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INFLUENCE OF SOCIAL MARKETING ON BEHAVIOUR CHANGES OF DIABETIC PATIENTS

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CERTIFICATION

I hereby certify that contents of this dissertation are wholly my own work unless otherwise referenced or acknowledged. Information from sources is referenced with original comments and ideas from the writer herself/ himself.

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ABSTRACT

The main objective of the study is to evaluate the influence of social marketing tools on behaviour changes of diabetic patients. The descriptive and analytical research methods are used to meet the objective of the study. A sample of 390 diabetic patients was selected from the diabetic clinics and hospitals. The primary data is gathered from personal interview and structured questionnaires instruments by using the multiple regression model for analysis. In this study, it was found that five social marketing tools, product, price, promotion, professional, and performance have positive significant effect on behaviour changes of diabetic patients. The findings of moderating effects demonstrated that among the demographic characteristics, education has positive moderating effect on the relationship of social marketing tools and behaviour changes. Moreover, change in knowledge, change in attitude, intention to change and willingness to spend have affected on health status and change in behaviour, belief and willingness to spend have significant effect on quality of life. The results of this study encourage to policy makers to emphasize on improving behaviour changes of diabetic patients in health industry, Myanmar. The results suggest and the best ways to diabetic patients for behaviour changes and improving the results of their outcomes such as health status and quality of life. According to the findings of this survey, use of social marketing tools can change the behaviour of diabetic patients, prevent the complications of diabetes and improve the quality of life of diabetic patients. Moreover, it can achieve the aim of the fourth Social Objective "Uplift of health, fitness and education standards of the entire nation" pronounced by the State. It partially contributes to the accomplishment of Nation's health and social objective. This study contribution is beneficial for human resources development because it improves the health status and quality of life not only at individual and family level but also at organizational and national level. Finally, another beneficial result is that it relieves the monetary burden of the country by reducing the cost for health care sector.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ASEAN	Association of South East Asian Nations
BMI	Body Mass Index
COPD	Chronic Obstructive Pulmonary Disease
CSM	Contraceptive Social Marketing
DKA	Diabetic Keto Acidosis
DM	Diabetes Mellitus
DSM-IMB	Diabetes Self-Management, Information-Motivation-Behaviour
FBS	Fasting Blood Sugar
FDA	Food and Drug Administration
GDP	Gross Domestic Product
HbA1c	Hemoglobin A1c
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
HONK	Hyperosmolar Nonketotic Coma
IDDM	Insulin Dependent Diabetes Mellitus
IDF	International Diabetes Federation
IDFWP	International Diabetes Federation Western Pacific
IHD	Ischaemic heart disease
ITNs	Insecticide-Treated Bed Nets
KAP	Knowledge Attitudes and Practices
LLINs	Long-Lasting Insecticide-Treated Nets
MBG	Mean Daily Blood Glucose
MMDA	Myanmar Diabetes Association
MMOL/L	Millimol per Liter
MOH	Ministry of Health
MPH	Master of Public Health
NCDs	Non-Communicable Diseases
NGOs	Non-Governmental Organizations
NIDDM	Non-Insulin Dependent Diabetes Mellitus

NPH	Normal Pressure Hydrocephalus
OGTT	Oral Glucose Tolerance Test
OPD	Outpatient Department
PAPM	Precaution Adoption Process Model
PEN	Package of Essential Non-Communicable Disease Interventions
PERForM	Performance Framework for Social Marketing
PhD	Doctor of Philosophy
PSI	Population Services International
QOLID	Quality of Life Instrument for Indian Diabetes Patients
RBS	Random Blood Sugar
SDBG	Standard Deviations of Daily Blood Glucose
SPSS	Statistical Package for Social Sciences
STATA	Statistics and Data
STI	Sexually Transmitted Infection
TB	Tuberculosis
T2D	Type 2 Diabetes
T2DM	Type 2 Diabetes Mellitus
US$	United States Dollar
WHO	World Health Organization
WHO HQ	World Health Organization Headquarters
WHO PEN	World Health Organization Package of Essential Non-Communicable Disease Interventions
2HPP	2 Hours Post-Prandial Blood Sugar

CHAPTER I
INTRODUCTION

Attention toward social marketing is escalating both in the developing and developed countries. The main aim of social marketing is to change harmful individual behaviour and solve social problem. Social marketing is a behavioral science and informed approach to promote social change. It focuses to lead about voluntary behaviour change that is sufficiently adaptable to bring about broader social or cultural change by means of marketing techniques and principles (Kotler & Zaltman, 1971). Social marketing may openly be defined as the application of marketing techniques to solve social complications. It covers a wide variation of disciplines that include health education, advertising, economics, business management, psychology and epidemiology. Moreover, social marketing objects to persuade or lead people to adopt specific courses of activity or behaviour which are generally received as being beneficial (Manoff, 1985).

The behaviour changes start from their awareness, knowledge, attitudes, and then change practices. If the knowledge, attitude, and practice of diabetic patients are enhanced and the quality of health services is improved, itleads to solve their problems of diabetes. As the world becomes more modern, people's lifestyles become more modern and diseases become more and more modern, including diabetes. The behaviour change is not isolated process, but happens at the social level, involving interpersonal channels of communication. Social marketing campaigns tend to overlook these factors and are based on information campaign that use traditional marketing principles and are intended to promote behaviour in a similar way to products. Using this issue as an explanation for the failure of many behaviour changing initiatives, McKenzie-Mohr and Schultz (2014) suggested an alternative approach that has proven to be effective with a broad set of behaviours.

Diabetes affects millions of people across the world. In 2014 there were about 422 million adults with diabetes, a four-fold rise since 1980. Much of this increase is among people living in low and middle income countries, which account for nearly

80% of the burden of diabetes. Diabetes is now the eighth leading cause of death worldwide. Younger age groups are increasingly being affected. Diabetes burdens not only individuals with catastrophic medical expenses but also families due to waste of time and extra costs. Societies and government also suffer losses due to reduced labour productivity and premature death. The total health-care expenditure on diabetes worldwide was US$ 612 billion in 2013, estimated to account for around 11% of global health-care expenditure. The losses in Gross Domestic Product (GDP) worldwide due to diabetes from 2010 to 2030 are estimated to be US$ 1.7 trillion. Diabetes is therefore as much a development issue as it is a health issue (Singh, D. P. K,2016).

World Health Organization estimates that Non-Communicable Diseases (NCDs) such as diabetes and cardiovascular diseases accounted for 59% of deaths in Myanmar in 2014. Furthermore, many developing countries are facing a double or triple burden of diseases, as they endure the impact of rising trends of NCDs while tackling emerging and re-emerging infectious diseases. Treatment for diabetes and other NCDs is extremely expensive, and the costs involved force families into catastrophic spending and impoverishment. The costs for the health-care system derived from NCDs are high and steadily increasing, and will have an enormous impact in many countries, including Myanmar (Singh, D. P. K, 2016).

In Myanmar, the national level survey about diabetes prevalence was studied by selecting a total of 9360 people systematically from 14 States and Divisions in 2014. According to the findings in this survey, the prevalence of diabetes between the age of 25 and 64 years is 10.5% in Myanmar. The prevalence of diabetes in male population is 9.1% and in female population is 11.8%. According to this data, females are more prone to diabetes than males. Only 2.9% of diabetic patients got diagnosis and 7.6% are under-diagnosed. Although prevalence of diabetes mellitus in rural areas is 9%, it is found that diabetes prevalence in urban areas is 14%. This survey shows the prevalence of diabetes in 14 States and Divisions and it is found that Yangon is the most prevalent area among other States and Divisions with diabetes prevalence rate of 18.2%. This survey also indicates that the prevalence of diabetes nationwide is 10.5% and the prevalence of pre-diabetes is 19.7% which is two times greater than the former. According to Myanmar population statistics issued in 2014, the population of aged between 25 and 64 years would be 24 million among total population of 51

million. It is estimated that 2.5 million people are suffering diabetes and 4.7 million people are pre-diabetic among this age group (Latt, T. S., et al, 2019).

In Myanmar, facilities for early detection of the disease are lacking especially in rural areas, where nearly 70% of the population lives among whole country. Health care services for diabetic patients are also difficult to implement, as necessary information, education, and communication materials as well as essential drugs and tests are not available in rural areas. In Yangon Region, a survey about diabetes prevalence done in 2003-2004 showed 12% of population are suffering diabetes and another survey done in 2014 showed diabetes prevalence of 18%. Therefore, diabetes prevalence in Yangon region has increased by 6% in a decade. The findings in this survey are very useful not only for planning healthcare projects but also for other developmental projects in Myanmar (Latt, T. S., et al., 2019).

Care services for diabetic patients are also difficult to implement as necessary information and knowledge in all areas of Myanmar. As the core reason for the diabetes health problem lie on lack of knowledge about the diabetes health care in Myanmar, delivering that knowledge to them is the key step to solve this problem. Only after the acceptance of that knowledge by the diabetic patients, this will lead to positive change in their behaviour accordingly. Therefore, it is required to find the ways and means to be able to disseminate diabetes knowledge effectively and efficiently to the target adopters.

The solution to this problem of how to change behaviour is in the discipline of marketing and this study intends to highlight the application of marketing strategies to change the knowledge, attitudes and behaviour of the patients with diabetes.

1.1 Rationale of the Study

Nowadays, non-communicable diseases are threatening and challenging the health of human beings. The major cause of mortalities in the world is analyzed and found out to be non-communicable diseases. Among several non-communicable diseases, ischaemic heart disease (IHD), cancers, diabetes and chronic lung diseases are regarded as major non-communicable diseasesby WHO.

Non-communicable diseases are causing much harm to not only suffered individuals and their families, but also the whole community. For non-communicable diseases, they can cause pre-mature deaths and unable to fully enjoy the pleasures of human life while alive, and also result in loss of human resources, damaged productivity

for the country and other damages. Among NCDs, diabetes is rapidly increasing incidence around the world as a pandemic, mostly in middle-income countries.

The main risk factors that cause diabetes and other major NCDs are well known and are common amongst all countries. In particular, tobacco use, adverseuse of alcohol, poor dietary habits (high in salt, sugar and fat and low in fruits and vegetable) and physical inactivity are established modifiable behavioral risk factors for NCDs. The basic component of NCDs prevention is the identification of these common risk factors and their prevention and control. Surveillance of prevalence trends plays therefore a fundamental role in controlling these diseases. Systematic surveillance offers comparable data to identify disease levels and trends of major risk factors which can predict NCDs.

Worldwide prevalence of diabetes is studied as 347 million and WHO predicted that mortality due to diabetes will become seventh highest in 2030. Between 50% and 80% of diabetic patients are also detected dying of coronary vascular diseases (Singh, D. P. K, 2016).

However, since the establishment of the Prevention and Control of Diabetes Project in 1995-96 (a collaborative programme between WHO and the Ministry of Health), activities have been implemented to raise public awareness of diabetes and to improve the standard for diabetes health care in Myanmar. WHO Office in Myanmar has provided technical support to the project of diabetes prevention and control in terms of capacity building, advocacy and research for the last two decades since the inception of the project.

The first WHO STEPS survey aimed at identifying these trends was conducted in Myanmar in 2003-2004. It was sub-national in scope and covered Yangon region only. This survey (conducted among people aged 25-74) revealed the overall prevalence of diabetes to be 12%, with 11.7% prevalence in men and 12.8% amongst women. A second Step survey was conducted in 2009, but it did not include biochemical tests. The latest national survey of NCDs risk factors was conducted in 2014 by the Diabetes Control project of the Ministry of Health, with technical support from WHO HQ and WHO Myanmar in terms of training of interviewers, data analysis and provision of instruments for data collection.The survey collected information on socio-demographic and behavioral characteristics, physical measurements such as height, weight and blood pressure and biochemical measurements (e.g., blood glucose and total cholesterol level, triglycerides, etc.). It was a population-based survey of

adults aged 25-64 from 52 townships in Myanmar. Almost 9000 adults participated (Latt, T. S., et al., 2016).

High prevalence among Myanmar population and risky behaviours of IHD, cancers, chronic respiratory diseases are also discovered widely. In order to prevent these non-communicable diseases effectively, prevention activities for cigarette and tobacco use, much alcohol drinking, lack of physical exercise, infrequently having fruits and vegetables, obesity, hypertension, hypercholesterolemia are needed to function in nationwide progressively. According to Diabetes Prevalence and NCD Risk Factors Survey in 2014 in Myanmar, it was discovered that prevalence of diabetes among 25 to 64 years of age was about 10.5%. Calculating with this rate, there wereabout 2.5 million expected of patients with diabetes in Myanmar. Comparing prevalence, it was also higher than other neighborhood countries. As there may be 8 IHD in every 10 diabetic patients, there would be many individuals with risk of ischaemic heart disease (Latt, T. S., et al., 2016).

Leading by Ministry of Health in Myanmar, not only behavioural and lifestyle modification related health education about diabetes, a non-communicable disease, also diabetes prevention program including early diagnosis, investigation, and effective treatment for detected cases are being managed to enable necessary accomplishments even for rural areas implemented by basic health professionals. Human resource management also takes part in an important role in investing in employee development. This was attained by assisting employees to arrange and market themselves for internal positions and if desired, helping them pursue employment opportunity outside the organization.

As behaviour and lifestyles of individuals are changing in current world, many diseases concerning individuals' behaviour are also appearing along with changes in dietary lifestyles and natural environments. Therefore, in order to attain and practice the correct health knowledge and reduce diabetes prevalence, the whole community may participate through extensive promotion of advocacy meetings within community and knowledge sharing in media.

If prevention activities are not worked in time, not only individual or family, also the whole community as Myanmar citizenshave to suffer and economic burden for the countrywill also happen owing to excessive health expenditures andfall in productivity.Beneficial to free from non-communicable diseases including diabetes,

reinforcement from doctors, health staffs and social marketers together withthe entirepopulationis becoming important.

To address the problems of diabetes in Myanmar, the WHO Country Office in cooperation with the Ministry of Health has been implementing the World Health Organization Package of Essential NCD Interventions (WHO PEN) for primary care in low resource setting in two pilot townships in Yangon Region. The WHO PEN Protocol 1 is being implemented: prevention of heart diseases, strokes and renal disease through integrated management of diabetes mellitus and hypertension. A national strategic plan is currently being formulated to scale up PEN disease interventions to an additional ten townships in 2016 (Latt, T. S., et al., 2019).

Social marketing is adopted as a strategy for changing behaviour by the social organization nowadays. It combines the best element of the traditional approaches to social change in an integrated planning and action. This research tries to depict the use of marketing principles and techniques in advancing a social cause, idea or behaviour.

Diabetic health care education is very important in developing countries. Diabetes represents one of the biggest public health challenges facing in Myanmar. Thus, diabetes health campaigns are delivered to diabetic patients.There is a need to encourage the practice according to the instruction given by department of health. Therefore, this study aims to analyze the social marketing tools to promote the acceptability of the social idea or practice of diabetic health care and influence of social marketing on behaviour changes and its outcomes of DM patients in Yangon Region, Myanmar.

1.2 Problem Statement of the Study

Diabetes Mellitus now becomes the greatest world's health problem of 21stcentury. About 415 million people worldwide are suffering diabetes according to the latest statistics issued by International Diabetes Federation in 2015. It is estimated that total number of diabetic patients would be 642 million globally in 2040. According to these data, one in eleven adult populations all over the world is suffering diabetes in 2015 and it is estimated that one in ten adult populations would suffer diabetes in 2040. Approximately over half of diabetic patients are suffering diabetes silently although they do not actually know their diagnosis. Diabetes is one of the most expensive diseases and it can lead to huge economic burden for the patient himself and his family.

In addition, diabetes mellitus can lead to cost burden of national health systems and can disturb the economy and development of the countries. The country itself loses its productivity not only due to healthcare cost for diabetic patients but also due to loss of human resources. These can lead to financial burden of the country. Most of the countries on the world are spending between 5% to 20 % of total healthcare cost for diabetes mellitus and its complications. Therefore, diabetes is now recognized as the cause of economic burden of the country not only as health issue.

According to the latest figures reported by International Diabetes Federation in 2015, 6.5% of the population aged 20 to 79 years are suffering diabetes and it is evaluated that total of two million people is suffering diabetes in Myanmar.

The country needs to know the prevalence of diabetes mellitus and total number of diabetic patients approximately. Only then, planning effective projects and appropriate reallocation of human resource can be done and preventive measures to reduce the burden of diabetes which is nearly pandemic can be done.

In Myanmar, it is the time to conduct healthcare projects and to spend money for prevention of non-communicable diseases such as diabetes mellitus, cardiovascular diseases, cancer and COPD. Only then, healthcare projects in Myanmar will become the effective ways to prevent the actually occurring diseases and it can prevent morbidity and mortality of people. Therefore, it is required to use social marketing tools as effective ways to prevent morbidity and mortality of people.
In Myanmar, the main issues of diabetic patients are lack of knowledge on health literacy, not doing annual medical check-up, not knowing the side effects of anti-diabetes drugs; lack of knowledge on importance of physical exercise, lack of knowledge on complication of diabetes mellitus, unavoiding the food concerning the issue of hyperglycemia, and not taking the diabetes drugs regularly.

The number of patients suffering diabetes is increasing worldwide due to increasing global population, increasing number of the aged, rising number of urbanized populations, abundance of unhealthy food and eating habits and increasing number of obese people due to reduced physical activity. It is found that most diabetic patients are living in low and middle income countries. Thus, it is important to do diet and life style modification for diabetic patients to prevent diabetic complications. Therefore, diabetic patients need to know diabetic knowledge, things to do and things to avoid concerning with diabetes. Doctors, health staffs and social marketers use social marketing tools to deliver this knowledge to diabetic patients.

To analyze Myanmar's culture and situations, it is essential to survey the influence of social marketing tools on behaviour changes of diabetic patients. Although the research on consumers' attitude and behaviour concerning specific products or services are being carried out to promote sales of specific businesses, influencing the social marketing factor on behaviour change of diabetic patients have yet to be explored in Myanmar. Therefore, this study intends to find out the influence of social marketing on behaviour changes of diabetic patients in Yangon Region.

1.3 Research Aim and Questions

This study aims to find out social marketing tools which can influence on behaviour changes diabetic patients in Yangon. According to the research problem, research questions emerged. This study intends to find the answers for following research questions;

(1) What tools of social marketing are influencing on behaviour changes of diabetic patients in Yangon Region, Myanmar?
(2) Is there moderating effect of demographic characteristics of diabetic patients on relationship between social marketing tools and behaviour changes?
(3) How do behaviour changes effect on diabetic patients' outcomes?

Thus, it is predicted that these findings provide social marketing tools that are enable the diabetic patients to promote the acceptability of the social idea or practice of diabetic health care in Yangon Region.

1.4 Objectives of the Study

The general objective of the study is to analyze the influence of social marketing on behaviour changes and its outcomes of diabetic patients in Yangon Region. The specific objectives of the study are:

(1) To examine the influence of social marketing tools on behaviour changes of diabetic patients in Yangon Region.
(2) To identify the moderating effects of demographic characteristics on relationship between social marketing tools and behaviour changes of diabetic patients in Yangon Region.
(3) To analyze the effect of behaviour changes on outcomes of diabetic patients in Yangon Region.

1.5 Method of Study

This study is conducted based on the descriptive and empirical research method to arrive at findings and conclusion. Descriptive method is used to present the diabetic patients' demographic characteristics, psychological characteristics, and behaviours. The empirical research method is used to analyze the characteristics which explain the impact of demographic, psychological characteristics, and social marketing tools on the behaviour of diabetic patients.The target population of the study is diabetic patients treating with endocrinologist who specialize in diabetes in Yangon Region. The respondents were selected from charity clinics, public medical outpatient department (OPD) and private medical outpatient department (OPD) health centers because it was easier to recruit diabetic respondents according to the consultation day.

As a sampling design, two-stage sampling procedure was utilized to collect the data for evaluating research objectives of this study. At first stage, the medical hospitals and clinics of diabetes in Yangon Region are divided into three strata, such as government hospitals, private hospitals and charity clinics. The strata contain 26 government hospitals in first stratum, 56 private hospitals in second stratum and 55 charity clinics in last stratum. A stratified random sample of 3 hospitals is equally chosen from each stratum. At the second stage, each of 130 patients from endocrinologist's medical hospitals and clinics were selected by systematic random sampling from selected medical hospitals and clinics chosen in first stage. As a systematic sampling, every fifth patients were chosen as sample units to become the sample size of 390 patients from the selected sampled medical hospitals and clinics.

Both primary and secondary sources of data are used in this research. The chosen diabetic patients were requested to complete the questions by face-to-face interview to observe and investigate about diabetic patients' demographic, psychological characteristic, and their behaviours. The questions are to be measured with five-point Likert Scale, closed and open ended as well as interview schedules. The primary data are collected through survey questionnaire while secondary data are taken from the various sources such as management textbooks, report books published by MOH, magazinesand journals, conducted research papers concerning and social marketing and behaviour changes from various fields, and internet.

The questionnaire is divided into parts such as demographics factors, social marketing tools, behaviour changes and outcomes. Descriptive statistics such as

mean, percentages, and standard deviation were used. This study employed quantitative research method using multiple linear regression analysis to analyze the data. Reliability and validity of data were tested before proceeding to the regression analysis.

1.6 Scope and Limitations of the Study

This study mainly focuses on influence of social marketing on behaviour changes of diabetic patients in Yangon Region, Myanmar. This research collects data concerning diabetic patients by means of questionnaires. The analyses were conducted based on survey data in 2021. This study emphasizes diabetic patients' behaviour toward health. This study excludes other patients concerning non-communication diseases. This study analyzes the influencing factors i.e., social marketing tools, demographic factors and psychological factors that affected their behaviour and excludes the effects of other situations. This study mainly emphasizes on the diabetic patients' behaviour towards health in Yangon Region area and excludes other major cities such as Mandalay, Naypyidaw, Pathein and Mawlamyaing in Myanmar. This survey was taken by asking questionnaires to diabetic patients from diabetic clinics and hospitals including three charity clinics, three government hospitals and three private hospitals among the hospitals and clinics in Yangon. Health status of diabetic patients was obtained by self-assessment using their latest results of 2HPP, FBS, HbA1c, creatinine and lipid profile not by using their medical records and other health indicators. Data analysis, suggestions and conclusion described in this research depend on both the primary data and secondary data available.

1.7 Organization of the Study

This study consists of six main chapters. Chapter 1 is the introduction, which describes rationale of the study, problem statement of the study, research questions, objectives of the study, method of study, scope and limitations of the study and organization of the thesis. Chapter 2 is the literature review section of the study, explaining the detail theoretical background of social marketing and conceptual framework relating to behaviour change models and outcomes as quality of life. Chapter 3 describes the complications of diabetes mellitus and social marketing practices in Myanmar. Chapter 4 presents the research methodology of the study.

Chapter 5 discusses the results of study with the objective of investigating the influence of social marketing tools on behaviour changes and behaviour changes effect on outcomes of diabetic patients. Chapter 6 is findings and discussions, suggestions and recommendations, contribution of the study and needs for further research studies.

CHAPTER II
LITERATURE REVIEW

This chapter presents the theoretical background which will be applied and used to analyze collected data and information and review of the relevant literature on social marketing with a focus on diabetic patients, followed by independent variables to explain the dependent variable on influence of social marketing on behaviour changes of diabetic patients. The last part of chapter deals with the conceptual framework of the study.

2.1 Background of Social Marketing

Social marketing was first defined by Kotler and Zaltman (1971) as "the design, implementation and control of programmes calculated to influence the acceptability of social ideas and including considerations of product planning, pricing, communications and market research". They referred to social marketing as simply the application of the principles and tools of marketing to achieve socially desirable goals, that is, benefits for society as a whole, rather than for profit or other organizational goals.

An often-cited definition in the past decade has been Andreasen's (1995): "Social marketing is the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behaviour of target audiences in order to enhance their personal welfare and that of their society".

By social marketing it is meant (1) a social idea or practice, (2) one or more groups of target audiences and (3) social change management technology. Social marketing was established as a discipline in the (1971)s, when Philip Kotler and Gerald Zaltman perceived that the same marketing principles that were being applied to sell products to consumers could be used to "sell" ideas, attitudes and behaviours.

Several authors defined social marketing in various ways. Kotler and Zaltman (1971) defined social marketing as differing from other areas of marketing only with

respect to the objectives of the marketer and his or her organization. Social marketing is a strategy for changing behaviour. It integrates the best elements of traditional approaches to social change in an integrated planning and action framework and utilizes advances in communication technology and marketing skill.

The history of social marketing comes from the marketing, or academic, perspective in developed countries. This tradition overlooks the international contributions to the advancement of social marketing; it also omits an essential dynamic of social marketing. That dynamic is the tension between the practitioners who continue to push the practice of social marketing to solve numerous health and social puzzles and the academic marketers who debate whether these applications it their definitions of social marketing (Lefebvre, 2011).

The development of social marketing has followed two ways. The first one can be traced through business systems and related academic research beginning in the early 1900s, when economic theory diversified from an exclusive focus on production and the creation of economic value to also include distribution and regulatory systems and the marketing of products (Wilkie & Moore, 2003). Over the next decades, marketing became increasingly concerned with its relevance to managers and managerial functions. By the late 1960s, scholars began exploring the extension of marketing beyond commercial applications in order to address the needs of nonprofit organizations, educational and cultural institutions, and the planning of social change programs (Kotler & Lee, 2005). Throughout the evolution of the marketing discipline, the interface of marketing with social issues has been of interest; marketing has also been deeply involved with the consumerism movement (Bloom & Gundlach, 2001). Since the 1980s, marketing scholars have increasingly specialized according to their interests, levels of analysis, and research methods. Social marketing has evolved into an identified subgroup that focuses on social issues along with public policy, marketing ethics, macro marketing, consumer economics, and international consumer policy (Wilkie & Moore, 2003).

The second route for the evolution of social marketing came out of the challenges confronting public health and social change practitioners around the world. In many cases managers of public health and social change programs were instrumental in searching for innovative answers to age-old problems. They were also among the seekers of more effective and efficient ways to implement large-scale

public health and social welfare programs. It is from these perspectives that shown in following.

(a) The Beginnings of Social Marketing Practice

Harvey (1999) provided a rich narrative describing how Peter King and his colleagues responded to the Indian government's desire to reduce population growth in India in the mid-1960s (when there were more than twelve million births each year). It was clear that with too few doctors and with clinics concentrated in urban areas, any program that could make a dent in persuading over 500 million citizens to use birth control would have to go beyond traditional medical practices. The government knows the lacked the expertise to create a demand for family planning. Government promotes the distribution system to make family planning products (such as condoms, intrauterine devices, and birth control pills) widely available. A Marketing Plan (Chandy et al., 1965) laid out the essential ideas for the social marketing of contraceptives, with sections of the proposal titled

- Conducting consumer research
- Sourcing the products
- Branding and packaging
- Advertising and promotion
- Distribution
- Pricing
- Cost-benefit analysis

Although both the Indian government and foreign donors responded favorably to the plan, government agencies had to be reorganized to support and manage such an extensive marketing effort. After that reorganization a pilot project was carried out for approximately two years, distribution companies were lined up, advertising agencies were identified and funded, and nearly 400 million identically produced and packaged condoms were made by six manufacturers and delivered to the Indian government. According to Jain (1973), it was not until 1968 that the condom marketing program was finally launched. Early evaluations of the project found that the social marketing, community-based distribution model was more cost effective than clinic-based distribution activities in terms of couple-years of protection offered per dollar of investment and that there were higher utilization and less wastage of condoms through free as opposed to paid distribution channels (Black, 1976).

Harvey (1999) took the ideas of the project and applied them in Kenya. It was at this time that Harvey rejected the idea that gratitude was part of a helping marketing exchange with people who wanted family-planning products, commenting that it would never be comfortable providing help to people in ways that suggested they should express gratitude. It found such relationships demeaning, is immoral". Rather, Black and Harvey (1976) focused on developing commercial transactions for condoms and other family-planning products in which prices were set at nominal levels. Most often the full costs of the program, including advertising; promotion, distribution, and management were subsidized through donor grants and contracts (Harvey, 1999). Harvey described and Black's contraceptive social marketing (CSM) approach as informing people about the advantages of birth control through mass media efforts as well as other communication channels, educating people about specific methods, and offering low-priced contraceptive brands.

A key feature of these early social marketing approaches is the central importance of a product that could be offered in a commercial and tangible exchange with people. The principle of offering tangible products for some payment, however minimal, has been extended too many types of commodities including other family-planning products, oral rehydration solutions, and insecticide-treated bed nets (ITNs). This conceptualization and social marketing practices have both critics and defenders (see, for example, Curtis et al., 2007). In response to criticism and the changing realities of the public health marketplace in developing countries, many practitioners of the CSM model have embraced behaviour change and service delivery models as necessary to accomplishing their health missions. For example, behavioral interventions and voluntary HIV testing clinics now complement CSM programs, and are also used independently, for HIV/AIDS prevention. Significantly increased funding for and supplies of ITNs and long-lasting insecticide-treated nets (LLINs) through the Global Fund and many donor organizations and countries has made it more feasible to distribute them at no cost to prevent malaria (Brugha & Walt, 2001).

(b) The Evolution of Social Marketing

The practices of social marketing evolved in developed country contexts from a more explicit academic lineage. Shaw and Jones (2005) identify the emergence of the school of marketing management in the 1950s and 1960s as a milestone event for the marketing discipline. Many of the concepts social marketers now hold dear

consumer orientation, audience segmentation, the marketing mix were introduced with the intention of addressing the question, primarily from the seller's perspective, of how an organization should organize and market its products and services. It was in this vein that Kotler and Levy (1969) proposed expanding the marketing concept beyond commercial businesses to include nonprofit organizations. Lazer (1969) was simultaneously proposing the practice of marketing management to achieve positive societal impacts in addition to helping to meet business goals. It was with the backdrop of the social upheavals of the late 1960s in the wake of the assassination of Martin Luther King Jr., the nascent interests in environmental issues (Earth Day was first observed in 1970), and rising consumer activism that Kotler and Zaltman (1971) proposed and defined a marketing approach to planned social change: "Social marketing is the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, distribution, communication and marketing research".

Since this definition first appeared, most authors in the field have neglected both work and have attributed the origins of social marketing to this definition (Andreasen, 1995; Kotler & Lee, 2005; Lefebvre, 2013). One remarkable exception to this trend is Hastings (2007), who favors the definition of social marketing prepared by Lazer (1969): "Social marketing is concerned with the application of marketing knowledge, concepts and techniques to enhance social and economic ends. It is also concerned with investigation of the social consequence of marketing strategies, decisions and activities." By looking at the Kotler and Zaltman definition more closely, and compare it to the definitions found in Table (2.1), it is apparent that an enormous shift in emphasis has occurred from using social marketing as a way of promoting ideas to seeing it as a methodology for changing behaviour. One reason for this shift lies in the types of problems of social marketing and it has been applied to in developed countries: the prevention, detection, and treatment of cardiovascular diseases and cancers. Especially in the prevention arena, developing scalable approaches to detecting and controlling high blood pressure, high blood cholesterol levels, and breast cancer; reducing risk behaviours including cigarette smoking and eating high-fat and high-calorie foods; and encouraging healthier behaviours such as taking leisure time and doing physical activity led to solutions focused on changing behaviours to improve health status.

