countries started collaborating to control gas emissions. For example, 118 cities around the world worked together to establish 'the

United Nations (U.N.) Conference on Environment and Development’ or ‘Rio Earth Summit’ in Brazil in June 1992. The “Rio Earth Summit’ was established to persuade various countries to join in mutual agreement to protect land, employment, and nature for the next generation. It linked development with the environment (Tollefson and Gilbert, 2012).

Consequently, the U.N. Conference influenced in 1972 and 1992 in the Montreal Protocol and Kyoto Protocol (Tollefson and Gilbert (2012); Neimark and Mott (2011)). The conference mentioned climate change in terms of greenhouse gas emissions due to people’s activities which accelerated the global effects, and it needed low-income countries to pay attention (Chazournes, 1992). At that time, the main greenhouse gas (GHG) emissions had come from high-income countries; however, it had a high potential to move to low-income countries (U.N., 1992).

Next, controlling human-made greenhouse effects was the primary issue during the Kyoto Protocol. An agreement was made that aimed for its members, all western countries and many Eastern European countries, including the US, Canada, and Japan, to control their activities that produced greenhouse gas emissions. A minimum of five per cent reduction was set to be achieved between the year 2008 and the year 2012, from the standard level in the year 1990. (UNFCCC, 2020).

In 2015, it was accepted that greenhouse gas emission potentially had a significant impact on the increase in average world temperatures by up to two degrees Celsius (Ollila, 2019). Another supportive idea was from the World Bank president, Dr Jim Yong Kim. He provided a positive view of climate change. He suggested that to deal with climate change now would prevent further damage to the earth and would also bring economic stimulation (The World Bank report, 2016). What is more, by the year 2100, the average world temperature will increase by over three or four degree Celsius (UNFCCC, 2020). Also, climate change increases the possibility of heatwaves, unusual levels of snowfall and melting of the polar ice caps, so increasing the sea level, leading to a reduction in plants and animal and unpredictable rainfall, according to Paris Summit (2015). Furthermore, it was also projected that climate change would have a direct influence on the food chain, energy, water, and health (European Commission, 2020). It also had further consequences and impacts income, poverty, education and confrontation (European Commission, 2020).

According to the Paris 2015 agreement, the U.S. and China, eventually, had changed direction and supported the climate change issues. For example, Obama, the U.S. president, agreed to reduce greenhouse gas emissions. Meanwhile, the Chinese government launched new laws, playing a significant role in a reduction of mine utilisation and air contamination (Paris agreement, 2015). However, in June of the year 2017, Donald Trump, the U.S. president, announced that the U.S. wanted to withdraw from the Paris agreement. He claimed the Paris agreement was unfair for the U.S. due to the loss of economic benefits such as the loss of GDP and 2.7 million industrial jobs by the year 2025, and the loss of 6.5 million industrial jobs by the year 2040, estimated by the National Economic Research Association (The Whitehouse, 2020).

On one side, there is scientific information, mainly fossil fuel production and consumption, which were the main reasons for human-made greenhouse gases and the cause of global warming (Paris agreement, 2015). On the other side, in particular, the political and economic view, some countries such as the U.S., disagreed on the data, they tended to continue running fossil fuel businesses to fight the economic crisis (Grundmann (2007) and The Whitehouse (2017)). Recently, this climate issue has shifted; it has become involved with political policy planning to be a leader on green issues (Grundmann, 2007).

Besides, it was recommended that avoiding a debate about politics and science data on climate change can be done by applying emission reduction activities, for example (Sarewitz and Pielke, 2000). Similarly, it was found that some governments accepted that scientific evidence on climate change may or may not provide credit, however, to promote people to reduce GHG emissions is helpful for governments in resolving other issues (Betsill, 2001). Alternatively, it was recommended by Betsill (2011) that to reduce GHG emission in practice would only succeed by not focusing solely on climate change, because some people may not have felt the negative impacts in their areas. So, this issue might be prioritised indirectly by implementing and raising community concern for activities which produce less emitting of GHG gases such as waste reduction and recycling, for example (Gregorio et al, 2019).

In the economic view, it has been recently recommended that the global and local trends should shift from the arguments to invest in low carbon business (The World Bank report, 2016). For instance, it can be seen the success from local government by using the Climate

Protection Campaign (CPC), funded by the International Council for Local Environmental Initiatives (ICLEI) (ICLEI, 2020). The new investment succeeds because it was influenced by mutual benefits from environment involvement and economic rewards (Betsill, 2011).

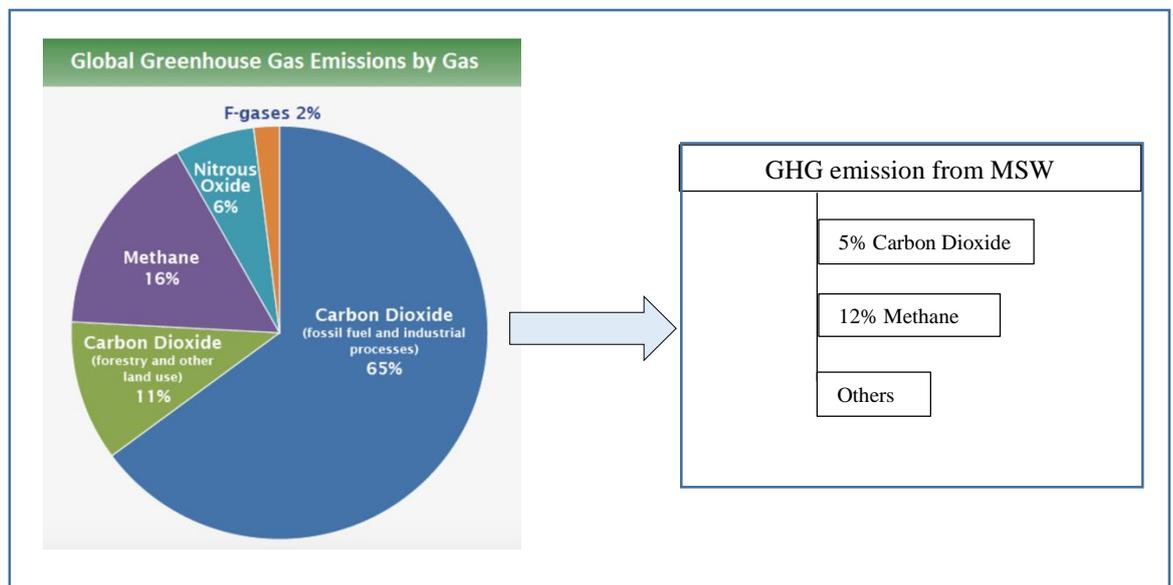


Figure 2.1: Global GHG and GHG from MSW
Source: Adapted from IPCC report (2020) and World Bank report (2020).

On the topic of waste, according to the IPCC report (2020), world GHG emissions consisted of five groups of gas. They are 65 per cent Carbon Dioxide from fossil fuel and industrial processes, 11 per cent Carbon Dioxide from forestry and other land use, 16 per cent Methane, 6 per cent Nitrous Oxide, and 2 per cent F-gases. See figure 2.1.

Furthermore, there was scientific evidence linking GHG emission and waste treatment, for example, according to the World Bank report in 2012, GHG emission from Municipal Solid Waste (MSW) released Carbon Dioxide at 5 per cent of the total global GHG.

Furthermore, scientific statistics on landfill, one of the solid waste treatment options, showed that Methane was emitted at 12 per cent of total Methane emission around the world (IPCC, 2020). Composting, one of solid waste elimination choices from waste recovery, also emitted Methane significantly (IPCC, 2020). Next, it was believed that Methane is 21 times more harmful than carbon dioxide, so reducing these harmful gases could be taken as an urgent action (IPCC, 2020). Although many countries encouraged their citizens to reduce GHG emission by focusing on the topic of reducing Carbon Dioxide emission, and the direct negative impacts caused by GHG in the environment. There are other strategies which should be promoted as prime priorities; such as saving budgets for health issues, having a better quality of the environment which leads to an increase of GDP or an essence of feeling good to improve their communities by

themselves. One of the new trends is demonstrated by the team of scientists at the Lawrence Berkeley National Laboratory (Berkeley Lab), the National Institute of Environmental Health Sciences (NIEHS), RAND Corp., and the University of Washington in 2014. Their research showed that in the year 2020, the US could save 10 billion dollars to 24 billion dollars on health savings if the government implements proper strategies to reduce GHG of up to 3 million metric tons of Carbon Dioxide per year (WHO report, 2010). There was another example from the EU collaboration between the year 1990 to the year 2007; they reduced Carbon Dioxide emission from 69 million tonnes per year to 32 million tonnes per year (ISWA, 2009). It can be said that if many countries have the same goal to reduce GHG, the outcome will present massive impacts. So, Thailand and Thai universities should take this action together to improve the world and their people's health.

Standard waste elimination processes consist of a landfill, composting, combustion (burning), and others (The World Bank report, 2015). As mentioned, GHG emission could be generated by both landfills and composting (aerobic digestion). Besides, burning waste should not be selected because the process can produce Methane the same as other fossil fuel plants even for the purposing of generating electricity (World Bank, 2015). Therefore, The World Bank (2015) pinpointed new trends that policymakers should encourage people to follow. These included reduce waste, increase recycling practice, improve waste collection systems, and avoid making compost or biogas from food waste with the anaerobic digestion technique, use alternative green energy, and others as global trends. Another trend which relates to increasing problems on municipal solid waste is that big cities likely generate much waste due to over development of land, transportation, energy, increased civilisation, community habits and local situations (Betstill, 2001). So, it is suggested that policymakers should not underestimate the consequences, and they should select various strategies to tackle these issues (The World Bank report, 2020).

2.2.2. Thailand and the commitment to Climate Change and the Implementation

Thailand is in the region of South-East Asia, with a population in the year 2020 of 69.7 million (World meter, 2020). Its neighbours are Myanmar and Laos to the north, Cambodia to the east, and Malaysia to the south (Nation online project, 2019). See figure 2.1. Based on gross national income (GNI) per capita estimation, Thailand was upgraded from a Low-

Middle Income country (LMI) to Upper-Middle Income country (UMI) in the year 2011. The upgrade was due to the rapid growth in the economy, which focused on manufacturing, agriculture, the service sector, education and skills improvement and others (The World Bank report, 2020).



Figure 2.2. Map of Thailand
Source: Nation online project (2019)

Moreover, in the year 2018, the annual GDP growth of Thailand increased by up to 3.8 per cent, while world GDP growth and UMI were at 1.9 and 4.1 per cent accordingly (The World Bank report, 2019). Based on the Nation online project (2019), although Thai is the official language in Thailand, English is widely used because Thailand is one of the top areas for tourism in the Asia-Pacific region. In the year 2015, it was ranked second with 30 million overseas visitors, while China was the number one contributor with 57 million arrivals, according to the Nation online project (2019). So, waste in Thailand does not come from only residents but also visitors. The government should promote both groups to reduce waste from their activities. Therefore, this study could present some useful strategies for management teams.

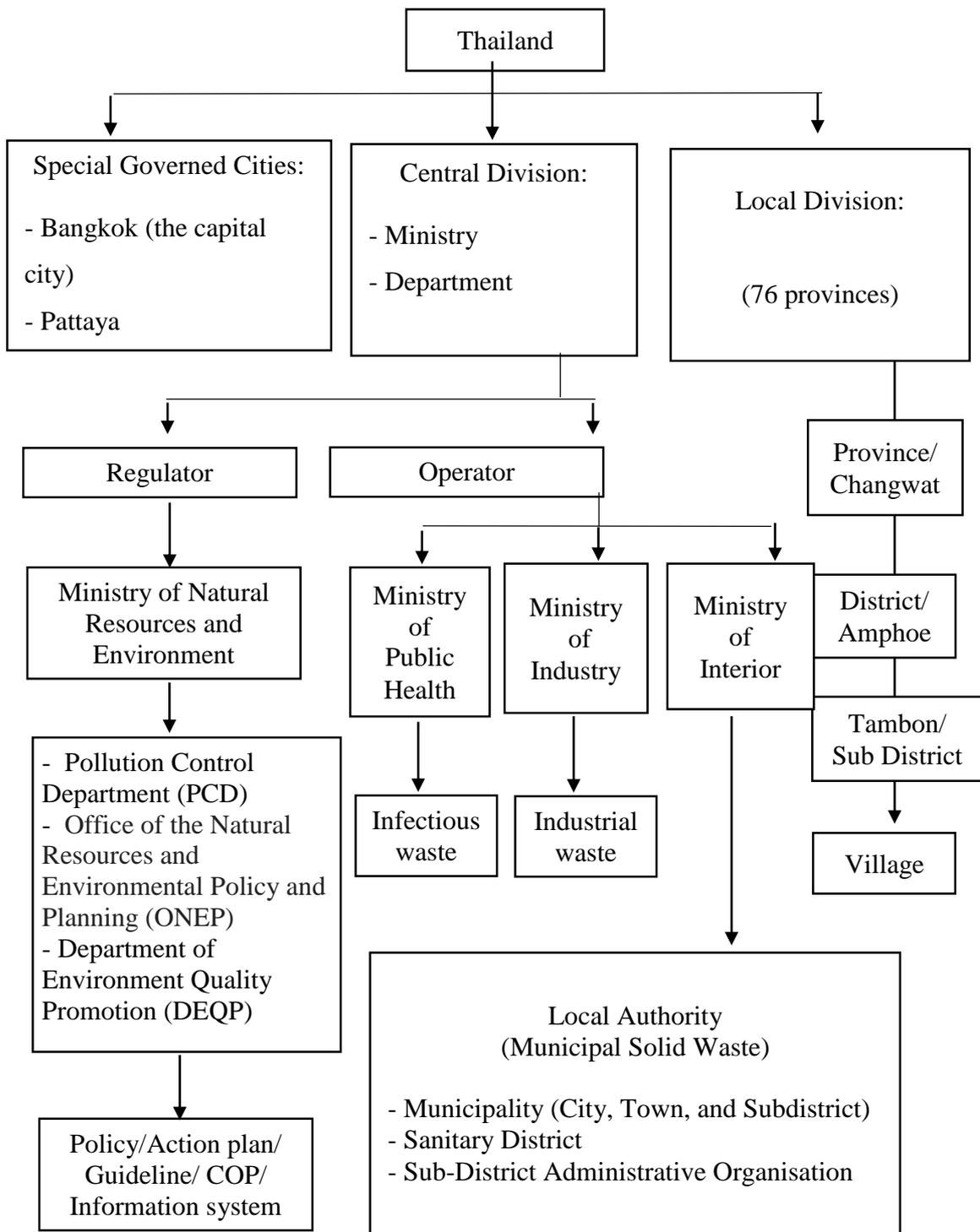


Figure 2.3: The framework of role of related agencies and political framework for Thailand waste management
 Source: Adapted from the Thailand Progress report on 8th East Asia Summit (2019): The Parliament, 2020: Ratchakitcha (2018)

According to the political framework from Rachakitcha (2018), Thailand divides into three groups which are Special Governed Cities, Central Division and Local Division. See figures 2.3. In the Central Division, their jobs are dealing with policy, action plan, information system and others. In the Local Division, most of the staff from the Operation Division are dealing with the implementation from each province to each village because each province divides into several districts, so one district manages several sub-districts. A village is the smallest part of the political framework in Thailand.

For Climate Change involvement, Thailand signed the Paris Agreement in October of the year 2015 and committed to attempting to reduce GHG emission by 20 per cent between the year 2021 to the year 2030 (INDC, 2016). According to INDC (2016), although greenhouse gas emission in Thailand was at a low level, 0.84 per cent of the total of the world in the year 2012 (INDC, 2016). However, Thailand was ranked at eleventh for the most vulnerable countries affected by climate change between the year 1994 and the year 2013. Then its rank rose to 10th in the year 2015 (IPCC report, 2015). Thailand had been significantly affected by climate change, between the year 1955 to the year 2014. During this time the temperature of Thailand had increased up to 1.45 degrees, and this had affected Thai people in various negative ways such as increasing irregular heavy rainfalls leading to frequent flooding and decreasing of livestock (IPCC report, 2015). In the year 2011, Thailand, especially Bangkok and many main cities, had suffered from devastating floods and loss of more than 600 lives and lost billions in economic damage (IPCC report, 2015). Consequently, if universities present themselves as socially responsible leaders by producing university students with high social responsibilities, the outcomes would help the country and the communities.

According to INDC (2016), implementing some strategies to tackle GHG emission reflected a holistic approach, this included not only controlling fossil fuel businesses but also the management on waste and promoting recycling from the global levels to local levels. Each organisation or each university can represent itself to encourage its members to be the leaders for waste reduction. In practice, according to the Thailand Progress report (2017), waste management teams were divided into two central agencies, regulators and operators, (See figure 2.3). The Ministry of Natural Resources and Environment's responsibilities are dealing with policy, action plans and information systems (Thailand report, 2017). While, according to the Thailand report at the 8th East Asia Summit/High-Level Seminar on Sustainable Cities in the year 2017, Operator teams consist of the

Ministry of Public Health, the Ministry of Industry and the Ministry of Interior, dealing with infectious waste, industrial waste, and municipal solid waste, respectively.

Although Thailand signed the Paris agreement in the year 2015, it had officially launched a National Agenda on waste management in the year 2014. The agenda was called 'the Road Map on Waste and Hazardous Waste Management', it was approved by the National Council for Peace and Order on the 26th of August in the year 2014 (Thailand report, 2017). At the university level, it was unlikely that universities would promote waste reduction by students using development plans. Following that was the 'National Solid Waste Management Master Plan (2016-2021)', approved by the cabinet on the 3rd of May in the year 2016, and then the action plan of 'Thailand Zero Waste' for the year 2016 and the year 2017. As a result, it can be said that the 'Zero Waste City Project' is widely used to describe several waste management projects in villages which support the National Plan. It also encourages residents to change their behaviour to reduce the amount of waste and to segregate waste at the source. At university sites, several Thai universities are presenting themselves to be zero waste universities, such as Chulalongkorn University and Mahidol University (Chulalongkorn University, 2019; Mahidol university, 2019). However, there is a lack of public source evidence to claim that CMU is promoting their students on waste reduction practice. So, this study would be beneficial for the university teams or other universities to gain new knowledge for promoting waste and recycling management among students.

After Thailand committed to International strategies, the government launched new Laws and directed authorities to take urgent action for managing waste and recycling at local levels. For example, each local municipality had to meet the carbon dioxide reduction target by promoting the 3R (Reduce: Reuse: Recycle) scheme aiming to reduce GHG emission by 5 per cent per month between the year 2016 and the year 2017 (UNDP report, 2016). Regarding public involvement, the government aims to implement programs and strategies at the local level by providing an education programme, raising awareness, and building capacity to tackle the issues between the year 2016 to the year 2021 (Thailand report, 2017). However, it can be said that it was not highlighted that raising awareness among students in Thai universities should be one of the priorities, unlike the village population. However, if a university aims to raise student's awareness, the outcomes will help the community in many ways.

Many barriers to waste management are that Thai people have faced several difficulties from various factors including a lack of budget, lack of standard landfill, non-systemic management plans, a lack of awareness amongst other things, according to the Thailand report (2019). Firstly, between the year 1993 to the year 2002, Thailand organised 95 landfill sites and 330 dumping sites to dispose of 11.2 million tonnes of total waste. Then waste treatment was in crisis due to exceeding the budget by 3 billion baht (Chiemchaisri et al., 2006). Secondly, in the year 2014, landfill sites and open dump fields caught fire over 15 times, causing many subsequent problems including air pollution and chemicals leaking into the soil, according to the Thailand report (2019). Thirdly, according to The Association of South-East Asian Nation ASEAN (2005), between the year 1999 to the year 2003, Thai residents generated waste at 0.613- 0.628 kilograms per person per day (0.613- 0.628 kg/cap/day). However, by the year 2014, waste in Bangkok was in a crisis due to people generating waste at a higher rate of 1.53 kg/cap/day, causing many problems. As a result of the waste issues in Bangkok, the Bangkok governor, Mr Sukhumhand Paribatra, and his team gradually shifted the interest from landfill to incineration. A pilot project was initiated spending 300 million baht to use incineration at Onnut and Nongkham municipality (Bangkok Post, 2010). By the year 2012, due to protests and legislation 121 landfill sites were no longer in use, as a result of a scarcity of landfill and an increase in budgets for landfilling, the governor kept renewing contracts with the private sector to improve landfill to meet the required standard (Challcharoenwattana and Pharino, 2015). The results showed that the investment had to increase from 418 baht per ton to 745 baht per ton, so incineration was still a priority (Challcharoenwattana and Pharino, 2015). However, Greenpeace (2013), one of the non-profit organisations in Thailand, argued that incineration was not the best answer because it produced air pollution and left harmful residuals in the soil. So, Greenpeace (2013) stated that although the leaders in Bangkok had unclear plans on how to deal with waste, the pilot study identified that dealing with this issue could begin with goals for sustainability, resident participation, and launch a 'Zero Waste' campaign to reduce waste, promote recycling and waste recovery. Similarly, the World Health Organisation (WHO) stated that one of the successful critical factors of waste elimination planning could consist of residents' opinions and their satisfaction (Sujaritpong and Nitivattananon, 2007). Also, Greenpeace added that the Bangkok management team could get polluters to take responsibility for their waste by introducing penalties such as paying tax on hazardous waste generation (Greenpeace,

2013). Nowadays, the trend to deal with waste consists of three key factors, focus on changing people's behaviour to become pro-environmental people, regulating people with laws, and providing facilities such as proper bins and cleaning services (INCPEN, 2016). For the university level, changing students' behaviour to reduce their waste, promoting them to be green people for sustainability and providing proper recycling facilities should be implemented following the direction of the international strategies as mentioned.

Overall, this section has already explained the background to Climate change, the Paris agreement, Thailand's commitment and the country's Action Plan, goals, and suggested implementation, so the next section (2.3) will show the background of waste and recycling and trends for the solution. Then, section 2.4 will describe CMU backgrounds on waste and recycling management, combining the current statistics of waste and recycling data in CMU. Section 2.5 will revisit the relevant models and theories.

2.3. Waste and Recycling management

This section categorises into seven topics which are; Definition of waste, Type of waste, Solid waste generation, Waste composition, Hierarchy of waste, Waste Collection and Recycling. This information also presents environmental scanning and new trends. While section 2.4, 2.4.1 and 2.4.2. will demonstrate CMU backgrounds on waste and recycling management and CMU staff members who are dealing with waste and recycling in CMU areas, both policymakers and implementors and the waste routes in CMU. Then, section 2.4.3- 2.4.5 will explain waste collection, waste composition, weight of solid waste and possible recycling rate calculation for university projects. Then, 2.4.6 will summarise the waste and recycling in CMU. This information aims to help policymakers to understand the reality and the contribution of this thesis, and it will lead to the creation of a social marketing plan for CMU.

2.3.1. Definition of waste

The definitions of waste are varied from different sources from the year 1983 to the present year. However, the main points likely emphasis that people should not ignore waste as unvalued matters, otherwise promoting to reduce waste will be not in their interests. These are examples of the definitions:

‘Something which the owner no longer wants at a given place and time and which has no current or perceived market value’ (WHO Report, 1983, p.102);

‘Waste is not litter-even though many people confuse the two; litter is simply badly managed’ (Donnellan, 2000, p.3);

..... ‘In Solid Waste Management, there is no throw ‘away’’ (World Bank Report, 2015, p. 4)

In Thailand, the definition of waste, suggested by the private sector, ‘Wongpanit’, is shorter and more precise than the others, it shows that people should not ignore waste because it is value. It is ‘Waste is gold’ (Thairath, 2017:Wongpanit, 2020).

Recently, the word ‘Zero Waste’ is widely used regarding many projects or campaigns because a new trend is promoting people to reduce waste until there is no waste. What is more, if people have changed their attitudes on what waste should be thrown away, the environment will be improved, and the people will live with a better quality of life.

2.3.2. Type of waste

In the year 1992, waste might be categorised by type of energy recoveries such as combustible waste, non-combustibles waste, and putrescible material (DoE, 1992). In the year 1996, Wells (1996, p.145) concluded that categorisation of waste consisted of 3 main groups; they are ‘Municipal waste, Industrial waste, and The Small-Quantity Hazardous Waste (SQHW)’. He added that municipal waste consists of waste from residents and small organisations such as biodegradable or organic waste (excessive food from preparation and consumption, and gardens), plastic, metal, and paper. While industrial waste signified waste from large organisations, which was mostly hazardous or harmful chemicals, the last type of solid waste was the other types of hazardous waste (Well, 1996). In the year 2008, the Organisation for Economic Co-operation and Development (OECD) explained the solid form of waste. It stated that it was unwanted and needed for disposal and did not include ‘radioactive waste from nuclear activities’ (OECD, 2008).

Waste can be categorised in various ways, for example, based on form (solid, liquid, and gas), chief characteristics, sources of waste, and others (Donnellan, 2000). Over the last few decades, waste categorisation has changed mostly based on sources of data, for example, in the year 1996, waste was divided into three main groups, but by the year 2015, The World Bank stated that in a global perspective, solid waste consisted of seven groups. In 2015, according to The World Bank Report, types of solid waste were categorised into seven key groups which are residential, commercial, industrial, institutional, construction and demolition, medical waste, and agricultural. Types of solid waste from residential areas are complex and unique, although there are similar types of solid waste composition from commercial, industrial, and institutional. In some categorisations, these sources are found in the same groups. Markets, restaurants, schools, universities, hotels, and others generated similar types of waste which were paper, cardboard, plastic, wood, food waste, glass, metals, special waste, hazardous waste, and electronic waste (e-waste) (World Bank, 2015).

So, this study focuses only on solid waste from Thai residents and the CMU community, namely 'Municipal Solid Waste (MSW)'. Although the data of waste composition from residents and institutions are categorised in different groups based on The World Bank (2015), the waste is mainly collected by the municipality service. Staff from universities, residents and local authorities can share their knowledge and skills to improve their waste reduction and recycling projects.

A long time ago waste treatment in Thailand was the responsibility of each household for, residents dealt with waste in various ways, and those methods became Thai norms such as open dumping, burning, burying, feeding chicken and others (PCD, 2015). It can be said that there is a lack of evidence showing if Thai people have gradually changed their norms. However, there is a piece of evidence showing the background of recycling in Thailand in the year 1987 by Wilson et al. (2009). Thailand had no records of recycling rates, but landfill waste pickers and street waste pickers played a significant role in recycling rates at 4 and 2.5 per cent respectively. However, in the year 2001, there was another piece of evidence that presented that residents in the capital, Bangkok, had used several ways to dispose of recyclable items. Such as waiting for door-to-door waste buyers (recognised as tri-cyclers), trading and separating valuable items or just leaving the items outside their homes for waste pickers and waste collectors (Wilson et al., 2009). Searching for

recyclable items on public streets is widely accepted in Thailand, while this is illegal in some countries such as in Abuja and other cities in Nigeria, Lusaka in Zambia (Iman et al., 2007; Waste and Skat, 2007).

Currently, most people deal with recyclable items in a variety of ways. Firstly, some people benefit by separating recyclable items and exchanging them for money, as offered at ten community-based programs and 100 school-based programs and accounts for 18.6 and 32.13 kg per member, respectively. (Challcharoenwattana and Pharino, 2015). Next, separating the items at home and selling them by either calling and visiting recycling shops or using intermediaries to pick up the items are used. (Wongpanit, 2019). Dealing with recycling can be improved in a variety of ways, but some ideas may be possible but not accepted as a global standard from Western countries and North America. For example, advice from Wilson et al. (2009) was that the government might allow street pickers to access the landfill sites and formally collaborate with waste stakeholders as this tended to increase recycling rates by up to 80 per cent. However, in recent years, an array of strategies to encourage residents to segregate waste at source has become a common practice as recommended by The World bank (2015). At the local level, not only promoting waste segregation at source but also supporting residents to use organic waste bins in residential areas and keeping it for making fertiliser and generating biogas for a small-scale usage should be included. There are some existing examples in Nonthaburi province (Central region) and Sakon Nakorn province (North-Eastern region) (Challcharoenwattana and Pharino (2015) and Pubsook (2019)). According to the 2017 country report, other government goals are to encourage the community to engage in various activities. Such as earthworm farming fed by vegetable waste to produce natural compost replacing the need for chemical fertiliser, to sell recyclable items at recycling shops, and to properly dispose of general waste at designated disposal sites for systemic waste collection. Similarly, this study will focus on how to encourage students to separate waste properly, aiming to reduce the amount of total waste and increase recycling rates for sustainability.

As a result of the categorisation of items, it is common to see schools or universities provide three basic types of waste bins. The three bins are for recyclable waste (paper, cardboard, glass, and metal), general waste (food waste, plastic, wood, and others), and hazardous waste (used batteries, used bulbs, pesticides and others). Furthermore, in some

schools and universities, they add food waste bins at the canteens. However, some people may segregate proper waste when they see recycling bins, unlikely some people who may not be affected by the bins, so to find out powerful strategies to change their behaviour is crucial as one of this research's aims.

2.3.3. Solid Waste Generation and a Limitation of Budget

According to The World Bank Report in the year 2012, increasing Gross Domestic Production (GDP) and population would lead to more waste generation. So, The World Bank suggested policymakers around the world to focus on the topic of waste and recycling management effectively in order to improve solid waste management (SWM). The World Bank estimated that the amount of global waste would reach 2.2 billion tons by the year 2015, and with limited funds, it will be challenging to handle. As a result, the cost of dealing with waste would increase more than four or five-fold from the year 2012 to the year 2025, particularly in Low-Income and Lower-Middle Income (LMI) countries. According to the categorisation from the World Bank based on global income, China, India, Thailand, Philippines, and Indonesia are all grouped as Lower-Middle Income countries (LMI).

What is more, at the global level, MSW generated around 0.8-1.5 kilograms per person per day (The World Bank Report, 2012). Next, it is predicted that by the year 2025, the amount of waste generation will massively increase by up to 3-fold (from 369 to 956 million tonnes per year) from Middle-Income countries. This massive increase in the amount of waste generated will cause these countries to have increasing difficulties and severe consequences if the waste is not managed effectively.

Based on the statistics from The World Bank Report in the year 2012, countries in South East Asia Pacific (SEAP) generated the most waste in the world at 33 per cent. Moreover, the management teams had to focus on the waste collection process due to the levels of excess waste. By comparison, high-income countries focused on promoting waste disposal or waste segregation at source to reduce the cost of waste collection (World Bank, 2012). Using purpose-built vehicles and collecting different types of waste in different lorries tended to reduce contamination of recyclers. However, it needed massive budgets which may not be affordable for low-income countries (World Bank, 2012). So, The World Bank

suggested that management teams or policymakers in low-income and middle-income countries should focus on the 3R's to reduce the cost of waste collection and waste disposal.

Population (/ area)	Waste (kg/capita)
Greater than 50,000	1.89
Less than 10,000-50,000	1.15
5,000 to 10,000	1.02
Less than 5,000	0.09

Table 2.1. Thailand Waste Generation
Source: PCD, 2013

Statistically, in the year 2012, Thai people generated 24.73 million tonnes of municipal solid waste, the waste generation per person in Thailand was based on population per area (PCD, 2013). See table 2.1. It can be said that a person in a big city, on average, tends to generate more daily waste than a person in a small city. According to the statistics from the Pollution Control Department (PCD) in Thailand, in the year 2018 Thai residents generated solid waste at 27.82 million tonnes per year which equates to 1.15 kg/cap/day. See table 2.2. It can be seen that there is a significant relationship between the increase in waste weight generation and waste generation per person from the year 2010 to the year 2018 (PCD, 2018). If Thai people generate waste at a higher rate every year, they also need to increase the disposal of waste per day significantly. Based on statistics, the World Bank noted that the amount of waste in LMI countries would increase 3-fold from the year 2012 to the year 2050 and that these countries will be facing more difficulties consequently.

Year	Waste weight (million tonnes)	Waste generation (kg/per person/ per day)
2010	24.22	1.04
2012	24.73	1.05
2014	26.19	1.11
2016	27.06	1.14
2018	27.82	1.15

Table 2.2: Thailand waste weight and waste generation per person from 2010 to 2018.
Source: PDC, 2019.

This study has already demonstrated the data of waste; the trends of waste generation, the barriers and some relevant factors. Next, it will present waste composition because this data can help teams to focus on specific strategies to increase the chances of a project being successful.

2.3.4. Waste Composition

Types of waste	% MSW composition from developed countries (Cointreau et al., 1984)	% MSW composition from HI countries (World Bank, 2012)	MSW composition from LMI countries (tons per year) (World Bank (2012), World Bank (2018))	% MSW composition from Thailand (Country report for 8TH East Asia Summit, 2015)
Paper, cardboard and packaging	30	32	14, 12.5	8
Kitchen and garden waste	24	27	54, 53	64
Glass	11	7	5, 3	3
Plastic	8	11	11, 11	17
Metal	8	6	3, 2	2
Others	27	17	13, 17	6
Total (%)	100	100	100, 100	100

Table 2.3: Comparison MSW from rich countries, middle-income countries and Thailand from various sources in different years

Source: Cointreau et al., 1984; World Bank, 2012; World Bank, 2018; the Country report for 8TH East Asia Summit, 2015

In 1984, MSW, in developed countries, consisted of seven types and the composition demonstrated at 30, 24, 11, 8, 8, 27 per cent of paper, biodegradable waste (kitchen waste and garden waste), kitchen waste, glass, plastic, metal, and others respectively (Cointreau et al., 1984). See table 2.3. It can be said that within 28 years, the composition shows fewer differences in rich countries. However, according to Gandy (1993), it was unclear how to classify types of waste in developing and undeveloped countries. However, data has become more available in recent years because, in the year 2012, The World Bank showed data on waste from 87 countries (World Bank, 2012). Then, in the year 2017, data on waste was collected from 265 countries (World Bank, 2012).

1

In developed LMI income countries, the statistics of the composition of MSW showed the similarities from the year 2012 to the year 2018, for example, biodegradable waste represented at 54 and 53 per cent (World Bank 2012 and 2018). See table 2.3.

Furthermore, according to data from the country report and the World Bank, comparing the year 2012 to the year 2018 on the composition of MSW between MI and Thailand, the data was similar. It can be said that in general, the composition of MSW could reflect income, as Thailand was categorised by the world bank in the LMI group (World Bank, 2015).

Although the fact that statistics are from various methodologies and measurements, the data is still beneficial for management plans to see the trends. For example, see table 2.3, from the year 1984 to the year 2012 in developed countries, people used less glass and metal, unlike plastic, paper, and organic waste. Comparing data of solid waste composition from High-Income (HI) countries to LMI countries, it showed LMI's generated more food waste and plastic, but less paper, glass, and metal waste.

Another useful piece of information is that Gandy (1933) concluded that it was for a variety of reasons that make waste composition differ from one country to another such as the degree of civilisation, the structure of employability, types of households, and the period of waste generation. However, the World Bank made a brief conclusion that the differences likely came from income and economic growth (World Bank, 2012).

In 2015, according to the country report for the 8th East Asia Summit, MSW was categorised into seven key groups; kitchen waste and plastic were the dominant groups representing at 64 and 17 per cent of the whole type, while paper, glass, metal, and other groups showed at 8, 3, 2, and 6 per cent respectively. See table 3. It can be said that biodegradable waste, plastic, and paper played a significant role in total waste in Thailand at 89 per cent (Country report for 8th East Asia Summit, 2015). As a result, if policymakers select specific strategies to handle these three dominant groups effectively, it will help to increase recycling rates and reduce the total amount of waste and reduce GHG emission significantly.

The new trend of waste composition is an increase in the use of plastic, especially in developing countries (World Bank, 2018). This trend will cause many problems, in the long-term because plastic is durable and can last more than 250 years in landfills releasing harmful chemicals and emitting GHG into the environment when incinerated (World Bank, 2018). If people do not reduce using plastic, the negative impacts will be apparent on both people's health and the budgets to cover the costs. In recent years, plastic in the oceans has been killing marine life around the world, while in the past, we saw advertisements focusing on the harmful effects of Climate Change affecting the Polar bears at the north pole. Therefore, the advertisements for raising awareness have changed from the negative impacts on polar bears to sad stories on marine creatures such as whales, dolphins, even small fish which have died from eating plastic. This sad news has similarly been reported

in Thailand in recent years, so dealing with waste is an essential world topic which needs specific strategies to match the waste composition and other crucial factors. It can be assumed that if policymakers encourage Thai people to separate food waste, plastic waste, and paper from other recyclable items, the recycling rates in Thailand will be increased dramatically. Proper recycling also helps to reduce contamination of recyclable items caused by food waste and leads to increased recycling rates at the same time, which was recommended by the World Bank (2018). Also, when people are familiar with recycling behaviour or proper waste segregation, encouraging them to reduce waste and reuse waste will be easier, and it will be increasing the chance of creating more zero-emission cities.

2.3.5. Hierarchy of waste

Strategy	Meaning
'Five Rs' (Simmons, 1991)	Refusal; Reduction; Re-use; Repair; Recycle
'3Rs' (Donnellan, 2000)	Reduce; Reuse; Recycle
'4Rs' (Hancock, 2001)	Reduce; Reuse; Recycle; Recovery

Table 2.4: 'R' Strategy

Source: Simmons (1991); Donnellan (2000); Hancock (2001).

In the early stages of waste management and recycling, people were more familiar with the 'five Rs'-Refusal; Reduction; Re-use; Repair; and Recycle (Simmons, 1991). It had been found that some options were not easy for some countries, especially Western countries, such as 'Refusal' which means to reject or refuse unnecessary items. The reason is that it may apply to luxury products and fashion, for example (Simmons, 1991). Another option, 'Repair', highlighted some company's marketing strategies where budget level electronic gadgets were launched for an affordable price but with a short life span, becoming uneconomical to fix. (Simmons, 1991). Later, most people moved on to a concept called the '3Rs'. The three 'Rs' had been used as a concept of waste management involving the hierarchy of waste, which are 'Reduce', 'Reuse' and 'Recycle' accordingly (Donnellan, 2000). However, there was another concept which is a fourth 'R'; 'Recover' was added (Hancock, 2001). See table 2.4.

According to the report from the World Bank in the year 2015, it claimed that waste's hierarchy consists of two main groups, waste diversion and waste disposal. See figure 2.3. Waste diversion is divided into four steps; reduce, reuse, recycle, and recover, while waste disposal represents landfill, incineration, and controlled dumping. However, in a Thai

context, some Thai people possibly recognise ‘Digestion and Composting’ are part of the 3Rs, for example, when they separate food waste for making biodegradable compost, they think that they are recycling. So, this study illustrates to people that they are following 3Rs concept when they are producing compost from food waste. Next, fixing unwanted items and reselling them or reusing them as second-hand products in Thailand probably stands for ‘Recycle’ or ‘Reuse’. Another example of the definition of ‘Recycling’ in Thailand is that it is common to see Thai people call it ‘Recycling’ instead of ‘Waste segregation’ because they separate types of waste into recycling bins, for instance. So, ‘Recycling’ in this study frequently stands for proper waste segregation which leads to increased recycling behaviour and reduced amounts of total solid waste.



*As a minimum, waste should be disposed at a "controlled dump," which includes site selection, controlled access, and where practical, compaction of waste. Incineration requires a complimentary sanitary landfill, as bottom ash, non-combustibles and by-passed waste needs to be landfilled.

Figure 2.4: Hierarchy of Waste
Source: The World Bank report (2015).

According to the research in Thailand, inadequate budgets was one of the main barriers for waste elimination; for this reason, many authorities still used dumping or open landfill (Challachroenwattana and Pharino, 2016). Although this method is less acceptable from a global perspective, it is economical (Challachroenwattana and Pharino, 2016). However, planning to close all sub-standard dumpsites to meet the global standard is a pressure that pushes local authorities to find alternative solutions that aim to reduce the amount of waste. As well as follow the regulations, international Laws and global agreements such as The Paris Agreement and others.

One of the benefits of the waste hierarchy is that policymakers can see the whole picture of the route of waste and select specific tools to apply to obtain specific aims. Similarly, from the resident's aspect, it is easy to explain that residents can play different roles to help the community. For example, if individuals begin properly separating waste to support recycling or other purposes, then they can change their new behaviour again on reusing or reducing. The idea of the best hierarchy is that of prioritising 'Reduce' at the start point, then performing 'Reuse', followed by 'Recycle' (The World Bank, 2017).

2.3.6. Waste Collection

According to World Bank (2012), municipal waste in high-income countries was collected at 98 per cent, other countries such as South Asian and Africa countries it was collected at 65 per cent and 46 per cent accordingly. In Thailand, the municipal waste collection rate was at 76.23 per cent, and it was sent for appropriate disposal, only 31.06 per cent of the time (PCD, 2015). Statistically, the primary method of waste elimination from appropriate disposal in Thailand was in landfills presenting at 83 per cent, while compost and incinerator were used at 5.89 and 4.92 per cent, respectively (PCD, 2015). Furthermore, waste was reused and recycled from the total amount of waste at approximately 20 per cent in the year 2015. Although the local waste collection was not 100 per cent, it showed that after Thailand implemented the 3R scheme from the year 2015 until the year 2018, recycling rates increased up to 34 per cent, according to PCD report in the year 2019. It can be said that in some areas which had no waste collection service by local municipalities, the residents had to handle their waste by themselves. They tended to use their methods such as open burning, open dumping, burying and others; consequently, these methods caused many problems (PCD, 2015).

Based on the categorisation of the waste collection around the world from the World Bank (2017), there were five types of waste collection which are House-to-house, Community bins, Curbside pick-up, Self-delivered, and Contracted or delegated service. In Thailand, the types of waste collected were varied due to each community policy compared to other Low-middle income countries (World Bank report, 2015). It can be said that each type has pros and cons. For example, if authorities provide public bins on the streets (shared bins), the possible drawback is that it is difficult to identify the source of each waste bag. If the authorities want to promote waste reduction and needs results from each household, the

result could show less validity because the waste might come from outsiders. However, sharing waste bins is economical and easy to collect if there are less waste collection sites (Thailand report, 2018). As a result of a variety in the collection options, some municipalities faced financial problems due to a lack of fee payment and funds. Then it leads to reduced service (Thailand report, 2018).

2.3.7. Recycling

According to the waste hierarchy, the preferred option for dealing with waste was '3R' (Reduce; Reuse; Recycle) and Recover (Digestion and Composting), suggested by The World Bank (2015). In practice, it was complicated to measure the 'Reduce' and 'Reuse' outcome. However, many sources accepted that the measurement of 'Recycle' such as recycling rates are likely to show a clear picture of a projects' improvement. Recycling rates were used as a reference in many global reports such as World Bank reports, Paris Agreement reports, and International reports. Alternatively, in recent years, when people refused or reduced the use of plastic bags, the results demonstrated a reduction in amounts of carbon dioxide emission (World Bank, 2015). So, this study explains the definitions and how to calculate basic recycling rates, aiming to give suggestions to show the improvement of student recycling practice to encourage them to continue new behaviours or promote new behaviour to their friends to increase recycling rates. This section begins with recycling definition, recycling rates and existing CMU recycling.

According to the definition of recycling from many sources, it can be said that some definitions have expanded the meaning, but most sources show similarities. These are some examples. In the year 1996, a definition of recycling was 'Recycling refers to an effort to encourage consumer choice of products that reduce waste or to retrieve material from the waste stream' (Well, p.140, 1996). Well (1996) pointed out that recycling is a consumer choice and a good company's strategy. Next, Hancock (2001) stated that recycling needs stakeholder involvement and recycled products were not always in the same form as the original products. While Donnellan (p.15, 2000) emphasised, 'It can be made into new items. In recent years, the United States Environmental Protection Agency (USEPA, 2019) gives the definition:

'Recycling is the process of collection and processing materials that would otherwise be thrown away as trash and turning them into new products'

Besides, according to the EU report (2019), the definition is that,

‘Recycling of waste is defined as any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.’

These are examples of recyclable items from the EU (2019): ‘Paper, glass, metals, plastics, textiles and waste electrical and electronic equipment are recovered from the waste stream and reprocessed to make secondary materials. Recycling was potentially accepted that it is a process of waste treatment which needs public participation such as ‘bring’, ‘collect’, ‘centralised’ system (Gandy, 1994). However, waste generators or residents or other people such as street waste pickers and tri-cyclers could be involved with the recycling process, in developing countries (Gandy, 1994). It is accepted that there are at least two main benefits from recycling; reducing quantities of waste and returning the material to be re-produced for the economy. (World Bank, 2019).

2.4. CMU backgrounds on Waste and Recycling management

This section consists of six sub-groups which are 2.4.1-2.4.6. Section 2.4.1 demonstrates the people who are in CMU waste management teams and responsible for dealing with waste and recycling such as staff from the University Strategies Division, the Physical Facilities and Environment Division, the Student Quality Development, and the Student Affairs Division. Section 2.4.2 demonstrates waste routes in CMU. Section 2.4.3 shows the waste collection in CMU and the people who transport the waste. Next, section 2.4.4, shows the solid waste composition and the weight of solid waste in CMU. Then, 2.4.5 leads to learning how to calculate the recycling rate for CMU, which is based on the available data. Finally, 2.4.6 shows the conclusion of waste and recycling in CMU.

This study explores potential social marketing strategies at CMU, so necessary information about CMU needs to be presented. Then, explaining the structure of the university management on waste and recycling issues will follow. Next, the existing data will demonstrate and compare to the statistics of Thailand in terms of waste composition, waste

weight, other relevant data and a conclusion. Then, the next section (2.5) will revisit relevant models and theories on waste and recycling topics.

In Thailand, the formal school system provided both government and private schools for people who are aged between 3 -21 years old, and there were 1,870,73 students between undergrad and below and 229,757 at postgrad (Office of the Educational Council, 2015). The proportion of students in government university and private university were 83.6%: 16.4% (Office of the Educational Council, 2019). Comparing all Thai universities in terms of total numbers of students each year, Ramkhumheang University (RU) was the largest with 68,452 new students in the year 2015 (RU, 2015). In the same year, Chula University and Chiang Mai University (CMU) had 37,851 and 37,263 undergrad and postgrad students, while, Mahidol University had only 6,325 students in the year 2011 (Chula, 2015; CMU, 2015; Mahidol, 2013). RU, Chula university and Mahidol university are in Bangkok, while CMU is sited in Chiang Mai or the north of Thailand.

2.4.1 Executives and administration of CMU

According to CMU (2019), CMU was established in the year 1964 and was granted permission and blessings by the late King (Rama 9): it was the first provincial university. This study mainly aims to provide benefits for CMU teams because it follows the same direction as CMU's vision which is 'A world-class university committed to social responsibility and creating development for sustainable excellence'. It underlines key aims mainly consisting of providing not only education and profession but also addressing moral and ethical standards under the late king's philosophy (Sufficiency Economy Philosophy) (CMU, 2019). CMU's logo is an elephant holding a torch and framed by two teak flowers which means CMU aims to provide learning and development with the most valuable. Natural resources in the North of Thailand (CMU, 2019). In the year 2018, there were 35,250 CMU students in total; according to CMU student statistics, most students, 24,289, were a full-time undergrad. There were three campuses, namely 'Main campus or Suan Sak', 'Mae Hae', and 'Saun Dok (Hospital)' (CMU report, 2015).

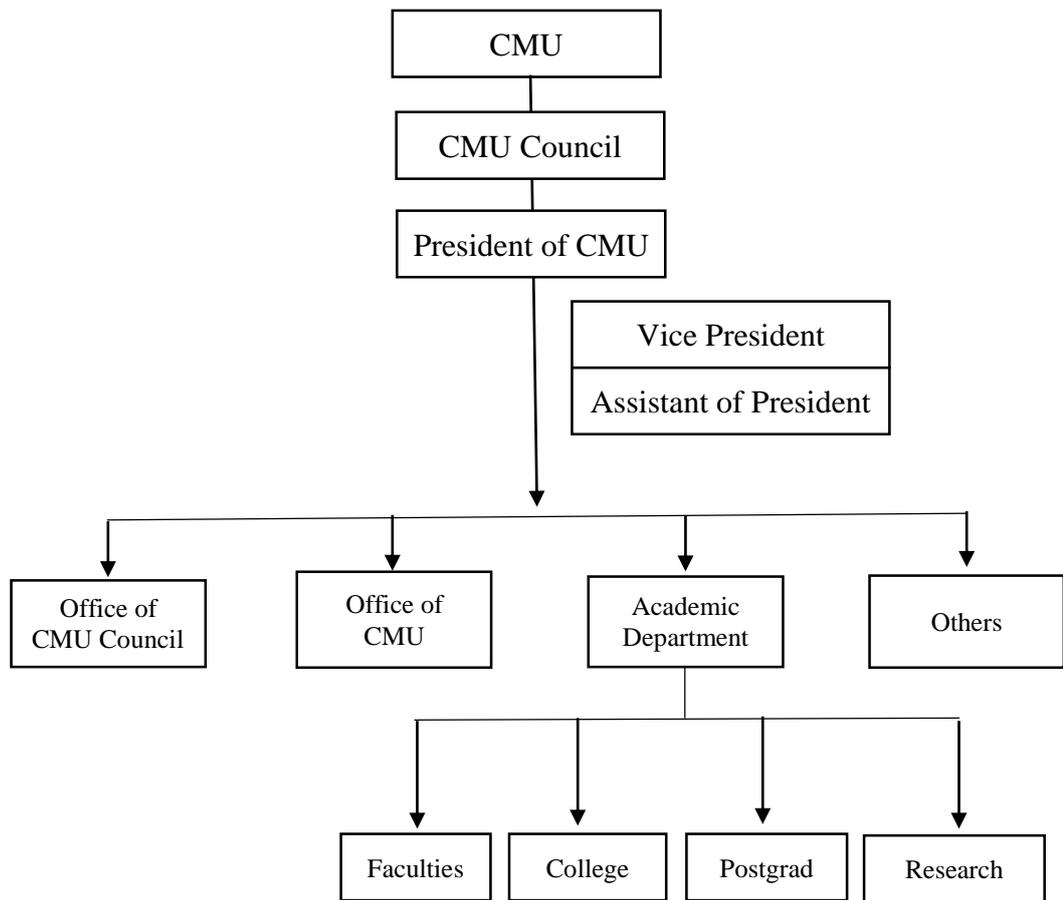


Figure 2.5: Organisation Structure and Administration of CMU
Source: CMU (2019)

According to the Executive Structure of CMU in the year 2019, it can be said that waste and recycling management is relevant to many divisions. For example, staff who work in the CMU offices at ‘University Policy, Financial, Public Relations’ division, ‘Physical Facilities and Environment’ division. Also, ‘Research, Student Quality Development, Ethics, Quality and Global Citizenship Strategies’ division, ‘University Council Affairs’ division and others. Furthermore, in practice, there are several people who directly or indirectly engage with this topic such as staff from Academic Division which consists of four central departments (Faculties, College, Postgrad, and Research), according to the organization’s structure and administration structure (2019). See figure 2.5 and figure 2.6.

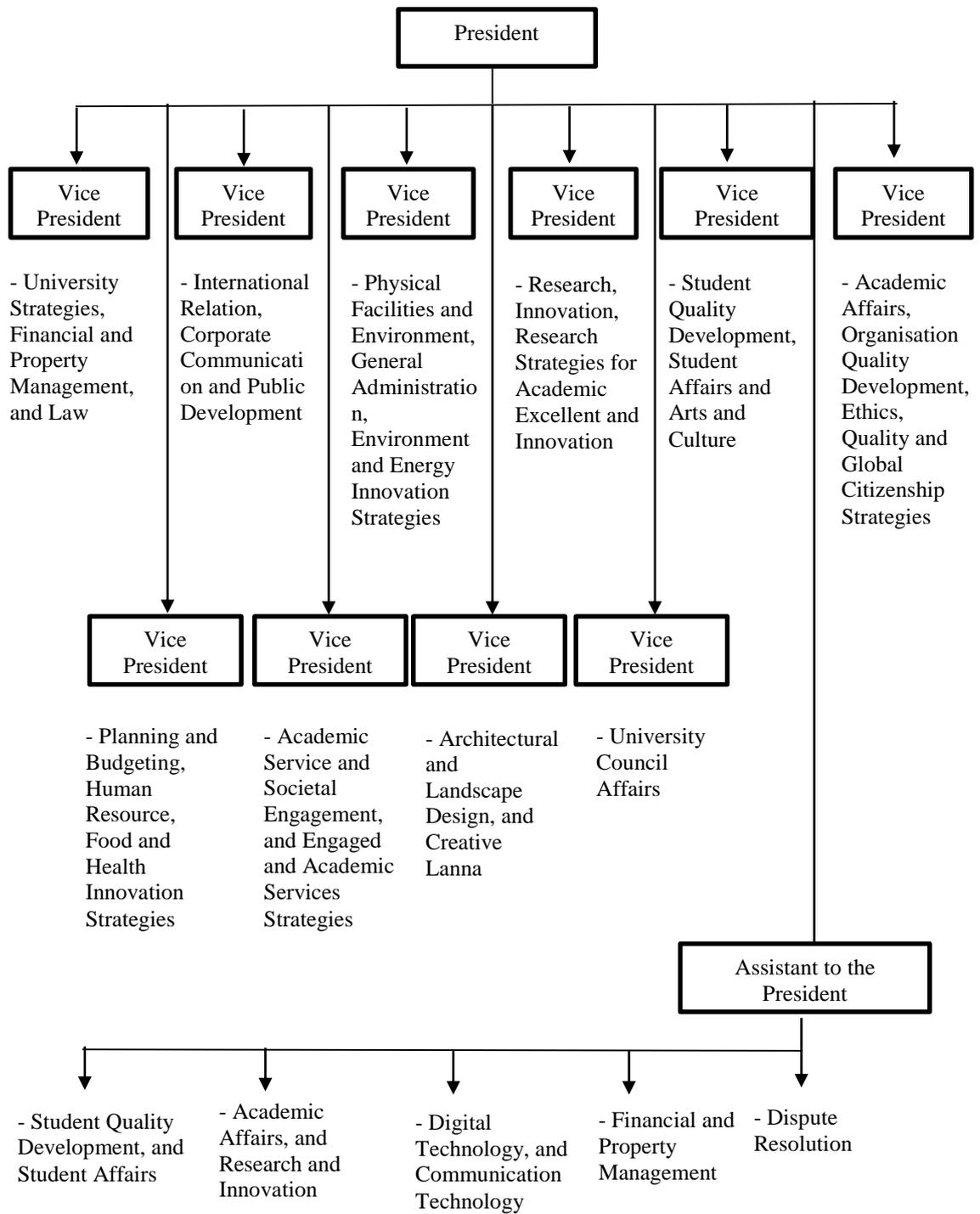


Figure 2.6: Executives of CMU
Source: Adapted from CMU (2019).

Although there is a lack of data on solid waste and recycling management in CMU, the aim of this study is to attempt to collect existing primary data and research by exploring primary data to present possible strategies and provide recommendations to the teams. So, the next sections, section 2.4.2- 2.4.4, will demonstrate the critical success or barriers for the waste routes in CMU, waste collection, solid waste composition and weight of solid waste from the CMU report in the year 2015. Then, section 2.4.5 will offer possible recycling rate calculations for other university projects. The conclusion of waste and recycling in CMU will be shown in section 2.4.6.

2.4.2. The waste routes in CMU and people who engage with waste and recycling

CMU is located in Chiang Mai (province); it is presented as a village or a city because it consists of not only study buildings and student flats but also a local market, a vet hospital, a primary school, and accommodation for CMU staff (CMU, 2019). Also, CMU provides various facilities for staff and students such as libraries, innovative learning centres, art museums, public transportation centres, a rugby-football field, a swimming pool, a gymnasium, hockey fields, football fields, a fitness park, banks, a post office, supermarket shops, canteens, and others (CMU, 2019). See figure 2.6. Even though waste bins in CMU were plentiful, CMU had organised more bins for the staff, students and visitors. Altogether it had 40 waste collection spots for the local authority collection service with a fixed schedule (CMU meeting report, 2015).

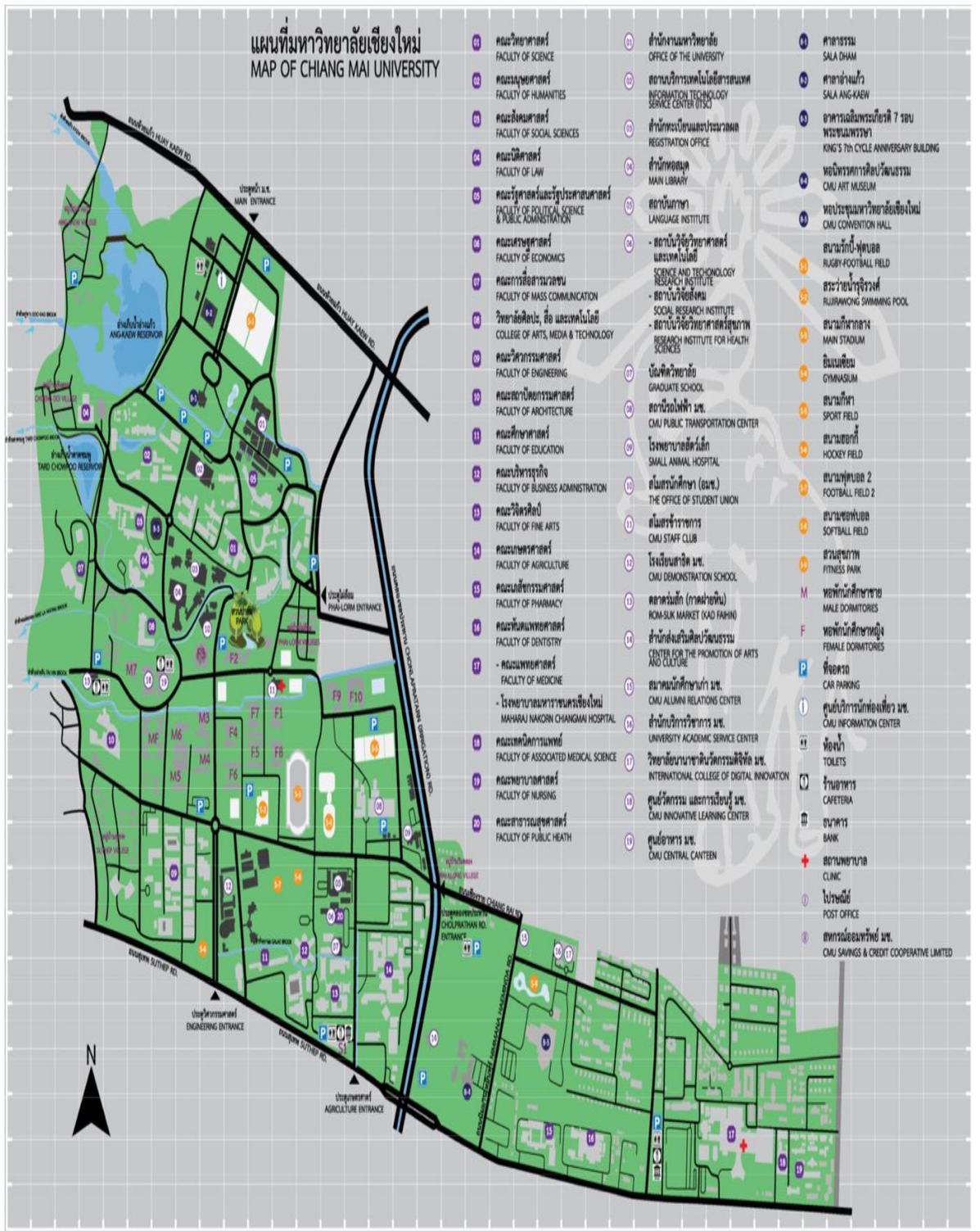
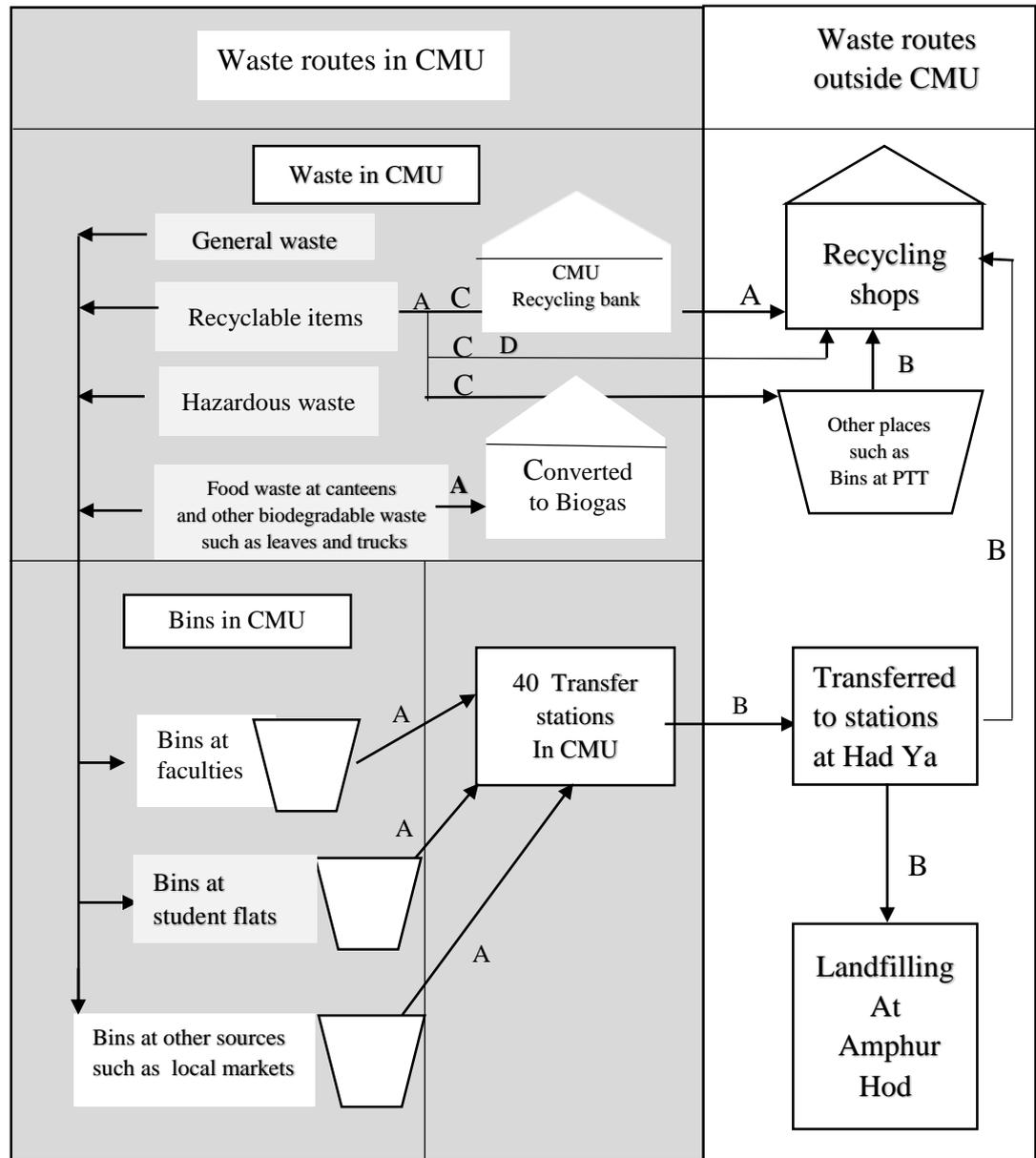


Figure 2.6: CMU map
Source: CMU (2019).

2.4.3. Waste collection in CMU



A = Waste was collected and delivered by CMU staff (mainly cleaning workers)
 B = Waste was collected and delivered by local municipality service or private companies
 C = Waste was collected and delivered by students
 D = Waste was collected by the people from recycling shops or other stakeholders

Figure 2.8: CMU Waste routes
 Source: Adapted from CMU report (2015).

No.	Waste station (Faculty and Flat)	No.	Waste station (Faculty and Flat)	No.	Waste station (Faculty and Flat)
1	Business	16	Art and Technology	28,29,30,31	Pilom village
2	Education	17	Economic	32	Central canteen
3	Male student flat no.5	18	Mass Communication	33	Female student flat no.2
4	Engineering	19	Humanity	34	Female student flat no.4
5,6,7	Suthep village	20,21	Chean Doi village	35	Public swimming pool
8	Architecture	22	Laws	36	Sport club
9,10,11	Suthep village	23	Co-op shop	37	Female student flat 40 y.
12	Suthep village	24	Social	38	Small Vet Clinic
13	Suthep flat	25	Politics	39	Female student flat 40 y.
14	Male student flat no.1	26	Parking area	40	Agriculture
15	Parking area/ local market	27	Science	Total = 40 spots	

Table 2.5: Schedule of CMU waste collection
Source: Meeting report no.4, 2015.

Waste bin designs were varied because their bins relied on the policy of each faculty (CMU report, 2015). Cleaning workers collected waste regularly from each faculty, the student flats and the local markets, and placed waste bags at 40 designated waste stations, see figure 2.7. (CMU report, 2015). Then the local municipality service provider collected waste from the 40 spots on a fixed schedule (see table 2.8) and dropped the waste bags at the local government transfer waste station at Had Ya in Amphur Maung. Finally, the waste goes to the Amphur Hod for landfill (CMU report, 2015). Besides, cleaning workers also have a responsibility to transfer food waste and biodegradable waste into the plant at Mae Hae campus to produce Biogas. However, recyclable items were partially collected and delivered to recycling shops outside CMU. Alternatively, recycling shop staff or intermediaries would come to CMU to buy the items themselves. Hazardous waste was potentially mixed with general waste and likely went to general bins (CMU report, 2015). Sometimes, waste was dumped outside the bins, according to the CMU report in the year 2015.

2.4.4. Solid waste composition and weight of solid waste in CMU

In CMU, solid waste was divided into two main types, namely 'Dry' and 'Wet'. According to informal conversations with staff and alumni, staff and students had seen two different types of waste bins for decades. However, in the year 2015, CMU launched a four-colour bin system (green, blue, yellow, and red) and placed the new bins in some key sites such as the central canteen. However, according to feedback from cleaning staff members, most students did not segregate the waste properly, and the separation of waste became their responsibility (CMU meeting report no.7, 2015). So, most valuable items at the bins were recycled or separated by the cleaning staff, not students. It can be said that recycling by waste pickers played a key role at CMU as in other areas in Thailand, where people can pick recyclable items from the bins for recycling trading (World Bank, 2015). The valuable items were separated again by waste collectors on a lorry when they are collecting the waste from each waste station. So, in general, it is difficult to calculate precise recycling rates from the bins if they were placed in open areas. Although there were no records for recycling rates in CMU, the data on amounts of solid waste and the waste composition was available because it was conducted by the faculty of Engineering in the year 2012 and was presented in the CMU report in the year 2014. According to the report, CMU generated solid waste at 893.20 tons per day (3,688.16 kg per day). The waste was divided into ten groups which were food waste at 41 per cent, plastic at 17 per cent, paper at 13 per cent, plastic bottles at 11 per cent, wood at 4 per cent, and 14 per cent of textiles, metal, ceramic, glass, and others. See table 2.6.

According to the CMU report (2015), waste generation hit a peak at 5,236.17 tonnes per year (1,696.52 kg per day) during study time, while the lowest waste weight generation was recorded during school break at 89.88 tonnes per year (2,140 kg per day). In comparison, see table 2.6, most of the composition of the waste in CMU were 41, 28 and 13 per cent of food waste, plastic (plastic and plastic bottles), and paper, respectively.

Type of solid waste in CMU	Waste composition (%)	Weight of Solid waste (tonnes per year)
Food waste	41	367.38
Plastic	17	148.71
Paper	13	118.54
Plastic bottles	11	99.28
Wood	5	40.06
Glass	5	} 119.23
metal	2	
Textiles	1	
Ceramic	1	
Others	4	
Total	100	893.20

Table 2.6: Types of solid waste, waste composition and weight of solid waste in CMU
Source: CMU report (2015).

Type of solid waste	Waste composition (%) (CMU report, 2014)	Waste composition (%) (Thailand report at East Asia Summit, 2015)
Food waste	41	64
Plastic	17	17
Paper	13	8
Plastic bottles	11	(plastic+plastic bottles =17)
Wood	5	(wood+food waste=64)
Glass	5	3
metal	2	2
Textiles	1	} 6
Ceramic	1	
Others	4	
Total	100	

Table 2.7: Types of solid waste and waste composition in CMU compared to Thailand
Source: CMU report (2014) and Thailand report (2015).

Comparing the waste composition from CMU to Thai residents, the former generated a higher percentage of plastic per year than the latter presenting at 28 and 17 per cent. In comparison, the latter generated a higher percentage of food waste than the former showing at 64 and 41 per cent respectively. See Table 2.7. Ideally, if CMU promotes students to separate food waste, plastic, and paper correctly, the results will show a significant impact on raising recycling rates. According to observation and feedback from CMU staff, CMU workers separated recyclable items after work. They left the general waste in waste bags, and then they transported the bags to the waste station sites. However, if students segregated waste efficiently at the source, they could help to increase recycling rates because it will decrease contamination of paper waste, for example (World Bank, 2018).