Fine (1981) has been one of the few writers to acknowledge the importance of ideas and social issues as products that are traded in a marketplace, which has been referred to as a "concept industry." It was found that these ideas solve problems as similar to the way that products satisfy needs and desires, and demonstrated the implementation of marketing to social issues such as increasing productivity in industry through improvements in the quality of the labor supply, increasing and expanding ideas of what constitutes safe driving, and reforming the education system. However, there has been limited acceptance of the concept that ideas are the province of social marketing (Andresen, 2011). Instead, what occurred was the introduction and acceptance of behavioral psychology into social marketing, beginning with Lefebvre and Flora (1988): "Social marketing is an invaluable referent from which to design, implement, evaluate, and manage large-scale, broad-based, behaviour-change focused programs".

In spite of early calls for social marketing to concern with social and population-based change, by Kotler and Zaltman (1971), Lefebvre and Flora (1988), and Walsh, Rudd, Moeykens, and Moloney (1993), many definitions of social marketing that emerged over the following two decades promoted a alteration of the theme of individual behaviour change for the common good (Andreasen, 1995; Kotler & Lee, 2008; Siegel & Lotenberg, 2007).

Table (2.1) Social Marketing Definitions, 1985–2010

Manoff, 1985	Social marketing is the adaptation of marketing to public health imperatives;it is a strategy for translating scientific findings about health and nutrition into education and action programs adopted from methodologies of commercial marketing.
Donovan & Henley, 2003	The application of the marketing concept, commercial marketing techniques and other social change techniques to achieving personal behaviour changes and social structural changes those arecompatible with the UN Declaration of Human Rights.
Smith, 2006	A programme management process designed to influence human behaviour through consumer-oriented decision making leading to increased social benefit.
Serrat, 2010 (Asian Development Bank report)	Social marketing is the utilization of marketing principles and techniques to affect behavioral change. It is anidea, process, and application for understanding thatindividuals are, what they desire, and then forming the creation, communication, and delivery of goods and services to meet their desires as well as the requirements of society, and solve serious social problems.
Dann, 2010	The adaptation and adoption of commercial marketing actions, institutions and processes as a means to make behavioral change in a targeted audience on a temporary or permanent basis to attain a social goal.

Source: Related Theory Survey, 2020

One outcome of adopting this individualistic approach was the charge that social marketing is another form of "blaming the victim," a criticism leveled against programs that aim for only individual levels of change and neglect social determinants and ecological models of behaviour, health, and well-being (Brieger, Ramakrishna & Adeniyi, 1986; Gielen & Sleet, 2003; Wallack, 1989). Another consequence has been the allure of developing mass media campaigns in which persuasive appeals are aimed

at individual behaviour change. As Wallack (1989) explained, types of programs share include certain characteristics:

- Problems are conceived as primarily individual-level matters, and knowledge, attitudes, and behaviours are analyzed and explored in order to create interventions to change them.
- Planners of these programs share the mass media fantasy that any social or health problem can be addressed adequately while the right message is delivered to the right people in the right way and at the right time.
- Approaches focus on individual choice and the responsibility to engage in healthier or more socialbehaviours to the exclusion of broader social and political contributions and influences.

The related effect of the focus on individual change has been that few social marketing projects have attempted to influence social determinants and social contexts, and projects have paid little attention to the growth of public policy approaches to market-based solutions (Lefebvre, 2011; Marmot & Wilkinson, 2005). In response to the restricted scope of social marketing programs, Lefebvre (2009) called for the recognition of social marketing as a social change tool for achieving social profits. Hastings (2007) embraced the notion of social marketing as a way to realize social goals and also to analyze the social consequences of marketing policies, decisions, and activities. Correspondingly, Donovan and Henley (2003) took issue with the proving individually focused efforts and saw "that primary future goal of social marketing as achieving changes in social determinants of health and well-being". In their subsequent book Donovan and Henley (2010) went further to describe social marketing as seeking to not only "inform and persuade" people but also to "legislate" to achieve social goals when the evidence, resources, nature of the problem, and prevailing norms allow it.

(c) Differences between Commercial and Social Marketing

The major differences between social and commercial marketing, as noted by various social marketers and commentators (Bloom and Novelli, 1981; McKee, 1992; Rangan, Karim and Sandberg, 1996; Rothschild, 1979) and from own experiences can be summarized as follows:

Defining and communicating the 'product' is far more difficult in social marketing, especially when different experts may have different views on the subject

(Egger et al., 2001). The ‘product’ in social marketing is often information designed to bring about attitudinal and behavioural change; less frequently do social marketers have tangible products to sell, and even where they do, the primary task is to sell the ‘idea’ (or core product). For example, people must first be convinced that water conservation (the ‘idea’) is desirable (and that their contribution would be meaningful) before they can be persuaded to purchase water limiting attachments to their plumbing.

Commercial products tend to offer instant gratification, whereas the promised benefits of many social marketing campaigns are often delayed. This especially applies to many health behaviours. Furthermore, some social marketing campaigns (such as de-stigmatization and anti-racism campaigns) appear to offer little, if anything, in return. Behaviours targeted in social marketing campaigns are often very complex, both at a personal and social level, and far more so than are the behaviours involved in purchasing most commercial products. Racist beliefs, attitudes and behaviours are far more complex than any purchasing behaviour.

Commercial marketing mostly aims at groups already positive towards the product category and its benefits, whereas social marketing is often directed towards hard-to-reach, at-risk groups or to entrenched bureaucrats and others with vested interests that are antagonistic to change.

Intermediaries and stakeholders in commercial marketing are far fewer in type and generally far easier to deal with (although perhaps costlier) than in social marketing. Anti-drug campaigns targeting youth involve a broad variety of intermediaries: health department staff, youth drug workers, drug clinics, school authorities, local government authorities, the police, sport coaches and youth entertainment operators. Commercial retailers can be influenced by monetary and promotional incentives in a straightforward negotiating process. Influencing medical practitioners to co-operate in a health promotion campaign are far more complex and gaining co-operation from different government departments or NGOs requires substantial skills.

Successful commercial marketers have a genuine concern for their customers’ needs not just their money. Social marketers share this concern, but at a deeper level. Social marketers’ transactions with their clients have the underlying goals of enhanced self-esteem, empowerment and enhanced wellbeing.

Social marketing attempts to replace undesirable behaviours with behaviours that are often costlier in time or effort, and, at least in short-term, less pleasurable or even unpleasant. Advances in parenting practices require considerable patience and persistence; withdrawal from addictive substances can be physiologically very traumatic; breaking long-established social and sub-cultural influences can be difficult.

Social marketing often asks the target group to accept a reduction in personal benefits or increase in personal costs to achieve a societal benefit from which they may or may not directly benefit. This applies particularly to corporations in areas such as packaging, land clearing and toxic waste disposal. Social marketing plans are often limited in comprehensiveness, duration and evaluation by available funds.

2.2 Marketing Concepts Applied in Social Marketing

Social marketing is originally named as were other sub-branches of marketing such as business-to-business or industrial marketing to refer to a specific sub-area of marketing. Social marketing is about as marketers and social change practitioners start to apply marketing techniques to achieve socially desirable goals.

(1) Behaviour Change Focus

A defining characteristic of social marketing includes the notion of a behaviour change focus. Andreasen (2002) advocated for behaviour change as the bottom line in any social marketing design and evaluation of interventions. An emphasis on behaviour change implies that the strategic integration of all elements of the marketing mix will facilitate an exchange process taking place. While communication elements may induce favourable positive attitudes towards behaviour, the environment must provide opportunities for the adoption of the behaviour with minimal barriers (Donovan, 2011).

Donovan and Owen (1994) proposed the following concepts, principles and features of marketing which apply to the social marketing concept:

(a) Fundamental Concepts

- Consumer orientation
- Exchange concept

(b) Overarching Principles

- Consumer value (use of the marketing mix)
- Selectivity and concentration (market segmentation)
- Differential advantage (competition)

(c) Defining Features

- Use of market research
- Integrated approach to implementation
- Monitoring and influencing environmental forces

(2) Consumer Orientation Approach

Consumer orientation forms the basis for many of the other marketing concepts and distinguishes social marketing from other frameworks which are used to achieve social change and social benefits. For example, Weininger (2003) declares that the consumer orientation approach is different from the approach that many public health practitioners take in assuming they know what is greatest for the public.

Utilizing the marketing conceptual framework requires the realizing of the people (consumers or target audiences) whose behaviours are the focus of social marketing efforts (Grier & Bryant, 2005). Consumer orientation implies that the consumer is central to, and an active member in, the social marketing process (MacFadyen, Stead & Hastings, 1999). Thus, social marketers must be aware of, and reactive to, consumer needs and desires (Lefebvre & Flora, 1988).

(3) Application of the Exchange Concept

Described as a core concept of marketing, exchange refers to the transmission of value between two or more parties. Each party must benefit, or at least perceive to be no worse off, by the exchange (Kotler & Andreasen, 1987). Therefore, the challenge that social marketers face is to maximize the perceived benefits and minimize the perceived costs faced by the target audiences (Andreasen, 2002).

Social marketing strategies and techniques can be used to profit society in general and the target audience in particular in many ways. There are four main areas that social marketing efforts have targeted on over the years: health promotion, injury prevention, community mobilization and environmental protection (Kotler & Lee, 2008).

Social marketing is marketing that sets out to achieve a public good. It aims to help individuals improve their personal circumstances (lifestyle, finances, health and so on) in order to improve society. Social marketing is also about saving lives and public resources in the long run. This is what makes it such an important undertaking; it's what makes it so satisfying and rewarding for people who work in the area. It may also explain social marketing's current "buzzword" status. There is no scarcity of useful definitions of social marketing (Kotler & Roberto,1989; Andreasen, 2011). (Kotler and Roberto, 1989; Hastings, 2007; Andreasen, 2011; and Lefebvre, 2013) defined classic definitions of social marketing by the recognized international experts generally include some or all of the following concepts:

- promoting behaviour change;
- the voluntary nature of that behaviour change;
- the social improvement purpose of that behaviour change;
- applying a planned approach to achieving the behaviour change;
- the use of commercial marketing techniques to achieve social change.

Three factors are essential for successful social marketing. They are the understanding of commercial marketing, understanding audience, preparation to change offering.

2.3 Social Marketing Tools

The social tasks will not success without a clear understanding of the marketing principles. It's based around the "four Ps" of marketing, partly because this provides a useful way to quickly understand some of the basics of commercial marketing, and partly because it allows adding some more "Ps" for the social marketing purpose. In social marketing, the marketing mix is the tactics to set the strategies of social marketing. This tool may be handled at any time with the purpose of fitting the eight Ps.

(a) Product

Product is the first P in social marketing tools. Product in social marketing is more complex than in commercial marketing. In commercial marketing, product considerations include the actual product or service as well as the brand name, reputation, packaging and so on. In social marketing, the product is the behaviour or health idea that the campaign planners would like the targeted individuals to adopt.

This product can be an action (e.g.,exercising more often) or tangible item, programme or services (e.g., drugs, help line). Moreover, Product is intangible as it is an idea, behaviour, orientation, action, treatment or prevention. Product comes from social problem analysis by external environments. The product must be situated, presented and modified in such a way as to maximize benefits and minimize costs (Kotler& Lee, 2008; Kotler& Roberto, 1989; Lefebvre & Flora, 1988; Lefebvre, 2011; Peattie, 2009; Weinreich, 1999 and Wood, 2012).

(b) Price

Price is the second P in social marketing tools. Price means all costs involved in a concept of change, since the mains including non-monetary ones: physical, time, social, and psychological. Bernhardt, Mays and Hall (2012) perceived that the role of social marketers is to look for alternatives to decrease the costs and barriers for individuals. Social marketers need to explain to the target audience the price paid by them in a given campaign. But, at the same time, it is hard to measure the price for every individual, because they are different from each other.

(c) Place

Place is the third P in social marketing tools. Place means where, when, and how products are available for a target audience. Place is related to distribution channels and, because of their intangibility, product should be easily accessed everywhere (Bernhardt et al., 2012; Kotler & Lee, 2008). If the major product is followed by tangible product, the places must be easily accessed by individuals. The intangible products can be available in places such as: hospitals, health centers, popular pharmacies, schools, and Internet (Ministry of Health's website, social networks, etc.). Therefore, in a health campaign, one may wonder, when, where and how to hand out the product and/ or services. The places the target audience finds it easier to access, taking in mind: distance, health reference places, accessible, and staff team to help provide products and/or services.

(d) Promotion

Promotion is the fourth P in social marking tools. This is the most popular tool among health professionals. Communication is important to persuade someone to balance between costs and benefits of change. Promoting products is awareness and

providing knowledge about the attitudes, intentions, and behaviour expected from the target audience and explaining how the campaign will support them (Glanz et al., 2008; Waisbord, Shimp, Ogden, & Morry, 2010). Thus, promotion requires understanding the target persons as well as their media habit in order to clarify the content of messages, communication, and media to achieve the individuals' idea in seeking two results: positioning the campaign, benefits; and ensuring a sustainable and healthy relationship between social marketers and target audience (Kotler & Lee, 2008; Kotler & Roberto, 1989; Peattie & Peattie, 2009; Weinreich, 1999).

(e) Process

Process is the fifth P in social marketing tools. Processes are the visible and non-visible activities to produce a social campaign. Lovelock and Wirtz (2011) believed that a poorly designed process will produce a slow, bureaucratic, and ineffective delivery, and then it will cause dissatisfaction to target audience regarding service quality. Thus, the processes add value to product and/or service, i.e., bad processes means low performance. Therefore, processes and frontline team may guarantee that has been offered is what has been sold, in order to exclude gaps between plan and performance. The processes must be improved continuously with the purpose of reducing failures and including and excluding steps that do not add value to the target audience, such as: introducing processes orientation addressed to produce the best service possible; increasing productivity and quality; finding out the average time per activity cycle: managing physical evidence; and preparing a flowchart to document the processes.

(f) Professional

Professional is the sixth P in social marketing tools. The service quality is founded on the interactions between the team of professionals and the target audience. According to Andreasen (1994), Brenkert (2002), Kotler and Lee (2008), and Wymer (2011), the skills of the staff team in social marketing campaign must be lined up in order to: (i) know or dominate the entire cycle of service processes from the start to finished with the purpose of delivering the quality of service to the target audience; (ii) manage conflicts between organization (sponsor) and target audience, in particular, the frontline team; and (iii) respect the moral and ethical patterns relative to their commitment and responsibility. Professional skills increase the performance in a

campaign, guiding individuals to cross the line between current and proposed behaviour. Lefebre (2011) explained that the professional's skills make the difference in a health campaign. Then, its importance is to: hire professionals to get performance in service processes in order to leverage their skill in favor of the campaign; provide support, consistent infrastructure, guidelines, training, etc; and develop professionals' skills for the campaigns, as teamwork, knowledge about the processes, etc.

(g) Performance

Performance is the seventh P in social marketing tools. The quantitative and qualitative indices are required to measure performance and quality. The performance aims to measure the provider's ability to deliver the benefits in a health campaign, respecting the individual's free-will and ethical patterns. Lovelock and Wirtz (2011) described five dimensions to evaluate the service quality in commercial marketing, which can be appropriated to health campaigns: tangibility the appearance of physical elements (facilities); reliability accuracy of performance, i.e., the guarantee; responsiveness, quickness and helpfulness; security credibility, expertise, safety, and pro activity; empathy easily accessible, communication, and understanding of the requirements of individuals. The gaps in service quality are: (i) the difference between what the social marketer believes that the target audience expects and their real needs and expectations; (ii) the difference between social marketer's perception of the target audience expectations and quality standards delivered in the campaign; (iii) difference between performance promised and the performance delivered; (iv) difference between what the social marketer promotes and what he delivers; (v) difference between what is actually delivered and what target audience realizes as received; and (vi) difference between what the target audience expects to receive and their perceptions about what was delivered to them.

(h) Program

Program is the last P in social marketing tools. Program should contain all activities required to develop a health campaign. For Kotler and Roberto (1989), Kotler and Lee (2008), and Weinreich (1999) defined program of social marketing plan helps professionals to get performance and quality in social campaigns, in order to: map the process failures and suggest solutions; introduce the consumer orientation in each step to ensure benefits; prioritize actions that meet consumer's satisfaction;

control the performance of processes to behaviour change; guarantee the service quality and remove gaps that compromise the performance as well as audiences dissatisfaction, assess the staff team at work with the target audience and their skill; and handle the marketing mix with the aim to achieve the mission, goals, and outcomes of the health campaign with the purpose of promoting the well-being, life conditions, lifestyle, and quality of life.

In social marketing, it is very often true that the product to be sold (the required behaviour) might not be what the public wants to buy. The good news is that this doesn't mean not achieving the aims; it just means to be cleverer about it. As in commercial marketing, the worst response is to continually try to peddle the unwanted product, simply because that's what being produced. When faced with a resistant or uninterested audience, the lesson from commercial marketing and from successful social marketing programs is to be prepared to fundamentally change offering.

2.4 Theories and Models of Behaviour Change

The following review analyzes and considers some of the main theories of behaviour and behaviour change that may be relevant to the development of effective interventions in social behaviour, including theories and concepts from mainstream psychology, and the associated sub-disciplines of health, leisure, recreation, physical activity and exercise psychology. For many years' conceptual models of behaviour change, such as Bandura's Social Cognitive Learning Theory (1985), Becker's Health Belief Model (1974), Azjen and Fishbein's Theory of Reasoned Action (1975); have been applied across a wide variety of disciplines, including health and socialbehaviour. Significant attention has been given in the literature to models of personal behaviour change peruse but much less attention has been designated to models or theories that try to understand behaviour change within groups, organizations and whole communities. The design of programs to reach populations requires an understanding of how those communities work, their barriers and enablers to change, and what influences their behaviours in general.

(1) Stage Theories of Behaviour Change

Mounting evidence suggests that behaviour change occurs in stages or steps and that movement through these stages is neither unitary or linear, but rather,

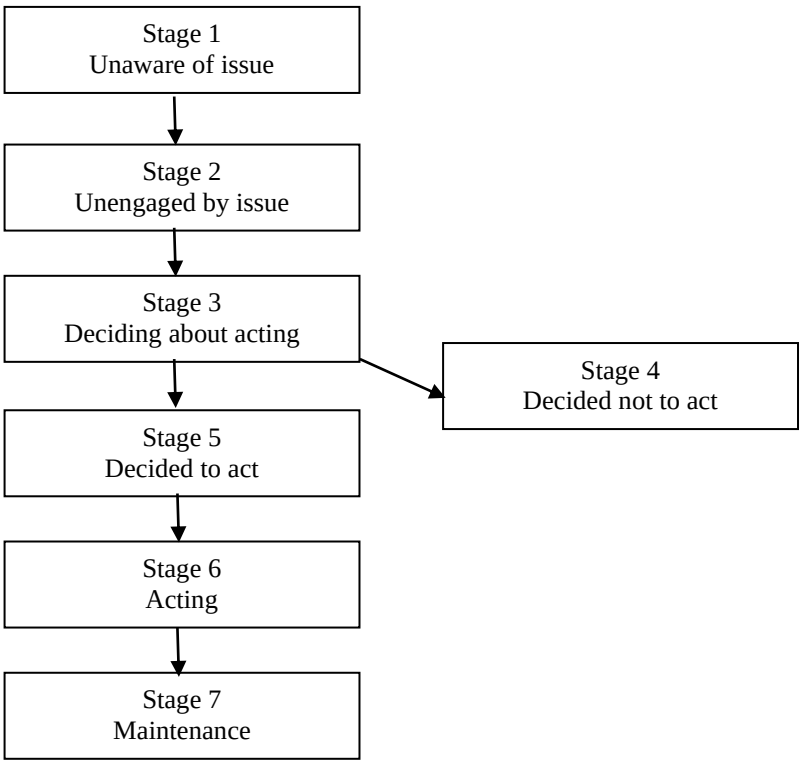
cyclical, involving a pattern of adoption, maintenance, relapse, and read option over time.

The work of Prochaska and DiClemente (1986) and their colleagues have formally identified the dynamics and structure of staged behaviour change. In attempting to explain these patterns of behaviour, Prochaska and DiClemente (1986) developed a trans theoretical model of behavioural change, which proposes that behaviour change occurs in five distinct stages through which people move in a cyclical or spiral pattern.

The first of these stages is termed precontemplation. In this stage, there is no intent on the sector of the individual to change his or her behaviour in the foreseeable future. The second stage is called contemplation, where people are conscious that a problem exists and are seriously considering taking some action to address the problem. However, at this stage, they have not built a commitment to undertake action. The third stage is described as preparation, and involves both intentions to change and some behaviour, usually minor, and often meeting with limited success. Action is the fourth stage where individuals actually modify their behaviour, experiences, or environment in order to control their problems or to meet their goals.

The fifth and final stage, maintenance, is where people work to avoid relapse and consolidate the gains attained in the action stage. The stabilization of behaviour change and the avoidance of relapse are characteristic of the maintenance stage. For behaviour to changes base the followings stages according to the Precaution Adoption Process Model (PAPM) of Weinsteinetal.,in 1998 (Figure 2.1).

Figure (2.1) Stages of Change or PAPM Model



Source: Weinstein et al., (1998)

The basis of the intervention is Weinstein's own Precaution Adoption Process Model (PAPM), and an instructive example of the cyclical way in which theory leads to experimental intervention, which leads back in turn to modifications to theory. The stage theory (PAPM model), has been utilized to analyze a variety of health behaviours, and argues that people will be persuaded to change only if the message is matched to the stage they have reached in their thinking: unaware of issue, unengaged, deciding about acting, decided not to act, decided to act, acting, and maintenance.

The PAPM is described by its author, Weinstein (1998), the model is concerned with preventive or precautionary behaviour against threat. This time, there are seven stages: unaware (not aware there is an issue or threat); unengaged (aware but not engaged); deciding about acting (considering the possibility of taking action); decided not to act; decided to act (to adopt the precaution); acting; and maintenance**.**

(2) Cognitive-Rationale Vs Psycho-Social Patterns of Behaviour Change Theory

Each behavioural change theory or model focuses on different factors in attempting to explain behaviour change. Most cognitive psychological theories suppose that individuals make decisions in a rational way; following a systematic review of all available information (Norman & Conner, 2005). The theories can be reclassified use a cognitive rationale approach to problem solving through information linked to action, and use a psycho-social approach to action, seeking to modify norms and values through social pressure.

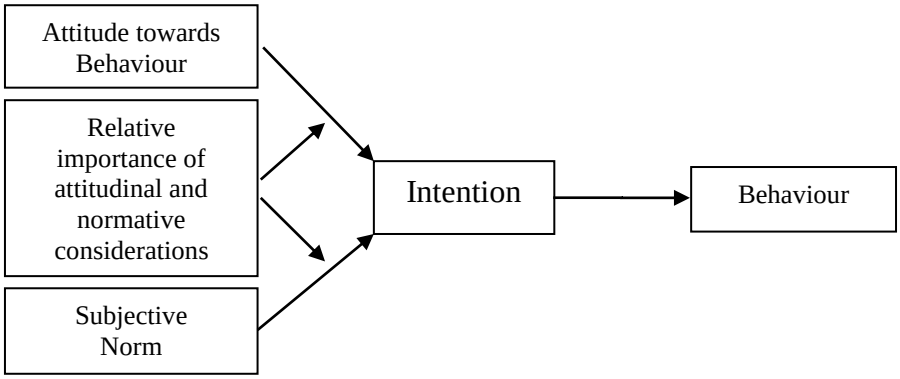
(a) Cognitive-Rationale Perspective

The cognitive perspective is the Health Belief Model (Cognitive Learning) which accounts for the variance of an individual's behaviour based on their attitudes and belief. Thus, by changing beliefs, actions will be affected, and whilst this may be a rational response, this is seldom enough to affect behaviour change. This approach focuses on the rational explanation and solution to the condition: the Social Planning on disease identification and cure or prevention, and the Health Belief Model on a rational connection between knowledge and behaviour change.

(b) Psycho-Social Perspective

Psycho-social analysis of human behaviour change recognizes other factors that influence change rather than purely cognitive-rational aspects. The theory of planned behaviour emphasizes the importance of social pressure to affect individual change. Ajzen, Fishbein and Heilbroner (1980) defined the theory of planned behaviour base on psycho and social perspective (Figure 2.2).

Figure (2.2) Theory of Planned Behaviour



Source: Ajzen, Fishbein & Heilbroner (1980)

(3) Social Learning Theory

The Social Learning Theory (Bandura, 1969, 1985, 1995) investigates how the behaviour of individuals interacts in a dynamic two-way process with their environment in constantly changing dynamics termed 'reciprocal determinism'. Three important contributory factors in effecting change are observational learning (emulating others), expectations associated with behaviour change, and the perceived personal capacity to effect change (self-efficacy). The health worker thus functions as a facilitating agent for change, helping to modify the social environment to make it more conducive to change, as well as building the self-efficacy of the individual.

Self-efficacy can be enhanced by breaking down the complexities of the target behaviour into manageable components, focusing on short term gains and tackling simple behaviour before the more complex ones. It enables people to have the confidence to achieve their tasks. (Bandura, 1985). By building individual self-efficacy the health promoter functions both as a facilitator and helps to modify the social environment to make it more enabling.The Social Learning Theory provides the basis for a more community-based intervention which will necessarily produce a more horizontal or holistic approach to community development rather than the narrow focus on reduction of disease.

2.5 Theories and Models of Behaviour Changes in Health

This section presented the three types of theories and models of behaviour changes in health. These are health promotion theories include focus on individual change and society change, health belief model, and outcomes model for health promotion such as quality of life.

(1) Health Promotion Theories

In health promotion theories include two main parts. These are theories that focus on individual change and theories that focus on society change.

(a) Theories that Focus on Individual Change

Theories that cover individual behaviour and seek to induce behaviour change through focusing on individuals include the Health Belief Model (Stretcher & Roenstock, 1997; Janz & Becker, 1984; Harrison et al., 1992), the Theory of Reasoned Action and Planned Behaviour (Ajzen & Fishbein, 1980; Ajzen, 1991;

Montano et al., 1997), the Stages of Change Model (Prochasca & DiClemente, 1984, 1997) and the Social Cognitive Model (Bandura, 1985, 1995).

(b) Theories that Focus on Society Change

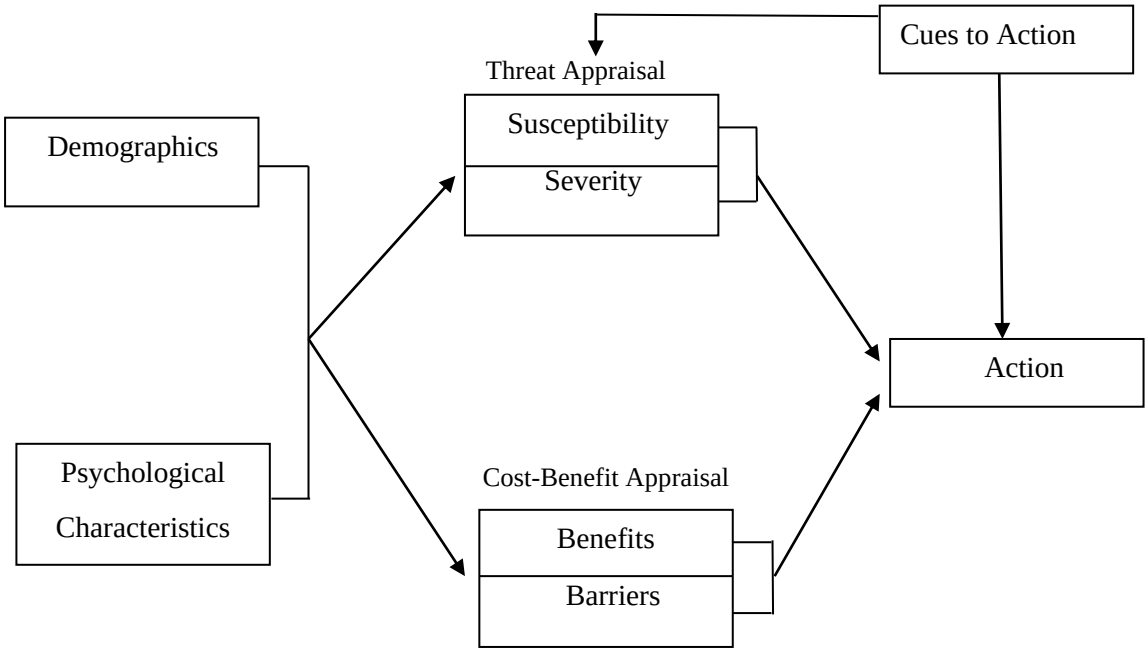
Alternatively, there are a group of theories that explain change with reference to the community and the most well know of this group is the Diffusion of Innovation (Rogers, 1983). Theories of Rural Development Chambers (1986) or the approaches of Community Development, the Social Planning and the Social Action (Bush et al., 2002; Minkler and Wallerstein, 1997; and Rothman and Tropman, 1987, 2001) are all variations on methods of empowering communities and achieving their involvement and cooperation.

A cohesive society is marked by an abundance of "mutual moral support", which instead of throwing the individual on own resources, leads to share in the collective energy and supports own when exhausted (Kawachi, 1987). This form of mutual support and trustworthiness is conceptualized by some as Social Capital, and has been defined as those features of social structures such as levels of interpersonal trust and norms of reciprocity and mutual aid which act as resources for individuals and facilitate collective action (Coleman, 1990; Putnam, 1993). In the context of Public Health Programmes, Social Capital can help communities to conduct their own health; it has, for instance, been shown to reduce conditions such as heart attack (Kawachi & Berman, 2000).

(2) The Health Belief Model

The health belief model (HBM) was perhaps the first behavioral model in health education. It was established in the 1950s by US Public Health Service workers in an attempt to explain participation and non-participation in screening programme for tuberculosis (Becker, 1974; Maiman & Becker, 1974; Rosenstock, 1974). It is still widely used today. For example, Bowman, Heilman and Seetharaman (2004) developed and tested a model of general product use compliance based on the HBM. Patient compliance with instructions for prescription medicines is particularly important for health outcomes and mental health outcomes in particular. The health belief model is presented in Figure (2.3).

Figure (2.3) The Health Belief Model



Source: Donovan & Henley (2010)

The model lists the following factors that are presumed to influence behaviour change in response to a potential health threat.

- the individual's perceived susceptibility to the threat;
- the individual's perceived severity of the threat;
- the individual's perceptions that the recommended behaviour will avert the threat (and any other additional benefits);
- the individual's perceptions about the cost of, and perceived barriers to, adopting the recommended behaviour; and
- the presence of cues to action (internal such as symptoms; external such as mass media advertising or interpersonal communications) that prompt the individual to act.

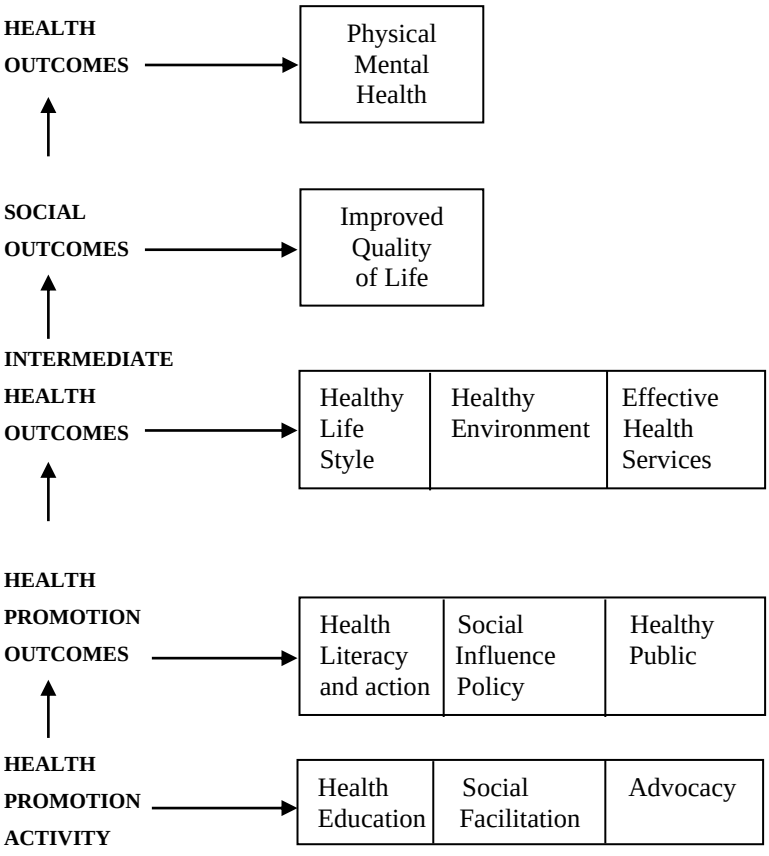
It is also assumed that demographic and psychosocial variables will moderate the above variables. Hence, an individual is more likely to take up exercise if they consider that they are at high risk for diabetes, if they perceive diabetes as a serious disease, if they believe that increased exercise is effective in reducing the risk of diabetes, if they perceive no major barriers or costs (financial, social or physical) to increasing their level of exercise, and if a friend draws their attention to a physical activity programme commencing at a nearby community recreation center.