2.4.5. Possible recycling rate calculation for university projects.

Type of solid waste in CMU	Waste composition (%)	Weight of Solid waste (tonnes per year)	Example of estimation of recycled waste (tonnes)	Estimated recycling Rate (%)	Estimated recycling Rate (%)
Food waste	41	367.38	367.38	100	100
Plastic	17	148.71			
Paper	13	118.54	59.27	50	100
Plastic bottles	11	99.28	99.28	100	100
Wood	5	40.06			
Glass	5				
metal	2				
Textiles	1	119.23			
Ceramic	1				
Others	4				
Total	100	893.20	525.93	59	78.6

Table 2.8: Example of recycling estimation in CMU
Source: Adapted from CMU report (2015).

According to various recycling measurements, recycling rates can be shown using different numbers. For example, recycling rates in New York state in the year 1997, which were calculated by the New York legislature and the Department of Environmental Conservation (a private agency), were at 23.6 and 41.9 per cent, respectively (Tonjes and Swanson, 2000). The influencers possibly consist of different characteristics of recyclable items, waste collection methods, the organisations who calculated the rates, and others (Tonjes and Swanson, 2000). However, it was suggested that dealing with general perception and increased understanding of public benefits could be implemented to

increase recycling rates (Tonjes and Swanson, 2000). Moreover, Tonjes and Swanson (2000) gave advice that began with having a standard data collection, then followed by recycling calculation, and obtaining information confidentially with specific notice, likely helped policymakers to promote recycling behaviour. The recycling rate is one essential tool for a standard comparison which can be calculated in different ways. For this study, it is recommended to use the EU Compositional Assessment Tool (EUCAT) from the ‘EU Recycling rate harmonization project’ in the year 2015 and MSW recycling rate from the Government of Australia (2012), because it is simple and accounted for a percentage of waste proportion between the number of recyclable items and amount of total waste.

$$\begin{aligned} \text{Recycling rate (\%)} &= \frac{\text{Weight of recycled items}}{\text{Weight of total waste}} \times 100 \\ &= \frac{525.93}{893.20} \times 100 \\ &= 59 \end{aligned}$$

Demonstrating the estimation of CMU recycling rate is 59 per cent, if

- All food waste is sent to the plant to produce gases to run some vehicles in CMU area;
- Only 50 per cent of paper waste can be recycled due to contamination of 50 per cent of total paper waste;
- We are aiming to sell or send all plastic bottles back to the manufacturer.

If CMU encourages students to segregate uncontaminated waste paper, then the recycling of waste paper will increase to 100 per cent (or 118.54 tons). Also, by reducing the use of plastic to zero tons (deleting 148.71 tons), the recycling rate will present at 78.6%.

$$\begin{aligned} \text{Recycling rate (\%)} &= \frac{\text{food waste} + \text{paper} + \text{plastic bottles}}{\text{(food waste} + \text{paper} + \text{plastic bottles} + \text{others)}} \times 100 \\ &\quad \text{(deleted 148.71 tons of plastic)} \\ &= \frac{367.38 + 118.54 + 99.28}{367.38 + 118.54 + 99.28 + 40.06 + 119.23} \times 100 \\ &= \frac{585.2}{744.49} \times 100 \\ &= 78.6 \end{aligned}$$

2.4.6. Conclusion of waste and recycling in CMU

Overall, based on the CMU report in the year 2015 and Sriplakich's finding, it can be said that all people were waste generators. However, primary waste segregation at source was undertaken by cleaning workers. They also played a significant role in the recycling trade because they brought recyclable items to the CMU recycling bank, recycling shops outside CMU, or called the service to collect the items at CMU. Moreover, they were responsible for collecting food waste at canteens and transported it to the new plant for conversion into biogas to run CMU vehicles. See figures 2.7. However, the target group for this thesis is CMU students, and it can be said that CMU students separated recyclable waste and tended to bring it to the CMU recycling bank, recycling shops and others with no data record. Moreover, there was no data on the amount of hazardous waste, such as used batteries or used mosquito spray bottles, sent to the Health Department. It was probably mixed with general waste and went to landfill sites. There were waste separation services from the local government service and the private sector. However, it was impossible to separate all the waste when they were collecting and transporting the waste on the way to the waste transfer stations. There are several types of lorries which seem to be accepted for standard collection and transportation, such as using lift trucks, trucks with compactors, rear open, or open side trucks (CCAC, 2019). However, there was no service by different trucks for different types of waste at CMU. CMU only used a single open tank on a pick-up (a small truck) (Sriplakich, 2015 and CCAC, 2019). Hence, according to the informal conversations, it is clear that it was possible that most people felt that there were no benefits to separating waste. People observed that each type of waste was going into the same truck or lorry. The reason for this was primarily due to the limitation of the system and funds. Based on the limitations of the type of vehicles, therefore, separating all types of waste at source should be implemented by main waste generators to reduce most of the total waste and increase recycling rates. It can be said that raising student awareness combining with facilities improvement are significant factors for CMU.

According to a CMU report in the year 2015, CMU waste management teams focused on using food waste to generate electricity to run some public vehicles in CMU, so there was no data for total recycling rates in CMU. Therefore, it was unlikely to use statistics to encourage students to increase recycling rates. However, it can be said that there is a high demand for the data. So, this study is unlikely for promoting recycling rates in CMU.

However, it will focus on the use of social media as an initiative to encourage students to tell their friends, to raise awareness and share their message. Recycling ambassadors or recycling initiators are most likely expected to be leaders for this project, aiming to change their friends' attitudes and to change their behaviour in the short and long term.

This study has already provided the background of Climate Change, Paris Agreement and the Thailand Reports, and the data on waste and recycling from the global, international, and local levels at section 2.2 - 2.4. Then this information will link to the next section, 2.5, 'Relevant Models and Theories' because it will present possible strategies and the applications to solve the problems.

2.5. Relevant Psychology Models and Theories

There are many psychology models and theories which have been used by social marketers and other social actors to identify crucial factors for a behavioural change. However, this study selected some key factors and categorised them into two main groups which are; individuals and environmental level group, and health model group. So, section 2.5.1-2.5.10 demonstrates a group of models and theories for individuals, inter-personal factors, community factors, and another macro level. Section 2.5.1-2.5.12 shows the combination of Health models.

In general, adoption of only one model or theory cannot show a perfect framework, so it is suggested that integrating an array of them could help policymakers gain more success (Greenwood and Lewin, 1988; Donovan and Henley, 2010; French and Gordon, 2015). Researchers, in empirical research, referred to a theory aiming to test it and tried to make it measurable, so it is common to see that the results possible showed only 1% to 65% of various behaviours and 14% to 92% presenting behavioural intentions (Ogden, 2003). In the perspective of a pragmatic and conceptual analysis, some theories may not work in some countries or some cultures because most theories were initiated in European countries. However, Asian people may have differences, for example (Eagle et al., 2013). So, a group of models and theories in this study aimed to revisit existing models and theories. However, it will also reflect other influences from a different perspective on findings and analysis, because the findings were conducted in Thailand, rather than in western countries which influenced existing models and theories.

Section	Model or Theory at the individual level	Examples of key factors
2.5.1	Instrument and classical conditioning (Pavlov (1927) and Skinner (1953) and Exchange theory (Kotler)	Rewards, Incentives or punishment
2.5.2	Nudge (Sunstein and Richard (2005)	Policy, incentive, disincentive, unconsciousness
2.5.3	Social marketing value/cost exchange matrix (French, 2011)	Policy, incentive, disincentive, consciousness
2.5.4	Theory of reasoned action (TRA) and Theory of planned behaviour (TPB) (Fishbein and Ajzen in 1975 and Ajzen in 1985)	Attitude, beliefs, norms, intention and others
2.5.5	Theory of interpersonal behaviour (TB) (Triandis, 1977)	Habits, emotions, role and others
2.5.6	Cognitive dissonance (Festinger, 1957)	Uncomfortable feelings and want to change behaviour
2.5.7	Motivation theory of Hierarchy of Needs (Maslow (1954)	Need, want, and desire
2.5.8	Morality, positive attitudes, (Pomazal and Jaccard, 1976: Zuckerman and Reis, 1978: Schwartz and Tessler, 1972) and Theory of Normative Conduct (Cialdini (1988) and Cialdini, Reno and Kallgren, 1991)	Morality, volunteering, norms, and altruisms
2.5.9	Stage of change model or trans-theoretical model (Prochaska and DiClemente (1983)	Pre-contemplation, contemplation, preparation, Action, maintain, termination
2.5.10	Influence, commitment, respect, consistency (Cialdini, 1984) and the interpersonal theory behaviour (Triandis, 1977)	Weapons of influence, reciprocation, commitment and consistency, social proof, liking, authority, and scarcity
2.5.11	The health belief model (HBM)	Demographic, benefits and barrier, severity, susceptibility, and cue to action
2.5.12	Determinants of health model (Dahlgren and Whitehead, 1991)	Individual lifestyle factors, social and community networks and General socioeconomic, cultural, and environmental conditions

Table 2.9: Relevant Psychology models and theories for a behavioural change

This section identifies the models and theories which are mostly based on the fundamental models relevant to individual factors such as attitudes, beliefs, and intentions. The first classic model is from Pavlov (1927) and Skinner (1953), showing the essential tools to encourage people to change their behaviour. It leads on to greater complexity which

mainly underlines incentives and disincentives, as an exchange, they are combined with a policy such as ‘Nudge’ and ‘Social marketing value/cost exchange matrix’ from Sunstein and Richard (2003) and French (2011), respectively. Next, some factors from ‘Theory of interpersonal behaviour (TB) from Triandis (1977) and ‘Cognitive dissonance’ from Festinger (1957) will be referred to later. See table 2.9: Group of models and theories for this study.

2.5.1. Instrument and classical conditioning (Pavlov (1927) and Skinner (1953))

Pavlov and Skinner (1927 and 1953) believed that people would change their behaviour if they were affected by stimulation as a condition, such as an incentive or punishment. Also, Maibach (1993) underlines that incentive was one of the tools which were suitable to be implemented for voluntary behaviour change. Furthermore, French and Gordon (2015) gave an example that in developing countries, people send their children to school for primary education, because they do not want to pay a fine as a punishment. However, French (2011) argues that using only punishment is not enough to change people's behaviour. For example, if people think there are a few chances that other people can see their illegal dumping, they might not change their behaviour.

Additionally, the dumper would happily pay the fine, if they are caught, but illegally dumping may save them money and be more convenient than legal dumping. So, increasing the changed behaviour can happen if some people prefer an incentive rather than disincentive (French, 2011). In recent years, there are at least two theories which mention these key factors but contain more details, so this study selects ‘Nudge’ and the ‘Social marketing value/cost exchange matrix’ in section 2.5.1.2 and 2.5.1.3.

2.5.2. Nudge (Thaler and Sunstein, 2009)

Although ‘Instrument and classical conditioning’ is useful as an essential tool to make people change their behaviour, people mostly do not follow the rules; they end up paying fines as a punishment. However, Thaler and Sunstein (2009) suggested that governments should apply ‘Nudge techniques’ to people who mostly used quick and easy decisions to select a choice when based on economic rewards rather than punishment. Similarly, ‘Nudge’ is a strategy which is designed with choices, explicit and presumed consent, and a

default rule which participants must select given options to take some actions (Thaler and Sunstein, 2009). This is illustrated by several different government's approaches such as choosing 'Opt-in' for organ donation in Germany and Austria, and by ticking a box or being asked to select the donation choice when drivers want to collect their photos for their new driving license in the US (Thaler and Sunstein, 2009). Expanding how to adopt the nudge approach successfully can be seen from the Illinois First Person Consent registry, in the year 2006, the state gained 'more than 4 million registered donors by the end of the year 2008' (Thaler and Sunstein, 2009, p.190). The online system for organ donation had been designed to show three steps which underlined the existing problems. The problems included a lack of donors, followed by using social norms saying that '60 per cent of adults in Illinois are registered' (p.191), and giving the links such as Myspace to make them feel they are making the right decision. In general, it can be said that residents play the role of passive social actors with their low cognitive engagement (French and Gordon, 2015). There is another soft nudge approach which tends to be created by using incentives and feedback as in the case of air polluters (Thaler and Sunstein, 2009). Governments can implement either a rigid approach (fines on people who produce greenhouse gases) or an incentive-based system such as giving cash or offering benefits to companies which reduce gas emission aggregation.

2.5.3. Social marketing value/cost exchange matrix (French, 2011)

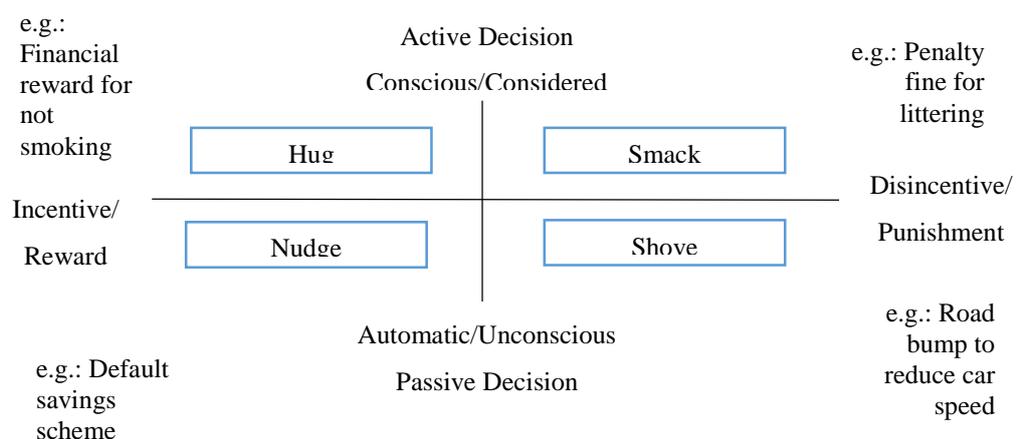


Figure 2.9: The social marketing value/cost exchange matrix
Source: French, 2011

Adopting a nudge approach can manipulate people into selecting the expected choices and can achieve significant change; however, there is an argument from social marketers (such as French (2011)). French (2011) believed that participants need to make their decisions consciously and freely choose the options by themselves as active decision-makers. Also, French (2011) offers Hug implementation replacing Smack implementation (from the social marketing value/cost exchange matrix). This matrix consists of four options which are both conscious and unconscious and also combining incentives and disincentive as prime factors. See figure 2.9. Besides, French and Gordon (2015) give more examples of the failure of the nudging application because it cannot solve some social problems such as crime and obesity. For example, the government may not succeed if it emphasizes that overweight issues are a social problem, and obese people are not a dominant group. French and Gordon (2015) believe that these people potentially then feel negative from the nudge application. So, when incentives and disincentive are the main factors, it will be better to use the value/cost exchange matrix (French, 2011). For the example of the application of 'Fines', Chaudhary et al., (2004) describes that some people are not interested in wearing seatbelts. However, they already know that they may receive severe injury from accidents and have to pay fines if caught by authorities.

Similarly, adopting 'Fines' may not be effective in Thailand or at a university. For example, people know that if they dump rubbish on public roads, they could be fined (2,000-baht maximum), according to the law, but they still illegally throw away rubbish. However, after combining possible factors from 'Nudge' and Value/cost exchange matrix' such as 'Fines', 'Rewards' and 'Consciousness', it seemed most people would select incentives rather than disincentive or punishment. However, some people still select to pay 'Fines' if they think they can afford it and exchange it with their conveniences (Donovan and Henley, 2012). So, Donovan and Henley (2012) conclude that only 'Incentive and Disincentive' cannot play a significant role for all people because the results give good outcomes only in some areas or some target audiences. These examples possibly show that people need other motivation to change their behaviour. Therefore, pursuing them to feel good or rewarding them could be a potential strategy if they do not dump waste illegally. Generally speaking, adopting the tools (incentive and disincentive) may not be enough to change people's behaviour because some people react based on other vital factors such as negative feelings, a moral choice, believing in a positive outcome amongst others. Therefore, the next sections 2.5.4- 2.5.12 will describe more relevant factors as choices.

2.5.4. Theory of reasoned action (T.R.A.)/ theory of planned behaviour (TPB) (Fishbein and Ajzen in 1975 and Ajzen in 1985)

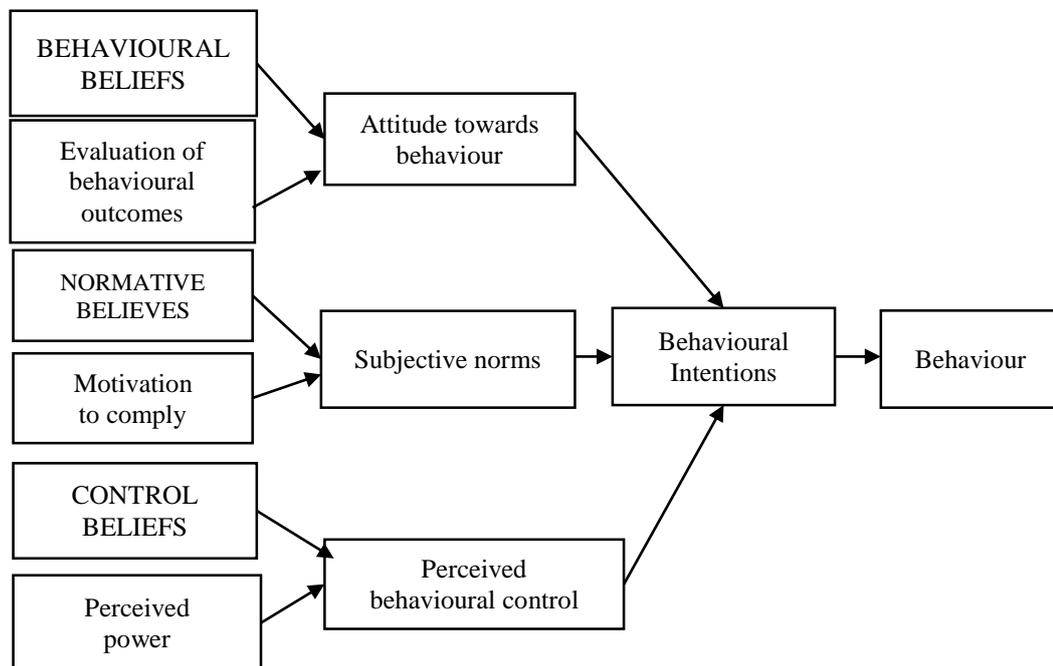


Figure 2.10: Theory of reasoned action (TRA)/ theory of planned behaviour (TPB)
Source: French and Gordon (2015).

This section combines ‘Theory of reasoned action’ (T.R.A.) and ‘Theory of planned behaviour’ (T.P.B) in the same group because they consist of similar keywords and Ajzen and Driver (1990s) added more factors to improve the theories (French and Gordon, 2015).

According to T.R.A. and T.P.B, people tend to make behavioural changes, if they have a conscious intention which is arising from crucial vital factors, such as beliefs, attitudes, subjective norms, and perceived behavioural control (Fishbein and Ajzen in 1975 and Ajzen in 1985). See figure 2.10. From a social marketing perspective, some benefits of the adoption of T.R.A. and T.P.B show that they help social marketers to predict essential factors for behavioural change (French and Gordon, 2015). Moreover, T.R.A. and T.P.B are widely used for predicting consumer behaviour, people’s lifestyle and health behaviour such as exercise and smoking (Donovan and Henley, 2012).

However, Triandis (1977) had a different point of view. They showed that one of the limitations of T.R.A. and T.P.B is that people’s behaviour can be affected if their habits

influenced them rather than their intentions. Hence, section 2.5.5 will explain the reasons why other factors can fill the gaps in this theory.

2.5.5. Theory of interpersonal behaviour (T.B.) (Triandis, 1977)

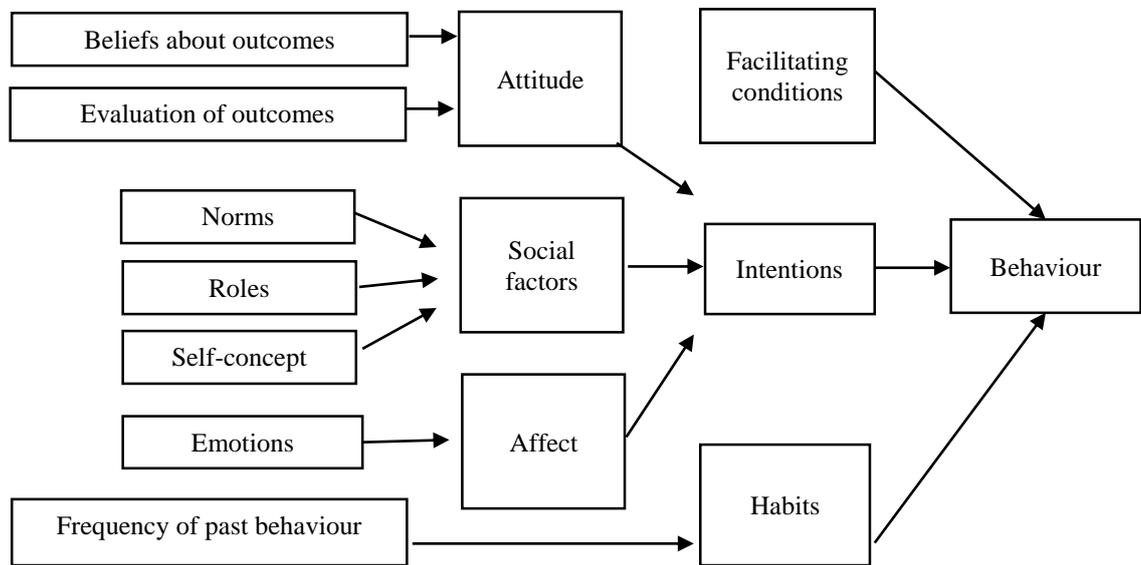


Figure 2.11: Theory of interpersonal behaviour
Source: Triandis, 1977

Compared to T.R.A. and T.P.B, this theory consists of many similar factors such as beliefs, attitude, norms. However, different factors play dominant roles, especially habits and frequency of past behaviour and the conditions that can facilitate this. (Triandis, 1977). See figure 2.11. For instance, it is believed that people use fewer reasons or less consciousness to decide because this behaviour is repeated on many occasions over time and become their habits, such as performing recycling at schools and then also performing recycling at universities. (See figure 2.9). French and Gordon (2015) give a piece of advice to help support the adoption, which is to remind the target audience of new rules or new attitudes, or by changing the environment, helping social marketers cut the cycle of ingrained habits and increase opportunities to change behaviour. The second example is the promotion of handwashing with soap in Ghana to reduce children’s death from diarrhoea caused by parents’ dirty hands. Social marketers delivered information via media and personal communication to remind people to think about the negative impacts or ‘Beliefs about

outcomes' if they do not wash their hands before having meals and after using the toilet (Scott et al., 2008).

2.5.6. Cognitive dissonance from Festinger (1957)

According to Festinger (1957), 'Cognitive dissonance' refers to uncomfortable feelings which can stimulate people to change their behaviour to have more positive feelings. What is more, Donovan and Henley (2012) expand that numerous social marketing campaigns are applying this theory to persuade people to change their behaviour to avoid discomfort. For example, smoking can seriously cause illness to others through passive smoking, and to pets as well. They refer to the example from a survey of Michigan pet owners from Milberger et al. (2009) which discovered that twenty-eight per cent of pet owners attempted to quit smoking when they learnt that smoking could harm their pets at home. Referring to an example of how this theory applies to waste and recycling topics, it has been shown that if people have negative feelings from the smell of waste, then they tend to fix this problem by proper waste segregation, in particular food waste.

2.5.7. Motivation theory of Hierarchy of Needs (Maslow (1954) and theory of exchange (Kotler)

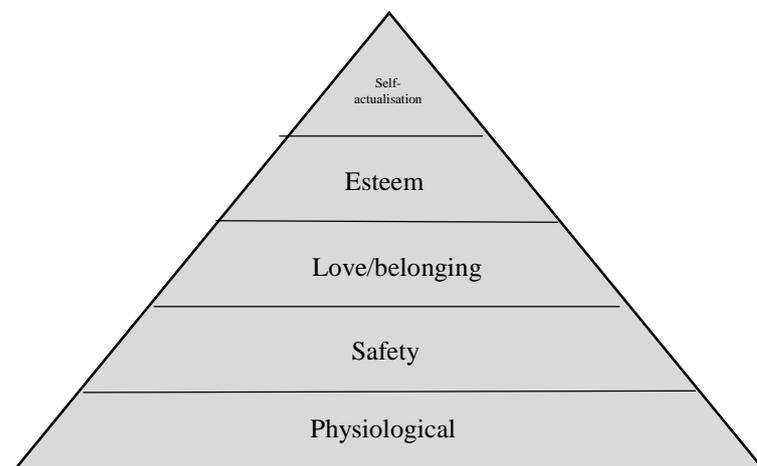


Figure 2.12: Maslow's Hierarchy of Needs
Source: Maslow (1954)

Maslow (1954) stated that people had five levels of need which started from a basic level until the highest level. See Figure 2.12. He believed that an individual's motivational steps had to begin with a physiological need such as air, food and water, then they would seek the second step, which was safety. Lee and Kotler (2011) agreed that this theory helped marketers to predict and meet their customer's needs efficiently. However, it was criticized by many social marketers because it tended to focus on individuals and might be linked with ethical issues rather than a large group of people with moral choices (Andreason, 2002). It is argued that in terms of social marketing perspectives, morality (which was at self-actualization/ the highest level of need) can be found in some people who may not be fulfilled at other levels, but they could have a moral mind. So, the next section will explain the reasons and may fill in the gaps in this theory.

2.5.8. Morality, positive attitudes, (Pomazal and Jaccard, 1976: Zuckerman and Reis, 1978: Schwartz and Tessler, 1972) and Theory of Normative Conduct (Cialdini (1988) and Cialdini, Reno and Kallgren, 1991)

Volunteering, good attitudes, and altruism seemed to be the leading prime success factors. These can be categorized into crucial factors in numerous models and theories such as those used for blood donation and organ donation, now performing as a moral norm (Pomazal and Jaccard, 1976: Zuckerman and Reis, 1978: Schwartz and Tessler, 1972). Besides, moral or personal norms from Fishbein (1967) and personal normative beliefs from Triandis (1977). Interestingly, there is another definite connection between recycling prediction and moral norms which can be found in the study from Allen, Fuller and Glaser (1994). Also, Cialdini (1988) clarified different types of norms and did several experiments: the results were beneficial because they would help social marketers in selecting proper tools for fixing problems. Also, Cialdini (1988), and Reno and Kallgren (1991) identified that people would follow other peoples behaviour. Especially if they think that behaviour is the norm or socially acceptable, however, if for example, some people dumped rubbish on a public road, at a football stadium, or a concert stadium when the event is over, it can encourage other people to imitate that behaviour.

Cialdini, Reno and Kallgren (1991) experimented on littering or dumping to test people's behaviour, comparing between the area that has already been littered and the clean area.

Then they dropped one piece of litter to both areas to check people's reaction. The result was that the former showed a significant increase in littering from thirty-two per cent to fifty-four per cent, while the latter presented a decrease of littering from fourteen per cent to six per cent. Furthermore, they did the second experiment and explored that if there were one handbill dumped on the floor, littering would increase from ten per cent to twenty per cent if another handbill was added. What is more, the percentage of littering rates would dramatically increase from twenty per cent to forty-one per cent when littering was increased from two pieces to eight pieces.

These experiments refer to Fishbein and Ajzen (1975), Triandis (1977), and Bandura (1977) and others, for example, Bandura (1977) stated that people are highly likely to dump litter if they imitate other people's behaviour. While, Cialdini, Reno and Kallgren (1991) argued that a person might dump litter differently on the floor if she or he sees a clean area or a dirty area. However, Fishbein and Ajzen (1975) believed that people tend to change their behaviour if they are influenced by both individual factors and environmental factors such as social norms. Schaffer (1983) expanded that social norms could consist of a norm for what most people do (descriptive norms) and what most people approve/disapprove of as a moral choice, namely injunctive norms. Then, Cialdini (1988) argued the descriptive norm concept that people possibly imitate most people due to their reasons, which may be involved with exciting offers, benefits, and 'a decisional shortcut', unlike most people actions. However, Triandis (1977) argued that another factor, in particular habits, can be a prime factor because he believed that people regularly do some things if they are their habits. It is difficult to change those habits. Arguably, Cialdini, Reno and Kallgren (1991) said that people could be convinced to change their behaviour if they are motivated by specific actions by promising social rewards or punishment.

2.5.9. Stage of change model or trans-theoretical model (Prochaska and DiClemente,1983)

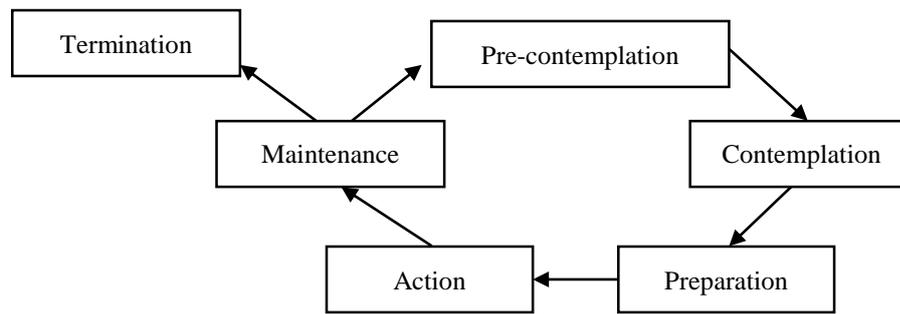


Figure 2.13: Stages of change model
Source: French and Gordon (2015)

Trans-theoretical models of change from DiClemente and Prochaska (1998) was originated from the Health Belief Model and the theory of reasoned action (Whitelaw et al., 2000). See figure 2.13. This model is suitable for explaining that each participant can start and stop from any stage such as smokers, preparing to quit smoking, or non-smoking. However, it still shows the gap because it does not provide critical influencers for each step (French and Gordon, 2015). However, it is suitable for some cases such as the Cancer Prevention Research Centre (the University of Rhode Island, 2006).

2.5.10. Influence, Commitment, Respect, Consistency (Cialdini, 1984) and the interpersonal theory behaviour from Triandis (1977)

According to Triandis (1977), people can create new behaviour if they have positive feelings such as affection of something, then they will have an intention and lead to produce new behaviour. Moreover, Cialdini (1984) stated that people tended to change behaviour if they were influenced by commitment, respect and consistency. Cialdini (1984) believed that people were influenced by critical factors; weapons of influence, reciprocation, commitment and consistency, social proof, liking, authority, and scarcity. Firstly, a piece of evidence from ‘weapons of influence’ is an example of when people were queuing to use a printer, a student asked the people if he could jump the queue and also explained the reason why he needed the copying. Finally, they accepted he could jump the queue because he gave reasons why he needed an urgent service. Secondly, in a topic of social proof, he explained that people could accept some things more quickly if

they saw people perform certain behaviours and achieve success. He referred to the experiments on children and dogs, conducted by Bandura and his colleague (1967 and 1968). He explained that 67 per cent of children who had dog phobia could reduce their degree of fear after watching a video of ‘a child playing with a dog for twenty minutes a day’ (Cialdini, p.119, 1984). According to the results of the experiment, the fear could come back again one month later; however, it concluded that several sources could influence these children such as a wide range of clips showing other children playing with their dogs. Cialdini (1984) not only gave advantages of social proof, such as a shortcut for achieving success but also mentioned weaknesses because it could cause problems if vulnerable people followed misleading advertisements, for example. Next, ‘Commitment and consistency’ are dominant factors from Cialdini (1984) point of view because when people made a public promise as a commitment, they tended to maintain their new behaviour and it is more likely to become long-term behaviour.

2.5.11. The Health Belief Model (H.B.M.)

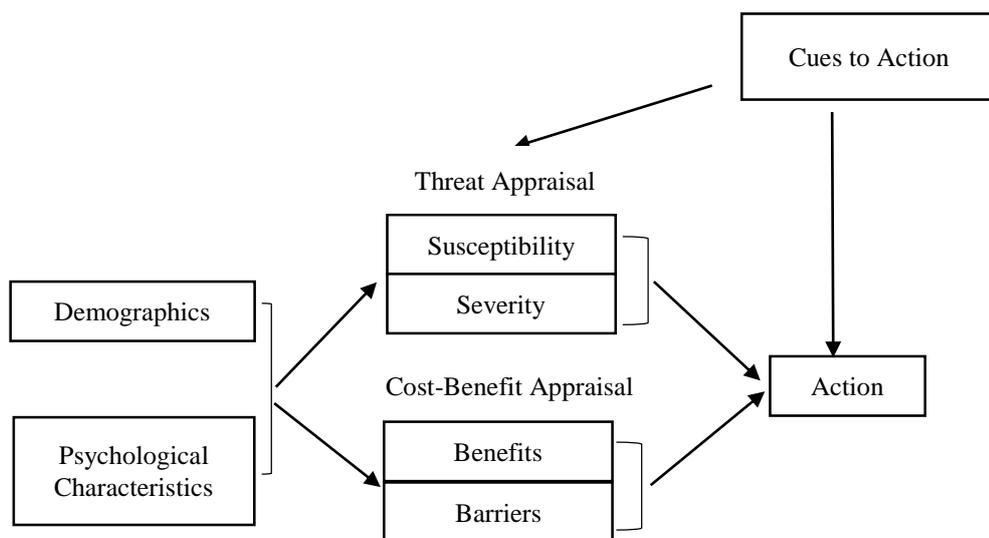


Figure 2.14: The Health Belief Model (HBM)
Source: Donovan and Henley (2010)

According to the Health Belief Model from Rosenstock (1974), it helped to predict that people can create new behaviour if they are influenced by crucial factors such as threatening appraisal, cost-benefit appraisal and the cues to action. See figure 2.11. Rosenstock (1974) underlined that if people are vulnerable or are suffering from severe

diseases, they will likely change their behaviour. Especially if they have self-efficacy to control themselves, for example, some people will do exercise if they do not want to take the risk of obesity. See figure 2.14. Then, Abraham and Sheeran (2005) reviewed the concept from Rosenstock (1974) and Janz and Becker (1984). They revised the model and said that the Health Belief Model (H.B.M.) showed a gap because some people do not take action if only relevant to health issues, so they removed some factors and added environmental and economic factors as key players. For example, individuals will not wear car seatbelts, even though they know that they are taking risks; however, they will use the belts if they do not want to pay a fine (Chaudhary, Soloman and Cosgrove (2004)). One of the applications suggested from Donovan and Henley (2012) is that social marketers should add ‘a promise to do or not to do’ to remind people such as athletes who tend to use a drug to win sports competition by underlining the drug side effects.

It can be said that these theories are useful for identifying essential factors to make a change. However, fixing these problems cannot be done by using only this model; for example, H.B.M. still has a gap which cannot explain how to solve problems (French, 2017). What is more, French (2017) argues that H.B.M. misses other crucial points which play essential roles, for example, this model does not include economic factors, environmental factors, belief, attitudes and others.

2.5.12. Determinants of health model

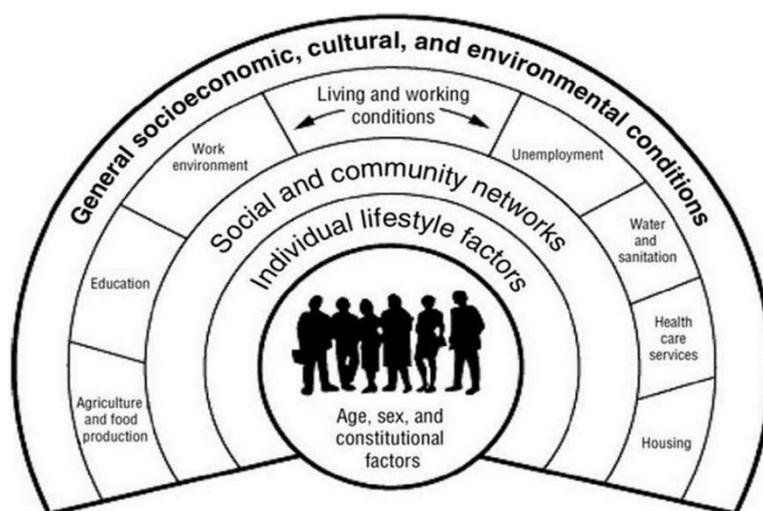


Figure 2.15: Determinates of Health Model
Source: Dahlgren and Whitehead (1991).

Dahlgren and Whitehead (1991) presented the Determinants of the health model. They described that people focus on the solutions of health issues in four levels or tiers, which are macro-level, material living conditions, material support networks, and lifestyle or behavioural factors. French and Gordon (2015) clarify the examples of each level, for example, the level of the material living condition consists of living and working conditions such as education, agriculture and food production, unemployment, water and sanitation. It can be seen in the interview results in particular ‘Tier 2: Agriculture and food production: Education: Living and working conditions: Unemployment: Water and Sanitation’.

See figure 2.15, which compared this theory to H.B.M.; it is found that this theory focuses on a big picture of a community’s effects which derived from critical factors in health in a community, while H.B.M. emphasizes on individual perception and beliefs (French and Gordon, 2015).

2.6. Management aspect

In general, this section describes essential tools from a management aspect which are types of policy management, models and theories which were widely adopted, and environmental factors which come from management responsibility in section 2.6.1-2.6.4. Then, section 2.6.5 will add other relevant factors from previous study cases. Section 2.7. will explain relevant models and theories from the social marketing aspect.

For policy implementation, theories are fundamentally divided into three main groups which are top-down theories, bottom-up theories and hybrid theories; the findings from Lipsky (1971), Elmore (1980) and Hjern and Hull (1982) are examples of bottom-up theories (Pulzl et al., 2010). General speaking, there is no right or wrong policy when selecting the type of policy for promoting recycling because it depends on many factors. One advantage of top-down policy implementation is that it is suitable for a small organization controlled by executives who are experts in their field (Combe, 2014). While bottom-up implementation is suitable for lower down the hierarchy, and it lets the manager play a pivotal role to handle specific issues effectively (Ezigbo, 2012). To make a university to become a green university for sustainability, the university leaders must play vital roles and use their initiative and assign their university teams and students to follow

the policy, this is recognized as top-down policy. However, if many students use their initiative and put pressure on the university staff to change their university to be a green and clean institution, it will be called a 'bottom-up policy'. Many universities are adopting top-down policy and gain a good reputation such as the 'American College & University Presidents' Climate Commitment, supported by 686 university and college administrators (Brinkhurst et al., p.342, 2011). However, if students struggle with the unfamiliarity of the change, top-down implementation could fail. (Halfacre-Hitchcock, 2006).

Another critical point is that if students run a recycling campaign, but there are a lack of funds and a lack of university support, the campaign may not achieve the goal (Brinkhurst et al., 2011). Sharp (2002) added another disadvantage for bottom-up implementation was that the campaign and the outcomes would present a short-term success, and the campaign needed repeating frequently. So, Brinkhurst et al., (2011) offered that university staff could be included as target audiences to maintain the new practice and pass it on to new students.

Similarly, from the interviews of the government sector workers in this study decentralization and bottom-up strategy are adopted in five cities. Their projects were in the 'Low Carbon City' projects, and the authorities were the main actors for managing waste and recycling issues (UNDP, 2016). The authorities had the power to solve environmental problems in their villages or cities (Pongloe et al., 2015). It is found that they use many techniques to run their project; for example, they do not only invite residents to engage in all activities but also provide proper facilities to meet the residents' needs. However, some residents did not want to change their behaviour, so other factors need to be added, such as understanding, knowledge, skills and conveniences. It can be said that to integrate some models and theories are essential. Sharing the authorities' experience is useful for the university teams because the teams could select the essential tools for their projects.

2.6.1. Lewin's three-step process

For the relevant models and theories, it can be said that to make people change their behaviour could fundamentally refer to 'A Force- Field' theory or three steps of behavioural change from Lewin (1951). Lewin (1951) believed that people would be changed if driving forces were more powerful than restraining forces. So, he suggested that changing peoples behaviour could consist of three steps: 'unfreezing or unlocking the

current level of behaviour’; ‘moving to a new level’; ‘refreezing new behaviour at new level’. He indicated that an organization could launch a new policy, then provide information to encourage target audiences to discover new alternatives. Then, adjusting people’s attitudes and beliefs and improving facilities to reduce the barriers at the second level. At the last level, the organization could increase other driving forces to push the target audiences, such as utilizing rewards for initiatives aiming to maintain the new behaviour. See table 2.10.

Step of change	Examples of Driving forces
1. Unfreezing or unlocking the current level of behaviour	Creating a vision or launching a new policy Providing information Encouraging target audiences to discover new alternatives
2. Moving to a new level	adjusting attitudes, beliefs, system, facilities or others
3. Refreezing new behaviour at a new level	increasing other driving forces to push the target audiences such as utilizing rewards for initiatives at the refreezing level

Table 2.10: Lewin’s three-step process.
Source: Adapted from Lewin (1951) and Hayes (2014).

2.6.2. The basic five types of intervention

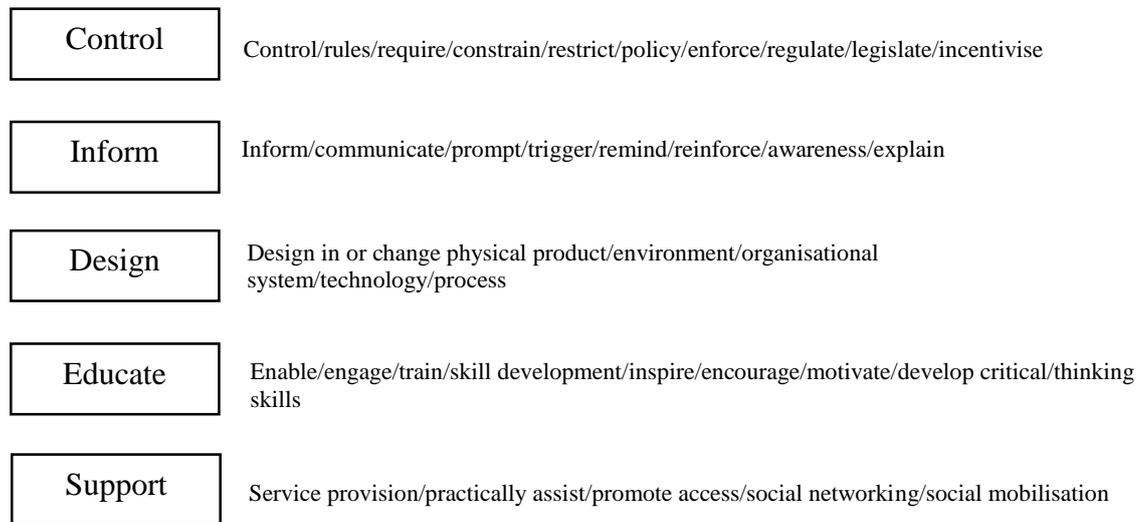


Figure 2.16: The basic five types of intervention cluster (the decides) framework
Source: French, 2011

This theory seemed to be useful for planning the necessary steps of theory implementation, action research, and group dynamics. However, it showed a weak point because people's behaviours were dynamic and complicated (Burnes, 2004a and 2004b). See figure 2.16. The National Health Service (N.H.S.) (2002) criticized the theory and explained that this theory tended to think of the organization goals which might not match with the target audiences' needs. N.H.S. (2002) added that changing people's norms could improve the outcomes. Hayes (2014) suggested that focusing on people attitudes, using a flexible approach with the right communication, building trust and commitment, and engaging with stakeholders could increase success. It can be said that if a management team combine the fundamental management theory and the arguments, it could be matched with the five basic types of intervention cluster framework, consisting of control, information and persuasion, education, design, and support (French, 2011). This strategy is useful for dealing with residents or students who disagree with following the policy or the campaign. See figure 2.12. French (2011) pointed out that at the first step a management team could apply incentives or disincentive with the new rules, while the three steps of change stated that incentives could be adopted at the last step.

Furthermore, French (2011) added that promoting people to do good things could be used in the first step. It can be seen that at the second step, the framework focused on people's awareness, communication before designing the facilities. It likely showed the target

audiences as the main actors rather than an organization. So, it can be said that the basic five types of intervention cluster framework are useful for a management team because it explains how to prepare a social marketing project and points out the possible powerful tools.

2.6.3. The Rossiter-Percy motivational model (Rossiter and Percy, 1997) and knowledge and understanding

Another critical factor which is relevant is ‘resident involvement’, which is most likely to explain their situations because all residents are involved with the poor conditions. Rossiter and Percy (1997) presented that the target audience has a high level of involvement with both negative and positive motivation. The distinction of this model is that resident engagement plays a crucial role in every step, which is the opposite of the intervention theories. It can be said that it is innovative and sensible to encourage residents by using them to run the projects, but it is difficult. Expanding upon the meaning of this concept, it could be said that authorities would present themselves as consultants and promote residents to manage the project. Moreover, authorities need to have specific skills.

2.6.4. Value of citizen model

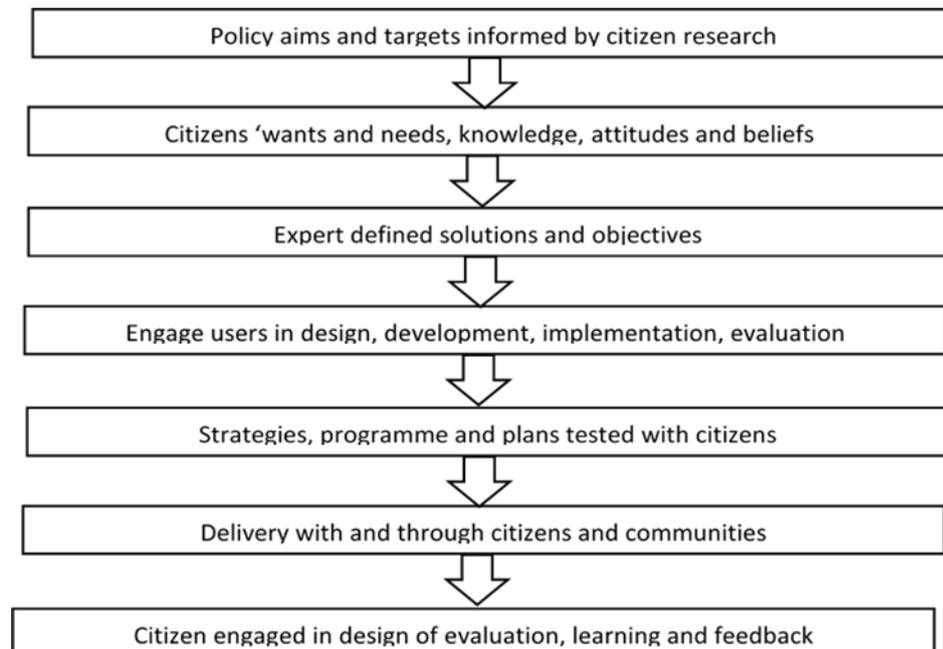


Figure 2.17: Value for a citizen model
Source: French and Gordon (2015)

Implementation can be seen in the five study cases in this study because it will present similar steps of 'Value for citizen model'. French and Gordon (2015) described that understanding, listening and motivating residents to take part is the central part of the behavioural change and are vital tools. However, it can be said that gaining their cooperation is not an easy task, especially if authorities do not have essential skills such as communication skills. Moreover, if residents are not ready to perform the whole process, the model seems to be adaptable for some communities. General speaking, this model presents the ideal concept for promoting social marketing for sustainability. See figure 2.17.

2.6.5. Other key factors from previous study cases

For environmental factors, recycling facilities and the waste management process are central topics for this study because it is believed that if the policy does not focus on sufficient recycling bins at universities, it is unlikely to see recycling practice, for example. Many pieces of evidence are showing that convenience, goal setting with feedback, participatory approaches, win-win situation promotion, rules, incentives, familiarity, collaboration with stakeholders are vital recycling success factors.

One of the previous studies presented that if residents or waste generators had to pay the waste fees with unit-charging-methods, they would perform more recycling, compared to a flat rate fee implementation (Sakai et al., 2008). Sakai et al. (2008) conducted a case study with Japanese residents from four municipalities, and they discovered that the idea of Pay-As-You-Throw (P.A.Y.T.) was significant for total waste reduction and it increased 20-30% recycling rate. In Thailand, many municipalities used a flat rate waste collection fee at 20 baht. However, all authorities in the five study cases had changed the fees systems and implemented several intervention techniques. There two primary keys were to increase the conveniences and offer multi-level fees. As mentioned, in Thai universities, in particular C.M.U., the waste collection fees which are based on the total volume of waste were implemented only at special events. Each student did not pay the fee individually. Applying the fee-charging system may be adopted if it could help C.M.U. to raise student awareness.

The second example from the previous study is from Australia, goal setting and feedback could increase recycling rate if it is combined with feedback (Lingard et al., 2001). This technique is beneficial because the researchers gave four examples of feedback to lever with the intervention. Four types of feedback are the percentage of total waste during a specific period, the percentage of total waste during the project, percentage of bin contamination during the current month, and percentage of bin contamination during the project. These techniques could be adopted for C.M.U. Competitions. Lingard et al. (2001) also added that the management team could apply psychological theories such as intrinsic motivators and personal norms. They suggested that the costs and benefits of engaging could be adopted, for example, presenting incentives before and after the recycling policy implementation.

Another feedback study from a South Korean university, Kim et al. (2005) experimented with 12,000 students and 600 university staff members. It explained that presenting feedback of weight of recyclable paper and percentage of correct separation of paper cups and cans per month at the lounge area significantly impacted upon recycling improvement. They stated that when the experiment withdrew the feedback posters, the recycling behaviour declined. They used both written feedback displays and graphic feedback displays placed above the recycling bins.

The next study was conducted by Seik (1997) in Singapore; it found that the recycling barriers were an inconvenience, a lack of incentives, and unfamiliarity. Seik (1997) stated that management teams could pay attention to the waste collection process, waste storage, waste transportation to reduce the barriers. He told that in the 1960s and early 1970s, Singapore focused on economic growth, and residents separated food waste for animal feeding. As a result, promoting recycling emphasized the benefits of financial reasons rather than environmental solutions. His 2-year-experiment provided recycling bins to residents, and recycling flyers were used to inform the residents. His strategies consisted of many tools such as setting up recycling bins at designated points, engaging with waste collectors, education and using recyclable items for donation. He discovered that reasons for recycling were thinking of the next generations, conserving the environment, and performing good examples for their children. However, he discovered that some students, senior people and housewives were the leading group who ignored recycling. The reasons were unfamiliarity, inconvenience, a lack of storage room, the money from recycling was not attractive, recycling made their houses dirty, and there is no pick-up service available. He summarised that Singapore could use Japan as a model. He underlined that the essential successful management techniques in Japan were strong resident engagement, suitable recycling activities, and proper recycling trades.

There was a study which underlined that good policy could address local environment quality and global climate change impacts and use a win-win situation in modern Asian cities, such as urban areas in India and China (Oliveira et al., 2013). This study was influenced by an increase in greenhouse gases (GHG) from the report of the Asian Development Bank (A.D.B.). The study concluded that an organization could reduce recycling barriers if it worked with local stakeholders to strengthen the strategies. Other

reasons were that local stakeholders might have advanced technology and innovative tools to tackle with intervention, for instance. The study gave examples of concepts such as learning opportunities and threats of waste sectors, transportation, energy involvement. In practice, C.M.U. could adopt this concept by building a network with stakeholders from the previous project such as ‘a smart city project’, and other university sponsors from many events to run recycling projects. In other words, but similar meaning, C.M.U. could find opportunities to implement co-benefit strategies with the five authorities and five business owners from this study or other C.M.U sponsors to run new recycling projects.

Overall, this section has identified other critical success factors and barriers from the management aspect. The next section of this study will describe other useful techniques on how to promote students to recycle which will come from the social marketing aspect.

It can be said that policymakers and management teams should integrate an array of strategies and many tools from many aspects to increase the success in their projects.

Overall, the management aspect underlines how to manage the people for a change, and it is believed that it has to adopt models and theories from the psychological aspect and implement them in the social marketing strategy. So the next section will demonstrate other recycling influencers from a social marketing aspect, it mainly describes how to focus on target audiences and goal setting and how to apply essential tools such as 4Ps for the action taking phase. Also, it will show examples of how to use eleven steps for social marketing adoption and evaluation.

2.7. Social marketing aspect

This section is categorized into three main parts; they are ‘the dimension of social marketing’, ‘The exchange theory and 4Ps’, and ‘the adoption of eleven steps of social marketing strategy’, showed in section 2.7.1, 2.7.2, and 2.7.3, respectively. Although the models and theories from the psychology section and the management section are categorized into social marketing fields, this section mentions these three main parts because they could be represented to make a social marketing plan. This section demonstrates relevant social marketing models and theories which the C.M.U teams could apply for their projects. It could be said that social marketing concepts originated from a

psychology aspect and other aspects. For example, ‘the social-ecological model (S.E.M.)’ demonstrates that ‘Individual and Microsystem’ are based on each target audience insights and their community, and the two systems influence each other (Fourali (2015). Next, Lee and Kotler (2016) thought that people would change their behaviour if they were satisfied by exciting offers such as incentives and disincentives, so they offered ‘the Exchange Theory’ which was derived from Kotler (1972) and Bagozzi (1978).

Similarly, the previous section (Psychological aspect), French (2011) offered a social marketing strategy, ‘the Social marketing value/cost exchange matrix’ to be an alternative strategy or possibly replaced by ‘Nudge’ from Thaler and Sunstein (2009). Social marketers could adopt incentives and disincentives when target audiences were in a conscious situation to make the project sustainable. Although 4Ps from Kotler’s strategy was criticized by French (2011) and French and Gordon (2015) because it was too simplistic and reductive, this study adopted the 4Ps as essential tools and also combined many tools from different angles. For example, the researcher mostly adopted the psychological aspect for individual factors and used ‘4Ps’ (Lee and Kotler, 2016), ‘The basic five types of intervention cluster’ (French, 2011), ‘Value for a citizen model’ (French and Gordon, 2015) and ‘Eleven steps of social marketing adoption (Fourali, 2015) for alternative strategies. So, section 2.5.3.1 demonstrates the application of S.E.M., and section 2.5.3.2 and 2.5.3.3 explain how to use the 4Ps and other essential steps. Then, section 2.5.3.4 shows how to make a social marketing plan based on ‘the eleven steps of social marketing strategy’. Section 2.6 concludes the literature review chapter.

2.7.1. The social-ecological model (S.E.M.)

The ‘Social-ecological model states that there are five key influencers which play crucial roles in social marketing based on the psychological aspect from Bronfenbrenner (1979). These are the microsystem, exosystem, macrosystem, mesosystem and chronosystem. See figure 2.14. Individuals will be influenced by their small community (microsystem) such as parents, friends, school and others. They involve each other or have a system of connection which is called mesosystem (French and Gordon, 2015). Exosystem represents the external environment which indirectly influenced (French and Gordon, 2015).

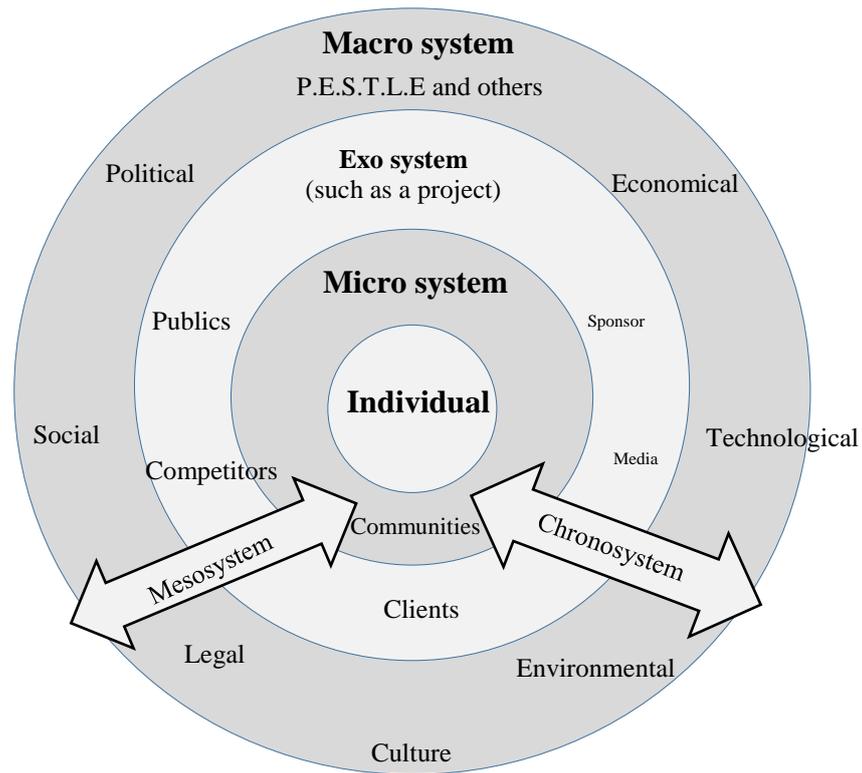


Figure 2.17: The dimensions of social marketing
 Source: Adapted from Bronfenbrenner (1979) and Fourali (2016).

Fourali (2016) added that a social marketing project could be one of the examples of exosystem; moreover, he used the conceptual reflection of micro and the macro environment from Dibb et al. (2006) and explained that stakeholders (such as sponsors, clients, competitors, intermediaries and public) and media are included. For a macrosystem, P.E.S.T.E.L (Politico, Economy, Social, Technology, Environment, and Legal) and others such as Culture are the primary influencers (French and Gordon, 2015). Lastly, Chronosystem is ‘timing of events within or between systems’ (Fourali, p.19, 2016).

According to French and Gordon (2015), the social-ecological model (S.E.M.) mostly comes from qualitative research. Fourali (2016) added that it could help social marketers to identify prime successful factors, which are complex, and it also analyses strength, weaknesses, opportunities and threats for promoting behavioural change.

2.7.2. The exchange Theory and 4Ps

Lee and Kotler (2016) believed that people tend to adopt a new behaviour if they receive equal or more benefits as an exchange compared to perceived costs; this concept is derived from Kotler (1972) and Bagozzi (1978). They suggested that 4P or 7P (Product, Price, Place, and Promotion and others) strategy can fix the behavioural problems because product signifies benefits with three dimensions (core, actual, and augmented). Also, Price refers to both intangible and tangible offering to target audiences to change the behaviour such as convenience, time, incentives, disincentives and others (Lee and Kotler, 2016). For Place and Promotion, the former means accessibility, while the latter means persuasive communication via multi-channels such as traditional media and social media (Lee and Kotler, 2016). Lee and Kotler (p.157, 2016) offered that to set up behavioural objectives and target goals, social marketers could address three objectives:

- ‘Behavioural objectives (what you want your audience to go)’
- ‘Knowledge objectives (what you want your audience to know)’
- ‘Belief objectives (what you want your audience to believe or feel)’

They also emphasized that each campaign ‘always has a behaviour objective’ and social marketers could find a baseline from similar projects to set up specific goals. For target goal setting, they suggested that it could be based on specific, measurable, attainable, relevant, and time-sensitive (SMART). Moreover, they gave an example from the case of waste reduction promotion in Texas in the year 2013. They described that social marketers could find out desired behaviours, sample size, perceived barriers, potential motivators. For example, 1,206 Texas residents who were over 15 with a high tendency of dumping rubbish on the public roads were the primary target. The desired benefits of the group could be incentives for not illegally dumping waste, such as wanting to be good people for their children. Other crucial steps can be seen in Table 2.11.

Examples of social M.K. plan	Examples from the waste reduction in Texas in 2013 and others
1. Target audience characteristic	Texas residents who were over 15 with high tendency of dumping rubbish on the public roads

2. Sample size	1,206 people
3. Desired benefits	Incentives for not illegal dumping such as being proud to be a model Disincentives for illegal dumping such as fines
4. Perceived barriers	Being in a hurry, less pay attention to adverse impacts of dumping, lack of knowledge, inconvenience
5. Potential motivators	People who tell you a message and make you change behaviour
6. 4Ps (Product/Price/Place/Promotion)	Product: Key concepts that make them not illegal dumping Price: Fines, raising awareness, education, advertising Place: Main public areas in Texas such as popular tourist locations Promotion: Opening events, T.V., billboards, posters, volunteers and social media
7. Goals	Behavioural objectives: Change the behaviour Knowledge objectives: Information or fact which target audiences want to know and they can change their behaviour Belief objectives: Values, opinions or attitudes
8. Competition	The messages from people or organization tell them not to change behaviour

Table 2.11: Examples of a social marketing plan for waste reduction and others
Source: Adapted from Lee and Kotler (2016.)

It is argued that 4Ps shows several gaps, for example, it seems to present the short-term behaviour and ignores ethics, critical thinking, reflexive practice, target audience participation, stakeholder engagement and others (French and Gordon, 2015; Fourali, 2016). As a consequence, Lauterborn (1990) offered 4Cs (Consumer, Cost, Communication, and Convenience) to replace 4Ps. French (2011) suggested that Behavioural Intervention Matrix (BIM), mentioned in section 2.5.1, could be useful. French and Gordon (2015) stated that ‘the social marketing intervention matrix (Control, Inform, Design, Educate, and Support)’, mentioned in section 2.5.1, should be strongly recommended.

2.7.3. The adoption of eleven steps of social marketing strategy

According to the social marketing aspect, to apply social marketing towards the real field could bring a clearer and broader picture by using the eleven steps of application of social marketing (Fourali, 2015). They are ‘Problem Identification’, ‘Planning’, ‘Purpose/Mission’, ‘Situation Analysis/Market Research’, ‘Objective’, ‘Target Groups and Obstacles’, ‘The Customer Proposition’, and ‘The Marketing Mix’, ‘Implementation (the Campaign/the Project)’, ‘Resource’, and ‘Monitoring and Evaluation (Process and Outcomes)’ (Fourali, 2016). The comparison steps of social marketing adoption from Fourali (2016) and others will be presented again in chapter 3. However, how to use this step will be demonstrated in the section of the findings at the problem identification phase and the research planning and acting phase. One of the benefits of this concept is that policymakers could learn the key points and the crucial steps from real practices from the five authorities in Chapter 5, and select alternative practices for C.M.U projects.

Comparing ‘eleven steps of social marketing adoption’ (Fourali, 2016) to the ‘ten steps of marketing developing plan’ (Lee and Kotler, 2016), it can be said that obstacles and propositions from the former are similar to barriers and desired benefits from the latter. So, in this study, these similar words will be used alternatively. Another crucial point was suggested by Fourali (2016) that evaluating results from the social marketing project should consider awareness, conviction, behavioural change, time, and the number of people affected. However, Lee and Kotler (2016) added different points which tend to link with financial factors such as return on investment (R.O.I.). For this additional point ‘if the amount of waste is reduced at...%, the organization will pay waste collection fee at a lower rate at....’ or ‘if the waste is reduced at.... the amount of carbon dioxide emission is reduced % from baseline.

2.8. Conclusion

This chapter addressed the complications and opportunities created by Climate Change which form both economic losses and potential new investment opportunities in green

projects or low carbon businesses. Although municipal solid waste is categorised into various types, in this study, the types of waste were based on the categorisations provided by The World Bank report of 2018 and the CMU report of 2015. For the waste composition in Thailand, there were similar proportions among lower and upper-middle-income countries which consist of seven groups or waste categories. However, when comparing the statistics of waste generation at a local level and the university the students and residents, both generated food waste at around 40 per cent of total waste (World Bank report,2018: the CMU report, 2015). While the former significantly generated more plastic waste to the latter. These facts could highlight that students might need specific types of recycling bins, such as a bin for plastic, or require creative motivation, such as volunteers or fun activities with compelling incentives to reduce the plastic waste generated. There were similar MSW collection systems between students and residents because waste segregation at source was varied. However, the responsibility for the recycling of the leading waste likely belonged to the government, waste pickers, and others who were not waste generators. For the general waste elimination system comparison, the government mainly sent the total waste to landfill sites (a mix of general waste and food waste). While the university teams tended to separate only food waste for Biogas production. Although the villages and the university provided recycling bins for chemical waste or hazardous waste, it was discovered that some villages sent harmful waste to the government division for standard elimination. However, in the university, the harmful waste was likely mixed with general waste at the bins. Recycling waste such as plastic water bottles was partially separated and sent to recycling bins or recycling shops by residents and a small number of students. So, this study aims to increase recycling behaviour and identify the issues of waste segregation and provide the results for the leading teams by exploring alternative strategies to increase awareness among students.

Other essential tools for promoting waste segregation in this study consist of many factors. For models' and theories' adoption, this study revisited many psychological, management, and social marketing aspects to increase the success of upcoming university projects. For example, this study identified the weaknesses of the Planned Behaviour Model, which might not be suited to students who did not recycle their waste at recycling bins. The students had negative attitudes, misunderstanding, peer pressure, or because they require specific or more compelling activities and incentives to drive their participation. Next, this study underlined that the concept of punishment, according to Palov, Nudging, and the

marketing Matrix might not work with people who wanted to dump waste illegally. However, they would pay a fine if their actions were reported to the authorities. However, this study does not offer only one approach for the management teams' consideration, such as top-down strategy implementation; it reflected upon the limitations and also offered alternative angles such as bottom-up strategy and a combination of strategies. For example, from the top-down adoption, it may present a lack of participation from the target audience. To improve participation, brainstorming with the target audience can be added at the beginning stage of change as a prime strategy to increase the success of each project. This study possibly supports the idea that 'Resident Engagement' plays a significant role in all steps of the management aspect. It emphasised that a behavioural change and an implementation of a social marketing plan will unlikely show a permanent change in behaviour if the project runs for a short period. Then, it concluded that promoting a behavioural change needed integration of models and theories and specific tools. So, this study concluded that it aims to explore other powerful tools and adoption of relevant models and theories.

Chapter 3: Methodology

3.1. Introduction

This study has already mentioned the research aims and objective and backgrounds of the Climate Change, Paris Agreement, and Thailand’s involvement. Chiang Mai University or CMU- is the university which served as the location for data collection in a case study which was presented in chapter 1 and chapter 2. Moreover, in chapter 2, the relevant models and theories are presented as potential critical success factors for increasing the success of the projects at CMU. Chapter 3 outlines the research philosophy based on interpretivism and positivism. Chapter 3 also outlines the data gathering techniques used in the research approach (theory development and type of data). The research strategy (action research and social marketing characteristics), in sections 3.2, 3.3, and 3.4, respectively. Section 3.5 will describe the criteria of the quality of the study and the ethical considerations. Finally, the conclusion of this chapter is presented in 3.6. Then chapter 4 will link this chapter to research design and other vital topics. Finally, Chapter 5 will present the Findings.

3.2. Research philosophy

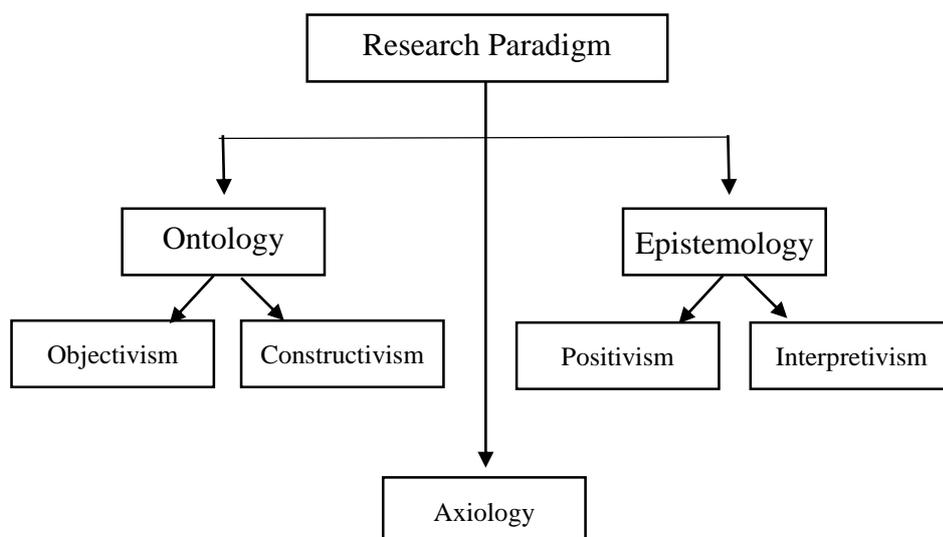


Figure 3.1. Research Paradigm
Source: Saunders et al. (2016)

This section begins by explaining the difference between epistemological orientation and ontological orientation research philosophy. Then, it shows the position of this study linking to the research approach and the research design. It identifies the research strategy which consists of various tools such as; questionnaire/survey, interviews, focus groups, and the implementation of a recycling project at CMU as a part of action research.