(3) The Outcome Model for Health Promotion

Health promotion is an activity directed towards enabling people to take action. Thus, health promotion is not something that is done on, or to people; it is done with people, either as individuals or as groups. Participation and partnership are valuable processes in health promotion (Nutbeam & Harris, 1999).

In an attempt to clarify the complexity of evaluating programs aimed at improving health, Nutbeam (1998) provided an Outcome Model for evaluating Health Promotion which enables the identification of indicators of success across a range of contributory factors. Moreover, the three measurable outcomes will be social influence and action and improved Public Health Policy. The Health Promotion Outcomes will lead to Intermediate Outcomes, consisting of healthy lifestyle and environment and effective health service. This in turn leads to Social Outcomes (an improved quality of life), and this finally will provide a Health Outcome: good health. Health Promotion Activity is comprised of Health Education, Group Facilitation, and Advocacy show the Figure (2.4).

Figure (2.4) Outcome Model for Health Promotion



Source: Nutbeam, 1999

(a) Health Status

The state of health of a person or population evaluated with reference to morbidity, impairments, anthropological measurements, death rate, and indicators of functional status and quality of life.

The WHO health indicators provide internationally accepted standards for various aspects of health status. WHO guides health policy in its Member States toward priority health problems, the use of solutions known to them, and relevant directions for problem-orientated research to improve the efficiency and effectiveness of investment for health development.

(b) Quality of Life

The concept of quality of life broadly encompasses show an individual measures the 'goodness' of multiple aspects of their life. The see valuations include one's emotional reactions to life events, disposition, sense of life fulfillment and satisfaction, and satisfaction with work and individual relationships (Diener, Suh, Lucas, & Smith, 1999). In the literature, the term 'quality of life' is also often referred to as 'well-being'. However, there are lots of challenges to developing a meaningful understanding of the quality of life and/or well-being literature.

Smith (1973) proposed well-being be used to refer to objective life conditions that apply to a population generally, while quality of life should more properly be limited to individuals' subjective assessments of their lives because of what Smith felt to be the evaluative nature of the term. Today, this distinction has been lost. In some instances, one term is even used to define the other (De Leo et al., 1998). The lack of distinction can in part be traced to the multiple conceptualizations of quality of life that have evolved over the years Beesley and Russwurm (1989), starting with the economic approaches popular in the late 1960s and 1970s when quality of life well-being was assessed by quantitative measures and unemployment rates (Liu, 1976). In reaction to this rigidly quantitative approach to the subject, researchers began inquiring in to individuals 'subjective experiences of their lives in the belief that objective measures alone were incomplete measures of 'quality of life' (Andrews Withey, 1976; Campbell, Converse & Rogers, 1976).

The quality of life/well-being has both objective components – i.e., components external to an individual and measurable by 'others' and subjective components–i.e., personal assessments of one's own life or of particular aspects of

life using measures of satisfaction, happiness, or other self-assessment scales (Campbell et al., 1976). Thus, although researchers such as Smith (1973) maintained conceptual distinction between the two types of measures, it is clear at those who followed did not. Here, both terms will be used inter changeably. Diener et al., (1999) was summaries some common components of subjective well-being. He mainly focuses on top-down factors that represent individual factors (such as values and goals) influencing well-being.

2.6 Previous Research Studies

In this section, the study has presented a review of previous research studies related to social marketing tools, behaviour changes and health outcomes as health status and quality of life. The several studies have addressed the relationship of social marketing tools and behaviour changes and behaviour changes effect on health status and quality of life. In this study, there are four variables to be constructing the conceptual framework and it included social marketing tools and behaviour changes, outcomes such as health status and quality of life, and moderating effect of demographic characteristics. Therefore, the previous research studies discuss four parts.

The first part is to identify the social marketing factors. It presented the (Mbugua, 2003 & Casais, 2015). Moreover, Minet (2011) and Hradec Kralove (2013) presented the diabetic patients health situation. The second part is social marketing factors effect on behaviour changes. The third part is the relationship of behaviour changes and outcomes and it presented in Bus (2015), Firestone et al., (2016), diabetic self- management and information, motivation, behaviour model (DSM-IMB model), and PERForM framework. Finally, the moderating factor of demographic characteristics effect on relationship of social marketing tools and behavior changes was based on health belief model and health promotion model. The following empirical researches are shown these parts.

Mbugua (2003) defined usage of social marketing strategies is in changing public behaviour. This study finds to seek the problem of slow adoption of the new farming technique by the smallholder farmers under the lens of social marketing strategies and the extent of their application in the model. For any successful social marketing program, the right mix of the social marketing tools needs to be applied.

Casais (2015) defined exploring social marketing strategies: the use of positive and negative emotional retrials in health advertising in four European countries. Public Health advertisements are essentially targeted to general people, with general message and commonly framed by public policies in a reactive response to health dynamics. The research showed sensitiveness between the use of positive and negative appeal and countries profiles and epidemic rates.

Minet (2011) defined the self-management in diabetes care. The study finding indicated that people with diabetes had specific needs for support in the daily responsibility of managing diet, exercise, medication and blood glucose monitoring. A relevant treatment from the patient's perspective would occur to be one that aims at overcoming problems that the patient experiences in self-management of diabetes mellitus.

Hradec Kralove (2013) defined diabetes Mellitus. This paper links diabetes mellitus with the Alzheimer's disease as a difference expression of diabetes, since it is closely associated with several key neuronal factors implicated in dementia.

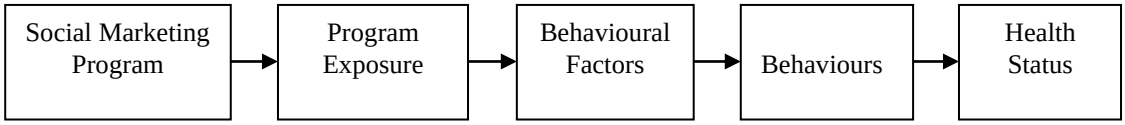
Bus (2015) defined the motivational conversation and social support to promote behaviour change. This study results were social support may influence behaviour change. The changes in behaviour strategies were not independently associated with the change in the outcomes but this may be due to the variability in social support and other factors not assessed in the study.

According to Rebecca Firestone, Cassandra J. Rowe, Shilpa N. Modi and Dana Sievers (2017), social marketing can influence behaviours and outcomes of health. Better documentation of social marketing interventions is needed when evaluating these programs. Investments are required as well in scaling up and replicating effectual social marketing approaches.

A key issue of this study is in evaluating the effectiveness of social marketing is whether social marketing program practically achieve behaviour change on a consistent basis. Program recruiting mass media or interpersonal communication methods may raise the target audience's awareness and intentions to use goods and services. These behavioural factors, improved knowledge, attitudes or perceived self-efficacy may promote the end goal of social marketing, but do not give sufficient evidence that social marketing interventions have attained their stated purpose. Rather, these factors may mediate the process of behaviour change or can be categorized as intermediate outcomes (Andreasen, 2002). Demonstrated proof of

changes in behaviour or improvements in health status could address these affairs and provide a more reliable evaluation of effectiveness and impact (Raphael, 2000). Logic model on the effects of social marketing of Rebecca Firestone, Cassandra J. Rowe, Shilpa N. Modi and Dana Sievers (2017), is shown in Figure (2.5).

Figure (2.5) Logic Model on the Effects of Social Marketing



Source: Rebecca Firestone, Cassandra J. Rowe, Shilpa N. Modi& Dana Sievers (2017)

According to logic model on the effects of social marketing, a social marketing program, which may consist of many components of the marketing mix toolsand may involve both supply and demand side strategies, should lead to individual level programme exposure by the target audience. Individual level exposure should determine a change in mediating behavioural factors access and availability to health services and products, knowledge, attitudes,intentions, social norms etc, that ultimately lead to adoption of a health promoting behaviour. Healthy behaviour change (i.e., taking preventative and/or treatment action), should then lead to advance in health status, as assessed through measures of morbidity, mortality, or fertility status.

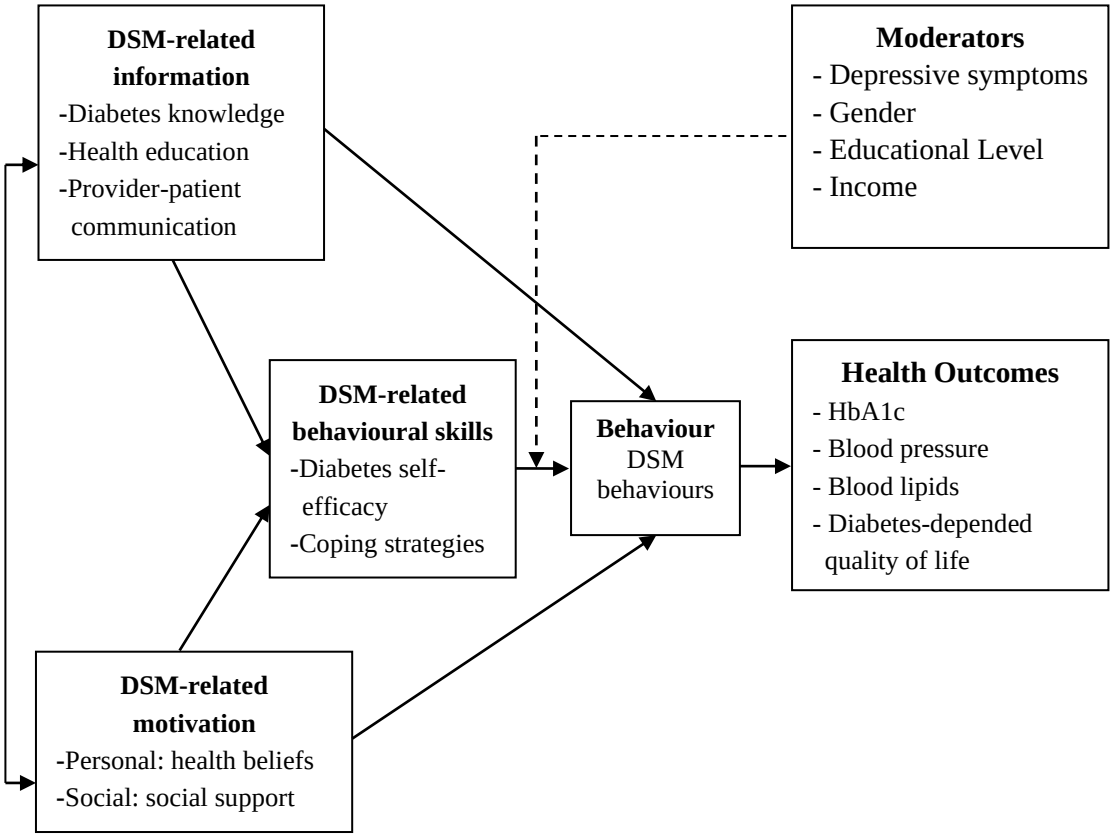
Most programs used a range of methods to promote behaviour change. Programs with positive, statistically significant findings were more probably to apply audience insights and cost-benefit analyses to motivate behaviour change. Key evidence gaps were found in voluntary medical male circumcision and childhood pneumonia. Social marketing can influence health behaviours and outcomes in global health; but, evaluations assessing health outcomes remain relatively limited. Global health investments are required to (a) fill evidence gaps, (b) strengthen evaluation rigour and (c) expand effective social marketing approaches.

Moreover, the DSM-IMB model brings comprehensive insight into the relationship that affects DSM and its associated health outcomes, based on a systematic review of literature in that area. The DSM-IMB model asserts that DSM related IMB skills are basic determinants of DSM behaviours. DSM related information and motivation are suggested to work primarily through behavioural skills to act on the initiation and maintenance of DSM behaviours. DSM behaviours

lead to health outcomes, which in order can influence one's future maintenance of the behaviour through a feedback loop that affects one's levels of DSM related IMB skills over time. The proposed moderators can influence the relationship among the variables in the DSM-IMB model.

IMB provides the theoretical basis for this study. The concepts from the IMB model can easily be translated into intervention components. The IMB model adequately captures essential concepts which have been well supported in the literature to improve DSM behaviours, including information (e.g., diabetes knowledge), motivation (e.g., social support) and behavioural skills (e.g., diabetes self-efficacy). The model postulates that individuals are more probably to take health-related actions, such as DSM behaviours, if they are well informed, highly motivated (personally and socially), and have adequate and appropriate behaviours, and thus, experience positive health outcomes.The DSM-IMB model of Tingting Liu, Dongmei Wu, Jing Wang, Changwei Li, Rumei Yang, Song Ge, Yan Du and Yanyan Wang (2018) is shown in Figure (2.6).

Figure (2.6) The DSM-IMB Model

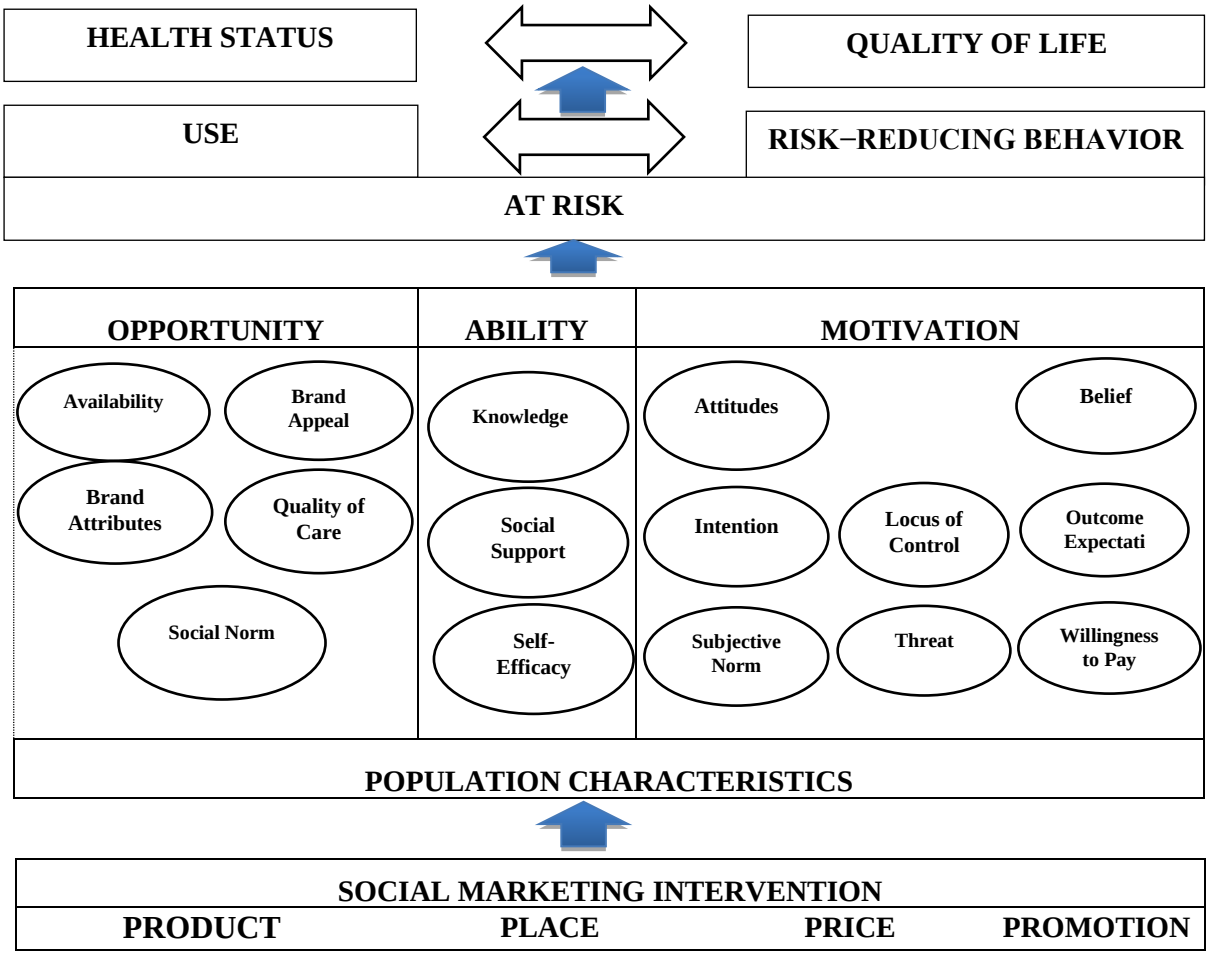


Source: Tingting Liu, Dongmei Wu, Jing Wang, Changwei Li, Rumei Yang, Song Ge, Yan Du and YanyanWang (2018)

According to Figure (2.6), Liu et al., (2018) portray the overarching conceptual framework of this study. The framework is composed of the following six major interrelated components: DSM-related information, DSM-related motivation, DSM-related behavioural skills, DSM behaviours, health outcomes and moderators. Themodel is based on three constructs: information, motivation and behavioural skills. For behaviours that are multiplex such as DSM, information and motivation are thought to work mainly through behavioural skills to initiate and keep up the behaviour at focus, and the behaviour is directly related to health outcomes.

In addition, PSI's Research and Metrics Department developed a social marketing project framework in 2004. The framework, called PSI's PERForM, describes the social marketing process, identifies key concepts important for designing, monitoring, and evaluating social marketing interventions, and mirrors the four levels and concepts of the logical framework.The PSI's PERForM framework of PSI's Research and Metrics Department (2004) is shown in Figure (2.7).

Figure (2.7) PSI's PERForM Framework



Source: Patel & Chapman (2005)

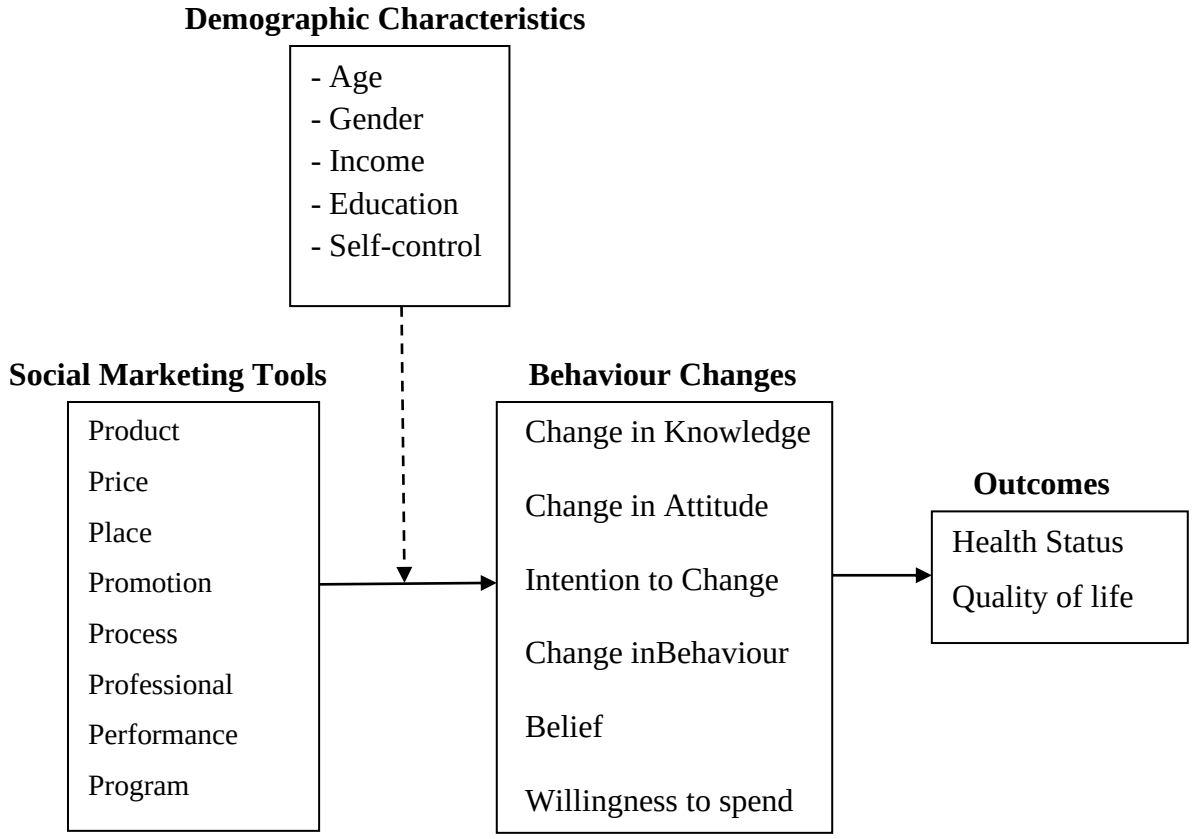
According to the Figure (2.7), PSI's Research and Metrics Department (2004), the aim of PERForM is to summarize known determinants of behaviour and the relationship between behaviour and health in order to supply social marketers with timely, actionable information for decision making. PERForM can be categorized into four levels, which incrementally help to better understand and explain behaviour change and health status: Goal (i.e., health status and quality of life), purpose (i.e., use, risk-reducing behaviour, and need), outputs (i.e., opportunity, ability, motivation, and population characteristics, and activities (social marketing intervention and the 4Ps). PSI uses the PERForM framework in a four-step, iterative process to guide the development, implementation, and evaluation of its social marketing effortswith the overall goal of changing behaviour of target populations. (Patel & Chapman, 2005).

PSI is a global non-profit organization committed for the improvement of health of people in the developing countries by focusing on serious health challenges such as family planning, HIV and AIDS, barriers to maternal health, health of children under five years, malaria, diarrhoea, pneumonia, malnutrition and other circumstantial health problems.PSI Myanmar was first established in 1995 and it is one of the most popular NGOs in Myanmar that do many successful social marketing activities. Its successful activities include primary interventions focusing on family planning, HIV/STI prevention and treatment, diarrhoeal disease, malaria and tuberculosis.PSI also do many health education campaigns for diabetes mellitus in Myanmar.During COVID-19 pandemic, PSI Myanmar is also successful in initiating mask and handwashing campaigns for prevention of COVID-19 transmission. Its successful activities are very much helpful and supportive for improving health status of Myanmar people.

2.7 Conceptual Framework of the Study

Based on the various theories and concepts found in contemporary literatures, the present study attempts to analyze the influence of social marketing on behaviour changes of diabetic patients. In Figure (2.8), the conceptual framework of the study is presented. In this framework, valid measures are used to measure the behaviour or action of diabetic patients in Yangon Region.

Figure (2.8) Conceptual Framework of the Study



Source: Own Compilation, 2020

According to the research objectives,this conceptual framework uses to solve the research questions. There are four groups of variables in this study: Social marketing tools, Demographic characteristics, Behaviour changes and Outcomes. In the conceptual framework, the first part of independent variables of social marketing tools; there are product, price, place, promotion, process, professional, performance and program based on marketing mix theory. The moderating factors are age, gender, income, education and self-control. The mediating factors are change in knowledge, change in attitude, intention to change, change in behaviour, belief and willingness to spend and the dependent variables are outcomes; such as health status and quality of

life based on Logic Model on the Effects of Social Marketing (Rebecca Firestone, Cassandra J. Rowe, Shilpa N. Modi & Dana Sievers, 2016), The DSM-IMB Model(Tingting Liu, Dongmei Wu, Jing Wang, Changwei Li, Rumei Yang, Song Ge, Yan Du & Yanyan Wang, 2018) and PSI's PERForM Framework (PSI's Research and Metric Department, 2004).

According to the conceptual framework of the study hypotheses were occurred. The following research hypotheses were stated based on the revelations in the review of literature concerning social marketing, behaviour changes, and outcomes.

The following are hypotheses of this study;

H_1: Social marketing tools have positive and significant effect on behaviour changes.

(H_{1a}) Social marketing tools havepositive and significant effect on change in knowledge.

(H_{1b}) Social marketing tools have positive and significant effect on change in attitude.

(H_{1c}) Social marketing tools have positive and significant effect on intention to change.

(H_{1d}) Social marketing tools have positive and significant effect on change in behaviour.

(H_{1e}) Social marketing tools have positive and significant effect on belief.

(H_{1f}) Social marketing tools have positive and significant effect on willingness to spend.

H_2: Demographic characteristics have moderating effect on the relationship between socialmarketing tools and behaviour changes.

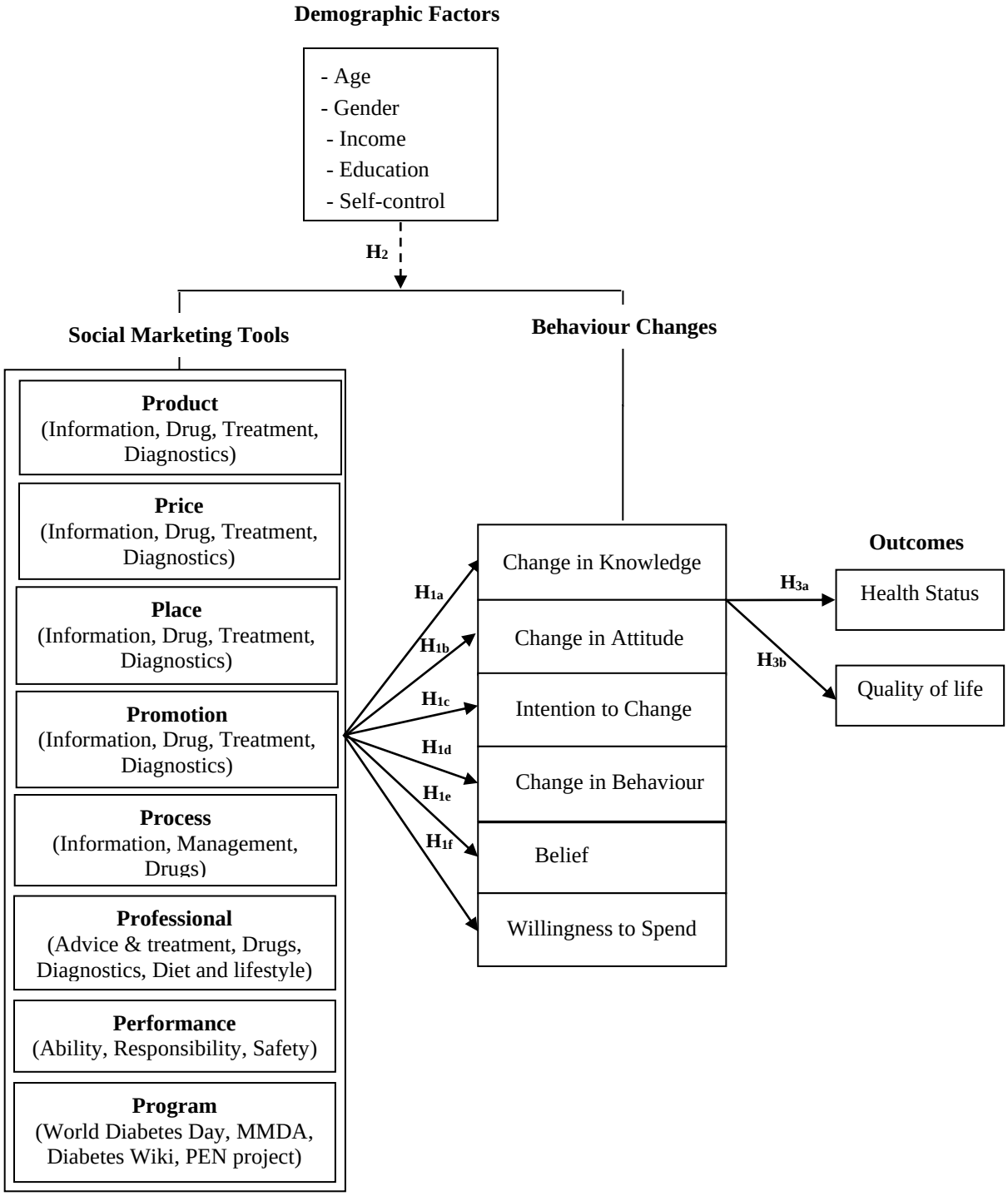
H_3: Behaviour changes have positive and significant effect on diabetic patients' outcomes.

(H_{3a}) Behaviour changes have positive and significant effect on diabetic patients' health status.

(H_{3b}) Behaviour changes have positive and significant effect on diabetic patients' quality of life.

According to the above conceptual framework the following analytical framework can be occurred (Figure 2.9).

Figure (2.9) Analytical Framework of the Study



Source: Own Compilation, 2021

2.8 Working Definitions of Key Terms

In this section of the study, key terms such as social marketing, behaviour change, health status and quality of life are defined. In social marking tools includes product, price, place, promotion, process, professional, performance, and program.

(a) Social Marketing

Social marketing was first defined as "the design, implementation and control of programs calculated to influence the validity of social ideas and including considerations of product planning, pricing, communications and market research". They referred to social marketing as simply the application of the principles and tools of marketing to achieve socially desirable goals, that is, benefits for society as a whole, rather than for profit or other organizational goals.

Social marketing is a process that uses marketing principles and techniques to create, communicate, and provide value in order to influence target audience behaviours that benefit society and the target audience (Kotler et al., 2005).

In this study, social marketing tools such as product, price, place, promotion, process, professional, performance and program are used.

(i) Product

Product denotes the idea, knowledge, drugs, treatment and diagnostic tests for diabetes given to diabetic patients by the doctors and social marketers.

(ii) Price

Price is defined as the healthcare services which are given to diabetic patients not only with fair price and time saving but also with free of charge by their healthcare providers.

(iii) Place

Place mean the distribution channel to get the information about DM, anti-diabetic drugs, treatment and diagnostic tests in an easy way with time saving.

(iv) Promotion

Promotion refers to the healthcare promotion given to diabetic patients by their social marketers such as drugs, treatment, diagnostic tests, etc.

(v) Process

Process denotes the procedure of giving necessary information concerning with DM, effective management including treatment and tests and standardized prescription of drugs to diabetic patients by the healthcare providers.

(vi) Professional

Professional indicates the competent action of giving effective and standard healthcare services to diabetic patients by the professional healthcare providers.

(vii) Performance

Performance signifies the healthcare unit concerning with facility, proficiency, responsibility, safety, security and responsiveness given to diabetic patients by their healthcare providers.

(viii) Program

Program conveys the meaning of doing diabetes mellitus programmes such as World Diabetes Day, MMDA, Diabetes Wiki application and WHO PEN project for the diabetic patients by their healthcare providers and social marketers.

(b) Behaviour Changes

Behaviour changes that may be pertinent to the improvement of effective interventions in health behaviour, including theories and concepts from mainstream psychology, and the associated sub-disciplines of health, leisure, recreation, physical activity and exercise psychology.