In general, there are two primary research approaches or paradigms- 'Epistemological Approach' and the 'Ontological Approach' (Frankfort-Nachmias and Nachmias, 1992). However, according to business research, there are four research paradigms whereby both the Epistemology and the Ontology are divided into two sub-groups, namely 'Objectivist' and 'Subjectivist' (Burrell and Morgan, 1979). Then, in 2015, Saunders et al. added an approach which considers 'the roles of values and ethics' named the 'Axiological Approach'. Next, 'Subjectivism' which is from an Ontological Approach, is replaced with 'Constructivism'. Finally, from the Epistemological Approach 'Positivism' and 'Interpretivism' are called 'Objectivism' and 'Subjectivism' (Saunders et al., 2015). See figure 3.1.

This study takes an 'Epistemological Approach' using both the 'Positivism Approach' and the 'Interpretivism Approach' due to a multitude of reasons based on the assumptions of the philosophers mentioned above.

Various researches have differing perspectives on the 'Epistemological Approach' and the 'Ontological Approach'. This study tends to fall into the area of 'Epistemology' because it is believed that the 'nature of phenomena' a 'conceptual approach' explains the reasons why something happens. Also, it shows the complexity which is not or may not be by an orderly phenomenon, and it is widely used in social science research (Frankfort-Nachmias and Nachmias, 1992; Crother and Lancaster, 2009, p.22). Conversely 'Ontological' explains that social phenomena and nature of reality are independent, according to Burrell and Morgan (1979) and Johnson and Duberley (2003).

According to another dimension of the philosophy of the research, each categorisation is divided into general sub-dimensions. The Ontology paradigm consists of 'Objectivism' and 'Subjectivism or Constructivism'. The former relies on viewing 'an organisation as a

tangible object', and an organisation's actors strictly play their roles in different jobs within 'a hierarchy and external factors' (Bryman, 2012, p.32). Furthermore, social actors from constructionism create the culture from their perceptions and their actions. 'The Rules' in Constructivism were far less extensive and less rigorously imposed than might be supposed from a classic account of an organisation' (Bryman, 2012, p.33). The actors follow the rules and do their tasks with ethical responsibility due to high restrictions (Bryman, 2012). Moreover, social construction directly derives from the social actors; for example, an organisation has its own culture, which was built up from the social actors such as the employers, the employees as well as others (Bryman, 2012). According to Johnson and Duberley (2003) and Crother and Lancaster (2009) 'Objectivism' focuses on rules and commands. While 'Subjectivism' generally refers to people's thoughts or the actors' perceptions. The findings from this study are unlikely to show the 'rules or commanding' from an Objectivism perspective Johnson and Duberley (2003) and Crother and Lancaster (2009) because it is believed that recycling is a choice and it tends to depend on social marketing promotion rather than university rules. So, it is not in an area of 'Objectivism' from an 'Ontology' approach.

This research is based on 'Constructionism' from an 'Ontological Approach' because the researcher summarizes that social actors have individual perception. However, it may lead to provide different actions or behaviours in order to oppose changes or behavioural changes in recycling. For example, if all students around the world follow the rules, such as performing recycling in their universities, it is worthless to find out alternative strategies to encourage them to do recycling because they are already doing it correctly. However, only some students perform recycling. Therefore, this study has utilized a 'Constructionism Approach' but not all the concepts of the 'Constructionism Approach'.

Indeed, this study cannot be classified from a 'Subjectivism Approach' on the side of 'Ontology' because 'Subjectivism' undoubtedly means a person can have an opposite perspective in different organisations, times, places and circumstances. 'Subjectivism' is an example of 'doing something by understanding' rather than by 'commanding',. Hence it goes against 'Objectivism' or 'Ontology' assumptions. (Strauss et al., 1973).Furthermore, it is believed that if people have positive attitudes towards recycling, they tend to perform recycling at all times and in all places.

Strauss et al. (1973) added that for 'Constructionism', organisation actors involved with various parties, dealing and negotiating for change; build their social world not from

external factors, but through their interactions. So, this study does not fall into the area of 'Constructivism' from an 'Ontology Approach'.

Another assumption, from Johnson and Duberley in 2003, is that both 'Ontology' and 'Epistemology' approaches show reflexivity of a management perspective and they are interrelated between an 'Ontological Approach' and an 'Epistemological Approach'. However, an overlap was found between 'Subjectivism' and 'Objectivism'.

2. This study is positioned into the 'Epistemology Approach' from both 'Positivism' and 'Interpretivism' because it starts the crucial factors by underscoring problem identification and pinpointing the appearance of knowledge and how to know it and obtain it, considered a dependent process which is in the area of 'Epistemology' (Burrell and Morgan, 1979; Blaikie, 2010). Frankfort-Nachmias and Nachmias (1992, p.6) explained that the concept of 'Epistemology' is that 'It develops knowledge and builds new theories' and that 'Nature is orderly'. Similarly, this approach relies on models and theories, and it shows gaps in its adoption. Then, it aims to explore new knowledge or develop existing social phenomena. Besides, it underlines that knowledge can be found by observation which is mostly for science and widely used for marketing and management (Bryman and Bell (2011) and Bryman, 2012);

3. The position of this study prospectively uses the concept of 'Positivism' because it tends to rely on numerical data and leads to assuming how to communicate knowledge to other people. At the same time, the latter underlines people's perspectives and how to communicate the message to target audiences (Burrell and Morgan, 1979). This study expands this by using questionnaires or surveys to find out the characteristics of university students, such as their socio-demographic data, their lifestyles, and their social media usages at the problem identification phase. Then when the findings presented the types of marketing communication channels, the channels are then adopted for the recycling project at CMU. Also, it selects a self-completed survey to reflect the attitudes of the target audiences at the evaluation phase to show the level of satisfaction and demonstrates the success of the implementation of recycling projects and the use of Social media (The Facebook page). The adoption of the study into reality falls into 'Positivism' because it seeks the best marketing communication channels for the implementation of the project ((Bryman, 2012). However, the findings from the survey do not intend to prove models or

theories as a basis of 'Positivism' which is dealing with a hypothesis to create laws or rules (Bryman, 2012).

4. As mentioned, this research aims to examine ongoing C.M.U recycling programmes in terms of problem scanning, exploring possible solutions and offering some suggestion to the teams at C.M.U. Therefore, priority should be given to discovering the conclusions. The questions such as 'How to change or improve recycling behaviour?' or 'What are the recycling barriers?' are included and presented to target audiences. This study does not only utilize surveys but also semi-structured interviews to explore the alternative and effective social marketing strategies for the target audiences and gives a set of recommendations for new projects to succeed in the adoption phase. As a result, it is positioned as 'Interpretivism' according to Bryman (2012), because of at least three reasons. Firstly, it demonstrates the 'whole picture' of the research and then goes into the depth of the supporting ideas with coherence in order to explain the reasons why it gathers data from different participants with different approaches. Secondly, it underlines the complexity of participants' perceptions with a different experience. Thirdly, and most importantly, it shows interpretation. For example, the research aims to seek a set of recommendations from the university stakeholders, and the results may have a high potential to change their' behaviour. Also, the study explains why the strategies could work effectively and also presents the reasons why it is possible. General speaking, this study falls into 'Positivism' and 'Interpretivism' areas, as mentioned.

For another categorisation, Saunders et al. (2015, p.128) believe that 'Axiology' should be added as a new philosophy paradigm because it emphasises 'the role of values and ethics' and it explains the researchers' statement on how they manage ethical issues in their research. Their findings can show both facts and opinions. However, the researcher will present ethical issues in terms of other influential factors in section 3.6.

There is another approach which is called the 'Pragmatic approach'. The distinction of 'Pragmatism' is that there are two critical reasons for action research, and it consists of a variety of methods. It is also considered by Robson (2011, p.29) that the 'Pragmatic Approach' is a way for the researcher to address the conclusions of the research problems and it claims that 'Values play a large role in conducting research and in concluding the studies, and they see no reason to be concerned about that influence'. Cherryholmes (1992)

and Teddlie (2005) contend that this approach is for descriptions, theories, explanations and narratives conducted by a researcher who selects the topic with the value system and seeks the answers for the research.

On the contrary, Robson (2011) concludes that 'Pragmatism' is an 'Anti-Philosophy' approach. 'Pragmatism' represents perceptions from cultural values such as democracy, and its root is from neurobiological processes, which tends to interact in order to help actors to survive (Johnson and Onwuegbuzie, 2004). Furthermore, Mertens (2002) raises a different perspective than the others, which is the 'Pragmatic Approach' is aided by the value of policymakers, customers and other groups who are not researchers.

When considering the research paradigm or orientation, this study tends to apply less 'Constructionism' from the 'Ontological Approach', and prefers 'Positivism' and 'Interpretivism' from an 'Epistemological approach'. However, the action research is somewhat relevant to the 'Pragmatism Approach' Mertens (2002) and Sauder (2016), because it consists of several methods and focuses on the values of the policymakers, the target audience and the stakeholders.

3.3. Research approach (Theory development and type of data)

After providing the philosophical approach of the selected research paradigm, which is a combination of quantitative and qualitative data (i.e. a mixed-method design), this section clarifies the reasons why the research should be conducted and what types of data should be gathered. The former refers to the theory development which is a deductive, inductive and abductive approach, and the latter applies qualitative data or quantitative data (Van Maanen et al., 2007; Ketokivi and Mantee, 2010; Bryman and Bell 2011; Saunders et al., 2015). Therefore, section 3.3.1 describes the differences between the three approaches, and then section 3.3.2 will demonstrate the types of data which this study selected.

3.3.1. Theory development

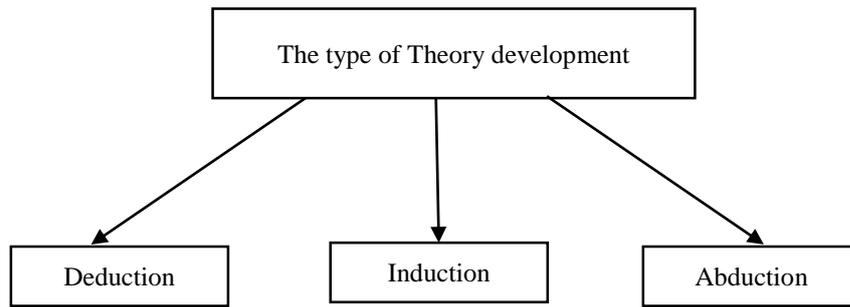


Figure 3.2.: Theory development/Research approach
Source: Saunders et al. (2015)

Social research approaches are primarily categorised into three theories. They are the ‘Deductive Approach’, the ‘Inductive Approach’, and the ‘Abductive explanation/approach’ (Saunders et al., 2015). See figure 3.2. The explanation is not the same as Bryman and Bell, (2012); Van Maanen et al., (2007); Ketokivi and Mantere (2010) because they believe there are only two core approaches which are ‘Deduction’ and ‘Induction’. The ‘Deductive Approach’ begins with a theory, and then a researcher discovers the best answer for the conclusion, such as the result of an experiment or the theory for a hypothesis—the ‘Inductive Approach’ (Saunders et al., 2012). Bryman and Bell (2011, p.11) does not conclude a clear picture of the ‘Deductive Approach’ theory which is; a researcher must use a hypothesis translating ‘empirical scrutiny into researchable entities’, then gather data and use either hypothesis confirmation or hypothesis rejection, and end with the theory revision. Figure 6 displays the process of the ‘Deductive Approach’.

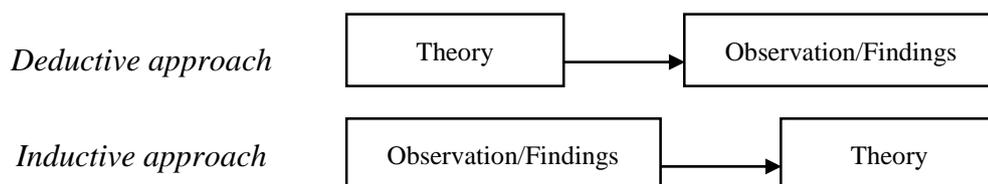


Figure 3.3.: The difference between deductive approach and inductive approach
Source: Bryman (2012).

Arguably, Merton (1967, p.39) states that ‘the sequence can be depicted’. Merton also believes some theories such as ‘Grounded Theories’ are far more connected to social research. In other words, it tends to be ‘a more abstract and general level’, according to the conclusion from Bryman (2012, p.8).

However, Bryman (2012) suggested that research relies on the mid-range theories ‘Grounded Theories’ and ‘Empirical Scrutiny’ that depend on a researcher’s perspective. The ‘Deductive Approach’ Schoonhoven (1981), is commonly applied in the management and business world to explain the relationship between an organisation and its environment. The ‘Deductive Approach’ Schoonhoven (1981) also presents the complex conditions and how to implement the findings for the organisation's structure. Despite this, the ‘Deductive Approach’ Schoonhoven (1981), is not used in this study.

The reasons are that this research does not rely on only one theory; secondly, it does not involve the proving of the hypothesis. Lastly, it may not fit to change or improve the theory, but it expands the understanding of social actors. Even though this research maintains the participants’ behavioural change in the recycling project combining various methods, it might not be selected as a deductive explanation because it is not relevant to conclude that some correlation is true or false. Contrarily, it discovers some effective recycling strategies for management teams as alternatives and tries to understand how, and why it works and how to implement it. See figure 3.3.

Also, this research is not from an ‘Inductive Approach’ because the ‘Inductive Approach’ engages with linking less theory at the beginning and uses observation or qualitative data such as dealing with the emotions of employees on an organisation’s change issues, then it generates a theory based on the assumptions and finally goes back to create a new theory (Merton, 1967; Glaser and Strauss, 1967). Moreover, the focus group and interview are implemented as grounded data analysis in the ‘Inductive approach’, besides it provides alternative strategies to deal with a specific situation. The researcher could apply deduction if only two approach options existed; however, Saunders et al., 2012 states that it should be recognised as ‘Abductive Approach’ not ‘Deductive’ or ‘Inductive. The reasons consist of exploring choices, testing them and trying to improve them. Van Maanen et al. (2007) supports the idea that this study is not in the area of ‘Induction’ because it begins with a group of theories and attempts to understand the problems and create a specific research framework. Van Maanen et al. (2007) supports the idea that this research can be

categorised as an ‘Abductive Approach’ because the study consists of testing the research framework and improving it after the data analysis.

3.3.2 Type of data: Qualitative versus quantitative data

Facing the different objectives of selecting between qualitative and quantitative data implementation is useful and practical for this study because it gives guidance to the data collection process and the data analysis in an academic way. Besides, it also has a connection to the ‘Philosophy Assumptions’ in section 3.2.

When comparing the research paradigm and the research approach with the type of data, this study primarily employs ‘Constructionism’ and ‘Interpretivism’ from an ‘Ontological Approach’ and an ‘Epistemological Approach’. This study supports the ‘Inductive Approach’ and possibly generates a theory, which is compatible with the assumptions of Bryman and Bell (2011). However, it can be categorized as an ‘Abduction Approach’, from the concept of Van Maanen et al. (2007) and Saunders et al., (2012). While discovering the potential marketing strategies and evaluating its implementation, it should demonstrate the credibility of the data. In order for the data analysis to provide accuracy and validity of the measurement of the participants or university students and present generalisations, the study should record quantitative data (Robson, 2011).

However, the study concerns the university stakeholders as insiders of the community, and it cannot omit their opinions. As a result, this study is a combination of qualitative and quantitative data. The findings explain ‘why and how’ to improve the recycling campaign or project. However, the research framework needs to be tested in order to improve it and then answer ‘how to do it’ before providing suggestions. In other sections, the researcher will explain other factors such as generalisation and validity. For this section; the researcher emphasises the typical features of both qualitative and quantitative and explains why they are essential for the study. Then, the researcher will mention other considerations.

Comparing the differences between quantitative data and qualitative data, Hammersley (1992) described that the former presents the general circumstances. While, the latter is dealing with the description, starting with data and leading to the hypothesis, primarily in case studies (Hammersley, 1992). Alternatively, Halfpenny (1979) pays attention to the

differences of another perspective, for example, qualitative is a more soft and flexible approach, and involves the subjective instead of the objective, focusing on case studies rather than general cases. In 1988, Bryman stated that quantitative study is the method that scientists use for experiments to investigate factors which are measurable and controllable. In 2011, Silverman argued that researchers and not only scientists could utilise a quantitative approach for their social research interests. Bazeley and Jackson (2013, p.2) simply explain that ‘qualitative is intensive or extensive information which is non-numeric such as text or visuals. Also, Blaikie (2010) says that business research needs quantitative study because it can precisely demonstrate the needs of customers and products better than words or qualitative study. Moreover, quantitative study mostly begins with words and is transformed into numbers, and it will be delivered in the form of both numbers and words (Blaikie, 2010). It seems to be controversial, but Blaikie (2010) emphasises that in a social study, he still has a different point of view from them.

Although the researcher positions from a ‘Constructionism Approach’ which underlines organisation actors, their various parties or the stakeholders involving behavioural change on recycling topic (Strauss et al., 1973). The social actors influence themselves and create cultures from their perception (Bryman, 2012). However, quantitative data assists the researcher to understand the background of critical participants, university students, and then the findings will represent whether the quantitative data confirms the design of the evaluation and if it fits the representations of the participants.

The points of view from Robson (2011) explain why this research benefits from quantitative data. Robson (2011) points of view are:

1. Giving a pre-direction for a researcher at an early stage and present statistics of the key participants in order to apply the research framework (theoretical involvement).
2. Maintain a distance between the researcher and the participants to demonstrate that the researcher did not affect the answers.
3. Assisting a researcher to set up a practical experiment for testing the assumptions from the findings which is expected from the vast participant population.
4. Finally, the quantitative data can be reproduced, rechecked, and is expected to show the same outcome.

Similarly, Blumberg et al., 2005 confirms that quantitative data creates a statistic view of participants but does not take into account their in-depth experience. However, they suggest that it can be combined with open-ended questions to explore unexpected answers and gain a qualitative approach at the same time. Ritchie and Lewis (2008) have the same conclusion; however, they have a different perspective in that a researcher can design the questions for gaining the information from participants' experiences by using qualitative data from open-ended questions.

Accordingly, adopting only quantitative data in this research is not suitable, because to focus on meaning and interpret the meaning does not fit for quantitative data collection (Robson, 2011). (Robson, 2011) identifies the advantages of qualitative data as:

1. Accordingly, if the social world is phenomenal, and those social actors are involved, a generalisation of participants, from quantitative data collection, is not a core concern. Nevertheless, conducting qualitative data and gaining new data from social actors with flexibility is, so qualitative data can help a researcher during the design process.
2. It is suitable for small-scale participants and widely used for the theoretical framework, which is the priority of research.
3. The context from participants is meaningful, but sometimes it cannot be shown in a number; therefore employing qualitative data is required.

This research surmised similar ideas as Blaikie in 2007 and Creswell in 2008; they conclude that qualitative data serves as an interpretivism purpose. They explain that it obtains non-numerical data with an in-depth understanding of the participant's opinions. By contrast, Ritchie and Lewis, 2008 state that qualitative data is most relevant to the 'Inductive Approach' because it refers to the findings of the theory. If this research relies on only this conclusion, it would not be convincing, because the aims of this study do not focus on finding a new theory. However, qualitative data represents a significant aspect of this approach.

Positioning this research as an 'Abduction Approach', Blaikie (2007) explains that the aims of the 'Abduction Approach' are to explore unexpected information which tends to create a new theory rather than testing or replicating the current theory. Moreover, gaining qualitative data and quantitative data are required. Another meaning is that 'Abduction Approach' consists of both 'Induction' and 'Deduction' (Blaikie, 2007).

This study uses ‘Mixed Methods’ which integrate both qualitative and quantitative data collection and analysis; as suggested by the Agency for Healthcare Research and Quality HRQ(2013). HRO (2013) pinpointed five reasons for the use of integration that can validate the findings for both qualitative and quantitative data sources. Qualitative data is used to explore the quantitative findings and to develop the survey instruments whereas the quantitative data is used to augment the qualitative outcomes of the study and involves community-based stakeholders (Wisdom and Creswell, 2013).

This study incorporates all five of the reasons; for example, this study uses a student survey, interviews with a select group of CMU students, and interviews with the staff at CMU during the ‘Problem Identification’ phase to reflect upon the findings and to increase the validity of the findings.

Then, it uses the findings from the CMU stakeholder interviews to explore the possibility of building a new recycling network, sharing knowledge and experiences in order to increase the success of future recycling projects at CMU.

According to a brief from HRQ in 2013, there are several advantages for using both qualitative and quantitative data collection and analysis. For instance, both the findings from the student survey and the student interviews showed that the students used Social Media, in particular, Facebook every day and intensively. Moreover, the students believed that by participating in some online activities through the use of Facebook, it could help to raise their awareness about recycling.

Further examples of the advantages of using the ‘Mixed method’ is that it can aid the researcher to collect comprehensive data. Then the findings can demonstrate the differing perspectives of the participants and the stakeholders, which is explained in ‘The Findings Chapter’ and ‘The Conclusion and Recommendations Chapter’.

However, there are three limitations for the integration, which are that it is complicated, time-consuming and relies on teams of researchers or experts (HRQ, 2013).

To summarize this section, it can be stated that this study requires both qualitative and quantitative data to serve different purposes and support the research aims and objectives.

The reasons why this research utilises both methods will be expanded in the next section, research strategy.

3.4. Research strategy (traditional research, action research, commercial marketing and social marketing)

This section consists of two main sub-sections which are the descriptions and differences of traditional research and action research, and commercial marketing strategy and social marketing strategy showed in 3.4.1 and 3.4.2, accordingly. Then, as a consequence of action research, section 3.5 will describe characteristics of three types of reflection.

3.4.1. Traditional research and action research

Fundamentally, it can be said that there are two types of research strategy - traditional research and action research (McNiff, 2002; Bradbury, 2015). Their characteristics are different in many aspects such as the aims, the methods, the benefits, and the action outcomes. For example, traditional research benefits by focusing on serving ‘the academic community’, while the benefits of action research are directly relevant to stakeholders such as ‘groups, organisations, and communities’ which are involved with the problem-solving’ (Bradbury, 2015, p.2). These characteristics lead to applying different methods in conducting this study which is from the aspect of action research. This section demonstrates the subtype of traditional research such as surveys, experiments and case studies, and then explains the specific characteristic of action research, accordingly. There are eight research strategies which are Experiment, Survey, Archival and Documentary research, Case study, Ethnography, Grounded theory, Narrative Inquiry, and Action Research. (Saunders et al., 2016).

It can be said that this study uses an ‘Action Research strategy’ and it plays a significant role in identifying community issues, seeking possible solutions, testing them, and improving on them, while traditional research aims to prove some theories and shows the conclusions (McNiff, 2002; Bradbury, 2015). Because of applying the action research, this study underlines the recycling issues in universities in Thailand, especially in the strategies to encourage university students to conduct, or conduct more, recycling. It gathers data from target audiences and the stakeholders and then shows a list of possible solutions, then

tests it and evaluates it in order to gain more understanding of the real situations with real people. Moreover, instead of proving theories, this study suggests an array of theories and various approaches in order to understand the facts in a real place and then it shows the potential solutions and practical suggestions.

Secondly, to conduct action research can show the progress of the researcher's work or show understanding of a researcher as a practitioner. For instance, this study describes how to apply the information from reality and also describes why the experiment outcomes or the results from the implementations can be radical and practical, or why the implementation should be added with some factors for further study. Additionally, this study shows the development of learning by reflexing the researcher's belief, and the beliefs may be changed after the practice from the research field (McNiff, 2002). To maintain the professional level of the researcher, the action research in this study assists the researcher in their work. Also, it enables participants to learn about the changes in people and situations for making changes for a better life which is suitable for promoting recycling practice (McNiff, 2002).

Next, there are similar aspects between traditional research and action research; for instance, both of them can gather data by quantitative and qualitative data collection and analysis (Bradbury, 2015). However, action research can be done and shown by using 'new practice, new learning, new forms of knowledge/practice' and sometimes requires publication and feedback, while traditional research likely requires 'publication' or feedback from academic communities in some journals (Bradbury, 2015, p.2). So, both qualitative and quantitative data collection are selected for this research, as mentioned.

Lastly, Bradbury (2015) concludes that even though action research has weaknesses such as ignoring objectivity, recycling bin design or recycling posters, it pinpoints the objects and firm conclusions which are dominant in traditional research. However, traditional research can have misleading information, according to Bradbury (2015). This research provides alternatives or possibilities for problem-solving while not identifying which one is right or wrong.

Topic	Action research	Traditional research
Aims	To identify community issues, To seek or explore the possibility for solutions, To test it, To improve it, and refers to a set of theories	To prove a theory
Methods	Qualitative data collection, Quantitative data collection	Qualitative data collection, Quantitative data collection
Benefits	Relevant to stakeholders such as 'groups, organisations, communities' who are involved with problem-solving.'	To serve 'academic community.'
Outcomes for researcher	To learn the new practice, a new way of learning, new forms of knowledge/practice', To reflect the study itself and sometimes it requires publication and feedbacks.	For publication and requires feedback from the academic community
Strengths	To provide alternative solutions or possibilities for problem-solving	To pinpoint objects and provide definite conclusions
weaknesses	To ignore objects (mostly) because it focuses on subjects, believes and reality	Can be misleading because it shows only limited conclusions (sometimes)

Table 3.1: The comparisons between action research and traditional research
Source: Adapted from McNiff, 2002; Bradbury, 2015

Table 3.1 above shows the comparisons between action research and traditional research. On one side, the research type is only either from traditional or action research. Another approach is that of Saunders et al. (2016) who divides research into eight groups which are: Experiment, Survey, Archival research, Case study, Ethnography, Action research, Grounded theory, and Narrative Inquiry. While, Bryman and Bell (2007) categorised research strategies for real-world social research into three main groups which are experiments, surveys, and case studies. This study is categorized as action research, not a case study. Although, there are similarities between a case study and action research such as paying attention to contribute to serving the academic community, gathering data from gaining an in-depth understanding of the real-life phenomenon (Anderson, 2006).

However, there are differences between case studies and action research, the former focuses on 'How' and 'Why' questions, while the latter additionally underlines 'How to' questions (Blichfeldt and Anderson, 2006). Moreover, a researcher from a case study plays a role as an observer, while an active participant can be found in action research, such as a member of an organisation or a facilitator (Saunders, Lewis, and Thornhill, 2016). In this study, the researcher represented herself as a former student aiming to find out the alternative solutions for the improvement.

3.4.2. Marketing strategy vs Social marketing strategy

There is some confusion between social marketing and commercial marketing. There are similarities which are: target audiences are a priority; and they are in various segments of society (Lee and Kotler, 2016). Next, they have to perceive benefits to perform the behaviour (Bagozzi, 1987). For both social and commercial marketing research is required to find out 'specific needs, desires, beliefs, and attitudes of target adopters' to create powerful strategies and then 'the results are measured and used for improvement' (Lee and Kotler, p.19, 2016). Lastly, Lee and Kotler (2016) added that the 4Ps strategy is recommended.

However, other characteristics are different; hence social marketing strategies were adopted as a critical strategy for this study. Therefore, to begin with, the definitions or distinction of social marketing becomes an essential explanation; these are extracts of the identification of social marketing:

'...the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programmes designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare and that of their society' (Andreason, 1995);

'...the systematic application of marketing concepts and techniques to achieve specific behavioural goals relevant to a social goal' - Gordon et al. (2006);

'...it is important to acknowledge that social marketing is about more than changing individual behaviour. We believe it should also apply to shift attitudes, perceptions, values and social norms as well as influencing environments, systems

policies, products and services, and even in informing how markets are managed and regulated’ - French and Gordon (2015);

‘...the difference (such as CSR-Corporate Social Responsibility) is that such initiatives, although seeming in appearance to tick the social marketing boxes, in reality, are very different as their end aim is enlightened self-interest as they aim to harness social values to meet corporate and marketing aims’ (Fourali, p.7, 2017).

There is another debate which is the difference between social marketing and commercial marketing regarding timescales, according to Eagle et al. (2013). They explain that the latter shows clear timescale, while the former may not. An example of commercial marketing is the exchange between consumers and producers, such as purchasing a product with money. In contrast, an example of social marketing is the exchange between recycling and non-recycling. However, in order to reduce carbon dioxide emission, it may take a more extended period or even a period beyond their lifetime (Eagle et al., 2013).

Topic	Commercial marketing	Social marketing
Goal and objectives	- Selling goods and services to get more profit	- Influencing behaviour which contributes good things to individuals and the community - ‘Behavioural objective’ is crucial, but Knowledge objective’ and ‘Belief objective’ probably added
Target segments	- Selecting the segments which give the highest volume of sales and profits	- Selecting the segments based on various criteria such as people who have similar needs, behaviour, barriers or lifestyle
Competition	- Other organisation who sell similar products and services	- Current or preferred behaviour, desired benefits, some companies which sell or promote compete for behaviour
Task	- Less complex tasks	- More complicated tasks
Main Sponsors	- Private sectors	- Government sectors, Private sectors, and NGOs

Table 3.2: The main differences between commercial marketing and social marketing

Source: Adapted from the conclusion of ‘*Social Marketing: Changing Behaviours for Good*’ (Lee and Kotler, 2016).

In 2016, Lee and Kotler identified the differences between social marketing and commercial marketing so that the necessary conclusions can be seen in table 3.2. In general, commercial marketing aims to sell products and services with the highest sales and profits, while social marketing pinpoints behavioural change and aims to offer a better life to individuals and the community (Lee and Kotler, 2016). Therefore, the process from social marketing application shows more complexity, and the main sponsors come from government sectors, according to Lee and Kotler (2016). However, based on table 3.2, other main parties are missing, which are private sectors and NGOs, they play a crucial role in the application of social marketing. So, these actors were added. For example, in Thailand, Toyota and Thailand Environment Institution Foundation (T.E.I) has encouraged local people to perform the '3Rs' and supported them to maintain the new behaviour by establishing the '3Rs Learning Centre' in many villages in Thailand for decades, according to Toyota projects (2019) and TEI (2019).

Based on the table, their competitors are different because social marketers have to deal with current behaviour, while commercial marketers use their strategies to compete with their rivals, who are selling similar products and services.

Even though the definitions of social marketing are still changing, for this study, it is rational to take a set of these concepts in order to develop positive change in recycling behaviour at Thai universities. Additionally, a university likely has a social responsibility to encourage students to do good for the community rather than only providing knowledge from the core education modules. So, this study significantly applies theories which refer to social marketing concepts and mentions theories such as 'multi-faceted approach for social change' and underlines the complexity of the levels which are 'individual, microsystem, mesosystem, exosystem, macrosystem and chronosystems levels' (French and Gordon, p.5, 2015).

Additionally, this study analyzes the traditional marketing concept-4Ps (Product, Price, Place, and Promotion) or 7Ps (-people, processes, and physical evidence) to understand behavioural change versus the new concept of social marketing by adopting psychology and sociology such as 'stakeholder theory, diffusion theory and social network theory" (Kotler and Zaltman, 1971; Kotler and Lee, 2016; Peattie and Peattie, 2003; Eagle et al., 2013).

The social marketing aspect consists of ‘Problem identification, planning, purpose, situation analysis/market research, setting the objectives, targeting groups and obstacles, customer proposition, marketing mix, implementation, resources, monitoring and evaluation (process and outcomes)’ (Fourali, 2015).



Figure 3.4: Steps of action research
Source: Fourali (2016)

Action research analyses from various sources such as Lewin, (1946), Kemmis and McTaggart (1988), Susman (1983), Fourali (2016) conclude that the similarity among them is that action research starts with problem identification. Then, as a consequence, action planning and action-taking are the main steps. After that, evaluation and reporting and learning steps are crucial steps that should be followed. Moreover, reflection significantly exists as a continuous spiral for each step, Fourali (2016).

When comparing the characteristics of action research and social marketing research, it can be said that the similarities are that social marketing begins with problem identification and scanning its environment (such as political, social, and culture). It continues to analyse its strengths, weaknesses, opportunities, and threats, then plans to take action and evaluate the outcomes. Lastly, action research focuses on the action taking and evaluation (Lewin (1946); Kemmis and Mc Taggart (1988)).

The steps of a social marketing plan and its adoption in this study

11 steps for social MK adoption (Fourali, 2015)	Ten steps for social MK plan (Lee and Kotler, 2016)	Five steps (phases) for action research Fourali (2015) concluded Lewin (1946), Kemmis and McTaggart (1988) and Susman (1983)	The presentation in this study (Some chapters overlap)
1. Problem Identification	1. The social issue, Background, Purpose, and Focus	1. Problem Identification (including Preparation)	Chapter 1 (Aims and Objectives) Chapter 2 (Background),
2. Planning		2. Action Planning	Chapter 3 (Research philosophy and type of data) Chapter 4 (Research Design)
3. Purpose/Mission			Chapter 4 (Research Design)
4. Situation Analysis/Market Research (PESTEL+SWOT)	2. Situation Analysis		Chapter 4 (Research Design) Chapter 5 (Findings (from primary data collection such interviews))
5. Objectives/Aims	4. Behaviour Objective and Target Goals		Chapter 1 (Aims and objectives) Chapter 4 (Research Design/Goals of the project)
6. Target Groups and Obstacles	3. Target Audiences 5. Target Audience Barriers, Benefits, and Motivators (the competition and other influencers)		Chapter 4 (Research Design for the project) Chapter 5 (Findings (from primary data collection such as survey and interviews))
7. The Customer Proposition	6. Positioning Statement		Chapter 4 (Research Design for the project)
8. The Marketing Mix (4Ps)	7. The Marketing Mix (4Ps)		Chapter 4 (Research Design for the project)
9. Implementation	10. Plan for Implementation and Sustaining behaviour	3. Action Taking	Chapter 5 (Project implementation)
10. Resources	9. Budget		Chapter 4 (Research Design for the project)
11. Monitoring and Evaluation (Process and Outcomes)	8. Plan for Monitoring and Evaluation	4. Evaluation 5. Reporting and Learning	Chapter 5 (Findings from the project implementation) Chapter 5 (Evaluation and Analysis of the project outcomes) Chapter 6 (Conclusion and Recommendation)

Table 3.3: The comparison of the relevant topics among the steps of social MK plan, social Mk adoption, action research and the presentation of this study

Source: Adapted from Fourali (2015) and Lee and Kotler (2016).

This study aims to follow the critical points of action research and social marketing strategy by presenting the topics mentioned in each critical step, McTaggart, (1988); Susman, (1983); and Fourali, (2016). See figure 3.3.

However, it is possible to surmise that action research highlights that every step can be adjusted and swapped in order to increase the percentage of success in instances of solving problems in a social marketing strategy. Next, there is a difference in perspective between them which is that action research reflects the reality or critical dimensions while possibly not showing positive outcomes. While, the social marketing strategy study is expected to show the successful implementation and outcomes (Denzin and Lincoln, 1994). Although action research pinpoints the process which reflects the previous steps, it eventually aims to offer some solutions for fixing the problems, which is the same as the social marketing strategy (Fourali, 2016). McNiff (p. 77, 2013) supported the ideas of action research that should consist of ‘observe, describe, plan, act, reflect, evaluate, and modify’, but he argued that the process should not always be ‘sequential or necessary rational’.

This study primarily aims to offer alternatives to the solution of recycling issues in C.M.U by the implementation of both concepts, so the next section explains the recycling project by using the eleven steps approach of social marketing and reflecting upon each step.

3.5. Ethical consideration and quality of research design

It is said that other essential factors should be considered concerning ‘ethical issues, quality of research design, and roles of researchers’ (Saunders, Lewis and Thornhill, 2015). Firstly, this section, section 3.5.1, describes ‘ethical issues’ and then moves to ‘quality of research design’ (section 3.5.2) which consists of generalisation, reliability, and validity, including how to establish or minimise disadvantages for a better study. Finally, it explains how to be a researcher as either an insider or an outsider, ‘roles of researchers’ for dealing with internal and external circumstances academically.

3.5.1. Ethical issues

Ethics are essential for each study because it likely represents a standard of study for a research topic, accessibility, data collection, data maintaining, data analysing until the data reporting step (Saunders, Lewis and Thornhill, 2015). Furthermore, the concern of ethics can develop trust and assist a researcher's study to gain credibility when a researcher practises it with participants and their organisations, according to Saunders and colleagues (2015). For this study, the researcher had been granted a 'Research Ethics Approval' at London Metropolitan University since the 30th of July in the year 2016. Then, attempting to conduct the study carefully, the researcher introduced the consent form to Executive teams aiming to ensure that the results were confidential and anonymous, and also followed ethical regulations (Cameron and Price, 2009). Moreover, the researcher explained that the interviewees have the right not to comment, according to Cameron and Price (2009). Applying codes instead of their names when the interview process was running or recording to avoid the 'closeness of the data' and try to 'secure the data' where applicable (Bazeley and Jackson, 2013, p.6). Next, the researcher always asked for permission before recording the data and the researcher used two mobile phones to record the interviews by herself and kept it confidential (Saunders, Lewis and Thornhill, 2015). Due to using the Thai language during interviews, the results were translated by the researcher, and then the transcriptions were made anonymous to again secure confidentiality (Bryman and Bell, 2007).

What is more, the researcher focused on 'theoretical transparency' and explained it to the interviewees (Silverman, 2010, p.282). Furthermore, the researcher always respected participants and their schedules and ensured the results would not show any sensitive data which could harm them (Brydon-Miller and Greenwood, 2006). The researcher also protected participants by reporting the results with codes to avoid identifying the individual participants. Lastly, the researcher allowed the participants to read their data so that they can verify its validity (Saunders, Lewis and Thornhill, 2015).

3.5.2. Quality of research design (Generalisation, Reliability, Validity, and Triangulation)

It is believed that the quality of research design mainly consists of generalisation, reliability, validity, and triangulation, which is presented in 3.6.2. (Saunders, Lewis and

Thornhill, 2015). So, this section will further explain the application of generalisation, reliability and validity. Finally, it will describe the adoption of triangulation and give the reasons why it is essential in the next sections.

3.5.2.1. Generalisation

Generalisation is often mentioned in quantitative data as a form of benefit because it is believed that when gaining a large number of participants by using a survey, it can show participants' general information, unlike qualitative data collection. So Welman, Kruger and Mitchell (p.80, 2005) suggested that generalisation, 'one dimension of validity', should apply to other situations effectively like other experiments. In practice, quantitative data from student surveys, in particular, surveys on Facebook tend to show generalisations in the results and show the students lifestyles and their behaviours in the use of social media. Therefore, a researcher needs to ensure that applying a Facebook Page for a project is a suitable tool for collecting data.

As mentioned, this study is a combination of quantitative and qualitative data collection and analysis. The results of the interviews are not representative of a large number of participants and may show a weak point of generalisation, but it is still useful and provides new and unique data (Frankfort-Nachmias and Nachmias, 1992: Silverman, 2010).

3.5.2.2. Reliability

Reliability is mainly referred to as one of the essential factors of research, because if each research shows the same results from different researchers, then it is reliable (Saunders, Lewis and Thornhill, 2015). However, Silverman (2013) argued that if each study showed the same information from different researchers at different times, then it is only slightly reliable. So, this study can maximise reliability by extending the questions to gain more understandable answers when the researcher plays an observer's role and notices that some questions require more explanation (Silverman, 2013). Next, note-taking while the interviewees express something which may show their uncertainty, or if they have some unusual body language was adopted Bryman (1988) and Silverman (2013). Another point of view from positivists is that they believe that the reliability of qualitative data is not the primary concern because the field of social science is based on reality, Silverman, (2011).

However, it can be ‘replicated’, but it will not be seen as the same results because ‘The world is always changing’ (Marshall and Rossman, 1989, p.147).

It is believed that reliability from quantitative data may be applied rather than qualitative data, however, to pay attention to validity, or something that involves approaching the right data, qualitative data is preferable, Welman, Kruger and Mitchell (2005).

3.5.2.3. Validity

Not only generalisation and reliability but also validity is included in qualitative data collection. Reliability from quantitative data may be applied rather than qualitative data, however, to pay attention to validity, or something that involves approaching the right data, qualitative data is preferable (Welman, Kruger and Mitchell, 2005). Conversely, validity is sometimes mentioned as a weakness of qualitative data because it is difficult to measure the errors from the results of the interviews compared to the results in terms of numbers from quantitative data collection, Frankfort Nachmias and Nachmias (1992). However, measurement of attitude or behaviour is relevant to multi-dimensions and also complicated, and it is most relevant to a researcher to get full access to the valid data, Welman, Kruger and Mitchell (2005). Moreover, validity is an essential topic for this study because exploring target audiences’ and the stakeholders’ opinions tend to demonstrate the potential critical success factors to solving problems (Welman, Kruger and Mitchell, 2005).

3.5.2.4. Triangulation

Another essential factor for providing excellent methods in data collection in this study is called ‘triangulation’. Triangulation is a typical method for business research and is used by implementing several methods to gather data to reflect accurate data or represent more validity and reliability, Crowther and Lancaster (2009; Farquhar (2012). In this study, to apply reflection and triangulation the taking of field notes and the taking of photos during the data collection process was implemented. Furthermore, informal conversation and observation were also adopted to reflect reality; for example, the C.M.U report and pieces of other theses, which were relevant to the topic, were also included. The informal conversation was mostly applied with some C.M.U staff members, students and former students when the researcher had the opportunity to have dinner or coffee with the target

audience (Coughlan and Coughlan, 2002), and the observation was examining waste in general bins, recycling bins and bins at locations mentioned by participants. Moreover, triangulation can be described as four angles which are from types of data collection, investigator or researcher, theoretical, and method (Denzin, 1978; Jick, 1979; Wang and Duffy, 2009; Farquhar, 2012). (See Table 3.4.)

Type	Description
Data	Data gathering from different sources, possibly at different times on the same object
Investigator	Gathering and interpretation of data by more than one researcher with the same objectives
Theoretical	Interpretation of data with a single data set by using more than one theoretical perspective
Method	Use of multiple techniques with the same method or different methods with the same object

Table 3.4: Types of triangulation
Source: Adapted from Denzin (1978), Jick (1979),
Wang and Duffy (2009) and Farquhar (2012).

This research applied all aspects of triangulation. First, the data section, this study gathered data by using different sources with the same objective, such as collecting both primary and secondary data about recycling strategies. Then for the investigator section, the researcher submitted a template of the questions to the participants and the executives in advance in order to gain reflections and permission. Moreover, the researcher sent the transcripts back to the participants so they could double-check their opinions. Also, there were several groups of lecturers from three campuses which gave peer' reviews on the questionnaire and identified the types of questions which were unclear, and then the researcher added more explanation before the questionnaire was conducted. Then, for a theoretical perspective, this study utilised various theoretical perspectives, from psychology, management, and marketing aspects. Lastly, this study used multiple methods for data collection, which were interviews, a focus group, questionnaire, observation and others.

3.5.2.3. Roles of researchers

To increase the credibility of a study, a researcher must consider the roles of an outsider and an insider, concerning the collection of data from the target organisation. For example, a researcher can gain the benefit of accessibility if they are perceived as an insider

(Saunders, Lewis and Thornhill, 2015). Furthermore, an insider already understands the complexity of the target organization, which can save time, Saunders, Lewis and Thornhill (2015). However, Tietze (2012) states that the benefit of being an outsider is that it can overcome obstacles if emotions are involved while conducting the study. Contrarily, Tietze (2012) says that an insider can easily see the impact of the research design and can create a better report dealing with the view of the organisation and create a clearer picture of the organisation than an outsider (Tietze, 2012). For this situation, the researcher took some advantages with the selection of the university because the researcher is a former C.M.U student, and has secure interpersonal connections with some lecturers. As an insider, the researcher aimed to help the university improve their projects. The secure interpersonal connections allowed the researcher to be introduced to participants and allowed for trust to be gained rapidly. However, it may have some disadvantages, such as being closed to emotions if unexpected results exist (Tietze, 2012).

3.6. Conclusion

This chapter stated that this study is in the category of ‘Epistemology’ which is from both a Positivism and Interpretivism approach because it is believed that a positivist uses quantitative data collection from the target audience and the stakeholders to examine general information from the target audience.

This study collected data on the students’ socio-demographics and their lifestyles on social media engagement to select specific marketing communication channels. Then, this study utilised the data to make an effective marketing plan to raise the students’ awareness of recycling topics. Conversely, Qualitative data collection was adopted to explore how to use social media and other crucial tools to promote recycling behaviour.

For the type of theory development, this research is categorised into ‘Abduction’ because it consists of discovering and testing alternative options, aiming to improve the findings, then offering a set of recommendations to the readers.

In terms of social marketing categorisation, it explained that it was not an adoption of a traditional marketing strategy, but it was a social marketing implementation because it was not for promoting goods and services which focuses on marketing to make more profit.

Additionally, the outcome from traditional marketing is mostly measured over a short period, whereas this study aims to promote a behavioural change which takes more time and uses more complicated factors, therefore, making traditional marketing obsolete for this study.

The main sponsors of social marketing are usually agents in the government sector, while agents in the private sectors are the main actors for traditional marketing. However, this study offers a new concept that university teams from either government campuses or private campuses can adopt the set of recommendations.

For the plan and implementation processes, this study combined ‘the Five Steps of an Action Research’ and the use of triangulation technique to increase validity and reliability. This study gathered data from different sources at different times on the same object to reflect the concept of data from a triangulation perspective.

It used interpretation of the data from more than one previous research with the same target audience by collecting comments from other researchers and the university lecturers on the design of the set of questions for the research participants and the styles of data analysis.

Then, it used multiple techniques with the same object to reflect reality, such as questionnaires, the focus group, interviews, and observations. Then the researcher used multiple roles to present herself at the same time to gain trust and also avoid the closeness of emotions to research participants.

Relevant models and theories were selected from Psychology, Management, and Social Marketing, and this study planned to integrate them for the adoption because it was believed that people had different needs and they needed different approaches and tools.

Nevertheless, after analysing the data from the target audience and the stakeholders, this study presented only direct stated factors, enabling the university teams to have the whole picture of their environment and their target audience. So, for any future projects, this study aims that the teams would have more effective tools, and their projects would gain more significant success.

Chapter 4: Research Design

4.1. Introduction

Chapter 1 and 2 presented information regarding global, international and local levels of waste and recycling management, including the background and trends. The information was gathered to present the aim of this study to create an understanding of the topics and learn from the experience of other research, case studies and projects. This study discovers that Climate Change causes severe issues and that the impacts have been felt worldwide. Moreover, at the international and local levels, to reduce GHG appears to be difficult if residents resist changing their behaviour and their activities which increase GHG. In practice, there are a lot of barriers, such as insufficient funds and data, which the policymakers should tackle. The central recommendations from the W.H.O are that policymakers should encourage people to reduce waste, to increase recycling, and to improve waste collection systems as a global trend (Worldbank, 2015).

Similarly, this research aims to explore critical success factors for promoting recycling among C.M.U students, so that it would help the university and community to reduce waste and increase recycling. Moreover, the findings and the suggestions chapter will present a summary on how to adopt a practical social marketing project and how to improve waste collection systems. So, this chapter is essential because it explains the type of data collection and how to implement it and analyse it. It will help social marketers and policymakers to make and implement plans.

Chapter 1 presented the research aims and objectives. Chapter 2 and 3 presented the background of governments, policymakers and communities involved in waste management and recycling on a global, international and local level. Next, the philosophy of research and the characteristics of action research are described in the content from chapter 2 and 3, and it is significantly linked to chapter 1. Subsequently, this chapter underlines the design methodology and implementation procedures. Then, it presents the findings in chapter 5. Finally, the conclusion and recommendations will be presented in

Chapter 1: Aims and objectives	Chapter 2: A literature review Chapter 3: Research methods	Chapter 4: Research design	Chapter 5: Findings Chapter 6: Conclusion and Recommendation
- Understanding, collecting, presenting, learning secondary data from global, international and local levels on waste management and recycling topics, such as their background, global trend 'Climate change.'	√ (presented) Secondary data Quantitative data and qualitative data	-	-
- Gathering, learning, and understanding similar findings on recycling issues for universities	√ (presented) <ul style="list-style-type: none">• Secondary data Quantitative data and qualitative data	-	-
- Providing the relevant regulations on waste management and recycling in Thailand	√ (presented) <ul style="list-style-type: none">• Secondary data Quantitative data and qualitative data	-	-
- Exploring primary data and secondary data from the target audiences and university stakeholders	√ (presented) <ul style="list-style-type: none">• Secondary data Quantitative data and qualitative data	Planning for data gathering Primary data/ Quantitative data and qualitative data - 400 survey sets for CMU students - 12 semi-structured interviews for CMU students - 15 semi-structured interviews for university staff, five government sectors, five private sectors, and 5 NGOs - One focus group for residents - observation and informal conversation with CMU students	-
-Examining ongoing Thai university recycling projects in terms of problems and possible solutions and receiving	√ (presented) <ul style="list-style-type: none">• Secondary data Quantitative data and qualitative data	Primary data/ Qualitative data - semi-structured interviews for CMU students - semi-structured interviews for CMU stakeholders	-

suggestions from the stakeholders;			
- Analysing recycling knowledge and best practice across the world and derive lessons for this project. - Understanding attitudes and behaviour, including the lifestyles of university students			Chapter 5: Findings for Problem identification phase
- Planning the new recycling project by applying the collected data and creating it for university students. -Testing, analysis and evaluating it at CMU		<ul style="list-style-type: none"> • Primary data/ Quantitative data/ Qualitative data - A recycling project/ CMU Recycling Ambassador contest on Facebook Page - Recycling message analysis from the contest - A satisfaction survey after the project - Informal conversation - Observation	Primary data secondary data quantitative data <ul style="list-style-type: none"> • Qualitative data Chapter 5: Findings for the Action planning phase, Action taking phase, and Evaluation phase
- Drawing conclusions from the findings - offering suggestions for university management teams and others			Chapter 6: Conclusion and recommendation

Table 4.1: The Framework of this study for each chapter, types of research design and types of data gathering

Chapter 6. See table 4.1. So, this chapter explains the research design and presents the reasons for selecting the data collection methods and the criteria of each method. According to the research aims and objectives, this study mainly aims to discover ‘Why’ and ‘How’ this research was necessary, then it focusses on ‘How to’ encourage the students to do or do more recycling practices by offering alternative social marketing strategies to the management teams. This study began in January 2017 and concluded in January 2018. Before data collection commenced, the researcher had to gain official permission from C.M.U according to the appropriate regulations and rules governing government universities. See the C.M.U letters of permission in Appendix A. After the preparation phase; the researcher began to carry out the study. The framework of this study was divided into several phases and is presented in table 4.1

Chapter 4 consists of seven sections. Section 4.1 shows the introduction, and it explains that the main topic is the details of the research design and the steps of the data collection. As mentioned, this research uses an action research methodology. The steps of action research consist of preparation, problem identification, action planning, action taking, evaluation, and the reporting and learning phases. So, section 4.2 demonstrates the research design. Section 4.3 shows details of the design at the beginning, which is at the preparation and the problem identification phases. It identifies the target audience for the data collection, the duration of the process, the goal for each target audience group and their codes. Section 4.4 demonstrates the research design and the plan for the research action planning and action taking phases, and also explains how to run a recycling project at C.M.U via a Facebook page and via two university boards. Then, section 4.5 shows the research design for the evaluation phase. Next, section 4.6 explains the data analysis methods, which are software analysis methods (excel and SPSS), and the conventional analysis (content or thematic analysis method). Lastly, section, 4.7, shows the summary of chapter 4. Finally, chapter 5 demonstrates the findings of this study.

4.2. Overall design

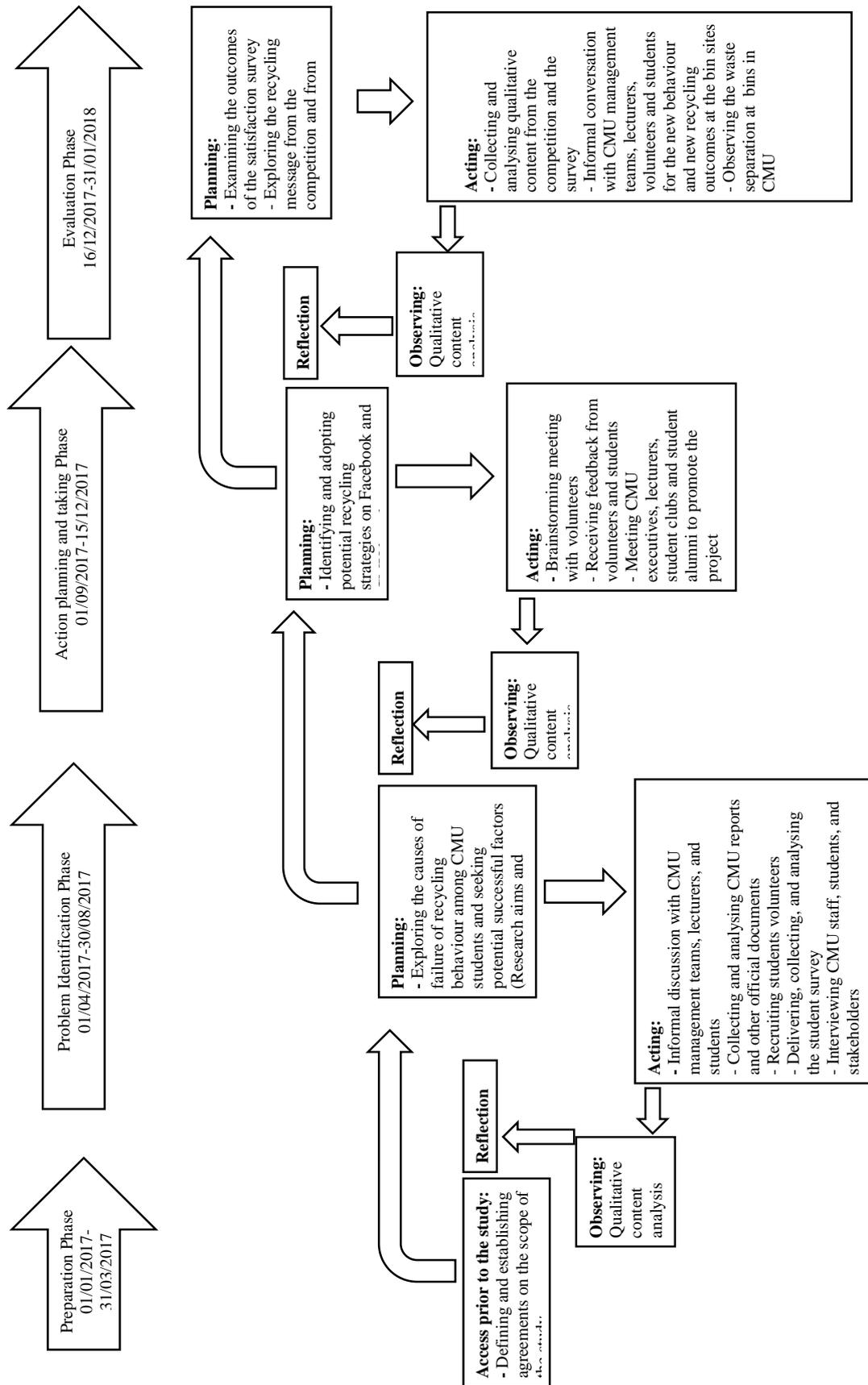


Figure 4.1: A Birdseye View of Methodology

The process of fieldwork is divided into four main phases. The first phase (section 4.3.) will begin with ‘Preparation phase’ and lead to ‘Problem identification phase’. Action planning and taking phase’ is categorised as the second phase presented in section 4.4. Lastly, ‘Evaluation phase’ is presented in section 4.5. Next, section 4.6 will identify the methods of data analysis which are via the method of survey, interviews, and focus group interviews.

The process of fieldwork was based on the suggestion from Andreason (1995), it presents a continuous cycle and reflection. The preparation is the first step of the study, and then it is followed by the problem identification. After that, action planning and adoption are utilised. Then, evaluation, reporting and learning take place, suggested by Fourali (2016). After completion of the project, the conclusion and recommendation will be presented to the C.M.U management teams. This study implemented informal discussion with the people who were relevant to these tasks, then collection and analyzation of C.M.U documentation occurred to gain more information and to observe other qualitative data before making the next plan. Then, it gives reflection back to the problem identification phase. These actions are examples for the first cycle of the preparation phase and problem identification phase. It can be said that all the process follows the research aims and objectives (presented in chapter 1) such as drawing conclusions from the findings to create social marketing strategies for C.M.U and offering suggestions for the C.M.U teams. See figure 4.1. Further information will be presented in section 4.2-4.7.

4.3. Preparation and Problem identification phase

Method/Activity	Time	Target Audience/Goal
1. Preparation	January – March 2017	<p>Target audiences</p> <p>C.M.U Vice-Chancellor and the staff</p> <p>Goals</p> <ul style="list-style-type: none"> • To introduce the researcher and the aims of the research • To gain permission for the data collection

Table 4.2: The target audiences and goals for the preparation phase

At the 'Preparation phase', owing to C.M.U being a government university, this study took place from January 2017 until January 2018 with official permission letters and the study had to follow the university rules and standard practice such as supporting C.M.U development plan with ethical consideration and also having the same direction of the existing activities. So, between January 2017 and March 2017, the study began by the researcher, introducing herself as a former student and a researcher to gain permission and trust to conduct the research. Then, the executives introduced the researcher to discuss with the waste and recycling management teams and the student development team. The discussion was to identify the research framework and inform the teams that this study aimed to help the teams to discover key success factors and barriers. The topic was raising C.M.U students awareness and promoting C.M.U students to change their behaviour to improve recycling. Also, to encourage students to separate proper waste, to reduce the amount of waste and also to develop themselves to engage with social activities to help their community. Also, the researcher explained the aims of the research. The expectancy of this step was to get permission in advance to collect the data and to discover any sensitive issues which the researcher would have to avoid. Finally, the research framework was accepted, and an official permission letter was received. See the permission letter in Appendix A. After gaining permission; the researcher could directly contact each division to collect the data by showing the permission letter and make appointments for interviews in advance. Table 4.2. presents the goals and the target audience. The researcher introduced herself as a former C.M.U student to gain trust and presented herself as an insider of the C.M.U community.

For the problem identification phase, although C.M.U students are the primary target audience for this study, there were many groups of participants serving different purposes such as C.M.U staff and C.M.U stakeholders. See figure 4.2. The next sections 4.3.1- 4.3.6 will present the aims and describes each group of participants, who were C.M.U students, C.M.U staff, local authorities, representatives from the private sector, NGOs, and local residents

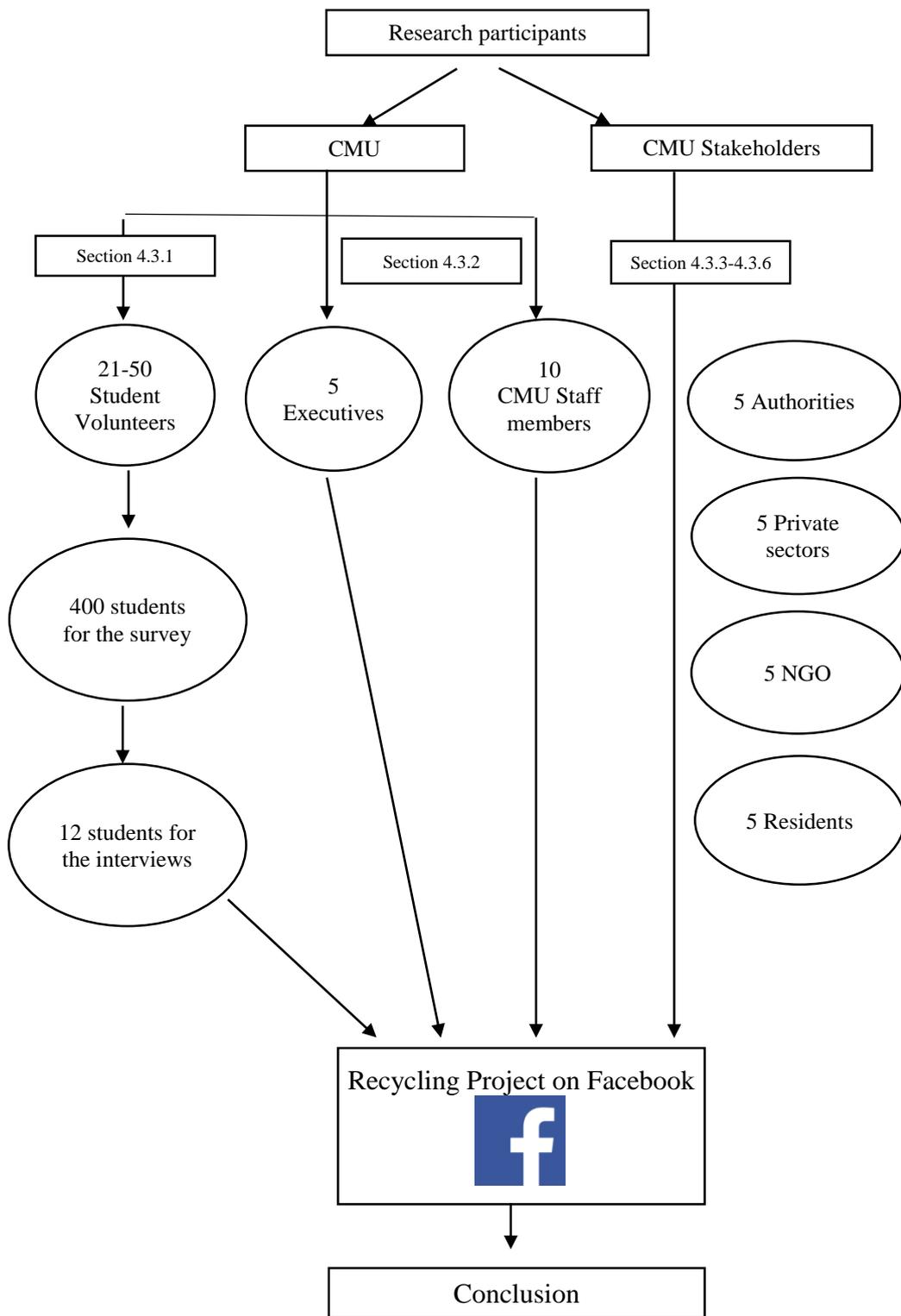


Figure 4.2: The expected participants in preparation and problem identification phases

4.3.1. CMU students

Section 4.3.1 consists of two main topics which are 4.3.1.1 (Target audiences, the method of data collection and the aims) and 4.3.1.2 (Codes of participants and procedures). Then, section 4.3.2- 4.3.6 will demonstrate other participants with the method of data collection and aims. Then, the codes of each group will be presented.

This section also shows social marketing application at step 6: Target Groups and Obstacles which aims:

- To classify the findings and compare them to relevant models and theories, and also give arguments of human behavioural change from a psychological aspect, a management aspect and a social marketing aspect aiming to demonstrate the essential recycling behavioural change factors.
- To investigate previous recycling experience at homes and schools and to present the recycling practices or the recycling behaviour at C.M.U in order to seek the critical success factors and the barriers.
- To explore students' needs and desires in order to find out the success factors for promoting recycling among C.M.U students.
- To discover current recycling obstacles or barriers from the participants perspective in order to improve recycling behaviour.
- To understand and to categorise the target groups perspectives for seeking suitable recycling messages and the most effective communication channels in terms of other recycling key success factors such as influencers and powerful media.
- To derive an attractive offer that gives incentives to maintain or change student behaviour.
- To conclude influences and maintain why it would work in light of the analysis.

4.3.1.1. Target audience, the method of data collection and the aims (at Problem identification phase)

Method/Activity	Time	Target Audience/Goal
1. Volunteer Recruitment	April-July 2017	<p>Target audiences</p> <ul style="list-style-type: none"> • 21-50 students (1-3 students per each faculty) <p>Goals</p> <ul style="list-style-type: none"> • To run the activities • To communicate with the researcher and their peers • To report the feedback to the researcher
2. Survey (Questionnaires)	August 2017	<p>Target audiences</p> <ul style="list-style-type: none"> • 400 university students <p>Goals</p> <ul style="list-style-type: none"> • To examine the student background's information • To practise the volunteers for running the activities • To collect the data and analyse it for the stage of the interviews
3. Semi-structured Interviews (University Stakeholders)	September-October 2017	<p>Target audience</p> <ul style="list-style-type: none"> • Ten students • Ten staff (both academic and non-academic staffs) • Five government officers • Five recycling business owners • Ten others such as activist, NGO, and householders <p>Goals</p> <ul style="list-style-type: none"> • To find out successful recycling factors and its barriers • To explore effective recycling strategies • To examine the logistic of recyclable items after disposal

		<ul style="list-style-type: none"> • To collect the data and analyse it for the stage of implementation • To seek opportunities for promoting recycling practice
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Table 4.3: The target audiences and goals for the problem identification phase

Table 4.3 shows the main participants in C.M.U from ‘the problem identification phase’, it was the primary data collection before ‘the project implementation phase’ or ‘Acting phase’ General speaking, this phase consists of three principal methods which are ‘Volunteer recruitment’, ‘Survey (Questionnaires)’, and ‘Semi-structured interviews’. For the C.M.U stakeholders, it distinguishes each group. The objectives of the tasks for volunteers, following the rules of social marketing strategy, are designed into three tasks- easy; medium; hard with a form of SMART- Specific, Measurable, Attainable, Relevant, and Time-Base, according to Fourali in 2016. The goals of the volunteer recruitment are for running the activities; secondly, it is for communicational mediators between the researcher and the participants. Lastly, it is for getting feedback from the research actions in order to improve or revise the process. The goal of the student survey was to examine the students’ background information.

Moreover, An initiation and practise session was implemented to get the participants ready to run the activities. Another aim is the data collection, both qualitative and quantitative, and to invite them to participate in the semi-structured interview. For the interview method, the goals for this process are to discover recycling success factors and its barriers, to explore effective recycling strategies from the people who ran the project and to gain credit for their success. Moreover, the goal is to examine the logistics of recyclable items after their disposal. The last goal for this step is to seek opportunities for promoting recycling practice.

4.3.1.2. Codes of participants and procedures

This section consists of three main topics as students participated in three groups: volunteers, survey respondents, and student interviewees, presented in group 1, group 2, and group 3, respectively.

Group 1. Codes of student volunteers and procedures

Using volunteers for this study is influenced by Cialdini et al. (1984) in ‘The door-in-the Face Technique in Reciprocal Concessions’, which indicates that when students have been given three tasks- easy; medium; hard, there is a high potential for students to agree to a collaboration on the easy task. In the medium task, some students agreed if they were asked by the same person due to social pressure (Cialdini et al., 1984). Moreover, to persuade students to do the tasks successfully may involve other factors such as a kind of incentive as well as other factors which are mentioned in the Literature review in chapter 2. The second crucial point for using student volunteers is to apply motivation theory from chapter 2. It would be used with teams of volunteers by presenting the target and the rewards as techniques and marketing tools, combining the theory from a management aspect. Moreover, volunteers can communicate with their friends by using their language, and they can observe their friend’s responses immediately in order to assist the researcher to adjust the project rules.

The procedures on how to recruit the volunteers, started by introducing the research aims, the framework of the Facebook page to lecturers from several faculties by announcing it as volunteer requirements on the Facebook page, ‘CMU London Recycling Project’ and by inviting some students and encouraging them to invite their friends (the Facebook Page: CMU London Recycling Project, 2019). The steps are presented below:

- To inform the university staff of the goals, the objectives and the rewards of the project, and the maximum number of volunteers per course or faculty (three volunteers maximum), and the name of the Facebook Page, the ‘CMU London Recycling Project’.
- For the interview recruitment, if some students were interested in volunteer jobs, they were able to contact the researcher in two ways. One way was to send their names and contact details into the private chat (Facebook Page inbox) in order to arrange an interview date via Messenger (on the Facebook Page). Another way was to reply directly in the comments section on the Student Recruitment Facebook Page and then send the name and contact

details to make the interview appointment via messenger on the Facebook Page;

- To announce on the Facebook Page on the 19th July 2017 explaining the goals and objectives and to allow C.M.U students to send their details into the private conversation box;
- To invite some students directly, who were known to the researcher from the pilot study, via a private Facebook account, and eventually, interview them by using messenger on the Facebook page.