(c) Health Status

It is a “State of complete physical, psychological, and social well-being, and not entirely the absence of disease or infirmity.” Health status is a dynamic condition resulting from a body’s constant adjustment and adaptation in response to stresses and changes in the environment for maintaining an inner equilibrium called homeostasis.Health status is a condition or quality of human organism, expressing functioning of the organism in given genetic or environmental conditions.

(d) QualityofLife

The concept of quality of life broadly encompasses how an individual measures the ‘goodness’ of multiple aspects of their life. These evaluations consist of one’s emotionalreaction to life experiences, disposition, sense of life fulfillment and satisfaction, and gratification with work and personal relationships. The term ‘quality of life’ is also often mentioned to as ‘well-being’.

CHAPTER III
DIABETES MELLITUS AND SOCIAL MARKETING PRACTICES IN MYANMAR

This chapter presents the diabetes mellitus profile which will be applied and used to analyze collected data and information and review of the relevant literature on social marketing with a focus on diabetic patients, followed by independent variables to explain the dependent variable on influence of social marketing on behaviour changes of diabetic patients. It includesthehistory of diabetes mellitus, background of diabetes mellitus, treatment of diabetes mellitus, prevalence of diabetes mellitus in Myanmar, activities of Myanmar diabetes association and social marketing practices for diabetes.

3.1 History of Diabetes Mellitus

For 2000 years, diabetes has been accepted as a fatal disease. In the first century A. D, a Greek physician, Aretaeus, named diabetes from the Greek word for "siphon" (www.diabeteshealth.com). In the seventeenth century, a London physician, Doctor Thomas Willis, decided whether his patient has diabetes or not by their urine samples. If it had a sweet taste, he would have diabetes mellitus. This way of monitoring blood sugars was used until the twentieth century.Prior to the discovery of the insulin, medical doctors had only a few ways to treat diabetic patients. Low calorie diet prolonged their lives but it caused weakness and near starvation. But in 1921, Canadian doctors treated patients with diabetes by using insulin and managed to drop high blood sugars to normal levels.In 1950, two types of diabetes: insulin sensitive (type I) and insulin insensitive (type II) were discovered. In the 21st century, diabetes researchers continue to find the ways toward a cure (Lakhtakia, 2013).

3.2 Background of Diabetes Mellitus

This section includes five parts for background of diabetes mellitus. These are definition of diabetes mellitus, types of diabetes mellitus,complications of diabetes, pathophysiology and risk factors of diabetes mellitus, and diagnosis and investigations of diabetes mellitus.

3.2.1 Definition of Diabetes Mellitus

Diabetes mellitus, or simply diabetes, is a group of diseases defined by high blood glucose levels resulted from defects in the body's ability to produce and/or utilize insulin. It is a condition firstly defined by the level of hyperglycemia that gives rise to risk of microvascular damage (retinal disease, renal disease and neuropathy). It is related with reduced life expectancy, remarkable morbidity due to specific diabetes associated microvascular complications, increased chance of macrovascular complications (ischaemic heart disease, stroke and peripheral vascular disease), and diminished quality of life (www.who.int/diabetes). Several pathogenetic processes are involved in the development of diabetes mellitus. These consist of processes, which impair the beta cells of pancreas with consequent insulin insufficiency, and others that result in resistance to insulin activity. The abnormalities of carbohydrate, protein and fat metabolism are due to insufficient action of insulin on target tissues resulting from insensitivity or lack of insulin (Report of a WHO Consultation, 1999).

3.2.2 Types of Diabetes Mellitus

The first widely accepted classification was published by the WHO in 1980 (Second Report, 1980). Two major types of diabetes mellitus were proposed: IDDM (Type I) and NIDDM (Type II). Other types such as gestational diabetes were also included. The modified form of 1985 (Diabetes Mellitus: Report of a WHO Study Group, 1985) was widely recognized and is used internationally. It was suggested that the terms "insulin-dependent diabetes mellitus" and "non-insulin-dependent diabetes mellitus" should not be used later, because patients were classified according to treatment rather than pathogenesis. The terms Type I and Type II were introduced to describe the cases which are primarily due to pancreatic islet beta-cell destruction the former and the common major form of diabetes resulting from defects in insulin secretion the latter (Goodpaster, 2010).

3.2.3 Complications of Diabetes Mellitus

Complications can be classified into acute complications and chronic or long-term complications. Acute complications include: Hypoglycemia which means blood glucose level <3.5mmol/l (63mg/dl) and it a result of treatment and not a manifestation of disease itself. Common symptoms include autonomic symptoms (such as sweating, trembling, pounding heart, hunger, anxiety), neuroglycopenic symptoms (such as confusion, drowsiness, speech difficulty, loss of concentration, incoordination) and non-specific symptoms (such as nausea, tiredness, headache). Diabetes Ketoacidosis (DKA) which is a major medical emergency and also a serious cause of morbidity especially in persons with type I DM. A significant number of newly diagnosed diabetic patients present with DKA. Its signs and symptoms include polyuria, thirst, weight loss, abdominal pain, nausea, vomiting, dehydration, confusion, drowsiness, coma, etc. Hyperosmolar Non-Ketotic Coma: It is occurred with severe hyperglycemia (>50mmol/L) without significant hyperketonaemia in type II DM (Davidson et al., 2006).Chronic Complications include: macrovascular complications such as ischaemic heart disease, cerebrovascular disease and peripheral vessel disease, microvascular complications such as retinopathy, neuropathy and nephropathy, diabetes foot and pregnancy related conditions (Boulton et al., 2005).

3.2.4 Pathophysiology and Risk Factors of Diabetes Mellitus

To understand the pathophysiology of diabetes, the basics of carbohydrate metabolism and insulin action must be known. After consumption of food, carbohydrates are broken down into glucose molecules in the gut. Glucose is absorbed into the bloodstream and elevates blood glucose levels stimulating the insulin secretion from the pancreas. Most of the cells in the body need insulin to allow glucose entry which reduces blood glucose levels. If blood glucose level is lower, insulin secretion is also decreased as a result.If insulin production and secretion are affected by disease, it results in hyperglycemia. Hyperglycemia can also occur if insulin secreted from pancreas is not utilized properly by target cells (Goodpaster, B. H., DeLany, J. P., Otto, A. D., Kuller, L., Vockley, J., South-Paul, J. E., & Jakicic, J. M, 2010). Effects of diet and physical exercise interventions on weight loss and cardio metabolic risk factors oncritically obese adults: a randomized trial. The controllable risk factors including obesity and inactive lifestyle are associated with diabetes mellitus. Other uncontrollable risk factors such as ethnicity and genetics are

also important.The primary risk factor for type I diabetes mellitus is having a family history of DM. Family history of DM is a major risk factor (Laakso, 1999). In type II DM, the associated risk factors are diet, obesity, increasing age, physical inactivity, insulin resistance, and family history of DM, genetic factors, race and ethnicity. Unhealthy diet and decreased physical activity related to rapid technological development and urbanization have led to sharp increase in number of patients with diabetes mellitus. A history of substance use has been reported as a significant factor associated with earlier age of onset of type II diabetes mellitus (Karlon et al., 2001).

3.2.5 Diagnosis and Investigations of Diabetes Mellitus

Clinical presentation includes classic triad of polyuria, thirst and weight loss, sub-acute presentation which may occur over months or years such as lack of energy, blurred vision, vulval itchiness and inflammation of glans penis, etc. and some may present with complications as presenting features such as DKA, staph skin infections, erectile dysfunction and eye problems, etc. Some may occur as incidental finding. Diagnosis is established by clinical features with one of the three tests of Fasting Blood Sugar (FBS), 2Hours post-prandial blood sugar (2HPP) and Random Blood Sugar (RBS). If patient has no symptom, two testing are required. Alternative method for diagnosis is Oral Glucose Tolerance Test (OGTT). Glycemic control is assessed by Glycated Haemoglobin (HbA1c) (Twillman, 2002).

3.3 Treatment of Diabetes Mellitus

Treatment includes dietary and lifestyle modification, oral anti-diabetes drugs, insulin therapyand the health care team.

The major environmental factors that lead to type II diabetes are sedentary lifestyle and over nutrition leading to obesity. Sedentary lifestyle is more common in urbanized societies. Dietary advice is essential upon diagnosis of diabetes. Normal advice includes: reducing intake of fatty foods, eating mainly vegetables, fruits, cereals, rice and pasta, eating only small amounts of refined sugar (jam, sweets etc.), eating at regular interval, carrying glucose tablets, sweets or products in case of hypoglycemia, reducing stress, getting enough sleep, exercising regularly; not only does it help reduce hyperglycemia, but it also reduces insulin resistance by reducing obesity (Harris et al., 1991). Carbohydrates have a big effect on blood sugar levels more than fats and proteins. Slow-release carbohydrates help keep blood sugar levels

even because they are digested more slowly, thus preventing the body from producing too much insulin. They also provide lasting energy and help people stay full longer (Gross et al., 2005).

Types of oral anti-diabetes drugs are: Biguanides (metformin), Sulphonylureas (e.g.; gliclazide), Thiazolidinediones (e.g.;pioglitazone), Alpha glucosidase inhibitors (e.g.; acarbose) and Meglitinides (e.g., repaglinide) (Boulton, 2005).

Insulin is a hormone that treats diabetes by controlling the amount of sugar (glucose) in the blood when used as a medication, it is derived from either pork (porcine), beef (no longer available in the US), or is genetically made to be identical to human insulin. Patients with type I diabetes mellitus depend on external insulin (mostly injectable insulin) for their survival because the hormone is no longer produced in the body. Patients with type II diabetes mellitus are insulin resistant, have relatively low insulin production, or both; certain patients with type II diabetes may eventually require insulin if other medications fail to control blood glucose levels adequately (Buysschaert,2000).

The health care team includes;general practitioners give primary care to the diabetic patients and general medical checkups,dietitians who have training and experience about diabetes help patients learn about the effects of food on their blood sugar and blood fat levels (Laakso, 1999), endocrinologists specialize in treating diabetes and diseases of hormonal system, the American Diabetes Association guidelines say diabetic patients should see eye doctor at least once a year, these checkups are the best way to detect diabetic eye disease, mental health professionals help personal and emotional health of diabetes patients, podiatriststreat problems of lower limbs, pharmacists who are highly trained know about the action of the drugs taken by diabetic patients on their body, dentists treat the problems of teeth and gums of diabetic patients andexercise physiologists guide the diabetic patients how to do regular exercise to help lower blood sugar, to help body better use insulin and to control weight (Rubin, 2000).

3.4 Prevalence of Diabetes Mellitus in Myanmar

The survey of the prevalence of diabetes and the study of the causes of non-communicable diseases was made in 2014 in Myanmar. This survey was taken based on the age limit between 25 and 64 years from 52 townships and it represents 14 Divisions and States. This survey wastaken by collaboration of Diabetes Implementation Plan, University of Medicine (2), Yangon, Ministry of Health and Sports and Department ofMedical Research. Doctors from Myanmar Medical Association have also involved and supported in this survey. World Diabetes Foundation has supported budget and World Health Organization has given technical support for this survey. The predominant finding of this survey shows that the prevalence of diabetes between the age 25 and 64 years is 10.5 in 100 populations in Myanmar. It was estimated that total number of populations suffering diabetes in Myanmar is about 2.5 million by calculating based on this result. This occurrence is greater than diabetes prevalence in neighboring countries. The greater the number of diabetic patients, the more occurrence of diabetic complications such as loss of vision, cardiovascular disease, stroke, myocardial infarct, renal impairment, diabetic neuropathy of hands and feetand leg amputation would be found. In addition, the risk of development of cancer will be higher due to diabetes. As 8 in 10 diabetic patientscan suffer cardiovascular disease, it is evaluated that the number of patients developing cardiovascular disease would be higher in Myanmar. It is known that the higher prevalence of diabetes among Myanmar population is the risk factor for higher incidence of cardiovascular disease, cancer and chronic respiratory disease.

The risk factors for development of NCD's include smoking, heavy alcohol drinking, less intake of fruits and vegetables, less physical activity, obesity, hypertension, diabetes and high blood cholesterol level. It is needed to prevent these risk factors nationally such as smoking, heavy alcohol drinking, less intake of fruits and vegetables, less physical activity, obesity, hypertension,diabetes and high blood cholesterol level for the effective prevention of NCD's.

In Myanmar, prevalence of Diabetes Mellitus is on increasing trend. In National Health Plan (2011-2016), prioritized actions have been developed with the aim to prevent, control and reduce disease, disability and premature deaths from chronic NCDs and conditions. Previously, it is known that National Health Plan of Myanmar emphasized communicable diseases such as TB, Malaria, AIDS, etc. but

now they recognize that non-communicable diseases as DM have shown leading cause of mortality and disability.

3.5 Activities of Myanmar Diabetes Association (MMDA)

Myanmar Diabetes Association was founded in April 2013. It is the official public association authorized by the government. The chairman of MMDA is Professor Dr. Tint Swe Latt. The aim of the association is to educate the people concerning with increasing occurrence of diabetes and to widely distribute the preventive measures for it by the health educators. It was established as a non-profit association to organize for the participation of the people of the whole country in the prevention, health education and service delivery for the case of diabetic patients so as to lessen the health and socioeconomic burden caused by the rising epidemic of diabetes.

MMDA annually holdsmemorial ceremony for World Diabetes Day by nominating specific dateand the last was held at Lotte Hotel, Pyay Road, Yangon on December 12, 2019 from 8:00 am to 4:00 pm. On that day, free medical check-up, cumulative physical exercise, displaying healtheducation gallery, giving T-shirt with MMDA badge and free sharing of health education pamphlets were done for the attendees. Not only that, the services which would charge high cost (from ten thousand to lakhs) in private laboratory such as HbA1c test, random blood sugar test, nerve examination for diabetic neuropathy, eye examination for diabetic retinopathy and blood pressure examination were given free of charge for the diabetic patients. Anyone who wants to do medical check-up and who wants to know about the knowledge and preventive measures about diabetes was allowed to attend the ceremony. The attendees were showed two physical exercise videos called “Exercise is Medicine” which were produced by MMDA and doing enjoyable cumulative physical exercise together with attendees and playing lucky draw were done for them. It is a ceremony that notifies the people to be involved in diabetes prevention and control by educating and highlighting how terrifying is diabetes, how dangerous is diabetes for the nation and the race and how should it be worried not only for individual but also for the family. The attendees were also entertained and fed with healthy diet. More than180 countries have held memorial ceremonies about World Diabetes Day globally.

MMDA has published health education videos which are advantageous for diabetic patients on (myanmardiabetes.org.mm) website and these videos are taken with endocrinologists including Prof. Dr. Tint Swe Latt, Prof. Dr. Than Than Aye, Prof. Dr. Ye Myint, Prof. Dr. Thein Myint and Prof. Dr. Khin Myittar Moe San. These health education video files including the titles of Exercise is Medicine, About Cure for Diabetes Medicine, New Treatment for Obese, Misunderstanding about Metformin, Diabetes Health Education (Q&A), Diabetes Health Education (Episode), Traditional Medicine and Diabetes (Q&A), Urinary Frequency in Diabetes (Q&A), Metformin in Diabetes (Q&A), Emotional Aspect on Diabetes (Q&A), Essential Tips for Diabetes, Tips for Healthy Lifestyle, If You Have Diabetes, Physical Exercise and Diabetes, Family and Diabetes, Essential Tips for Diabetic Patients' Attendants and Questions and Answers from World Diabetes Day (2018) have been published on this website to learn easily not only for diabetic patients but also for anyone who wants to know about diabetes. As the prevalence of diabetes mellitus among adult population in Myanmar is 10%, the whole family could find difficulty only if a family member is suffering from diabetes. Diabetes can also lead to socioeconomic burden for the family as it disturbs the improvement of the family. MMDA has also notified the campaign of “Family and Diabetes “with the aim to prevent the development of diabetes mellitus in family members as diabetes can be inherited from parents to children.

3.6 Social Marketing Practices for Diabetes

According to the survey, the prevalence of diabetes is increasing in Myanmar. Diabetes can lead to disadvantages of suffering subsequent complications if the patients have inappropriate lifestyle and unhealthy dietary habits. The main reasons of suffering these complications are lack of health knowledge, lack of regular medical check-up, lack of regular taking of required medicines, inactive lifestyle, lack of doing regular physical exercise and having unhealthy diet. Therefore, healthcare services and knowledge sharing from doctors, health staff and social marketers are necessary to prevent diabetic complications.

Social marketers are sharing health knowledge to DM patients to avoid sweetened, salty, fatty and high calorie diet in order to encourage them to have healthy dietary habits according to the role of "Product" from social marketing tools. They also notify them to have healthy beans and vegetables as advised by the doctors.

The doctors also remind to avoid smoking and alcohol drinking and give information about things to avoid and things to do for diabetes. The doctors also prescribe anti-diabetic drugs to take regularly to control diabetes well. They also remind the diabetic patients to avoid herbal drugs which are not evidence-based. The doctors also guide the patients to do insulin injection according to the given scale only after checking RBS whenever insulin injection is necessary. The required treatment is given in time before worsening in case the complications occur. The doctors also inform the patients about the various types of blood sugar tests and their normal values. Various types of blood tests can be done at clinics, hospitals and laboratories if required. The patients are also informed that HbA1c should be done three monthly.

The healthcare providers are giving free medical treatment to diabetic patients to save time and money of the patients according to the role of "Price" form social marketing tools. The doctors also arrange to get knowledge about diabetes from social media such Facebook, internet website, newspaper, journals and pamphlets with time saving without going to doctors and health staffs. They also arrange to buy anti-diabetic drugs easily not only with cheap price but also free of charge. Medical treatment has been got easily and with fair price from private clinics and hospitals. The doctors from government hospitals and charity clinics are also giving free medical treatment to diabetic patients by assigning specific date. Blood and urine tests can also be done at private laboratories with cheap price and time saving. Some laboratory tests can be done free of charge at government hospitals and charity clinics.

The health staffs and social marketers also arrange to diabetic patients to get easy access for information about diabetes, drugs, treatment and laboratory tests from private hospitals, government hospitals and charity clinics according to the role of "Place" form social marketing tools. The places the required anti-diabetic drugs can be got are also informed. The places where doctors are giving medical treatment and the blood tests can be done are also informed.

The healthcare services for diabetic patients are also promoted according to the role of "Promotion" from social marketing tools. The healthcare providers also give health knowledge to diabetic patients that diabetes can be totally cured and subsequent complications can occur without appropriate treatment. The doctors also repeatedly remind the patients to take anti-diabetic drugs regularly. MMDA holds memorial ceremonies frequently and give anti-diabetic drugs free of charge to diabetic patients. The number of charity clinics is also increasing and they also supply

enough anti-diabetic drugs free of charge. The required blood tests are also done in case diabetic complications occur. Online programs are also arranged where medical treatment can be got. MMDA has published health education videos on www.myanmardiabetes.org.mm website for diabetic patients to do regular physical exercise by watching these videos. MMDA has also done free laboratory tests for diabetic patients as memorial of World Diabetes Day. The doctors are giving effective treatment and required drug supply systematically to diabetic patients according the role of "Process" from social marketing tools. The doctors also educate the patients by showing health education videos before starting medical treatment. In addition, the doctors let the patients read educational posters, journals, magazines and pamphlets. The doctors also counsel and educate the diabetic patients that risk of developing diabetes is higher if the patients have inappropriate lifestyle and unhealthy dietary habits and change the behaviour of the individual patient. Measuring body weight and blood tests are done and documented before starting medical treatment. Then, the doctors give the required treatment and persuade the family members to be involved in treatment. The doctors prescribe the required anti-diabetic drugs, give appointment for next follow up visit and also remind to come next visit without fail.

The competent doctors and health staffs are giving standard and systematic healthcare services to diabetic patients according to the role of "Professional" from social marketing tools. The diabetic patients can get treatment and advice from physicians, endocrinologists, nutritionists and general practitioners. They also provide services for diabetic patients to be able to buy anti-diabetic drugs from expert registered pharmacists.

The health staffs from clinics and hospitals provide services for diabetic patients with full of proficiency, accountability, responsibility and safety according to the role of "Performance" form social marketing tools. The healthcare providers give treatment to patients patiently although the number of patients is high. They also do knowledge sharing campaigns actively to deliver health knowledge about things to avoid and things to do for diabetes to diabetic patients promptly and effectively. The doctors repeatedly educate the non-compliant patients to become adaptable with anti-diabetic treatment and to get good glycemic control. The doctors also give effective treatment if rare side effects anti-diabetic drugs occur and educate the patients to prevent further attack. The doctors carefully give treatment for diabetic patients to get good glycemic control and to prevent diabetic complications. The anti-diabetic drugs

prescribed by the doctors have been taken safely because these drugs are approved by FDA and registered in Myanmar. The doctors always save the documents of diabetic patients privately not to leak outside.

The doctors and social marketers are doing diabetes education programs according to role of "Program" from social marketing tools. Especially, MMDA frequently holds health education ceremonies with memorial of World Diabetes Day in order to aware of the people about diabetes. Free consultation with endocrinologists, free medical check-up, health talk about diabetes, sharing health education pamphlets, cumulative public physical exercise, doing games and giving prizes to winners and giving memorial gifts are done for the attendees of this ceremony. They let us install diabetes wiki application in hand phones and people can gain health knowledge at home because this application gives diabetes knowledge by displaying short health education videos. WHO PEN project have been established and implemented in 2012-2013 especially for people from rural area by collaboration of WHO and Ministry of Health and Sports, Myanmar. This PEN project makes diabetic patients get treatment from midwives and health assistants without medical doctors and leads to health coverage for people from rural areas. PEN project can reduce the workload for diabetic patients at hospitals and also reduces diabetic complications.

Although diabetes is not totally curable, its complications can be prevented and complete life-span can be achieved because doctors, health staffs and social marketers are widely contributing the social marketing practices to be aware of the importance of diet and lifestyle modification for the diabetic patients.

In conclusion, if diabetes is not prevented in time, Myanmar people would face the disadvantages of diabetes not only individually but also by the whole family and consuming more national health budget and reduced productivity are possible leading to financial burden of the country. In addition, the national action plan for poverty reduction and the nation's developmental effort will not be as successful as possible.

CHAPTER IV
RESEARCH METHODOLOGY

This chapter consists of seven components such as research design include sampling procedure and sample size, research instruments, reliability and validity test, data collection and data analysis method, research variables and multiple regression analysis,and testing assumptions of multiple linear regression.

4.1 Research Design

This study is conducted based on the descriptive and analytical research method to arrive at finding and conclusion. Descriptive method is used to present the diabetic patients' demographic characteristics, psychological characteristics and behaviour. The analytical research method is used to analyze the characteristics which explain the impact of demographic, psychological characteristics and social marketing strategies on the behaviour of diabetic patients.

4.1.1 Sample Size Determination

In this study, populations of diabetic patients in Yangon Region were unknown. To identify the sample size, the following formula of Cochran's (1977) method was applied:

$$n = \frac{Z^2 pq}{E^2}$$

where; n =sample size

z =table value for selected alpha level at 95% confidence interval

p =0.5 is the estimated proportion of an accredit that is present in the population

q=1-p = 0.5

E=acceptable margin of error for proportion being estimated = 0.05

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384.16$$

Thus, the required sample size of this study is at least 385.

4.1.2 Sampling Procedure

The aim of this study is to explore the influence of social marketing tools on behaviour changes of diabetic patients and behaviour changes effect on outcomes of diabetic patients. The unit of analysis of this study was diabetic patients in charity clinics, government hospitals, and private hospitals.

For all of the objectives, two stages sampling procedure was used to sample the respondents with diabetes mellitus. And this study used probability sampling method to select the respondents (diabetic patient) to reduce any biased problem.

As the first stage of sampling, the stratified random sampling method was applied to collect the hospital for the treatment of diabetes mellitus from each stratum. In the stratified random sampling, strata were classified into three stratum such as government hospitals, private hospitals, and charity clinics.

In Yangon, there are 26 government hospitals, 56 private hospitals and 55 charity clinics. List of charity clinics, government hospitals, and private hospitals are shown in Appendix B. Among 26 government hospitals, only 12 government hospitals for the treatment of diabetes were marked as the first stratum. For second stratum, those from 56 private hospitals were marked and for the third stratum, those from 55 charity clinics were marked. After three strata had been marked as the first stage, the three hospitals from each stratum were equally selected by using simple random sampling method (SRS).

After choosing these selected hospitals and charity clinics for the treatment of diabetes, 130 patients who were taking treatment from endocrinologists were selected by using systematic sampling from each selected stratum that already chosen in first stage. In the second stage, every fifth diabetic patients who enter those selected hospitals or clinics were chosen by using systematic sampling method. Although the required sample size for this study was computed as at least 385,a sample of 390 patients was selected in this stage.

The number of patients for the randomly chosen hospitals in each of the three strata of Yangon regions and the sample size allocation are shown in the Table (4.1).

Table (4.1) Selected Area and Sample Population

Stratum	Total number of hospitals	Number of hospitals selected	Name of Selected Area (Yangon Region)	Number of Sample Diabetic Patients
Government Hospital	12	3	Government Hospital (OPT) (Yangon General Hospital, North Okkalapa General Hospital, San Pya General Hospital)	130
Private Hospital	56	3	Private Hospital (OPT) (SSC Hospital, Shwe La Min Hospital, Tat Lann Hospital)	130
Charity Clinic	55	3	Charity Clinics (Dr. Htein's Clinic, HtaWunBae Quarter Charity Clinics, Better Burmese Health Care)	130
Total		9		390

Source: Survey data (2021)

4.1.3 Questionnaire Design

The questionnaire was divided into four sections. The first section of the questionnaire includes the respondents' socio demographic profiles which are age, gender, occupation, marital status, education level, monthly income, family member, other diseases, family history about diabetes, anthropometric measurements and self-control. The second section is concerned with the influencing factors of social marketing tools such as product, price, place, promotion, process, professional, performance and program. The third section is concern with behaviour changes questionnaire such as change in knowledge, change in attitude, intention to change, change in behaviour, belief and willingness to spend. The last section is about diabetic patient outcome questionnaire such as health status and quality of life. There are a total of 138 items: for influence of social marketing tools 97 items, for behaviour

changes practices 18 items and health status & quality of life 23 items. It is shown in Appendix (A).

In this study,the independent variables are social marketing tools. Social marketing tools in this study are product, price, place, promotion, process, professional, performance and program. Product tool in this study include information, drugs, treatment and diagnostics tests. This developed 12 items from Kotler and Lee (2008), Kotler and Roberto (1989), Lefebvre and Flora (1988), Lefebvre (2011), Peattie (2009), Weinreich (1999) and Wood (2012) based on product theoretical background and medical knowledge about diabetes. Price tool in this study include information, drugs, treatment and diagnostics tests. This developed 11 items from Bernhardt, Mays and Hall (2012) based on price theoretical background and medical knowledge about diabetes. Place tool in this study include information, drugs, treatment and diagnostics tests. This developed 12 items from Bernhardt et al., (2012) and Kotler and Lee (2008) based on place theoretical background and medical knowledge about diabetes. Promotion tool in this study include information, drugs, treatment and diagnostics tests. This developed 12 items from Glanz et al., (2008), Waisbord, Shimp, Ogden and Morry (2010), Kotler and Lee (2008), Kotler and Roberto (1989), Peattie and Peattie (2009) and Weinreich (1999) based on promotion theoretical background and medical knowledge about diabetes. Process tool in this study include information, management and drugs. This developed 10 items from Lovelock andWirtz (2011) based on process theoretical background and medical knowledge about diabetes. Professional tool in this study includes advice & treatment, drugs, diagnostics tests and diet & lifestyle. This developed 14 items from Andreasen (1994), Brenkert (2002), Kotler and Lee (2008), Wymer (2011) and Lefebre (2011) based on professional theoretical background and medical knowledge about diabetes. Performance tool in this study include ability, responsibility and safety. This developed 9 items from Lovelock and Wirtz (2011) based on performance theoretical background and medical knowledge about diabetes. Program tool in this study include World diabetes day, Myanmar diabetes association, diabetes wiki, and WHO PEN project. This developed 17 items from Kotler and Roberto (1989), Kotler and Lee (2008), and Weinreich (1999) based on program theoretical background and medical knowledge about diabetes.

The dependent variables in this study are behaviour changes. Behaviour changes in this study are change in knowledge, change in attitude, intention to change,

change in behaviour, belief and willingness to spend. This adapted 18 items from (Kaliyaperumal, 2004; Lakhan & Sharama, 2010; Traina, S. B., Mathias, S. D., Colwell, H. H., Crosby, R. D., & Abraham, 2016). The Diabetes related Intention, Attitude, and Behaviour Changes Questionnaire: assessment of a brief questionnaire to measure dietary control, physical activity, maintenance of a healthy body weight, and psychological antecedents.

The dependent variables in this study are outcomes. Diabetic patient's outcomes in this study are health status and quality of life. Health status in this study include 2hrs post-prandial (2HPP), fasting blood sugar (FBS), HbA1c, creatinine and lipid profile. This adapted 5 items from Liu,T., et al (2018), checking the information-motivation-behavioural skills model of diabetes self-care among Chinese adult persons with type II diabetes (Nagpal, J., et al., 2010). Quality of life in this study includes physical health, physical endurance, treatment satisfaction, diabetic symptom, affected family finance and diet satisfaction. This adapted 18 items from (Nagpal, J., Kumar, A., Kakar, S., & Bhartia, 2010). The development of' Quality of Life Instrument for Indian Diabetes patients (QOLID): a recognition and reliability study in middle- and higher-income groups.

4.1.4 Research Instrument

As the survey instrument, the structured questionnaire is developed. The questionnaire for the study is divided into four main sections of which the first section is to provide the demographic profiling of diabetic patients in charity clinics, government hospitals and private hospitals. The second section consists of the methods for the measurement of social marketing tools influencing behaviour changes. It consists of eight parts are prepared. The third section included behaviour changes of diabetic patients. The fourth section presented the outcomes of diabetic patients. Part (A) section is stated that respondents' related information and Part (B) section is prepared in eight parts. In part B sections will cover the following information: social marking tools such as product, price, place, promotion, process, professional, performance and program. In the survey research questions, behaviour changes present in part (C), and outcomes (health status and quality of life) present in part (D).

In this analysis, 12 items of product,11 items of price, 12 items of place, 12 items of promotion, 10 items of process, 14 items of professional, 9 items of

performance, 17 items of program, 18 items of behaviour changes, 5 items of health status, and 18 items of quality of life with factor loading less than 0.5 were removed from the analysis. The significant factor loadings provide the acceptable convergence validity. After inappropriate items were removed, social marketing tools such as product, price, place, promotion, process, professional, performance, and program were 63 items, behaviour changes 17 items, and outcomes such as health status and quality of life was conducted 17 items. Finally, the factors with the factor loadings above 0.5 were involved in this study. As shown in Table (4.2), questions for all eleven variables are modified after the factor analysis.

Table (4.2) Number of Question Items After Removed

Sr No.	Items	No. of Question Items Removed	No. of Question Items Left After Removed
1	Product	3	9
2	Price	4	7
3	Place	4	8
4	Promotion	4	8
5	Process	1	9
6	Professional	6	8
7	Performance	2	7
8	Program	10	7
9	Behaviour Changes	1	17
10	Health Status	0	5
11	Quality ofLife	6	12

Source: Survey data (2021)

4.2 Data Collection and Data Analysis Methods

This study is conducted based on both primary data and secondary data. The primary data are collected from the patients who are diabetic at selected medical clinics in Yangon Region. The literature and several publications about social marketing strategies, behaviour changes models and diabetes, are applied as the secondary data sources. Other important sources of secondary data are from hospital statistics, Internet web sites, books, journals, magazines and newspapers. The chosen diabetic patients were requested to complete the questions by structured interview to

observe and investigate about diabetic patients' demographic, psychological characteristic and their behaviours. The questions were measured with five-point Likert Scale, closed and open ended as well as interview schedules.