No.	Volunteer Coding	Course/Faculty (21)	Target of volunteers (21-63)
1	V011-V013	Humanities	1-3
2	V021-V023	Education	1-3
3	V031-V033	Fine Art	1-3
4	V041-V043	Social Sciences	1-3
5	V051-V053	Science	1-3
6	V061-V063	Engineering	1-3
7	V071-V073	Medicine	1-3
8	V081-V083	Agriculture	1-3
9	V091-V093	Dentistry	1-3
10	V101-V103	Pharmacy	1-3
11	V111-V113	Associated Medical Sciences	1-3
12	V121-V123	Nursing	1-3
13	V131-V133	Aggro-industry	1-3
14	V141-V143	Veterinary Medicine	1-3
15	V151-V153	Business Administration	1-3
16	V161-V163	Economics	1-3
17	V171-V173	Architecture	1-3
18	V181-V183	Mass Communication	1-3
19	V191-V193	Political Science and Public Administration	1-3
20	V201-V203	Law	1-3
21	V211-V213	Art, Media, and Technology	1-3
Total			21-63

Table 4.4: Codes of student volunteers

The volunteer task	Time	Goal	Rewards/Prizes
1. Easy task	September 2017	The delivery of 20 sets of survey questionnaires per each faculty	The Recycling T-shirt
2. Medium task	October 2017	To invite 20 friends to engage with the Facebook activity	The Recycling Certificate as a university recycling volunteer
3. Hard task	October-December 2017	To encourage students to participate in the Recycling Ambassador Competition at least 3 participants	<ul style="list-style-type: none"> • The certificate of the volunteer winners • Cash (£111/5,000b.) for a team

Table 4.5: The volunteer tasks, goals and rewards

Each volunteer code consists of three-part: The first digit is ‘V’ for Volunteer. Then, numbers 01, 02, until 21 represent the codes of each faculty (according to the university system). The last part runs from 1 to 3: the expected numbers of volunteers between one and three people. Although C.M.U provided 20 faculties and one college, however, in the system, it shows 01, 02, until 21 (C.M.U, 2019). See table 4.4. The volunteer tasks, goals and rewards were based on an informal conversation with students and observation from the primary rewards for university participation in volunteering, which consisted of t-shirts, certificates of participation and cash. See table 4.5.

Group 2. Codes of student survey participants and procedures

The quota sampling was selected, and the code of each participation consists of five digits, ‘S’ is the first digit representing C.M.U students. The first couple of numbers represent the university code from the university system, and then the last two digits show numbers 1, 2, 3,...20 as numbers of the twenty respondents per one faculty. See table 4.6.

No.	Code	Faculty (21)	Target of participants (420)
01	S0101, S0102,...,S0120	Humanities	20
02	S0201-S0220	Education	20
03	S0301-S0320	Fine Art	20
04	S0401-S0420	Social Sciences	20
05	S0501-S0520	Science	20
06	S0601-S0620	Engineering	20
07	S0701-S0720	Medicine	20
08	S0801-S0820	Agriculture	20
09	S0901-S0920	Dentistry	20
10	S1001-S1020	Pharmacy	20
11	S1101-S1120	Associated Medical Sciences	20
12	S1201-S1220	Nursing	20
13	S1301-S1320	Argo-industry	20
14	S1401-S1420	Veterinary Medicine	20
15	S1501-S1520	Business Administration	20
16	S1601-S1620	Economics	20
17	S1701-S1720	Architecture	20
18	S1801-S1820	Mass Communication	20
19	S1901-S1920	Political Science and Public Administration	20
20	S2001-S2020	Law	20
21	S2101-S2120	Art, Media, and Technology	20
	Total		420

Table 4.6. The code of survey participants

The Questionnaires: CMU London Recycling Project on Facebook Page

Part/Section	Aims
Opening section	<ul style="list-style-type: none"> - To provide background information of the study, the researcher, the research aims. - To ensure the participants about confidentiality and other standards of research procedure.
Part I (Question 1-9): Socio-demographical Section or the	<ul style="list-style-type: none"> - To examine and understand their general backgrounds which are genders, ages, educational levels, faculties or courses, religions, family houses' locations (which part of Thailand), the locations of their

student/ participation background section.	parent's house (municipality area, non-municipality area or others), current students' accommodation types, income or their spending per month.
Part 2 (Question 10-13): Student lifestyle on Social media Section.	- To identify the use of social media by the students. For example, they will give information on how long they have experience using social media. - To demonstrate types of popular social media, and the devices they used to access social media.
Part 3 (question no. 14-20): Use of Facebook Section	-To show students lifestyles on Facebook usage; it begins with the frequency of Facebook usage, followed by the duration, the purposes, advantages, disadvantages and others.
Part 4: Recommendation Section	- To gather their opinions on how to use Facebook to promote recycling in CMU effectively (Filling the gap about expected recycling activities on Facebook)
Closing Section	- To thank the respondent for his/her participation - To invite them to engage with the activities on the Facebook Page, namely the 'CMU London Recycling Project'.

Table 4.7: The contents and aims of the questionnaire survey

The C.M.U student survey or questionnaires are mainly categorised as a type of quantitative data collection. However, in the last section of this survey, participants were able to give more information in the context of qualitative data. The survey focuses on their socio-demographical data and their lifestyles on social media usage, in particular the use of Facebook (adapted from Zhang (2011); Kongrach (2011); Hemmin (2013); Acar (2014); Ainin et al. (2015); Phuangphae (2015); Manasijevic (2016)). There were six sections, it began with an opening section and ended with a closing section. Part 1 aimed to explore the socio-demographic of students. Part 2 and part 3 mainly focused on student lifestyle on social media and use of Facebook, for example; they will give information on how long they have experience using social media. Then, the information would be adopted for the process of the research planning and taking (implementation) phase. This information would ensure that the Facebook Page for this project would be useful. In the last section, participants could give further recommendations on how to encourage them to engage with activities to improve recycling at C.M.U. In general, the purpose of the data gathering is to understand the bigger picture and to design recycling activities which meet students needs.

Furthermore, another essential purpose was to invite some students to give their in-depth point of view or to provide qualitative data by using semi-structured interviews. Moreover, information from the survey and interviews were used in the recycling project's design on the Facebook Page (at the implementation and evaluation stages), in order to meet expectations or to achieve their needs. See table 4.7. The list of survey question can be seen in Appendix B.

A survey is mostly one of quantitative data collection, which fundamentally consists of three core characteristics (experiment, quasi-experiment, and non-experiment) (Welman, Kruger and Mitchell, 2005). It can be defined into two types which are structured interview and self-completion questionnaire (Bryman, 2012). Bryman (2012) state that a structured interview is divided into a face-to-face and a telephone interview, while, the self-completion questionnaire consists of three groups; supervised, postal, and Internet questionnaires. So, this study utilised a self-completion questionnaire, delivered and collected by volunteers at C.M.U.

For the design, method and reasons, the questionnaire was selected to gain primary data (both qualitative and quantitative data) from the university students for the following reasons::

1. The university students are numerous and are the main recycling target, and then to gain a significant number of them with a self-completion questionnaire is inexpensive, compared to face to face or telephone interviews. Moreover, it can be produced in a short period, and it is easy to deliver itself to the next step directly (Jankowicz, 2005; Crother and Lancaster, 2009);

2. The respondent's identities are secured because there is less contact with the researcher, as the questionnaires are delivered by volunteer students who are supervised by the researcher. Which can enable more trust amongst the students to answer the questions honestly, and then the students can trust the survey (Blau, 1964; Thibaut, 1959).

4. Also, it can provide perceptions or opinions directly and quickly which is suitable for this study, and it is widely used in classrooms, airline companies, hotels and restaurants (Mc. Daniel and Gate, 2013).

5. It represents the socio-demographic of the respondents such as gender, age, their lifestyle, and their opinions which tends to link to the conceptual research framework of

the research. (Welman, Kruger and Mitchell, 2005). What is more, when it shows the general background, it assists the researcher and volunteers to approach and invite the students for interviews.

6. This study employs self-completion questionnaire with a supervised method to gain a high rate of respondents, and then, the researcher does not get involved with the time management and the schedules like other participants' groups (Frankfort-Nachmaias and Nachmias, 1992).

7. The data can be easily demonstrated in a variety of forms such as graphs, tables, mean, and median, so it is convenient for data analyses with excel or SPSS software. Therefore, the results may be convincing for people who are in favour of statistic results (McDaniel and Gates, 2013);

9. Besides, according to marketing and management perspectives, a survey can be representative of all students in the university if the study concerns essential factors for minimising the weaknesses of the methods for the data collection methods (McDaniel and Gates, 2013; Bryman, 2012). This study also implemented a large number of participants for reliability and generalisation purposes.

The gain students opinions the survey and questionnaire consists of various types of questions such as multiple-choice, filling the gap, scoring the degree of agreement or disagreement. Then, the results of the quantitative data are analysed by SPSS software and demonstrated in term of frequency, percentages, Mean, and standard of deviation of the respondents. The content from filling the gap is presented as a list of comments. The Thai language was used in the genuine survey, and then it was translated into English. See the questionnaire and survey (both genuine and translated version) in appendix B.

For the sampling section, quota sampling plays a crucial role to discover the generalisation of student's socio-demographic data and student's lifestyle on social media. Moreover, Welman, Kruger and Mitchell (2005) stated that to ask questions with a whole group of numerous people is costly and impossible, so using a percentage of the whole population as samples are used. What is more, from the business point of view, applying a marketing survey with some samples is appropriate because it can build the whole picture of the whole population (Crowther and Lancaster (2009).

The number of students who were waste generators and who used existing recycling bins at the canteens, varied, because some students got their food from their student accommodation canteens, street markets or department stores. However, the number could be estimated by counting the students at the entrance of the canteen for a week, but some students may visit the canteens more than once per week. So, in this case, the study asks the students directly if they recycle. To sum up, 20 participants for each faculty would be the appropriate target for the volunteer's task. Then calculating students population in 2015 which was at 35,504, from 21 faculties including undergrads, postgrads and international students (13,566 males and 21,938 females) from 21 faculties and one college, then the entire set of the survey would be four hundred respondents approximately. Gomm (2008) supported this estimation and gave an example of the sample sizes which could provide better accuracy from Krejcie and Morgan (1970, p.608) which consists of the correlation of population size and required sample size. For example, if ten thousand students are generating the waste at the university canteens for one month, called population size, the required sample size should be three hundred and seventy students (Krejcie and Morgan (1970). Also, if the population size is at one million or more, the required sample size should be selected at three hundred and eighty-four. (See table 4.8). Also, when calculating the sample size to be used the acceptable margin of error is a maximum of a per cent (Saunders et al., 2012). Therefore, if the population is at 10,000, 370 accounts for 5%. (Saunders et al., 2012).

Based on the reasons above, four hundred and twenty sets of the survey were delivered. After the completion of the questionnaire process, the researcher and volunteers invited some respondents to partake in the interview process in order to gain more validity and support the triangular method.

This study considered the advantages and disadvantages of using a significant number of participants and how to gain the correct number of samplings. It is not easy to give the exact right answer on how many students should complete the questionnaire. However, the researcher attempts to conduct the research carefully and follow the fundamental recommendations from several academic sources. For example, Bryman (2012) states that when probability sampling is selected, it can give sampling errors even though it is well planned. It is suggested that the sampling should ask people who are 'a representative

sample of all students in the university’ (Bryman, 2012, p.187). Besides, not only the representative group but also the number of representatives are the key factors.

Population size	Required sample size
10	10
100	80
1000	278
10,000	370
50,000	357
1,000,000 or more	384

Table 4.8: The example of the required sample size
Source: Adapted from Krejcie and Morgan (1970).

Each method has both advantages and disadvantages; however, this research also concerns other essential factors such as time and cost (Bryman, 2012). So, this research may be suitable with stratified random sampling because the study should ask the questions to the students of each faculty to show the generalisation of each faculty (Bryman, 2012). The second reason which may be suitable for the study is that the study should have a second stratifying criterion, which is male and female students, or gender criterion Bryman, 2012. However, the disadvantages are that it is costly and time-consuming because the students study in different buildings, at different locations, and on a different campus.

Moreover, this study does not require simple random sampling or systemic sampling because it is difficult to access data which comprises of the student number from each faculty, then to run the number randomly or systemically in order to select the representative. It is also time-consuming and inconvenient. The last type of probability is multi-stage cluster sampling which is not selected for this study. Other reasons are that the students live and study in different locations, some of them live in student accommodation, again it is time-consuming approaching them and visiting each location to represent a generalisation.

Therefore, due to the many reasons stated above, the method of non-probability is selected. First, according to three types of non-probability sampling- convenience sampling; snowball sampling; and quota sampling, this study employs convenience sampling due to accessibility (Bryman, 2012). Also, Easterby-Smith and colleague (2005) add another type which is called ‘purposive sampling’, this concept can be seen in marketing research supermarkets (Easterby-Smith, Thorpe and Jackson, 2005, p.218). The respondents are filtered by appearance, such as gender and asked about their purchasing or their perceptions of products. Similarly, university students can be distinguished because some of them wear specific uniforms, such as engineer students and medical students. In this study, the questionnaires were delivered to the students who visit the university canteens for buying their meals as they were easily approachable. Second, it is convenient for both the questionnaire delivery volunteers and the respondents or participants because the students can finish the questionnaire at the canteen table and return them in the canteens. Third, it is shown to procure a high rate of response compared to a telephone interview or postal interview (Frankfort-Nachmias and Nachmias, 1992 and Easterby-Smith, Thorpe and Jackson, 2005). Fourth, the students are the genuine waste generators at the canteen, which is the main target of the recycling project at the university. Fifth, permission was granted to run the project at the canteen. Lastly, it is claimed that both snowball sampling and quota sampling rarely represent a generalisation because the participants are invited, or they participated because of their friends, or they come from only one faculty, this results in their answers not providing a full range of personal opinions. However, this study set a target number of participants from each faculty to minimise the bias from this issue. This study will present the data analysis in the findings section. The next section, group 3, will present the consequences after the survey process, which leads to the semi-structured interviews.

Group 3. student interviewees and procedures

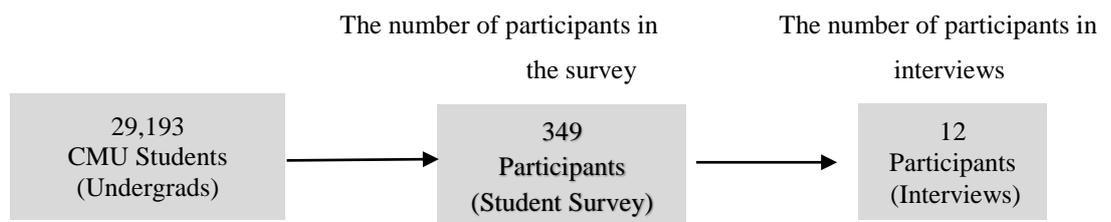


Figure 4.3: The number of student participants for this study (The number of the total undergrads based on the student statistics of CMU on 7 September 2017).

This study consists of various data collection techniques, which the previous section already explained. So this section presents the design, method and reasons for the interviews to serve the specific purpose of the research. Then, in section 4.3.2- 4.3.5 it identifies the interview questions amongst the target audience; C.M.U staff and other stakeholders.

According to the C.M.U student population in 2017, information from 349 out of 29,193 C.M.U undergrads was collected via the survey. Then, 12 students were willing to provide their in-depth opinions at the diagnostic phase. So, section 4.3.1 shows the design, method and reasons. The next sections (4.3.2-4.3.4) will give more details about how the interviews were conducted.

According to the question design format, the interviews began with student interviews and was then followed by interviews with the staff and the other stakeholders, respectively.

For design method and student interviews, this section focuses on the student opinions which show their needs or desires, possibly playing critical roles for improving recycling promotion in C.M.U, in particular the recycling project in this study. It also demonstrates the recycling obstacles from the students' perspectives which are useful for waste and recycling management teams to consider in order to reduce the barriers. A further contribution is for exploring the powerful social marketing strategies among C.M.U students.

This section also presents social marketing application at step 6: Target Groups and Obstacles which aims:

- To classify the findings and compare them to the relevant models and theories, and also give arguments of human behavioural change from a psychological aspect, a management aspect and a marketing aspect aiming to demonstrate the essential recycling behavioural change factors.
- To investigate their previous recycling experience at homes and schools and to present recycling practices or recycling behaviour at C.M.U in order to seek the critical success factors and barriers.

- To explore students' needs and desires in order to discover recycling success factors for promoting recycling among CMU students.
- To discover current recycling obstacles or barriers from participant perspectives in order to improve recycling behaviour.
- To understand and to categorise the target groups perspectives for seeking suitable recycling messages and the most effective communication channels in terms of other critical recycling success factors such as influencers and powerful media.
- To draw a conclusion on literature reviews reflection, previous studies and findings.
- The aim is to derive an attractive offer that gives an incentive to maintain or change behaviour. The researcher needs to determine the offer in the context of adverse influences (i.e. what could work against it; summary of influences) and argue why it would work in the light of the analysis.
- To derive an attractive offer that gives an incentive to maintain or change student behaviour.
- To make a set of conclusions to show potential influencers and reasons why they were selected as a priority in this study.

The interviewees had been informed that they had chances to receive exclusive gifts, T-shirts with the recycling project logo on, after the interview as an incentive. They were informed that they had the right to answer or not answer the questions at all times. Then the researcher introduced herself as a researcher and a former student of C.M.U and the purpose of the study. Next, the researcher showed them the formal university permission letter for the data collection. Additionally, the researcher also built trust and informed them that the information of their identities would be confidential according to standard research protection. As a result of the data protection process, participants coding is represented in the form of four digits representing the campus name and the number of participants.

Due to the different backgrounds of the students, the results show a wide range of opinions possibly based on their experience in different faculties and different student accommodation buildings. According to Sriplakich (2015), who conducted research at C.M.U and explored that there were differences between students who came from Medical backgrounds and students who came from Social Science backgrounds. For instance, the

former group had higher environmental consciousness and environmental awareness than the latter group. However, this study aims to reflect that fact from a different angle; interviewees might have different attitudes because of individual and environmental factors even if they come from the same faculty. Based on the information, even if they came from different cities, studied and lived in a different environment, they would perform recycling or engage with recycling activities if the C.M.U campaign serves their needs. This study aims to explore the need for improving the C.M.U campaign (organised by the central office and the student development division). However, if each faculty wants to explore the dominant strategies for themselves, they should research with students who come from the same faculty.

Students and Campus's location Coding	Code	No. of expected participants
SS=Student, Saun Sak Campus	SSO1, SS02, ..., SS10	2-10
SM=Student, Mae Hae Campus	SMO1, SM02, ..., SM10	2-10
SH= Student, Saun Dok Hospital Campus	SHO1, SH02, ..., SH10	2-10
Total		6-30

Table 4.9: The details of the participants' coding

For the coding system, each interviewee that participated in the survey received an invitation which was on the last page of the survey, and they were also invited to partake in volunteering activities during the thirty-minute face-to-face interview. The participants were all undergrad C.M.U students who were studying between one and four years at C.M.U. Also, they had been informed that they had a chance to receive T-shirts with the recycling project logo after the interview. The researcher gave them the t-shirts at the end of the interview. Their codes consist of their campus name and specific number, for example, the first two characters, namely 'SS' represents 'Student from Saun Sak Campus'. The last two digits show the specific number in the ranking of the interviews. The study expected to gain six to thirty students from all three campuses because volunteers from each campus would invite their friends to participate at a rate of at least two students per campus. See the codes in Table 4.10.

The content in the interview section consists of seven parts. See table 4.9. First, the researcher introduced herself as a researcher and as a former student of C.M.U, and for the study. Then, the researcher showed them the formal university permission letter for the data collection. Additionally, the researcher also built trust and ensured them that the information of their identities would be confidential following standard research practise. They were informed that they had the right to answer or not answer the questions at all times. Next, the ‘Student backgrounds section’ shows what they were studying and how long they had been in C.M.U.

Part	Aims
Opening section	<ul style="list-style-type: none"> - To provide background information of the study, the researcher, and the research aims. - To ensure the participants about confidentiality and other standards of research procedure.
Part1: Student backgrounds	<ul style="list-style-type: none"> - To examine student backgrounds such as their courses
Part 2: Previous recycling experience (at homes or schools)	<ul style="list-style-type: none"> - To learn about previous recycling experience in their homes and schools. - To seek powerful social marketing strategies from their previous experience
Part 3: Current recycling experience (at CMU)	<ul style="list-style-type: none"> - To learn and understand their recycling behaviour
Part 4: The vital success factors and barriers for promoting recycling practice at CMU	<ul style="list-style-type: none"> - To discover students’ needs in order to find out successful recycling factors and its barriers to promoting recycling among CMU students.
Part 5: Recycling activities at CMU (such as projects or campaigns)	<ul style="list-style-type: none"> - To find out their proposition and critical influencers on recycling activities for the adoption - To explore critical social marketing tools or other tools for the implementation
Further suggestion	<ul style="list-style-type: none"> - To extend their other opinions to improve recycling practice
Closing Section	<ul style="list-style-type: none"> - To thank the interviewees for the participation

Table 4.10: The contents and aims of the questionnaire survey

Next, they were asked to tell their previous recycling experiences, such as their recycling experience at home and school and give examples of the successful activities that influenced them to recycle. Next, they described their current recycling experiences such as recycling behaviour at the student accommodation and their faculties or canteens, and also explain what most influenced them. Moreover, they provided their opinions on the

reasons why some students failed to perform recycling at C.M.U, and what types of barriers existed. Then, they had the opportunity to give their ideas about activities which they thought would increase their recycling practice. Next, they gave further recommendation on how to improve recycling at C.M.U. Finally, the researcher closed the interview and thanked them for participation. See table 4.10 it demonstrates the contents and aims of the questionnaire survey. The list of interview questions can be seen in Appendix C.

Overall, the codes and procedures for gathering data from the students have already been presented. The next section (4.3.2.) will explain the research design for carrying out the interviews from the staff at C.M.U.

4.3.2. CMU staff

Section 4.3.1 presented details from the students who were the target audience. This section presents the details of the university staff. So, section 4.3.3-4.3.6 will describe the details from C.M.U stakeholders aiming to discover recycling success factors and their barriers. Also to explore effective recycling strategies, to examine the logistic of recyclable items after disposal, to collect the data and analyse it for the stage of implementation, and to seek the opportunities for promoting recycling practice. The primary type of data collection for stakeholders was semi-structured interviews, while a focus group interview was used for the data collection for the resident group. It seems the aims for participants were similar, but each group had specific aims. So, generally speaking, the interviews with C.M.U staff and stakeholders aim to:

- explore effective recycling strategies and their barriers
- examine the logistic of recyclable items after disposal
- collect data and analyse it for the stage of implementation
- seek opportunities for promoting recycling practice

Fundamentally, there are five characteristics of interviews, which are conversations and storytelling; individual semi-structured interviews; depth interview; group interviews; and focus group (Crother and Lancaster, 2009). These types provide both advantages and disadvantages; however, this study aims to select the most suitable methods and also

considers the objectives, the research questions, the researcher's skill, cost, time, availability, ethical issues, reliability, validity, generalizability, triangulation and others (Bryman, 1989; Crother and Lancaster, 2009; Silverman, 2010; Marshall and Rossman, 2011; Bazeley and Jackson, 2013; Silverman, 2013). So, this study selected individual semi-structured interviews for most participants, especially university staff and the recycling stakeholders for many reasons.

First, individual semi-structured interviews can show their personal opinions, contain new information, and their peers cannot interfere with the interview process (Crother and Lancaster, 2009). Moreover, it is flexible because it can be adjusted if participants have a limit of time, in particular executive people, or people that need more explanation of some of the individual questions. (Silverman, 2013). Next, the researcher can explain the topic during the introduction part of the interview, and it provides the opportunity to ask more questions rather than relying on a questionnaire, and it creates a comfortable environment which can help the interview to flow. (Frankfort-Nachmaias and Nachmias, 1992; Crother and Lancaster, 2009).

However, in-depth interviews are not selected because they are time-consuming, and the staff or recycling business owners are likely busy. Moreover, from a psychology perspective, in-depth interview is used for exploring cases which are relevant to sensitive issues like 'psychological research and examination' (Crother and Lancaster, 2009, p.148). Neither group interviews nor focus groups are chosen because both of them may not deliver individual opinions and they may not be suitable for the participants because it is difficult to invite them to provide their time all at once in a group, especially people from the private sectors. Even though there is a benefit for some marketing research or management studies to apply group interviews and focus groups on gaining conclusion of aa products perception, the feedback may have the potential to be influenced by the participants, especially if an influential person is leading the answers.

However, there are some disadvantages to conducting face-to-face semi-structured interviews. For instance, they are time-consuming, high cost and possibly give bias answers, (Frankfort-Nachmaias and Nachmias, 1992). Despite the disadvantages, it can be said that semi-structured interviews are suitable for exploring the facts or peoples behaviour, which is 'dynamic' when trying to understand 'subjective data' from participants, and for gathering data from a holistic approach such as interviews and

observation. What is more, it gives a high rate of response, compared to other methods such as telephone interviews (Welman, Kruger and Mitchell, 2005, p.7 and p.8). Another recommendation from Smith and colleagues (2002) is that conducting face-to-face interviews may be organised with a low cost, especially ‘Asian students who study in the UK’ and select an online interview, such as skype, instead of a face-to-face interview. It is also suggested from a marketing perspective that online interviews are used with high-level people such as doctors and top business directors who are busy (Mcdaniel, Jr. and Gates, 2013, p.193). Based on Thai culture, the online interview is not selected because most Thai people rarely participate in online interviews with outsiders. Thai people mostly go online for distant business meetings or to interact with their friends. Traditionally, Thai people such as business owners or university staff are accustomed to being interviewed in the traditional face-to-face method because it is formal, practical and acceptable, and they can provide their opinions freely and privately. Besides, after the interviews, they can build a friendship or a new network as a culture, according to Crowther and Lancaster (2009). Another reason is trust; the interviewer had a relationship with the people suggesting others to partake in the interview process, which enabled a higher level of trust to be gained.

For the sample size of the interview, according to Saunders et al. (2012), it is suggested that participants for semi-structured interviews should be between five and twenty-five. So, this study set up a minimum quota of five. However, if a participant recommends adding more participants, they were added due to the relevance of the task.

Type of study	Minimum sample size
Semi-structured interviews	5-25
In-depth interviews	5-25
Grounded theory (Epistemological approach)	20-35
Considering a homogeneous population	4-12
Considering a heterogeneous population	12-30

Table 4.11: Minimum non-probability sample size
Source: Adapted from Saunders (2012).

This study utilises the semi-structured interview which is one of the non-probability samplings which consists of incidental sampling, quota sampling, snowball sampling,

purposive sampling, self-selection sampling and convenience sampling (Welman, Kruger and Mitchell, 2005).

First, snowball and purposive sampling are selected because the information is collected from colleagues who can provide rich information or expand upon their interests (Marshall and Rossman, 2011). Second, Welman et al. (2005, p.69) gave the example of suitable snowball sampling which is useful for collecting data from people with academic qualifications', for example, an executive director of a company may refer people from the same academic background at 'Oxford University' because they have shared some experiences. Third, it provided credibility as the group of people are involved in the same topic or the same issue (Marshall and Rossman, 2011). Fourth, only a few participants are likely representative of the population if the field of the study relies only on a few experts such as recycling business owners (Welman, Kruger and Mitchell, 2005). Fifth, snowball sampling assists in approaching a specific network and enables the quick movement from the first interviewee to the next, or onto other interviewees and eventually gains more participants in a shorter period (Blaikie, 2010). For instance, Thai recycling business owners are mostly limited, and the dominant organisation in Thailand has been expanding around Thailand. So, snowball sampling is the most suitable one; furthermore, the group of recycling business owners may provide different information which can help explore new issues because they work in different parts of Thailand. Lastly Bryman (2011) and Cameron and Price (2009) conclude that snowball sampling is a typical method in social research.

However, Bryman (2011) underlines the disadvantage of snowball sampling; it may not represent a variety of information, and it has a high potential not to show reflective opinions. Moreover, it is arguable that the snowball method which is one of the qualitative data collection methods can be based in the region of non-reliability because it is not confirmed that the same answers will be delivered with the same questions at different times because people may have a new experience and change their thoughts all the time (Hammersley, 1992). Moreover, some interviewees may provide well-planned answers to show the positive sides rather than the realities, for example, some interviewees may be reluctant to show genuine political opinions because of trying to avoid conflict (Hammersley, 1992). Furthermore, the staff may feel insecure if they state that they are interested in encouraging university students to do recycling, but some of the management

team's members do not support the ideas. Even though it is hard to give the same information from different researchers at different times and provide more reliability in an experiment's result, this study maximises reliability by:

1. Introducing the consent forms and explaining that the result is definitely confidential and also follows ethical regulations (Cameron and Price, 2009). Moreover, Cameron and Price (2009) expand that the researcher should explain that the interviewee has the rights not to comment.
2. Applying code instead of names during the interview to avoid the 'closeness of the data' and try to 'secure the data' (Bazeley and Jackson, 2013, p.6)
3. Focusing on 'theoretical transparency' and explaining it to interviewees (Silverman, 2010, p.282).
4. Extending the questions to gain more understandable answers when the researcher plays an observer's role and notices that some questions require more explanation (Silverman, 2013).
5. Taking notes when the interviewees express something which maybe show uncertainty or if they have some unusual body language (Bryman, 1988; Silverman, 2013).

Hence, this section consists of four primary topics which are 4.3.2.1 (Participants, roles, and the research aims.), 4.3.2.2 (Codes of C.M.U staff and procedures) and 4.3.2.3 (Content of interview questions and aims), and 4.3.2.4 (Documentation).

4.3.2.1. Participants (CMU staff), roles, and research aims.

Participants/CMU Team (expected numbers of participants)	Participant roles in CMU	Aims
1. Executives	- Policymakers	- Understanding the existing university development plan and the implementation of waste and recycling topics

		- Learning their attitudes and expectation for CMU students on waste minimization and recycling practice with their tools and limitations
2. Student development division team	- Promoting waste reduction - Running waste and recycling activities	- Investigating the previous and existing activities relevant to promote recycling practises or waste segregation and reduction among students - Finding out the critical success factors and barriers to recycling
3. Waste and recycling management team	- Operating CMU recycling bank - Managing waste and recycling bins - Transporting all waste from each area to 40 designated spots in CMU	- Examining the critical successful recycling bank and barriers - Understanding the process of the waste and recyclable items collection
4. Marketing and management lecturers	- Providing management and marketing lessons for CMU students	- Learning powerful strategies from the academic staff - Gaining suggestion from them to increase the successful results for the recycling project on Facebook
Total (10-13)	Four groups of participants	- To discover the critical success factors and the barriers

Table 4.12: The participants (CMU staff and their roles) and the goals for the data collection

This section presents the type of participants who were from four groups. Then, it shows the roles and aims of each group. According to the C.M.U organisation's framework from the university website in 2019 (mentioned in chapter 2) and from the informal conversations after the researcher introduced herself as a formal C.M.U student and a researcher, this study selected to collect data from various groups of staff because each group had different responsibilities and different roles. However, all of their opinions are crucial as environmental factors of the target audiences. Moreover, they were insiders, and they tended to know possible solutions and how to fix the problems. Furthermore, they

were close to the students, and they knew some key strategies to deal with the students. So, these participants were categorised into four main groups which were Executives, Waste and Recycling Management Team Members, Student Development Division Team and Marketing and Management Lecturers, as shown in Table 4.12.

4.3.2.2. Codes of CMU staff and procedures

Group (expected participants)	Roles	Codes	Type of data collection
1. Executives (1-3)	Policy makers	CMU1, CMU2, CMU3	Semi-structured interview
2. Student development division team (3)	Social marketers	SD01, SD02, SD03	Semi-structured interview
3. Waste and recycling management team (1-2)	Recycling bank operator	WR01, WR02,	Semi-structured interview
4. Marketing and management lecturers (5)	Lecturers	MK01, MK02, ..., MK05	Semi-structured interview

Table 4.13: Codes of CMU staff

Before conducting the interview process, the researcher gained permission from executives and head of each department or division, according to the university regulations. Semi-structured interviews were carried out for 30 minutes per interviewee, approximately. The list of questions was introduced to them in advance, and the interview scheduling relied on their available time. During the interviews, two voice recorders (from mobile phones) and note-taking were used. Initially, only purposive sampling was adopted; however, due to the suggestions of some interviewees snowball sampling was adopted.

For the coding, each code consists of two primary sources which were their roles and the specific number of participants. Types of data collection and their codes, as shown in table 4.13. The list of interview questions can be seen in Appendix C.

4.3.2.3. Content of interview question and aims

Part	Aims
Opening section	<ul style="list-style-type: none"> - To provide background information of the study, the researcher, the research aims. - To ensure the participants about confidentiality and other standards of the research procedure.
Part1: Participants' backgrounds section	<ul style="list-style-type: none"> - To understand participant backgrounds such as their roles
Part 2: Key successful factors to promote recycling and its barriers from previous projects section	<ul style="list-style-type: none"> - To learn about their previous waste and recycling management experience - To seek powerful social marketing strategies and limitations from their previous experience
Part 3: Upcoming projects and expected strategies and tools section	<ul style="list-style-type: none"> - To understand and learn the preparation process for the next projects
Part 4: Further suggestion section	<ul style="list-style-type: none"> - To extend their other opinions to improve recycling practice among CMU students
Closing Section	<ul style="list-style-type: none"> - To thank the interviewees for the participation

Table 4:14: Content of interview question and aims

In general, the interview questions for the C.M.U staff were designed to find out critical recycling success factors and its barriers from their perspectives and to learn and understand the barriers. Moreover, the results tended to show reflexivity between the students and the staff. They were categorised into six main sections which are 'Opening section', 'Participants' backgrounds section', 'Key success factors to promote recycling and its barriers from previous projects section', 'Upcoming projects and expected strategies and tools section', and 'Further suggestion section' following the aims of the research. 'Closing section' was the last section. See table 4.14. The details can be seen in appendix section D, E, F and G for 'Executives', 'Student development division team', 'Waste and recycling management team', and 'Marketing and management lecturers', accordingly.

4.3.2.4. Types of available documentation and contents

Available documents at CMU	Contents
<ul style="list-style-type: none"> • CMU report (2015) 	<ul style="list-style-type: none"> • Statistics of waste proportion at some student flats
<ul style="list-style-type: none"> • Recycling bank report 	<ul style="list-style-type: none"> • Statistics of recycling bank accounts
<ul style="list-style-type: none"> • Thesis (Sriplakich, 2015) 	<ul style="list-style-type: none"> • The survey and interviews to find out the environmental awareness and the environmental consciousness of waste management
<ul style="list-style-type: none"> • Recycling posters 	<ul style="list-style-type: none"> • The recycling bank poster at the parking area near the central canteen • The recycling instruction posters at canteens

Table 4.15: Summary of available documents at CMU on waste and recycling topics

For gathering the relevant documentation as a prime tool, it can be said that there was a lack of data on this topic for many reasons. For example, there was no record on the university system showing that this topic was in high demand of C.M.U research students. Also based on visiting the university libraries, from informal conversations with librarians and lecturers, and access to the university database, and viewing the student thesis sections. One of the reasons was that there were some activities relevant to promoting recycling among students such as video clips, waste segregation posters, recycling logos and recycling strategy competitions. Nevertheless, they did not upload the documents into public sources because they were student assignments in classes. However, based on observation in the main buildings such as the central canteen, faculties and the library, there were recycling instruction posters produced by two faculties in different formats. It can be probably stated that there was no standard for recycling promotional posters and for design or placement of recycling bins.

Moreover, it was found that there were C.M.U reports and a Recycling bank report, and a thesis indicating that each faculty promotes recycling based on their perspectives, but there were not any similar patterns. What is more, the statistic collection of waste at some student accommodation had been conducted. Also, recycling activities at the recycling bank was found to be in decline. Based on informal conversations with staff and students and from observation at C.M.U, the majority of recyclers at the bins were cleaning workers. See table 4.15 for a summary of the existing documentation. So, due to the available evidence, informal conversation and observation, it is possible to say that C.M.U

is in the early stage of recycling promotion. It was discovered that all types of waste were mixed in both general waste and recycling bins, based on conversations with students, staff, and the researcher's observations. Another critical factor identified from the informal discussions with executives, the staff, and students was that they thought that recycling did not occur because they felt it was useless. The fact was that it was a norm to see the waste collectors taking all types of waste bags together at the same time and mixing the items in the same small truck and small lorries for daily waste transportation. Some students provided their opinion and stated that there was no significant impact from whether they recycled or not; however, some students recycled and traded items from their activities. Informal conversations, also identified that some students thought that recycling was the responsibility of cleaning workers and the workers earned a significant amount of money from waste separation. Overall, it is possible to say that no hard evidence exists to show a clear picture of successful recycling promotion and standard practice (Sriplakich, 2015). Further research on how to find out practical and powerful strategies to improve the recycling practice at C.M.U was essential (Sriplakich, 2015). It concludes that there were many issues on recycling improvement topics with limitations, so this study carefully selected only the vital points and explored their perspectives and needs from several methods such as survey questionnaires, face-to-face interviews, observation and others. The list of questions can be seen in the Appendix section.

This section (4.3.2) has already mentioned the critical topic of data collection of C.M.U staff, so the next sections (4.3.3-4.3.6) will show coding and the other essential factors of C.M.U stakeholders.

4.3.3 Authorities (CMU stakeholder)

Code of participants/their projects	No. of expected participants
GOV1: 'Branches Recycling Bank' project (Government officer or authority at Maehia city/Chiang Mai)	1
GOV2: The waste fee management project (Sticker Implementation) (at Muang city/Lamphun)	1
GOV3: 'No Public Bins' project (at Thungsaliang city /Sukhothai)	1
GOV4: 'Zero waste city' project (at Hadsiew/ Sukhothai)	1

GOV5: The multi-projects for waste and recycling management (3Rs concept implementation) (at Padang city/Lamphun)	1
Total	5

Table 4.16: The codes of the participants

The previous sections (section 4.3.1 and 4.3.2) demonstrated the research design and procedures for data collection from the target audience and C.M.U staff. This section (4.3.3) shows the research design and procedures for data collection from local government officers, who had successfully run waste and recycling management projects in the North of Thailand. All of the participants had won many local and international low carbon city competitions or zero-waste society competitions. Also, their villages had become learning centres for other cities, according to the Promotion of Low Carbon City (PLCC). Including projects from the Municipalities in Celebration of His Majesty the King's 84th Birthday, which are supported by the National Municipal League of Thailand (NMILT) (NMILT, 2016). PLCC and NMILT projects received grants from the EU (European Union) with a budget of US 275,000 approximately (NMILT, 2016). The whole project had been organised over four years and ended in December 2015 and was based on four aims: City of waste minimisation, City of trees, City of energy efficiency, and City of sustainable consumption (NMILT, 2016). All authorities or government officers were from government offices which were the City-municipality, Town-municipality, Subdistrict-municipality or Subdistrict-administrative organisation (Ratchakitcha, 2018). See figure 4.3. The participants were selected from the city of waste minimisation competition section (NMILT, 2016).

Moreover, one city from the five cities won the Cleanest Province in Thailand Award in 2017 (Bangkok Today, 2019). It seems the authorities are outsiders of the C.M.U, but they are insiders of the community, so this study considers them due to several reasons. For example, it is noted that at least five local government officers are successful at encouraging their residents to do recycling using various strategies. At this point, it is essential to learn about the useful tools and the influences of these experts. The aims of this section are:

- To discover the success factors from the participants to promote recycling projects for C.M.U effectively.
- To learn the barriers from the participants' experience to reduce the failure of the C.M.U recycling project.

- To share the participants' experience with the C.M.U teams who are responsible for waste and recycling management.
- To seek opportunities to build a network between the C.M.U teams and the participants.
- To learn the process of how to create new sustainable behaviour (in particular recycling).

So, purposive sampling was adopted, and semi-structured, face-to-face interviews were conducted at the participant's workplaces for approximately thirty minutes. Five participants were from three provinces from the North of Thailand (Chiang Mai, Lamphun, and Sukhothai) with different recycling projects ('Branches Recycling Bank' project, The waste fee management project (Sticker Implementation), 'No Public Bins' project, 'Zero waste city' project, and The multi-projects for waste and recycling management (3Rs concept implementation)). See table 4.16 and see figure 4.4 The codes of participants are GOV 1, GOV2, GOV3, GOV4, and GOV5.

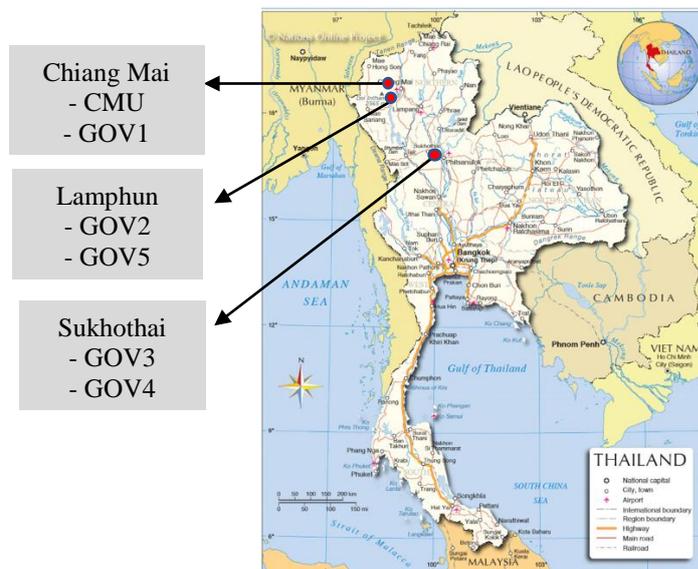


Figure 4.4: Map of Thailand and the cities of the participants
Source: Adapted from Nation Online Projects, 2018.

Further reasons why these projects and authorities were selected was because they had some shared similarities, such as people and environmental issues. In general, Chiang Mai has faced health problems from air pollution; any strategies which successfully solve this problem should be widely shared. Next, Maehia municipal (from the area of GOV1) is one of the education sources for students and institutions, in particular, C.M.U students,

according to an informal conversation with the staff. The C.M.U management teams can build networks and invite experts (GOV1-5) from these cities or villages to encourage the students to raise their recycling awareness. On the one hand, the C.M.U team may invite the government officers to provide their experience for C.M.U staff and students. On the other hand, CMU can expand opportunities and take the members to visit the city to increase their confidence and self-belief that they can run recycling projects. These activities can increase the success factors for other C.M.U projects. Lastly, building a network could help all participants to increase the success of their projects.

The content of the interviews with C.M.U staff was divided into seven sections. It began with the opening section and ended with the closing section. However, in the main body of the interview, there were some differences among C.M.U staff and other stakeholders because the design of the question did not only give opportunities for the interviewees to share their recommendations, but also allowed them to show the stakeholder requirements for C.M.U to support their next projects. It is believed that it opened opportunities to build a network. The list of interview question can be seen in Appendix C.

4.3.4 Private sectors (CMU stakeholder)

Section 4.3.1-4.3.3 covered the research design for data collection from C.M.U students, the staff, and the authorities, accordingly. Section 4.3.4 shows the details of the design for the private sector which consists of two main groups, recycling business owners doing recycling business with C.M.U members, and PTT the private company who provided recycling bins in the C.M.U areas. The next section (4.3.5) will provide the research design of non-profit organisations, and section 4.3.6 will show the research design of residents.

Code of participants	No. of expected participants
PTT1: A marketing manager of PTT (a private company which has successfully adopted social marketing strategies by encouraging customers to recycle their waste at gas stations around Thailand)	1
RS01, RSO2...RS05: The recycling show owners who have supported recycling behaviour for students and other customers	5
Total	6

Table 4.17: Codes of the participants and the expected number of the participants

Due to their expertise, purposive sampling and snowball sampling were used for the data collection. A face-to-face and semi-structured interview were adopted. Each interview was expected to take thirty minutes per participant. The expected number of participants was between 5-6 people to gain useful opinions for the C.M.U projects' improvement, such as a recycling bank in C.M.U and recycling trading for C.M.U students and staff. The list of questions can be seen in Appendix C. Their codes are 'RS01, RS02,..., RS05' for recycling shop owners, and 'PTT1' is for a marketing manager of the private company. See table 4.17. The list of interview questions can be seen in Appendix C.

4.3.5 Non-profit organisation sector (CMU stakeholders)

This section (4.3.5) shows the design of data collection for non-profit organisations, which was a semi-structured interview. However, section 4.3.6 will explain the design of the data collection, 'a focus group', of which the participants were from a village which won the competition of 3Rs project. Then, section 4.3.7 will give a summary of the design.

Code of participants	No. of expected participants
NGO1, NGO2,..., NGO5: Participants who worked at NGO: their roles were dealing with social marketing adoption	5

Table 4.18: Codes of the participants and the expected number of the participants

The NGO participants in this study worked at the Thai Environment Institute Foundation (TEI). Purposive sampling and snowball sampling were used for data collection because for many years; they were responsible for promoting many 3Rs projects and recycling projects around Thailand. The expected number of participants was around five people, so their codes were NGO1, NGO2, ..., NGO5. See table 4.18. The aims were gaining key success factors and potentially learning the barriers from real-life situations. Lastly, their perspectives, social marketing strategies, and suggestions would be useful and practical for C.M.U because they had worked with many international organisations dealing with a variety of participants in Thailand for decades. The list of interview questions can be seen in Appendix C.

4.3.6 Residents (CMU stakeholder)

This section explains the reasons why a focused interview was adopted for data collection. Moreover, the resident's opinions tend to be influenced by the projects' participants rather than the policymakers and project operators such as the authorities. It is useful for the researcher and C.M.U teams because the researcher and the team will see real examples from the field and some useful strategies which will possibly be selected to promote the project for this study and the projects for the university. After that, the codes of participants are presented. The next section, 4.3.7, will present the research design for the problem identification phase, and a summary of chapter 4. Then, 4.4 will demonstrate the design for the planning and implementation phase with a focus on 'the project implementation and the Facebook Page'.

Code of participants in the focus group interview	No. of expected participants
RES1, RES2, ..., RES5: Residents who worked for '3Rs Learning Centre at Sukhothai province' and their roles were heads of villages and volunteers	5

Table 4.19: Codes of the participants and the expected number of the participants

This research expected to gain opinions from five residents the codes adopted were RES1, RES2, ..., RES5 respectively. The first reason that a focus group interview was selected instead of a group interview is that it was recommended by a government officer. Secondly, according to Saunders et al. (2016), group interviews and focus group interviews are likely recommended methods for qualitative data collection because they encourage participants to give their opinions to the research questions with flexible question structures. However, Saunders et al. (2016) provide the possible weaknesses of both methods. Which are results in a group tend to show a similar direction, but sometimes their comments may be different if the research is conducted with individual interviews. Also, Saunders et al. (2016) distinguish that the difference between a group interview and a focus group is that in the former, the researcher plays the critical role of asking all the questions to all the participants. The latter is mainly organised by a modulator, while a researcher attends the interviews and adds more questions if needed. What is more, from a marketing perspective (McDaniel JR and Gates, 2013), describe that a focused interview should fundamentally consist of around eight participants and take one

and a half hours; this method is also commonly used for marketing research. They expand that if the number of participants is more than eight, each interviewee will give comments for only six minutes per discussion which gives less information. As a result, these concepts are similar to this study, so a focus group was selected. Other reasons why a focus group was selected are that when eight participants, including one modulator, were in the interviews, then residents could give their opinions freely because they have known each other for a long time. The atmosphere of focus groups could make them express themselves better than individual interviews. Next, it was suitable because the modulator had known all the participants' roles, so the modulator was able to organise the topics and participants in the correct order. The list of questions during the focus group interview will be shown in Appendix C.

Also, this section shows the three steps of a social marketing application which are step 6, 7, and 8 (The Target Group and Obstacles, The Customer Proposition, and The Marketing Mix). Although the residents are not C.M.U students, their roles are that of parents of C.M.U students, so there are several reasons why the possible strategies can be adopted. For example, generally speaking, these strategies focus on success factors and barriers from real situations. Moreover, the recycling projects from this city has already shown success. Clarifying the key reasons can be seen from the following paragraph.

The reasons why residents are chosen as C.M.U stakeholders are:

- As a result of the residents playing a significant role in recycling at home, so seeking how they think and why they do it is essential because the key factors can be adopted for C.M.U.
- It is believed that children may be influenced by their family and tend to perform recycling when they are at C.M.U. For instance, children tend to follow their parents in their daily behaviour, such as recycling at home. Moreover, these children may play an essential role as a recycling initiator for C.M.U recycling projects, therefore seeking key success factors from their children may help C.M.U to understand individual factors and environmental factors.

- It is essential to focus on government sectors, but the findings may not wholly show individual factors from residents who were recyclers, so reflecting both sides should be explored to understand reality. The study can be done by asking about other essential factors and barriers from the residents' perspectives.
- The data collection method for the residents consists of not only a focus group technique but also an observation technique to follow the triangulation concept and increase the validity of data collection.

4.3.7. Summary of the design of the problem identification phase

Overall, section 4.3.1-4.3.6 have already shown the research designs for the problem identification phase. The expected research participants were divided into six groups who are C.M.U students, C.M.U staff, government sectors, private sectors, non-profit organisations, and residents. This section summarises the data collection techniques, which consists of survey questionnaires, semi-structured interviews, the focus group, observation, informal conversations and others. The quota sampling, purposive sampling and snowball sampling play a significant role for both the qualitative data and quantitative data collection. The main aims for the design are to explore the critical recycling success factors and their barriers. Moreover, network building should be adopted to learn and share knowledge and skills. After the problem identification phase, it leads on to the planning and action taking phase, which can be seen in the next section (4.4.).

4.4. Action Planning and Action taking phase

Section 4.3 showed the design and procedures of the 'Problem Identification phase'. So, this section (4.4) underlines two key phases, namely 'the Action planning phase' and 'the Action taking phase'. The Action planning phase consists of a brainstorming session with C.M.U staff, meetings with executives, and a workshop with student volunteers to improve the research planning for the research project the- 'C.M.U London Recycling Project' on a Facebook Page. Then, the Action taking phase consists of three groups of people who engaged with activities on the Facebook page, and with the recycling ambassador

competitions such as student volunteers and their friends. Then, identifying and adopting social marketing strategies from the project via Facebook and the C.M.U board were chosen for the next action planning and taking phase. Finally, a satisfaction survey was conducted for the Evaluation phase, which can be seen in section 4.5.

Methods/Activities	Participants (Codes)	Aims/Goals
<p>Group 1: at ‘the action planning.’</p> <ul style="list-style-type: none"> 1.1. A brainstorming session with CMU staff and CMU former students 	<ul style="list-style-type: none"> 5 participants from 5 faculties and 6 participants from CMU former students 	<ul style="list-style-type: none"> To gain their opinion as a reflection to improve the plan and the activities
<ul style="list-style-type: none"> 1.2. Meeting with executives and the CMU team 	<ul style="list-style-type: none"> Three executives, five members from the management team of student accommodation, and two student leaders from the CMU student accommodation club 	<ul style="list-style-type: none"> To gain their opinion as a reflection to improve the plan and the activities To promote the Facebook activities
<ul style="list-style-type: none"> 1.3. Workshop with student volunteers 	<ul style="list-style-type: none"> 18 student volunteers (V021, V022, V023, V031, V041, V042, V051, V111, V112, V113, V131, V132, V133, V151, V152, V181, V191, V201) 	<ul style="list-style-type: none"> To provide the recycling knowledge and the rules of the Facebook activities To gain their opinion as a reflection to improve the plan and the activities
<p>Group 2; at ‘the action taking phase.’</p> <ul style="list-style-type: none"> 2.1. Participating in the first activity (Like clicking, sharing three posts, and giving the comments) 2.1. Attending for the ‘Recycling Ambassador Competition’ on the Facebook Page 	<ul style="list-style-type: none"> At least 20- 60 students from 3 campuses were expected due to the task of the volunteers At least one participant from each faculty (21 	<ul style="list-style-type: none"> To provide the activity and rewards for building the trust To introduce the participants to access the Facebook Page and prepare themselves for the next activities

<ul style="list-style-type: none"> • 2.3. Engaging on the Facebook Page for like clicking, post sharing, and commenting 	<p>ambassadors in total for the competition)</p> <ul style="list-style-type: none"> • Students and their peers (200-4,000 participants such as Facebook users engaging the activities by like clicking, sharing, and posting comments, calculating from 10-200 likes per 1 ambassador) 	<ul style="list-style-type: none"> • To explore their recycling messages to reflex their attitudes • To share their opinions towards their peers and gain the feedbacks • To test the findings from the research planning phase • To summarise the critical success factors and its barriers from the activities • To expect to raise their recycling attitudes and behaviour.
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Table 4.20: Participant, their codes, and the aims or goals of the activities

The sample size at the action planning and taking phase and the goals can be seen in table 4.17. The period was between August and December 2017. The participants can be categorised into two main groups which are group 1- the participants at ‘the action planning’ and group 2- the participants at ‘the action taking phase’.

For group 1, there was a brainstorming session with five C.M.U staff members from five faculties and six C.M.U former students to gain their creative opinions as a reflection to improve the plan, and the activities were adopted, according to (Herring et al., 2009). The reasons were that they played significant roles as lecturers, and friends of the researcher, and consultants of the researcher, so they assisted the researcher to introduce herself to the team of executives and also invited their students to work and gain new knowledge with the researcher as volunteers. They helped the researcher gain access to the university teams, so they acted as an essential tool to unlock ‘the unfreezing stage’, according to Lewin (1951) and a force-field from Hayes (2014), mentioned in chapter 2 in the section of the management aspect. According to the informal conversations, they supported the researcher and the research aims because they thought that the project was beneficial; it encouraged the students to engage with the activities for the community, and the students could gain new knowledge, skills and other types of development. Then, meetings were conducted with three executives, five staff members from the student accommodation management team, and two student

leaders from the student accommodation club to gain their opinions as a reflection to improve the plan and the activities were adopted because the meeting was beneficial for both the researcher and the team. The meeting was organised at the male student accommodation building no.3 in October 2017 for two hours. The executives had known the research aims, and then they introduced their team to set up new activities to promote recycling at the student accommodation. They also invited the researcher to help them to establish new projects for the students. Besides, sharing some key success factors and any barriers from their experience of previous recycling projects, such as a proper duration for the competition, volunteering, types and amount of rewards for the student winners, was utilised (Schwartz, 1977; Cialdini, 1984; French, 2011).

Furthermore, promoting the Facebook activities to the teams was adopted because they were responsible for promoting recycling at the student accommodation, and their roles were supporting the students to segregate the waste properly and reduce the total amount of waste to show the student development. Two student leaders in the meeting were invited by the student accommodation team to increase their knowledge and learn the new trends from the research activities and the meeting. Then the researcher presented the activities to them to gain better student engagement in the Facebook Page activities. The last group of participants were volunteers, who worked with the researcher to invite their friends to engage with activities on three tasks, according to Cialdini, 1984. Eighteen volunteers were involved from eight faculties, and their codes are V021, V022, V023, V031, V041, V042, V051, V111, V112, V113, V131, V132, V133, V151, V152, V181, V191, V201. The coding system has already been mentioned in 'the research design' section for the student volunteers. Next, workshops were organized to provide recycling knowledge, and the rules of the Facebook activities were organised to ensure that they could encourage their peers to perform recycling in real life and take part in the competition on the Facebook Page. Workshops took place at the library, the canteen, and the meeting room on three campuses. Each workshop was carried out for thirty minutes per campus between August and September 2017, and then they had short discussions online with the researcher in the message section on the Facebook Page, as it was more convenient and saved time. Their feedback helped the researcher to improve the plan and the activities based on their needs, such as matching with their free time and avoiding their examination periods.

- For group 2, at ‘the action taking phase’, There were three sub-groups of participants who were from the first activity (like, clicking, sharing three posts, and giving comments), taking part in the ‘Recycling Ambassador Competition’ on the Facebook Page, engaging on the Facebook Page for ‘liking’ clicking, post sharing, and commenting. For the first activity, at least 20-60 students from 3 campuses were expected to participate. At least one participant from each faculty (21 ambassadors in total for the competition) was the goal of the competition. Finally, the target for the students and their peers was 200-4,000 participants. They were the Facebook users engaging in the activities by ‘liking’ clicking, sharing, and posting comments, calculated from 10-200 likes per ambassador, based on informal conversations with the student leaders and volunteers who used Facebook accounts to promote some activities such as the student volunteer clubs. The aims for these participants mainly focused on providing the activity and rewards for building trust, introducing the participants on how to access the Facebook Page and prepare themselves for the activities. Also to ensure the recycling message reflected their attitudes, that they shared their opinions with their peers and gave their feedback, testing the findings from the research planning phase, summarising the critical success factors and barriers from the activities, and expecting to raise recycling attitudes and behaviour.

Overall, this section explained the design and the procedures for the research at the ‘planning’ and ‘action taking’ phases. So, the next section will demonstrate the design and the procedures for the research at the evaluation phase. Moreover, it will show the contribution and reflection from the reporting and learning phase.

4.5. Evaluation phase

After ‘the action planning and the action taking phases’, the evaluation phase took place. It started in December 2017 and is aimed to conclude the new findings and create marketing strategies to encourage the target groups to do recycling. Moreover, it offers suggestions for university teams and others. The process for this phase mainly examined the outcomes of the satisfaction survey, discussed the recycling message from the competition and the Facebook comments, and observed the student behavioural change on recycling practice. It collected and analysed both qualitative content and quantitative data from the contest and the survey. Informal conversations with C.M.U management teams, lecturers, volunteers

and students about the new behaviour and new recycling outcomes at the bin sites were included. Moreover, observing the waste separation at the bins in C.M.U was utilised. The observation at the containers by the researcher finished in December 2017 due to the limitations such as the permission duration (ended in December 2017) and the student examination period (starting in January 2018). The satisfaction survey was conducted upon completion of the competition, and once the rewards were delivered to the participants. See the survey template in Appendix D.

Opening part	Aims
Part 1: Socio-demographical information of participants/ Respondent Background	<ul style="list-style-type: none"> • To examine socio-demographical information of participants' or respondents' background. • To investigate the public relation of the Facebook Page
Part 2: Participant Satisfaction on the Recycling Project	<ul style="list-style-type: none"> • To explore their satisfaction with the recycling project • To learn the suitability of the project, such as information about the activities and the competition. The rules and the duration of the contest. • To explore their feelings or attitudes after the activity engagement • To examine the types of rewards which they expected or desired • To discover powerful strategies to encourage them to perform recycling and maintain the behaviour for the long-term.
Part 3:	<ul style="list-style-type: none"> • to gain their further opinions for the improvement such as for the project and the survey
Closing part	<ul style="list-style-type: none"> • To thank the interviewees for the participation

Table 4:21: Contents of the satisfaction survey

The survey, namely 'CMU London Recycling Project on Facebook Page 2017', is divided into five parts. The beginning part aims to guarantee to participants that all information would be used for academic purposes, and it would be kept confidential as per standard research protection. Moreover, the researcher gave them the contact details of the researcher in case they had further comments. Part 1 aims to examine the socio-demographical information of participants' or the respondents' background and to investigate the type of public relations implemented in the project. Part 2 aims to explore their satisfaction with the recycling project, and part 3 was for their recommendations to improve the activities. Lastly, in the closing section, the researcher thanked them for their participation and for giving useful information for the improvement of activities. The survey question design consists of many types of questions such as multiple-choice questions, scaled-response questions (levels of satisfaction such as satisfied, neutral, or

dissatisfied), and recording their comments. See the survey template in Appendix x. Two hundred sets of satisfaction surveys were delivered to the students who participated in the activities. The code began with 001 until 200. The list of survey questions can be seen in Appendix C.

4.6. Method of data analysis

As mentioned, the data collected for this study was a combination of qualitative and quantitative data, so the methods of data analysis consist of a variety of presentations. For the results of the survey design, they show generalisations such as the percentage of respondents, frequency of respondents or mean of respondents. Excel and SPSS Software were selected to analyse the data. For the first part, the questionnaires implemented multiple-choice selection, filling the gaps, and scoring their opinions. First error checking was conducted by scanning for missing answers. If any participant did not answer, the researcher would present the solution as 'unspecified', 'missing' or 'o' in the tables (Saunders et al., 2016). Then, the data would be transformed to be analysed by using the software- Excel and SPSS and presented in the form of frequency or percentage in tables (Saunders et al., 2016).

Furthermore, some questions allowed the participants to give more than one answer, which the results are presented in a group of tables. However, the results from the opinions section were grouped and displayed in terms of thematic analysis. For the results from interviews and focus groups and others, several themes were utilised influenced by previous theories such as Cialdini (1984), Lee and Kotler (2016), and Fourali (2015). While Hiseh and Shannon (2005) and Forman and Damschroder (2007) stated that qualitative data should not be analysed and presented in statistical techniques, it is argued that the results could be coded and counted (Spencer et al. (2008) and Saunders et al. (2016). The reasons why the thematic analysis was selected was because the participants' comments show the social realities and thematic analysis was used as a standard method for qualitative analysis (Braun and Clarke (2006) and Spencer et al. (2008)). Bryman and Bell (2007) suggested that qualitative data should be analysed using two options, either an inductive option or deductive option. So from an interpretive standing point, the results show the summary of alternative social marketing strategies for encouraging C.M.U students to recycle. However, if the research position is at an abduction (already mentioned in chapter 3), the analysis aims to explore unexpected information which tends to create a

new theory rather than testing or replicating the current approach. Moreover, gaining qualitative data and quantitative data are required (Blaikie, 2007). Then, it follows the suggestions from a philosophical position, Braun and Clarke (2006), which provides an orderly and logical way to treat the qualitative data — develop and explain the patterns or relationships based on previous theories (Saunders et al., 2016).

For the procedure of thematic analysis, there are four main steps: 'becoming familiar with your data; coding your data; searching for themes and recognising relationships, refining themes and testing propositions, and evaluation' (Saunders et al., p.508, 2016). The details can be explained as follow;

- Becoming familiar with your data;

The researcher followed this suggestion by reading and re-reading the transcription and looking for the meaning of the contents, drawing a set of possible critical factors

- Coding your data

Coding or labelling the data was utilised because the materials were very complicated and relevant to multidimensions. As mentioned in chapter 2, this research focuses on three main areas which are a psychological aspect, management aspect, and social marketing aspect. So, the theme shows not only three sets of points, but also the labelling of the codes for participants. Coding helps the researcher to group the ideas and links them to the next stages.

- Searching for themes and recognising relationships

After grouping the data in term of codes, then it can be said that the study presents three categorisations which are the findings of the psychological aspect, management aspect, and social marketing aspect. Then, in each element, such as the psychological aspect, the results were grouped and presented to show the relationships between previous theories and existing findings. For example, there were various critical factors from a combination of approaches. It possibly indicates the arguments with new findings as evidence. This step was time-consuming because rearranging and revising were adopted to make the set of themes understandable.

- Refining themes and testing propositions

For this stage, the researcher had to select only relevant contents and deleted the non-relevant data and any repeating comments from participants. Testing the schemes can be

shown in different ways, not only proving the theories, but reflexivity and alternative explanation can be applied (Miles et al., 2014). Reflexive objectives were used in this process, for example, comparing the comments from the students and the university staff or the opinions from residents mirrored the outcomes from the authorities (Brinkmann and Kvale, 2015). What is more, observation and note-taking were included and compared to the interviews.

- Evaluation

Both the inductive and deductive position can use thematic analysis as a fundamental approach (Sauder et al., 2016). Moreover, a combination of induction and deduction is widely used for thematic analysis, so the researcher believed that this analysis would help the researcher to see the systemic procedure, flexibility and accessibility (Sauder et al., 2016).

4.7. Conclusion

Group of participants/ (expected) codes	(expected) No.	Types of data collection
<ul style="list-style-type: none"> • At the preparation and problem identification phase • January 2017- September 2017 <ol style="list-style-type: none"> 1. C.M.U volunteers 	21-50	Informal conversation (Qualitative data)
<ol style="list-style-type: none"> 2. C.M.U students 	400	A survey (Quantitative and Qualitative data)
<ol style="list-style-type: none"> 3. C.M.U students 	12	Interviews (Qualitative data)
<ol style="list-style-type: none"> 3. C.M.U staff (C.M.U1-3, SD01-3, WR01-2, MK01-05) 	5 (staff from management teams) 5 (lecturers)	Interviews (Qualitative data)
<ol style="list-style-type: none"> 4. Authorities (GOV1-5) 	5	Interviews (Qualitative data)
<ol style="list-style-type: none"> 5. Private sectors (RS01-4, PTT1) 	5	Interviews (Qualitative data)

6. NGO (NG01-5)	5	Interviews (Qualitative data)
7. Residents (RES1-5) and Visiting 3R centres	5	The focus group + Observation (Qualitative data)
<ul style="list-style-type: none"> • At the research planning and acting phases • October 2017- December 2017 <ol style="list-style-type: none"> 1. Recycling Ambassador 	20-60	Testing the findings (the recycling competition on Facebook and 2 C.M.U boards)/ (Qualitative data)
<ol style="list-style-type: none"> 2. The ambassadors' friends 	200-4000	Testing the findings (the recycling project on Facebook and 2 C.M.U boards) (Qualitative and quantitative data)
<ul style="list-style-type: none"> • At the evaluation phase • December 2017- January 2018 <ol style="list-style-type: none"> 1. C.M.U students 2. Ambassadors 	200	The satisfaction survey (Quantitative and Qualitative data) and observation (from the content of the competitors)

Table 4.19: Conclusion of expected participants

This chapter demonstrated that the study uses ‘the Five steps of action research’, recommended by Fourali (2016). See table 4.19. However, for the design of the presentation, it will present the steps via preparation, problem identification, research planning and taking, evaluation, and learning and reporting of the results.

From the preparation step until the reporting step, learning steps were used for all steps to ensure the improvement of the steps. This action research was conducted from January 2017 to January 2018. There were different research participants, but the primary target audience for raising recycling awareness were undergrad students at CMU.

For the preparation step, to access the university to conduct the study, official permission from the Vice-Chancellor had to be gained due to the government university rules and other rules. Then the researcher was required to describe the research aims and objectives

to gain further permission and recommendations from the university teams. The researcher had to follow the university's directions which were to support the university's mission, vision, and the university's development plan.

Informal conversation and observation were used to collect the data from the teams. For the secondary data collection or documentation, this study planned to use university reports and theses, to update CMU on the current waste and recycling situation.

It was discovered that the teams had struggled with reaching recycling objectives and identified many barriers. Moreover, most students did not recycle at the source due to many factors. While the staff believed that the students performed recycling for each university event, it was unclear if the recycling behaviour was sustainable. So, through these processes, the researcher learnt and understood the real situation, then a plan was adapted to meet the mutual aims between the researcher and the university.

For the stakeholders' data collection plan, the researcher submitted letters to gain access to each organisation in advance, and it was found that all the request letters sent took significant time for approval. Furthermore, the data collection had to be changed many times to suit the availability of each participant. Although the study was designed to collect data from 5 participants from each group which were CMU policymakers, CMU operators, CMU lecturers, government sectors, private sectors, NGOs, residents, and others, the total amount of actual participants would need to be adjusted again during the running process. See table 4.9.

After the preparation phase, the next step was the problem identification step; the researcher planned to collect data from each group from April 2017 until August 2017. The researcher had to approach each faculty at CMU to introduce herself and invited some lecturers to introduce the study and the project to their students for the recruitment of student volunteers to run the activities.

Online communication, in particular, on Facebook and LINE, were adopted to save time after the researcher was introduced to the participants. It was estimated that 21-50 student volunteers would participate in the project. Four-hundred survey respondents from 21

faculties were in the plan. Then, twelve student interviewees were projected for semi-structured interviews and other CMU staff and CMU stakeholders.

At the research planning and research taking phases or steps, volunteers had three tasks that they had to complete to achieve the outlined goals each varying in complexity. For the easy task, they had to deliver and collect 20 sets of the survey to each faculty. The medium task was designed for testing online engagement, so the volunteers had to invite twenty friends to select the post on the Facebook Page and share it to their Facebook. The hard task was designed for spreading students' words to promote recycling behaviour as recycling ambassadors to at least three teams from each volunteer. So, it was estimated that between two hundred and four thousands student participants were engaging with the promotion, which tended to have recycling attitudes and improve recycling behaviours. See table 4.19.

Due to the permission restrictions, this study only utilised one other type of medium to promote the project, which was university notice boards. However, LINE, student Facebook accounts, library boards and kitchen boards are applicable as innovative tools for promoting activities and raising the awareness, created by students.

For the research evaluation step, two hundred sets of a satisfaction survey after the conclusion of the recycling ambassador competition were collected and analysed. This task was not included in the three tasks for the responsibility of the volunteers', but they did deliver and collect the survey for the researcher.

It can be said that this study was carried out at CMU and other provinces by collecting both qualitative and quantitative data. A quota sampling technique was designed for the data collection for the first survey, but a convenience sampling technique was adopted for the data collection at the end of the project. For the interview method and the focus group method, purposive sampling and snowballing sampling were utilised to analyse the findings from CMU staff and CMU stakeholders.