The method of data collection used is determined by the type of data needed and pre-set research design. The two types of data are primary data and secondary data. Primary data ensures the most up-to-date information and realistic view to answer the hypotheses and research questions (Saunder, 2009).

For data analysis, descriptive statistics methods are applied to show the frequency tables and mean values as necessary. The factor analysis is also applied for validity test. Multiple linear regression analysis is conducted for major findings of this study. In this study, each factor includes different number of items and is measured on five-point Likert Scale. 5-point Likert Scale is used to analyze the collected data of the Likert questions and the results will be presented as mean and standard deviation. Likert (1932) defined the range for measure of attitude and perception of respondents. The width of range for the 5-point Likert scale questions is calculated to find the interval.

$$\text{N (Width of the range)} = \frac{\text{Maximum Level} - \text{Minimum Level}}{5}$$

$$= 5 - 1 / 5$$

$$= 0.8$$

The levels of agreement for the given statement in the questionnaire are calculated by mean scores and the interval range as follow:

4.21 – 5.00 are measured as Strongly Agree

3.41 – 4.20 are measured as Agree

2.61 – 3.40 are measured as Neutral

1.81 – 2.60 are measured as Disagree

1.00 – 1.80 are measured as Strongly Disagree

4.3 Reliability and Validity Test

The validity and reliability of research measures are crucial parts of any survey, which must be assessed and examined in order to make sure of the goodness of the measures used in the research. A reliable research instrument may not be necessarily valid.

The reliability is in need but it isn't a sufficient condition for validity. The reason for this is that a reliable measure may be reliable, but it can be measuring something else other than what it is originally designed to measure. This suggests that assessing the validity of a research instrument is more difficult than assessing its reliability. However, both validity and reliability are crucial aspects for measures that are interconnected and overlap to some degree (Sekaran & Bougie, 2003).

In this study, the questionnaire is developed by referring to the previous research papers. After the pilot study, the items with Likert type scale are tested for reliability by calculating the Cronbach's Alpha values. Such items are also tested for validity with factor analysis.

4.3.1 Reliability Test

For reliability of data collected from 390 respondents, the Cronbach's Alpha values are tested for all variables for which Likert type scale questions items are developed. The Cronbach's Alpha values of influencing factors such as social marketing tools, behaviour changes, health status and quality of life from outcomes are shown in Table (4.3).

Table (4.3) Reliability of Data

Variables	Cronbach's Alpha	No. of Items
Product	0.836	9
Price	0.891	7
Place	0.853	8
Promotion	0.847	8
Process	0.897	9
Professional	0.915	8
Performance	0.886	7
Program	0.903	7
Behaviour Changes	0.890	17
Health Status	0.844	5
Quality of life	0.866	12

Source: Survey data (2021)

The reliability coefficient of 0.7 or higher is considered “acceptable” in most social science research situations (Cohen R & Swerdlik M, 2010).As shown in Table (4.3); Cronbach’s Alpha values for social marketing tools, behaviour changes, health status and quality of life are greater than 0.7. Thus, the reliability of data for these variables is acceptable.

4.3.2 Validity Test

In this study, the question items’ validity is also tested are also tested with factor analysis. As preliminary analysis, the R-matrix (correlation matrix) is checked. The top half of this matrix contains the Pearson correlation coefficients between all pairs of questions whereas the bottom half consists of the one-tailed significance of these coefficients. First, the significance values are scanned for any variable that the majority of values are greater than 0.05. Then, the correlation coefficients are scanned for any greater than 0.9. If any are found, then check the determinant of the correlation matrix to avoid the problem of singularity in the data. The determinant should be greater than the necessary value of 0.00001. If the determinant value is greater than 0.00001, multicollinearity is not a problem for these data. If there is problem, it will be needed to eliminate variables causing the problem (Olkin & Pratt, 1958).

After preliminary analysis, the other important parts should be evaluated. These parts are Kaiser-Meyer-Olkin (KMO) measurement of sampling adequacy and Bartlett’s test of sphericity. The KMO statistic varies between 0 and 1. A value of “0” shows that the sum of partial correlations is greater relative to the sum of correlations, indicating diffusion in the pattern of correlations. Thus, factor analysis is not likely to be appropriate. A value close to 1 points to that patterns of correlations are relatively compact and so factor analysis should give distinct and reliable factors. Kaiser (1974) recommends accepting values greater than 0.5 as acceptable. Values below this should lead to either collect more data or rethink which variables to include. For factor analysis to work, the test should be significant with value less than 0.05 from Bartlett’s measure. If the significance value is less than 0.05, there are some relationships between variables and the R-matrix is not identity matrix. Thus, the factor analysis will work for the test.

Validity Test for Influencing Factors

The factors (with Likert type scale) applied in this study to test their behaviour changes of diabetic patients in health service aresocial marketing tools such as product, price, place, promotion, process, professional, performance and program.

The important indicators of factor analysis for these eight variables, behaviour changes and outcomes such as health status and quality of life are shown in Table (4.4).

Table (4.4) Validity of Data

Variables	Determinants	KMO	Significance
Product	0.040	0.863	0.000
Price	0.014	0.870	0.000
Place	0.021	0.819	0.000
Promotion	0.031	0.857	0.000
Process	0.006	0.885	0.000
Professional	0.002	0.864	0.000
Performance	0.004	0.729	0.000
Program	0.000	0.803	0.000
Behaviour Changes	0.005	0.812	0.000
Health Status	0.104	0.817	0.000
Quality of life	0.006	0.827	0.000

Source: Survey data (2021)

According to above table, all of the variables are significance. Moreover, all the variables' determinants value is also greater than the necessary value of 0.00001 and KMO statistic varies between 0 and 1.

4.4 Multiple Regression Analysis

In this research, descriptive statistics is used to describe demographic background of respondents' profile, social marketing tools such as product, price, place, promotion, process, professional, performance, and program,and behaviour changes factors, and outcomes of diabetic patients. Regression analysis was used to analyze the social marketing tools and explain the influencing on the independent variable- product, price, place, promotion, process, professional, performance, and

program on dependent variable behaviour changes. Moreover, regressedthe analysis of independent variable behaviour changes on dependent variable.

The multiple regression analysis was applied to influencing factors such as product, price, place, promotion, process, professional, performance, and program, and behaviour changes factors, and outcomes of diabetic patients. To explore the product, price, place, promotion, process, professional, performance, and program were used the independent variable and behaviour changes were used dependent variables. Moreover, behaviour changes were used independent variable and outcomes were used dependent variables. The statisticalpackages for social science (SPSS) Version 23 were used to analyze the multiple regression analysis.

The multiple regression models:

$Y=b_0 + b_1X_{1i} + b_2X_{2i} + \ldots + b_kX_{ki} + u_i$

In constructing the model, the variables are noted as:

Y_i =Dependent variable

$X_{1i,}\ X_{2i}, \ldots, X_{ki}$= Independent Variables

u_i = random error term

The moderation effect analysis was carried out using hierarchical multiple regression (Coakes, Coakes, and Rosenberg, 2008). The multiple regressions have been advocated as more appropriate method for determining whether a quantitative variable has a moderating effect on the relationship between two other quantitative variables.

The multiple regression models:

$Y = b_0 + b_1X_{1i} + b_2M_{1i} + b_3X_{3i} + X_{1i} * M_{1i} + u_i$

In constructing the model, the variables are noted as:

Y_i =Dependent Variable

$X_{1i,}\ X_{2i}, \ldots, X_{ki}$=Independent Variables

M'_i =Moderating Variable

u_i = random error term

4.5 Assumptions of Multiple Linear Regression

To practice the multiple linear regression method, the necessary assumptions of this method must be tested. When operating a multiple regression, there are some assumptions to check data in order for analysis to be reliable and valid.

Assumption 1 is “the relationship between the independent variables and dependent variable is linear”. The first assumption of Multiple Regression is that the relationship between independent variables and dependent variable can be characterized by a straight line. This assumption can be tested by looking at the distribution of residuals. This can be tested by reviewing the normal probability plot.

Assumption 2 is that “there is no multicollinearity in data”. This assumption is to test that the independent variables are not too highly correlated. This can be done in two ways. First, in the correlations table, correlations of more than 0.8 may be problematic. If this happens, it is needed to consider removing one or more of independent variables. Second, it can be conducted to more formally check that independent variables are not too highly correlated. For the assumption (no multicolliniarity in independent variables), VIFs scores are to be well below 10, and tolerance scores are to be above 0.2 (Keith, 2006; Shieh, 2010).

Assumption 3 is that “the values of the residuals are independent”. Durbin-Watson statistic in model summary box of SPSS output can be checked. This test is used to check the residuals are independent or uncorrelated. This statistic can vary from 0 to 4. For this assumption to be met, this value should be close to 2. Values below 1 and above 3 are caused for concern and may render analysis invalid.

Assumption 4 is that “the variance of the residuals is constant”. This assumption (assumption of homoscedasticity) is the one that variation in the residuals (or amount of error in the model) is similar at each point of the model. The scatter plot should like a random array of dots. If the graph looks like a funnel shape, then it’s likely that this assumption has been violated.

Assumption 5 is that “the values of the residuals are normally distributed”. This assumption can be tested by looking at the P-P plot for the model. The closer the dots lie to the diagonal line, the closer to normal the residuals are disseminated.

Assumption 6 is that “there are no influential cases biasing the model”. This assumption can be tested by going back to data file and looking at the Cook’s distance values. Any values over 1 are likely to be significant outliers which may place undue influence on the model, and should therefore be removed and analysis will be rerun.

All these assumptions are tested when making the multiple regression analysis in this study. The results are explained in Chapter (5).

CHAPTER V
ANALYSIS ON SOCIAL MARKETING TOOLS, BEHAVIOUR CHANGES AND OUTCOMES OF DIABETIC PATIENTS IN YANGON REGION

This chapter presents the analysis of outcomes of diabetic patient that consists of research design including research variables used in this research and multiple linear regressions. Moreover, 390 diabetic patients are selected and given structured questionnaires in selected area such as charity clinics, public hospitals, and private hospitals. Based on data, the demographic factors of respondents, descriptive statistics and data analysis for social marketing tools such as product, price, place, promotion, process, professional, performance, and program, behaviour changes and outcomes such as health status and quality of life of diabetic patients are using for this study.

5.1 Demographic Characteristics of Respondents

The initial phase of analysis is to determine the characteristics of the respondents involved in the study. A profile of the respondents is developed in terms of background information of the personal characteristics relating to social marketing tools. Firstly 390 diabetic patients' profile including general information of the respondents such as gender, age, marital status, occupation, income, and education, self-control of diabetes is identified. Each characteristic has been analysed in terms of absolute value and percentage, and the summary table of demographic characteristics is used to display these data more clearly. Table (5.1) shows the summary table of demographic characteristics of respondents (diabetic patients).

The sample includes 252 females and 138 males indicating that the female is the majority with the response rate of (64.6 %) while the remaining is male (35.4%). Age of respondents is divided into three groups such as between 28 and 48 years old, between 49 and 69 years old, and above 69 years old. The age level between 49 and

69 years old is largest group (59.2%) while diabetic patients with above 69 years old are the smallest group (18.7%).

Table (5.1) Demographic Characteristics of Respondents (Diabetic Patients)

No. of Respondents=390

Gender	**Number of Respondents**	**Percent**
Male	138	35.4
Female	252	64.6
Age(Years)	**Number of Respondents**	**Percent**
28-48	86	22.1
49-69	231	59.2
Above 69	73	18.7
Marital Status	**Number of Respondents**	**Percent**
Married	270	69.2
Single	47	12.1
Divorced	6	1.5
Widowed	67	17.2
Occupation	**Number of Respondents**	**Percent**
Government staff	30	7.7
Private staff	6	1.5
Own business	58	14.9
Manual workers	26	6.7
Dependent	177	45.4
Others	93	23.8
Income	**Number of Respondents**	**Percent**
No income	11	2.8
Under300,000kyats	153	39.3
300,001-500,000kyats	181	46.4
500,001-700,000kyats	11	2.8
700,001-900,000kyats	11	2.8
900,001-11,00,000kyats	11	2.8
11,00,001 kyats & above	12	3.1

Table (5.1) Demographic Characteristics of Respondents (Diabetic Patients)

No. of Respondents=390 (Continued)

Education		**Number of Respondents**	**Percent**
Primary		82	21.0
Middle		52	13.3
High School Pass		154	39.5
Diploma		6	1.5
Graduate		78	20.0
Master		12	3.1
Ph.D		3	0.8
Others		3	0.8
Self-Control of Diabetes		**Number of Respondents**	**Percent**
Food Avoid -	Yes	264	67.7
	No	126	32.3
Blood Sugar Control -	Yes	154	39.5
	No	236	60.5
Take Medicine Regularly-	Yes	350	89.7
	No	40	10.3
Doing Exercises -	Yes	150	38.5
	No	240	61.5
Follow Up Doctor Regularly-	Yes	147	37.7
	No	243	62.3

Source: Survey data (2021)

Marital status of respondents is classified into four groups; married, single, divorced and widowed. About 70% of the respondents are married. Occupation of respondents is classified into six groups; government staff, private staff, owns business, manual workers, dependent and others. Nearly half of the respondents are dependent. Income level of diabetic patients is classified into seven groups ranking from no income to 11,00,001 kyats & above. Among them, diabetic patients the largest with 46.4% (between 300,001 kyats to 500,000 kyats) and diabetic patients the smallest with 2.8% (no income, between 500,001 kyats to 700,000 kyats between 700,001 kyats to 900,000 kyats, and between 900,001 kyats to 11,00,000 kyats).

Education levels of diabetic patients are divided into eight groups; primary, middle, high school passed, diploma, graduate, master, PhD and others. About 40% of the respondents are high school pass.To know the self-control of diabetic patients, these patients are asked the questions related to whether avoiding food, testing blood sugar level, taking medicine regularly, doing exercises, and follow up doctors regularly.

5.2 Descriptive Analysis of Social Marketing Tools, Behaviour Changes, and Outcomes

According to the mean values of the items, the respondents generally agree the eight key factors of social marketing tools, six key factors of behaviour changes, five key factors of health status, and six key factors of quality of life. Each factor includes different number of items and is measured on five-point Likert scale.

As shown in Table (5.2) to (5.12), product items include four statements, price items includefour statements, place items include four statements, promotion items include four statements, process items include three statements, professional items include four statements, performance items include three statements, and program items include four statements respectively. Moreover, behaviour change items include six statements, and outcomes of quality of life items include six statements and health status items include five statements also respectively. The respondents can fill up their answer by selecting one from the five options. The high average scores suggest that respondents (diabetic patients) have high perception on these dimensions. Table (5.2) shows the diabetic patients' perception on product items such as information, drugs, treatment, and diagnostics.

Table (5.2) Respondents' Perception on Product

Items in Product	Mean	Standard Deviation
Information	4.4299	0.37876
Drugs	4.0538	0.74148
Treatment	4.4410	0.44097
Diagnostics	4.4359	0.41435
Overall Mean	**4.3402**	

Source: Survey data (2021)

Table (5.2) indicates that the overall mean for product tool is 4.34 and overall level of product tool is "strongly agree". Therefore, respondents' has higher perception on product item. Most of the diabetic patients avoiding sweeten foods and eating healthy food. Moreover, most of diabetic patients prefer doing treatment and diagnostics in product tool of social marketing.

Table (5.3) shows the diabetic patients' perception on price items such as information, drugs, treatment, and diagnostics. The results are shown in the following Table in detail.

Table (5.3) Respondents' Perception on Price

Items in Price	Mean	Standard Deviation
Information	3.9731	0.60624
Drugs	3.9846	0.69131
Treatment	4.1923	0.52832
Diagnostics	4.2350	0.46870
Overall Mean	**4.0963**	

Source: Survey data (2021)

Table (5.3) indicates that the overall mean for price tool is 4.10 and overall level of behaviour changes for price tool is "agree". Therefore, respondents' has higher perception on price item. Most of diabetic patients prefer doing treatment and diagnostics test because charity clinics are giving free of health care services and blood and urine tests have been done very fast with fair price.

Table (5.4) shows the diabetic patients' perception on place items such as information, drugs, treatment, and diagnostics. The results are shown in the following Table in detail.

Table (5.4) Respondents' Perception on Place

Items in Place	Mean	Standard Deviation
Information	4.1248	0.45580
Drugs	3.6833	0.60022
Treatment	3.9706	0.47018
Diagnostics	4.2436	0.54575
Overall Mean	**4.0056**	

Source: Survey data (2021)

Table (5.4) indicates that the overall mean for place tool is 4.01 and overall level of place tool is "agree". The respondents rated of information variable mean value is more than 4.01. It means most of the diabetic patients known the information about diabetes from medical doctors, health staffs, and social marketers in an easy way. Moreover, the respondents rated as strongly agree on diagnostics and all of the variables mean score are more than 3.5. Therefore, respondents' has higher perception on place item.

Table (5.5) shows the diabetic patients' perception on promotion items such as information, drugs, treatment, and diagnostics. The results are shown in the following Table in detail.

Table (5.5) Respondents' Perception on Promotion

Items in Promotion	Mean	Standard Deviation
Information	4.3684	0.45559
Drugs	4.3372	0.44029
Treatment	4.0308	0.64857
Diagnostics	3.2692	0.63069
Overall Mean	**4.0014**	

Source: Survey data (2021)

Table (5.5) indicates that the overall mean for promotion tool is 4.00 and overall level of promotion tool is "agree". Therefore, respondents' has higher perception on promotion item. Most of diabetic patients prefer to know information,

drugs and treatment in promotion tool of social marketing. Most of the diabetic patients have controlled diabetes for doctors' support for educate of diabetes and suffer diabetic complications. Moreover, pharmacies and pharmaceutical companies occasionally do sale promotion and provide some anti-diabetic drugs free of charge.

Table (5.6) shows the diabetic patients' perception on process items such as information, management, and drugs. The results are shown in the following Table in detail.

Table (5.6) Respondents' Perception on Process

Items in Process	Mean	Standard Deviation
Information	4.0556	0.51044
Management	4.1795	0.53161
Drugs	4.3410	0.51368
Overall Mean	**4.1920**	

Source: Survey data (2021)

Table (5.6) indicates that the overall mean for process tool is 4.19 and overall level of process tool is "agree". The respondents rated as strongly agree on drugs and all of the variables mean score are more than 4.1. Therefore, respondents' has higher perception on process item. Most of diabetic patients taken anti-diabetic drugs in time as prescribed by the doctor and given insulin injection in required condition.

Table (5.7) shows the diabetic patients' perception on professional items such as advice and treatment, drugs, diagnostics, and diet. The results are shown in the following Table in detail.

Table (5.7)Respondents' Perception on Professional

Items in Professional	Mean	Standard Deviation
Advice and Treatment	4.3709	0.52393
Drugs	3.1026	0.34845
Diagnostics	3.0769	0.25385
Diet and Lifestyle	4.1231	0.56934
Overall Mean	**3.6684**	

Source: Survey data (2021)

Table (5.7) indicates that the overall mean for professional tool is 3.67 and overall level of professional tool is “agree”. Therefore, respondents’ has higher perception on professional item. Most of diabetic patients prefer doing advice and treatment, and diet and lifestyle in professional tool of social marketing. Diabetic patients received healthcare advice and treatment for diabetes from general physicians, endocrinologists, and nutritionists. Moreover, diabetic patients doing regular physical exercise every day.

Table (5.8) shows the diabetic patients’ perception on performance items such as ability, responsibility, and safety. The results are shown in the following Table in detail.

Table (5.8) Respondents’ Perception on Performance

Items in Performance	Mean	Standard Deviation
Ability	4.0419	0.51840
Responsibility	4.2423	0.48593
Safety	4.0859	0.54695
Overall Mean	**4.1234**	

Source: Survey data (2021)

Table (5.8) indicates that the overall mean for performance tool is 4.12 and overall level of behaviour changes for performance tool is “agree”. The respondents rated as strongly agree on responsibility and all of the variables mean score are more than 3.5. Therefore, respondents’ has higher perception on performance item. Most of the diabetic patients believed the healthcare providers do diabetes awareness campaigns to convey things to do, things to avoid and things to be aware concerning with diabetes effectively and quickly to diabetic patients , and the doctor careful and conscientious treatment. Moreover, most of the diabetic patients taken anti-diabetic drugs prescribed by the doctor because these drugs are FDA approved and registered in Myanmar.

Table (5.9) shows the diabetic patients’ perception on program items such as world diabetes day, Myanmar diabetes association, diabetes wiki, and PEN project. The results are shown in the following Table in detail.

Table (5.9) Respondents' Perception on Program

Items in Program	Mean	Standard Deviation
World Diabetes Day	3.1000	0.33028
Myanmar Diabetes Association	3.2359	0.47643
Diabetes Wiki	3.1192	0.39177
WHO PEN project	3.0949	0.31862
Overall Mean	**3.1375**	

Source: Survey data (2021)

Table (5.9) indicates that the overall mean for program element is 3.14 and overall level of program tool is "neutral". The reason of lower average mean than other social marketing tools is most of the diabetic patients in Myanmar not to know programs widely. Therefore, program tool respondents' rate is lower than other social marketing tools.

Table (5.10) shows the diabetic patients' perception on behaviour changes items include change in knowledge, change in attitude, intention to change, change in behaviour, belief, and willingness to spend items. The results are shown in the following Table in detail.

Table (5.10) Respondents' Perception on Behaviour Changes

Items in Behaviour Changes	Mean	Standard Deviation
Change in Knowledge	4.3385	0.48980
Change in Attitude	4.4718	0.49076
Intention to Change	4.2795	0.49687
Change in Behaviour	4.1449	0.54623
Belief	4.2051	0.51976
Willingness to Spend	4.1564	0.67542
Overall Mean	**4.2660**	

Source: Survey data (2021)

Table (5.10) indicates that the overall average mean for behaviour changes item is 4.27 and overall level of behaviour changes element is "strongly agree". The reason is respondents of diabetic patients highly interest and strongly agree on behaviour changes items especially change in attitude and change in knowledge factors. Most of the diabetic patients known the accurate sample size of balanced diet (half is vegetable, one-fourth is rice and another one-fourth is meat), they could change the dietary habit to a healthy way and they do health lifestyle and healthy dietary habit to prevent obesity. Moreover, most of the diabetic patients avoided bad habits after known the diabetic knowledge.

Table (5.11) shows the diabetic patients' perception on health status items includes 2HPP, FBS, HbA1c, Creatinine, and Lipid profile. The results are shown in the following Table in detail.

Table (5.11) Respondents' Perception on Health Status

Items in Health Status	Mean	Standard Deviation
2HPP	4.4128	0.54262
FBS	4.3333	0.50363
HbA1c	4.4846	0.54938
Creatinine	3.2692	0.61929
Lipid Profile	4.3872	0.54262
Overall Mean	**4.1774**	

Source: Survey data (2021)

Health status of diabetic patients is measured by using 2HPP, FBS, HbA1c, creatinine and lipid profile. 2HPP means blood glucose level measured two hours after last meal. FBS means blood glucose level measured eight hours after last meal. HbA1c is a blood test that measures average blood sugar levels over the past three months. Creatinine is a compound excreted in urine which indicates renal function. Lipid profile is a blood test that is used to detect abnormalities in lipids e.g.triglycerides and cholesterol.

Analyzing the health status factor included in outcomes of diabetic patients, Table (5.11) indicates that the overall mean for health status factor is 4.18 and overall level of health status factor is "agree". Therefore, respondents' has higher perception on health status. Diabetic patients get diabetic health knowledge about dietary and lifestyle modification and assessment of their health status shows good control especially of 2HPP, FBS, HbA1c and lipid profile including good sugar control. In this survey, most of the diabetic patients can control their blood sugar level and prevent the suffering of diabetic complications.

Table (5.12) shows the diabetic patients' perception on quality of life items such as physical health, physical endurance, treatment satisfaction, diabetic symptom, affected family finance, and diet satisfaction. The results are shown in the following Table in detail.

Table (5.12) Respondents' Perception on Quality of Life

Items in Quality of Life	Mean	Standard Deviation
Physical health	4.3299	0.44777
Physical endurance	4.3991	0.42882
Treatment satisfaction	4.3915	0.47747
Diabetic Symptom	4.4009	0.43320
Family finance	4.3487	0.42728
Diet satisfaction	4.3530	0.39623
Overall Mean Value	4.3705	

Source: Survey data (2021)

Quality of life of diabetic patients is measured by using physical health, physical endurance, treatment satisfaction, diabetic symptom, family finance and diet satisfaction. Analyzing the quality of life factor included in outcomes of diabetic patients in Yangon, Table (5.12) indicates that the overall mean for quality of life

factor is 4.37 and overall level of quality of life factor is “strongly agree”. Therefore, respondents’ has higher perception on quality of life.

Diabetes sometimes affects patient’s efficiency at work. Due to diabetic condition, most of the patients never fail to do stopping forward, sitting knee chest position and body rotation. Almost all patients are very satisfied with current diabetes treatment. The families budgets of nearly all patients have got affected very little by the expenses related to diabetes management. Some of the patients sometimes have unhealthy diet inappropriate for diabetes.

After health status of diabetic patients had improved, assessment of their physical health, physical endurance, treatment satisfaction, diabetic symptoms, family finance and diet satisfaction indicated that they have good perception on these factors and it was found in this survey that most of the respondents possessed good quality of life.

5.3 Influence of Social Marketing Tools on Behaviour Changes of Diabetic Patients, Yangon

Multiple regression analysis was performed to observe the relationship between the independent variables (social marketing tools) and dependent variable (behaviour changes). The results of multiple regression analysis are shown in Tables (5.13) to (5.19).

To identify the relationship between social marketing tools (product, price, place, promotion, process, professional, performance, and program) and behaviour changes (change in knowledge, change in attitude, intention to change, change in behaviour, belief and willingness to spend). The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance, and program) and behaviour changes variables are presented in this section.

5.3.1 Influence of Social Marketing Tools on Changes in Knowledge

In the following analysis, the independent variables are social marketing tools and dependent variable is change in knowledge. The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance and program) and change in knowledge are presented in the Table (5.13).

Table (5.13) Influence of Social Marketing Tools on Change in Knowledge

Dependent Variable: Change in Knowledge	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	1.104	.422		2.614	.009	
Product	.089	.083	.063	1.074	.284	2.361
Price	.130*	.072	.118	1.808	.071	3.378
Place	-.050	.064	-.037	-.788	.431	1.486
Promotion	.357***	.079	.302	4.512	.000	3.049
Process	.137***	.052	.127	2.634	.009	1.570
Professional	.222**	.105	.122	2.119	.035	2.250
Performance	.470***	.085	.429	5.522	.000	4.072
Program	-.008	.083	-.005	-.101	.920	1.740
R^2	0.436					
Adjusted R^2	0.425					
F statistics	36.889***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.13) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 43% of the variation in change in knowledge which is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.43. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, promotion, process and performance strongly influence on change in knowledge of diabetic patients at 1 % level of significant.

Moreover, Professional tool influences on change in knowledge of diabetic patients at 5% significant level and price tool influences on change in knowledge of diabetic patients at 10% significant level. Based on the standardized coefficient (beta) value result, it can be concluded that performance tool has the highest influencing power, promotion tool has the second highest influencing power, process tool has the third highest influencing power and professional tool has the fourth highest

influencing power and price tool has the least influencing power on change in knowledge of diabetic patients. The coefficient of product, place and program are not significant. According to the results, three social marketing tools, promotion, process and performance have 1% significantly positive effect on change in knowledge of diabetic patients.

Hypothesis 1(a) tried to test the relationship between social marketing tools and change in knowledge. In Table (5.13), it can be seen that the relationship between price and change in knowledge is positive and significant ($b = 0.130$, $p<0.10$), promotion and change in knowledge is positive significant ($b = 0.357$, $p<0.01$), process and change in knowledge is positive and significant ($b = 0.137$, $p<0.01$), professional and change in knowledge is positive and significant ($b = 0.222$, $p<0.05$), and performance and change in knowledge is positive significant ($b = 0.470$, $p<0.01$). Thus, hypothesis 1(a): social marketing tools of price, promotion, process, professional, and performance have positive and significant relationships with change in knowledge were accepted.

Relating to the performance of social marketing tools, it is found in this study that the role of performance has influence on change in knowledge of diabetic patients because health staffs at hospitals and clinics give treatment to patients patiently although the number of patients is high, share health education about diabetes including important dos and don'ts effectively and quickly and take responsibility with their treatment.

For the promotion of social marketing tools, it is found in this study that the role of promotion has influence on change in knowledge of diabetic patients because healthcare promotion for diabetic patients includes giving add on health knowledge about complications of diabetes mellitus and doing necessary blood tests to detect them earlier.

As regards the process of social marketing tools, it is found in this study that the role of process has influence on change in knowledge of diabetic patients because the doctors give systematic treatment and do knowledge sharing campaign for diabetic patients including giving diabetes health knowledge using video files before starting treatment, letting them read health education posters and pamphlets, assessment and guidance on their diet and lifestyle habits and prescribing drugs to take regularly.

5.3.2 Influence of Social Marketing Tools on Changes in Attitude

In the following analysis, the independent variables are social marketing tools and dependent variable is change in attitude. The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance and program) and change in attitude are presented in the Table (5.14).

Table (5.14) Influence of Social Marketing Tools on Change in Attitude

Dependent Variable: Change in Attitude	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	.484	.413		1.171	.243	
Product	.412***	.081	.293	5.079	.000	2.361
Price	.174**	.070	.171	2.484	.014	3.378
Place	.091	.062	.067	1.456	.146	1.486
Promotion	.055	.078	.046	.708	.479	3.049
Process	.068	.051	.064	1.331	.178	1.570
Professional	.166	.102	.092	1.624	.105	2.250
Performance	.236***	.083	.215	2.833	.005	4.072
Program	.001	.081	.001	.013	.990	1.740
R^2	0.462					
Adjusted R^2	0.451					
F statistics	40.925***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.14) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 45% of the variation in change in attitude which is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.45. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding “rule of thumb” of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, product and performance strongly influence on change in attitude of diabetic patients at 1 % level of significant. Moreover, Price tool influences on change in attitude of diabetic patients at 5% significant level. Based on the standardized coefficient (beta) value

result, it can be concluded that product tool has the highest influencing power, performance tool has the second highest influencing power and price tool has the least influencing power on change in attitude of diabetic patients. The coefficient of place, promotion, process, professional and program are not significant. According to the results, two social marketing tools, product and performance have 1% significantly positive effect on change in attitude of diabetic patients.

Hypothesis 1(b) predicted that the relationship between social marketing tools and change in attitude. From the Table (5.14), it can be seen that the relationship between product and change in attitude is positive and significant ($b = 0.412$, $p<0.01$), price and change in attitude is positive and significant ($b = 0.174$, $p<0.05$), and performance and change in attitude is positive significant ($b = 0.236$, $p<0.01$). Thus, hypothesis 1(b): social marketing tools of product, price and performance have positive and significant relationships with change in attitude were accepted.

For the product of social marketing tools, it is found in this study that the role of product has influence on change in attitude of diabetic patients because doctors and social marketers give treatment and health knowledge to diabetic patients such as letting them avoid sweetened, salty, fatty and high calorie diet, smoking and alcohol drinking and letting them eat balanced diet suitable for diabetes and do physical exercise regularly.

As to the performance of social marketing tools, it is found in this study that the role of performance has influence on change in attitude of diabetic patients because the doctors repeatedly educate the diabetic patients with poor glycemic control who do not follow the rules of diet and lifestyle modification to become good patients with better glycemic control.

5.3.3 Influence of Social Marketing Tools on Intention to Change

In the following analysis, the independent variables are social marketing tools and dependent variable is intention to change. The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance and program) and intention to change are presented in the Table (5.15).

Table (5.15) Influence of Social Marketing Tools on Intention to Change

Dependent Variable:Intention to Change	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	.283	.446		.636	.525	
Product	-.067	.088	-.047	-.762	.447	2.361
Price	.154**	.076	.150	2.036	.042	3.378
Place	.004	.067	.003	.059	.958	1.486
Promotion	.483***	.084	.402	5.755	.000	3.049
Process	-.009	.055	-.008	-.168	.867	1.570
Professional	.209*	.110	.114	1.891	.059	2.250
Performance	.094	.090	.085	1.051	.294	4.072
Program	.189**	.088	.174	2.154	.032	1.740
R^2	0.389					
Adjusted R^2	0.376					
F statistics	30.308***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.15) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 38% of the variation in intention to change which is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.38. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, promotion strongly influences on intention to change of diabetic patients at 1 % level of significant. Moreover, Price and program tools influence on intention to change of diabetic patients at 5% significant level and professional tool influences on intention to change of diabetic patients at 10% significant level. Based on the standardized coefficient (beta) value result, it can be concluded that promotion tool has the highest influencing power, program tool has the second highest influencing power, price tool has the third highest influencing power and professional tool has the least influencing power on intention to change of diabetic patients. The coefficient of product, place, process and performance are not significant. According to the results, a promotion

social marketing tool has 1% significantly positive effect on intention to change of diabetic patients.

Hypothesis 1(c) proposed that the relationship between social marketing tools and intention to change. From the Table (5.15), it can be seen that the relationship between price and intention to change is positive and significant ($b = 0.154$, $p < 0.05$), promotion and intention to change is positive and significant ($b = 0.483$, $p < 0.01$), professional and intention to change is positive and significant ($b = 0.209$, $p < 0.10$) and program and change in attitude is positive significant ($b = 0.189$, $p < 0.05$). Thus, hypothesis 1(c): social marketing tools of price, promotion, professional and program have positive and significant relationships with intention to change were accepted.

With regard to the promotion of social marketing tools, it is found in this study that the role of promotion has influence on intention to change of diabetic patients because healthcare promotion for diabetic patients by doctors includes giving systematic treatment and add on health knowledge that diabetes is not totally curable and patients can suffer its complications such as loss of vision, kidney damage, stroke, myocardial infarct and hypertension if they cannot control their blood glucose level without taking regular treatment.

5.3.4 Influence of Social Marketing Tools on Change in Behaviour

In the following analysis, the independent variables are social marketing tools and dependent variable is change in behaviour. The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance and program) and change in behaviour are presented in the Table (5.16).

Table (5.16) Influence of Social Marketing Tools on Change in Behaviour

Dependent Variable: Change in Behaviour	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	.249	.436		.572	.568	
Product	.233***	.086	.149	2.716	.007	2.361
Price	.115	.074	.102	1.555	.121	3.378
Place	.005	.066	.003	.077	.939	1.486
Promotion	.362***	.082	.274	4.407	.000	3.049
Process	-.051	.053	-.043	-.958	.338	1.570
Professional	-.065	.108	-.032	-.604	.546	2.250
Performance	.273***	.088	.223	3.107	.002	4.072
Program	.247***	.086	.135	2.880	.004	1.740
R^2	0.517					
Adjusted R^2	0.506					
F statistics	50.877***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.16) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 51% of the variation in change in behaviour which is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.51. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, product, promotion, performance and program strongly influence on change in behaviour of diabetic patients at 1 % level of significant. Based on the standardized coefficient (beta) value result, it can be concluded that promotion tool has the highest influencing power, performance tool has the second highest influencing power, product tool has the third highest influencing power and program tool has the least influencing power on change in behaviour of diabetic patients. The coefficient of price, place, process and professional are not significant. According to the results, four social marketing tools, product, promotion, performance and program have 1% significantly positive effect on change in behaviour of diabetic patients.

Hypothesis 1(d) indicated that the relationship between social marketing tools and change in behaviour. In Table (5.16), it can be seen that the relationship between product and change in behaviour is positive and significant ($b = 0.233$, $p < 0.01$), promotion and change in behaviour is positive and significant ($b = 0.362$, $p < 0.01$), performance and change in behaviour is positive and significant ($b = 0.273$, $p < 0.01$) and program and change in behaviour is positive significant ($b = 0.247$, $p<0.01$). Thus, hypothesis 1(d): social marketing tools of product, promotion, performance and program have positive and significant relationships with change in behaviour were accepted.

As for the promotion of social marketing tools, it is found in this study that the role of promotion has influence on change in behaviour of diabetic patients because healthcare promotion for diabetic patients by doctors includes knowledge sharing on social media and online medical consultation to change their dietary and lifestyle habits, to take medicines regularly and to do regular physical exercise.

In view of the performance of social marketing tools, it is found in this study that the role of performance has influence on change in behaviour of diabetic patients because healthcare providers perform knowledge sharing campaigns to deliver dos and don'ts about diabetes to diabetic patients more effectively and quickly.

About the product of social marketing tools, it is found in this study that the role of product has influence on change in behaviour of diabetic patients because doctors and social marketers are sharing knowledge about diabetes that the behaviours such as unhealthy dietary habits, lack of physical exercise and lack of regular clinic visit predispose to development of diabetic complications.

Concerning the program of social marketing tools, it is found in this study that the role of program has influence on change in behaviour of diabetic patients because on World Diabetes Day, Myanmar Diabetes Association holds memorial ceremonies and free consultation with endocrinologist, giving treatment and blood tests free of charge, health talks, sharing health education pamphlets and mass public physical exercise are done for diabetic patients on that day.

5.3.5 Influence of Social Marketing Tools on Belief

In the following analysis, the independent variables are social marketing tools and dependent variable is belief. The results of the relationship between social

marketing tools (product, price, place, promotion, process, professional, performance and program) and belief are presented in the Table (5.17).

Table (5.17) Influence of Social Marketing Tools on Belief

Dependent Variable:Belief	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	.422	.418		1.009	.314	
Product	-.046	.082	-.031	-.557	.578	2.361
Price	.234***	.071	.218	3.300	.001	3.378
Place	-.070	.063	-.049	-1.113	.266	1.486
Promotion	.325***	.079	.259	4.113	.000	3.049
Process	.110**	.051	.096	2.147	.033	1.570
Professional	.298***	.104	.155	2.872	.004	2.250
Performance	.344***	.084	.296	4.085	.000	4.072
Program	-.015	.082	-.009	-.189	.850	1.740
R^2	0.508					
Adjusted R^2	0.498					
F statistics	49.256***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.17) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 50% of the variation in belief which is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.50. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, price, promotion, professional and performance strongly influence on belief of diabetic patients at 1 % level of significant. Moreover, process tool influences on belief of diabetic patients at 5% significant level. Based on the standardized coefficient (beta) value result, it can be concluded that performance tool has the highest influencing power, promotion tool has the second highest influencing power, price tool has the third highest influencing

power, professional tool has the fourth highest influencing power and process tool has the least influencing power on belief of diabetic patients. The coefficient of product, place and program are not significant. According to the results, four social marketing tools, price, promotion, professional and performance have 1% significantly positive effect on belief of diabetic patients.

Hypothesis 1(e) tried to test the relationship between social marketing tools and belief. From the Table (5.17), it can be seen that the relationship between price and belief is positive and significant ($b = 0.234$, $p < 0.01$), promotion and belief is positive and significant ($b = 0.325$, $p < 0.01$), process and belief is positive and significant ($b = 0.110$, $p<0.05$), professional and belief is positive and significant ($b = 0.298$, $p<0.01$), and performance and belief is positive significant ($b = 0.344$, $p<0.01$). Thus, hypothesis 1(e): social marketing tools of price, promotion, process, professional, and performance have positive and significant relationships with belief of diabetic patients were accepted.

In the matter of the performance of social marketing tools, it is found in this study that the role of performance has influence on belief of diabetic patients because the doctors give advice to diabetic patients to prevent further attacks when rare and mild side effects of some kinds of anti-diabetic drugs are encountered.

As to the promotion of social marketing tools, it is found in this study that the role of promotion has influence on belief of diabetic patients because diabetes specialists advise the patients to do necessary blood tests to get early detection and prompt treatment for complications of diabetes.

With regard to the price of social marketing tools, it is found in this study that the role of price has influence on belief of diabetic patients because diabetic patients can save time and money to get the necessary information about diabetes from social media such as Facebook, website, newspaper, journals and pamphlets without going to doctors and health staffs.

Relating to the professional of social marketing tools, it is found in this study that the role of professional has influence on belief of diabetic patients because they ask advice and get treatment with trust from general physicians, endocrinologists and nutritionists.

5.3.6 Influence of Social Marketing Tools on Willingness to Spend

In this analysis, the independent variables are social marketing tools and dependent variable is willingness to spend. The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance and program) and willingness to spend are presented in the Table (5.18).

Table (5.18) Influence of Social Marketing Tools on Willingness to Spend

Dependent Variable:Willingness to Spend	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	.862	.623		1.384	.167	
Product	.125	.123	.065	1.022	.307	2.361
Price	.172	.106	.123	1.622	.106	3.378
Place	.085	.094	.045	.902	.368	1.486
Promotion	.335***	.117	.205	2.857	.005	3.049
Process	-.025	.076	-.017	-.331	.741	1.570
Professional	.114	.154	.046	.738	.461	2.250
Performance	.356***	.126	.236	2.839	.005	4.072
Program	.099	.122	.044	.807	.420	1.740
R^2	0.354					
Adjusted R^2	0.340					
F statistics	26.098***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.18) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 34% of the variation in willingness to spend which is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.34. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding “rule of thumb” of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, promotion and performance strongly influence on willingness to spend of diabetic patients at 1 % level of significant. According to the above Table, it can be concluded standardize

coefficient (Beta) value for performance tool is higher than standardize coefficient (Beta) value for promotion tool. It means that performance tool strongly influences on willingness to spend of diabetic patients. The coefficient of product, price, place, process, professional and program are not significant. According to the results, two social marketing tools, promotion and performance have 1% significantly positive effect on willingness to spend of diabetic patients.

Hypothesis 1(f) predicted that the relationship between social marketing tools and willingness to spend. In Table (5.18), it can be seen that the relationship between promotion and willingness to spend is positive and significant ($b = 0.335$, $p<0.01$), and performance and willingness to spend is positive significant ($b = 0.356$, $p<0.01$). Thus, hypothesis 1(f): social marketing tools of promotion and performance have positive and significant relationships with willing to spend were accepted.

As for the performance of social marketing tools, it is found in this study that the role of performance has influence on willingness to spend of diabetic patients because diabetic patients willingly spend money and time on going regular clinic visits and doing regular blood glucose tests using FDA approved glucometer as advised by doctor.

In the matter of the promotion of social marketing tools, it is found in this study that the role of promotion has influence on willingness to spend of diabetic patients because the doctors give add on health knowledge to diabetic patients about the deadly complications of diabetes and the patients also willingly spend money and time on doing necessary blood tests to get early detection of complications of diabetes.

5.3.9 Influence of Social Marketing Tools on Behaviour Changes

In the following analysis, the independent variables are social marketing tools (product, price, place, promotion, process, professional, performance, and program) and dependent variable is behaviour changes. The results of the relationship between social marketing tools (product, price, place, promotion, process, professional, performance, and program) and behaviour changes are presented in the Table (5.19).

Table (5.19) Influence of Social Marketing Tools on Behaviour Changes

Dependent Variable:Behaviour Changes	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	.036	.282		.126	.900	
Product	.124**	.056	.102	2.240	.026	2.361
Price	.120**	.048	.136	2.500	.013	3.378
Place	.011	.043	.009	.249	.803	1.486
Promotion	.320***	.053	.311	6.014	.000	3.049
Process	-.044	.035	-.047	-1.271	.205	1.570
Professional	.157**	.070	.100	2.247	.025	2.250
Performance	.296***	.057	.301	5.195	.000	4.072
Program	.085	.055	.060	1.536	.125	1.740
R^2	0.666					
Adjusted R^2	0.659					
F statistics	94.775***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.19) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that the 65.9% of the variation in behaviour changes is predicted by eight independent variables of social marketing tools as the value of adjusted R^2 is 0.659. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, social marketing tools variables of promotion and performance strongly influence on behaviour changes of diabetic patients at 1% level of significant. Moreover, social marketing tools variables of product, price and professional influence on behaviour changes of diabetic patients at 5% level of significant. According to the result shown in the Table (5.19), standardized coefficient (Beta) of promotion is highest, performance is second highest, price is the third highest and then product and professional are fourth and last influence on behaviour changes of diabetic patients. Therefore, it can be concluded that promotion tool has the highest influencing power,

performance tool has the second highest influencing power, price tool has the third highest influencing power and product tool has the fourth highest influencing power and professional tool has the least influencing power on behaviour changes of diabetic patients. The coefficient of place, process and program are not significant. According to the results, two social marketing tools, promotion and performance have 1% significantly positive effect on behaviour changes of diabetic patients.

Hypothesis 1 tried to test the relationship between social marketing tools and behaviour changes of diabetic patients. From the Table (5.19), it can be seen that the relationship between product and behaviour changes is positive and significant ($b=0.124$, $p<0.05$), price and behaviour changes is positive and significant ($b=0.120$, $p<0.05$), promotion and behaviour changes is positive and significant ($b=0.320$, $p<0.01$), professional and behaviour changes is positive and significant ($b=0.157$, $p<0.05$), and performance and behaviour changes is positive significant ($b=0.296$, $p<0.01$). Thus, hypothesis 1 social marketing tools of product, price, promotion, professional, and performance have positive and significant relationships with behaviour changes of diabetic patients were accepted.

Relating to the promotion of social marketing tools, it is found in this study that the role of promotion has influence on behaviour changes of diabetic patients because the doctors give add on health knowledge to diabetic patients that uncontrolled diabetes can lead to complications such as loss of vision, kidney damage, stroke, myocardial infarct and hypertension, government hospitals and charity clinics give treatment, blood tests and some kinds of drugs free of charge and consequently, the diabetic patients also go regular clinic visits, take medicines regularly and follow the guidance of doctors in diet and lifestyle modification and also achieved improvement in behaviour changes.

Concerning the performance of social marketing tools, it is found in this study that the role of performance has influence on behaviour change of diabetic patients because the doctors repeatedly give health knowledge about diet and lifestyle habits to diabetic patients, share health knowledge on social media, give treatment to patients with patience, responsibility and safety and consequently, the patients also follow the guidance of doctors in their diet and lifestyle habits and achieved improvement in behaviour changes.

5.4 Moderating Effect of Demographic Factors

The moderating effect analyzed using SPSS multiple regression and the results are as follow by model 1, model 2, and model 3. Before the analysis the moderating effect analyzed of multiple regression, firstly correlation analysis the relationship between social marketing tools and behaviour changes, secondly analysis the relationship between behaviour changes and moderating variables (demographic factors: Age, Gender, Education, Income, Self -control), and then thirdly analysis the multiple regression of moderating effect of social marketing tools and behaviour changes Table (5.20). The correlation results of demographic factors and behaviour changes are shown in Appendix (C).

Moderating Effect of Education and Self Control on the relationship between Social Marketing tools and Behaviour Changes

The analysis on moderating effect of education and self-control on the relationship between social marketing tools and behaviour changes is shown in Table (5.20). According to the Table (5.20) results, social marketing tools are correlated with behaviour changes (Model 1) and social marketing tools, education and self-control within diabetic patients are related to behaviour changes (Model 2). Other demographic factors such as age, gender, and income are not correlated in relationship between social marketing tools and behaviour changes of diabetic patients. Social marketing tools, education and the interaction between social marketing tools and education are related to behaviour changes of diabetic patients (Model 3).

Table (5.20) Moderating Effect of Education and Self-control on the Relationship between Social Marketing Tools and Behaviour Changes

Dependent Variable: Behaviour Changes	Model 1				Model 2				Model 3			
	B	**SE**	**t**	**Sig**	**B**	**SE**	**t**	**Sig**	**B**	**SE**	**t**	**Sig**
(Constant)	1.139	.248	4.587	.000	.671	.277	2.421	.016	3.890	1.404	2.770	.006
Social Mkt Tools	1.370***	.063	21.808	.000	1.299***	.063	20.787	.000	2.125***	.360	5.899	.000
Education					.035***	.009	3.905	.000	.515***	.155	3.323	.001
Self-Control					.215***	.052	4.109	.000	1.317	.964	1.367	.172
Social Mkt-Education									.123***	.040	3.104	.002
Social Mkt-Self-Control									.395	.249	1.587	.113
R^2	0.551				0.594				0.605			
Adjusted R^2	0.550				0.591				0.599			
F statistics	475.595***				188.289***				117.396***			

Source: Survey data (2021)

Statistical significance Indicate *** at the 1% level, ** 5% level and * 10% level

Hypothesis 2 proposed that demographic characteristics have moderating effect on the relationship between social marketing tools and behaviour changes. From the Table (5.20), it can be seen that the relationship of education and between social marketing tools and behaviour changes is positive and significant ($b = 0.123$, $p < 0.01$). Thus, hypothesis 2 education of demographic characteristics has positive and significant relationships with social marketing tools and behaviour changes of diabetic patients were accepted.

Although there is a few increment of R^2, adjusted R^2 and the regression coefficient of the interaction term is significant after adding the interaction terms of any moderating variable to the regression models. The results suggest that the education level of respondents has a significant moderating effect on the relationship between social marketing tools and behaviour changes.

5.5 Effect of Behaviour Changes on Outcomes of Diabetic Patients

This section presented the multiple regressions analysis performed to observe the relationship between the independent variable (behaviour changes) and dependent variable of outcomes such as health status and quality of life of diabetic patients.

The multiple regressions analysis of dependent variable health status and independent variable behaviour changes is shown in the Table (5.21).

Table (5.21) Effect of Behaviour Changes on Health Status of Diabetic Patients

Dependent Variable: Health Status	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	4.398	.208		21.174	.000	
Change in Knowledge	.238***	.071	.295	3.340	.001	3.124
Change in Attitude	.240***	.063	.298	3.796	.000	2.479
Intention to Change	.115*	.059	.144	1.925	.055	2.249
Change in Behaviour	.096	.059	.132	1.626	.105	2.663
Belief	.110	.071	.145	1.557	.120	3.494
Willingness to Spend	.095**	.039	.162	2.430	.016	1.788
R^2	0.046					
Adjusted R^2	0.031					
F statistics	3.044***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.21) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that 3.1% of the variation in health status which is predicted by six independent variables of behaviour changes as the value of adjusted R^2 is 0.31. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, behaviour changes variables of change in knowledge and change in attitude strongly effect on health status of diabetic patients at 1% level of significant and willingness to spend effect on health status of diabetic patients at 5% level of significant. In addition, intention to

change affects on health status of diabetic patients at 10% level of significant effect. Moreover, standardized coefficients (Beta) of significant factors such as change in knowledge, change in attitude, intention to change and willingness to spend indicate that change in attitude has the highest influencing power, change in knowledge has the second highest influencing power, willingness to spend has the third highest influencing power and intention to change has the least influencing power on health status of diabetic patients. The coefficient of change in behaviour and belief are not significant. According to the results, two behaviour changes factors, change in knowledge and change in attitude have 1% significantly positive effect on health status of diabetic patients.

Hypothesis 3(a) indicated that the relationship between behaviour changes and health status of diabetic patients. In Table (5.21), it can be seen that the relationship between change in knowledge and health status is positive and significant ($b=0.238$, $p<0.01$), change in attitude and health status is positive and significant ($b=0.240$, $p<0.01$), intention to change and health status is positive and significant ($b=0.115$, $p<0.10$) and willingness to spend and heath status is positive significant ($b=0.095$, $p<0.05$). Thus, hypothesis 3(a): behaviour changes; change in knowledge, change in attitude, intention to change and willingness to spend have positive and significant relationships with health status of diabetic patients were accepted.

About the change in attitude of behaviour changes factors, it is found in this study that the role of change in attitude has effect on health status of diabetic patients because the mindset of diabetic patients has improved that doing regular physical exercise and weight reduction to prevent obesity can lower the risk of diabetic complications and save lives and consequently, their health status becomes better.

As regards the change in knowledge of behaviour changes factors, it is found in this study that the role of change in knowledge has effect on health status of diabetic patients because the knowledge of diabetic patients has improved that one of the causes of diabetes is improper diet and lifestyle leading to increased blood glucose level and they get the knowledge of having balanced diet (half of plate is vegetable, one fourth is rice and another one fourth is meat) and consequently, their health status becomes better.

The multiple regressions analysis of dependent variable quality of life and independent variable behaviour changes is shown in the Table (5.22).

Table (5.22) Effect of Behaviour Changes on Quality of Life of Diabetic Patients

Dependent Variable: Quality of Life	Unstandardized Coefficients		Standardized Coefficients	t	Sig	VIF
	B	SE	Beta			
(Constant)	1.813	.162		11.195	0.000	
Change in Knowledge	.084	.055	.103	1.511	0.132	3.124
Change in Attitude	.049	.049	.060	.997	0.319	2.479
Intention to Change	.041	.046	.050	.877	0.381	2.249
Change in Behaviour	.100**	.046	.136	2.169	0.031	2.663
Belief	.233***	.055	.303	4.219	0.000	3.494
Willingness to Spend	.086***	.030	.144	2.812	0.005	1.788
R^2	0.436					
Adjusted R^2	0.427					
F statistics	49.331***					

Source: Survey data (2021)

Statistically significant indicate ***at 1%, ** at 5%, * at 10% level respectively

In Table (5.22) the value of the F test statistics shows the overall model is highly significant at 1% level. The fitted model explains that 42.7% of the variation in quality of life which is predicted by six independent variables of behaviour changes as the value of adjusted R^2 is 0.427. The multicollinearity statistics by using variance inflation factors (VIF) are also checked and it is indicated that there are no variables exceeding "rule of thumb" of 10 for VIF. Therefore, multicollinearity does not consider the significant problem in the model. In this analysis, behaviour changes variables of belief and willingness to spend strongly effect on quality of life of diabetic patients at 1% level of significant and change in behaviour effects on quality of life of diabetic patients at 5% level of significant. Moreover, standardized coefficients (Beta) of significant factors such as change in behaviour, belief, and willingness to spend indicate that belief has the highest influencing power, willingness to spend has the second highest influencing power and change in behaviour has the least influencing power on quality of life of diabetic patients. The coefficient of change in knowledge, change in attitude and intention to change are not significant. According to the results, two behaviour changes factors, belief and

willingness to spend have 1% significantly positive effect on quality of life of diabetic patients.

Hypothesis 3(b) predicted that the relationship between behaviour changes and quality of life of diabetic patients. In Table (5.22), it can be seen that the relationship between change in behaviour and quality of life is positive and significant ($b = 0.100$, $p < 0.05$), belief and quality of life is positive and significant ($b = 0.233$, $p<0.01$), and willingness to spend and quality of life is positive significant ($b = 0.086$, $p<0.01$). Thus, hypothesis 3(b): behaviour changes; change in behaviour, belief and willingness to spend have positive and significant relationships with quality of life of diabetic patients were accepted.

Regarding the belief of behaviour changes factors, it is found in this study that the role of belief has effect on quality of life of diabetic patients because they believe that the factors such as living away from stress, anxiety and anger, proper dietary habit and doing regular physical exercise are more beneficial than oral drugs and insulin and consequently, their quality of life becomes better.

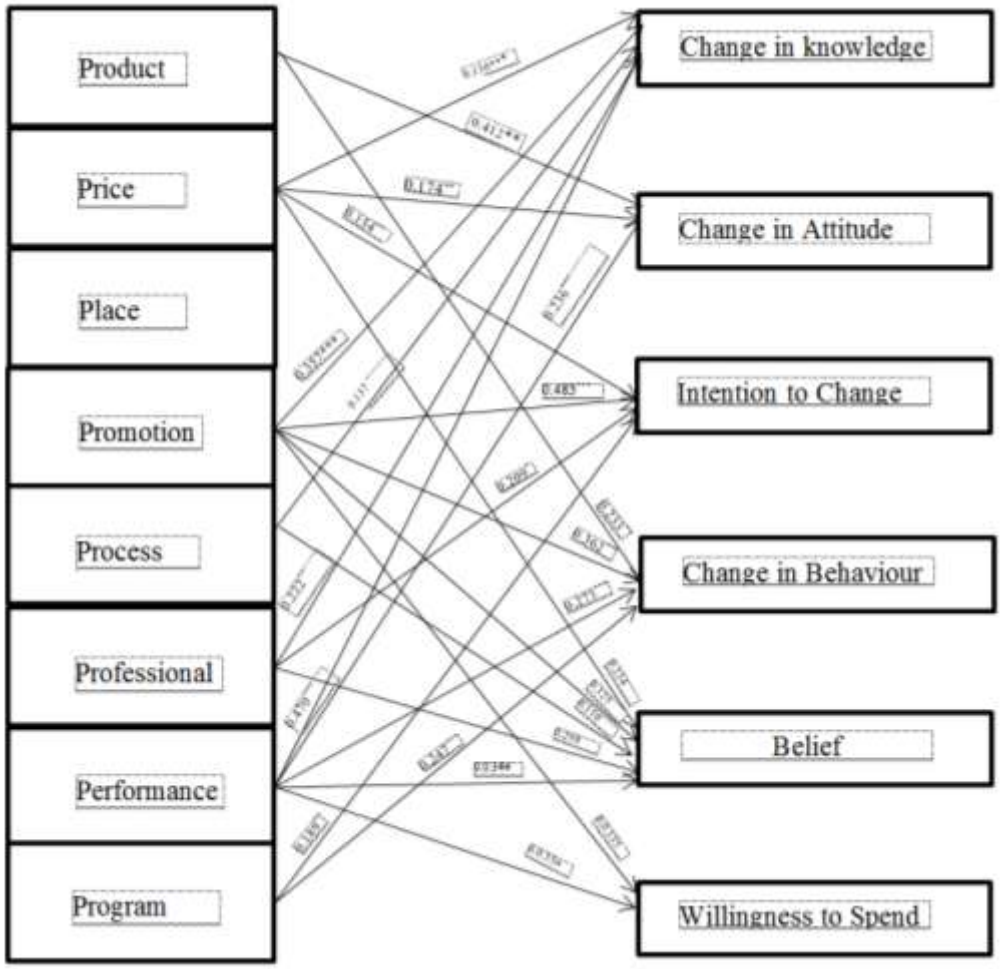
In view of the willingness to spend of behaviour changes factors, it is found in this study that the role of willingness to spend has effect on quality of life of diabetic patients because they take time to do regular blood glucose tests as advised by doctor and they also willingly take time to go to doctors as quickly as possible to get prompt treatment in case of neuropathy and foot ulcers and consequently, their quality of life becomes better.

5.6 Summary of Results

Multiple regressionanalysis was conducted to analyse the relationship between social marketing tools and behaviour changes of diabetic patients in Yangon Region. To achieve the objectives of the study, the three relationships were investigated. The first regression analysis was undertaken to examine the influence of social marketing tools on behaviour changes. Secondly, the moderating effect of demographic characteristics of diabetic patients on relationship between social marketing tools and behaviour changes was analysed. Thirdly, the effect of behaviour changes on health status and quality of life of diabetic patients was analysed. The summaries of results are shown in the following figures.