The research planning for the data analysis was achieved by using excel and SPSS for the quantitative data analysis. At the same time, the thematic system was utilised to group the qualitative data and then present the findings by interpretation and explanation on how to promote recycling among students

Chapter 5: Research Findings

5.1. Introduction

Chapter 4 presented the research design, the procedures addressing the research questions and the research objectives. Moreover, it explained how to implement the ‘CMU London Recycling Project’ on the Facebook page to test the findings.

As a consequence, chapter 5 illustrates the results of the research design. Section 5.2 consists of the results from the Preparation and the Problem Identification Phase. Section 5.3 demonstrates the findings from the Research Planning and Research taking. Section 5.4 reveals the results of the Research Evaluation Phase. Finally, section 5.5 presents a summary of this chapter.

This study utilises a comparison between the five steps of action research (Problem identification, Action planning, Action taking, Evaluation, and Report learning) and the eleven steps of the application of social marketing strategies of Fourali (2016). Every chapter displays the reporting and learning steps, while the contributions demonstrate what the researcher ascertained from the actions implemented in this study.

5.2. The findings at ‘The Preparation and The Problem Identification Phases’

Section 5.2 consists of six sections, 5.2.1, to 5.2.6. presenting the results from the Volunteer Recruitment, the Student Questionnaire, the Semi-Structured Interviews of the students, CMU staff and other CMU stakeholders, and the results of the Residents’ Focus Group.

5.2.1. Volunteer Recruitment and Contributions

Volunteer Coding	Course/Faculty (21)	Target of volunteers (21-63)	Updated Codes	Gender	Actual Volunteers (18)
V011-V013	Humanities	1-3	-	-	0
V021-V023	Education	1-3	V021, V022, V023	1M, 2F	3
V031-V033	Fine Art	1-3	V031	1M	1
V041-V043	Social Sciences	1-3	V041, V042	2F	2
V051-V053	Science	1-3	V051	1M	1
V061-V063	Engineering	1-3	-	-	0
V071-V073	Medicine	1-3	-	-	0
V081-V083	Agriculture	1-3	-	-	0
V091-V093	Dentistry	1-3	-	-	0
V101-V103	Pharmacy	1-3	-	-	0
V111-V113	Associated Medical Sciences	1-3	V111, V112, V113	2M, 1F	3
V121-V123	Nursing	1-3	-	-	0
V131-V133	Aggro-industry	1-3	V131, V132, V133	1M, 2F	3
V141-V143	Veterinary Medicine	1-3	-	-	0
V151-V153	Business Administration	1-3	V151, V152	2F	2
V161-V163	Economics	1-3	-	-	0
V171-V173	Architecture	1-3	-	-	0
V181-V183	Mass Communication	1-3	V181	1F	1
V191-V193	Political Science and Public Administration	1-3	V191	1M	1
V201-V203	Law	1-3	V201	1M	1
V211-V213	Art, Media, and Technology	1-3	-		0
Total		21-63	-	8M, 10F	18

Table 5.1. The Number of Volunteers

Table 5.1 demonstrates that eighteen volunteers were invited to work on the recycling project. The election to utilise volunteers for this study was influenced by Cialdini et al. (1984), from ‘The door-in-the Face Technique in Reciprocal Concessions’. Eighteen students from ten faculties were selected as volunteers. Altogether there were three students from The Faculty of Education, one student from The Faculty of Fine Art, two students from The Faculty of Social Sciences, one student from The Faculty of Science, three students from The Faculty of Associated Medical Sciences, three students from The Faculty of Aggro-industry, two students from The Faculty of Business Administration, one student from The Faculty of Mass Communication, one student from The Faculty of Political Science and Public Administration, and one student from The Faculty of Law.

The volunteer task	Time	Goal	Rewards/Prizes	Results
1. Easy task	September 2017	The delivery of 20 sets of survey questionnaires per faculty	The Recycling T-shirt	All 18 volunteers achieved the goal
2. Medium task	October 2017	To invite 20 friends to engage with the Facebook activity	The Recycling Certificate as a university recycling volunteer	Seven volunteers from 3 faculties achieved the goal (V051,V111,V112,V113,V131,V132,V133)
3. Hard task	October-December 2017	To encourage students to participate in the Recycling Ambassador Competition at least 3 participants	The certificate of the volunteer winners Cash (£111/5,000b. per a winner)	Three volunteers achieved the goal (V051, V111, and V131)

Table 5.2: The Outcomes for the Volunteer Tasks

Examples of rewards	The feedback from students
<p>1. A T-shirt with a logo</p>  <p>Front</p> <p>Back</p>	<p>V051, V111, V131, and V132 commented that their friends loved the t-shirt logo on the front and that they felt comfortable with the Thai language and the baby elephant on the back of the t-shirt. Their friends projected that they would participate in the next activity in order to gain other rewards. Moreover, they commented that the t-shirts were suitable to wear during other activities and some even wore the t-shirts on their team holidays.</p>
<p>2. The Certificate</p> 	<p>Most of the volunteers said that the certificate was a functional tool that could potentially help them on their career path.</p>
<p>3. The Student fund award and the certificate</p> 	<p>All the winners said that they were delighted to receive the student fund award as it could help to support their other needs.</p>

Table 5.3: Examples of the Rewards and the Feedback

Based on the informal interviews and tasks, the volunteers delivered the survey forms to their roommates who were studying on different courses, and then returned the survey forms to the researcher. In total, 394 students from twenty-one faculties completed the questionnaire. Also, the volunteers provided useful feedback; such as their availability (V021, V022, V041, V051, and V131) and their exam schedule to avoid any scheduling issues and to ensure a sufficient number of students participated. Then, some volunteers (V051, V111, V131), and (V132) commented that their friends loved the t-shirt logo on the front and that they felt comfortable with the Thai language and the baby elephant on the back of the t-shirt. Their friends projected that they would participate in the next activity in

order to gain other rewards. The next useful feedback was that their friends participated in the first activity for, multiple reasons (*selecting three posts and sharing the posts to get some rewards such as key rings with London logos*). For example, seven volunteers from three faculties (V051, VO11 and VO13) enjoyed delivering the awards to their friends, they were happy, and their friends were happy. They told the researcher that their friends tried to win the first activity because it was easy to become one of the winners. The keyrings, which was one of the rewards, were used as their motorcycle key holder. Moreover, they commented that the t-shirts were suitable to wear during other activities and some even wore the t-shirts on their team holidays. Furthermore, most of the volunteers said that they were delighted to receive the student fund award as it could help to support their other needs. See table 5.3 above.

Also, some volunteers informed the researcher about the reasons why some students were not interested in becoming volunteers. According to informal conversations, some students had the intention to engage with the questionnaires, filling, delivering or collecting them; however, they did not want to have too much responsibility. Some students suggested that they only wanted to participate in compulsory university activities such as ‘volunteering’ to gain university credits or improve their university scores.

Furthermore, in December of 2017 once the ambassador competition ended the researcher allocated additional tasks to the volunteers without setting a fixed time frame such as quota sampling, setting targets and rewards for delivering and collecting the satisfaction survey. It was discovered that compared to the task with a fixed time frame and set goals, it took longer to be completed, and the principal respondents were from one faculty. The survey without a fixed time frame response rate was not as high as the rate from the easier task that included incentives.

At the evaluation phase, two hundred sets of the satisfaction survey were delivered, and one hundred and twenty-four sets were returned for data analysis. The response rate for the survey without a fixed time frame was 81% (124/200), compared to the response rate from the easier task which was 93.80% (394/420), (*the details are presented in the next section, results of the survey*). Cialdini et al. (1984), stated that giving incentives to students to finish tasks was a potent tool; however, this study discovered that incentives and their availability possibly influenced the task and the outcome

5.2.2. Student Questionnaire Survey and the Contributions to this Study

One of the research objectives is to investigate the backgrounds of the students, primarily their interests, lifestyle, and their perspectives for promoting recycling practices in the university (*mentioned in chapter 1: the research aims and chapter 3: the research design*). By investigating the background of the students, it can be determined if their lifestyle or their culture was a determining factor. The method of delivering the questionnaire to the students at CMU was via the student volunteers, and it was determined to be a successful method. Section 5.2.2.1 presents the response rates of the survey, the source, and discoveries made by the researcher. Section 5.2.2.2 explains in detail the results, including an analysis of why the delivery method was successful.

Student Questionnaire Results at the Problem Identification Phase

1. Gender

Gender	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 0 (Unspecified)	2	0.5	0.5	0.5
1 (Male)	143	36.3	36.3	36.8
2 (Female)	249	63.2	63.2	100.0
Total	394	100.0	100.0	

Table 5.4: Frequency of Genders

Table 5.4 demonstrates that three hundred and ninety-four university students at CMU (Chiang Mai University) were surveyed for two weeks, and the completed questionnaires were delivered and collected by volunteers from three campuses (*Main campus /Saun Sak campus; Saun Dok campus; Mae Hea campus*). There were slightly more females in the sample at a rate of sixty-three per cent approximately or 249 female students from a total of 394 students, while the number of male students was one hundred and forty-three or thirty-six per cent approximately. Also, two students did not specify their gender. See table 5.4 above.

2. Age

Age	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 0 (Unspecified)	1	.3	.3	.3
1 (< 18 y.)	1	.3	.3	.5
2 (18-21 y.)	295	74.9	74.9	75.4
3 (22-25 y.)	96	24.4	24.4	99.7
4 (>25 y.)	1	.3	.3	100.0
Total	394	100.0	100.0	

Table 5.5: Frequency of the Age of the Students

Table 5.5 demonstrates that the highest age range of the participants was between eighteen and twenty-one years old at a rate of 74.9 %. The second-highest student age range was at 24.4% or ninety-six students from a total of three hundred and ninety-four. The last three categories had one participant per group, which were the age ranges above twenty-five, under eighteen, and in the category of unspecified, representing a rate of 0.3 %. See Table 5.5 above.

3. Educational Level

Educational Level	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 0 (Unspecific)	6	1.5	1.5	1.5
1 (1 st year)	55	14.0	14.0	15.5
2 (2 rd year)	42	10.7	10.7	26.1
3 (3 rd year)	137	34.8	34.8	60.9
4 (4 th Year)	154	39.1	39.1	100.0
Total	394	100.0	100.0	

Table 5.6: Frequency of Educational Levels

Table 5.6 demonstrates that the highest number of participants was in the fourth-year student group at 39.1% or 154 students out of 394 students. The second-highest number of participants was in the third-year student group at 34.8% or one hundred and thirty-seven students. The third and fourth highest number of participants were from the first-year student group and the second-year student group at 14.0% and 10.7% or fifty-five students

and forty-two students, respectively. Six students did not identify their educational level, representing a rate of 1.5%. See table 5.6 above.

4. The Faculties or the Courses of the Students

Faculty	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 1	21	5.3	5.3	5.3
10	20	5.1	5.1	10.4
11	17	4.3	4.3	14.7
12	20	5.1	5.1	19.8
13	19	4.8	4.8	24.6
14	20	5.1	5.1	29.7
15	20	5.1	5.1	34.8
16	19	4.8	4.8	39.6
17	5	1.3	1.3	40.9
18	20	5.1	5.1	45.9
19	19	4.8	4.8	50.8
2	20	5.1	5.1	55.8
20	20	5.1	5.1	60.9
21	20	5.1	5.1	66.0
3	20	5.1	5.1	71.1
4	20	5.1	5.1	76.1
5	20	5.1	5.1	81.2
6	19	4.8	4.8	86.0
7	20	5.1	5.1	91.1
8	20	5.1	5.1	96.2
9	15	3.8	3.8	100.0
Total	394	100.0	100.0	

Table 5.7: Frequency of Faculties

(1= Humanities, 2= Education, 3= Fine Arts, 4= Social Sciences, 5= Science, 6= Engineering, 7= Medicine, 8= Agriculture, 9= Dentistry, 10= Pharmacy, 11= Associated Medical Sciences, 12= Nursing, 13= Argo-industry, 14= Veterinary Medicine, 15= Business Administration, 16= Economics, 17= Architecture, 18= Mass Communication, 19= Political Science and Public Administration, 20= Law, 21= Art, Media and Technology)

Table 5.7 demonstrates that the participants were from twenty-one faculties, with The Faculty of Humanities accounting for twenty-one students. There were twenty students from each of the Faculties of Education, Fine Arts, Social Sciences, Science, Medicine, Agriculture Pharmacy, Nursing, Veterinary, Medicine, Business Administration, Mass Communication, Law, and Art, Media and Technology. The faculties of Engineering, Argo-industry, Economics, Political Science and Public Administration accounted for nineteen participants each. While the faculties of Dentistry, Associated Medical Sciences, Architecture had seventeen, fifteen, and five students, respectively. See table 5.7 above.

5. Religion

Religion	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 0 (No religion)	1	.3	.3	.3
1 (Buddhism)	374	94.9	94.9	95.2
2 (Muslim)	6	1.5	1.5	96.7
3 (Christian)	11	2.8	2.8	99.5
4 (Others)	2	.5	.5	100.0
Total	394	100.0	100.0	

Table 5.8: The Frequency of the Types of Religion

Table 5.8 demonstrates that the dominant religion was Buddhism represented at 94.9% or three hundred and seventy-four students from three hundred and ninety-four. Christian, Muslim and others, are shown at eleven, six, and two students (2.8%, 1.5%, and 0.5%) respectively. Also, there was one student or 0.3% who did identify as having a religion. See table 5.8 above.

6. Location

The residential areas of the families of the students		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	1 (North, West)	314	79.7	79.7	79.7
	2 (North East)	15	3.8	3.8	83.5
	3 (Central, East)	48	12.2	12.2	95.7
	4 (South)	17	4.3	4.3	100.0
	Total	394	100.0	100.0	

Table 5.9: The Frequency of the Residential Areas of the Families of the Students

Table 5.9. demonstrates that the majority of participants came from the North and the West of Thailand at three hundred and fourteen students or 79.7%. Meanwhile, Central, East, South, and the North East of Thailand is represented at 12.2%, 4.3%, and 3.8% or forty-eight, seventeen, and fifteen students, respectively. See Table 5.9 above.

7. The Location (Municipality/Non-Municipality) of the Students' Families

The Location of the Students' Families		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	0 (Unspecified)	13	3.3	3.3	3.3
	1 (Municipality)	210	53.3	53.3	56.6
	2 (Non-municipality)	171	43.4	43.4	100.0
	Total	394	100.0	100.0	

Table 5.10: The Frequency of the Locations of the Students' Families

Table 5.10 demonstrates that the number of students' families that are located in a municipality was represented at two hundred and ten families or 53.3%. The number of students' families that are located in a non-municipality was represented at 43.3%. Also, there were thirteen participants or 3.3% who did not know or did not specify their families location. See table 5.10 above.

8. Type of Accommodation

Type of Accommodation	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 0 (Unspecified)	2	.5	.5	.5
1 (alone)	128	32.5	32.5	33.0
2 (with 1 student)	174	44.2	44.2	77.2
3 (with >1student)	53	13.5	13.5	90.6
4 (with family/ relatives)	37	9.4	9.4	100.0
Total	394	100.0	100.0	

Table 5.11: The Frequency of the Type of Accommodation

Table 5.11 demonstrates the number of participants that lived with one roommate was represented at 44.2% or one hundred and seventy-four out of three hundred and ninety-four participants. Living alone was second in the ranking represented at 32.5% or one hundred and twenty-eight students. Living with more than one roommate and living with their family or relatives was represented at 13.5% and 9.4%, respectively. Also, there were two students or 0.5% who did not specify the type of accommodation. See Table 5.11 above.

9. Students' Monthly Income or Spending

The frequency of the Students' Monthly Spending or Income	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 1 (<£66.67p)	19	4.8	4.8	4.8
2 (£66.67p-£111)	127	32.2	32.2	37.1
3 (>£111-£222)	188	47.7	47.7	84.8
4 (>£222)	60	15.2	15.2	100.0
Total	394	100.0	100.0	

Table 5.12. The Frequency of the Students' Monthly Spending or Income
 (1= under 3,000 b/£66.67, 2= 3,000-5,000 b./£66.67-£111.11, 3= >5,000- 10,000 b/£111.11-£222.22, 4= >10,000 b/£ 222.22) (Exchange rate 45 b.=£1)

Table 5.12 demonstrates that one hundred and eighty-eight students or 47.7% spent between £111.11 and £222.22 per month. One hundred and twenty-seven students or

32.2% spent between £66.67 and £111.11 per month. Sixty students or 15.2% spent over £222.22 per month. While the number of students that spent under £66.7 per month was represented at 4.8% or nineteen students, see table 5.12 above.

The significance of the findings to the contribution of this study is that questions 1-9 present that the information collected came from both males and females whose ages were between eighteen years old and twenty-one years old. They were mainly studying in CMU in the third and the fourth academic year. All respondents were studying undergrad courses, and the principal religion was Buddhism. Almost eighty per cent of participants previously lived in the North and the West regions of Thailand and were equally located in the municipality and non-municipality areas. At the time of being respondents, over seventy per cent of participants either lived alone or lived with one roommate, and they spent between sixty-six pounds to two hundred and twenty-two pounds per month.

There are two critical points identified by the survey, which are useful for this study. First, the findings represent the general population of CMU students. Second, the survey was helpful to comprehend the sample population. These facts were applied to the design of the recycling project. For example, the findings indicated that the activity on social media should be attractive for all genders.

Moreover, it should not only focus on Buddhism because religions were varied. Next, due to their diversity, the activity should not have any impact on the location of their family home or the authorities (*municipality or non-municipality areas*) at their family homes. Also, the social media recycling activity should make use of a word-of-mouth strategy, and it would have a higher success rate if each faculty or course competes with each other, even if they share similar backgrounds. Next, to encourage participants to engage with recycling activities effectively, the activity should be designed by themselves and their roommates. Moreover, to increase the number of participants, the amount of money offered as an incentive for participation should appear valuable, and it should be calculated according to their monthly spending.

The first part of the findings provides the socio-demographical information, whereas the next part provides their lifestyles or their interests on social media platforms which are the next critical factors implemented in the design of the recycling project.

Part 2: Student Lifestyle on Social Media

Questions 10-13 of the questionnaire demonstrate the students use and experience in using social media platforms. First, it provides information about how long they have been using social media platforms. Second, it identifies which social media platforms are the most popular. Finally, it identifies the types of electronic devices used to access social media platforms. This information is presented below in Tables 5.13-5.41.

10. Experience Using Social Media Platforms

Experience	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 1- less than 2 years	2	0.5	0.5	0.5
2-4 years	37	9.4	9.4	9.9
More than 4 years	355	90.1	90.1	100.0
Total	394	100.0	100.0	

Table 5.13: The Frequency of the Number of Years Experience Using Social Media Platforms

Table 5.13 demonstrates that 90.1% of participants had more than four years of experience using social media platforms. 9.4% of participants had between two years and three years of experience using social media platforms, and 0.5% of participants had less than two years of experience using social media platforms. See table 5.13 above.

11. Types of Devices Utilised to Access Social Media Platforms

Cell Phone	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid Not used	4	1.0	1.0	1.0
Used	390	99.0	99.0	100.0
Total	394	100.0	100.0	

Table 5.14. The Frequency and Percentage of Social Media Use via a Cell Phone

99% of the students accessed social media platforms via cell phone, while only 1% or four out of three hundred and ninety-four students did not use a cell phone to access social media platforms via cell phone. See table 5.14 above.

I-Pad/Tablet	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid Not Used	287	72.8	72.8	72.8
Used	107	27.2	27.2	100.0
Total	394	100.0	100.0	

Table 5.15 The Frequency and Percentage of Social Media Use via an I-pad/Tablet

Table 5.15 demonstrates that 72.8% of students accessed social media platforms via an I-Pad/ Tablet while, 27.2% did not access social media platforms via an I-Pad/Tablet. See table 5.15 above.

Notebook/Laptop Computer		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	75	19.0	19.0	19.0
	Used	319	81.0	81.0	100.0
Total		394	100.0	100.0	

Table 5.16: The Frequency and Percentage of Social Media Use via a Notebook/Laptop Computer

Table 5.16 demonstrates that 81.0% of students accessed social media platforms via a notebook/laptop computer, while and 19% did not access social media platforms via a notebook/laptop computer. See table 5.16 above.

Desktop Computer / Other		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	199	50.5	50.5	50.5
	Used	195	49.5	49.5	100.0
Total		394	100.0	100.0	

Table 5.17: The Frequency and Percentage of Social Media Use via a Desktop Computer / Other

Table 5.17 demonstrates that one hundred and ninety-five students or 49.5% accessed social media platforms via a desktop computer, while one hundred and ninety-nine students or 50.5% did not use a desktop computer to access social media platforms. See table5.17 above.

According to the findings, the primary device used to access social media platforms was a cell phone at three hundred and nineteen students. Second, in the ranking was a computer at one hundred and ninety-five students, and third was an I-Pad/ Tablet at one hundred and seven students.

12. Types of Social Media Platforms

Facebook		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	4	1.0	1.0	1.0
	Used	390	99.0	99.0	100.0
Total		394	100.0	100.0	

Table 5.18: The Frequency of the Use of Facebook

Table 5.18 demonstrates that 99% of students used Facebook, while four students or 1% did not use Facebook. See Table 5.18 above.

Twitter		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	160	40.6	40.6	40.6
	Used	234	59.4	59.4	100.0
Total		394	100.0	100.0	

Table 5.19: The Frequency of the Use of Twitter

Table 5.19 demonstrates that 59.4% of students used Twitter, while the one hundred and sixty students or 40.6% did not use Twitter. See Table 5.19 above.

Instagram		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	50	12.7	12.7	12.7
	Used	344	87.3	87.3	100.0
Total		394	100.0	100.0	

Table 5.20: The Frequency of the Use of Instagram

Table 5.20 demonstrates that 87.3% of students used Instagram, while fifty students or 12.7% did not use Instagram. See Table 5.20 above.

YouTube		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	22	5.6	5.6	5.6
	Used	372	94.4	94.4	100.0
Total		394	100.0	100.0	

Table 5.21: The Frequency of the Use of YouTube

Table 5.21 demonstrates that there was a significant difference between the number of students that used YouTube compared to those that did not use Youtube at 94.4% and 5.6% respectively. See Table 5.21 above.

Google+		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	186	47.2	47.2	47.2
	Used	208	52.8	52.8	100.0
Total		394	100.0	100.0	

Table 5.22: The Frequency of the Use of Google+

Table 5.22 demonstrates that 52.8% of students used Google+, while 47.2% of students did not use Google+. See Table 5.22 above.

WhatsApp		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	359	91.1	91.1	91.1
	Used	35	8.9	8.9	100.0
Total		394	100.0	100.0	

Table 5.23: The Frequency of the Use of WhatsApp

Table 5.23 demonstrates that 91.1% of students used WhatsApp, while 8.9% did not use WhatsApp. See Table 5.23 above.

LINE		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	9	2.3	2.3	2.3
	Used	385	97.7	97.7	100.0
Total		394	100.0	100.0	

Table 5.24. The Frequency of the Use of LINE

Table 5.24 demonstrates that three hundred and eighty-five students or 97.7% used LINE, while nine students or 2.3% did not use LINE. See table 5.24 above.

Skype		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	Not Used	327	83.0	83.0	83.0
	Used	67	17.0	17.0	100.0
Total		394	100.0	100.0	

Table 5.25: The Frequency of the Use of Skype

Table 5.25 demonstrates that sixty-seven students or 17% used Skype, while three hundred and twenty-seven students or 83% did not use Skype. See table 5.25 above.

Other Social Media Platforms	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid Not Used	388	98.5	98.5	98.5
Used (KaKao, QQ)	6	1.5	1.5	100.0
Total	394	100.0	100.0	

Table 5.26 The Frequency of the Use of Other Social Media Platforms

- Table 5.26 demonstrates that there were two other social media platforms used by a small percentage of students. The platforms were KaKao and QQ. Six students or 1.5% used these other social media platforms, while three hundred and eighty-eight students or 98.5% did not use them. See table 5.26 above.

Social Media Platform Types and the Frequency of Use	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid Unidentified	18	4.6	4.6	4.6
Facebook	197	50.0	50.0	54.6
Twitter	36	9.1	9.1	63.7
Instagram	41	10.4	10.4	74.1
YouTube	39	9.9	9.9	84.0
Google+	4	1.0	1.0	85.0
WhatsApp	1	.3	.3	85.3
Line	57	14.5	14.5	99.7
Other	1	.3	.3	100.0
Total	394	100.0	100.0	

Table 5.27: Social Media Platform Types and the Frequency of Use

Table 5.27 demonstrates that Facebook was the primary social media platform used by students at 50%. The second most used social media platform was LINE at 14.5%. Instagram, YouTube, Twitter, Google+, WhatsApp, and Others were used at 10.4%, 9.9%, 9.1%, 1.0%, 0.3% and 0.3% respectively. While 4.6% of students did not indicate the social media platform that they used. See Table 5.27 above.

The significance of the findings to the contribution of this study is that 90% of participants had four years or more experience using social media platforms, and they accessed social media platforms via their cell phones almost 100% of the time. Accessing social media platforms via a computer or an I-Pad/Tablet was utilised as a second and third option,

respectively. Most of the students used Facebook, LINE, Instagram and YouTube. Facebook was identified as the most popular social media platform at a rate of 50% of participants, followed by LINE at a rate of 14.5%. While Instagram, YouTube and Twitter were used at a rate of 10% or less.

According to the findings, it can be determined that social media use has become part of routine life for the students and that a social media platform should be implemented to conduct the recycling project. Also, due to Facebook having the highest percentage of users, it can be determined that Facebook should be the social media platform utilised as a communication channel and that it could be a compelling and innovative marketing tool. Facebook has a cell phone app, and most of the students use their cell phones to access social media. Lastly, the recycling activity on Facebook could also be adapted and applied via LINE, Instagram, YouTube or Twitter.

Part 3: The Students Use of Facebook

Part 3 demonstrates the student’s lifestyle on Facebook determined from questions 14-20 in the questionnaire. First, the frequency of Facebook usage followed by the duration and finally, the purpose and other reasons for using Facebook will be demonstrated below.

14. The Frequency of Facebook Use Per Week

Frequency of Facebook Use Per week	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid 1 day	8	2.0	2.0	2.0
2-3 day	13	3.3	3.3	5.3
4-6 day	24	6.1	6.1	11.4
everyday	350	88.6	88.6	100.0
Total	395	100.0	100.0	

Table 5.28: The Frequency of Facebook Use Per Week

Table 5.28 demonstrates that Three hundred and fifty students or 88.6% used Facebook every day of the week, 6.1% used Facebook between four to six days per week, while 2% used Facebook one day per week. See table 5.28 above.

15. The Frequency of Facebook Use Per Day

Times for the use of Facebook Per Day		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	1-2 times	38	9.6	9.7	9.7
	3-4 times	47	11.9	12.0	21.6
	5-6 times	78	19.7	19.8	41.5
	More than 6 times or all time	230	58.2	58.5	100.0
	Total	393	99.5	100.0	
Missing	0	2	.5		
Total		395	100.0		

Table 5.29: The frequency of Facebook Use Per Day

Table 5.29 demonstrates that two hundred and thirty students or 58.2% used Facebook more than six times per day. Seventy-eight students or 19.7% used Facebook between five to six times daily. Forty-seven students or 11.9% used Facebook between three to four times daily. Thirty-eight students or 9.6% used Facebook between one to two times daily, while two students or 0.5% did not identify their daily Facebook usage. See Table 5.29 above.

16. The Frequency of The Time Spent on Facebook

The Time of Day of Facebook usage		Responses		Per cent of Cases
		N	Per cent	
Time	Early morning	211	21.1%	53.8%
	During classes	172	17.2%	43.9%
	Lunch time	252	25.3%	64.3%
	After school till bedtime	363	36.4%	92.6%
Total		998	100.0%	254.6%

Table 5.30: The Frequency of The Time Spent on Facebook
(allowed to select more than one answer)

Table 5.30 demonstrates that students used Facebook throughout the day. The most frequent time is after school until bedtime at three hundred sixty-three students or 36.4%. The time of day with the least activity on Facebook is during class time, with one hundred seventy-two students or 17.2%. See Table 5.30 above.

17. The Duration of Facebook Usage Per Day

Duration of Facebook Usage		Frequency	Per cent	Valid Per cent	Cumulative Per cent
Valid	less than 1 hr.	69	17.5	17.6	17.6
	1-2 hrs.	93	23.5	23.7	41.3
	2-3 hrs.	68	17.2	17.3	58.7
	More than 3 hrs.	162	41.0	41.3	100.0
	Total	392	99.2	100.0	
Missing		3	.8		
Total		395	100.0		

Table 5.31: The Frequency of the Duration of Facebook Usage Per Day

Table 5.31 demonstrates that one hundred sixty-two students or 41% use Facebook for more than 3 hours per day. Sixty-eight students or 17.2 use Facebook for between two to three hours per day. Ninety-three students or 23.5% use Facebook between one to two hours per day, and sixty-nine students or 17.5% use Facebook for less than one hour per day. While three students or 0.8% did not give any information about their daily Facebook use. See Table 5.31 above.

18. The purpose of Facebook Usage

Purpose	Responses		Per cent of Cases
	N	Per cent	
Post a picture or message	219	16.1%	55.4%
Check in	131	9.6%	33.2%
Play games	75	5.5%	19.0%
Follow news	310	22.8%	78.5%
Contact friends	331	24.4%	83.8%
Used for public relations	99	7.3%	25.1%
Purchase goods and services	89	6.6%	22.5%
Find new friends	50	3.7%	12.7%
It is popular/ a new trend	30	2.2%	7.6%
Other	24	1.8%	6.1%
Total	1358	100.0%	343.8%

Table 5.32: The Frequency of the Purposes of Facebook Usage
(allowed to select more than one answer)

Table 5.32 demonstrates that the students' primary purpose for using Facebook is for contacting their friends at 24.4% or for reading the news at 22.8%. However, there was another purpose which was posting a picture or a message accounting for 16.1%. Checking into places represents 9.6%, followed by public relations, purchasing goods and services, and playing games at 7.3%, 6.6%, and 5.5% respectively. While finding new friends, following a new trend, or other purposes is at 3.7%, 2.1%, and 1.8% accordingly. See Table 5.32 above.

19. The Benefits of Facebook Usage

Frequency of the Benefits		Responses		Per cent of Cases
		N	Per cent	
Benefits/ Advantages	Education Support	35	7.0%	9.4%
	Following the latest news	154	30.7%	41.5%
	Exploring new social network communities	25	5.0%	6.7%
	Making new social network friends	22	4.4%	5.9%
	Convenient when communicating with friends or others	227	45.2%	61.2%
	Conducting online business	5	1.0%	1.3%
	Entertainment	34	6.8%	9.2%
Total		502	100.0%	135.3%

Table 5.33:: The Frequency of The Benefits of Using Facebook
(allowed to select more than one answer)

Table 5.33 demonstrates that the highest percentage of respondents, 45.2% thought that Facebook was beneficial because it was convenient when communicating with friends or other people. Second in the ranking, is for following the latest news, accounting for 30.7%. 7% and 6.8%. of the respondents thought that Facebook was beneficial for education support and entertainment, respectively While, making new friends, meeting new communities, and conducting online business accounted for 5.0%, 4.4% and 1.0% respectively. See Table 5.33 above.

20. The Disadvantages of Facebook Usage

Types of Disadvantages of Facebook Usage		Responses		Per cent of Cases
		N	Per cent	
Disadvantages	Risky information sharing	52	12.7%	15.5%
	Cyberbullying	22	5.4%	6.5%
	Addiction	141	34.3%	42.0%
	Less social interaction in real life	25	6.1%	7.4%
	Less privacy	63	15.3%	18.8%
	Unwanted/ False information/ distraction	108	26.3%	32.1%
Total		411	100.0%	122.3%

Table 5.34: The Frequency of the Types of Disadvantages of Facebook Usage

Despite Facebook having many benefits, the respondents identified multiple disadvantages to the use of Facebook. Table 5.34 demonstrates that the highest percentage of students at 34.3% identified Facebook addiction as a disadvantage. Distraction from unwanted information sharing is second in the ranking at 26.3%. Other disadvantages include less privacy at 15.3%, risky information sharing at 12.7%, less social interaction in real life at 6.1%, and cyberbullying at 5.4%. See Table 5.34 above.

Part 4: Qualitative Data

Group	%	Students Comments from Question 19- What are the Benefits of Using Facebook?
1	45.2	<p>Communicating with Friends or Others Easily, Conveniently, and/or speedily</p> <ul style="list-style-type: none"> • ‘It is very easy to talk to friends via Facebook because everybody has their own Facebook accounts’ (S0101) • ‘Facebook is for communicating among friends or groups’ (S0102); • ‘Using Facebook is convenient for chatting with friends’ (S0103); • ‘A use of Facebook is easy and convenient’ (S0212); • ‘It is good for communication, and it is the place where people can express their opinions’ (S0218); • ‘To talk to friends at ease’ (S0304); • ‘Facebook is a place which everybody uses, so it makes communication easier with one App (Facebook Application)’ (S0307); • ‘I can talk to my friends easily on Facebook’ (S0614); • ‘Facebook is a channel making people contact each other easier’ (S0702); • ‘Facebook makes communication easier because people can use it instead of phoning’ (SS0806);

		<ul style="list-style-type: none"> • ‘It is a network using for contacting people who are distance’ (S0809); • ‘Using Facebook is easy and free of charge’ (S1618); • ‘It is accessible, and the system is well designed for all ages’ (S1813); • ‘It is the online network which connects people around the world and gives them more convenience’ (S1814); • ‘To contact with friends and family easily’ (S2015); • ‘To talk and send my files to friends easily’ (S2104).
2	30.7	<p>Following the Latest News</p> <ul style="list-style-type: none"> • Facebook is good for updating the news because it is faster than TV’ (S0502); • ‘Using Facebook is good for updating the news of my friends’ (S0509); • ‘It makes me do not miss the news’ (S0703); • ‘There is always updating news’ (S1004); • ‘To update news without watching TV’ (S1017); • ‘It is good for updating news speedy’ (S1601); • ‘It is good for updating news and replacing newspapers/press’ (S1819); • ‘It can update news and provide information’ (S2004); • ‘It is a source for searching news of the world’ (S2014).
3	7.0	<p>Education Support</p> <ul style="list-style-type: none"> • ‘It helps me to talk to my friends for our homework’ (S1107); • ‘It is good because it uses to follow coursework and exams’ (S1111); • ‘To talk within groups about homework’ (S1815); • ‘To send my files and photos for my study/ multipurpose’ (S1802); • ‘It can send my files to everywhere’ (S1904); • ‘It is good for sending my homework, and it is for organising my group work’ (S2103); • ‘It is good for sending CV and photos for some job applications’ (S2104).
4	6.8	<p>Entertainment</p> <ul style="list-style-type: none"> • ‘It is good for playing games’ (S0405); • ‘For entertaining’ (S0420); • ‘To make the free time more value’ (S0610); • ‘Entertainment’ (S0611); • ‘To search attractive females’ (S0612); • ‘It makes me feel relaxed’ (S1102); • ‘There are some interesting Facebook pages which serve my interests’ (S1816); • ‘Fun’ (S1907).

5	5	Making New Social Network Friends <ul style="list-style-type: none"> • ‘It can build social network friends easily’ (S0320) • ‘To make more new friends’ (S1911)
6	4.3	Exploring New Social Network Friends <ul style="list-style-type: none"> • ‘To open opportunities for making new friends’ (S1109)
7	1	Conducting Online Business <ul style="list-style-type: none"> • ‘It is good for online business’ (S0316).
Total	100	100% = 141 respondent (or 34.3 % of 411 respondents)

Table 5.35: Students Comments from Question 19- What are the Benefits of Using Facebook?

Table 3.35 demonstrates the student's answers to question 19- What are the Benefits of Using Facebook? In the form of original sentences and categorised into seven groups. See Table 3.35 above.

- **Group 1 (45.2%)- Communicating with Friends or Others Easily, Conveniently, and/or Speedily**

45.2% of students identified the primary benefit of using Facebook as ‘Communicating with Friends or Others Easily, Conveniently, and/or speedily’. See Table 5.35 above.

- **Group 2 (30.7%)- Following the Latest News**

30.7% of students identified the primary benefit of using Facebook as ‘Following the Latest News’. See Table 5.35 above.

- **Group 3 (7.0%)- Education Support**

7% of students identified the primary benefit of using Facebook as ‘Education Support’. See Table 5.35 above.

- **Group 4 (6.8%)- Entertainment**

6.8% of students identified the primary benefit of using Facebook as ‘Entertainment’. See Table 5.35 above.

- **Group 5 and group 6 - Making New Social Network Friends (5.0%) and Exploring New Social Network Communities (4.3%)**

5.0% of students identified the primary benefit of using Facebook as ‘Making New Social Network Friends’, while 4.3% of students identified the primary benefit of using Facebook as ‘Exploring New Social Network Communities’. See Table 5.35 above.

- **Group 7 (1%)- Conducting Online Business**

1% of students identified the primary benefit of using Facebook as ‘Conducting Online Business’. See Table 5.35 above.

Table 3.36 demonstrates the students’ answers to question 20-*What the Negative Aspects of using Facebook are?* In the form of original sentences and categorised into six groups. See Table 3.36 below.

Group	%	Students Comments from Question 20-What the Negative Aspects of using Facebook?
1	34.3	<p>Addiction</p> <ul style="list-style-type: none"> • ‘It is an addiction because of playing games’ (0103); • ‘It wastes people time such as work or study time (when they are addicted)’ (0302); • ‘Students may interfere with their study time when they are often on Facebook’ (0404); • ‘It makes people too much addiction’ (0501); • ‘People spend time too much on it, so they do not want to do anything’ (0612); • ‘It is addictive and wastes time’ (0702); • ‘It makes people addicted and spend time too much on it’ (0711); • ‘It is tough not to use it, and it wastes time’ (1008).
2	26.3	<p>Unwanted/ False Information Distraction</p> <ul style="list-style-type: none"> • ‘There are spreading violence and unaccepted sexual behaviours without censoring’ (0102); • ‘Sometimes, it uploads too much advertisement’ (0209); • ‘It inserts advertisement that makes me feel upset’ (0712); • ‘It often spreads false information which creates misunderstanding among massive people’ (0713);

		<ul style="list-style-type: none"> • ‘It shows sexual harassment posts’ (0715); • ‘It can build false information easily’ (1001); • ‘It contains too much false information without any filtration’ (1006).
3	15.31	Less Privacy <ul style="list-style-type: none"> • ‘There is less privacy’ (0111); • ‘There is no privacy (0220); • ‘It is for publicity and not privacy’ (0819).
4	12.7	Risky Information Sharing <ul style="list-style-type: none"> • ‘It is risky for approaching people’s private information’ (0112); • ‘It may be a fraud when people share their information too much’ (0320); • ‘When people show their lives to strangers, they may face several frauds’ (0511); • ‘There are online hackers, so Facebook users may be lost their property if they are less beware of it’ (0710).
5	6.1	Less Social Interaction in Real Life <ul style="list-style-type: none"> • ‘It makes people pay attention to other people in the social world rather than people in reality’ (0505); • ‘People frequently talk on Facebook, and then they less meet or talk in their real lives’ (0801).
6	5.4	Cyberbullying <ul style="list-style-type: none"> • ‘Everybody can post everything without thinking, and it causes some problems with people lives’ (0104). • ‘There are some pages destroying people reputations’ (0915).
Total		

Table 5.36: Students Comments from Question 20-What the Negative Aspects of using Facebook?

Group 1: Addiction(34.3%)

34.3% of students identified the primary negative aspect of using Facebook as ‘Addiction’. See Table 3.36 above.

Group 2: Unwanted/ False Information Distraction (26.3%)

26.3% of students identified the primary negative aspect of using Facebook as ‘Unwanted/ False Information Distraction’. See Table 3.36 above.

Group 3: Less Privacy (15.31%)

15.31% of students identified the primary negative aspect of using Facebook as ‘Less Privacy’. See Table 3.36 above.

Group 4: Risky Information Sharing (12.7%)

12.7% of students identified the primary negative aspect of using Facebook as ‘Risky Information Sharing’. See examples such as participants no.0710 and no.0511 in Table 3.36 above.

Group 5: Less Social Interaction in Real Life (6.1%) and group 6: Cyberbullying (5.4%)

6.1% of students identified the primary negative aspect of using Facebook as ‘Less Social Interaction in Real Life’, while 5.4% of students identified the primary negative aspect of using Facebook as ‘Cyberbullying’. See examples such as no.0801 and no.0915 in Table 3.36 above.

The significance of the findings from part 1 and part 2 to the contribution of this study is that it demonstrates that students use Facebook in their daily lives, and with a high tendency to use Facebook for prolonged periods. Part 3 demonstrates that students are addicted to Facebook, with some students using it for more than three hours per day. Communicating with friends is identified as the main primary purpose for using Facebook. Also, due to the in-depth nature of this study, the central primary negative aspect of Facebook Use is identified as addiction.

Findings from previous studies and existing statistics show some similarities and some differences. According to the study, ‘The Study of Teenagers’ Behaviours in Using Social Networking Sites (SNSs) in Thailand: A Case study of Facebook’ from Kongrach (2011), it concluded that 400 students were addicted to Facebook for multiple reasons, such as photo and video sharing, searching for friends, sending messages, playing games, expressing their opinions, and sharing their likelihood. Similarly, this study significantly demonstrated that participants used Facebook for contacting friends, following the news, posting pictures or messages. See Table 5.37 below.

Comparison of Findings in Thailand	The results from a previous study (in 2011)	The results from this study (2017)
No. of participants	400	394
Educational level	Undergrads and above	Undergrads
ages	19-21	18-21 (74.9%)
Experienced on Facebook	One year	More than four years (90.1%)

Frequency of the use per week	1-5 times weekly	everyday
No. of hours daily	1-3 hours.	1-3 hours (40.7%) Over 3 hours (41.0%)

Table 5.37: The comparison of the research findings in Thailand in 2011 and the findings from this study in 2017.
Source: Adapted from Kongrach (2011)

However, the participants from the previous study used Facebook for 1-3 hours daily and had one year worth of using a Facebook account. In this study, the addiction becomes profoundly significant because the participants used Facebook for 1-4 hours daily at 40.7 %, and 41% used it over 4 hours daily. Also, they had experience using a Facebook account for over four years See Table 5.37 above.

The statistics on Facebook usage in Thailand	No. of users in 2011 (millions)	No. of users in 2013 (millions)	No. of users in 2015 (millions)	No. of users in 2017 (millions)
Source: Zocial Inc. (2011)	13.27			
Source: Zocial Inc. (2013)		18		
Source: Bangkok Post (2018)			37	
Source: Bangkok Post (2018)				49

Table5.38: The comparison of the statistics on Facebook usage in Thailand every two years, from 2011 until 2017.

This study references the statistics on Facebook usage in 2011 in Chapter 2. In 2011 Thailand had 13.27 million Facebook users, (Zocial Inc, 2011). However, the number of Facebook users dramatically increases in 2015 and 2017 at 37 and 49 million, respectively (Zocial Inc, 2013 and Bangkok Post, 2018). This study was, therefore, this study was conducted during a period of a dramatic increase in Facebook usage and Facebook addiction. The number of users in 2017 is almost four-fold the number of users in 2011 (Bangkok Post, 2018). See Table 5.38 above.

Therefore it can be concluded that Facebook is the primary tool to be adopted in the process of this study and will likely have a high engagement rate amongst students. However, conducting the process of this study on Facebook should be combined with students' purpose for using Facebook in the first place.

The recommendations, process and the implementation of the recycling activity on Facebook is explored in the next section of this study part 5.

Part 5: Recommendations, Process and the Implementation of the Recycling Activity on Facebook

Questions 21-28 in the questionnaire explored how to use Facebook to promote recycling effectively. Students' opinions on how to use Facebook to promote recycling in their university are demonstrated by a scoring system. The scoring system is 2; -1; 0; +1; +2 representing 'strongly disagree', 'disagree', 'I don't know', 'agree', 'strongly agree' accordingly.

The researcher then converted the scoring system for questions 21-28 to 0.01 to 5.00 instead of -2 to +2. See table 5.39 below.

The Range of the Scores

Strongly agree	4.51-5.00
Agree	4.50-3.51
Do not know	3.50-2.51
Disagree	1.51- 2.50
Strongly disagree	0.01-1.51

Table 5.39: Students Opinion Scores from questions 21-28

Furthermore, it has two parts, rating the score of agreement or disagreement and providing their opinions by filling in the gap. They are demonstrated by manual grouping and in a group of tables. Table 5.40 below demonstrates the answers provided for questions 21-25.

1. Can Facebook deliver knowledge and entertainment?	0	1-	2-	2+	1+
2. Can we exchange our opinions and feelings via Facebook?	2+	1+	0	1-	2-
3. Can Facebook change people thought and behaviour?	2+	1+	0	1-	2-
4. Is Facebook beneficial for delivering messages between university students , such as student news and student activities?	-2+	1+	0	1-	2
5. Is Facebook useful for encouraging students to start doing some activities? such as promoting students to do recycling in a university?	2+	1+	0	1-	2-

The scores meaning: (-2) =Strongly disagree, (-1) =Disagree, (0) =Don't know, (+1) = Agree, (+2) = Strongly agree.

Table 5.40: Answers Provided for Questions 21-25

Statistics/Student rating on agreement or disagreement to use Facebook for promoting student activities, such as recycling.	N		Mean	Std. Deviation
	Valid	Missing		
1. Facebook can deliver knowledge and entertainment.	383	12	4.38	.746
2. We can exchange our opinions and feelings via Facebook	382	13	4.33	.706
3. Facebook can change people thought and behaviour	382	13	3.85	.975
4. Facebook is beneficial for delivering messages between university students such as student news and student activities	382	13	4.45	.718
5. Facebook is useful for encouraging students to start doing some activities such as promoting students to do recycling in a university	382	13	3.85	.941
Total	395	0	4.0359	.92633

Table 5.41: Statistics/Student rating on agreement or disagreement to use Facebook for promoting student activities, such as recycling.

Table 5.41 demonstrates that the overall students' opinion score fell into the category of 'Agree' (score 4.50-3.51), for promoting recycling activities via Facebook, while also providing both entertainment and knowledge. Also, it demonstrates that promoting recycling activities via Facebook is useful for exchanging ideas and feelings among the users, changing attitudes and behaviours, promoting student activities, for encouraging students to become interested in activities and it is a useful tool for public relations. For example, the statistics demonstrate that three hundred and eighty-two of the participants agreed that Facebook could be a useful tool for promoting recycling showing the mean score at the top of the group at 4.45. They also expressed that using Facebook can provide both entertainment and knowledge at the same time, and it can help when exchanging ideas and expressing feelings which accounted for 4.38 and 4.33, respectively. Moreover, they agreed that using Facebook can change their attitudes and behaviours on recycling issues at 3.85. See table 5.41 above.

Questions 26-33 of the survey demonstrate the students' perspectives on the types of communication tools that are powerful and effective for promoting recycling, and a blank area for students' to further elaborate on their perspective was provided. The questions were 'selection and filling the gaps', and are grouped and presented in table 5.42 below.

Frequency of the Communication Channels for Promoting Recycling	Responses		Per cent of Cases
	N	Per cent	
Posters on university buildings' and student accommodation's boards	182	23.0%	50.4%
University Websites	64	8.1%	17.7%
Facebook	249	31.4%	69.0%
Other social Medias	135	17.0%	37.4%
Recycling clubs	66	8.3%	18.3%
Recycling volunteers and Recycling ambassadors	84	10.6%	23.3%
Others (<i>See Below</i>)	13	1.6%	3.6%
Total	793	100.0%	219.7%

**Others = increasing bins, placing recycling signposts near the bins, volunteers stand near recycling bins, exchanging recycling practice for some credits or a score, exchanging recyclable items with money at the university, providing a new module of recycling and delivering recycling flyers.*

Table 5.42: The Frequency of the Possible Channels for Recycling Promotion
(allowed to select more than one answer)

Table 5.42 demonstrates students' opinions on the various channels for promoting recycling, such as via university websites, social media, student volunteers, student ambassadors, student clubs, placing posters at university buildings or the student accommodation and other means. The first, the second, and the third most powerful channels were Facebook, Posters on the University and Accommodation Boards, and Other Social Media represented at 31.4%, 23.0%, and 17.0%, respectively. See Table 5.42 above. There were 788 comments for why the most powerful channel was Facebook and 193 comments for why Posters on the University and Accommodation Boards could be a useful tool. They agreed their selections were accessible for public relations, delivering messages rapidly and also for ease of access shown at 29.7% and 46.6% respectively. Facebook was identified as exciting and popular amongst the target audience at 29.3%, and that students' used Facebook frequently at 22.1%.

The qualitative data from the questionnaire is presented in the Recommendation section of this study. It demonstrates the reasons why students' believe that Facebook or other online sites would be a powerful marketing tool to promote recycling activities. The students' comments are presented using 'The Thematic Method' and are presented in six groups.

73.3 per cent of respondents believed that they preferred using Facebook and Posters on University Boards as a marketing tool to promote recycling activities.

Group	%	Suitable Marketing Channels for Promoting Recycling Activities and Examples of Respondents' Comments
1	31.4	<p>Facebook is suitable for promoting recycling activities</p> <ul style="list-style-type: none"> • 'Facebook is interesting and good for sharing when activities or projects are running'. (S1206) • 'Facebook is accessible and shareable' (S1217). • 'Everyone can see Facebook content all the times' (S1302). • 'It directly communicates to the right targets' (S1401). • 'Most students use social media, in particular, Facebook to update news' (S1618). • 'It is the most popular' (S1911).
2	23.0	<p>Posters on the university boards</p> <ul style="list-style-type: none"> • 'Students easily follow recycling issues on boards without any access to social media' (S0502). • 'It can be seen frequently' (S0501). • 'It mostly is seen by many people who walk pass by the boards' (S1502). • 'Because it is a place where students walk pass by the most' (S1804). • 'It is a real place where can show real practice immediately' (S1812).
3	18.9	<p>Student volunteers, student ambassadors and student clubs (10.6%+8.3%)</p> <ul style="list-style-type: none"> • 'To use people such as volunteers and ambassadors is interesting and fun' (S1111) • 'Using people, in particular students, to promote recycling is good because it is good for people who have the same goal and it is easy to achieve it' (S0509) • 'Recycling club members are good for leading other students to engage with recycling activities' (S1102). • 'Students can create student engagement' (S1412). • 'Students will follow student leaders' (S1218). • 'Student club members can invite more students to participate in' (S1615). • 'Students can have physical contact with recycling club members who have a strong commitment, but it may cause high budget' (S1807). • 'Students are the best motivators, and they can encourage their friends to do something straight away' (S2004). • 'Student volunteers and student ambassadors can provide understandable information to students' (S1404); • 'Student leaders can build up good attitudes to students' (S1412);

	<ul style="list-style-type: none"> • ‘Using student volunteers is good for students who do not know how to do recycling’ (S1615); • ‘Student ambassadors are student representatives who are better for underlining the important points’ (S1702); • ‘Student volunteers and student ambassadors are modal of students, and they can build up a good attitude for recycling’ (S2005); • ‘Using both students ambassadors and volunteers is good because it is accessible’ (S2019); • ‘It will be good because volunteers and ambassadors will spread a variety of information which expected that should much greater than information via internet’ (S2104); • ‘Student volunteer and ambassadors can approach students easily’ (S1220); • ‘It is excellent because the student ambassador and volunteers are good for helping other students and better give some instructions’ (S1807). • ‘A new recycling club is good for meeting new friends’ (1302); • ‘Participating in a new recycling club is an opportunity to meet new friends’ (1415); • ‘A new recycling club is interesting in particular doing some activities with new friends’ (1505). • ‘Student clubs are good to promote recycling because it is a real organisation, which is realistic, opposing online promotion’ (S1608). • ‘To use a club to promote recycling is good because it will have original recycling club members who are responsible for specific duty’ (S2019). • ‘Using students ambassador and student volunteers are good to make a brainstorm, and it is also good for innovative ideas’ (S1216). • ‘To set up interesting activities and combine with good public relation, such as recycling ambassadors, can make students interested in’ (S1611). • ‘Recycling ambassador’s technique is one way of encouragement, and it does not force students to do activities, but students are free and happy to join them’ (S0209); • ‘Young people feel bored when they are told to do something by adults; however, they accept student leaders, especially motivating them for a positive attitude’ (S1108); • ‘Student leaders are inspirational for other students’ (S0210); • ‘To use students to tell students should give a better outcome rather than the outcome from students who be told by lecturers’ (S1614); • ‘Friends tell friends and should make much better access, and it is also better than general announcements’ (S1802); • ‘Friends easily invite friends to do something’ (S1816);
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		<ul style="list-style-type: none"> • ‘Students lead students successfully because they are in the same generation and understand each other easily’ (S0103). • ‘It is a recommendation from one person to one person, which makes followers feel they are important’ (S0812). • ‘To begin with, one student is at least better than nothing, then it will be increasing to 2, 3, 4, and so on’ (S0505).
4	17	<p>Other social media (YouTube and Instagram)</p> <ul style="list-style-type: none"> • ‘Other social media such as YouTube can post a video to convey messages interestingly’ (S1618). • ‘YouTube is good for making interesting stories and promote recycling clearer and easier’ (S2014). • ‘Participating in recycling activities is good for reminding students to be followed and make students apply it for real practice’ (S1504).
5	8.1	<p>University websites</p> <ul style="list-style-type: none"> • ‘Using university websites is suitable tools for people who do not walk by the university boards, but they can see the recycling promotion on websites’ (S1602). • ‘It is better than just using public relation such as websites because this way is at least showing some people doing recycling in real life’ (S0505). • ‘It is trustworthy because it is an official website’ (1870).
6	1.6	<p>Others such as recycling instruction, recycling bins, recycling flyers</p> <ul style="list-style-type: none"> • ‘To place recycling instruction near the bin sites in CMU is recommended’ (S1608). • ‘Expecting to see correct examples of recycling at bin sites because it will lead students to discard various waste properly’ (S0110). • ‘To place recycling symbols or recycling instruction on each bin is recommended because student usually read the signs before throwing rubbish away’ (S0118). • ‘Using flyers may be sent to everybody’ (S0306).
Total	100	(793 participants)

Table 5.43: Suitable Marketing Channels for Promoting Recycling Activities and Examples of Respondents’ Comments

Table 5.43 demonstrates the comments from the respondents and identifies both online and offline methods for promoting recycling activities. In the first group, the comments identify that Facebook would be the most powerful marketing tool to promote recycling activities. The second group identify posters placed on boards around the university as a useful marketing tool to promote recycling activities. The third group identify that student ambassadors conveying ideas to other students would be a useful marketing tool to promote recycling activities because they can relate to people of the same age.

The fourth group identify other online channels such as Youtube and Instagram as a useful marketing tool to promote recycling activities because the message can be portrayed entertainingly.

The fifth group identify university websites as a useful marketing tool to promote recycling activities because the university website is a reliable and authoritative source of information,

The last group identify recycling instruction posters, recycling bins and recycling flyers as a useful marketing tool to promote recycling activities because they could promote behavioural change in the students.

Group 1: Facebook is Suitable for Promoting Recycling Activities

Most of the participants identified that Facebook is an accessible and exciting website and that it can be utilised to communicate with a target audience directly. See Table 5.43 above.

Group 2: Posters on the University Boards

Some participants identified that posters placed around the university campus would be easily seen by the students, and could be a source of reinforcement as they would be seen often. See Table 5.43 above.

Group 3: Promoting Recycling Behaviour by Student Ambassadors, Student Volunteers, and in Student Clubs

Some participants identified that using student ambassadors, student volunteers, and student clubs because they are student-driven, can spread a message rapidly through personal contact and students feel comfortable speaking with other students rather than a person of authority. See Table 5.43 above. Conversely, there were students, that identified that they were not interested in using volunteering and clubs as a marketing tool to promote recycling activities.

- (S0106) stated: 'I disagree with using recycling volunteers because students may be very busy.'

- (S0515) stated: ‘I do not believe using volunteers or ambassadors will work because if people do not want to do something, then they will do nothing.’
- (S0106) stated: ‘To use recycling clubs may not be widely effective because it will work only amongst the club members’

Group 4: Other Social Media Platforms (YouTube and Instagram)

Even though the statistics of the selection of Facebook and university boards are the dominant selection with 31.4% and 23.0%, respectively, if accumulated the statistics of the minor groups are significant. The students gave interesting opinions which consist of agreements and disagreements on the channels to use as marketing tools. Some students stated that not only using Facebook and posters but also implementing other social media platforms, such as YouTube and Instagram, show a high tendency for successfully promoting recycling. See table 5.43 above.

According to the survey results, one hundred and thirty-four students from three hundred and ninety-five students or 49.3% identified other social media platforms such as YouTube and Instagram as potential marketing tools because it was popular among students, and the platforms provide direct communication with the target audience. Furthermore, the students identified that using other social media platforms can deliver a message quickly and provide ease of access.

It was also identified that there is a gap in only using Facebook to promote recycling activities because some students do not use Facebook. Also, using other social media platforms was recommended as a marketing tool to help to reduce the amount of paper that would be used in other marketing tools such as posters placed around the university campus.

- (S1603) stated: ‘It is good for some people who do not use Facebook sites’
- (S2015) stated: ‘It can make better visualisation than reading recycling instructions on paper’.

Group 5: University websites

The qualitative data identified that some students thought university websites to promote recycling activities, would be a useful tool.

- (S1804) stated: “CMU students must access the university website frequently’ They added that ‘Everybody not only students but also university staff will see it on the website, and they will help the university to look clean”.

According to the results of the survey, using a university website, an alternative strategy, and as a marketing tool, could not be ignored. A university website is a marketing tool that allows easy content creation as it is updated by the IT department, and it is used regularly by the students. However, one student provided an argument against using a university website.

- (S1803) stated: “I disagree with using a university website because students will not follow the universities advice.”

Group 6: Others

The qualitative data also identified that other strategies could be implemented to promote recycling activities such as:

- recycling flyer delivery
- increasing recycling bins
- placing more bins in strategic locations
- providing instructions on how to dispose of recyclable items into the correct bins
- using students near the bins to monitor activity
- exchanging scores or credits for recycling
- buying recyclable items from students.

These strategies would allow for the outcomes and results to be collected and monitored easily. See table 5.43.

Several comments identified that that competition with rewards such as credits or scores could motivate students to change their behaviour.

- (S1505) stated: 'Each department should give students some credits or some scores on participating recycling activities either in compulsory modules or optional modules.'
- (S1506) stated: 'To provide other options when students collect plastic bottles, except exchanging with money.'
- (S1813) 'To set up competitions for getting awards, to give a reduction, to deliver free products, to exchange something, to offer an additional product or to promote recycled products should be applied or to promote students to exchange recyclable items with new products or to use social for sharing how to recycle used products or transform used products into valuable products for communities.'
- (S0103) stated: 'Organising recycling events to promote recycling practice will be a powerful tool.'

The qualitative data also identified that waste and recycling management in CMU should be improved to support a change in recycling behaviour amongst students.

- (S0612) stated: 'It is worthless when some people do recycling and finally bin collectors put various waste together again which does not support recycling, so it will be better if people transform recyclable items into another form of value products'
- (S0909) stated: 'People separate waste, but eventually, bin collectors put them together, so why people have to do recycling? To separate various types of waste should be the responsibility of the government, it is not a job for residents because they paid taxes already. Where are the taxes going? 'It is challenging to see waste bins, so to solve this problem could provide sufficient bins and make it available. It is a daydream for promoting recycling while it is scarce for bins.'

The significance of the findings to the contribution of the action research in this study identifies that the most useful marketing tool to promote recycling activities and encourage students to change their behaviour is a social media platform. In particular, Facebook should be the most useful marketing tool to promote recycling activities and encourage students to change their behaviour due to the high percentage of users and because of the amount of time spent on the platform.

The Students or Participants Backgrounds Section

The participants were 394 students who were males, females and unspecified at 36.3%, 32.6% and 0.5% respectively. The highest frequency of age range was between 18-21 years old at 74.9%. There were two main groups from the third-year students and the fourth-year students, which accounted for 34.8% and 39.1% respectively. They came from 21 faculties, with 20 participants in 17 out of 21 groups. The prominent religion of the participants was Buddhism at 94.9%. The participants significantly came from the North and the West of Thailand at 79.7%. Also, their family homes were located both in the municipal area and non-municipal areas equally. They lived in accommodation with one other student or stayed alone at 44.2% and 32.5% respectively. Furthermore, 47.7% spent between £111.1- £222.2 per month.

The Students or Participants Lifestyle on Social Media Platforms Section

The highest frequency of students had over four years of experience using social media platforms such as Facebook, Twitter, Instagram, YouTube, Google+, WhatsApp, LINE, and Skype. The primary method used for accessing social media platforms was via cell phone at 99%.

The Students or Participants Lifestyles on Facebook Section

The highest frequency of students accessed Facebook every day and at least six times daily at 86% of overall participants. They identified the purpose of using Facebook was for keeping in touch with friends, updating on the latest news, and posting a photo or message at 24.4%, 22.8% and 16.1% respectively. However, they identified disadvantages to using Facebook, such as addiction identified at 34.3%, followed by unwanted information distraction at 26.3% and risky information sharing at 12.7%.

The Recommendation Section

The participants of this study shared agreement that Facebook could be utilised as a marketing tool to promote recycling activities in their university. Furthermore, they agreed that utilising Facebook could lead to a positive change in student attitudes and behaviour

and result in a higher activity participation rate than other marketing tools. Moreover, they believed that Facebook allowed them to express their ideas and opinions and provided a source of entertainment.

The highest frequency of students suggested that Facebook could be a practical and powerful marketing tool to promote recycling practices at their university at 31.4%. Other methods for promoting recycling practices were suggested by the participants such as placing recycling posters on boards around the university campus, using other social media platforms and utilising volunteers, ambassadors and organisers to lead and facilitate recycling activities at 23%, 17%, and 10.6% respectively.

The findings from the student survey provide the researcher with new and valuable information. As a result of this analyses, the researcher will combine the information from the student survey with the information from the university staff and the university stakeholder interviews in order to design and promote activities that encourage recycling.

There are multiple reasons why this study selected student volunteers and Facebook as a prime marketing strategy to implement the recycling activity.

According to the results from question 8 of the survey, 57.7% of participants identified that they lived with one or more person. While, participants identified that they lived alone or lived with their family or relatives, at 32.5% and 9.5% respectively. They engaged with their friends during study time from Monday to Friday as well as during workshops at weekends. Also, it was identified that students tended to actively participate in an activity if their friends requested them to participate. It can be inferred that friends are a primary influencer amongst all surveyed genders and of those aged between 18 and 21 years old.

Second, respondents identified that they frequently used social media platforms such as Facebook, LINE, and YouTube at 99%, 97.7% and 94.4% respectively, while Instagram was used at only 87.3 % of overall participants. Moreover, it was identified that the highest frequency of use amongst the social media platforms was on Facebook at 50%, followed by LINE at 14.5%, and other social media platforms at 15%.

Furthermore, it was identified that Facebook as a marketing tool, has multiple benefits over other marketing tools such as ease of access, the ability to display graphs and statistics, and

provides privacy to each user. Facebooks functions and features provide security to the students, and therefore it can be inferred that utilising Facebook to conduct a recycling activity would result in a higher rate of participation than other marketing tools.

Another feature of Facebook is that announcements and advertisements can be displayed quickly and effortlessly. Also, Facebook is a global social media platform with users spread all over the globe, and registration to access Facebook is possible without providing a phone number. Facebook is vastly different from the social media platform LINE, which 97.7% of participants identified they used frequently. LINE requires users to register and link an account to a phone number. LINE has a high frequency of use in Thailand; however, it is used less frequently in other countries. Also, the features and functions of LINE are different from Facebook. Therefore, this study selected to utilise Facebook as the primary social media platform to promote recycling activities.

After selecting and utilising volunteering and Facebook as a priority, this study aimed to explore other success factors and the barriers to recycling by interviewing a select group of students.

The strategies for implementing the recycling activity on a Facebook page will be combined with the opinions from the university staff and the university stakeholders and then applied to the recycling project to increase the success of the marketing strategy. The results from the interviews are displayed in the next section.

5.2.3. Findings of the Student Interviews

This section consists of three main parts which are the findings from a psychological aspect, a management aspect, and a social marketing aspect, presented in 5.2.3.1, 5.2.3.2, and 5.2.3.3 respectively. The findings demonstrate that integrating key recycling factors could help students to perform recycling. Moreover, this section presents the details of the target audience and the students' s and the barriers from a social marketing step. The conclusion from this section will be combined with the findings from the student questionnaire, interviews of the university staff and the university stakeholders to form the research design at the research planning and research action phase.

The aims of this section are:

- To learn current recycling practices among students, including their previous recycling experience at home and school;
- To compare and pinpoint the models and theories of human behavioural change with the findings, aiming to demonstrate essential recycling behavioural change factors;
- To seek social marketing strategies from the students' perspective;
- To draw a conclusion on literature reviews reflection, previous study and findings.

In order to provide literature reviews compared to the findings, this study focuses on the psychological, management, and marketing aspects. The first section begins with the psychological aspect such as personal factors- beliefs, attitudes, and intentions and others. Then, the second part is relevant to the management aspect, such as recycling facilities and the CMU recycling bank. Then, powerful tools such as recycling activities, recycling projects, and social media platforms will play crucial roles as social marketing strategy involvement. Finally, social marketing section will explain how to create the project to meet the students' needs.

No.	Campus	Faculty	Code of Participant	Gender	Year of Study
1	Saun Sak	Social Science	SS01	F	4
2	Saun Sak	Science	SS02	F	4
3	Saun Sak	Engineering	SS03	M	2
4	Saun Sak	Mass Communication	SS04	F	3
5	Saun Sak	Business Administration	SS05	F	4
6	Saun Sak	Science	SS06	F	4
7	Saun Sak	Art, Media, and Technology	SS07	F	1
8	Saun Sak	Social Science	SS08	F	1
9	Mae Hea	Aggro-industry	SM01	M	4
10	Mae Hea	Aggro-industry	SM02	F	4
11	Saun Dok Hospital	Associated Medical Science	SH01	M	3
12	Saun Dok Hospital	Associated Medical Science	SH02	F	3
Total	3 campuses	7 faculties	12 participants	M=3, F=9	Y1=2, Y2=1, Y3=3, Y4=6

Table 5.44: Codes of the Participants and their Recycling Background

Data were collected from twelve students (three males and nine females) (interviewees) who were undergrads from seven faculties. Their faculties were Social Science, Science, Engineering, Mass Communication, Business Administration, Art, Media, and Technology, Aggro-industry, and Associated Medical Science. They had between one year and four years of recycling experience at CMU. See table 5.44 above.

5.2.3.1. Psychology aspect

Based on the findings, many factors are indicating that promoting students to perform recycling could integrate the critical factors from various models and theories. The contents from the interview are categorised into five groups, presented below.

- **Beliefs, Attitudes, Intentions (Fishbein and Ajzen, 1975; Ajzen, 1985)**

Compared to the theory of reasoned action (TRA) and the Theory of Planned Behaviour (TPB) (Fishbein and Ajzen (1975) and Ajzen in (1985), discovered that some participants had negative attitudes about waste collection and they did not want to recycle their waste. Some students believed that different kinds of waste would be mixed after waste collection. See examples of evidence from table 5.45. In reality, according to observation and informal interviews with waste lorry drivers and a member of staff, there were cleaning workers recycling plastic bottles at the bins. Then, the waste collectors transferred the waste bags from the temporary waste stations to designated waste stations. After that, the local government workers or subcontractors would collect the waste and separated it again in the lorry while they were transporting it to other waste stations in the city. However, there was another waste collection type, which was collecting all the waste together and taking it to the new energy plant on the CMU campus. Unfortunately, numerous students did not know about the new process. So, it is suggested that the teams should provide further information on the proper process of waste collection to increase recycling behaviour.