Figure (5.1) Social Marketing Tools and Behaviour Changes Factors

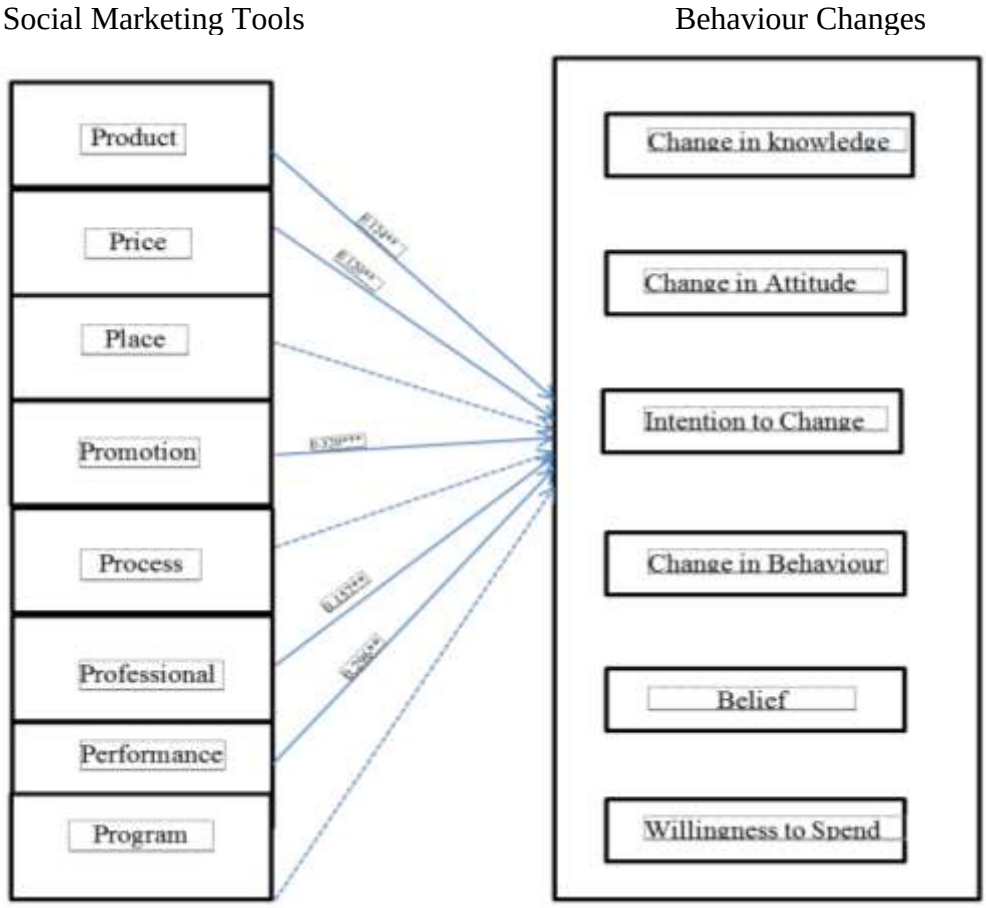
Social marketing Tools Behaviour Changes



Source: Survey data (2021) Notes → Significant Relationship

*** Significant at 1% level, **5% level and *10% level

Figure (5.2) Social Marketing Tools and Behaviour Changes of Diabetic Patients

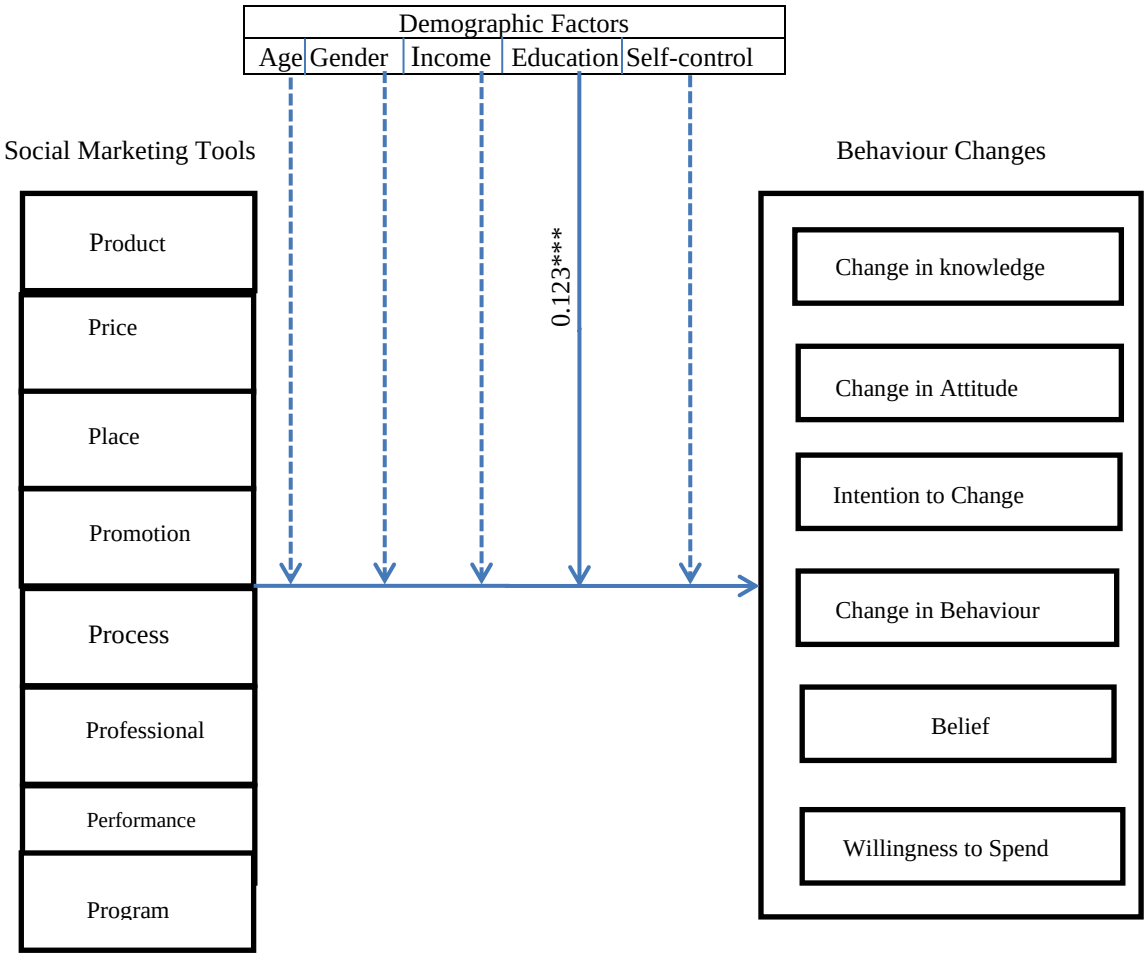


Source: Survey Data (2021)

Notes: ——→ Significant Relationship

*** Significant at 1% level, **5% level and *10% level ---------→ Not Significant Relationship

Figure (5.3) Demographic Factors on Relationship between Social Marketing Tools and Behaviour Changes



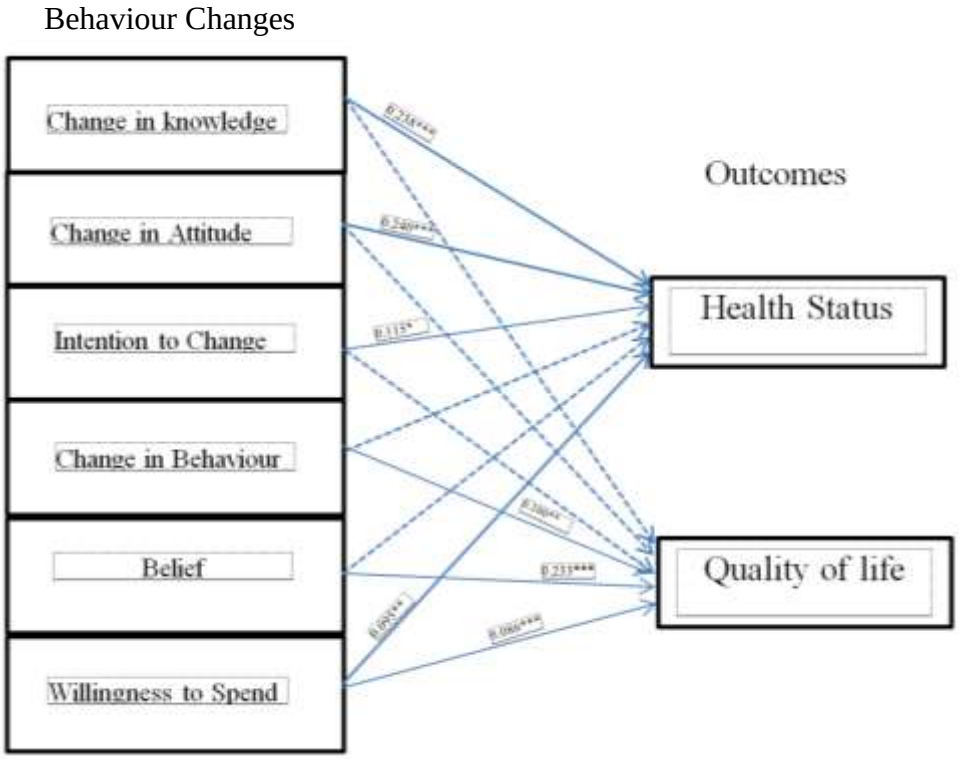
Source: Survey data (2021)

Notes: ——→ Significant Relationship

*** Significant at 1% level, **5% level and *10% level

- - - - → Not Significant Relationship

Figure (5.4) Behaviour Changes and Outcomes of Diabetic Patients



Source: Survey data (2021)

Notes: ——→ Significant Relationship

*** Significant at 1% level, **5% level and *10% level

--------→ Not Significant Relationship

According to the Figure (5.1) result, there is a positive and significant influence of price, promotion, process, professional and performance on change in knowledge of diabetic patients. There is a positive and significant influence of product, price and performance on change in attitude of diabetic patients. There is a positive and significant influence of price, promotion, professional and program on intention to change of diabetic patients. There is a positive and significant influence of product, promotion, performance and program on change in behaviour of diabetic patients. There is a positive and significant influence of price, promotion, process, professional and performance on belief of diabetic patients. There is a positive and significant influence of promotion and performance on willingness to spend of diabetic patients. According to the Figure (5.2) result, there is a positive and significant influence of product, price, promotion, professional and performanceon behaviour changes of diabetic patients. According to the Figure (5.3) result, education factor is the moderating effect on the relationship between social marketing tools and behaviour changes of diabetic patients. According to the Figure (5.4) result, there is a

positive and significant effect of change in knowledge, change in attitude, intention to change and willingness to spend on health status of diabetic patients. And then, there is a positive and significant effect of change in behaviour, belief and willingness to spend on quality of life of diabetic patients.

5.7 Checking the Assumptions of Multiple Linear Regression Model

The first assumption of the multiple linear regressions is that there is a linear relationship between the independent variable and each of the dependent variables. The best way to check the linear relationship is to create scatter plots and then visually inspect the scatter plots for linearity. All these assumptions are mentioned in chapter (4). The results of all assumptions made for multiple regressions are shown in Appendix C. The normal probability plot of independent and dependent variables fails along the linear line. Therefore, the distribution is quite normal. It can be concluded that linearity assumption is generally reasonable. The assumption of homoscedasticity was checked by the residual scatter plot errors between observed and predicted values. A plot of standardized residuals versus predicted values can reveal whether points are equivalently distributed across all values of the independent variables. It is not a funnel shape and the residuals are equal across the regression line. It can be concluded that this assumption is met. In this result, each of the variables of the VIF values is not higher than 10. Therefore, there is no multicollinearity in the model. Cook's distance value for the model is not more than 1 that is show in Appendix C. It indicates that there is no influential (outlier) value in the modal.

CHAPTER VI
CONCLUSION

Based on the results of the data analysis, the last chapter is devoted to draw the conclusion on the results of this study. In this chapter the finding on the research of the influence of social marketing on behaviour changes of diabetic patients in Yangon are presented. At first, findings and discussion on the results of social marketing tools on behaviour changes, and behaviour changes effect on outcomes and its consequences are stated. In the later part, suggestions and recommendations, contribution of the study, and needs for further research study are presented.

6.1 Findings and Discussions

With the aim of analyzing social marketing tools on behaviour changes of diabetic patients, analysis of the moderating effect of demographic characteristics on the relationship between social marketing tools and behaviour changes, the effect of behaviour changes on outcomes such as health status and quality of life are explored.

After carrying out this study, the conclusion is that social marketing tools are important factors to behaviour changes because they help them to adapt better and smooth social changes that are rapidly occurring and leads to improving respondents' (diabetic patients) health status, quality of life and satisfaction in community. The reason of social marketing tools is to be ensuring that the improving level of human capital is sustainable and achieve.

To obtain the objectives of the study, three research questions are set. They are (1) What tools of social marketing are influencing on behaviour changes of diabetic patients in Yangon Region, Myanmar? (2) Is there moderating effect of demographic characteristics of diabetic patients on relationship between social marketing tools and behaviour changes? (3) How do behaviour changes effect on diabetic patients' outcomes? Based on these research questions, three objectives are specified. They are (1) To examine the influence of social marketing tools on behaviour changes of diabetic patients in Yangon Region. (2) To identify the moderating effects of

demographic characteristics on relationship between social marketing tools and behaviour changes of diabetic patients in Yangon Region. (3) To analyze the effect of behaviour changes on outcomes of diabetic patients in Yangon Region.

Based on the research questions and objectives, three main hypotheses were explored to gain the expected behaviour changes through social marketing tools, and outcomes through behaviour changes. The details of three main hypotheses are (1) Social marketing tools have positive and significant effect on behaviour changes. (2) Demographic characteristics have moderating effect on the relationship between social marketing tools and behaviour changes. (3) Behaviour changes have positive and significant effect on diabetic patients' outcomes.

According to research questions, objectives, and hypotheses, the five sections are discussed. Firstly discussed the respondents of diabetic patients profile, secondly discussed the descriptive statistic of product, price, place, promotion, process, professional, performance, and program, behaviour changes, and outcomes (health status and quality of life), thirdly discussed the influence of social marketing tools on behaviour changes of diabetic patients in Yangon Region, fourthly discussed the moderating effects of demographic characteristics on relationship between social marketing tools and behaviour changes, and the last discussed the analyze the effect of behaviour changes on outcomes (health status and quality of life) of diabetic patients in Yangon Region.

Firstly, in selected diabetic patients (respondents), this study selected from the population of 390 who were treated in charity clinics, government hospitals, and private hospitals in Yangon. Among the respondents, female was higher than male and most of the respondents of diabetic patient age was 49-69 years. Moreover, most of the respondent income was 300,001-500,000 kyats (46.4%). The questionnaires with five-point Likert scale items were used to collect the primary data and questionnaire was based on previous literature.

Secondly, social marketing tools of diabetic patients in charity clinics, government hospitals, and private hospitals in the study are explored according the variables such as product, price, place, promotion, process, professional, performance, and program. According to the mean value of social marketing tools, all the variables are higher than 3.5 except program variable and all variables have "agree" level also except program variable. Furthermore, according to survey results questionnaires, based on coming charity clinics, government hospitals, and private hospitals and

answering respondents of questionnaires for social marketing tools, most of the respondents agree and strongly agree (average above 50 percent). It means that respondents agree influencing of social marketing tools such as product, price, place, promotion, process, professional, performance, and program on behaviour changes and it effect on outcomes (health status and quality of life). Mbugua, (2003) defined important of social marketing tools and usage of social marketing strategies in changing public behaviour. Moreover, Casais (2015) defined exploring social marketing policies, and Minent (2011) defined the self- management in diabetes care.

Thirdly, concerning the objective(1), product, price, place, promotion, process, professional, performance, and program influence on behaviour changes of diabetic patients in Yangon Region. According to the objective and hypotheses presented social marketing tools are positively related to behaviour changes of diabetic patients. In this section presented the analysis was performed to observe the relationship between the independent variables of social marketing tools and dependent variable of behaviour changes (change in knowledge, change in attitude, intention to change, change in behaviour, belief, and willingness to spend).

According to analysis results, eight variables in social marketing tools such as (product, price, place, promotion, process, professional, performance, and program), among them performance, promotion and process have positive effect on change in knowledge, product and performance have positive effect on change in attitude, promotion tool has positive effect on intention to change, promotion, performance, product and program have positive effect on change in behaviour, performance, promotion, price and professional have positive effect on belief, performance and promotion have positive effect on willingness to spend and promotion and performance have positive effect on behaviour changes of diabetic patients.

This study shows that the change in knowledge of diabetic patients is mainly due to the influence of social marketing tools (performance, promotion and process) than other social marketing tools. The diabetic patients get much health knowledge and they also possess change in knowledge because the doctors treat the patients patiently, share health knowledge, give add on health knowledge about the diabetic complications as health promotion and also give systematic treatment with planning.

This study exhibits that the change in attitude of diabetic patients is mainly due to the influence of social marketing tools (product and performance) than other social marketing tools. The diabetic patients achieve change in attitude on diabetes because

doctors and social marketers repeatedly give health knowledge to diabetic patients to get good glycemic control such as to avoid improper diet, smoking and alcohol and to have healthy diet and to do regular physical exercise.

This study reveals that the intention to change of diabetic patients is mainly due to the influence of social marketing tool (promotion) than other social marketing tools. The diabetic patients achieve intention to change for diet and lifestyle modification because the doctors give add on health knowledge to patients as health promotion that uncontrolled diabetes can lead to its complications such loss of vision, kidney damage, myocardial infarct and hypertension.

In this study, it is found that the change in behaviour of diabetic patients is mainly due to the influence of social marketing tools (promotion, performance, product and program) than other social marketing tools. The diabetic patients get much health knowledge and achieve change in behaviour because doctors and health staffs do health education campaigns to deliver diabetic information to patients effectively and quickly and Myanmar Diabetes Association holds memorial ceremonies to give opportunities to patients such as free consultation with diabetes specialists, arranging health talks, sharing health education pamphlets and doing mass public physical exercise.

This study conveys that the belief of diabetic patients is mainly due to the influence of social marketing tools (performance, promotion, price and professional) than other social marketing tools. The diabetic patients attain belief that they can live full life-span if they have healthy dietary and lifestyle habits and good glycemic control because the doctors give treatment and guide to prevent further attacks of rare and mild side effects of some anti-diabetic drugs and advise to do necessary blood tests to get early detection and prompt treatment.

This study points out that the diabetic patients have willingness to spend for diabetes is mainly due to the influence of social marketing tools (performance and promotion) than other social marketing tools. As advised by doctors, the diabetic patients willingly spend time and money for regular follow up visits to clinics, for using FDA approved glucometer and for doing necessary blood tests for early detection and prompt treatment of diabetic complications.

This study proves that the behaviour changes of diabetic patients are mainly due to the influence of social marketing tools (promotion and performance) than other social marketing tools. The diabetic patients attain healthy dietary and lifestyle habits

as advised by doctors and behaviour changes because the doctors give add on health knowledge that uncontrolled diabetes can lead to deadly complications, free medical treatment, blood tests and drug supply at government hospitals and charity clinics, sharing diabetic health knowledge on social media and treatment to patients with patience, responsibility and safety.

This finding is in line with the previous study of PSI's Research and Metrics Department., PERForM framework (2004). In this study, the social marketing tools strongly effect on behaviour changes. Moreover, Logic model defined the effect of social marketing on behaviour changes (Firestone et al., 2016), and DSM-IMB model by Liu et al., (2018) defined the social marketing effect on behaviour changes.

Fourthly, according to the objective (2), are analysed the moderating factors of demographic characteristics of the respondents (diabetic patients) include gender, age, income, education, and self-control effect on relationship between social marketing tools and behaviour changes. Among the respondents, there were more female than male, but gender imbalance did not influence the study in any way. According to the analysis, gender, age and income also did not effect on relationship of social marketing tools and behaviour changes. From the data on education level of the respondents, most of them passed a high school. Education factor and self-control factor are the correlated between relationship of the social marketing tools and behaviour changes. The result of the moderating analysis shows that the education level of respondents has effect on the relationship between social marketing tools and behaviour changes.

Finally, concerning the objectives (3), behaviour changes are positively related to outcomes such as health status and quality of life. According to results, six variables in behaviour changes among them change in knowledge and change in attitude have positive effect on health status and belief, and willingness to spend also have positive effect on quality of life.

In this study, it is found that the improvement of health status of diabetic patients is mainly due to the effect of change in attitude and change in knowledge of diabetic patients under the influence of social marketing practices. The health status of diabetic patients has improved because they attain change in attitude and change in knowledge that healthy dietary and lifestyle habits, regular physical exercise and weight reduction to prevent obesity can protect them from diabetic complications and save their lives.

This study exhibits that the improvement of quality of life of diabetic patients is mainly due to the effect of belief and willingness to spend of diabetic patients under the influence of social marketing practices. The diabetic patients become healthier and attain good quality of life because they believe that practices such as living away from stress and anxiety, controlling dietary habits and regular physical exercise are more beneficial in treatment of diabetes than oral and injectable drugs and furthermore, as advised by doctors, they also willingly take time to do regular blood glucose test and to get prompt treatment for neuropathy and foot ulcers.

From the findings, it's clear that there are numerous benefits of behaviour changes through social marketing tools of diabetic patients at health industry and thus, this can improve diabetic patients ' outcomes such as health status and quality of life. This finding is in line with the previous studies Bus, K.A (2015), PERForM framework (2004), Logic model by Firestone et al., (2016) and DSM-IMB model by Liu et al., (2018) the behaviour changes are strongly effect on outcomes.

In conclusion, the health industry should focus on social marketing tools by giving most effort in conferences and discussions, without ignoring the workshops and seminars for sharing information of diabetes mellitus. Therefore, the effectiveness of the social marketing tools can be improved if the health industry could emphasize more in sharing information base on diabetes application as wiki.

6.2 Suggestions and Recommendations

Based on the findings of the study, the following factors including behaviour changes through social marketing tools are needed for better outcomes.

This study recommends that selected diabetic patients should mainly focus on influencing of social marketing tools on behaviour changes. It also shows that the needs of the behaviour changes and social marketing tools should be valued and health industry should take more effort to make better health development via improving social marketing tools. It is also recommended that diabetic patients should take into account both individual and operational needs when carrying out organizational assessment for behaviour changes.

Identification of needs of social marketing tools such as product, price, place, promotion, process, professional, performance, and program should be done more professionally with responsible person as well as the individuals involved together with influencer in society and social marketing specialist. Health sector should

identify the social marketing tools needs in the organization that also covered departmental or team and individual plans. Only when the expectations of the patients and the action of health sector meet, the organization is more sustainable.

Another suggestion in social marketing on health education program should be focused on individualized or diabetic patient centered education that can enhance diabetic patients' self-management on their treatment regimen. As a result, patients can adhere to treatment regimen and manage their blood glucose level in normal limit or control level. A better structured education programme of social marketing intends not only to improve knowledge of diabetic patients but also to change their knowledge, attitude, intention, behaviour, belief and practice towards drug therapy, diet & lifestyle modification and regular exercise should be enhanced. Physical activity is one of the options of diabetes management, which increases insulin sensitivity, improves glycogen storage, allows for use of glucose in muscles more efficiently and reduces mortality. As doing physical exercise is very important for controlling blood sugarlevel and preventing of diabetes complications, every patient need to know about the implications of exercises and be encouraged for doing exercise regularly.

A coordinated agenda for NCD surveillance and research is essential to strengthen the evidence base for cost-effective and culturally appropriate diabetes prevention and control measures by using social marketing tools. As health care organization are dynamic in nature, future studies should be done to investigate to evaluate the efficacy of diabetes education programs based on modern social marketing strategies and behaviourally specific procedures compared with more traditional education programs.

In addition, raising public awareness by using social marketing tools among the general population about prevention of risk factors for NCDs including diabetes mellitus is needed to control the morbidity and mortality of diabetes. The WHO package of essential NCD interventions (PEN) project, which includes standardized tools for health facility assessment, essential diagnostic equipment, essential drugs, counseling of patients, recording and reporting, and community mobilization is an innovative package for increasing access to high-quality, low-cost care for people at high risk for NDCs. This intervention should develop and strengthen in both urban and rural communities.

Individuals are influenced by factors acting at all stages of their life span and risk of developing diabetes including diabetes is more susceptible with increasing age. Diabetes and its risk factors are best addressed throughout the course of people's lives, through promotion of healthy behaviours and early diagnosis test and treatment through childhood, adolescence, adult life to old age. Thus, screening for diabetes is so costly, but it should be implemented in all high-risk groups in order to detect early diagnosis test and provide effective treatment. These should be done effectively at government level, private level and NGO level by using social marketing practices and individual level should participate in these programs.

6.3 Contribution of the Study

The current study contributes to the existing research knowledge by introducing data and findings from different researchers, as well as improving the behaviour changes of diabetic patients through the social marketing tools such as product, price, place promotion, process, professional, performance, and program, and improving the outcomes such as health status and quality of life through behaviour changes of diabetic patients. It also proposes ideas about how diabetic patients' behaviour changes such as change in knowledge, change in attitude, intention to change, change in behaviour, belief, and willingness to spend and outcomes such as health status and quality of life in the health industry can be improved.

In addition, selected charity clinics, government hospitals, and private hospitals in Yangon will benefit directly from this research, because they will become aware of the social marketing tools 8P's that affect the behaviour changes and behaviour changes effect on health status and quality of life of diabetic patients. Invariably, this study will improve whole of the health industry understanding the effect of social marketing tools on behaviour changes of patients' and behaviour changes effect on health status and quality of life.

Furthermore, the diabetic patients not having enough behaviour changes and do not improve their outcomes such as health status and quality of life in organization, and they expend searching for a new way and adjusting to new treatment. Moreover, the diabetic patients' amount is higher and they also search for new clinics and hospitals for their health transaction are presented because they don't have satisfied services. Thus, the issue is obviously relevant to clinics and hospitals' administration, health care services, and effective advice and treatment, while the prevention can be

perceived as better than the cure. Hence it is more advantageous to manage cases of subsequent higher diabetic patients or to control patients' negative side effect instead of spending money and time on solving its detrimental effects. Therefore, above issue is a better way for human capital improve and organization success.

It can be stated that this current study contributes methodologically to understandings of the nature of chosen sample, which is represented by diabetic patients in Yangon. By attempting to understand the phenomenon of the social marketing tools on behaviour changes of diabetic patients in health industry, and the social marketing tools 8P's influences on the behaviour changes, and behaviour changes effect on outcomes of health status and quality of life, the finding of the present study will act as a bridge, filling a gap in the social marketing tools and behaviour changes literature for health industry in Yangon, Myanmar.

Sharing health knowledge to diabetic patients by using social marketing tools widely, under the influence of social marketing, leads to changes in dietary and life styles of diabetic patients such as improvement in diabetic health knowledge, healthy dietary habits and healthy life styles, doing daily regular physical exercise, maintaining body weight to prevent obesity, going regular follow up visits and taking medicines regularly and avoiding smoking and alcohol drinking. These behaviour changes can reduce the prevalence of diabetic complications such as loss of vision, cardiovascular disease, stroke, myocardial infarct, kidney damage, peripheral neuropathy and diabetes foot and amputation and consequently improve the quality of life of diabetic patients.

With provision of proper and adequate health education on treatment regimen, it can be expected that less and less diabetes patients will come to the hospital with late complications and consequently, there would not be necessary for expensive treatment and would reduce the health burden to the family, community and nation.

Timely prevention of diabetes and its complications by means of effective use of social marketing tools leads to freedom from disease suffering at individual level and family level, reduction of healthcare cost at national level, improvement of human resource and productivity, reduction of financial burden and improvement of GDP of the nation. Due to reduction of healthcare cost, the nation itself can enhance the activities of national development sector.

This survey is very beneficial for human resources development because it improves the health status and quality of life not only at individual and family level

but also at organizational and national level. In addition, another beneficial result is that it alleviates the financial burden of the country by reducing the cost for health care sector.

Moreover, it can achieve the aim of the country's fourth Social Objective "Uplift of health, fitness and education standards of the entire nation". It partially contributes to the accomplishment of Nation's health and social objective.

6.4 Needs for Further Research

This section will attempt to explain the requirements of the further studies for the influence of social marketing on behaviour changes of diabetic patients in Yangon. This study only focuses on diabetic patients in Yangon and includes 390 patients from three charity clinics, three government hospitals, and three private hospitals. It does not cover for the entire place such as charity clinics, government hospitals, and private hospitals.

Hence, the need for further research is to encourage the study on the social marketing tools and to give attention on the study on behaviour changes and outcomes of health status and quality of life of all places of charity clinics, government hospitals, and private hospitals in Myanmar. If so, the data obtained from the whole nation of charity clinics, government hospitals, and private hospitals will generate the result more accurate and comprehensive picture to capture the key factors of social marketing tools from the diabetic patients in health industry.

Another need for further research is to focus on using other social marketing tools such as public, pure string, people, partnership, polices, physical evidence, physical environment and other related factors and so on. The main factors in this research are social marketing tools, behaviour changes, and outcomes. Therefore, this is a limitation in this study owing to the other factors such as external environment, organization support, and government support that effect on the diabetic patients in health industry. Moreover, this study only focuses on diabetic patients and it has not been covered for health industry.

Although diabetic patients from government hospitals, private hospitals and charity clinics are studied altogether in this study, further research can be done by separating specific types of hospitals and clinics in different layers. In addition to diabetes mellitus, TB, malaria, HIV, CA, Covid-19 and so on can be studied in further research.

Moreover, the need for further research is to try to obtain the sufficient data and to adjust the numbers of independent variables questions and dependent variables questions. This main focus of this study is influencing of social marketing tools on behaviour changes. However, some external environmental factors also effect on behaviour changes such as cultural, economic factors, and political factors. Therefore, this study can be further investigated by adding other variables which contributes for health industry.

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APPENDICES

APPENDIX A

Influence of Social Marketing on Behaviour Changes of Diabetic Patients

Section (A) **CODE Number: ( )**

Sociodemographic Characteristics

1. Age _____

   (How old were you at your last birthday?)

2. Gender Male ☐ Female ☐

3. Occupation

   (i) Government staff ☐
   (ii) Private staff ☐
   (iii) Own business ☐
   (iv) Manual worker ☐
   (v) Dependent ☐
   (vi) Others ☐

4. Marital Status

   (i) Married ☐
   (ii) Single ☐
   (iii) Divorced ☐
   (iv) Widowed ☐

5. Educational level

   (i) Primary school ☐
   (ii) Middle school ☐
   (iii) High school ☐
   (iv) Diploma ☐
   (v) Graduate ☐
   (vi) Master degree ☐
   (vii) PhD ☐
   (viii) Others ☐

6. Monthly income (own)

   (i) No income ☐
   (ii) Under 3 Lk ☐
   (iii) Over 3 Lk to 5 Lk ☐
   (iv) Over 5 Lk to 7 Lk ☐
   (v) Over 7 Lk to 9Lk ☐
   (vi) Over 9 Lk to 11 Lk ☐
   (vii) Over 11 Lk & above ☐

7. Family Members _____.
8. How long do you suffer Type 2 DM?
   (i) One year ☐
   (ii) Two years ☐
   (iii) Three years ☐
   (iv) Four years ☐
   (v) Five years& above ☐
9. What other diseases do you have?
   (i) None ☐
   (ii) Kidney Disease ☐
   (iii) Heart Disease ☐
   (iv) Eye Disease ☐
   (v) Hypertension ☐
   (vi) Other Related Disease _____
10. Do you have family history of Type 2 DM?
   (i) No ☐
   (ii) Yes ☐
   (iii) Don't Know ☐
11. How long have you been taking treatment for DM with your doctor?
   _____year _____ months.

ANTHROPOMETRIC MEASUREMENTS

12. Height _____
13. Weight _____
14. BMI _____
15. BP _____

Self-control	**Yes**	**No**
16. Do you avoid the food that worsens DM?	☐	☐
17. Is your blood sugar level well controlled?	☐	☐
18. Do you take anti-diabetic drug on time?	☐	☐
19. Do you do physical exercise regularly?	☐	☐
20. Do you visit your doctor regularly?	☐	☐

Section (B)

Product

These are the questions asked to assess the diabetic patients about the idea, knowledge, drugs, treatment and diagnostic tests for diabetes given to them by the doctors and social marketers.

Please answer the questions depending on the extent of your agreement.**(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Information**	**1**	**2**	**3**	**4**	**5**
1.	I have avoided sweetened, salty, fatty and high calorie food and I have been eating healthy food such as beans and vegetables as directed by my doctor.					
2.	I have been avoiding smoking and alcohol drinking as directed by my doctor.					
3.	My doctor said unhealthy diet, doing no exercise and sedentary lifestyle are risk factors for diabetic complications and so I have controlled myself to avoid these bad habits.					
B.	**Drugs**	**1**	**2**	**3**	**4**	**5**
1.	I have been taking anti-diabetic drugs regularly everyday as prescribed by my doctor to control my blood sugar level in normal range and to prevent diabetic complications.					
2.	I have been avoiding non-evidence based medicines and herbal medicines as warned by my doctor.					
3.	Whenever insulin injection is required, it is done according to the scale directed by my doctor only after monitoring of Random Blood Sugar level.					
C.	**Treatment**	**1**	**2**	**3**	**4**	**5**
1.	The doctors thoroughly control blood glucose level of their patients as main treatment instead of symptomatic treatment.					
2.	Diet and lifestyle modification can always be figuratively mentioned as one of the important treatment options given to diabetic patients by the doctors.					
3.	The doctors always give necessary treatment in time for development of diabetic complications before worsening of symptoms in patients with chronic uncontrolled diabetes.					
D.	**Diagnostics Tests**	**1**	**2**	**3**	**4**	**5**
1.	I have been controlling my blood sugar level thoroughly as my doctor said that fasting blood sugar level of less than 126mg/dl is considered as controlled diabetes.					
2.	I have been controlling my blood sugar level carefully as my doctor said that 2HPP level of less than 180mg/dl is considered as controlled diabetes.					
3.	I have been controlling my blood sugar level thoroughly as my doctor said that HbA1c level of less than 6.5% is considered as controlled diabetes.					

Price

These are the questions asked to assess the diabetic patients whether they know or not about the health care services which are given not only with fair price and time saving but also with free of charge given to them by their healthcare providers.

Please answer the questions depending on the extent of your agreement. **(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Information**	**1**	**2**	**3**	**4**	**5**
1.	There has been no need to charge for medical doctor, health staffs and social marketers who are sharing knowledge about diabetes to be complied by diabetic patients.					
2.	The required information about diabetes has been learned with time saving from social media such as facebook, internet websites, newspaper, journals and pamphlets without visiting to medical doctors and health staffs.					
B.	**Drugs**	**1**	**2**	**3**	**4**	**5**
1.	Anti-diabetic drugs can be bought easily with time saving from private hospitals, private clinics and pharmacies.					
2.	Some kinds of anti-diabetic drugs have been shared without charges at government hospitals.					
3.	Some kinds of anti-diabetic drugs can be taken without charge at charity clinics.					
C.	**Treatment**	**1**	**2**	**3**	**4**	**5**
1.	Medical doctors are giving full-time treatment to diabetic patients with fair price and time saving at private hospitals and clinics.					
2.	Doctors on duty from government hospitals have been giving free consultation, free examination and treatment to diabetic patients.					
3.	Doctors from charity clinics are giving free healthcare services to diabetic patients by assigning specific date.					
D.	**Diagnostics tests**	**1**	**2**	**3**	**4**	**5**
1.	Blood and urine tests have been done very fast with fair price and time saving at private hospitals, clinics and laboratories.					
2.	Blood and urine tests can be done, some without charge and some with fair price at government hospitals.					
3.	Some kinds of blood and urine tests can also be done without charge at charity clinics.					