No.	Key Factor	Evidence from the Interviews
1	Beliefs, Attitudes, Intentions (Fishbein and Ajzen, 1975; Ajzen, 1985),	<p>‘It is believed that general waste, recycling waste and wet waste will be mixed and go to the same lorry for the same elimination process’ (SS06).</p> <p>‘In general, students think whether they recycle or not, the rubbish will go to the same waste bag’ (SS03).</p> <p>‘My family do not recycle because whatever we separate waste or not, the waste collectors always take all the waste bags together. It will go into the same lorry and go through the same waste elimination process’ (SS02).</p>
2	Feeling Guilty and Thinking of the Consequences and Peer Pressure and Social Rules	<p>‘If I have recyclable items such as plastic bottles, I do recycle. I personally do recycle for others, such as waste pickers. They work in poor conditions because they have to put their hands into wet rubbish (food waste) to find recyclable items. I feel sorry for them. Why don’t we help them by separating the items when we see recycling bins? Since I have seen the poor waste pickers and their difficulties, I feel that recycling is a little thing I can do for them. If I can do it, I definitely do it. When I feel this way, it changes my habits forever’. (SS03)</p> <p>‘They (students who do not recycle) make the cleaning workers have much tougher jobs’. (SH02)</p> <p>‘When my friends do not recycle, I tell them the bad consequences if we do not recycle, for example, they will the waste bin collectors’ time.’ (SS01)</p> <p>‘If my friends do not recycle, I tell them that they are getting waste pickers in trouble because the waste pickers will take longer time to separate the items. If we separate the items properly, they can do their jobs easier’. (SS02)</p>
3	Habits and Facilities (Triandis, 1977)	<p>‘I recycle in my daily life; for example, I separate plastic bottles and bags from other items. Recycling has been my habit since I was young. I recycle, but some of my friends do not. They may not have recycling experience. However, we can tell and show them how to recycle at the bins’. (SS01)</p>
4	Norm, Intention and Facilities (Triandis, 1977)	<p>‘(Our family members) We have put everything into one waste bag for a long time. People in my village do the same’ (SS08).</p>

		<p>‘Students think recycling is not important because we see our friends disposing of mixed rubbish as the norm.’. (SH02)</p> <p>‘There is no recycling bin in my flat. If I see a recycling bin, I will recycle’. (SS04)</p> <p>‘I do not recycle at my flat because of no recycling bins; however, I do recycle when I study at CMU because there are recycling bins’. (SM02)</p>
5	<p>Unpleasant odours +Agreement + Facilities (Cognitive dissonance from Festinger (1957) + Commitment and consistency from Cialdini (1984) + Facilitating Conditions Triandis (1977)</p>	<p>‘My flat provides three bags for food waste, general waste and plastic bottles’. I live with a friend. We have a mutual agreement that we need to recycle because we do not like to have unpleasant odours in our room’. (SS04)</p> <p>‘My school provided recycling bins, in particular bins for plastic bottles, so we disposed of the bottles into the different sports teams’ bins’... ‘Then, we sold the bottles and took the money to support our sports teams. There were recycling shop staff visiting the school and exchanging the recyclers for money’. (SS01)</p>

Table 5.45: The summary of relevant key recycling factors from student interviews

- **Feeling Guilty and Thinking of the Consequences and Peer Pressure**

Based on the findings, feeling sorry for waste pickers and thinking of the consequences play a significant role as a recycling influencer. The examples from the student perspectives can be seen in table 5.45. It can be said that based on the interviews students encouraging their friends to recycle while explaining the consequences and putting pressure on their friends to perform recycling could work.

Moreover, these techniques could have a higher frequency of outcome if students told students, compared to the social pressure received from other groups of people. In this instance, Cialdini (1984) explained a similar concept in his book, he stated that a person could jump a long queue of people for photocopying if that person explained the reason why they were in a hurry, and if they explained the positive outcomes of receiving permission from the people to jump the queue.

- **Habits and Facilities (Triandis, 1977)**

Triandis (1977) used the Theory of Interpersonal Behaviour (TIB) to explain that people's behaviour was likely influenced by their habits and frequency of previous behaviour. Similarly, the findings show that some students did not recycle because they did not have recycling habits influenced by their families. However, the interviewee (SS01) believed that their friends could recycle if recycling bins were introduced. See table 5.45. There was an interviewee (SM02) that stated that their recycling behaviour depended on not only their previous experience but also on incentives and the availability of recycling bins. These factors can be found in the Theory of Interpersonal Behaviour; however, the three factors have to be combined to create the recycling behavioural change.

- **Norm, Intention and Facilities (Triandis, 1977)**

When people mixed all types of waste, it can be said that they possibly thought that it was the perceived norm. These people did not recycle due to the perceived norm and are not categorised in the same group who did not recycle because of their perception that waste was mixed during the collection process. The interviewee said:

‘We dispose of everything, food waste and general waste, into one waste bag and leave it outside our house and then the waste collectors will pick it up in a couple of days. It was common practice’ (SS04).

See further examples from table 5.45. However, another interviewee (SS03) had the opposite practice and said,

‘We separate plastic bottles and put the bottles into a bag and leave it near the bin outside the gate. We think it is a common practice’.

These findings seem to be matched to the findings of Cialdini et al. (1988), which describe different types of norms, namely descriptive norm and injunctive norm. So, educating these people could fix this problem.

- **Unpleasant Odours + Agreement + Facilities (Cognitive Dissonance from Festinger (1957) + Commitment and Consistency from Cialdini (1984) + Facilitating Conditions Triandis (1977)**

When students have support from recycling facilities, they perform recycling (Triandis, 1977). Based on the interviews, two students needed at least three factors to perform recycling which was the availability of recycling bins, agreement or commitment, and avoidance of unpleasant odours. Similarly, the interviewee's reasons could be relevant to other critical recycling success factors from several models or theories such as avoidance of unwanted smell from a 'physiological and psychological influencer' (Koob et al., 1992) and 'Cognitive dissonance' (Festinger, 1957). Fourali (2016) explained that people would perform some activities in order to get rid of unwanted and adverse effects of pre-existing needs.

- **Facility (providing recycling bins) + Incentives+ Competition Activity+ Affection (entertainment)+ Stakeholders**

'My school provided recycling bins, in particular bins for plastic bottles, so we disposed of the bottles into the different sports teams' bins'... 'Then, we sold the bottles and took the money to support our sports teams. There were recycling shop staff visiting the school and exchanging the recyclable items for money' (SS01)

5.2.3.2 Management Aspect

According to the interviews, all participants said that they had seen various types of recycling bins in different locations throughout the CMU campus during their time studying and travelling around the campus. However, all the participants stated no bins are available in the classrooms, so some students disposed of their rubbish on the tables. Most interviewees stated that they needed more recycling bins and other tools to improve recycling practice. The findings can be categorised into two main topics; they are bin issues and recycling bank issues. For each topic, the interviewees also offered possible solutions. It was discovered that the CMU Management Team could help students to perform recycling if the barriers can be eliminated.

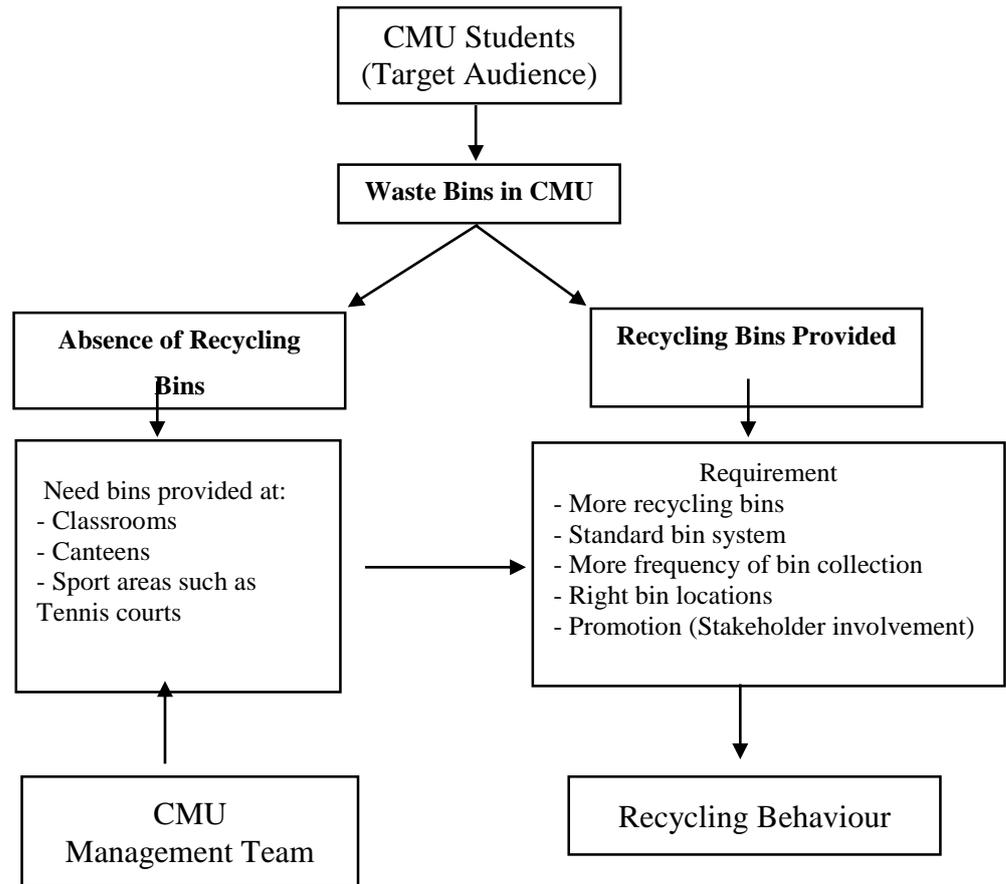


Figure 5.1: Key Recycling Factors on Waste Bins Issues from a Management Aspect

The findings consist of two key topics which are case A, ‘Absence of Recycling Bins’ and case B, ‘Recycling Bins Provided’. In the instance of case A, the interviewees identified where they wanted to use recycling bins and also gave possible solutions if CMU faced a lack of budget. In the instance of case B, the findings show how recycling behaviour improved if bins already existed. Overall, most interviewees required more recycling bins, a standard bin system, more frequency of waste collections, proper bin locations, and recycling promotion. See figure 5.1.

Case A. ‘No recycling Bins.’

The interviewees provided their perspective on the recycling barriers, and they also pointed out that they needed recycling bins in their classrooms, facilities, canteens, and the sports area (tennis courts). These are the comments and overall perceptions of the interviewees.;

‘We do not recycle if there are no recycling bins. However, we recycle at our faculties because there are recycling bins’ (SH02);

‘Increasing the number of recycling bins can promote recycling. I hope that CMU will provide recycling bins in my classrooms because many students are disposing of plastic water bottles and paper sheets in classes. Moreover, there are no recycling bins in my faculty’s buildings’ (SS04);

‘I really want to see recycling bins in playing fields and tennis courts. There are no recycling bins, including in toilet areas. In fact, waste bins are in huge demand. The frequency of the bin collection is not sufficient. People often see the (general) bins containing too much rubbish, and the rubbish is overflowing. In particular, the general bins in front of the 7/11 shops (convenience store) are filled with rubbish quickly because some students take rubbish from the tennis courts to the bins at the supermarket.’ (SS01).

There was one participant who gave possible solutions for the management team they stated:

‘I think CMU should move general bins out and replace them with recycling bins if the budget is limited’. (SH02).

Case B. Recycling Bins Provided, but more Recycling Bins Needed

Most interviewees believed that recycling bins played a significant role in recycling, so they gave examples and possible solutions that they needed to use more recycling bins in some areas such as their faculties at Ung-Kaew lake. Then, they provided possible solutions. They stated:

‘There is a lack of recycling bins. I think if there is an increase in recycling bins, it will encourage students to recycle better’. (SH01);

‘We recycle when there are recycling bins because we cannot recycle without recycling bins. If CMU has a limited budget for recycling bins, I

recommend that recycling bins should be placed at Ung-Kaew lake (the greatest public lake in CMU) because there is only one recycling bin there.’ (SS04);

‘It is common to see general bins in CMU; however, I expect CMU to provide more recycling bins. The main location that I expect to see more recycling bins is at the canteen in my faculty.’ (SS02);

‘There is no doubt that increasing recycling bins is a suitable strategy for promoting recycling. I first saw recycling bins at the central canteen, then I found them at my faculty, but there is a lack of recycling bins overall. General bins are commonly seen in many spots at CMU.’ (SS06).

Also, a participant provided a crucial strategy to increase the opportunities for students to recycle. They stated that the recycling bin location needs to be right next to them; they elaborated further and stated:

‘If recycling bins are placed too far from the student sitting areas’ this results in inconvenience, and there are many students that only use the general bins that are near them for all their waste items. (SS02).

As a result of independent management systems, each faculty provided general and recycling bins according to their independent faculty plan. As a consequence, students did not know the limitation of the system; hence they asked for evidence of the investment from the waste and recycling facilities. They stated:

‘I know that CMU is a large university, and there are numerous buildings. However, I wish I could see CMU equally improve the recycling facilities among faculties. We need a standard bin system’. (SS05);

‘Recycling bins with three colours at the central canteen are well recognised and stand out. However, the bins in other places are in a variety of colours and sizes, so it is complicated for us to separate the waste properly’. (SS03);

‘Some faculties provide recycling bins, while others do not. I think CMU should place recycling bins in all faculties. If there is a recycling bin placed in my faculty’s building, I would definitely recycle. Moreover, I think CMU should use the same bin system everywhere. For example, when I see a yellow bin, I always think of a certain type of rubbish. The standard system will make recycling easier because I will not stop and check the colour of each bin before disposal of waste items.’ (SS04);

‘I think CMU should use different colours and different types of general bins and recycling bins. Specific colour bins will help students to remember and recycle the types of waste better’. (SM02);

‘It is widely seen that my friends dispose of mixed recyclable items into both general bins and recycling bins. I feel I want to recycle for them, but it is difficult to distinguish the different types of bins with non-systemic colour bins’(SS02).

One participant advised on how to gain the students’ attention to the recycling bins such as using a specific symbol or a particular flag combining the use of social media to distinguish the obstacle and limit confusion, they stated:

‘Colours can help students to distinguish between the different types of recycling bins. However, we should use red with a symbol such as a human skull to remind students about hazardous items. Moreover, a red flag could be used near the bin because most students get confused about the differences between metal cans (hazardous containers) and drink cans’ (SH01).

There were other solutions provided by the interviewees (SH05 and SS01) on how CMU could improve recycling by promoting students to recycle frequently. They stated:

‘Most students will recycle for the first time or the first period because they are excited about the new bins. However, when they get used to, they do not

want to because recycling is not interesting. So, I think that CMU should promote them to use the bins frequently' (SS05);

'Although we have proper recycling bins, CMU should use social media such as Facebook or university boards to remind students.' (SH01).

The interviewees (SS03 and SM02) pointed out that CMU should promote recycling; they also provided examples which are relevant to proper waste collection and the route of recyclable items. They stated:

'The smelly bins should not exist. CMU should collect the waste more frequently to improve recycling practice' (SS03);

'We do not want to see them (bin collectors) put a mixture of rubbish into the same bag after we recycle it. Actually, we expect to see the use of recyclable items'. (SM02);

The strategy of using a 'Recycling Bank' whereby recyclable items are exchanged for cash was not seen favourably by all students. Students have differing views, opinions and perspectives. Some students were interested in the CMU recycling bank; however, they expected to see extra support provided, and they also needed reinforcement to keep a positive attitude and continue to use the recycling bank. Based on informal conversations with some students and a recycling bank operator, a majority of students were not interested in the recycling bank for multiple reasons. Student members were declining continuously (this issue will be mentioned in the staff interview section). Three interviewees explained the barriers and also offered solutions on the strategy of having a 'Recycling Bank', they stated;

'When I studied at secondary school, I recycled because my school had a recycling bank and it was very convenient. So, CMU should improve a recycling bank for improved sustainability'. (SS04);

My school had a recycling bank, and every student was able to exchange plastic bottles for cash at all times. I think the recycling bank was excellent because

whoever took plastic bottles there, they got some money back straight away. There was a group of students and staff running the bank every Wednesday. The students received money from the school for working in the recycling bank. However, the recycling bank in CMU is different for several reasons. For example, when we were children, money from recycling was very enticing. We exchanged ten plastic bottles for 1 baht (45 baht = 1 pound) and 1 baht for children was a significant amount. However, it is not enticing for young adults (SS04)

‘I think students need support. Although there is a recycling bank operating every Wednesday (in the main campus), it is not enough. Our campus is far from the main campus, and we would like to have a university mobile service which collects our recyclable items for the recycling bank. For practical and reasonable operation, the mobile service would exchange the items for money at our campus. Alternatively, the mobile service could transfer the money into the students’ accounts at the main campus later’. (SM01).

‘The CMU recycling bank has many competitors. There are recycling projects serving students to exchange recyclable items with other items such as chicken’s eggs. The weak point of the bank is that it is not recognised amongst students. However, most recycling activities also have limitations because they run activities locally. Unfortunately, some students do not know about them. So, promoting the recycling bank and the recycling activities should serve all faculties to gain better recycling practice’. (SS01)

Overall, based on the findings, creating a creative marketing strategy and increasing student engagement, for example, cooperating with student clubs to run recycling activities or building a network with recycling business owners or other stakeholders could improve the recycling bank system and lead to an increase in recycling behaviour amongst students at CMU

Comparing the findings to the model ‘Three Steps of Change’ (Lewin,1951), it could be said that CMU could adopt a new policy and a new marketing strategy to encourage the target audience and improve upon the current situation. Based on the findings, to promote recycling activity, to increase the use of the ‘Recycling Bank’ and to push the target

audience to change their behaviour requires powerful alternative strategies. For example, launch a new policy to encourage students to be volunteers at the "Recycling Bank" and providing them with rewards such as certificates of volunteering. Also, promoting the recycling bank in a new way is needed such as using student clubs as recycling station points to provide better accessibility, then the bank transfers the items from the clubs to the main campus. For public relations, the bank could use online channels to promote the process and the operation times and gain feedback to improve the service. Online marketing could be performed by student volunteers, for instance. Alternatively, stakeholders could help in the process by making appointments with recycling business owners to collect the items for each campus and calculating the monetary value based on the real recycling market.

5.2.3.3 Social Management Aspect

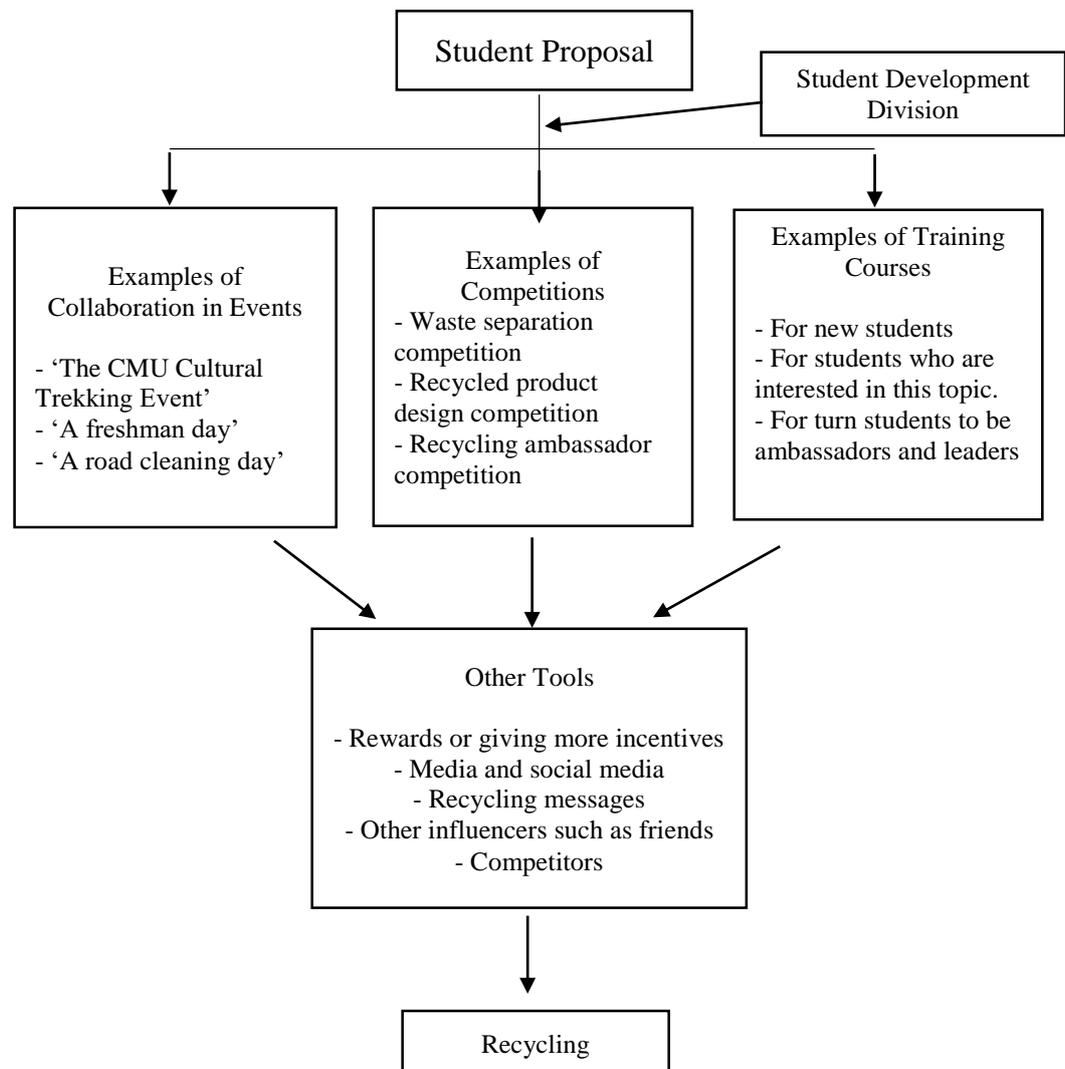


Figure 5.2: Student Proposals or the Desired Student Outcome

According to the interviews, students thought that recycling activities could raise awareness about recycling. In CMU, raising student awareness was the responsibility of the staff of the Student Quality Development division. The students' opinions were presented as 'Student Proposals or the Desired Student Outcome' according to a social marketing aspect.

All participants emphasised that CMU could organise some activities to raise recycling awareness; the activities could improve recycling practises. There were three core forms of activities suggested, which were 'Collaboration', 'Competition', and 'Training courses'. Below is an explanation of the suggested activities with the students' comments to provide clarity. 'Collaboration' activities are categorised as 'Type 1' 'Competition' is categorised as 'Type 2'. "Training Courses" are categorised as 'Type 3' and "Other Tools" is categorised as 'Type 4.'

Section 5.2.3.4 Summary

Type 1: Collaboration

Four participants were sharing their ideas on how to raise recycling awareness by using a collaboration strategy. For instance, the participant (SS04) focused on the CMU annual event, namely 'The CMU Cultural Trekking Event' and concluded that CMU should promote and encourage all of the event participants to collect their waste during the activity. The activity should be organised every year and become the norm.:(SS04) further stated:

'CMU should launch a recycling campaign every semester as a norm at the university. For example, at 'A Welcoming New Students Day' or 'A Freshman Day'. When new students see the recycling project, they may invite more friends to join the activity. The current existing example of waste management in CMU is from volunteering at the annual university event, welcoming new students or 'The CMU Cultural Trekking Event', this September. Other recycling activities should imitate it because when students collect the waste and recyclable items along the way from the university to the destination, it is fun and enjoyable. CMU should run the activities continuously because they are essential. However, I always see all

theses university activities running temporarily. What is more, the recycling activities could be promoted among the students via student councils, societies and clubs on their Facebook Page.’ (SS04)

They thought that all faculties could set up ‘A Road Cleaning Day’ for students. They said that many students had left much waste behind after the events, and CMU could change this norm. They stated:

‘Improving collaboration among faculties for waste collection on public streets at CMU may be a good strategy. Due to their participation, some participants will be more aware and not dispose of rubbish randomly. Moreover, the activity will change some students’ attitudes. CMU should run the activities every year as a new university norm. The senior students will happily work with new students on waste management’. (SS06);

‘Promoting recycling at CMU should be organised every year. There is no recycling activity at present, so I think we could have a big cleaning day to do good for our community like the activity of the faculty of Engineering’. (SS03);

‘Having a big cleaning day at CMU and providing recycling bins for the separation of waste should be implemented to raise student awareness’. (SS05).

Type 2: Competition

All interviewees suggested competition activities, such as waste separation competitions and recycled product design competitions, and recycling ambassador competitions, as essential tools to raise student awareness and promote recycling practice amongst students. Also, they thought that competitions could improve their faculty’s reputation and also strengthen unity. They further elaborate and stated;

‘I think that CMU could encourage students to participate in recycling competitions because most students love participating in activities. They want to be winners for their group or their faculty. The competitions should be organised and have a long term duration. They can change student habits’. (SS01);

‘We love engaging in competitions because we want our faculty to have the pride of being the best team of the year. The competition can have a big impact on students, so it should be repeated annually for all faculties because university students love competitions. The competitors should take photos before and after the recycling practice has been completed and post the photos on social media such as Facebook’. (SS03).

‘CMU should use competitions and find winners, based upon proper waste segregation over a limited amount of time’. (SS04);

‘CMU should promote recycling among faculties, student clubs, or student flats to compete with each other on how to recycle their waste. This strategy will encourage students to do more recycling. Students should organise the activities by themselves because they can set up a brainstorm meeting and find out how to run the competitions successfully’ (SM02);

‘Promoting recycling in the CMU community could be achieved by encouraging students to participate in motivational and innovative recycling competitions, such as a recycled product design competition, and this could increase student awareness’ (SM01);

‘A recycled products competition could be an effective strategy because showing recycling in real life is more understandable and less likely to be boring in the eyes of the students. This strategy is better than giving students recycling knowledge through the means of a formal and traditional course format. Moreover, having competitions will increase the opportunities for bonding to occur between students and their faculties, and it is also about raising the faculties reputation’. (SS05)

Moreover, they believed that using famous students as student representatives to promote recycling on social media would be the most powerful strategy. They stated:

‘We have ‘The CMU Star Competition’ every year, but this year we call it ‘CMU Ambassador Competition’. The winners will be measured by scores from Facebook voting and from answering challenging questions on stage. I think that CMU should use the winners of the Ambassador Competition to promote recycling

among students because they are good-looking, and most students love imitating and acting upon their ideas.’ (SS05).

‘In my opinion, competition is an exciting strategy because most students imitate popular student’s behaviour. Famous students have many followers on social media platforms such as Facebook or Instagram. Recycling ambassadors should have excellent communication skills. They should come from all faculties. However, to change student behaviour will not happen overnight; it needs time and needs to be reinforced frequently. It is not just about posting their photos and messages once and then disappearing because students might forget. The activities should be repeated over a long period. (SS04)

Type 3: Training course

The participants emphasised that training courses are a powerful tool to change student behaviour because the courses could demonstrate real recycling practice, and then students who have passed the course could become leaders.

‘CMU should provide a recycling training course for new students. The guest speakers should be academic staff members. The recycling message should be the advantages and disadvantages of recycling’. (SM02);

‘I attended a recycling training course when I was a new student. It has been established now for three years. This year, the outcome showed that 90% of participants were able to segregate waste properly. The training course was compelling because my recycling awareness was completely increased. Moreover, the speaker changed my beliefs on which types of waste should be in the same bags and sent to the same landfills’ (SH02);

‘I think CMU should open recycling training courses for students who are interested in this topic. After the training course, the students should play the role of leaders. Their responsibilities are the delivery of recycling information and increasing recycling understanding’. (SS02).

Overall, comparing the findings of this study to relevant theories such as Maslow's theory and the study case from Texas, the results of this study discovered that some students tend to do something to fulfil their needs and desires by engaging with some recycling activities where there is a definite link with Maslow's theory. All participants agreed that promoting recycling among themselves could improve recycling practice and that cooperation, competition and training courses are prime tools to raise recycling awareness.

Moreover, according to the results of the CMU student survey and the interviews, there is a significant link to critical factors outlined by Triandis (1977). The results found that generally, most young people seem to love the excitement of attending activities which were combined with social media posts and sharing of media from the event.

In competition, students, that share the same goal, would cooperate in order to achieve this goal and tended to change their behaviour in order to win the competition (Cialdini, 1984).

Also, from the 'Don't Mess with Texas' which was a campaign among young people, encouraging the cleaning of public roads and competitions amongst the various groups with the posting of photos on Facebook, Twitter, or Instagram, it is evident that the competition aspect was one of the critical success factors (Don't Mess with Texas, 2018). Moreover, some students had the opinion that to promote recycling, there should be a focus on other sources such as training courses, as sharing skills amongst peers tend to be another critical influencer

Type 4: Other Tools

It can be said that critical tools such as financial rewards, media and social media could help students to perform recycling easier. For Example, some students identified that they could use financial rewards to support their study. Comparing the findings to Maslow's theory (1954), it could be said that the students focus and desire is on their basic needs and self-esteem due to their financial situations. However, they still want to be accepted as members of the groups. Other reward tools and incentives such as certificates, clothing and key rings could be used for recreational purposes and could also support them to achieve other goals, such as gain better employment after their graduation. So, this section consists of numerous topics; and it explains the types of rewards, then gives examples of the student's favoured media and social media platforms. Next, it provides examples of

powerful recycling messages and then, it references other influencers, such as their peers. Finally, the competitors themselves will be mentioned.

- **Rewards and messages**

Eleven out of twelve interviewees stated that rewards are powerful tools if the rewards meet their needs. One interviewee argued that disincentive could be adopted to change student behaviour. Based on the interviews, the rewards can be categorised into tangible and intangible assets. For instance, school scores, school credits, student funds are tangible assets. Feeling happy or feeling proud and pride are examples of intangible assets. However, there was one participant who argued that disincentive or punishment could be adopted and stated;

'Alternatively, I think if a student does not recycle, the student should get punishment; and have their scores reduced or removed.' (SS04).

Based on the findings, from the student's shared opinions, it pinpoints that student funds were more attractive than other incentives (food and entertainment coupons, student scores, student certificates and tangible credits). These are the comments and opinions to support this position:

'The awards for recycling contests should be student funds which are given to the winning team because the winners can manage the money themselves'. (SS03);

'Student funds or valuable items such as cell phones are recommended for the recycling competition'. (SM01);

'The awards should be cinema tickets, a discount coupon for a meal or something relevant to entertainment. The prizes should be provided to everyone in the winning teams. Also, giving t-shirts, with a recycling slogan or a logo, is a good reward for the winners because the slogan will remind the students to recycle and can become standard practice. If they wear those t-shirts, but they do not recycle, they may feel guilty'. (SS06);

'There is a compulsory module for activity participation, and this is categorised as 'GE'. For new students, they have to join an activity in CMU for one hour to pass this module. I think that promoting recycling through the GE model would be a good idea. Innovative, creative and practical recycling models should be the criteria for approval'. (SMO1);

'The awards should be key rings for our room key or our motorbike key, reusable shopping bags and T-shirts'. (SM02)

The study explores that all participants prefer online channels (such as websites and social media) to promote recycling rather than traditional channels (such as television, radio, and university press). Flyers were rejected because they were boring. What is more, few students believed that using university boards would be more effective than flyers. On the contrary, all of them believe that using social media platforms such as Facebook works significantly better because they use it in their daily life. This correlates with the findings of this study that discovered that Facebook Addiction was prevalent amongst students.

The findings are supported by the evidence from Blair (2017), She states that digital and social media platforms were a new trend for the 21st century for social marketing promotion, which was useful not only for the users but also for researchers for testing, refining and evaluating the behavioural interventions'. Besides, to spread a new social norm or behavioural change would rapidly succeed because the digital world can create a significant impact on numerous users, in particular from friends, families, famous actors too strangers (Centola, 2013). Similarly, in Thailand, it was purported in 2017 (Coconut, 2018) that Thai people are in the top ten of the rankings of Facebook users in the

An instance of, a well-known social marketing campaign in Thailand, was a marathon campaign which used Facebook as a vital and dominant tool for promoting the marathon campaign. As a result of the successful marketing campaign on Facebook, 1.1-billion-baht was donated to 11 government hospitals and simultaneously promoted running for a healthy lifestyle of Thai people. This campaign had tremendous and phenomenal success (Bangkok post, 2017; ChannelNewAsia (Facebook), 2017; nation multimedia, 2017).

These are the comments and opinions on Facebook as a marketing tool:

'Nowadays, online sites have a big impact on students, reward messages pop up on the first page of the official university website, and Facebook significantly recommends and directs students attention'. (SH01).

'Promoting recycling on Facebook should be selected because students can share interesting information about the advantages of recycling to their friends and tell them to recycle. They can help some people such as waste collectors' (SM02);

'I think that the Like and Share functions on Facebook can stimulate students, especially when students think the content provides them benefits. (SS02);

'Good recycling activities should be introduced during lunchtime. The activity schedule should be displayed on the university boards in advance. Alternatively, the recycling activity posters can be placed on the canteen tables in order to remind students'. (SS07);

'CMU should produce interesting videos for promoting recycling. A student may change their behaviour as a result of the video. For example, the video content should explain the different types of waste and the advantages and disadvantages of recycling'. (SS08);

'students frequently access the university website and Facebook pages. In particular, The Registration Department's Web Page, to check on their examination schedule and their scores, so using these channels could help to promote recycling.' (SS04).

The participants (SH02) stated that issues of climate change and the time needed for plastic waste to decompose are not exciting or even interesting topics. They stated:

'Climate change issues have been continuously mentioned for a long time now, but I think it is not interesting at all. These issues are boring, and the topics do not affect our lives. When people say plastic needs 500 years to be decomposed, it is too long for our lives because the human life span is shorter than that.'

Although using the LINE application on mobile phones for Thai people is popular, it has some feature limitations (Thailand Redcat, 2017). LINE recently provided 'Sharing' and 'Like' functions; however, these functions are not as practical as Facebook or Facebook pages for promoting a project in public, according to informal conversation and interviews. However, the combined use of LINE and Facebook could be a better solution.

- **Potential Motivator (Recycling influencers)**

According to the interviews, the majority of participants stated that students are the most potent recycling influencers to raise recycling awareness in order to create recycling behavioural change. However, a minority of participants argued that university staff should also play a vital role at the same time as the student influencers. Their comments and opinions are stated below:

'The student leaders should play an important role in promoting recycling in CMU because most students follow the student leaders' recommendations. Moreover, recycling practice is good behaviour and very useful, and no one can resist the chance to participate and follow the student leaders. It does not harm anyone. The budget should come from the executive team'. (SM02);

'The students from the student council or the student union are the most significant influencers. They will work as collaborators amongst student clubs. However, lecturers should participate and provide the consultation and be a positive role model as consultants. (SS05);

'I think my friends are the most powerful communication tool because they are suitable to warn their friends about whether to do or not to do something. When we are amongst our group, especially when we are close friends, we can naturally talk about everything, and we can even talk one on one. For instance, they can warn their friends immediately when their friends do not recycle at the bin sites.'. (SM02)

'I think to use students to tell students is an effective strategy because students accept their friends. However, the disadvantage is that the students, who are selected as recycling ambassadors, have to spend their time to promote recycling

campaigns such as recycling parades or recycling practice demonstrations. It may interfere with their study time' (SH01).

According to Cialdini (1984), he emphasised that people are most likely to agree if their friends introduce something among the group because they feel the same as each other and feel that they have shared something in common. Therefore, there is no doubt why all participants underscored that they prefer their friends to deliver recycling messages and introduce them to recycling practices.

However, according to the management aspect, if a leader sets a goal and sets the rules and then uses essential tools to change behaviour, it can have positive results and could be an excellent alternative strategy. Similarly, the findings support this premise:

'To promote recycling in CMU must begin by everyone, including executives. Executives should perform recycling as the norm. Then, they can play a key role in delivering powerful recycling messages to students and other staff'. (SH01);

'I think to promote recycling in CMU should start at the executives because they can set a new rule to manage the behaviour of the people in CMU. Another strategy is that every faculty should add recycling activities as a compulsory module'. (SH05).

'Lecturers should have the role of providing recycling knowledge and recycling experience during their lectures. Each faculty could organise recycling events. As a consequence, the feedback should be submitted to executives. (SH01).

- **Competition**

Kotler and Lee (2016) suggest that target audiences have three critical areas or obstacles; hindering the behavioural change of the target audience.

- Needs more than one issue from a campaign to change their behaviour,
- Need to do it is a habit or part of their daily life routine

- Resistance from other people who deliver messages countering the desired behaviour change, for example, people addicted to smoking as a target audience and advertisements from cigarette companies.

It could be said that from the results of the findings, the critical areas or obstacles; hindering behavioural change amongst the students are:

- Students' habits such as ignorance about recycling, laziness, careless and others
 - Their peers who tell them not to recycle or even discourage them from recycling. students may have the intention to separate recyclables at the recycling bins, but their friends discourage them and state, 'No matter where you dispose of it, it will not be recycled'.
- Media such as tv shows and movies which portray scenes of actors who do not participate in recycling activities harms the behaviour of the target audience of this study.

This section has already presented the potential influencers on recycling behaviour, so, the next section will present the evidence regarding other key recycling factors and the barriers from the CMU staff and stakeholders.

5.2.4. The Findings from the Interviews of CMU Staff and Stakeholders

No.	Code	Gender	Organisation	Role
1	CMU1	M	CMU/ Executive	Policymaker
2	CMU2	F	CMU/ Executive	Policymaker
3	SD01	F	CMU/ Student Development Division	Social Marketing Campaigner
4	SD02	F	CMU/ Student Development Division	Social Marketing Campaigner
5	SD03	M	CMU/ Student Development Division	Social Marketing Campaigner
6	WR01	M	CMU/Waste Management	Recycling Bank Operator
7	RS01	F	Private sector/ Recycling shop at Phitsanulok	Recycling Training Course Leader
8	RS02	F	Private sector/ Recycling shop owner at Phitsanulok	Recycling Training Course Leader
9	RS03	F	Private sector/ Recycling shop owner at Chiang Mai	Recycling Training Course Leader
10	RS04	F	Private sector/ Recycling shop owner at Chiang Mai	Recycling Training Course Leader
11	RS05	F	Private sector/ Recycling shop owner at Chiang Mai	Recycling Training Course Leader

12	PTT1	M	Private sector/The Petroleum company in Bangkok	Retail Marketing Manager of PTT Gas Station
Total	12 interviewees	M=4 F=8	6 CMU staff members and Six stakeholders	2 Policymakers, 3 SMK Campaigner, one Recycling Bank Operator, five Recycling Shop Owners, One Marketing Manager

Table 5.46: Summary of The Findings from the Interviews of CMU Staff and Stakeholders

There were two executives, three staff from the student development division, one staff member from the recycling bank, five recycling owners and one interviewee from a private company. Their codes are CMU1-2, SD01-3, WR01, RS01-05, and PTT1, respectively. See table 5.45.

According to the interviews of the two CMU policymakers (CMU1 and CMU2), CMU is in the early stages of promoting recycling. It needs more research and development. They stated that promoting recycling was pertinent to many factors, such as legal, politics, culture, environment, facilities, and stakeholder involvement. Moreover, the findings show that CMU students had unpredictable recycling behaviour. They concluded that promoting recycling was essential. These are the comments and overall perceptions from the CMU executives:

‘Dealing with waste and recycling at CMU is complicated, we are working on it. We work with executive teams, the waste and recycling management team, student development division team, research teams, and other teams. Last year, we won the environmental competition, and we are recognised as a ‘Smart City’ of Thailand. This year, we have received government funding for a ‘Waste to Energy’ project. We currently recycle food waste and use it as fuel for our plant. We also upgraded our vehicles from Biogas to Natural Gas Vehicles (NGV).’ (CMU1);

‘In 2016, CMU implemented the annual development plan, namely ‘Green and Clean Campus’. In 2017, we were working on the new annual plan- ‘CMU Development Plan no.11’. For the implementation and evaluation of this plan, we still need massive improvements. For example, each faculty does not use the same standard recycling bin, and this causes several problems. We discovered that there were mixtures of waste in both recycling and general bins. There were three faculties (Faculty of Engineering, Economics, and Business and Management) attempting to promote recycling such as conducting research, producing ‘recycling

instruction posters, and using public relation. Nevertheless, the students failed to perform recycling. Instead of giving negative feedback regarding recycling failures, we developed the plan to protect these issues from happening again'. (CMU2);

'By law, CMU has no right to transport the waste between campuses. So, we have to use government services. The waste collectors mixed all types of waste in the same container during transportation. As a result, students think that waste separation is not needed. We have waste separation systems. The first system is in Saun Dok Hospital Campus dealing with hazardous waste (such as radioactive and chemical waste), infectious waste and general waste. The second system is in Mae Hae Campus, focusing on food waste and general waste. For recycling waste, we have been working on it; we are building a recycling plant to separate the waste. If we cannot transport the waste by ourselves, we also have another plan. We need to promote recycling among students and staff.' (CMU1)

'Research on recycling topics are in high demand. Last year, the government granted two million baht to CMU for recycling research. We have spent 70,000 baht on a pilot study investigating CMU staff recycling behaviours. The research aimed to find out how to improve recycling issues. We placed three-colour recycling bins without publishing recycling instructions. Then, we discovered that recycling was adopted by two out of sixteen divisions. The key success factors for this experiment were habits and incentives. People usually separated glass bottles for sale at home, and they also recycled several items at their offices. Now, we removed the bins from the office because we plan to use the bins for the next data collection at the student flats. We think we have to promote recycling among the students and focus on raising recycling awareness. Nevertheless, we have not started it yet. We also do not yet have the conclusion for the bin design and the total number of new recycling bins. We have to accept that our students are not very disciplined. If we do not provide sufficient bins, instead of keeping their rubbish until finding a bin, they tend to dump the rubbish in public areas.' (CMU2).

For the Recycling bank issues, from the previous section, the student interviewees stated that the CMU recycling bank needed improvement. The findings in this section present CMU staff and stakeholders' opinions from different perspectives. For example, the

interviewee (WR04) thought that the bank could continue operating recycling activities, while another interviewee (CMU2) argued that it could be taken over by students. These are the comments and overall perceptions of CMU staff and stakeholders.

‘The CMU recycling bank is not a long-term operation; the operation will be terminated when the recycling plant is ready’. (CMU1);

‘I personally think that the recycling bank is not useful because there are many students who do not know about it. What is more, the money from recycling exchanges is not always an effective tool. Promoting recycling behaviour should use the concept of ‘doing something good from good people’ and ‘recycling behaviour gives a better quality of life’’. (MK04);

‘The bank is useful for CMU waste reduction because we have to deal with four to six tonnes of waste daily. It has been established since 2009, funded by the National Economic and Social Development. The project was closed in 2015, then CMU operated the bank aiming to support recycling behaviour. The bank runs only Wednesday from 9 am to 12 noon at the main campus. We need five staff minimum. There are insufficient staff and facilities for the operation. Recently, the student members are decreasing due to a lack of promotion; however, our main customers are cleaning workers.’ (WR01);

‘I wish the student council would establish a recycling bank themselves. The recycling bank system at Mahidol university is brilliant because the student council earns a profit of approximately one million baht. The students use the money for other student activities’. (CMU2);

‘In my opinion, CMU students should play a crucial role in recycling activities, and the staff should be consultants and financial supporters. However, we should not expect too much of them because the activities possibly interfere with their study.’ (WR01).

Several possible solutions were discovered on how to improve the bank or increase recycling behaviour. For instance, recycling business owners could work with CMU to

improve it. Recycling trade could be more convenient and accessible. Other benefits of the bank could be giving opportunities to students to learn how to operate it and how to encourage their friend to recycle. These are the opinions from five interviewees (RS01, RS02, RS03, RS04, and RS05) who are recycling shop owners:

‘I do not have a website or Facebook, but our working time is every day from 8 am. until 5 pm. Most CMU staff and students visit my shop at the weekends’ (RS05);

‘My recycling shop uses Facebook as a key tool. There are a great number of CMU students that are customers. The students ask me to buy and collect the recyclable items at their student flats. Furthermore, the students buy used items from my shop and sell the items back to me when their activities are over’ (RS03);

I use LINE and websites for checking and updating the prices of recyclables. Student universities visit my shop not only for the trade but also for attending recycling training courses’ (RS02);

‘I work with several schools and universities to encourage their students to recycle. For example, the students turn plastic bottles into points at my shop to win prizes. (RS01);

‘I would like to have a recycling shop at CMU because it is a golden opportunity for both of us. For instance, I will provide a basic recycling training course on how to gain benefits for creating a marketing plan to promote recycling in CMU areas. Besides, some students can gain experience when working part-time with us. (RS04)

The comments, and overall perceptions of The Retail Marketing Manager of a PTT gas station, are as follows;

‘Our recommendations for the university is to exchange recyclable items for food coupons which can be used in CMU supermarkets. If the university does not have the potential to manage this process, recyclable items can be sent to our recycling projects, to be exchanged for money to buy stationery and sports equipment for

poorer students. The name of our recycling project is 'YakLakYim' or 'Recycling for smiles', which launched in May of the year 2017. In the beginning, we provided recycling bins to our dealers with no charges. We have 14,000 dealers running gas stations, while we own only 130 stations. For additional recycling projects, gas station dealers have to pay for the bins. We believe that the money from recycling is not very much, but the impact is very vast. We do not use the money to change peoples behaviour, but we create the project and simply implement marketing strategies. For our new projects, we will have other value-added strategies such as 'vending machines for recycling', customers will be able to bring items for recycling trade. We believe that when people take action together; the results have a significant impact on the community. Sustainability does not come from only the customers; it comes from everybody. The world will be a better place because we can create a small change together'. (PTT1);

The interviewee (PTT1) also offered comments and opinions on various opportunities and stated;

'Everybody should build a recycling network. We can have a plan together for the flow of the recycling process. The university could maybe raise recycling awareness among students, and then the station will offer the next step. We have known that there are several companies in Thailand dealing with recycling business. We need collaboration with the government and the private sector and the university because young people are the future of the country. Universities have a responsibility to change students' attitudes to make our community better at sustainability. We should share our skills and knowledge. We should not run everything for the whole process. The process of recycling will flow perfectly and be sustainable. Recently, our partners are 7/11(convenient stores), Amazon (coffee shops) and KFC (Kentucky Fried Chicken shops). For our next step, we will focus on every consumer. We will launch new projects consistently. We expect customers to take recyclable items to our stations. As a consequence, customers will perform recycling at home' (PTT1).

For the recycling promotion from the Student Quality Development division, the findings show that the staff had similar opinions as to the students. They believed that a recycling

bin standard for all areas could increase recycling. They promoted recycling practice for new students, through a parade and flyers. They also visited each faculty to explain how to separate the waste at the yearly CMU Trekking Event, but they only had a window of five minutes to speak to the students directly.

These are the comments and opinions stated by the Social Marketing Campaigners at CMU/ Student Development Division;

‘I personally say that recycling bins with lids are not practical because students have to open the lid to dispose of waste. It is not convenient, and the covers are not clean. I believe that if we have a standard bin system, recycling will be increased up to 80 per cent’. (SD03)

‘We are waiting for a new standard bin system for all areas. If we have a new bin system, we will begin to promote students to recycle. We think that students do not recycle because we cannot see the standard bins. Students maybe get confused on how to recycle at the source.’ (SD02).

‘We introduce new students on how to separate waste properly for five minutes per faculty; we focus on waste separation at the CMU Trekking Event every September. We use a roadshow or a parade to get their attention and raise their awareness. We have done public relations for one month. Our parade organises on Monday and Tuesday evenings on the main public roads and during lunchtimes on Wednesday at the central canteen. We use mascots representing each type of recycling bin and use megaphones to get the students’ attention. We use flyers for the recycling instructions. We give them free keyrings; the keyrings are multicoloured and are the same colours as the recycling bins.’ (SD01)

This team had to use competition and online channels to gain student engagement; however, they do not adopt students’ direct ideas. The team had a Facebook Page, but they only occasionally used it. They thought that the student council uses online sources to help them to gain student participation. They thought that the students’ promoted recycling very well, but the students’ still need support.

‘We used to organise a sticker of recycling instruction competition, but the labels of the winners were not practical. We used online votes to measure the outcomes. We do not use that design.’ (SD02)

‘We have our Facebook page for talking to students from the student council. The student council helps us to recruit volunteers for the waste separation at the CMU trekking event.’ (SD02)

The participant believed that a new rule, punishment, and incentives and advanced technology would stimulate some students to recycle. However, there was another student group who organised and participated in events without the need for incentives. They stated:

‘In my opinion, if CMU staff recycle as a norm, it will be a standard for CMU. I believe that if CMU has a rule and a punishment, recycling will be increased. CMU should use technology to get the students attention, for example, if a student disposes of waste in a wrong bin, the machines at the container should give feedback with electronic voices.’ (SD01)

‘For volunteers at the event, we give them free lunch boxes. Some students participated in volunteer jobs because they can accumulate credits, and then they can apply for student loans. Some students help the university without any rewards. At the yearly CMU Trekking event, we have forty volunteers for dealing with waste during the event. After the event, they gain the benefits from plastic bottles trade. They use that money for other activities.’ (SD02).

After the event, they used informal observation to check the results of their waste collection activity. They stated that there was no precise data available. The participant (SD03) stated:

‘We do not have any data indicating that we increase recycling behaviour after we promote the students’ to recycle. We think that one of the barriers is that we do not have a standard bin system.’ (SD01)

‘We have placed recycling bins at a central canteen for two years; they are various colours. However, we use only blue and yellow bins at the bus stations. We randomly look into the containers, and we found that there was a mix of waste. Students’ recycle at the event very well; however, they fail to recycle at CMU.’ (SD03)

‘We do not collect data for the waste weight or types of waste before and after the event. We randomly observe the waste on public roads.’ (SD02)

All of the student development team believed that students were good at promoting recycling, but students need support and CMU would work with them.

‘I think students are innovative and creative, but they do not have much time to promote recycling by themselves. If they promote recycling, recycling will be increased, but they do not have a budget to do that. CMU should be their consultants and support them to encourage recycling. (SD01)

Overall, the findings showed that the team promoted recycling only during special events because they thought that they would run a project once students had a new bin standard system. The critical success of projects in their experience was mainly from student engagement at the student council.

This section has presented the findings from the CMU staff and the CMU recycling stakeholders. The next section will present the findings from seven CMU lecturers, six authorities, six residents and three people from non-profit organisations. Their perspectives have an emphasis on other critical successful recycling factors.

5.2.5. Findings from the Interviews of the Marketing and Management Lecturers

No.	Code	Gender	Organisation	Role
1	MK01	M	Marketing Department	Lecturer
2	MK02	M	Marketing Department	Lecturer
3	MK03	F	Marketing Department	Lecturer
4	MK04	F	Marketing Department	Lecturer
5	MK04	F	Marketing Department	Lecturer
6	MK05	F	Marketing Department	Lecturer
7	MK06	M	Marketing Department	Lecturer
8	MM01	F	Management Department	Lecturer
Total	Eight interviewees	M=3 F=5	Marketing and Management Department	Eight lecturers

Table 5.47: The summary of the interviewees from CMU Marketing and Management lecturers

Section 5.2.4 presented the findings from the interviews of CMU Executives, the CMU management teams, and the CMU stakeholders (private sector). The findings primarily focused on the CMU plan and the implementation of the CMU plan. The participants mainly underlined the obstacles to recycling, while the private sectors offered collaboration as an alternative. So, this section, 5.2.5, presents a summary of the findings from the interviews of six Marketing Lecturers (MK01, MK02,..., MK06) and one Management Lecturer (MM01). See table 5.47 above.

In general, they shared their skills and knowledge on how to encourage the students' to perform recycling at CMU. Also, they stated that the obstacles could be fixed. Due to their backgrounds, the findings tend to show a variety of possible solutions.

Their opinions can be categorised into four main parts which are policy, the psychological and social marketing strategy, stakeholder engagement, and student participation. See figure 5.10.

Similarly, the four key recycling factors are the same as the three aspects of this study (Psychology, Management, and Social marketing aspects). Although, there are similar findings between the Lecturers and the findings of student survey and the findings from the student interviews; the lecturers added several critical success factors and also provided useful examples based upon their experience. So, section 5.2.5 consists of policy, psychological and social marketing strategy, stakeholder engagement, and student participation presented in section 5.2.5.1, 5.2.5.2, 5.254.3, and 5.2.5.4., respectively.

5.2.5.1 Policy

All participants (MK01-05 and MM01) stated that changing people's behaviour was complicated, took a long time, and they thought that critical success factors should focus on the students' perspective. In practice, they believed that changing students' behaviour could begin with a small change in a small group, and then when the student's got used to it, everything would then be more natural. All interviewees shared their perspective, gave good examples and offered possible solutions for the CMU teams. The management lecturer (MM01) supported the points and gave useful examples from using a strategy called 'KAIZEN' which is influenced by Japanese culture. (MM01) stated;

'Our team and I have implemented the strategy- 'KAIZEN' with CMU staff to change small things. The target audience is administrators. It is believed that proper strategic management can change their behaviour. The project aims to focus on energy saving in our workplace. 'Suggestion' and 'Small Improvement' are essential parts of our project. The strategy focuses on small change because it is believed that small change is easy and practical to achieve. We are soon going to complete this project; however, we have found that focusing on small changes can result in significant impacts. So, I think that projects promoting recycling should adopt this idea'. (MM01)

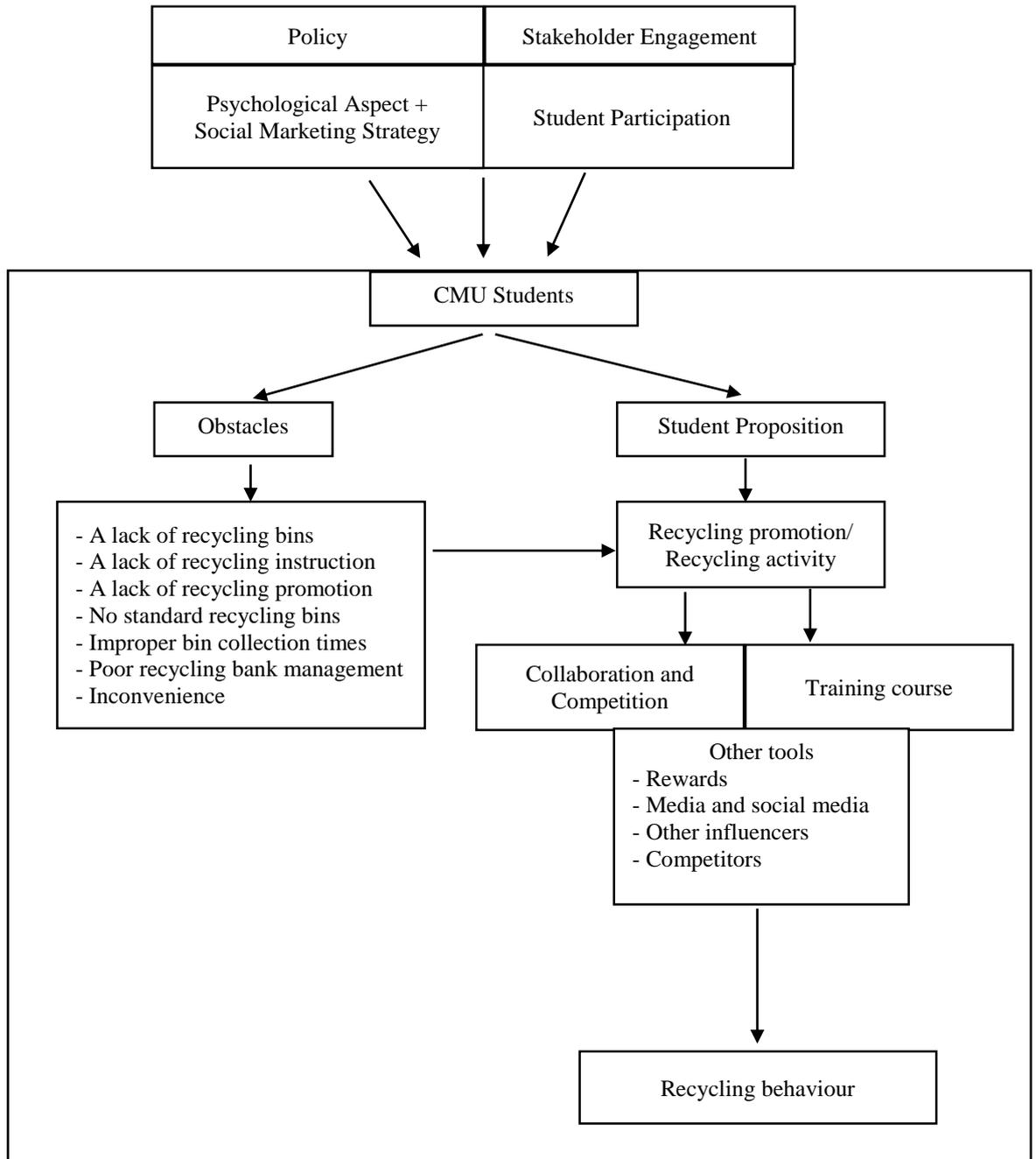


Figure 5.3: Summary of the Findings from the Lecturers' Perspective

The marketing lecturer (MK01) shared their experience on a case from the marketing department and stated,

‘Concerning previous and good marketing outcomes, in the year 2012, we assigned our students to do recycling research. They facilitated a short project for just one month. They identified recycling problems and collected data for two weeks and spent one-week planning strategies for dealing with the recycling problems. Then, they evaluated the results, and the results were brilliant. After the implementation of the strategy, it was found that there was a dramatic change. Before the study commenced, we did nothing to improve recycling at the recycling bins. For example, there were no instructors at the recycling bins; we only provided the recycling bins. However, we used cleaning workers standing next to the recycling bins helping students to separate waste individually. After the project, our students performed recycling very well, and we did not need to use any cleaning workers next to the bins.’ (MK01)

Next, six out of the seven participants stated that CMU should implement a new policy combined with social marketing strategies. One participant emphasised that using only policy with students would not show any success but adopting an excellent social marketing strategy would be better. The marketing lecturer (MK02) referred to a past successful CMU project and emphasised that using a policy with the stakeholders is a crucial tool; however, using simple steps is a crucial tool with students. They stated:

‘The example of a past successful CMU campaign from the central department was ‘the banning of styrofoam food containers’. All shops in CMU were not allowed to use any styrofoam food containers’. Their alternatives were food containers made of biodegradables such as sugar cane fibres or transparent plastic bags. However, I think that promoting recycling amongst young people would not need to rely on launching new policies, and I think that students will insist on recycling themselves’.(MK02)

These are the other supporting ideas provided by the lecturers, which describes why implementing a policy was an excellent recommendation; and some interviewees gave examples from their experience from previous projects:

‘Changing students’ habits is difficult and time-consuming. It depends on the environment. The effective strategies should consist of 50 per cent policy implementation and 50 per cent incentive and social marketing implementation. To discover the primary influencers that result in change, it should focus on the needs of the students’. We should ask the students directly.’ (MK03)

‘To promote recycling at CMU needs to first focus on setting a new policy, and then each faculty needs to provide standard recycling bins. Then, it should be followed by using a grand recycling event opening as an initiative and as a way to promote the new policy. The outcomes and results should be measure and collected carefully. Besides, the people who should play an important role are the executives, the lecturers, and the students. Lecturers and other staff would be the initiators, and then the behaviour would expand to the students. Another strategy is that recycling should be a compulsory module that affects the student semester score’. (MK05)

‘I think that to provide recycling bins at CMU first came from the policy of this faculty. There are two recycling systems. The first one is separating food waste. The second system is the separation of general waste and recycling waste. It is believed that the outcome is almost 100 per cent for food waste recycling. However, the results from the other system are not at 100 per cent. The success factors are that the process is simple, understandable and practical. I do not know the recycling campaigns of the students from the CMU Waste and Recycling Management Teams. However, here (business school), there is sufficient recycling information, recycling instructions, and available recycling bins. Moreover, we have a second process to make complete recycling by using cleaning workers to double-check on the outcome, and if there is an incomplete outcome, they will fix it immediately. I do not know where the recyclable items go because there is a team for dealing with it. Students never get involved in this process’. (MK02)

Several interviewees gave examples from previous CMU projects. They suggested that CMU should run each project for a long-term period, then the students would recycle as a habit. Additionally, they thought that the concept of each project had to match the students’ lifestyle. Moreover, CMU could show the results of the implementation of the projects. These are the comments that support their claims:

‘The motorcycle helmet-wearing campaign at CMU shows that students need a policy, and there needs to be a high frequency of implementation and evaluation. We assigned security guards to check on each rider at the university gates. The rule was that if a student was not wearing a helmet at the gate, she or he must not get permission to enter into the CMU campus areas. We expected students to perform this behaviour at 100 per cent; however, we found that the outcome did not reach the target. We needed to continue the implementation long-term. Besides, there was no data collection during the campaign. I think that if a key tool from this campaign was applied to a recycling campaign; it would be better if the results displayed the percentage of change, for example.’ (MK04)

‘The outcome of the motorcycle helmet wearing campaign will be better if security guards at the gate of CMU checked on each student rider seriously. However, it was found that a few student riders are taking their helmets off after passing through the university gates. I think to implement a strict policy for promoting them to change their behaviour would help, if it runs over a long-term period, then students will do it as a habit’ (MK03)

5.2.5.2. Psychological Aspect and Social Marketing Strategy

The marketing lecturers (MK02, MK03, MK04, and MK06) underlined that psychology models and theories and other essential tools (such as students engagement and incentives) should play a key role:

‘I have seen recycling bins in this Business school for between two and three years. Students may not recycle properly. I think that campaigns to promote them to do more recycling should consider psychology aspects such as motivation or incentive involvement’. (MK06)

‘They (students) have their own beliefs that all waste goes to the same elimination process, for example, the waste (both recycling and general waste) will be mixed in the same lorry’. (MK04)

‘I have seen recycling bins for ten years when the bins were first installed, it seemed students did recycle, but there was an increase in the opposite behaviour once they get familiar with the bins. I think they need to be motivated’. (MK03)

‘An effective strategy may be assigning student volunteers to stand next to the recycling bins and also give recycling guidance to students who do not know how to separate the waste at the bins. Moreover, the volunteers should get benefits from the task by receiving scores’. (MK02)

The interviewees (MK04, MK03, and MK05) thought that promoting students to do good things for the community was more important than focusing on other incentives such as money from recycling trades.

‘To promote recycling, practices should be used as a concept of doing something good from good people such as ‘Recycling makes life better’. I personally say that recycling trade at a recycling bank may not be a good promotion. CMU should promote recycling at student flats. A social marketing strategy should be adopted, such as a concept of donation or as a moral model. Then, students who recycle will feel good to do good things. CMU should provide sufficient recycling bins in order to offer them much more convenience’. (MK04)

‘The recycling messages for a training course should provide the importance of why we do recycling, which will make them have pride in what they are doing for the community when they (student volunteers) are standing next to recycling bins for mentoring other students. The action may result in a reduction of the Climate Change Effect and of Waste Reduction’. (MK03)

‘The recycling messages for encouraging students could underline other benefits beyond that of exchanging recycling items for money. We should focus on sustainability for the future. We should encourage the students to do good things for the future. For example, we could reduce the use of natural resources if we recycle. Global warming issues are too far from their daily life, but climate change does have the potential to impact them. Another essential factor for recycling is an

ethical issue because they will know the benefits and outcomes of recycling’.
(MK05)

The participant (MK04) added their opinion, which was similar to the Psychological concept of Cialdini (1984) that states that in order for a message to be powerful and have an impact it should tell the people the reasons they should do something:

‘The university should provide information explaining to students what happens after the waste collection; for example, there is a process of separating different types of waste. To demonstrate where the waste is going is recommended, if the university needs students to feel recycling is beneficial’ (MK04)

5.2.5.3. Stakeholder Engagement

Most participants thought that CMU should use the staff to promote recycling online, in particular, through social media to lead students to change their behaviour. One marketing lecturer stated:

‘The potential strategy could be using Deans of each faculty to promote recycling behaviour by posting photos on the official faculty Facebook, other social media platforms or on the university website. Then, the student community would spread recycling practice’.
(MK05)

Many participants stated that using recycling competitions among faculties in order to help CMU compete in the green campus competition was recommended, but each activity should present the results and the outcomes. Most participants said that if CMU teams need cooperation, they were ready to share knowledge and skills.

These are the comments that support their claims:

‘CMU is capable of competing in green campus competitions because we have a better environment and other essential factors, unfortunately, the management at CMU does not perform very well. However, at the faculty level, recycling promotion is excellent and has satisfactory results. If the central CMU management

teams need us as a corporative team, we will always help them. In fact, we have already helped them on many projects.’ (MM01)

‘The award from engagement in the recycling activity engagement is the chance to visit foreign countries where the residents perform recycling very well. This reward is exceptionally appealing. Other rewards are visiting other universities where we have MOU agreements already. Moreover, we also have an agreement with foreign countries. We are always welcome. I believed that knowledge and skill sharing is essential. We need a network to run this process. (MK03)

5.2.5.4. Student Participation and Other Tools

The interviewees stated that student engagement was significant, but the strategy should be combined with training courses and incentives. The participant (MK01 and MK05) added that clear recycling instruction could increase recycling practice.

These are the comments that support their claims:

‘I have seen green and yellow bins for six years, but I have only seen the four-colour bin system for three to four years in this faculty. However, there is still confusion on how to separate the waste. For example, if the waste is a plastic cup from a drink, both the staff team and the student team are confused where they should dispose of the plastic cup as it is an unwanted drink and a plastic recyclable. If we see a cup is a recyclable item and we put it into a recycling bin, the other recyclable items will be contaminated. So, we decide to put the items into a general bin. So, to fix this problem, a recycling training course should be provided to us. I think that an effective strategy may be assigning student volunteers to stand next to the recycling bins and also give recycling guidance. Moreover, the volunteers should get benefits from doing the task, such as receiving a score towards their overall grade. (MK02)

‘I have seen recycling bins since I started working here. Students who are recyclers try to perform recycling in CMU. However, students probably get confused on how to separate waste properly. For example, at a bin site, they attempt to recycle, even though there is a mix of both recycling and non-recycling items in the bins such as

plastic straws. However, in Japan, the recycling formation is obvious because it demonstrates to people where each type of waste are going too. Such as this waste is for combustion, and non-combustion and this bin is for metal cans and paper. In Japan, they not only show information in terms of basic recycling instruction but also present the results and numbers of recyclable items. Japan performs recycling very well, but visitors probably get confused the first time and finally they get used to it'. (MK01)

'I have seen recycling bins for four to five years, but there are some excellent cooperative students. However, if they are in a hurry, they commonly dispose of their waste into general bins. However, they would regularly dispose of plastic bottles into recycling bins. One of the excellent strategies is that CMU should make short and clear recycling instruction for them. (MK05)

'In our faculty, after separating recyclable items, cleaning workers can earn money from it freely. We have never changed it because we do not want to interfere with their (cleaning workers') income'. (MM01)

'(If using students instead of cleaning workers to deal with recyclable items and taking money from the activity), cleaning workers (who are responsible for this jobs) will not be against the change, but the worry is there is a lack of people who are available for dealing with recyclable waste.' (MK04)

Most participants gave examples of how to run recycling activities and who would play a key role. They stated:

'To promote recycling, we should start at powerful student organisations such as the student council, the student society, and student clubs because they have their own Facebook pages. For example, the Mor Chor Team (CMU team) this Facebook account is a powerful tool for communication'. (MK01)

'These young people tend to follow their friends or senior students rather than lecturers. 'Friends tell friends' or 'Senior students tell junior students' should be critical tools. Student councils should get guidelines from management. They will possibly run the activities better than CMU staff'. (MK06)

‘The recommendation is to set up a ‘Marketing Plan Competition’ and take the strategy and implement it. The students probably can run some activities and get support from university staff. Students could set up competitions (‘Marketing Plan Competitions’ or ‘Recycling Campaign Competition’) for short-term implementation. For a long-term plan, CMU should have a system to support the marketing plans; for example, an organisation should continue promoting the campaign and expanding upon it’. (MK02)

‘In the Marketing department, we had a competition for promoting video clips ‘Not littering on roads’. We encouraged them to deliver the message among themselves. However, we did not see any real improvement or progress in the practice of not littering. We selected the best quality video. The winners got excellent marks. We have not evaluated the outcome of the competition yet. I think students who participated in activities have a raised awareness’. (MK03)

‘My advice is to utilise recycling competitions among faculties in order to help CMU compete in the green campus competition. If we can reduce workers who are dealing with waste, the university will decrease the spending on waste management. The benefits are both tangible and intangible assets, but to make it sustainable, the university should run the activities frequently’. (MK04)

‘The competitions should run continuously, and it should begin with small projects as initiatives at some faculties and then expand the size of the activities. To implement a policy may be helpful, but the main organisers should be students because students know students behaviour’. (MK06)

The participants (MK01 and MK03) also gave useful information that was about the trend of the use of social media platforms and the suitable time for promoting recycling. Generally speaking, they thought that students would switch from Facebook to Instagram, based on their experience, they stated

‘For the past 4-5 years, students have changed their interests. They have progressively shifted from being Facebook users to LINE users. It is noticeable that

there is no interest in reading any university notices on boards. The dominant communication channel is online. There is a decrease of Facebook content reading (from their faculty Facebook), but when there is a crucial issue posted on the faculty Facebook page, some students will tag their specific friends' names for them to read. (MK01)

'The competition should run at the beginning of the first semester at the student orientation days because there are a lot of new students and tremendous waste generation. This activity should operate every year for all students. To change student behaviour activities should frequently be repeatedly'. (MK03)

Overall, when comparing the findings to relevant models or theories, it can be said that most individual factors (university students' desire and its barriers) and microsystems (their friends and staff in CMU or influencers) were partially discovered by the survey and from the interviews of the target audience which consisted of 394 respondents and 12 interviewees, accordingly.

Therefore, the interviews of 13 university staff (seven academic staff and six non-academic staff) focused on other dimensions which are macrosystems (PESTLE and Culture), exosystems (sponsors, media, project or campaign, public, competitors), microsystems (students' influencers), mesosystems (connection among dimensions) and Chrono systems (time which indicates that is changing all the times) (Bronfenbrenner, 1979).

It can be said that the findings from the academic staff tend to involve the Macrosystem and the Meso system rather than Individuals (Bronfenbrenner, 1979). Also, Fourali (2016) also provide other types of factors for social marketers which are called upstream level (such as national policy), midstream level (such as campaign support), and downstream (such as tactical support). Compared to the interviews of the CMU executives, the results reflect the university goals and the university policy for waste and recycling management as representatives of macrosystem or upstream level.

Next, at the midstream level section, the results from previous successful recycling campaigns in CMU will be shown as potential success factors for the next recycling campaign or project. Then, the tactical support or downstream section can be found from

the opinions from academic staff who lecture marketing and management modules at CMU in terms of social marketing strategies.

- **Upstream level** (such as national policy, university goals, and the university policy for waste and recycling management and other macroenvironmental factors such as economy, politics and culture)
- **Midstream level** (such as campaign support, previous successful recycling campaign factors, current recycling activities (the recycling bank) and its barriers)
- **Downstream level** (such as tactical support from previous activities, essential marketing strategy from lecturers' perspectives)

They explained that they had seen recycling bins in CMU for at least 3 to 10 years. The recycling bins were a variety of colours and designs and given different names such as wet waste bins, dried waste bins, and yellow bins. Then they expanded on the why the students did not recycle and explained that it was due to some perceived barriers such as no excitement about the recycling bins, confusion in the recycling information, a lack of recycling knowledge and understanding, inconvenience, and also no benefit is received from recycling.

5.2.6. Findings of the Interviews of Residents, Government Authority Representatives and Members of a Non-Profit Organisation

No.	Code	Gender	Organisation	Roles
1	GOV1	F	Hae-Hia City Municipality/ Chiang Mai	Authority of the Project 'Branches Recycling Bank'
2	GOV2	F	Muang Lamphun Municipality/ Lamphun	Authority of the Project 'The Waste Fee Management'
3	GOV3	M	Thungsaliang City Municipality/ Sukhothai	Authority of the Project 'No Public Bins'
4	GOV4	F	Hadsiew City Municipality/ Sukhothai	Authority of the Project 'Zero Waste City' and Modulator of the Focus Group
5	GOV5	F	Padang City Municipality/ Lamphun The Thailand Winner for International Cleanliness Province 2017	Authority of the Multi-Projects for Waste and Recycling Management (3Rs concept Implementation)
6	GOV6	M	Hadsiew City Municipality/ Sukhothai	Authority of the Project 'Zero Waste City' and Assistant Modulator of the Focus Group

7	RES1	M	Hadsiew City/ Sukhothai	Headman from the Village A/leader of the 3Rs Centre and other Social MK Projects such as Banning Smoking and Low Carbon City
8	RES2	M	Hadsiew City/ Sukhothai	Headman from Village B/ Leader of 3Rs Project
9	RES3	M	Hadsiew City/ Sukhothai	Headman from Village C/ CEO of Village Funds
10	RES4	M	Hadsiew City/ Sukhothai	A volunteer from Village D/ Rice Farmer
11	RES5	F	Hadsiew City/ Sukhothai	A volunteer from Village E/ Business Owner
12	RES6	F	Hadsiew City/ Sukhothai	A volunteer from Village F
Total	2 Gov. 6 Res.	3 F 5M	6 Authorities from 3 Provinces 6 Residents from Hadsiew City	(5 Projects) (4 Headmen and 2 Volunteers)

Table 5.48: The Participants of the Interviews and Focus Group Interviews and their Position and Roles within the Government or Organisation

This section presents the findings from the interviews and the focus group interviews of six residents and six authority representatives at the Problem Identification Phase. Three females and five males participated in this process. The backgrounds of the twelve participants and their roles can be seen in table 5.48 above. The crucial success factors for recycling and the barriers are categorised into three main aspects which are; psychology, management, and the social marketing aspects presented in sections 5.2.6.1, 5.2.6.2, and 5.2.6.3, respectively. Section 5.2.7 will demonstrate the findings from the interviews of Non-Government Organisations (NGO). Then, section 5.3 will present the findings from the Research Planning and Research Taking phase. Then, section 5.4 will demonstrate the findings in the evaluation phase. Finally, section 5.5 will present a summary of the findings.

5.2.6.1. Psychological Aspect

Model and Theory	Key factors	Example
A. Health Models (HBM+DHM)	Unhealthy	GOV4, GOV5
B. Social Cognitive Theory (Bandura in 1977 and 1986) and Social Proof (Cialdini, 1984)	Visiting Other Cities to Learn how to Recycle waste	GOV4, GOV5, RES1
C. The Rossiter-Percy Motivational Model (Rossiter and Percy, 1997) and Knowledge	Resident Involvement	RES01, GOV4

D. Morality and Positive Attitudes Toward Behaviour	Volunteering	RES01, RES6, RES03
E. Commitment, Respect, Consistency and the Interpersonal Theory of Behaviour from Triandis (1977) and Cialdini (1984)	Commitment	GOV4, GOV5, RES1, RES2
F. Social Norm (Cialdini, Reno and Kallgren, 1991)	Changing the Norm to Reduce Waste	RES2, RES6, GOV1, GOV5
G. The Social Marketing Value/Cost Exchange Matrix +Social Pressure (French, 2011)	Using Peer Pressure and Punishment with Residents who do not want to pay the Waste Collection Fees	GOV1, GOV2, GOV3
H. Incentives	More Income	RES4, RES5, GOV5

Table 5: 49: Conclusion of Relevant Models and Theories

A. The Health Belief Model (HBM) from Donovan and Henley (2010) and The Determinants of Health Model from Dahlgren and Whitehead (1991)

According to the interviews, the projects were most relevant to health problems, and the authorities fixed the causes of health problems by promoting recycling. The findings can be categorised and matched with several models and theories. See table 5.49 above.

The researcher selected two models, ('the Health Belief Model' (HBM) from Donovan and Henley (2010) and 'Determinants of Health Model' from Dahlgren and Whitehead (1991) because there is significant evidence to demonstrate that the participants identified 'the residents' psychological characteristics and demographics, susceptibility, the severity of health issues, benefits and barriers' and the tools for fixing the problems. The participant (GOV4) provided examples and stated:

'Our residents had been in poor health for a long time. For example, farmers were in poor health due to using pesticides for their rice fields. If we can use compost or biofertilizer made with food waste to replace the chemicals, our life would be better.' (GOV4)

B. Social Cognitive Theory (Bandura in 1977 and 1986), Social Proof (Cialdini, 1984) and Leadership Skills

According to the interviews, once the residents were ready to change their behaviour, the authorities supported them to visit several model cities to learn how to run projects and promote recycling. As a consequence, when the residents had the project running successfully, they planned to set up another project. What is more, other city members visited their communities and repeated the process, which created a feeling of achievement, and therefore the residents continued and maintained the positive behaviour. It can be said that these behaviours are most likely linked to 'Social Cognitive Theory' (Bandura (1977 and 1986)) and 'Social Proof' from Cialdini (1984) and 'Resident Engagement' (Rossiter and Percy, 1997). Both the government officer and the resident explained the process they went through and stated:

'For our preparation stage, we visited other cities which have similarities with our city to learn powerful strategies, such as Bann Tungsri in Phare. The city was awarded the top city model for zero-waste minimisation. They focused on a 'No Public Waste Bins Project'. We then adjusted some of their useful strategies for our city. We also replicated their concept, 'community engagement', as the primary strategy. We agreed to support the village headmen as the project leader. We positioned ourselves as supporters of the projects, not the facilitators.' (GOV4)

'We visited cities which had won the waste and recycling management competition. They selected the staff from the residents that demonstrated leadership skills, and they found that the residents ran the city project, and the local municipality cooperated as a consultant. We were astonished, and we were impressed because those people ran the project perfectly. So, we thought that we could do it ourselves.' (RES1)

C. The Rossiter-Percy Motivational Model (Rossiter and Percy, 1997), Commitment, Skills, Positive Attitudes, Experiences and Knowledge

Another critical factor which is relevant to resident involvement is likely to explain the situation because all residents are impacted by the poor conditions. Rossiter and Percy (1997) presented that if the target audience has a high level of involvement with both negative and positive motivation, it most likely demonstrates that these factors play dominant roles more than information delivery.

‘I have been working on waste and recycling management for 12 years (since 2006). My first project was the ‘Ban Na Yu Chum Chon Na Mong/ Lovely Home LovelyCommunity’. We used a standard evaluation process from the Health Department. The residents had to have a brainstorming meeting and concluded what the issues were that they wanted to improve.’ (GOV5)

‘There was no conflict among us because we all experienced bad and adverse conditions, so we all agreed to fight and overcome the difficulties.’ (RES1)

Although Rossiter and Percy (1997) did not focus on message delivery as an essential factor, another interviewee (GOV4) argued that she thought it was essential to deliver knowledge to the residents on how to recycle and what the processes should include. She stated:

‘At the first stage, we had to make our residents understand the aims and the direction that the project required. The municipality had a responsibility to provide relevant knowledge such as how to recycle.’ (GOV4)

D. Morality and Positive Attitudes Toward Behaviour (A Moral Norm from Pomazal and Jaccard (1976), Schwartz and Tessler (1972), Fishbein's and Ajzen's Theory of Reasoned Action (1975) and Power of Leaders

Based on the findings of the interviews, volunteering, good attitudes, and working as a group account for prime success factors. These can be categorised into numerous models and theories such as cases of blood donation and organ donation performed as a moral norm from Pomazal and Jaccard (1976) and Schwartz and Tessler (1972), respectively. Next, positive attitudes can lead to the performance of new behaviour from the Fishbein's and Ajzen's Theory of Reasoned Action (1975). Interestingly, there is a definite connection between recycling prediction and moral norms which can be found from the study from Allen et al. (1994). The findings show that they promoted recycling and did not expect to get any payment:

‘We promoted recycling without any payment. We did not feel we needed extra money to run the project. We think we have firm intentions and good cooperation. We did not feel like we lost anything. We think we all gained multiple benefits’ (RES1)

‘I am a volunteer for many clubs. My family and I love being volunteers because we believe we are doing the proper and right thing. We are responsible for our community. We plan to reduce the number of waste collection spots to reduce the amount of carbon dioxide emissions. We believe that we should use fewer waste bags. We want everyone to dump rubbish in the morning to help the system work better.’ (RES6)

‘I am the CEO of the community funds; the objective is to provide study funds for our children. So, I invite our children to help us to collect rubbish on public roads every month. This strategy is compelling. We can see them improving their understanding and awareness. We believe that if children engage with activities and have positive attitudes, they will recycle ’ (RES3)

However, due to Thai culture, on some occasions, volunteers received additional incentives:

‘The recycling bank was completely run by volunteers who do not receive any salary; however, we provided them with fertiliser when they requested.’ (GOV1)

E. Commitment, Respect, Consistency and the Interpersonal Theory of Behaviour from Triandis (1977) and Cialdini (1984)

Based on the findings of the interviews, it was discovered that after the residents participated, they displayed essential success factors consistent with the Interpersonal Theory of Behaviour from Triandis (1977), Commitment, and Social Proof from Cialdini (1984) and various other essential success factors. Furthermore, it discovered that commitment and affection play crucial roles in the project. According to Triandis (1977), people can create new behaviour if they have positive feelings such as affection for something, then they will have an intention, and then this leads to producing a behavioural change. From the findings, it was determined that the residents love and respect the late king (The King IX) and they desired to do the right thing to remember and honour him on his birthday. These are the statements made;

‘We started the project three years ago (in 2013), then the following year, we all agreed to commit to running the project to honour our King (Rama 9 The Great). We were very proud to present our love to the Great King Rama IX by doing something good for the community’. (RES1)

‘When we agreed that we would collect rubbish every Sunday morning, we expected every household to bring the bags in only on a Sunday morning, there were a few residents who were reluctant to follow our rules, and then they dumped rubbish on Saturday night. Now, they have changed their behaviour. I think that it is because of many factors such as repeating our commitment and because of our consistency of reminding them about the rules.’ (RES2)

‘One technique is that we tackle several objections by following ‘Ten Tummanoon/ The Ten Rules from our Agreement’); waste Management and Carbon Emission Reduction Projects were also included. We use tri-cycles to collect recycling waste instead of motorcycles or cars. We can reduce carbon emissions from each activity. We frequently grow more trees, and we replaced the standard light bulbs with halogen bulbs (energy saving bulbs) to save electricity.’ (GOV5)

F. Social Norm (Cialdini, Reno and Kallgren,1991)

Based on the findings, there was evidence showing that people illegally dumped rubbish or litter after they had seen a place that was already full of rubbish. The illegal dumping increased consistently. However, people stopped dumping rubbish when the rubbish had been removed from that area. This case study, illegal dumping in the city, existed on the bank of the river at the local school. The interviewees explained;

‘While the school disposed of waste at the rear gate, it was noticeable there were several residents that imitated that behaviour. (RES6)

‘Some of the staff members illegally dumped rubbish at the school's rear door. Consequently, some residents followed the school member’s behaviour because they started dumping their rubbish in the same area. We had to remove all the rubbish from that area and then there was no rubbish’ (RES2)

Based on the interviews, the reasons why people did not dump rubbish again could be based on many answers; however, at least some experiments and conclusions from Cialdini, Reno and Kallgren (1991) may help to identify possible factors. There was a norm found amongst the residents, which is categorised as a social norm:

‘Residents in Maehia burnt unwanted dry leaves and tree branches as a social norm. Their habits have been changed because of our project implementation.’ (GOV1)

G. The Social Marketing Value/Cost Exchange Matrix and Resident Engagement

Based on the findings, Thongsaliang village used punishment to prevent unwanted behaviour. They set up a new rule (500 Baht for illegal dumping in their city) and planned to use that money to support their activities in the city. After the new rule was implemented, the interviewee (GOV3) said that they helped each other to monitor illegal dumping. As a result, they found only one case which was caused by an outsider. Then, illegal dumping disappeared. It can be said that the disincentive technique is still an option from The Social Marketing Value/Cost Exchange Matrix (French, 2011).

However, the findings refer to not only punishment but also other factors such as attitude, beliefs, knowledge and volunteering/morality. For instance, the interviewee stated that their project was run with several groups using multiple-techniques identifying the critical factors as the Theory of Reasoned Action (TRA). So, this study will explain the findings in terms of the TRA, motivational model and knowledge in the following section;

‘We pointed out the solution where we arranged specific areas for depositing leaves and branches at a bank. Next, when we produced fertiliser from the dry pieces of wood and other parts, residents benefited from using the fertiliser. On the other hand, if residents burnt unwanted leaves and branches, they must pay a fine’.
(GOV1)

H. Incentive

The findings display similar factors which can be found from the comments of RES1 underlining that he and his family changed their behaviour because they felt they gained benefits and did not lose anything. Then, they recommended that their peers changed their behaviour. Other examples for changing behaviour because of the gain of benefits was from RES4, RES5.

‘We use unwanted vegetables to feed earthworms; the earthworms produce urine and stools. We use the urine as our rice bio-fertiliser. I can earn more money in various ways. For example, I can sell earthworm stools at our local market and here

(3Rs Learning Centre). It costs twenty baht per kilogram. I can earn four thousand baht from one order.

What is more, an earthworm can be sold. However, I often give visitors earthworm stools for free. I feel happy, and I am doing good for the community.’ (RES4)

‘I am the owner of a hotpot restaurant. In the past year, I kept fermented pork and beef in single-use plastic bags in the fridge and disposed of the plastic bags every day. Recently, I have used plastic containers instead of plastic bags. I have found that I saved money. My husband added that we generated less waste after the change. Feeling this way is excellent, we introduced other shop owners to reusable plastic boxes to save money and gain more profit from their business.’ (RES5)

‘As the consequence of focusing on environmental issues and running the activities which encouraged them to recycle, they separate general waste, food waste and recycling into different bins. Then they earned money from recycling trade and gained benefits from the compost which came from food waste. They also reuse the products by creating new things from recyclable items. For the hazardous waste, they paid for the transportation of hazardous waste that was taken to Chiang Mai.’ (GOV5)

5.2.6.2. Management Aspect (Bottom-up and Decentralisation)

According to the types of management identified in five previous case studies, it was clear that a bottom-up system had been adopted because their management systems used models from the four cities, ‘Khon Kaen, Nakorn Ratchasima, Samui and Klaeng’, of the UN development programme (UNDP report (2016) and NMITL (2016)). Moreover, according to the Country Report in 2018, waste management had been transferred from the Ministry of National Resources and Environment to the Ministry of Interior. Then, decentralisation was adopted at a local level, and the new management system was regulated by the ‘Act on the Maintenance of the Cleanliness and Orderliness of the Country, B.E.2560 (A.E.2017) (Royal Thai Government Gazette, 2017).

To reduce health problems and the overall amount of waste, municipalities had to select useful tools to encourage residents to change their behaviour or their lifestyle. According to the management aspect, the findings seem to be similar to the three Steps of Change' (Lewin, 1951), 'The Five Types of Intervention Cluster; (French, 2011), and Resident Involvement from 'The Rossiter-Percy Motivational Model (Rossiter and Percy, 1997)'. In order to initiate change, effort should be put into the driving force and into reducing the obstacles from the restraining force. These are a summary of their techniques; it consists of several tools such as control, inform, design, educate, support and other techniques, according to the Five Types of Intervention Cluster (French, 2011). It can be said that the authorities integrated several models and theories and residents participated in all the steps. See the explanation below;

A. Control (Agreements/Commitments+ Incentives+ Resident Engagement)

At the first stage, 'control' is not only the first concept for change, based on the findings, but the government officers also used resident engagement to make mutual agreements combined with incentives. All authorities (GOV1-GOV6) underlined that they invited residents to participate in their projects. They used several meetings to gain residents' opinions on how to fix the problems. They also adopted decentralisation techniques to transfer the power to the leaders of the resident teams. Then, they explained that the benefits of the change could be many types of incentives. Then, many residents participated in the process. Moreover, representatives at each meeting had a responsibility to deliver the message to other residents. See the explanation below;

'When we had to solve the air pollution problem, we invited residents to be on the committee. We gave them information on the health issues, and then we consulted with them on how we can run the recycling bank. Then, the bank was organised by volunteers. They can receive rewards such as fertiliser and visit a learning centre where the city has used fertiliser for their rice fields and vegetables'. (GOV1)

'The prime success factor of the project is residential engagement which consists of leaders from both government departments and residents. They are from seventeen groups such as Community Committees, The Housewives Club, volunteers from the Environment Club, volunteers from the Health Club, and government officers

from the Environmental Department of the City-Municipality. We set up leaders of the groups, and then we had a brainstorming meeting every month to seek possible solutions to solve our problems. Next, we made a plan to set up the budgets and submitted it to the central government to provide the estimated budgets. The development plan became the official agreement in 2014.’ (GOV2)

‘For the project of waste minimisation, we have established new rules for waste and recycling management. In reality, it was impossible to have all the residents attend the meetings. As a result, we appointed representatives to attend the meeting and then deliver the message back to the other residents.’ (GOV4)

‘The residents had to have a brainstorming meeting and concluded what the issues were that they wanted to improve. However, the direction of the development from residents had to match our aims. We had five crucial factors such as cleanliness, environment, safe vegetables for the community, such as basic Thai vegetables and herbs for a daily meal. After we encouraged the residents to follow the 3Rs policy, we also provided our office for recycling trade and the residents could keep the money in their own bank accounts from selling the items’. (GOV5)

B. Inform (Inform+ Feedback for Alternative Solutions)

After the residents had been informed by the volunteers, letters, and through local radio, they were asked to give other solutions if they did not agree;

‘We wanted to reduce the waste collection spots from eleven to eight. When we delivered a new message that we needed to change the behaviour for greater sustainability, some residents argued that they did not recycle or minimise their waste. We solved the problems by asking them for alternative scenarios on how to fix it. We assigned representatives to write reports on the information such as the addresses of the people who disagreed with the behavioural change and asked for other solutions. As an additional tool, we utilised the local radio for public relations.’ (GOV4)

The participant (GOV3) also shared his experience on how to deal with the limitations because, in reality, there were no perfect tools. He explained the facts to the residents, and then the residents accepted the limitations;

‘We had several brain-storming meetings with some resident leaders from five subcommunities about the pressures from banning dumpsites and the limited facilities, and then we concluded a solution. However, we still faced obstacles; for example, some residents had different needs. One of their disagreements was that they asked for a four-recycling bin system for communal areas instead of using designated waste bins with the labels of their addresses. However, we explained the reasons why there were limited options available, as we had only one lorry for the waste collection. We were unable to pick up different types of waste at different times in one location. So, the residents had to recycle the items by themselves before our waste collection.’ (GOV3)

C. Incorporation (Codesigning+ Testing = Design Improvement)

All the authorities designed the process of the projects with their residents, and then they tested the design by conducting pilot studies. Next, they improved the strategies and implemented the strategies to larger groups. The participant (GOV3) shared his experience and stated;

‘To regulate them (residents) for a behavioural change was risky as they might be against the closing of the dumpsites in the area. We had to set up new waste collection fees and new collection times. The residents could feel it was inconvenient and expensive. So, we offered them the new waste collection fees, which were based on four options. If they could generate less general waste, then they would pay less. They had paid the collection fee at 20 baht as a flat rate for decades, but for the new policy, they could select from four options -10, 20, 30 and 40 baht, based on the volume of total waste. We started the pilot study in five villages, and now we have implemented the project for all eleven of the villages. The evaluation is quite good because we have reduced the total waste from eight tonnes to six tonnes annually within just two years of the implementation of this project.’ (GOV1)

D. Educate (Education+ Knowledge and Skill Sharing + Networking)

The participant (GOV4) explained that after providing training courses to residents, the residents implemented the projects and became experts. They supported the residents to share knowledge and skills and built the network;

‘We invited the leaders of the schools for training and meetings. There are several schools or institutions around Thailand visiting our city as a Low Carbon City of the country. Now we encourage students to be mentors because of our project exhibition located in the temple which is near the school. The visitors are from various departments such as other municipalities and Military departments and clubs. We now have a powerful network after the success of the project.’ (GOV4)

E. Support (such as Data, Technology, Funds and Others)

When the authorities and residents had reached agreement on how to run their projects, they had to deal with other obstacles such as a lack of data, technology and funds. They gained support from their communities and other stakeholders such as local schools, temples, fire stations, private companies, NGOs, and others. The participants (GOV1 and GOV4) stated:

‘We use the local temple to run the recycling bank. Everyone can go to the temple and drop off the leaves and branches.’ (GOV1)

‘Our city is one of the Low Carbon City models of Thailand. We work with NMITL (the National Municipal League of Thailand), Mahidol University, TGO (Thailand Greenhouse Gas Management Organisation/ Public Organisation) and Tree World Company (a Private Company in Thailand). Now our network is expanding’. (GOV4)

‘All Buddhist monks in our villages have reduced plastic waste from their performance of religious activities for decades now. Moreover, a lot of media and social media have shared this behaviour. This public relations campaign helped us to spread distinctive behaviour’ (GOV5)

According to the findings, after the projects had finished, residents maintained the new behaviour and earned more income which can be called ‘a sustainable change’. Moreover, they were starting new projects, and new supporters were coming in to help with the projects. For example, GOV4 said that this city was going to have its own waste separation plant. She explained;

‘Next, for our new project, we plan to build a waste separation station; we submitted our proposal for government funds. The plant costs six million baht. Now, the first step of our proposal has been approved. Our plan will solve not only the problem of solid waste but also water waste. The plant will use a belt separator for the waste separation. We will collect plastic bags and compress them into cube shapes for trading.’ (GOV4)

As a result of the recycling and ‘3R’ practice, the residents gained more income in many ways. For example, many authorities visited their cities aiming to gain knowledge and skills, then they opened a ‘3R’ learning centre and also gave opportunities to their residents to sell local products at the learning centre.

When authorities and residents started implementing the projects, there were several interventions. They fixed the problems by using many techniques such as changing the waste collection times to be more convenient and described the limitations of why they could not provide some facilities. Moreover, they asked hesitant residents to offer alternatives or asked volunteers to collect feedback.

5.2.6.3. Social Marketing Aspect

According to the findings, there is much useful information, but this study selected only some dominant examples. This table aims to explain how to prepare a social marketing plan for a project. As mentioned, each step is not necessary to be run in a particular order. According to Fourali (2016), the findings from five case studies of waste minimisation could be summarised in terms of the Eleven Steps of the application of Social Marketing. See table 5.50.

Steps of SM	Findings	Examples of the Findings
1. Problem Identification	<ul style="list-style-type: none"> - An excess of waste (GOV1, GOV2, GOV3, GOV4, and GOV5) - Dumpsite closing (GOV3) - Waste collection fee imbalance (GOV2) - Harmful conditions or health issues (GOV1, GOV4, GOV5) 	<ul style="list-style-type: none"> - ‘In Chiang Mai, air pollution was one of the serious health issues. Residents in Maehia burnt unwanted dry leaves and tree branch as a social norm (GOV1) - ‘Some residents were not willing to pay the waste collection fees’ (GOV2) - ‘In the past, we eliminated our waste by using the open-dump method in 19 rai from 32 rai. Now, all dumpsites are closed.’ (GOV3) - ‘Our residents had been in poor health condition for a long time. For example, farmers were unhealthily caused by using pesticides for their rice fields. If we can use compost or biofertilizer, made by food waste, replacing the chemicals, our life would be better.’ (GOV4) - ‘Our problems are an increase in waste from local markets, school vans and fabric production and Dengue virus spreading’ (GOV5)
2. Planning	<ul style="list-style-type: none"> - Integrated multi-approach - Promoting 3Rs 	<p>‘For the city of waste minimisation, we selected the strategy which promotes residents to manage their waste by themselves. We separated different types of waste, for food waste, residents run the project at the temples for making several products.’ (GOV4)</p>
3. Purpose/Mission	<ul style="list-style-type: none"> - To reduce air pollution - To raise awareness - To offer behavioural change (A change of social norms) - To be community sustainability - To have a better life 	<p>- ‘The strategy for raising recycling awareness, I use 3R (reduce, reuse, recycle) strategy. I described them by using several examples from their daily life.’ (GOV4)</p>
4. Situation Analysis/MK research	<p>- PESTLE/SWOT Analysis</p> <p>Example of SWOT</p> <p>Strength</p> <ul style="list-style-type: none"> - A high degree of resident participation (GOV4 and GOV5) <p>Weakness</p> <ul style="list-style-type: none"> - Lack of space for recycling bank (GOV1) - A failure of the waste collection fee system <p>Opportunity</p> <ul style="list-style-type: none"> - A high degree of stakeholder engagement (GOV4 and GOV5) 	<p>P- Government assigned to reduce the total waste at 5 per cent per month (GOV1-5), the government assigned to close the dumpsite in the city (GOV3),</p> <p>E- If this city had to send the waste outside, the waste collection fee would be increased (GOV3), If this city cannot collect the waste fee, the management was in a crisis. (GOV2)</p> <p>S- Residents had to change their habits (and norms) and had to work together to engage with 3R implementation (GOV4 and GOV5). Most Thai people respect the Late King, and they</p>

	<p>Threat</p> <ul style="list-style-type: none"> - Crop and waste burning is a social norm in other provinces in Thailand (GOV1), - Weak waste collection fee systems can be found in many villages in Thailand. (GOV2) 	<p>want to do a good thing for the country and the King.</p> <p>T- We use new technology such as an App (Application on a mobile phone) to calculate the outcome for the case of tree dimension measurement from the project precisely conveniently (GOV4)</p> <p>L- Legal was utilised, but residents added their new regulations and commitments such as a five hundred-bath fine for illegal dumping (GOV4)</p> <p>E- Environment needed to be improved such as ‘No Crop Burning’ (GOV1)</p> <p>R- Religion- Most residents were Buddhists and residents respect Buddhist monk and tend to follow the monk behaviour</p> <p>C- Cultures- Thai people have several Thai traditional festivals which create more waste.</p>
5. Objective	SMART objective	<ul style="list-style-type: none"> -To reduce carbon dioxide emission within one year and three years from the Zero Waste City’s project - To reduce total waste at least 5% per month
6. Target group+ Obstacles	<ul style="list-style-type: none"> - Target groups- residents - Obstacles- Lacks knowledge, understanding, skills, confidence, resident’s participation and funds 	<ul style="list-style-type: none"> - Providing -training courses, meetings, visiting other cities, training to be mentors - Inviting residents to be representatives - purposing supports and funds from several outsource
7. Customer proposition	<ul style="list-style-type: none"> - To pay the fee at the lowest rate - To gain incentives rather than disincentives - To have a better life - To have more convenience 	<ul style="list-style-type: none"> - Their waste collection fees did not increase - Residents got new products for use and sale - They were healthier and lived longer
8. MK mix (4Ps)	- Product, Promotion, Price, and Place	<ul style="list-style-type: none"> - Product 1. Change behaviour 2. Augmented level- Proud of themselves and highly satisfaction 3. Actual level- waste reduction and few health problems 4. Core level- Healthier
9. Implementation	- Stage 1 and stage 2	<p>Stage 1- Planning, recruitment (representatives), setting up committees</p> <p>Stage 2- Local radios, meetings and door-to-door communication</p>
10 Resource	- Funds	<ul style="list-style-type: none"> - Budget from Municipality (GOV1-5) (NMITL, 2015) - Sponsor from others such as German, Toyota, TEI (Thailand Environment Institute)

		organisation), Three World company, Bike clubs and others (GOV4 and GOV5)
11. Monitoring and Evaluation (Process and Outcome)	<ul style="list-style-type: none"> - Clear behavioural change - To have a better life - Measurable method 	<ul style="list-style-type: none"> - According to the interview, evaluation from a pilot study; ‘We did a pilot study for three sub-cities for one year, we discovered that the total amount of waste had reduced from 12 to 5.6 tonnes. We reduced green gas emission at three hundred and ten tonnes. We save spending from 480,000 to 280,000 baht for waste management implementation.’ (GOV4) - Evidence from behavioural change measured from the increasing of hazardous waste dumping, according to the interview - After the implementation, the projects reduced carbon dioxide emission 765.6 tonnes from the baseline between 2013-2014 (The National Municipal League of Thailand, NMITL, 2015)

Table 5.50: Examples of Social Marketing Adoption
Source: Adapted from Fourali (2016).

It can be said that CMU teams should apply The Eleven Steps for promoting their next projects by learning the essential tools from Table 5.50. Moreover, this study will adopt this table for the project and will show the process and results in the findings of the research planning and action taking phase.

5.2.7. The Findings of the NGO Interviews

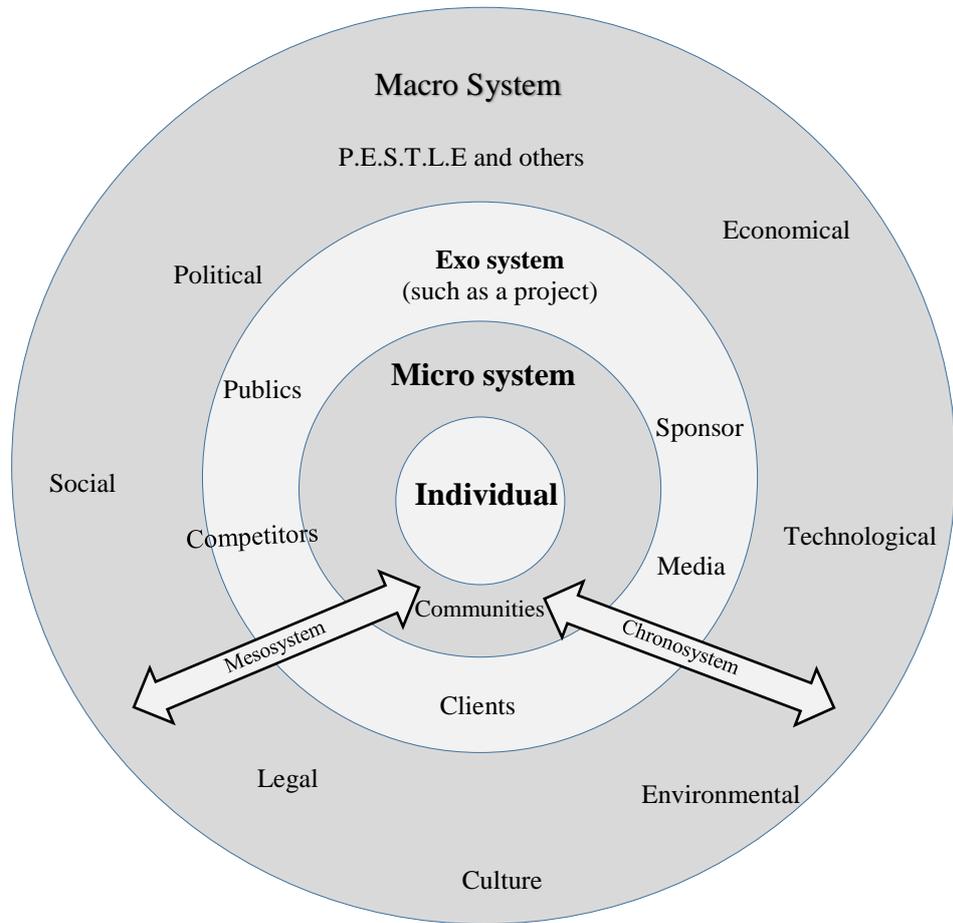


Figure 5.4: The Dimensions of Social Marketing
Source: Adapted from Bronfenbrenner (1979) and Fourali (2016).

The findings from the NGO interviews can be categorised according to Bronfenbrenner (1979) and Fourali (2016) into four main topics which are the macrosystem, exosystem, microsystem, and others, See figure 5.4.

For the macro system, the participant NGO1-3 stated that although Thailand had several commitments on climate change issues, the organisations which had the responsibility of tackling the issues implemented the policy ineffectively. They thought that the government

did not correctly use a robust and powerful approach. They also advised that the government could have justification for working with other stakeholders. As a result, the country development plan did not show a clear direction. The participant (NGO1) suggested that the government had to launch new laws to manage the people:

‘At the international level, I think that we have to implement specific laws to control them on waste management issues. There are no laws on recycling practice. As a result, Thai people feel free to do whatever they want. Nowadays, waste and recycling management has become the responsibility of each local municipality. Most people think that they have paid the waste collection fees and then the authorities are responsible for these jobs. This system makes people have no awareness of waste minimisation. Furthermore, they think that it is not their responsibility.’ (NGO1)

She mentioned that recycling awareness could be found in only people who worked in environment fields:

‘Thai people ignore recycling and the impacts on the environment because they do not feel close to this issue. However, speaking to environmental people, their mindsets are certainly relevant to environmental issues. Of course, recycling awareness is embodied in their mindsets.’ (NGO1)

For the exosystem, all participants said that raising peoples' awareness was essential. They gave examples from their experiences and explained how to run a project among Thai people. The participant (NGO1) compared previous successful projects to the existing projects:

‘A long time ago, the most effective waste management campaign in Thailand was from TA-WI-SED (Magic Eye) on several media platforms, in particular TV. Unluckily, at present, there is no TV campaign at all. The government does not encourage the residents through media campaigns on this topic. I think using proper media campaigns on this issue is essential. If they do it, the media campaign will strengthen the local authorities in the implementation.’ (NGO1)

While NGO1 referred to the previous example, NGO2 and NGO3 described the trend of the marketing strategy, the sponsors, and the existing projects:

‘We work as a consultant for each project because we are an NGO, but we can run each project if there is an organisation that has a plan. We not only work with local government departments but also the private sector. Recently, promoting people to do a good thing is a new trend because private sectors use the sustainability concept to replace traditional CSR (Corporation Social Responsibility). In the past, a company might have a forestation project for CSR, but the company has shifted to implement doing something for the community for sustainability, such as changing peoples behaviour. The company aims to promote their reputation in this way as a recognised brand and activity. For example, PTT is well-recognised as a green forest project. SCG has an excellent reputation for the project of waste to energy.’ (NGO2)

For the microsystem, they focused on families and schools. They believed that school rules regulated students to perform recycling. Recycling activities is a powerful tool to raise students’ recycling awareness. The participant (NGO1) thought that most schools did not promote recycling because school staff did not feel recycling was necessary, then she said that promoting recycling would be a new trend.:

‘Educating children should be adopted when they are very young such as at kindergarten. It is found that most teachers are not interested in this topic, then schools will not focus on this issue. At the university level with young adults, they are rarely interested in the environment, and their favourite topics and interests are about technology. Most universities do not realise they are producing students with no environmental interest. If universities do not stand up to change their policies, these consequences will affect university students. The students will finish the course without awareness. Recently, a few Thai universities have launched waste and recycling campaigns, such as being green universities. We hope to see a better future from their campaigns.’ (NGO1).

For the microsystem, they explained how to run activities for various groups. They categorised target audiences through several criteria, such as types of houses, age,

educational level, and gender. They explained that they worked as consultants and used a flexible approach to encourage residents to change their behaviour. Their team consisted of only four people, but they were responsible for many projects around Thailand. One of the reasons why they could implement their strategies effectively was that they asked the residents' needs, and then they invited residents to engage with every step of the activities. Also, they shared how to maintain new behaviour over the long-term. See the explanation below;

‘In the elderly community, we will expand new participants who are members of the new generation. We set up some activities for different ages to build their network. We also implemented this strategy for schools, temples, and other Bangkok Metropolitan departments.’ (NGO2)

‘We found that kids are new groups. We recruited children to be volunteers promoting the residents to take part in recycling topics via the local radio. Child volunteers play important roles as junior DJs. Finally, their parents performed recycling’. (NGO3)

At the individual level, all participants stated that women tended to participate in the activities more than men. They believed that incentives and disincentives were critical tools to gain their corporation and maintain their behaviour:

‘We have found that female groups are more powerful than male groups. Based on our experience, we often encourage women to participate in our operations. We use games and competitions to promote recycling. Our prizes are t-shirts, caps, and school stationery’. (NGO2)

‘I am sure that if the recyclable items are in high demand, it can change people's behaviour. In some countries, they charge customers if the customers use single plastic bags; this strategy can change peoples behaviour. I believe that incentives maintain peoples behaviour, but when they perform a new behaviour for a long time, we can withdraw the incentives.’ (NGO1)

For the chronosystem, they stated that changing peoples behaviour is time-consuming, so each project should run for at least one year. They underlined that evaluating the results could be done in many ways, such as checking the percentage of waste contamination or number of recyclable items. Then, they gave recommendations to CMU:

‘If CMU implements a recycling project, the results will show better validity when the project is adopted in the student flats or a closed system. However, it is challenging for CMU to measure the weight of recycling and general waste around the university because it is not a closed system. Not only can students and the staff access the university, but so can visitors, recycling business owners and other stakeholders. In the student flats, the outcome can be checked by the percentage of waste contamination. For example, by checking the recyclable items which remain in general waste bins before and after the campaign is completed. However, we cannot use this method for just a one-month campaign implementation’. (NGO1)

‘For a ‘Waste to Energy’ project, we begin with encouraging people to separate waste properly, which is the initial strategy. We evaluate the outcomes of each project when it runs for one year. We expect to change their behaviour for sustainability. We frequently check the results and feedback after the project implementation. If a community has shown a permanent change, we will invite other cities to learn how to run the project successfully. Then, their difference becomes long-term behaviour.’ (NGO2).

The next section, 5.3, will show the findings from the research planning and action taking phase. Then, section 5.4 will demonstrate the findings from the evaluation phase, and Section 5.5 will present a summary of the findings.

5.3. The findings at ‘The Research Planning’ and ‘The Research Implementation’ Phases

In CMU, many people generated waste, such as the staff, students, food sellers, and visitors. However, in this study, the target audience was the students at CMU. So, this study focuses on raising recycling awareness and behavioural change for the short and

long-term initiative and for doing a good thing for the community. As mentioned, to implement some strategies from other countries is possible, but it should be customised and linked with a conceptual framework for practical strategies. This study is action research involving several stages and multiple stakeholders, and this research considers and builds upon a previous pilot study involving numerous university students from four universities in Thailand (McNiff, 2013 and Fourali, 2015).

So, it can be said that the researcher adopted the previous findings and the experience from the pilot study and developed a new project and tested it at CMU. During the research planning and research action taking phases, it can be said that there were many factors which were limitations, in particular the time constraints of the permission, the project, and the student semester. So, the findings tend to present initiatives and short-term behaviour. However, it is suggested that in subsequent or future projects vital factors such as the different types of activities at different times and in different places, and support factors such as funds or sponsors from CMU teams and CMU stakeholders should be taken into consideration.

Due to the limitations, the main recycling activity on the Facebook page was conducted from 19th July in the year 2017 until 3rd December in the year 2017. The timeframe of the research at the research implementation phase is displayed in Table 5.51 below.

03/07/17	CMU Opening Day of the first semester
19/07/17	Facebook Opening Day in the UK
01/11/17- 01/12/17	The Recycling London CMU Ambassador contest in Thailand
03/12/17	Rewarding the winners at CMU
15/01/18	The end of the first semester

Table 5.51: The Timeframe of the Research at The Research Implementation Phase

This section demonstrates the findings from the Research Planning and the Research Implementation Phases in section 5.3.1-5.3.3, respectively. Section 5.3.1 describes the results for the Planning and The Research Implementation Phases in terms of SWOT, 4Ps and other vital factors. Then, section 5.3.2 presents the student ambassadors' recycling messages during the contest. Also, it demonstrates the reflexivity and the learning process.

The findings identify many key recycling success factors which are categorised into seven groups, based on the psychological aspect such as ‘Norms’, ‘Emotions’, and ‘Incentives’. Section 5.3.3 demonstrates the Recycling Ambassadors and their friends ‘engagement in the contest on the Facebook Page.

Furthermore, it presents the results and the consequences of the findings from the Problem Identification Phase, in particular from ‘The Student Survey and the ‘Student Interviews and the interviews and the focus group interviews of the Stakeholders’. Additionally, it demonstrates how to adopt social marketing strategies to promote recycling among CMU students. Section 5.4 will present the results from ‘The Evaluation Phase’ which possibly demonstrates the adoption of innovative and practical social marketing strategies.

5.3.1 Planning Phase Results in terms of SWOT, 4Ps and other Key Factors.

According to the social marketing aspect, there are three main dimensions to consider which are the microsystem, exosystem, and the macrosystem (Bronfenbrener (1979) and Fourali (2016)). The first dimension refers to small communities such as families, schools and friends. Secondly, an exosystem refers to a relationship between microsystems, such as can be seen between a family and a school in terms of social service and communication channels. For example, there are competitors, sponsors, projects, and media (Fourali, 2016). Thirdly, a macro system refers to cultural values and laws. In a Thai context, this means taking into consideration the university recycling stakeholder involvement and adapting the social marketing strategy accordingly. Similarly, the study will collect data or participants’ opinions not only from university students but also from the stakeholders. As mentioned, changing people’s behaviours is complex, and it cannot be done without the collaboration of the stakeholders, for example, to make recycling a norm it requires recyclers, bins or bags, waste collectors, waste management teams, marketers and recycling market, social service, and media.

Table 5.52 displays a summary of the critical factors identified from the interviews and focus group interviews and from the social marketing plan, based on the SWOT, 4Ps and other factors. See Table 5.52 below.

Factors of the project	Example
1. SWOT	<p>S-strengths</p> <p>CMU students loved engaging with fun activities with their friends.</p> <p>They used social media, especially Facebook and LINE, to talk to each other and share their opinions daily.</p> <p>They preferred incentives when they spend time on each activity.</p> <p>They tended to follow their friends' or their idols' suggestions.</p> <p>They loved convenience, creativity, innovation and technology.</p> <p>W- weaknesses</p> <p>Student recycling behaviour seems to be difficult to be changed.</p> <p>Students seem to ignore formal and traditional recycling promotion.</p> <p>O- opportunities</p> <p>CMU focused on 'a green and clean university' plan and attempted to find effective strategies and tools to raise student's awareness.</p> <p>There were many competitions to strengthen their unity.</p> <p>T- threats</p> <p>There were so many student activities all year, but there were no disincentives for students who generated too much waste after each activity.</p> <p>CMU teams made unstable decisions on recycling bin improvement.</p> <p>Each faculty provided different recycling bins and recycling instruction poster.</p> <p>A lack of collaboration between the CMU office teams and each faculty</p> <p>There was no consistent recycling promotion.</p>
2. Social marketing objectives for this project	<p>An increase in recycling behaviour, maintaining recycling behaviour (Behaviour objectives)</p> <p>An increase of recycling understanding, knowledge and skills (Knowledge objectives)</p> <p>Feeling happy when attending recycling activities, feeling more confident of performing recycling, sharing a positive attitude to their friends (Belief objectives)</p>
3. Target audiences	<p>Students who used Facebook regularly</p> <p>Students who loved to strengthen unity by engaging with the contest and the activities</p> <p>Students who loved to share positive attitudes and their knowledge and skills on recycling topics</p> <p>Students who were able to communicate recycling messages creatively and innovatively and gained massive attention and positive impacts</p>
4.Target goals	Target audiences

	<p>Students and their peers (200-4,000 engagements such as Like, Love, Share, and posting comments)</p> <p>Goals</p> <p>To test alternative social marketing strategies</p> <p>To observe students' behaviours during the activities and the competitions</p>
5. 4Ps and others	<p>Product: (core, actual, and augmented levels), price, place, and promotion</p> <p>The project offered the recycling ambassador contest, which consisted of innovative and creative social marketing strategies to increase awareness and tended to increase recycling behaviour.</p> <p>Students who participated in the contest had to create recycling messages to tell their friends how to recycle and why they had to recycle. Then, they had to share their messages with their friends and families to gain Likes, Love, and Shares. The winners were measured by most Likes, Love, Shares, and Comments (numbers of engagement). Additionally, there were other rewards for innovative or creative competitors who did not gain the most Likes or Shares but won the committees' hearts.</p> <p>The contest offered tangible incentives (such as stationery, reusable bags, t-shirts with unique logos, certificates, and student funds) and moral incentives. (such as feeling good to be a green person, feeling happy to recycle and willing to share their positive attitudes, and feeling more confident when maintaining recycling behaviour)</p> <p>Students that competed in the contest had to spend their time to promote their recycling messages and perform recycling behaviour for one month. Then, they would put effort into promoting their idea using both traditional and new communication channels by placing recycling contest posters on their faculty's libraries', student kitchens', study rooms' boards. (This strategy aimed to allow the students to create their communication channels and gain more confidence to do good things for CMU)</p> <p>The researcher helped them to promote their ideas by placing recycling contest posters on the university boards (according to the official permission), informing the executives, the management teams and the student leaders in several meetings, and visiting several student clubs to inform and invite them to engage with the activities.</p> <p>For the online platforms such as Facebook, LINE, and others, each student competitor had to share their recycling ideas from the Facebook page to their personal Facebook accounts, then their families and friends shared the messages to their peers to gain the most Likes, Love, and Shares back to the student competitors. Students used other social media to spread their recycling messages such as LINE and Instagram. Then, other people who supported their ideas would click Like, Love, and Share on the Facebook page.</p>

	The researcher helped the ambassador competitors to gain more engagement by posting their ideas with their numbers.
6. Results (Source: The Facebook page- 'CMU London Recycling Project')	Twenty-six ambassador groups were participating in the contest. The students were from the faculties of Engineering (2), Science (3), Education (1), Argon-industry (3), and Associated Medical Science (17). All ambassador groups gained massive public impressions and received engagement from 137,710 people. They showed that they delivered their messages and gained 70,299 engagements within one month (Like, Love, Share, and Comment). In total, 19,891 Likes, 502,686 Shares, and 122 Comments were collated by the end of the contest according to the findings from the Facebook page on 1st December 2017.

Table 5.52: The Social Marketing Plan including SWOT, 4Ps and other Vital Factors
Source: The Facebook page- 'CMU London Recycling Project' (2017)

This research discovered that the Facebook Page tends to reflect the students' perspectives which can be categorised into eight main vital factors. The factors will be identified in the next section.

5.3.2 The Student Ambassadors' Recycling Messages During the Contest

Group	Example
1: Emotions such as love, fun or being disappointed played critical roles for recycling (Triandis, 1977) and Maslow (1954)).	<p>'Dumping waste into the recycling bin is better than being dumped.' (Ambassador no. 3)</p> <p>'Putting the right waste into the right bin like giving your heart to the right person.' (Ambassador no.14.)</p> <p>'Being a hero by putting the right rubbish to the right bin.' (Ambassador no. 1)</p> <p>'Angels always recycle. How about you? Do you recycle?' (Ambassador no. 23)</p> <p>'Flawless performing, using right bins'. (Ambassador no. 11)</p> <p>'I wish I had a Harry Potter hat and magic so that I can turn more CMU students in to waste separation fans.'</p>

	(Ambassador no. 6)
2: For the self-concept, (norms Triandis (1977) and Cialdini (1991).	‘For a student flat with no waste sorting, you can put plastic bottles into separate bags and put it by the waste bin.’ (Ambassador no.5).
3: Morality, knowledge and skills were essential for recycling.	‘Although recycling bins are colourful, good people know how to select the right recycling bin. Quality people recycle because they want to do a good thing.’ (Ambassador no. 25) ‘Doing a good thing and sharing it. Pay attention when recycling—checking the right waste for the right bin’. (Ambassador no. 24) ‘Proper recycling with high speed makes the world better’ (Ambassador no. 22)
4: Incentives or Benefits of recycling- creating a pleasant environment, making the world better (Cialdini, 1991), Beliefs about outcomes, Triandis, 1977)	‘Please put the paper into the recycling bin. So, it can be transformed into something that can be used again’. (Ambassador no. 7) ‘Better waste management starts with separating your waste into proper bins.’(Ambassador no. 8) ‘Sorting your waste for better love and care for the environment.’(Ambassador no. 17) ‘We cannot stop sorting waste for a good cause.’ (Ambassador no. 19) ‘Waste sorting for better care for the environment.’ (Ambassador no.15) ‘Reuse the cardboard box to save raw materials’ (Ambassador no.16)
5: For Intervention, providing information was an essential tool. (French and Gordon, 2011)	‘I am sorting my waste by putting straw and lid into ‘General’ bin, and plastic cup into ‘Recycling’ bin’. (Ambassador no.9) ‘What to put in colour-code bins: blue – non-recyclable items; green – food and garden waste; yellow – recyclable items; red – all other rubbish’ (Ambassador no.12)

	<p>‘Let us finish all drinks and put empty bottles into the recycling bin separated from other waste bins’ (Ambassador no.2)</p> <p>‘General waste bin is for only non-recyclable waste such as plastic bags, instant noodle packages.’ (Ambassador no.4)</p>
6: Changing negative attitudes such as recycling is too tricky, and it is an inconvenience (Fishbein and Ajzen (1975) and Ajzen (1985))	<p>‘Recycling is effortless like dumping your banana peel into the compost bin.’ (Ambassador no.10)</p> <p>‘You can simply put the right item to the right bin’ (Ambassador no.13)</p> <p>‘Everybody can put rubbish into the recycling bin.’ (Ambassador no.18)</p>
7: Consciousness, unconsciousness, intentions, norms, roles (Triandis, 1977) and (Fishbein and Ajzen (1975) and Ajzen (1985))	<p>‘Please reuse and cycle paper’ (Ambassador no.20)</p> <p>‘Everyone has recycling awareness, consciousness and intentions’ (Ambassador no.20)</p>
8: Recycling even feel tired and sleepy (Fast and slow actions from Kahneman, 2011)	<p>‘Although I finish my project very late and I was exhausted, I still recycle properly.’ (Ambassador no.21)</p>

Table 5.53: The Categorisation of the Recycling Messages from 26 Ambassadors

Based on the student ambassadors’ recycling messages during the contest, the findings demonstrated the key factors which were categorised into eight groups. They are ‘Emotions’, ‘The Self-Concept’, ‘Morality, Knowledge and Skills’, ‘Incentives or Benefits’, ‘Intervention and Information’, ‘Attitudes and Inconvenience’, ‘Consciousness, Unconsciousness, Intention, Norm, and Role’, and ‘Fast and Slow Actions’.

Table 5.53 below presents examples of the perspectives of the student ambassador recycling contestants. Twenty-six teams expressed their positive attitudes towards recycling and also led their peers to believe that recycling could be a new norm for them to help the CMU community.

After the completion of the competition, further data was collected to check on the feedback from the participants and their peers. Although the survey respondents seemed to provide feedback that leaned in a positive direction, they also provided recommendations on how to improve any future recycling projects or activities. It can be said that the winning teams received various incentives not only categorised as tangible assets but also as intangible assets such as feeling happy and feeling confident to continue recycling behaviour. The rewards for each of the winners and the statistics of the engagement are presented in the following section.

5.3.3. The Recycling Ambassadors and their Friends' Engagement in the Contest

A	B	C	D	E	F	G	H	I	J
1	1	06	68	36	104	2	106	3173	Cap no. 4 (1)
2	4	05	231	276	498	2	500	4025	Reusable bags no.10 (4), no.9 (2)
3	1	06	73	34	107	2	109	2563	Notebook no.7(1)
4	4	05	10000	21325	31325	4	31329	15203	The winners 10,000 b.
5	4	13	62	56	118	1	119	1704	Reusable bag no.10 (1)
6	3	11	7100	24128	31228	47	31275	25168	The winners 5,000 b. + T-shirt (20)
7	3	11	78	58	136	1	137	2038	Cap no.5 (1)
8	3	11	41	14	55	1	56	686	T-shirt no. 6 (1)
9	3	11	112	225	337	8	345	3555	Bags no.8,9 and 10
10	3	11	88	109	197	2	199	2765	Bag no. 10 and 9
11	1+ 2+ 3+ 4	11	191	234	425	1	426	4734	The winners 5000 b.
12	3	11	115	83	198	1	199	7460	The winners 1000 b.
13	3	11	76	41	117	11	128	3187	Cap no.5 (1)
14	2	02	566	2791	3357	8	3365	18941	Cap no.5 (2) + t-shirt
15	4	05	35	16	51	1	52	1751	T-shirt no. 6 (2)
16	4	13	12	9	21	1	22	738	Notebook no.7
17	3	11	314	654	968	1	969	15517	Cap no.5+t-shirt
18	4	11	225	42	267	14	261	4704	Bag no.10 (2) + t-shirt (1)
19	4	11	178	37	215	1	216	5357	The winners 3000 b.
20	4	11	83	23	106	3	109	2678	T-shirt no. 10 (3)
21	4	13	6	3	9	1	10	359	T-shirt no. 10 (1)
22	4	13	6	1	7	1	10	361	T-shirt no. 10 (1)
23	4	11	51	24	75	1	76	3045	T-shirt no. 10 (1)
24	4	11	78	54	132	1	133	4203	T-shirt no. 10 (3) +bag no10 (1)

25	4	13	11	2	13	1	14	419	T-shirt no. 10(1)
26	2	11	91	20	111	3	114	3376	T-shirt no. 10 (3)
		Tot al	19891	50286	70177	122	70299	13771 0	

The Key for Table 5.54: A=Number, B=Year, C= Faculty Code, D= Likes & Love, E=Shares, F= Total Likes, Love & Shares, G= Number of Comments, H= Number of Engagements, I= Number of Views J= Reward Received

Table 5.54: The Recycling Ambassadors and their Friends' Engagement in the Contest

Twenty-six ambassador groups were participating in the contest. The students were from faculties of Engineering (2), Science (3), Education (1), Argo-industry (3), and Associated Medical Science (17). All of the ambassador groups gained massive public impressions and received views from 137,710 people. They demonstrated that they delivered their messages and gained 70,299 engagements within one month (Like, Love, Share, and Comment). In total, 19,891 Likes, 502,686 Shares, and 122 Comments were collated by the end of the contest according to the findings from the Facebook page on 1st December 2017.

Most of the contestants received their rewards at a ceremony on 3rd December in the year 2017 at the registration building no. 5 in front of the university display boards. The contestants had been studying at CMU for between one year and four years. Fourteen out of the twenty-six groups were from the fourth-year students. All students who engaged with this activity received certificates. Five ambassador groups received student funds of between 1,000-10,000 baht and as well as winner certificates: they were contestant's number 4, 6, 11, 12, and 19. Other rewards consisted of t-shirts, reusable bags, caps, and notebooks. It was discovered that in each group, there were at least two additional students (such as photographers and scriptwriters) who were not present during the ceremony or present in the photos memorialising the event. However, they had significantly helped their friends to compete with the other groups. So, these students also received certificates indicating that they were CMU London Recycling Ambassadors. After the end of the reward ceremony, photos were taken to memorialise the event, and the contestants completed satisfaction survey forms. Moreover, they delivered the forms to their friends, and the forms were collected by volunteers. See table 5.54.

Overall, this section has described the recycling ambassador competition and the ambassador contestants characteristics. The qualitative data and quantitative data were collected by adopting several techniques such as observation and recycling message analysis during the contest. The photos of each contestant team from the Facebook Page and the atmosphere of the activities on the day of the ceremony are displayed in Appendix E. Section 5.4 will demonstrate the results from ‘The Satisfaction survey’ at the Evaluation Phase which were collected after the award ceremony.

5.4. The Findings at ‘The Evaluation Phase’

Section 5.4 is categorised into two sections which are section 5.4.1 and section 5.4.2. Section 5.4.2 presents the findings from the satisfaction survey, which collected both qualitative and quantitative data from the recycling ambassador contestants and their friends’. Section 5.4.2 describes the findings from the informal interviews and observation during the contest.

5.4.1. The findings from the Satisfaction Survey

Part	Types of the data	Respondent information
1.	Socio-demographical information of the ambassadors and their teams	<ul style="list-style-type: none"> - 135 respondents (68.1 % females and 31.9% males) - They were from the faculties of Associated Medical Science, Aggro-Industry, Education, Science, Engineering and Pharmacy - 54.3% of respondents had been told by their friends to participate in the project. - 27.6% of respondents had known about the project by sharing on Facebook - 11.1% of respondents had been told by volunteers - 7% of respondents had been told by the posters on the university boards - 7% of respondents had been told by their lecturers
2.	Participation Satisfaction	<p>The suitability of the project section</p> <ul style="list-style-type: none"> - One month duration for liking clicking and sharing for both of the activities was the most suitability, while they thought that the information about the activities and the communication channels was below average. <p>The value of the project section</p>

		<ul style="list-style-type: none"> - It discovered that they preferred different types and amounts of rewards to the aims, objectives, and the content on the project. - After the end of the project, they were satisfied at the highest level because they thought they had gained better knowledge and understanding, and it led them to apply the recycling behaviour into their daily lives better. - They felt that their awareness had been increased when they participated in the activities. They thought that the project made them think of the benefits of recycling and gave them more understanding on how to recycle correctly. - 88.9% of respondents would participate in similar projects in the future. They mainly thought that the activities provided advantages of recycling and the project was creative and exciting at 21.5% and 14.8% accordingly.
3.	Recommendations	<p>They suggested that:</p> <ul style="list-style-type: none"> - The project would promote more students to engage activities; - They gave other sources for public relation such as other CMU Facebook Pages; - They thought that the project could be better if the rules could be implemented intensively and showed more fairness.

Table 5.55: The Summary of the Satisfaction Survey

The survey consists of three parts; the first part aims to examine the socio-demographics of the Facebook Page's participants. Also, it aims to investigate the feedback on the use of the Facebook Page to promote recycling activities and recycling behavioural change, mentioned in chapter 4, the design of the data collection at the evaluation phase. The findings demonstrated that there were 135 respondents: there were females at 68.1% and males at 31.9%. The majority were from the third-year students and the fourth-year students representing 54.1%. Ninety-six students (73.8%) were from the faculty of Associated Medical Science which was the major group of respondents, while students from the faculties of Aggro-Industry, Education, Science, Engineering and Pharmacy represented at 10.8%, 6.9%, 4.6%, 3.1% and 0.8%, accordingly. One hundred and twenty-two had never volunteered in a project before, while, only seven people were previous volunteers in other projects. Regarding the information on the discovery of the Facebook Page and the recycling promotion, the findings showed that 54.3% of respondents had been told by their friends to participate in the project. 27.6% of respondents discovered the project because of posts shared on Facebook. While 7% of respondents had been

introduced to the project by posters on the university display boards.. 11.1% of respondents were informed about the project by lecturers and volunteers

Part 2 of the satisfaction survey aimed to examine the levels of satisfaction of the project. For the suitability of the project section, the respondents felt that one-month duration for liking, clicking and sharing both activities was the most suitability amount of time. However, they thought that the information provided about the activities and the communication channels was below average.

For the value of the project section, it discovered that they preferred different types and amounts of rewards to the aims, objectives, and the content of the project. However, upon completion of the project, they were satisfied at the highest level because they thought they gained better knowledge and understanding, and it led them to apply the recycling behaviour into their daily lives better. Moreover, they felt that their awareness had been increased when they participated in the activities. They thought that the project made them think of the benefits of recycling, and it provided them with more understanding of how to recycle correctly. Besides, 88.9% of the respondents said that they would participate in similar projects in the future. They mainly thought that the activities provided the advantages of recycling, and the project was creative and interesting at 21.5% and 14.8% accordingly.

For Part 3 of the satisfaction survey, the participants suggested that the project should have promoted more students to engage in the activities. They provided other possible sources for spreading public relations messages such as other CMU Facebook Pages. They thought that the project would have been better if the rules were implemented intensively and if more fairness was displayed

5.4.2 The Findings from Information Conversations and Observation

Based on the informal conversations and observations during the contest, the findings demonstrate that the participants attended the activities in groups, and they helped each other to compete with the other competitors with positive feelings, creative ideas, and new information. They demonstrated the accessibility of the recycling bins, and then they

created recycling instructions using simple language and then demonstrated correct recycling behaviour. They informed their friends that recycling was easy and could be performed in various ways in many different places. After they presented themselves as recycling ambassadors for one month, there was an increase of recycling behaviour measured by the amount of paper and plastic bottles at the specific recycling bins at two of the student flats in Saun Dok Hospital campus. Although at the two student flats, there was no official data of the weight of the recyclable items before and after the contest due to the limitations of this research. The researcher gathered the data by using observation and informal conversations with cleaning workers and student volunteers every week for one month, and the results demonstrated that positive recycling behaviours were increasing weekly. However, it can be said that an evaluation of the results regarding recycling behaviour improvement could be performed if the activity had a long term duration which could provide a higher rate of validity.

5.5. Conclusion

The findings consist of 3 key groups which are the findings from ‘the Problem Identification phase’, ‘the Research Planning and Research Taking phase’, and ‘the Evaluation phase’.

At ‘the Problem Identification phase’, it covered that three student volunteers achieved the three goals or three tasks. Seven student volunteers achieved both ‘Easy task’ and ‘Medium task’. While there were all student volunteers (eighteen people) achieved ‘Easy task’. The study found that students loved the given prizes; for example, they loved the logo, ‘the baby elephant on the back of the t-shirt. They would wear the t-shirts as a team to engage with other activities, and they had positive attitudes towards the activity and waited to join the next activities. Next attractive incentives for them were the certificates for the volunteering and winners because they would use these documents to present themselves as green people for their job application. Also, the winners of the ‘Hard task’ stated that receiving the student fund as the top award supported their other needs.

There were 394 students given their information on the survey. The participants were 63.2 % females, 36.3% males, and 0.5% unspecified. They were undergrad studying at 21 faculties. The major range of age of the respondents was 18-21 years old at 74.9%. The

dominant of religion was Buddhism representing at 94.9%. Most of the participants came from the north of Thailand and lived with flatmates. They mostly received monthly income from their families between 3000-10,000 bath or 66.7-222.2 pound. Their experience online using social media platforms was over four years. Almost 100% used Facebook and YouTube as daily social media platforms. So, there was a high tendency to select social media, in particular, Facebook, for one of the powerful marketing tools among these young people. Most of the participants used Facebook more than six times daily on their mobile phones because their devices were mainly used for chatting with friends, posting their photos, and following the news. Other marketing channels for promoting them to engage with recycling promotion were posters on university boards at their faculties and their student flats, recycling volunteers/ambassadors/recycling clubs, other social media, (such as Instagram, LINE, and YouTube), university websites, and others representing at 23%, 18.9%, 17%, 8.1%, and 1.6%. Based on the findings from the students, this study selected the Facebook Page, student volunteers, student ambassadors, and university boards as priority tools.

For the findings of 12 student interviews, they were nine females and three males from 7 faculties. This study discovered that further key recycling factors from psychology aspect were 'Belief, Attitudes, and Intention', 'Feeling Guilty, Thinking of the Consequences of Peer Pressure and Social Rules', 'Habits and Recycling Facilities', 'Norm', 'Unpleasant Odours, Agreement, Commitment and Consistency'. According to the findings, one of the recycling barriers was the absence of recycling bins which could be fixed by the CMU waste and recycling management teams. The additional recycling key was 'Standard of recycling bins', 'More frequency of bin collection', 'Right bin locations', 'Promotion with stakeholder engagement'. All student interviewees believed that 'More incentives' and 'Interesting recycling activities such as competitions and training courses' highly likely raised their recycling awareness which tended to lead them to perform recycling. Also, their influencers were their friends, and social Media played the significant roles of social marketing tools.

According to the findings from CMU staff interviews and stakeholders, all interviewees underlined that promoting a recycling behaviour was a complicated task, and it needed a rigid policy, a strong commitment, consistency and stakeholder engagement. They were 13 CMU staff members and 18 CMU stakeholders, who were responsible for dealing with

waste and recycling issues in their workplaces. Two CMU executives accepted that the recycling barriers at CMU were an unstable policy, a lack of data and a lack of experts. Moreover, six municipalities explained that private sectors and NGO were the main initiators and sponsors for recycling promotion at local levels such as villages. The study explored that building a recycling network likely helped the university teams to increase recycling rates in real practice. It was suggested that a visit to a 3R recycling centre could be beneficial to share knowledge or experiences among experts and new members. Further suggestions from the six private sectors, CMU could improve recycling rates by reorganising the recycling bank or opening an opportunity for stakeholders to set up a new system of recycling bank which provided more job experience for the students. However, three NGO members mentioned that if some communities did not have space for recycling bank operation, but they surely increased recycling behaviour by using volunteers and recycling buyers to exchange the items for trading at designated areas. Additionally, five residents mentioned that recycling behaviour could be built if there were influential residents' unity and participation, constant government support, other powerful stakeholders' support, having attitudes towards recycling by economic involvement, the leadership of main actors, and sustainable incentives such as more income and improved reputation. Authorities underlined that health issues were the main reasons for stimulating most residents to cooperate with authorities to fix the negative impacts. Even though CMU students did not face similar problems as the residents due to the short time they are living at the campus, it was still suggested that promoting students to increase their recycling behaviour could help improve the GHG emissions and the amount of waste generated. Recycling improvements can be achieved by focusing on developing the students to be good people to help the university and the community to take care of the environment and eventually leading the university to have a reputation for being a green and clean university.

At the research planning and taking phase, the findings were conducted from the Facebook Page engagement, student volunteers, recycling ambassador competition, use of university boards, informal conversation, meetings, observation, documentation, and others. There were 26 recycling ambassador teams, 30 males and 55 females, delivering their recycling messages online and offline in the competition of the project. They gained public interests and massive responses representing at 70,299 clicking times (Like, Love, Share, Comment and others), and 137,710 seen by their friends and families within one month. Their

recycling messages were relevant to some key factors such as 'Attitudes and habits', 'Consciousness and unconsciousness', 'Emotions', 'Norms', 'Self-concept', 'Knowledge and skills', 'Incentives', 'Morality', and others. The further findings at the evaluation phase showed that 135 satisfaction survey's respondents believed that their recycling attitudes and behaviours significantly increased by engaging with the project. The respondents with 88.9 % would participate in similar projects in the future because the innovative promotion had a strong impact on them. They said that the strategies were practical and brought them happiness. However, they underlined that their awareness and behaviour would be sustainable if the university teams continue to promote it.

Chapter 6: Conclusion and Recommendations

This section consists of three sections which are the Summary of the Findings, the Recommendations and Areas of Consideration presented in section 6.1, 6.2 and 6.3, respectively.

6.1. Summary of the Findings

This study aims to offer alternative recycling success factors to the university teams and other teams to increase recycling behaviour and reduce the amount of waste and promote target audiences to do good things for the community. It can be said that there is a lack of research exploring crucial recycling factors and barriers, in particular in a university in Thailand. To learn from other cases, studies from universities overseas may be possible; however, the factors may not be practical because of differences in cultures. This study took place at CMU from April to December in the year 2017. The recycling project conducted the activities between November and December in the year 2017 on a designated Facebook Page. A summary of this research is presented below. In the beginning section, this study presented three main essential areas of concern which are 1. Climate Change and the Paris Agreement, 2. Waste and Recycling Management, and 3. Social Marketing Adoption at CMU.

At the global level, this research demonstrated that the negative impacts of Climate Change had caused many problems around the world, and everyone should pay attention to reducing GHG emissions, especially during large group activities. Then, this study presented that Thailand had signed an agreement and had committed to reducing GHG emissions during the years 2012 to 2050.

Also, this study identified that the government implemented a new policy which aimed to intensively reduce GHG emission by at least 20 per cent by the year 2030 as well as promote green technologies (ONEP, 2015).

This study identified that at the local level, the government had set targets for each municipality to reduce GHG emissions by 5 per cent from the baseline of the total emissions from 2016.

This study also identified that in order to reach this target, a countrywide master plan was required and was implemented to be followed from the year 2016 to 2021 which promotes all the stakeholders to perform waste reduction at the source and to implement the 3Rs strategy (UNDP, 2016). It can be said that the government would not meet this target easily if there are many barriers such as a lack of law for recycling, a lack of budget, lack of technology, and a lack of data and data sharing. As a consequence, this study aims to share knowledge and skills so that the teams can come together and work towards a collective goal for the sake of the environment and to reduce GHG emissions and have an impact on the effects of Climate Change.

As a result, at a university level, each university has to explore alternative strategies to handle waste and identify their recycling problems which require the university management teams to work together with other university teams to overcome the difficulties. Practically, they need support from other teams to reach the goal of increasing recycling behaviour amongst students. However, the teams at CMU have different individual goals; for example, the Student Quality Development Team needs to produce quality students with high exam scores. In contrast, the Management Team needs to reduce the amount of waste generated by the students.

First, this study aims to share new knowledge and skills to each team at CMU and also to deliver to the university teams evidence from the findings of this research on how to encourage students to adopt the 3Rs strategy or to perform recycling which was collected from six authority representatives, six private sector representatives, six residents, and three NGO representatives. Also, this research categorises new knowledge, and the process of learning into three aspects which are psychology, management, and social marketing aspect because it was apparent during this research that management teams and governments integrate many models and theories in their projects especially from these three aspects.

This study also aims to offer potential social marketing strategies on how to fix the problems with recycling and waste management at CMU, which incorporate aspects of psychology and management theory.

After gathering data, both qualitative and quantitative data, this study tested the strategies for improving recycling behaviour amongst students with a target audience that were students at CMU, which is located in the north of Thailand.

Then, it summarised the critical success factors and barriers from the study so that the teams can adopt and implement the benefits from the findings of this study to improve future projects.

At the problem identification phase, this study discovered that CMU university had a plan which aimed to focus on 'a green and clean university project'. However, in practice, most students did not separate waste correctly at recycling bins. This study discovered that cleaning workers played a crucial role in recycling the items and sold the items to recycling businesses. According to the students' perspective, most students did not recycle due to many barriers. For example, they Believed that the waste collectors would mix all the items into one truck during the collection process. The negative belief of the students was indeed found to be substantiated during this study.

This study identified that some students recycled at home but failed to perform recycling at CMU due to a lack of recycling bins and other inconveniences. The results identified that students had the intention to recycle, but they were confused about how to separate waste correctly into different bins, and therefore the students had got used to not recycling, and this was the norm.

This study identified that all the student participants believed that raising recycling awareness could be a powerful tool to remind them to recycle. It was identified that if students attended recycling activities, it would result in increased recycling behaviour. However, this research identified that at CMU many other competitors are vying for the attention of students such as other activities, inviting them to participate and providing them incentives that were more appealing than activities focusing on recycling. According to the findings of this research at the problem identification phase, it was identified that each student event never had a 'zero-waste' goal, so students did not feel recycling or waste reduction was crucial. So, from the findings of this research, the university teams should set up a new policy and standard practice to remind students to reduce their waste or follow the 3Rs policy.

Based on the findings from the authorities and residents' interviews in this research, recycling projects are required to be conducted for between one year and three years in order to gain success. Stakeholders (especially the private sector) played a crucial role in supporting the success of the projects, for example, by providing training courses and by providing sponsorship.

From the findings of this research, the main characteristics of residents and success factors on why they engaged with projects were identified. There were many reasons why they had changed the behaviour; for example, they gained incentives from recycling trade, they wanted to improve their communities, and pay respect to the late King amongst others. Most residents engaged with the projects from the beginning until the end of the projects and they developed a strong commitment to maintaining the new behaviour. Also, to improve health was identified as a critical success factor during this research and was a crucial reason for high engagement rate amongst the residents surveyed during this research.

This research also identified that maintaining market dominance and business position were the primary motivations for the Private Sectors engagement in recycling activities. However, this led to the promotion of sustainability and an overall positive effect on the community. The recycling business owners interviewed during this research provided recycling training courses for everyone because they wanted to offer extra services to gain more customers. They offered to help the university teams to improve the recycling bank in various ways, including opening a new recycling bank and using students to work part-time jobs. They thought that students could gain more experience in the practice of recycling and help to promote awareness amongst other students.

Next, this research identified that NGO's, worked with many organisations, and it was identified found that private companies were the main social actors, not the government. The NGO's interviewed in this research suggested that CMU could launch a new policy with a focus on the 3R's policy. Overall, the similarities of the success factors from the authorities, residents, private sectors and NGO were identified during this research as 1. Resident or Target Audience Engagement 2. Commitment 3. Sufficient Funds; 4. Planning 5. A Strong Network. Therefore the researcher encourages CMU to focus, on these five factors in order to gain a higher success rate in future projects.

Second, this research does not provide only new knowledge but also presents a new methodology. This study is an action research study; therefore, the data was not gathered to prove a model or a theory. This research began with the preparation phase and problem identification phase; it utilised many data collection techniques such as questionnaires, interviews, and observations to reflect the findings and the facts.

This research presents the critical success factors from the 3R's project to the teams in order to make recycling more effective. New knowledge was discovered, such as new norms or new rules. This research presents the findings and reflections on possible solutions to the teams at CMU.

The presentation of this research includes many forms about the target audience, such as the general characteristics of the target audience, their socio-demographic factors and lifestyles in term of percentages. Also, for the qualitative data analysis section of this research, the results are presented utilising many themes on how to run the project successfully. The themes' summarise and present essential tools and information for teams at CMU to implement and improve upon future recycling projects.

Third, the research presents the findings with a variety of solutions because people have different needs, and the teams at CMU have to use different tools to promote recycling. For example, students needed two main topics which were recycling facility improvement and activities. For recycling bin improvement, the management team was dominantly responsible for this job. While running the activities to raise student awareness was in the student quality development team.

From the students' perspectives, this research identified that some students would need a recycling bin standard in all areas. Other students identified that they needed real practice and training courses. Also, some students identified that they would recycle if they had a better attitude and belief about the benefits of recycling. While other students identified that they would recycle if student stars, celebrities or their friends told them to recycle.

These examples are presented in the findings of this research so that the teams at CMU are aware of critical factors for the success of future projects and merely ignoring these factors would more than likely result in further failure of recycling projects. For

example, to enable future projects to be effective, management teams and the student quality development team should collaborate and share barriers and potential solutions.

Furthermore, this research identified that collaboration amongst departments is a crucial success factor that the teams at CMU should implement. For example, if the central team needed to set up a standard recycling poster, they could work with the marketing and management lectures to produce attractive slogans (adopting the psychology aspect, management and social marketing aspects and others) to gain student attention and improve the success of the posters.

Fourth, this research tested the findings and implemented a recycling project conducted utilising a Facebook Page and the university display boards at CMU, and the results offer newfound knowledge and contributions to the success of future projects at CMU. It was identified that there is a lack of new knowledge contribution between authorities (from the five municipality representatives interviewed in this research) and experts (from a marketing manager from a private company, four recycling business owners from the north of Thailand, and three members of NGO organisations interviewed in this research). It can be said that there is a lack of reflective presentation between target audiences and social marketing campaigners who are residents, social marketing campaigners, the CMU teams and CMU students. The new practical advice is that practitioners and experts have shared value and should collaborate.

This research identified that this new way of collaborating, engaging with Thai stakeholders and realising that they have shared value was beneficial for the university teams because it increases the possibility of a change in a community by sharing their understanding with a reflective presentation.

Overall, this study adopted many aspects and presented reflective findings aiming to offer alternative social marketing strategies to the CMU teams. Also, the new knowledge is creative, innovative and practical for other teams who face similar problems and are trying to discover possible solutions.

6.2. Recommendations

Based on the findings from this research, this section provides recommendations to various groups below.

6.2.1. Policymakers

Based on the findings, it is suggested that CMU should have various strategies to promote the reduction of waste or recycling practice. Implementing new policies and goals, with a strong commitment to sustainability.

Firstly, CMU should create a new policy for promoting itself as ‘The Zero Waste University’, ‘CMU loves the 3Rs (Reduce: Reuse: Recycle)’ Scheme. Setting goals to encourage CMU students to build environmental awareness and engage in the activities is advised. Also, Inviting students to help CMU to achieve the university’ s goals and preparing to attend the green campus competition. Making students see the consequences of their actions such as ‘Going green together aiming to win ‘the University Green Campus Competition’’. Also, setting a goal to reduce plastic usage by 50% within one year and evaluate the results from each faculty or each student accommodation building and provide monthly feedback. Then, rewarding the faculties or accommodation buildings when the residents reach the goal and identifying the winners as model sites and as a template to share with others.

Punishment can be adopted in some cases such as reducing students’ scores if they leave rubbish in classes, canteens or on public roads. All students can inform or give feedback to CMU via online resources and then equally reward them as a representative of anti-social behaviour via online platforms.

CMU should promote students’ ethical behaviour via online channels and university notice boards to make them feel proud of themselves and their achievements. Budgeting for the projects and stakeholder involvement are vital to run or promote activities. However, if CMU struggles with insufficient funds, CMU can co-work with other stakeholders such as private companies to arrange the activities or run co-projects. They can run CSR in CMU, and they can build their relationships with students who will be their potential customers.

Working with NGO's to update the community activities is another prime strategy and sending some students to attend the activities is important because students can have real-life experience and then adopt some strategies for CMU. For government sector involvement, CMU should build networking opportunities with authorities for green project visits and publish the schedules online to gain support from outsiders such as CMU alumni.

6.2.2 Waste and Recycling Management Team

CMU should have a new rule for the waste collection fees for each student flat and faculty based on weight or volume of waste produced. If the residents can reduce waste, their flats will be the model for sustainability.

However, if residents in a flat generate waste at higher rates, another rule may be to adopt a penalty. For example, if it is found that there is poor management in a student flat such as dumping rubbish on public roads in the surrounding area, then the university will charge an extra collection fee. CMU should take the money from the penalty to invest in facilities such as adding more recycling bins.

Improving facilities is crucial. Based on the findings, there are several arguments on types, design, and the number of bins to promote recycling. In some villages, 'No Public Bins' can reduce problems of illegal dumping. On the other hand, some people throw away rubbish on public roads if they cannot find bins. These arguments still exist; however, based on the findings, it can be said that placing recycling bins can increase recycling rates only for people who regularly recycle. Nevertheless, recycling will increase more if they can see clear waste segregation instruction posters near the bins or adopting incentive strategies to promote them to take part in some competitions.

The same standard of recycling bins should be implemented in all areas in CMU, in particular for those students who love short message reading and throw away rubbish for convenience reasons. However, it is not always necessary to use the four colour bin system for general, recycling, biodegradable, and hazardous waste like European countries, because their waste composition is different from Thailand and CMU. For example, CMU should provide bins for plastic because it can show the amount of plastic waste to students and reflects their waste generation. Innovative coffee cup bins

should be placed at canteens because some students get confused when they have to throw away the unwanted drink and the containers into the recycling bins, they are worried their waste will contaminate the paper waste in the same bins. So, CMU should provide at least two bins; one is for unwanted ice and drinks; another is for cups or bottles, which is not the same place as paper. The paper needs separate paper bins.

Improving the recycling bank is a crucial priority because some students do not recognise it, and some students feel that the price of trading recyclables is not attractive enough. Learning from study cases from NGO interviews is practical and essential because while the recycling bank system was working very well in some organisations, it did not exist in many villages. There is no right or wrong whether to maintain the recycling bank system, but if CMU wants to use this bank to encourage students to increase recycling behaviour, then this study offers three choices which are 1: Re-organising it, 2: Opening opportunities for outsiders to establish their business and use CMU university students to run the shop as part-time employees, and 3: Encouraging the student council or student clubs to run the shop and giving them support such as mentoring

6.2.3. CMU Student Quality Development Team

Creating new norms are significant because there are many study cases from the villages showing that a 'new norm' can reduce waste significantly. Taking this into account, CMU should set up a scheme of waste reduction for all activities. Creating new behaviour and reminding students by using a strong and clear goal of waste reduction, such as 'We Commit to being a Zero Waste Uni.'. Then, adopting this commitment into practice during the main CMU annual events such as 'The Annual CMU Trekking', 'CMU Ambassador competition', 'The Big Cleaning Day'. Reporting the amount of waste after each activity, demonstrating the waste route, and calculating the amount of GHG reduction in comparison to previous levels all contribute to making a new standard of environmental care.

Establishing new competitions to provide both education and fun to raise student awareness are recommended because it can leave a lasting impression and lead students to adopt sustainable behaviour. A 'Recycling Ambassador Competition' among faculties, a 'Waste Reduction Competition' between male and female students at their accommodation, and a '3R's Competition' among campuses are some examples.

Using social media to spread the message and gain more positive engagement. Based on the findings, students love competitions because they enjoy the competitive spirit, and they can demonstrate unity and build or maintain relationships among their fellow students.

Reducing negative beliefs and creating new positive attitudes on waste and recycling and applying technology to gain student engagement by providing essential information and then linked to positive feedback which is close to their daily lives. For example, presenting CMU waste transportation routes and opening online resources for students to engage with, such as using a mobile application to inform the waste collection team if bins are overflowed.

Building a new mobile application for staff and students to check the locations of each type of recycling bin, the capacity, and the schedule of the collection is recommended. Providing them with an online coin, reward or score when they visit the bins and dispose of waste, so they can collect the scores to buy selected products such as reusable water bottles or reusable school bags at co-op shops or other convenience stores in CMU.

Also, providing opportunities to students to post their messages daily on social media to tell their friends why they should recycle, and also advertising the winners of competitions online so that they can be the recycling ambassadors of the week and providing significant rewards to the winners aiming to build initiative and maintain their behaviour.

6.2.4. Lecturers

Deans of each faculty should stand as new 'green people' to encourage students to protect the environment and take up a new norm, then posting their stories on how to become green people via online sources to encourage students who use online platforms daily.

Lecturers should provide advice to students on how to become green people in a modern world such as 'Using reusable bags instead of single-use plastic bags' or 'Waste

segregation at the source which is essential for their generation'. Moreover, lecturers should give a warning if it is found that some students leave rubbish in classes after their lectures. Lecturers should assign students to undertake projects or surveys on recycling topics such as finding out potential essential factors to promote recycling in their faculties and implement it in real practice.

6.2.5. Students

CMU University should provide innovative education or training courses to students or student volunteers because these people can be mentors or leaders. Then, they will lead their groups to start recycling, and the university can improve student confidence, knowledge and skills by taking them to learn techniques from villages who won green competitions.

Promoting the 3R's, waste reduction and recycling practice by student leaders, CMU ambassadors, CMU competition winners, or other people who influence students is recommended. Some students like to follow their friends, and students easily imitate the behaviour of people whom they admire. In general, CMU 3R advocates do not only have to be students, but also lecturers and other staff can be advocates of the 3R scheme

Furthermore, in CMU, volunteers or student ambassadors can help the university by standing next to the bins to tell their friends how to separate proper waste. They should also visit students at canteens to invite other students to increase recycling by giving examples of the benefits of food waste, running the vehicles in CMU. Some students may feel guilty if they know that their waste will go to a landfill in Chiang Mai and release GHG into the environment.

Student council, student society, and student clubs should promote recycling on their Facebook page such as 'Mor Chor Team' Facebook page and use their language to explain why students should change their behaviour, such as competing with other students' universities to become one of the green universities of the world. 'Friends tell friends' or 'Senior students tell junior students' strategies should be included because students love being a part of a larger group and following their friends and their idols such as CMU ambassadors or winners from the CMU beauty contest.

They can use the money from recycling trade to support various charities because it can make students feel proud of themselves. For instance, they can donate the money to remote schools in Chiang Mai to buy school materials or sports equipment to make CMU students proud to help their environment and community. Alternatively, each student club should provide recycling bins and use the money from recycling to support their activities and encourage students to maintain their behaviour.

Giving feedback or showing the results after recycling or waste reduction on the student social media channel is a prime tool. This strategy tends to stimulate them to continue improving upon the practice. For example, it is recommended that the percentage of recycling rates each month for each student flat is published. Also, showing the progress via both student flat notice boards and online sources should be adopted because some people use online options regularly to answer their enquiries or post exciting news.

6.3. Areas of Consideration

It can be said that three research limitations or issues were identified found during this study which are time, people and budget.

Firstly, the study was conducted over a short period of approximately two months on the Facebook page in 2017. It is improbable to say that the validity of the findings at the evaluation stage was high.

It would be better to evaluate the students' behaviour over an extended period. So, it can be said that this study might present behavioural change induced by using initiatives.

Secondly, this study was mainly organised by the researcher as an individual. Although volunteers helped the researcher to collect the survey, the researcher to spend much time on other activities from their regular life, it is recommended for future research that a team is utilised not an individual.

The last important consideration is regarding the budget. This study did not use any government funds, so the project and the rewards might not serve the majority of the

students' needs. Therefore, it is recommended that further research could incorporate more substantial funding

Finally, the researcher recommends the following topics for future research:

- Collect the data of waste composition for all faculties and the student flats;
 - Collect the data on recycling rates for all areas;
 - Promote students to recycle by using different social marketing tools;
 - Find the key factors to encourage students to be recycling initiators and mentors.
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Bibliography

Acar, A. (2014) *Culture and Social Media: An Elementary Textbook*. Cambridge: Cambridge Scholars Publishing.

Action for Climate Thailand (2019) Available at:
<https://actionforclimate.deqp.go.th/?p=6436&lang=en> (Accessed 15 January 2020).

Ainin, S., Naqshbandi, M.M., Moghavvemi, S and Jaafar, N.I. (2015) Facebook usage, socialization and academic performance. *Computers & Education*. 83. pp. 64-73.

Asia LEDS Partnership (2020) 11th Thailand Social Development. Available at:
<http://www.asialeds.org/resource/eleventh-national-economic-and-social-development-plan-2012-2016-thailand/> (Accessed 15 January 2020).

Bangkok Post (2017) Special Reports. Available at:
<https://www.bangkokpost.com/thailand/special-reports/288912/enterprising-collectors-find-trash-means-cash> (Accessed 22 March 2019).

Bangkok Post (2019) Sinking Cities: Rising sea levels caused by climate change, coupled with land subsidence, are an urgent challenge across Asia. [Online] Available at: <https://www.bangkokpost.com/world/1740904/sinking-cities> (Accessed 18 November 2019).

Bangkok Post (2020) Facebook Users in Thailand. Available at:
<https://www.bangkokpost.com/learning/learning-together/1296218/who-are-thailands-46-million-facebook-users-> (Accessed 22 March 2019).

Bangkok Post (2020) Green Campus Model. Available at:
<https://www.bangkokpost.com/thailand/special-reports/1614354/mahidol-pioneers-green-campus-model-for-universities> (Accessed 22 March 2019).

Bangkok Post (2020) Thailand Top Ten in Social Media Use. Available at:
https://www.bangkokpost.com/business/1420086/thailand-makes-top-10-in-social-media-use?utm_source=dlvr.it&utm_medium=facebook (Accessed 22 March 2019).

Bangkokpost, 2015. Climate Change. Available at:
<https://www.bangkokpost.com/opinion/opinion/1534914/crunch-time-in-climate-change-fight> (Accessed 20 January 2019).

Bazeley, P. and Jackson, K. (2013) *Qualitative Data Analysis with NVIVO*. 2nd ed. London: Sage Publications, Inc.

Blaikie, N. (2010) *Designing Social Research*. 2rd. Ed. Cambridge: Polity Press.

Blau, P.M. (1964) *Exchange and Power in Social Life*. New York: John Wiley & Sons.

British Broadcasting Center (BBC) (2018) News: Jakarta, the fastest-sinking city in the world. Available at:<https://www.bbc.com/news/world-asia-44636934> (Accessed 18 November 2019).

Bryman, A. (1998) *Quantity and Quality in Social Research*. London: Allen.

Bryman, A. (1998) *Research Methods and Organisation Studies*. London: Routledge.

Bryman, A. (2012) *Social Research Methods*. 4th ed. Oxford: Oxford University Press.

Burrell, G. and Morgan, G. (1982) *Sociological Paradigms and Organisational Analysis*. London: Heinemann.

Callendar, G.S. (1938) The artificial production of carbon dioxide and its influence on temperature. *Quarterly Journal of the Royal Meteorological Society*. 64. pp.223-240.

Callendar, G.S. (1940) Variation of the amount of carbon dioxide in different air currents. *Quarterly Journal of the Royal Meteorological Society*. 87 (371). pp.395-400.

Callendar, G.S. (1949) Can carbon dioxide influence climate?. *Weather* 4, pp. 310-314.

Cameron, S. and Price, D. (2009) *Business Research Methods: A Practical Approach*. London: Chartered Institute of Personnel and Development.

Campbell-Lendrum, D. and Prüss-Ustün, A. (2019) Climate change, air pollution and noncommunicable diseases. *Bulletin of the World Health Organization* 2019. 97(2). pp.73-168.

Center for World University (CWUR) Rankings (2020) University Rankings. Available at: <https://cwur.org/2019-20.php> (Accessed 22 March 2019).

Center for World University Rankings (2020) Chiang Mai University Ranking - CWUR World University Rankings 2018-2019. Available at: <https://cwur.org/2018-19/thailand.php> (Accessed 22 March 2019).

Chase, S.E. (2011) Narrative inquiry: Still a field in the making, in N.K. Denzin and Y.S. Lincoln (eds). *The Sage Handbook of Qualitative Research*. 4th ed. London: Sage. pp. 421-434.

Chazournes, L.B. (1992) United Nations Framework Convention on Climate Change: Human Impact on Climate Change. Available at :<https://legal.un.org/avl/ha/ccc/ccc.html> (Accessed 20 April 2019).

Chiang Mai University (CMU) (2020) CMU Trekking. Available at: <https://www.cmu.ac.th/th/article/20dbbd5f-c15e-419a-8b43-d4af87f2bc6e> (Accessed 22 March 2019).

Chiang Mai University (CMU) Student Union (2020) CMU Trekking Photos. Available at: <https://www.facebook.com/ChiangmaiUniversityStudentUnion/photos/a.2711452948865810/2711464272198011/?type=3&theater> (Accessed 22 March 2019).

Chiang Mai University (CMU) Student Union (2020). CMU Trekking Photos. Available at: <https://www.facebook.com/ChiangmaiUniversityStudentUnion/photos/a.2711452948865810/2711493265528445/?type=3&theater> (Accessed 22 March 2019).

Chiang Mai University (CMU) Student Union (2020) CMU Trekking. Available at: <https://www.facebook.com/ChiangmaiUniversityStudentUnion/> (Accessed 22 March 2019).

Chiang Mai University (CMU) (2015) *Statistical Report of CMU Students*. Available at: https://www3.reg.cmu.ac.th/mis-reg/misreport/student_9.php (Accessed 10 February 2017).

Chiang Mai University Report (2015) 'The Annual Development Plan' Paper presented at CMU Annual Meeting 2015, Chiang Mai, Thailand, unpublished.

Chula University Facebook (2020) Chula Zero Waste. Available at: <https://www.facebook.com/chulazerowaste/photos/p.2542031552680638/2542031552680638/?type=1&theater> (Accessed 22 March 2019).

Cialdini, R. (1984) *Influence: How and Why People Agree to Things*. New York: William Morrow and Company, Inc.

Coffey, A, Holbrook, B. and Atkinson, P. (1996) *Qualitative Data Analysis: Techniques and Representations*. Available at: <http://www.socresonline.org.uk/1/1/4.html> (Accessed 2 April 2017).

Cronbach, L. J., Rajaratnam, N., & Gleser, G. C. (1963) Theory of generalizability: A liberalization of reliability theory. *British Journal of Statistical Psychology*, 16, pp.137-163.

Crowther and Lancaste (2009) *Concepts, Methods, and Cases*. 2nd ed., South-Western, Cengage Learning.

Crowther, D. and Lancaste, G.(2009) *Research Methods; A concise introduction to research in management and business consultancy*. 2nd ed. Oxford: Elsevier Ltd.

Cunliffe, A.L. (2010) Retelling tales of the field: In search of organisational ethnography 20 years on, *Organizational Research Methods*, 13(2). pp.224-239.

- Denzin, N. (1978) *The Research Act in Sociology*. 2nd. Ed. Chicago: Aldine.
- Donovan, R. and Henley, N. (2010) *Principles and Practice of Social Marketing: An International Perspective*. Cambridge: Cambridge University Press.
- Eagle, L., Dahl, S., Hill, S., Bird, S., Spotswood, F. and Tapp, A. (2013) *Social Marketing*. London: Pearson.
- Easterby-Smith, M., Thorpe, R. and Jackson, P.R. (2008) *Management Research*. 3rd ed. London: Sage Publications, Inc.
- European Commission (EC) (2020) Climate Negotiation: Paris Agreement. Available at: https://ec.europa.eu/clima/policies/international/negotiations/paris_en (Accessed 18 June 2019).
- Farquhar, J.D. (2012) *Case Study Research for Business*. London: Sage Publication Ltd.
- Federal Republic of Germany (2018) The Federal Ministry for the Environment: A brief history of the German national reporting system on climate change. Available at: https://www.transparency-partnership.net/system/files/document/A%20brief%20history%20of%20the%20German%20national%20reporting%20system_0.pdf (Accessed 20 March 2020).
- Feinberg, F.F., Kinnear, T.C., and Taylor, J.R. (2013) *Modern Marketing Research*. South-Western, Cengage Learning publishing.
- Ferrara, I. and Martinez, E. (2006) Influence of personality on ecological consumer behavior. *Journal of Consumer Behavior*, 6, pp. 167-181.
- Fourali, C. (2016) *The Promise of Social Marketing: A Powerful Tool for Changing the World for Good*. Croydon: Routledge.
- Frankfort-Nachmias, C. and Nachmias, D. (1992) *Research Methods in the Social Sciences*. 4th ed. London: St.Martin's Press, Inc.
- French, J. and Gordon, R. (2015) *Strategic Social Marketing*. London: Sage.

French, J. (2017) *Social Marketing and Public Health; Theory and Practice*. 2nd. Ed. Croydon: Oxford University Press.

Gandy, M. (1994) *Recycling and the politics of urban waste*. London: Earthscan Publications Limited.

Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory*. Chicago: Aldine. Global Environmental Change

Gomm, R. (2008) *Social Research Methodology: A Critical Introduction*. 2nd ed. Trowbridge: UK.

Grundmann, R. (2007). Climate Change and Knowledge Politics. *Environmental Politics* 16(3), pp.414-432.

Halfpenny, P., (1979) The analysis of qualitative data. *Sociological Review*, 27(4) pp. 799-825.

Hammersley, M. (1992) *What's Wrong with Ethnography?*. London: Routledge.

Hasselmann, K. (1997). Multi-pattern fingerprint method for detection and attribution of climate change. *Climate Dynamics*.13, pp. 601–611.

Hemming, A. (2013) *Social Media Consumption Behaviors and Opinion towards Results of Experiencing Social Media in Bangkok Metropolitan*. Master of Science (Applied Statistics). National Institute of Development Administration (NIDA).

Higher Education Funding Council for England (HEFCE) (2018) *World University Rankings*. Available at: <https://www.universityrankings.ch/methodology/times> (Accessed 22 March 2019).

IPCC (2020) *Global Greenhouse Gas Emission by Gas in 2014*. Available at: <https://www.ipcc.ch/report/ar5/wg3/> (Accessed 18 April 2020).

Jankowicz, A.D. (2005) *Business Research Projects*. 4th. Ed. London: Thomson.

Jick, T. (1979) Mixing qualitative and quantitative methods: triangulation in action, *Administrative Science Quarterly*, 24 (4). pp.602-611.

Ketokivi, M. and Mantere, S. (2010) Two strategies for inductive reasoning in organizational research. *Academy of Management Review*, 35(2), pp.315-333.

Kongrach, P. (2011) The Study of Teenagers' Behaviors in Using Social Networking Sites (SNSs) in Thailand: A Case Study of Facebook. Master of Science. Thammasat University.

Kotler, P. and Keller, K.L. (2012) *Marketing Management* 12th ed. New York: Pearson.

Kotler, P. and Lee, N. (2005) *Corporate Social Responsibility: Doing the Most Good for Your Company and Your Cause*. New Jersey: Wiley.

Kotler, P., Kartajaya, H., and Setiawan, I. (2017) *Marketing 4.0: Moving from Traditional to Digital*. New York: John Wiley & Sons Inc.

Krejcie, R. and Morgan, D. (1970) Determining sample size for research activities: *Educational and Psychological Measurement*, 30, pp. 607-610.

Lawrence Berkeley National Laboratory (2020) New Research Quantifies Health Benefits of Reducing Greenhouse Gas Emissions, November 18, 2014. Available at: <https://newscenter.lbl.gov/2014/11/18/new-research-quantifies-health-benefits-of-reducing-greenhouse-gas-emissions/> (Accessed 18 January 2020).

Lee, B. (2012) Using documents in organizational research. In G. Symon and C. Cassell (eds) *Qualitative Organisational Research Core Methods and Current Challenges*. London: Sage. pp.389-407.

Lee, N. and Kotler, P. (2016) *Social Marketing: Changing Behaviors for Good*. 5th ed. London: Sage.

Livescience (2015) News. Available at: <https://www.livescience.com/65370-indonesia-move-capital-from-sinking-city.html> (Accessed 27 May 2019).

Manasijevic, D., Zivkovic, D., Arsic, S, and Milosevic, I. (2016) Exploring students purposed of usage and educational usage of Facebook. *Computers in Human Behavior*. 60. pp. 441-450.

Marshall, C. and Rossman, G. (1989) *Designing Qualitative Research*. London: Sage.

Marshall, C. and Rossman, G. (2011) *Designing Qualitative Research*. 5th ed. London: Sage Publications, Inc.

McDaniel, Jr. C. and Gates, R. (2013) *Marketing Research: International Student Version*. 9th. Ed. Singapore: Wiley.

Nation (2018) News: Thailand becoming ‘garbage bin of world’. Available at: <https://www.nationthailand.com/news/30347404> (Accessed 15 January 2020).

Nation (2015) News. Available at: <https://www.nationmultimedia.com/detail/national/30347404> (Accessed 23 January 2019).

National Center for Environmental Information (NCEI) (2015) Global Climate. Available at: <https://www.ncei.noaa.gov/news/global-climate-201812> (Accessed 2 April 2019).

Network of Universities from the Capitals of Europe (UNICA) (2020) Green Your University Awards. Available at: <http://green.unica-network.eu/page/“green-your-university”-award> (Accessed 22 March 2019).

New Jersey Minority Educational Development (NJ MED) (2020) Global Universities Rankings-2019 by NJ MED. Available at: <https://www.engmorph.com/University-Rankings/nj-med-global-univ-rankings-2019> (Accessed 22 March 2019).

Ollila, A. (2019) Challenging the scientific basis of the Paris climate agreement, *International Journal of Climate Change Strategies and Management*, 11(1), pp. 18-34.

Parliament, Thailand (2020) Waste Management in Thailand. Available at: <https://library2.parliament.go.th/ebook/content-ebbas/2562-acd3.pdf> (Accessed 18 January 2020).

Petroleum Authority of Thailand (PTT) (2019) Yaklakyim: Recycling projects at PTT stations. Available at: <https://www.yaklakyim.com/about-us/> (Accessed 18 November 2019).

Phuangphae, P. (2015) A Study of behaviour for using of Social Media of preservice teachers. *Veridian E-Journal*, Silpakorn University, 9 (2), May-September, pp.946-956.

Plass, G.N. (1956). The Carbon Dioxide Theory of Climate Change. The U.S. Office of Naval Research. 8 (2). pp. 140-154.

Pollution Control Department (2019). *Booklet on Thailand State of Pollution 2018*, Bangkok: S. Mongkon Press Limited Partnership.

Pollution Control Department Thailand (PCD) (2019) School Recycling Bank. Available at: www.pcd.go.th/info_serv/pol_suc_wastebank.html (Accessed 22 March 2019).

Positioning Magazine (2018) Social Medias in Thailand. Available at: <https://positioningmag.com/1159478> (Accessed 22 March 2019).

QS World University Rankings (2020) Top University Rankings. Available at: <https://www.topuniversities.com/university-rankings/world-university-rankings/2020> (Accessed 22 March 2019).

Ratchakitcha (2018) Thailand's recycling legislation. Available at: http://www.ratchakitcha.soc.go.th/DATA/PDF/2561/A/082/T_0001.PDF (Accessed 18 June 2018).

Revelle, R. and Suess, H.E. (1956) Carbon Dioxide Exchange Between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO₂ During the Past Decades. *Tellus*, 9(1), pp.18-27.

Sarewitz, D. and Pielke, R. (2000) Technology: Breaking the Global-Warming Gridlock. *The Atlantic*. Available at: <https://www.theatlantic.com/magazine/archive/2000/07/breaking-the-global-warming-gridlock/304973/> (Accessed 18 June 2019).

Saunders, M., Lewis, L., and Thornhill, A. (2016) 7th ed. *Research Methods for Business Students*. Essex: Pearson.

Saunders, M., Lewis, P. and Thornhill, A. (2012) *Research Methods for business students*. 6th ed. London: Pearson.

Saunders, M.N.K. (2012) Choosing research participants' in G. Symons and C. Cassell (eds.) *The Practice of Qualitative Organizational Research: Core Methods and Current Challenge*. London: Sage. pp.37-55.

Silverman, D. (2006) *Interpreting Qualitative Data: Method for Analyzing Talk, Text and Interaction*. 3rd ed. London: Sage Publications, Inc.

Silverman, D. (2011) *Interpreting Qualitative Data: A Guide to the Principles of Qualitative Research*. 4th ed. London: Sage Publications, Inc.

Smith, E, Thorpe, M., and Lowe, A. (2002) *Management Research: An Introduction*. London: Sage Publications, Inc.

Sriplakich, A. (2016) Efficiency Enhancement of Waste Management in Chiang Mai University Community. Master of Arts (Man and Environment Management). Chiang Mai University.

Statista (2020) Internet:Social Media & User-Generated Content Available at: <https://www.statista.com/statistics/284483/thailand-social-network-penetration/> (Accessed 22 March 2019).

Statista (2020) Statistics. Available at:

<https://www.statista.com/statistics/490467/number-of-thailand-facebook-users/>
(Accessed 22 March 2019).

Thailand Greenhouse Gas Management Organization (Public Organization)
(TGO) (2015) News. Available at;

http://www.tgo.or.th/2015/thai/news_detail.php?id=641> (Accessed 22 March 2016).

Thai Parliament (2018) Solid Waste Management and Barriers Report. Available at:

https://library2.parliament.go.th/giventake/content_nrsa2558/d060560-01.pdf (Accessed
15 January 2020).

Thairath (2017) 'Waste is gold' [YouTube], March 2017. Available at:

<https://www.youtube.com/watch?v=4IYTYzjn4Dg> (Accessed 18 March 2019).

The International Council for Local Environmental Initiatives (ICLEI) (2020) Cities for
Climate Protection (CCP) Campaign. Available at:[http://southasia.iclei.org/our-
activities/our-pathways/low-emission-development/cities-for-climate-protection-ccp-
campaign.html](http://southasia.iclei.org/our-activities/our-pathways/low-emission-development/cities-for-climate-protection-ccp-campaign.html) (Accessed 18 June 2019).

The International Solid Waste Association (ISWA) report (2020) Waste and Climate
Change ISWA WHITE PAPER in 2009. Available at

[:http://www.seas.columbia.edu/earth/wtert/sofos/WEB_ISWA_White_paper.pdf](http://www.seas.columbia.edu/earth/wtert/sofos/WEB_ISWA_White_paper.pdf)
(Accessed 18 May 2020).

The Ministry of the Environment Government of Japan (2018) The Eighth Regional 3R
Forum in Asia and the Pacific. Available at:

<https://www.env.go.jp/recycle/3r/en/results/08.html> (Accessed 15 November 2020).

The Nation Online Project (2019) Political map of Thailand. Available at:

<https://www.nationsonline.org/oneworld/map/thailand-region-map.htm> (Accessed 18
June 2019).

The Office of National Resources and Environment Policy and Planning (ONEP) (2019). Available at:

https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Thailand%20First/Thailand_INDC.pdf (Accessed 1 April 2020).

The Thailand Progress Report (2020) Promoting Complementarities between the Asean Community Vision 2025 and the UN 2030 Agenda for sustainable development.

Available at: <http://www.mfa.go.th/asean/contents/files/asean-media-center-20190805-161845-942544.pdf> (Accessed 18 June 2019).

The United Nation Framework Convention on Climate Change (2019) Available at:

<https://www4.unfccc.int/sites/ndcstaging/Pages/Home.aspx> (Accessed 1 April 2020).

The United Nation Framework Convention on Climate Change (UNFCCC) (2019)

Available at:

https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/347251_Thailand-BUR2-1-SBUR%20THAILAND.pdf (Accessed 15 January 2020).

The United Nation (2020) World Summit on Sustainable Development: Outcomes on World Sustainable Development. Available at:

<https://www.un.org/en/development/devagenda/sustainable.shtml> (Accessed 20 March 2020).

The United Nations Development Programme (UNDP) report (2019) The United Nations Development Programme 2030 agenda. Available at:

<https://www.un.or.th/globalgoals/global-goals/climate-action/> (Accessed 1 December 2019).

The United Nations Thailand (2015) Second Biennial Update Report of Thailand.

Available at:

https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/347251_Thailand-BUR2-1-SBUR%20THAILAND.pdf (Accessed 20 April 2020).

The World Bank (2020) News: Speeches & Transcripts: Remarks by World Bank Group President Jim Yong Kim at Climate Action Summit. Available at:

<https://www.worldbank.org/en/news/speech/2016/05/05/remarks-world-bank-group-president-jim-yong-kim-climate-action-summit> (Accessed 18 June 2019).

The World Bank (2020) The World Bank Report: What a Waste 2012. Available at: <http://documents.worldbank.org/curated/en/302341468126264791/pdf/68135-REVISED-What-a-Waste-2012-Final-updated.pdf> (Accessed 18 April 2020).

The World Bank Report (2019) Thailand's Growth Moderates as Global Risks Intensify. Available at: <https://www.worldbank.org/en/news/press-release/2019/07/08/thailands-growth-moderates-as-global-risks-intensify> (Accessed 18 June 2019).

The World meter (2020) Thailand Population (1950 - 2020). Available at: <https://www.worldometers.info/world-population/thailand-population/> (Accessed 20 May 2020).

Thibaut, J. W. and Kelley, H. H. (1959) *The Social Psychology of Groups*. New York: John Wiley & Sons.

Time Higher Education (2020) World University Rankings. Available at: <https://www.timeshighereducation.com/world-university-rankings/2020/world-ranking#survey-answer> (Accessed 22 March 2019).

Titscher, S., Meyer, M., Wodak, R. and Vetter, E. (2000) *Methods of Text and Discourse Analysis*. London: Sage, pp.467-482.

Tollefson, J. and Gilbert, N. (2012) Rio report card: the world has failed to deliver on many of the promises it made 20 years ago at the Earth summit in Brazil. *Nature*. 486 (7401). pp.20.

Top University (2019) Rankings. Available at: <https://www.topuniversities.com/university-rankings/asian-university-rankings/2019> (Accessed 27 March 2019).

Toyota (2019) CSR: Stop Global Warming Projects. Available at:
<https://www.toyota.co.th/news/WdPwP6jZ> (Accessed 18 November 2019).

Toyota (2019) News Available at:<<https://www.toyota.co.th/news/WdPwP6jZ>
(Accessed 27 May 2019).

Treadaway, C. and Mari, S. (2012) *Facebook Marketing: An Hour a Day*. 2nd ed. New Jersey: John Wiley & Sons, Incorporated.

Truong, V.D., Garry, T., and Hall, C.M. (2014). Social Marketing as the Subject of Doctoral Dissertations, August 9, 2014.

The Union of Concerned Scientists (UCSUSA) (2015) Available at:
<https://www.ucsusa.org/global-warming/science-and-impacts/science/ipcc-background.html> (Accessed 27 March 2019).

The Union of Concerned Scientists (UCSUSA) (2015) Science Background. Available at: <https://www.ucsusa.org/global-warming/science-and-impacts/science/ipcc-background.html#bf-toc-1> (Accessed 27 March 2019).

The United Nations (UN) (2015) Climate Change. Available at:
<https://www.un.org/en/sections/issues-depth/climate-change/> (Accessed 30 March 2019).

The United Nations Framework Convention on Climate Change (UNFCCC) (2019) Paris Agreement. Available at: <https://unfccc.int/news/175-states-sign-paris-agreement> (Accessed 2 March 2019).

The United Nations Framework Convention on Climate Change (UNFCCC) (2019) Paris Agreement. Available at: <https://unfccc.int/sites/default/files/list-of-representatives-to-high-level-signature-ceremony.pdf> (Accessed 2 March 2019).

United Nations Centre for Regional Development (UNCRD) of Division for Sustainable Development Goals (DSDG) (2019) ‘Ninth Regional 3R Forum in Asia and the Pacific / Theme: 3R as a Way for Moving towards Sufficiency Economy - Implications for

SDGs'. Bangkok, Thailand 4 Mar 2019 - 6 Mar 2019. Available at:
<https://www.uncrd.or.jp/content/documents/7743Final-Bangkok%20R%20Declaration-adopted-11%20March%202019-Issued-without-formal-editing.pdf> (Accessed 18 November 2019).

United Nations Climate Change (2020) Process and Meetings: What is the Kyoto Protocol?. Available at: https://unfccc.int/kyoto_protocol (Accessed 2 March 2020).

Van Maanen, J., Sorensen, J.B. and Mitchell, T.R. (2007) The interplay between theory and method. *Academy of Management Review*, 32 (4), pp. 1145-1154.

Wang, W. and Duffy, A. (2009) A triangulation approach for design approach', International Conference on Engineering Design, Stanford, CA.

Welman, C., Kruger, F. and Mitchell, B. (2005) *Research Methodology*. 3rd ed. Cape Town: Oxford University Press Southern Africa.

White House (2020) Statement by President Trump on the Paris Climate Accord (June 1, 2017). Available at: <https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/> (Accessed 18 June 2019).

Wongpanit (2019) Buying Price. Available at: <http://www.wongpanit.com/> (Accessed 20 March 2019).

Wongpanit (2020) Franchise. Available at: <http://www.wongpanit.com/franchise> (Accessed 20 March 2020).

Wongpanit (2019) Kronkran todpaba. Available at:
<http://www.wongpanit.com/kronkran-todpaba.php> (Accessed 27 May 2019).

World University Rankings (2019) Rankings. Available at:
https://worldtop20.org/global-universities?gclid=Cj0KCQjwi43oBRDBARIsAExSRQFEt8bnN58SkH7PLrF635KRnZFnzvHoDEcj3uuN3EDprsGx-HBRyiIaAskEEALw_wcB (Accessed 27 March 2019).

World wildlife (2015) Effect of Climate Change Available at:
<https://www.worldwildlife.org/threats/effects-of-climate-change> (Accessed 27 July 2019).

Yin, R.K. (2014) *Case Study Research: Design and Method*. 5th ed. London: Sage.

Zhang, N. (2011) *Greening Academia: Developing Sustainable Waste Management at UK Higher Education Institutions*. PhD. The University of Southampton.

Appendix

Appendix A: Copy of Research Permit at

Chiang Mai University (CMU) ½ at the preparation phase

English version

Department: Office of Chiang Mai University,

Student Quality Development, and Student Affairs Tel. 43047

Document: 6592(6.4)/922

Date: 27 October 2017

Subject: Permission Request to introduce campaign “Using Social Market Strategy to Promote Recycling in a Thai University.”

To President of Chiang Mai University

Request Summary: Miss Sariya Kruayim (DBA Student London University UK) has requested to have permission to interview CMU lecturers and administrators, also run a contest under the research campaign “Using Social Market Strategy to Promote Recycling in a Thai University” starting on October 17, 2017.

Request Details:

1. Permission to interview ten selected lecturers and administrators assigned to the Waste Management Program at CMU.
2. Permission to collect data on how CMU collect and manage wastes within the student campus.
3. Permission to launch CMU London Recycling Project via Facebook to find the best presenter for the recycling program (Recycling Ambassador). Miss Sariya will send an executive summary report to Faculty once all research work at CMU is complete.

Kindly acknowledge the facts and proceed accordingly

Regards

(Miss Sukanya Intachai)
Administrator

(Mr. Attapon Kienkum)
Head of Student Affairs

(Mrs. Atchara Sriplakich)
Director of Student Quality
Development, and
Affairs Division

Student

Notification

Approved

(30 October 2017)

(Associate Professor Amnat Yousukh, M.D.)

Vice President

(Student Quality Development, Student Affairs,
and Arts and Culture Division)

Acting for President of Chiang Mai University

Appendix A: Copy of Research Permit at

Chiang Mai University (CMU) 2/2 at the Preparation phase

English version

Document 6596(1)/1075

Registration office
Chiang Mai University
239 Haukaw Rd. Suthep D.
Muang Chiangmai 50200

26 April 2017

Subject: Research Permit at CMU RB Building 3 and 5

To Miss Sariya Kruayim

Reference: Permission request to perform research work at CMU Building 3 and 5

This letter is in response to the permission request to perform research work at CMU Building 3 and Building 5 during business hours and/or outside business hours, from May 2017 to December 2017.

The registration office has reviewed and approved this request. So, you have permission to perform your research work at CMU Building 3 and 5 during the requested timeframe. Please contact the following building administrators If you need any assistance: Mr Sompong Chaicana Tel. 061-3658757 and Mr Wanlop Khawpunya Tel. 089-7597161.

Regards

(Dr. Ronachai Pratanaphon)

Deputy director
Registration office

Tel. 053-948911

Fax. 053-948945

Appendix A: Copy of Research Permit at

Chiang Mai University (CMU) 1/2 at the Preparation phase

Thai version

 **บันทึกข้อความ**

ส่วนงาน...สำนักงานมหาวิทยาลัย...กองพัฒนานักศึกษา...งานทุนและนริการ...โทร. ๕๓๐๕๗
ที่ ศธว.๕๙๒.(จ.๕)/...๕/๒๒...วันที่ ๒๗ ตุลาคม ๒๕๖๐

เรื่อง...ขออนุญาตเก็บข้อมูลและจัดกิจกรรมภายใต้งานวิจัย "Using Social Marketing Strategy to Promote Recycling in a Thai University".

เรียน อธิการบดี (ผ่านรองอธิการบดีฝ่ายพัฒนาคุณภาพนักศึกษาและกิจการพิเศษ)

สรุปเรื่อง นางสาวศรียา เครือยิ้ม นักศึกษาปริญญาเอก ชั้นปีที่ ๕ คณะบริหารธุรกิจ มหาวิทยาลัยลอนดอนเมโทรโพลิเทิน, ลอนดอน, ประเทศอังกฤษ ได้มีหนังสือเรื่อง ขออนุญาตสัมภาษณ์คณะอาจารย์และเจ้าหน้าที่และจัดการแข่งขันเล่นเกมส์ เพื่อประกอบทำการวิจัยภายใต้หัวข้อ "Using Social Marketing Strategy to Promote Recycling in a Thai University" ลงวันที่ ๑๗ ตุลาคม ๒๕๖๐

กฎ/ระเบียบ/ข้อมูลที่เกี่ยวข้อง

๑. ขออนุญาตสัมภาษณ์อาจารย์และผู้ที่เกี่ยวข้องกับการบริหารจัดการขยะในมหาวิทยาลัยเชียงใหม่ จำนวน ๑๐ ท่าน โดยผู้วิจัยได้จัดเตรียมไว้เรียบร้อยแล้ว
๒. ขออนุญาตดูงานขั้นตอนการจัดการขยะภายในมหาวิทยาลัยเชียงใหม่
๓. ขออนุญาตจัดกิจกรรมทาง Facebook ภายใต้ชื่อ CMU London Recycling Project โดยมีการประกวดขลุ่ยทูตทางการแยกขยะ (Recycling Ambassador) ภายหลังจากเก็บข้อมูลและจัดกิจกรรมภายในมหาวิทยาลัยเชียงใหม่เสร็จสิ้น ทางผู้วิจัยจะนำไปสรุปผลและเสนอต่อผู้บริหารของมหาวิทยาลัยเพื่อเป็นประโยชน์ต่อทางมหาวิทยาลัยต่อไป รายละเอียดตามเอกสารดังแนบ

ข้อเสนอเพื่อพิจารณา

จึงเรียนมาเพื่อโปรดทราบและพิจารณา

(นางสาวสุกัญญา อินทชัย)
พนักงานปฏิบัติงาน

(นายอัครพล เชื้อนคำ)
หัวหน้างานทุนและนริการ

(นางอัจฉรา ศรีพลากิจ)
ผู้อำนวยการกองพัฒนานักศึกษา
๓๗ ต.ค. ๒๕๖๐

คำสั่ง

อนุมัติ
รองอธิการบดีฝ่ายพัฒนาคุณภาพนักศึกษาและกิจการพิเศษ
ปฏิบัติกรแทนอธิการบดีมหาวิทยาลัยเชียงใหม่

Appendix A: Copy of Research Permit at

Chiang Mai University (CMU) 2/2 at the Preparation Phase

Thai version

ที่ ศร 6594(1)/1075



สำนักทะเบียนและประมวลผล
มหาวิทยาลัยเชียงใหม่
239 ถ.ห้วยแก้ว ต.สุเทพ
อ.เมือง จ.เชียงใหม่ 50200

26 เมษายน 2560

เรื่อง อนุญาตให้ใช้สถานที่อาคารเรียนรวมหลังที่ 3 และ 5
เรียน นางสาวศรียา เครือยิ้ม

อ้างถึง หนังสือขออนุญาตใช้สถานที่อาคารเรียนรวมเพื่อทำการวิจัย

ตามหนังสือที่อ้างถึงท่านได้ขออนุญาตใช้สถานที่อาคารเรียนรวมหลังที่ 3 และหลังที่ 5 เพื่อทำการวิจัย ในเวลา และ/หรือนอกเวลาราชการ ตั้งแต่เดือนพฤษภาคม 2560 และเดือนกันยายน ถึงเดือนธันวาคม 2560 นั้น

สำนักทะเบียนและประมวลผล พิจารณาแล้วไม่ขัดข้อง อนุญาตให้ท่านใช้สถานที่อาคารเรียนรวมหลังที่ 3 และหลังที่ 5 ตามระยะเวลาที่ขอมาได้ โดยสำนักทะเบียนและประมวลผล มอบหมายให้ นายสมพงษ์ ไชยชนะ พนักงานสถานที่ หมายเลขโทรศัพท์ติดต่อ 061-3658757 และนายวัลลภ แก้วปัญญา พนักงานสถานที่ หมายเลขโทรศัพท์ติดต่อ 089-7597161 เป็นผู้ประสานงานและอำนวยความสะดวกในการใช้สถานที่

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ



(อาจารย์ ดร.รณชัย ประรณานพ)

รักษาการแทนรองผู้อำนวยการสำนักฯ ปฏิบัติการแทน
ผู้อำนวยการสำนักทะเบียนและประมวลผล

หน่วยพัสดุฯ
โทร. 053 - 948911
โทรสาร. 053 - 948948

Appendix B: The Student Questionnaire Form used a the Problem Identification Phase

English version

No.....

Questionnaire CMU London Recycling Project on Facebook Page

This questionnaire is for serving academic purposes, aiming to examine university student at CMU (Chiang Mai University/Thailand) about their backgrounds, lifestyles or behaviours on use of Facebook, and recycling activities on Facebook. It is also a part of DBA (Doctor of Business Administration) practice at London Metropolitan University, London, UK. All information given is confidential, and it will be applied for improving future research designs, waste and recycling education and recycling activities in some universities. Moreover, it can be implemented as a promotion of recycling practice as a social norm.

It is divided into four sections, which are:

Part 1: Socio-demographic Section

Part 2: Student lifestyle on Social media Section

Part 3: Use of Facebook Section

Part 4: Recommendation Section (about recycling activities on Facebook)

Thank you for taking the time to complete this question. If you have any inquiries, please feel free to contact;

Sariya Kruayim

E-mail: sariya.kr@yahoo.com or sak1245@my.londonmet.ac.uk

Part 3: The Use of Facebook Section

14. How often do you use Facebook per week?
a. 1-day b. 2-3 days c. 4-6 days d. Everyday
15. How many times do you use Facebook per day?
a. 1-2 times b. 3-4 times c. 5-6 times d. over 6 times or all-day
16. What time do you usually use Facebook? (one or more than one answers)
a. The morning before study time b. During study time
c. Lunch time d. After school until bedtime
17. How many hours do you spend on Facebook?
a. Less than 1 h. b. 1-2 h. c. Between 2 h. and 3 h. d. Over 3 h.
18. What are your purposes for using Facebook (one or more than one answers)?
a. Posting content and photo b. Checking-in c. Playing games
d. Reading News or Following celebrities/peers/friends and others
e. Chatting with friends f. Advertising g. Buying some product
h. Finding new friends i. Updating new trend j. Others _____
19. What are the benefits when using Facebook?

20. What are the negative points when using Facebook?

Part 4: Recommendation Section (about recycling activities on Facebook)

(-2)-Strongly disagree, (-1) Disagree, (0) Don't know, (+1) Agree, (+2) Strongly agree

Do you think?

- | | | | | | |
|--|----|----|---|----|----|
| 1. Facebook delivers knowledge and entertainment | -2 | -1 | 0 | +1 | +2 |
| 2. We can exchange our opinions and feelings via Facebook | -2 | -1 | 0 | +1 | +2 |
| 3. Facebook can change people thought and behaviour | -2 | -1 | 0 | +1 | +2 |
| 4. Facebook is beneficial for delivering messages between university students such as student news } student activities | -2 | -1 | 0 | +1 | +2 |
| 5. Facebook is useful for encouraging students to start doing some activities such as promoting students to do recycling in a university | -2 | -1 | 0 | +1 | +2 |

Please give your opinions on how to effectively promote recycling knowledge, understanding, and practice at CMU such as separating and throwing different waste/items into different recycling bins, properly. Alternatively, please give reasons

what else the university should do for promoting recycling. (one or more than one answers)

1. To increase the recycling posters in studying building and accommodation buildings because _____

2. To promote recycling on the university website because _____

3. To promote recycling on the University Facebook or Student Union Facebook because _____

4. To promote recycling on other Social Medias such as Youtube, Instagram because _____

5. To promote recycling on Television Channels, Cinemas, Movies, VDO and Songs because _____

6. To run recycling activities such as setting up Recycling Society because _____

7. To recruit recycling volunteers and recycling ambassadors for introduce or promote recycling to their friends because _____

8. Others _____

Thank you for your cooperation.

If you have more information, please be participated in the interview (20-30 mins).

You are invited to participate in recycling activities on Facebook-

“CMU London Recycling Project”.

Please follow us; you will gain recycling understanding and entertaining by joining some innovative recycling activities between October and December 2017.

There are a lot of trendy London souvenirs and student funds at

Facebook Page: CMU London Recycling Project

Appendix C: Interview guide used at the Problem Identification Phase

Questions for Students

1. Please describe your recycling practice at home or at school?
2. What made you recycle or not recycle?
3. How many years have you been studying at CMU?
4. When did you remember that CMU providing Recycling bins?
5. Please describe the colours or the characteristics of recycling bins at CMU, do you think it is practical? Why?
6. Do you think you or your CMU friends recycle? Why?
7. In your opinion, how to promote recycling among students at CMU effectively? Why?
8. In your opinion, what are the recycling barriers?
9. What are influencers for the students on recycling- your friends, families, academic staff, waste and recycling management teams, or the leaders of the university? How and why?
10. If CMU promotes recycling practice, what activities should be used?
11. What are the effective practical awards for the students on recycling activities?
12. Do you have any further recommendation? Please...

Questions for Executives and staff from Waste and Recycling Management

1. How many years have your work in CMU or work for waste and recycling management?
2. What is your role for CMU Waste and Recycling Management?
3. From your opinion, could you describe CMU waste and recycling management such as environmental factors, barriers, and solutions?
3. What is the plan for dealing with waste and recycling issues in CMU?
4. What strategies do you use for encouraging students and staff to recycle in CMU?

Questions for a staff member of CMU Recycling Bank

1. Please describe a brief CMU Recycling Bank history.
2. Please explain the process of the recycling bank
3. What are the benefits of CMU Recycling Bank?
4. What are the obstacles of the bank?

Questions for Academic University Staffs (at Marketing Department and Management Department)

1. How many years have you been working at CMU?
2. When did you remember that CMU providing Recycling bins?
3. Please describe the colours or the bin, do you think it is practical?
4. Do you think students do recycling? Why?
5. In your opinion, how to promote recycling at CMU effectively?
6. From your point of view, what are successful recycling factors?
7. What are the recycling barriers?
8. Do you think that disincentive or incentive strategy could be implemented as a marketing tool or marketing motivation?
9. Do you think social marketing strategies could be applied? How?
10. What are influencers for the students on recycling-their peers, families, academic staff, waste and recycling management team, or the leaders of the university?
11. If CMU promotes recycling practice, what activities should be used?
12. What are the effective practical awards for the students on recycling activities?
13. How do the leaders and staff promote recycling to students?
14. How do students promote recycling for students?
15. How could other organisations be a partnership?
16. Do you have any further recommendation? Please...

Questions for Government sectors (Authorities)

1. Please introduce yourself and your role for the project
2. Please describe how you run the project. Please give examples.
3. From your perspective, what are key success factors for the project?
4. What are the barriers when you ran the project, and how did you deal with them?
5. What are your next projects or plans? How will you manage the projects or plans?

6. Do you have any requirement for CMU to support your next project? Please describe.
7. Do you have any recommendation for the CMU management team to promote recycling and waste minimisation? Please explain.

Questions for Residents in the focus group

1. Please introduce yourself and your role for the project
2. Please describe how your behaviour has changed, and why?
3. From your perspective, what are key success factors for the project?
4. What are the barriers when you run the project or when you had to change your behaviour, and how did you deal with them?
5. What are your next projects or plans? How will you manage the projects or plans?

Questions for Recycling shop owners

1. How many years have you run this recycling business?
2. How many workers do you have?
3. Please tell your working time
4. Is your business influenced by the external environment such as Politics, Economic and Social factors?
5. Please describe your business, your position and your competitors
6. Please identify the characteristics of your customers
7. Are the school students and staff or university students and staff your customers?
8. What kinds of recycling activities which students or the staff run with your shop?
Please describe
9. Please explain the types of recyclable items which you sell and buy
10. How do your customers contact you to sell the products?
11. What strategies do you implement for your business?
12. Could you give information describing why people should separate the items properly?
13. Do you have any plan to increase customers or market share from the university?
14. Do you have any suggestion for universities and students for recycling's trading?

Questions for the PTT manager

1. Please describe your company backgrounds and the recycling projects at PTT stations
2. Could you please tell the recycling projects 'objectives and feedback on recycling activities?
3. Please kindly share the marketing strategies towards customer behavioural change
4. Please give the information about your new recycling plans.
5. Do you have any suggestion for CMU to promote recycling?

Appendix D: Photos of the adoption of social marketing tools and the strategies at the Research Taking Phase

1. The posters for introducing the competition and persuading the students to participate in the activities.



Figure 1.1A

1.1. COMPETITION.

You are invited for CMU recycling ambassador competition aiming to encourage your friends to perform recycling at sources. Please send your recycling messages and photos to engage with the competition. The winners will receive student funds such as 10,000 baht, 5000 baht, and others. The end of the application is on 25 November 2017. Please follow us and find more details at CMU London Recycling Project!



Figure 1.2A

1.2. COMPETITION.

Please vote your friends for the recycling ambassador competition by clicking 'LIKE, LOVE, HAHA, WOW or SHARE' on the Facebook Page: 'CMU London Recycling Project'. The vote will be closed on 30 November 2017.

2. Three examples of online recycling messages from the recycling ambassador contestants.



Figure 2.1A



Figure 2.2A



Figure 2.3A

2.1. 'I basically have my food all. But if it is too much, I will dump the food waste at the specific bin because it will be recycled for bio-fertiliser'. Mild, UEL/ UK.

2.2. 'Let us dispose of used plastic bottles at the recycling bin because we can reduce the waste which will be sent to landfill sites or combustion. We will help our community to reduce the pollutions'. Mild, UEL/ UK.

2.3. 'I always separate used cartridge tanks for hazardous bins because this packaging contains toxic chemicals and they have to go to the specific bins because they will be eliminated by a different method'. Mild, UEL/ UK.

3. Recycling promotions on two university boards at RB Building used for promoting the recycling ambassador competition at Building three and five on the campus of CMU



Figure 3A: Recycling posters on CMU boards

4. The meetings with the CMU staff team and the student club members at Student flat no. three in the campus of CMU to promote the online project, ‘CMU London Recycling Project.’



Figure 4.1A: The CMU staff team

Figure 4.2A: The student club members

5. The twenty-six Recycling Ambassador teams and their recycling messages and ‘CMU London Recycling Ambassador Competition’, on the Facebook Page



5.1. ‘Being a hero by putting the right rubbish to the right bin.’ (Ambassador no. 1)

5.2. ‘Let us finish all drinks and put empty bottles into the recycling bin separated from other waste bins.’ (Ambassador no.2)

5.3. ‘Dumping waste into the recycling bin is better than being dumped.’ (Ambassador no. 3)



5.4. ‘General waste bin is for only non-recyclable waste such as plastic bags, instant noodle packages.’ (Ambassador no.4)

5.5. ‘For a student flat with no waste sorting, you can put plastic bottles into separate bags and put it by the waste bin.’ (Ambassador no.5)

5.6. ‘I wish I had a Harry Potter hat and magic so that I can turn more CMU students in to waste separation fans.’ (Ambassador no. 6)



5.7. ‘Please put the paper into the recycling bin. So, it can be transformed into something that can be used again.’ (Ambassador no. 7)

5.8. ‘Better waste management starts with separating your waste into proper bins.’(Ambassador no. 8)

5.9 ‘I am sorting my waste by putting straw and lid into ‘General’ bin, and plastic cup into ‘Recycling’ bin.’ (Ambassador no.9)

5.10. ‘Recycling is effortless like dumping your banana peel into the compost bin.’ (Ambassador no.10)



5.11. ‘Flawless performing, using right bins.’ (Ambassador no. 11)

5.12. ‘What to put in colour-code bins: blue – non-recyclable items; green – food and garden waste; yellow – recyclable items; red – all other rubbish.’ (Ambassador no.12)

5.13. ‘You can simply put the right item to the right bin.’ (Ambassador no.13)



5.14. 'Putting the right waste into the right bin like giving your heart to the right person.' (Ambassador no.14.)

5.15. 'Waste sorting for better care for the environment.' (Ambassador no.15)

5.16. 'Reuse the cardboard box to save raw materials.' (Ambassador no.16)



5.17. 'Sorting your waste for better love and care for the environment.' (Ambassador no. 17)

5.18. 'Everybody can put rubbish into the recycling bin.' (Ambassador no.18)

5.19. 'We cannot stop sorting waste for a good cause.' (Ambassador no. 19)



5.20. 'Although I am dumped, I recycle my waste correctly.' (Ambassador no.20)

5.21. 'Although I finish my project very late, and I was exhausted, I still recycle properly.' (Ambassador no.21)



5.22. ‘Proper recycling with high speed makes the world better.’ (Ambassador no. 22)

5.23. ‘Angels always recycle. How about you? Do you recycle?.’ (Ambassador no. 23)

5.24. ‘Doing a good thing and sharing it. Pay attention when recycling—checking the right waste for the right bin.’ (Ambassador no. 24)



5.25. ‘Although recycling bins are colourful, good people know how to select the right recycling bin. Quality people recycle because they want to do a good thing.’ (Ambassador no. 25)

5.26. ‘Please study hard on paper sheets to pass exams, then recycle the paper at the bins.’ (Ambassador no. 26)

6. The winners of the student volunteer competition and their prizes (5,000 b.x3 teams)



7. The winners of the recycling ambassador competition and their prizes



7.1. : The winner no.4 (10,000 b.) and the winner no. 6 (5,000 b.)



7.2: The winner no. 11 (5,000 b.), the winner no.19 (3,000 b.), and the winner no.12 (1,000 b.)

8. The winners and their peers at the end of the project



Appendix E: Student Questionnaire Form used at the Evaluation Phase

English version

No.....

Questionnaire Form University Student Satisfaction on CMU London Recycling Project on Facebook Page 2017

(CMU-Chiang Mai University)

This questionnaire aims to collect your opinions in terms of satisfaction information in order to improve the recycling activities at CMU.

There are three parts which are;

Part 1: Socio-demographical information of participants/ Respondent Background;

Part 2: Participant Satisfaction on the Recycling Project;

Part 3: Recommendations.

It is also academic research. All information from this survey is confidential, and it will be used for academic purposes. Thank you for your corporation. If you have any queries on any aspect of this survey, please feel free to contact at 099 253 4293 or leave a message at CMU London Recycling Project (Facebook Page)

Sariya Kruayim

E-mail: sariya.kr@yahoo.com or sak1245@my.londonmet.ac.uk

Please complete the questionnaire by ticking the appropriate box(es) for each question, according to your opinions.

Part 1: Socio-demographical information of participants/ Respondent Background

1. What is your gender?

- 1) Male 2) female 3) Unspecific

2. What year of your degree are you in at CMU (Chiang Mai University)?

- 1) First-year undergraduate 2) Second-year undergraduate
 3) Third-year undergraduate 4) Fourth-year undergraduate and others

3. You are a student in what Faculty?

.....

4. What is your role in this project?

- 1) Recycling Facebook Page (RFP) Volunteer (if 'yes' script question no.5)
 2) Non- RFP Volunteer

5. How do you know this Facebook Page?

.....

Part 2: Participant Satisfaction on the Recycling Project

Please indicate your answers by ✓ in the box(es) below, according to your opinions

How would you rate?	+2	+1	0	-1	-2
	Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
1. The suitability of the project					
1) This Recycling project provides a plenty of information about the activities and the competition.					
2) The rules of the competition are clear and fair.					
3) The duration of the competition is suitable - one month for 'Like and Share Clicking' for the first activity.					
4) The duration of the competition is suitable - one month for 'Like and Share Clicking' for the second activity.					
2. The value of the project					
1) Do you understand the aims and objectives of the project?					
2) Does the content on the project meet your interest?					
3) Do the awards such as London souvenirs and study funds meet your satisfaction?					
3. After the end of the project;					
1) Have you gain better knowledge and understanding about recycling?					
2) Do you feel you have better recycling awareness?					
3) Have you done recycling as an ambassador in front of your peers?					
4) Have you introduced or recommend 'Recycling' to your peers better?					
5) Do you think you are confident to apply the knowledge, understanding, and experience from the activity engagement into your diary life?					
4. Readiness of the project					
1) This project raises recycling awareness.					

How would you rate?	+2	+1	0	-1	-2
	Strongly Agree	Agree	Don't know	Disagree	Strongly Disagree
2) This project provides the benefits of doing recycling which is interesting					
3) This project motivates people to think of recycling as an important practice in diary lives.					
4) The benefits from this activity engagement can be applied into the real life.					
5) I am satisfied when participating this project by my peer suggestion.					
6) I am happy and agree with the award given by this project					

Part 3: Recommendations

Please feel free to give useful information in order to improve the Recycling activities at CMU.

1. Will you participate in any activity which is similar to this project? Please give the reasons.

1)Yes

2) No

.....

.....

.....

.....

.....

2. In your opinion, how to improve this page in terms of project promotion or advertising?

.....

.....

.....

3. How to improve the project in terms of activity or competition characteristics?

.....

.....
.....
.....

4. Do you have any further recommendation about the project?

.....
.....
.....
.....

5. Do you have any recommendation about this survey? Please provide it.

.....
.....
.....
.....
.....

☺ Thank you for taking the time to complete this survey