Place

These are the questions asked to assess the diabetic patients whether they know or not where to get the information about DM, anti-diabetic drugs, treatment and diagnostics tests in an easy way.

Please answer the questions depending on the extent of your agreement. **(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Information**	**1**	**2**	**3**	**4**	**5**
1.	I have known the information about DM from medical doctors, health staffs and social marketers in an easy way.					
2.	I have been sharing things to do and things to avoid for DM by word of mouth among diabetic patients.					
3.	I have improved my knowledge about DM by learning from social media such as TV, internet, facebook, newspaper, magazines, journals and pamphlets.					
B.	**Drugs**	**1**	**2**	**3**	**4**	**5**
1.	Anti-diabetic drugs can easily be got from private hospitals and pharmacies.					
2.	Anti-diabetic drugs can easily be got from government hospitals and urban health centers.					
3.	Anti-diabetic drugs can easily be got from charity clinics too.					
C.	**Treatment**	**1**	**2**	**3**	**4**	**5**
1.	Treatment for diabetes can easily be got from private hospitals and general practitioner clinics.					
2.	Treatment for diabetes can also be got in an easy way at outpatient departments from government hospitals.					
3.	Treatment for diabetes can also be got in an easy way at charity clinics from all over the township.					
D.	**Diagnostics tests**	**1**	**2**	**3**	**4**	**5**
1.	I have easily done blood and urine tests for diabetes at private hospital, laboratories and general practitioner clinics.					
2.	I have also done blood and urine tests for diabetes in an easy way at laboratories from government hospitals.					
3.	I have also done blood and urine tests for diabetes in an easy way at charity clinics.					

Promotion

These are questions asked to assess the diabetic patients about the healthcare promotion given to them by their social marketers.

Please answer the questions depending on the extent of your agreement.**(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Information**	**1**	**2**	**3**	**4**	**5**
1.	The doctors give us more health knowledge about diabetes that it can't be totally cured and can lead to blindness and even death if left untreated.					
2.	The doctors always inform us that diet and lifestyle modification is the only way to control diabetes if we do not want to take oral anti-diabetic drugs and insulin injection.					
3.	I have controlled my diabetes well because the doctors always educate us that we could suffer diabetic complications such as renal impairment, stroke, myocardial infarct and hypertension if we are not controlling diabetes thoroughly.					
B.	**Drugs**	**1**	**2**	**3**	**4**	**5**
1.	I have been taking anti-diabetic drugs regularly because the doctors are repeatedly reminding us to do like this to control diabetes.					
2.	Pharmacies and pharmaceutical companies occasionally do sale promotion and provide some anti-diabetic drugs free of charge.					
3.	Charity clinics are also increasing in number and supporting diabetic patients with anti-diabetic drugs free of charge.					
C.	**Treatment**	**1**	**2**	**3**	**4**	**5**
1.	The general practitioners not only given medical treatment to diabetic patients but also do necessary blood tests for them to be able to early detect the development of diabetic complications and give prompt treatment.					
2.	I also have taken treatment for diabetes by tele consultation from doctors serving as health influencers and from telemedicine teams.					
3.	Different kinds of health related associations publish health knowledge video files about exercise for diabetic patients and so I participate and perform according to the video files.					
D.	**Diagnostics Tests**	**1**	**2**	**3**	**4**	**5**
1.	I have done blood tests free of charge at memorial ceremonies held on World Diabetes Day.					
2.	Private hospitals and pharmaceutical companies hold memorial ceremonies and sale promotion events, provide some kinds of blood tests free of charge and I also go and do blood tests there.					
3.	Blood tests such as creatinine and lipid profile can be done with cheap price at private laboratory opened at Dr. Htein's Free Clinic.					

Process

These are the questions asked to assess the diabetic patients about necessary information concerning with diabetes, effective management (which includes treatment and tests) and standardized prescription of drugs given to them by the healthcare providers.

Please answer the questions depending on the extent of your agreement.**(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Information**	**1**	**2**	**3**	**4**	**5**
1.	The doctors explain us (or their patients) about necessary information concerning with diabetes by video conferencing before giving medical treatment.					
2.	The doctor let us (or their patients) read educational posters, journals and pamphlets about diabetes before starting medical treatment.					
3.	The doctors encourage us (or their patients) by giving educational advice about the development of complications of diabetes if we behave inappropriate lifestyles and unhealthy dietary habits.					
B.	**Management**	**1**	**2**	**3**	**4**	**5**
1.	The doctors do pre-assessment about the current dietary habits of their patients (before starting treatment)					
2.	The doctors do body weight measuring and necessary blood tests of their patients.					
3.	The doctors have changed the inappropriate lifestyle and dietary habits of their patients to appropriate ones.					
4.	The doctors persuade the patients' family members to participate in diabetic treatment of their patients by educating them.					
C.	**Drugs**	**1**	**2**	**3**	**4**	**5**
1.	I have been taking anti-diabetic drugs in time as prescribed by my doctor.					
2.	The doctor gives treatment for diabetes not only by prescribing oral anti-diabetic drugs but also by giving insulin injection in required condition.					
3.	I have been visiting my doctor regularly as he always recalls me in order to continue prescribing necessary anti-diabetic drugs.					

Professional

These are the questions asked to assess the diabetic patients whether they know or not about the effective and standard healthcare services given to them by the professional healthcare providers.

Please answer the questions depending on the extent of your agreement. **(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Advice and Treatment**	**1**	**2**	**3**	**4**	**5**
1.	I have received healthcare advice and treatment for diabetes from general physicians.					
2.	I have received healthcare advice and treatment for diabetes from endocrinologists.					
3.	I have received healthcare advice and treatment for diabetes from nutritionists.					
4.	I have received healthcare advice and treatment for diabetes from general practitioners.					
B.	**Drugs**	**1**	**2**	**3**	**4**	**5**
1.	I have been taking anti-diabetic drugs regularly as prescribed only by the physicians and general practitioners.					
2.	I always buy anti-diabetic drugs from pharmacies where professional and infallible registered pharmacists take charge.					
3.	I never take any medicines which are not prescribed by doctors and also injectable drugs, oral drugs and herbal medicines that are not evidence-based.					
C.	**Diagnostic Tests**	**1**	**2**	**3**	**4**	**5**
1.	I regularly do blood glucose testing as prescribed by doctor.					
2.	I do HbA1c testing three monthly as prescribed by general physician.					
3.	I have done blood tests concerning with renal function including creatinine as prescribed by endocrinologist.					
4.	I have done lipid profile testing as prescribed by endocrinologist.					
D.	**Diet and Lifestyle**	**1**	**2**	**3**	**4**	**5**
1.	I have been eating healthy diet compatible with diabetes as advised by doctor.					
2.	I have been avoiding sweetened food and sugar instituted matter as reminded by doctor.					
3.	I do regular physical exercise everyday including walking at least 30 minutes per day as guided by doctor.					

Performance

These are the questions asked to assess the diabetic patients about their experience and feeling at healthcare unit concerning with facility, proficiency, responsibility, safety, security and responsiveness given to them by their healthcare providers.

Please answer the questions depending on the extent of your agreement. **(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

A.	**Ability**	**1**	**2**	**3**	**4**	**5**
1.	The healthcare providers give treatment to diabetic patients patiently although the number of patients is massive.					
2.	The healthcare providers do diabetes awareness campaigns to convey things to do, things to avoid and things to be aware concerning with diabetes effectively and quickly to diabetic patients.					
3.	The healthcare providers repeatedly give educational advice to non-compliant patients with uncontrolled diabetes to become compliant ones with good glycemic control.					
B.	**Responsibility**	**1**	**2**	**3**	**4**	**5**
1.	The doctors always guide and treat us for occasional and rare mild side effects of anti-diabetic agents and also educate us to prevent repeated attacks.					
2.	For me, the only reason of becoming good glycemic control is the careful and conscientious treatment of my doctor.					
3.	I have been suffering none of the complications of diabetes due to conscientious and methodical treatment of my doctor.					
C.	**Safety**	**1**	**2**	**3**	**4**	**5**
1.	I have been reliably taking the anti-diabetic drugs prescribed by my doctor because these drugs are FDA approved and registered in Myanmar.					
2.	My blood glucose level test results are reliably accurate because my doctor uses good quality glucometer.					
3.	My doctor always keeps my documents about diabetes confidential not to leak outside.					

Program

These are the questions asked to assess the diabetic patients about DM program such as World Diabetes Day, MMDA, Diabetes Wiki application and WHO PEN project made for them by their healthcare providers and social marketers.

Please answer the questions depending on the extent of your agreement. **(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5).**

A.	**World Diabetes Day**	**1**	**2**	**3**	**4**	**5**
1.	I have received free consultation and free medical check-up given by diabetologist.					
2.	I have improved knowledge about diabetes because of diabetes health talk, sharing diabetes education pamphlet and sharing health education which are done on that day.					
3.	I have participated in doing cumulative public physical exercise, playing games and giving prizes to winners and giving memorable presents to participants on that day.					
4.	The theme for Diabetes Awareness Month and World Diabetes Day 2019 is “Family and Diabetes”. (rom;prsm;use;rmzVq;csao;csa&m*grjzpatmiumu , pV)					
B.	**MMDA**	**1**	**2**	**3**	**4**	**5**
1.	MMDA was established in 2014 and it still exists as a trusty association for diabetic patients.					
2.	According to the aim of the association “Health Education and Prevention of Diabetes”, the association provides health knowledge and much support for diabetic patients.					
3.	The video files about diabetes health knowledge published on facebook page of MMDA have been watched.					
4.	MMDA frequently holds memorial ceremonies and free consultation with specialists, doing blood tests and giving anti-diabetic drugs free of charge are available on this day.					
5.	The health education video with the title of “Exercise is Medicine” with voluntary participation of Diabetes Specialist Professor Dr. Tint Swe latt has been published online and I also have followed the ways in this video.					
C.	**"Diabetes Wiki"application**	**1**	**2**	**3**	**4**	**5**
1.	I have learned diabetes knowledge by watching short health education videos which are displayed in Diabetes Wiki application.					
2.	I have gained much health knowledge about diabetes by watching the explanations about symptoms and complications of diabetes in Diabetes Wiki application.					
3.	I have been complying the ways described in this application concerning with the importance of diet and lifestyle modification and how to handle diabetes by the patient himself.					

D.	WHO PEN project	1	2	3	4	5
1.	WHO PEN project was established in Myanmar in 2012-2013 and it is very supportive for diabetic patients.					
2.	It makes to get more treatment coverage for DM without the need of doctors.					
3.	It makes to get DM treatment just from midwives and health assistants.					
4.	It reduces DM workload in hospitals.					
5.	It makes DM patients in rural areas accessible to treatment.					

Section (C)

Behaviour Changes

These are the question asked to assess the diabetic patients whether their general knowledge of DM, their attitude, their behaviour, the belief and willingness have changed or not after social marketing.

Please answer the questions depending on the extent of your agreement. **(If you agree the following, you must choose one answer, choose; Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree =4, Strongly agree = 5)**

No.	Particular	1	2	3	4	5
A.	**Change in Knowledge**					
1.	After I have known that one of the causes of DM is unhealthy dietary habit and inappropriate lifestyle leading to increased blood sugar level, I am used to living in a correct way of lifestyle and dietary habit.					
2.	After I have known that unhealthy dietary habits can lead to diabetic complications, I am used to having healthy dietary habit.					
3.	After I have known the accurate sample size of balanced diet (half is vegetable, one-fourth is rice and another one-fourth is meat), I could change my dietary habit to a healthy way.					
B.	**Change in Attitude**					
1.	After I have known that obesity is the most significant factor leading to type 2 DM, I have been behaving healthy lifestyle and healthy dietary habit to prevent obesity.					
2.	Regular physical exercise and weight reduction can prevent development of diabetes and can save our lives from danger of diabetes.					
3.	I am now aware to control my blood sugar level within normal limit as I know the symptoms of hypoglycemia and hyperglycemia.					
C.	**Intention to Change**					
1.	I am used to doing regular physical exercise daily and I can also reduce my body weight.					
2.	After I have known that diabetic patient should avoid smoking and alcohol drinking, I have been practicing these good habits.					
3.	After knowing that diabetic patients should not behave inactive lifestyle such as watching TV for more than three hours, I have been avoiding such bad habit.					

D.	**Change in Behaviour**					
1.	I have been doing regular physical exercise like walking daily by taking special time for it.					
2.	Although I ate fat and sugar related food previously, I am now having plenty of vegetables, fruits and whole grains.					
3.	After I have known that physically inactive lifestyle such as prolonged sleeping and prolonged sitting can contribute to increased blood glucose level, I have been avoiding these bad habits.					
E.	**Belief**					
1.	I believe that eating balanced diet, reducing weight and regular physical exercise are superior than taking anti-diabetic drugs and insulin injection in management of DM.					
2.	I believe that I have to change my habit to live away from anxiety, stress and anger.					
3.	I go regular follow up visit to my doctor with great expectations for diabetes.					
F.	**Willingness to Spend**					
1.	I specially take time to check my blood sugar level regularly as directed by my doctor.					
2.	I visited to my doctor in time for foot ulcer and nerve damage and I took enough time to receive treatment for it.					
3.	I have been voluntarily sharing knowledge about diabetes such as things to do and things to avoid to other diabetic patients and giving advice to them to go regular visit to their doctors.					

Section (D)

I. Health Status

These are the questions asked to assess the diabetic patients about the improvement of their health status.

Please answer the questions depending on the extent of your health status. **(If you agree the following, you must choose one answer, choose; Very poorly controlled=1, Poorly controlled=2, Neutral=3, Controlled= 4, Well controlled= 5)**

No	Particular	1	2	3	4	5
1.	2hrs post-prandial (2HPP)					
2.	Fasting Blood sugar (FBS)					
3.	HbA1c (3 monthly)					
4.	Creatinine					
5.	Lipid profile					

II. Quality of Life

Instruction

These are the questions asked to diabetic patients to assess how they feel about the impact of diabetes on their quality of life. Their response will help us find ways for improving diabetes care. If they are not sure about which response to give to a question, please choose the one that seems to be the most appropriate. We would like to request you to attempt to answer all questions.

However, the choice or decision to not to answer a particular question is entirely yours. You can always find the help of the interviewer if you have any confusion about the meaning of some questions or choice.

(A) These are the questions asked to assess the diabetic patients about role limitation due to their physical health.

(Key: 1=Always, 2= Frequently, 3= Often, 4 = Sometimes, 5 = Never)

No	Particular	1	2	3	4	5
1.	How often does DM limit your social life?					
2.	How often does DM affect your efficiency at work?					
3.	To what extent do you avoid travelling (business tour, holiday tour) because of your DM?					

(B)These are the questions asked to assess the diabetic patients about their extent of physical endurance within last three months.

(Key: 1=Always, 2= Frequently, 3= Often, 4 = Sometimes, 5 = Never)

No	Particular	1	2	3	4	5
1.	Due to your diabetic condition, did you fail to do your vigorous activities like lifting heavy weight, running and jumping?					
2.	Due to your diabetic condition, did you fail to do climbing mountains, continuous walking and ascending high apartments?					
3.	Due to your diabetic condition, did you fail to do stooping forward, sitting knee chest position and body rotation?					

(C) These are the questions asked to assess the diabetic patients about their treatment satisfaction. Please tick any one option.

(Key: 1=Very dissatisfied, 2 = dissatisfied, 3= Neutral, 4 = Satisfied, 5 = Very satisfied)

No	Particular	1	2	3	4	5
1.	How satisfied are you with your current diabetes treatment?					
2.	How satisfied are you with duration of time it takes to manage your diabetes?					
3.	A person with diabetes needs to exercise of 30 minute per day, 5 days a week. Keeping this in mind, how satisfied are you with the time you spend for exercising?					

(D) These are questions asked to assess the diabetic patient about frequency of diabetic symptom they suffered.

(Key: 1=Always, 2= Frequently, 3= Often, 4 = Sometimes, 5 = Never)

No	Particular	1	2	3	4	5
1.	In the last three months, how often have you had thirst or dry mouth?					
2.	In the last three months, how often have you felt excessive hunger?					
3.	In the last three months, how often have you had frequent urination?					

(E) These are questions asked to assess the diabetic patients how diabetes has affected them and their family's finances.

(Key: 1**=** A lot, 2 = Highly, 3 = Little, 4 = Very little, 5 = Not at all)

No	Particular	1	2	3	4	5
1.	To what extent has your priority of expenditure shifted towards diabetes management?					
2.	To what extent has your family budget got affected by the expenses related to diabetes management?					
3.	To what extent has your diabetes limited your expenditure on other aspects of life (movies, outings, parties, etc)?					

(F) These are questions asked to assess the diabetic patients about their diet satisfaction.

(Key: 1**=**Always, 2= Frequently, 3= Often, 4 = Sometimes, 5 = Never)

No	Particular	1	2	3	4	5
1.	How many times did you have unhealthy diet inappropriate for diabetes?					
2.	How often do you feel depressed because of your diabetes?					
3.	All people want to fulfill certain roles and lead their lives in a purposeful manner. How often do you feel that you have been able to lead your life in the same way?					

Thank you very much for your time.

APPENDIX B

List of Government Hospitals in Yangon

1) Yangon General Hospital
2) Thingangyun General Hospital (Sanpya General Hospital)
3) North Okkalapa General Hospital
4) Insein General Hospital
5) East Yangon General Hospital
6) New Yangon General Hospital
7) Hlaing Thar Yar General Hospital
8) West Yangon General Hospital
9) Yangon Specialty Hospital (500 Bedded)
10) Universities Hospital
11) Yangon Workers' Hospital
12) North Dagon Township Hospital
13) South Okkalapa Women and Children Hospital
14) Central Women's Hospital (Ahlone)
15) Aung San Tuberculosis Hospital
16) Yangon Eye Hospital
17) Yangon Children Hospital
18) Htan Ta Pin Hospital
19) Yankin Children Hospital
20) Dagon Child/Infant Hospital
21) Wai Bar Gi Specialty Hospital (Infectious Diseases)
22) Bedded 100 Tharkayta Hospital
23) Yangon ENT Hospital
24) Yangon Orthopaedic Hospital
25) Yangon Mental Health Hospital
26) Yangon Women's Hospital (Bahan)

(Source: http://www.yangondirectory.com)

List of Private Hospitals in Yangon

1) OSC Hospital
2) Victoria Hospital
3) Shwe La Min Hospital
4) Asia Royal Hospital
5) SSC Hospital
6) Aung Yadanar Hospital
7) La Gabar Hospital
8) Pun Hlaing Siloam Hospital
9) Sakura Hospital
10) Parami General Hospital
11) Bahosi Hospital
12) Ma Har Myaing Hospital
13) Shwe Baho Hospital
14) Tat Lann Hospital
15) Ar Yu Hospital
16) Thu Kha Gabar Hospital
17) Hlaing Taw Win Hospital
18) Moe Myittar Hospital
19) Grand Hantha Hospital
20) Chan Myae Hospital
21) Chan Thar Hospital
22) Green Cross Hospital
23) Kan Thar Yar International Hospital
24) Academy Hospital
25) Moe Thee Hospital
26) Rose Hill Hospital
27) Pinlon Hospital
28) Samitivej International Hospital
29) Myint Myat Taw Win Clinic
30) Thu Kha Waddy Hospital
31) Thamine General Hospital
32) Thiri Sandar Hospital
33) Thukha Kywel Hospital
34) Aye Chan Aung Hospital
35) Bangkok Hospital

36) KBC Hospital (KarenBaptest Convention Hospital)
37) Kwekabaw Hospital
38) Kaung Hospital
39) Kembangan-U.H.C Hospital
40) Lin Paragu Hospital
41) Mingalar Hospital
42) Mingalar Mon Hospital
43) Mudita Hospital
44) Muslim Free Hospital
45) Mya Parami Hospital
46) MyittarOo Hospital
47) New Life Hospital
48) Paragu Hospital
49) Parkway Hospital
50) Shin Par Ku Hospital
51) Shwe Padauk Hospital
52) Shwe Taw Win Hospital
53) Yadanar Hospital
54) YarzaDirit Hospital
55) Gadayhtay Hospital
56) Jivitadana Sangha Hospital

(Source: http://www.yangondirectory.com)

List of Charity Clinics in Yangon

Name of Township	Name of Charity Clinic
1. South Dagon	1) Ah Lin Yaung Foundation
	2) Yu Ya Charity Clinic
	3) Dr. Htein's Clinic
	4) Better Burmese Health Care (BBHC)
	5) Industrial Zone (1) Administration Committee Clinic
	6) Maternal and Child Welfare Association
2. East Dagon	7) AhnandaMyittar Monastery Charity Clinic
3. Dagon Seikkan	8) Aryu Charity Clinic
4. Mingalardon	9) Dhamma Paragu Charity Clinic
	10) Thiri Charity Clinic
	11) Dr. Htein's Clinic
5. South Okkalapa	12) Dr. Htein's Clinic
	13) People's Health Foundation Charity Clinic
	14) Pinn Ya Charity Clinic
	15) Maternal and Child Welfare Association
6. Lanmadaw	16) Hna Lone Hla Foundation
7. Hlaing Thar Yar	17) Lu Yae Chun Charity Clinic
	18) Tun Charity Clinic
	19) People's Health Foundation Charity Clinic
8. Bahan	20) MogokeVipasana Dhamma Yeik Thar
	21) PhyoSaydanar
9. North Okkalapa	22) Myittar Yay Sin Charity Clinic
	23) Yaung Chi Oo Charity Clinic
	24) HtaWun Bae Quarter Charity Clinic
	25) Maternal and Child Welfare Association
10. Seik Gyi Kha NaungTo	26) PhyoSaydanar
11. Dawbon	27) Pyinnyar Thar Ya Health Foundation
	28) Maternal and Child Welfare Association

12. Pazundaung	**29) Pyit Tine Htaung**
	30) Saydanar (Hantharwady U Win Tin Foundation)
	31) Vigen Myanmar Charity Clinic
	32) Nuga Best Charity Clinic
	33) ShweYaung Hnin Si Cancer Foundation
	34) Maternal and Child Welfare Association
13. Yankin	35) 1RBIS Charity Clinic
	36) ShwePyi Hein
	37) Tamil Hindu Religiousfund Trust Clinic
14. Thingangyun	38) SandaThukha
15. Kamayut	39) Shwe Pyi Hein
	40) Maternal and Child Welfare Association
16. North Dagon	41) Thukha Ah Lin
17. Hlaing	42) Maternal and Child Welfare Association
18. Insein	43) Myat Kutho Charity Clinic
	44) Phyu Sin Myittar Charity Clinic
	45) Myanma Community Promotion Charity Clinic (MCP)
19. Pabedan	46) Cholia Special
20. Botahtaung	47) Guru Nanak Free Dispensary
21. Sanchaung	48) Hanbit Nano Medical Center
	49) Myanmar Liver Foundation
22. Latha	50) Khant Hope Temple
23. Shwe Pyi Thar	51) Maternal and Child Welfare Association
24. Thaketa	52) Medecins Sans Frontieres
25. Hlegu	53) Dr. Htein's Clinic
26. Than Lyin	54) MyittarYeik Charity Clinic
	55) ThanLyin Social Security Board

(Source: http://www.yangondirectory.com)

APPENDIX C

(a) Frequencies Test

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	28-48years	86	22.1	22.1	22.1
	49-69years	231	59.2	59.2	81.3
	Above69 years	73	18.7	18.7	100.0
	Total	390	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	138	35.4	35.4	35.4
	Female	252	64.6	64.6	100.0
	Total	390	100.0	100.0	

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	government staff	30	7.7	7.7	7.7
	private staff	6	1.5	1.5	9.2
	own business	58	14.9	14.9	24.1
	manual workers	26	6.7	6.7	30.8
	dependent	177	45.4	45.4	76.2
	others	93	23.8	23.8	100.0
	Total	390	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	others	3	.8	.8	.8
	primary	82	21.0	21.0	21.8
	middle	52	13.3	13.3	35.1
	high school	154	39.5	39.5	74.6
	diploma	6	1.5	1.5	76.1
	graduate	78	20.0	20.0	96.1
	Master	12	3.1	3.1	99.2
	PhD	3	.8	.8	100.0
	Total	390	100.0	100.0	

Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No income	11	2.8	2.8	2.8
	Under 300000kyats	153	39.3	39.3	42.1
	300001-500000kyats	181	46.4	46.4	88.5
	500001-700000kyats	11	2.8	2.8	91.3
	700001-900000kyats	11	2.8	2.8	94.1
	900001-1100000kyats	11	2.8	2.8	96.9
	1100001 kyats & above	12	3.1	3.1	100.0
	Total	390	100.0	100.0	

Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	married	270	69.2	69.2	69.2
	single	47	12.1	12.1	81.3
	divorced	6	1.5	1.5	82.8
	widowed	67	17.2	17.2	100.0
	Total	390	100.0	100.0	

Foods Avoid (Self Control)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	264	67.7	67.7	67.7
	No	126	32.3	32.3	100.0
	Total	390	100.0	100.0	

Blood Sugar control (Self Control)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	154	39.5	39.5	39.5
	No	236	60.5	60.5	100.0
	Total	390	100.0	100.0	

Take Medicine Regularly (Self-Control)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	350	89.7	89.7	89.7
	No	40	10.3	10.3	100.0
	Total	390	100.0	100.0	

Doing Exercises(Self Control)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	150	38.5	38.5	38.5
	No	240	61.5	61.5	100.0
	Total	390	100.0	100.0	

Follow Up Doctor Regularly (Self Control)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	147	37.7	37.7	37.7
	No	243	62.3	62.3	100.0
	Total	390	100.0	100.0	

(b) Validity Test

Product

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.863
Bartlett's Test of Sphericity	Approx. Chi-Square	1236.704
	Df	36
	Sig.	.000

Price

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.870
Bartlett's Test of Sphericity	Approx. Chi-Square	1660.618
	df	21
	Sig.	.000

Place

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.819
Bartlett's Test of Sphericity	Approx. Chi-Square	1498.180
	df	28
	Sig.	.000

Promotion

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartlett's Test of Sphericity	Approx. Chi-Square	1333.502
	df	28
	Sig.	.000

Process

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett's Test of Sphericity	Approx. Chi-Square	1950.983
	df	36
	Sig.	.000

Professional

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.864
Bartlett's Test of Sphericity	Approx. Chi-Square	2329.568
	df	28
	Sig.	.000

Performance

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.729
Bartlett's Test of Sphericity	Approx. Chi-Square	2129.772
	df	21
	Sig.	.000

Program

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.803
Bartlett's Test of Sphericity	Approx. Chi-Square	3029.200
	df	21
	Sig.	.000

Behaviour Changes

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	2032.267
	df	45
	Sig.	.000

Quality of Life

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.827
Bartlett's Test of Sphericity	Approx. Chi-Square	1961.746
	df	28
	Sig.	.000

Health Status

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.817
Bartlett's Test of Sphericity	Approx. Chi-Square	875.128
	df	10
	Sig.	.000

(c) Reliability Test

Product

Reliability Statistics

Cronbach's Alpha	N of Items
.836	9

Price

Reliability Statistics

Cronbach's Alpha	N of Items
.891	7

Place

Reliability Statistics

Cronbach's Alpha	N of Items
.853	8

Promotion

Reliability Statistics

Cronbach's Alpha	N of Items
.847	8

Process

Reliability Statistics

Cronbach's Alpha	N of Items
.897	9

Professional

Reliability Statistics

Cronbach's Alpha	N of Items
.915	8

Performance

Reliability Statistics

Cronbach's Alpha	N of Items
.886	7

Program

Reliability Statistics

Cronbach's Alpha	N of Items
.903	7

Behaviour Changes

Reliability Statistics

Cronbach's Alpha	N of Items
.890	17

Quality of Life

Reliability Statistics

Cronbach's Alpha	N of Items
.866	12

Health Status

Reliability Statistics

Cronbach's Alpha	N of Items
.844	5

(d) Determinant Test

Product

Correlation Matrix[a]

a. Determinant = .040

Price

Correlation Matrix[a]

a. Determinant = .014

Place

Correlation Matrix[a]

a. Determinant = .021

Promotion

Correlation Matrix[a]

a. Determinant = .031

Process

Correlation Matrix[a]

a. Determinant = .006

Professional

Correlation Matrix[a]

a. Determinant = .002

Performance

Correlation Matrix[a]

a. Determinant = .004

Program

Correlation Matrix[a]

a. Determinant = .000

Behaviour Change

Correlation Matrix[a]

a. Determinant = .005

Quality of Life

Correlation Matrix[a]

a. Determinant = .006

Health Status

Correlation Matrix[a]

a. Determinant = .104

(e) Component Matrix

Component Matrix[a]

	Component
	1
Product_Information_1	.678
Product_Information_2	.707
Product_Information_3	.702
Product_Treatment_1	.628
Product_Treatment_2	.757
Product_DiagnosticsTest_1	.822
Product_DiagnosticsTest_2	.527
Product_DiagnosticsTest_3	.764
Product_Drugs_3	.434

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Price_Information_1	.775
Price_Information_2	.611
Price_Drugs_1	.809
Price_DiagnosticsTest_1	.812
Price_Treatment_1	.812
Price_Treatment_2	.858
Price_Treatment_3	.848

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Place_information_1	.841
Place_information_2	.789
Place_information_3	.806
Place_drugs_1	.611
Place_drugs_2	.660
Place_treatment_1	.771
Place_treatment_2	.792
Place_DiagnosticsTests_2	.467

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Promotion_Information_1	.807
Promotion_Information_2	.787
Promotion_Informaiton_3	.763
Promotion_Drugs_2	.845
Promotion_Drugs_3	.754
Promotion_DiagnosticsTest_1	.593
Promotion_DiagnosticsTest_2	.619
Promotion_Treatment_3	.528

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Process_Information_1	.534
Process_Information_2	.750
Process_Information_3	.692
Process_management_1	.740
Process_management_2	.813
Process_management_3	.796
Process_management_4	.794
Process_Drugs_1	.780
Process_Drugs_2	.805

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Professional_adviceandtreatment_1	.886
Professional_adviceandtreatment_2	.856
Professional_adviceandtreatment_3	.888
Professional_drugs_2	.803
Professional_drugs_3	.701
Professional_diagnosticstest_1	.815
Professional_diagnosticstest_2	.774
Professional_dietandlifestyle_3	.647

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Performance_Ability_1	.786
Performance_Ability_2	.738
Performance_Ability_3	.643
Performance_Responsibility_1	.829
Performance_Responsibility_2	.863
Performance_Safety_2	.808
Performance_Safety_3	.782

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
Program_WorldDiabetesDay_2	.882
Program_WorldDiabetesDay_3	.882
Program_WorldDiabetesDay_4	.832
Program_MyanmarDiabetesAssociation_1	.594
Program_DiabetesWiki_1	.814
Program_DiabetesWiki_3	.858
Program_WHOPENProject_2	.700

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
BehaviourChange_Knowledge1	.832
BehaviourChange_Knowledge2	.827
BehaviourChange_Knowledge3	.829
BehaviourChange_Attitude1	.668
BehaviourChange_Attitude2	.712
BehaviourChange_Attitude3	.703
BehaviourChange_Intention1	.590
BehaviourChange_Intention2	.704
BehaviourChange_Intention3	.722
BehaviourChange_Behaviour1	.711
BehaviourChange_Behaviour2	.713
BehaviourChange_Behaviour3	.750
BehaviourChange_Belief1	.789
BehaviourChange_Belief2	.772
BehaviourChange_Belief3	.787
BehaviourChange_Willngness1	.650
BehaviourChange_Willngness2	.622

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
PhysicalHealth_2	.494
PhysicalHealth_3	.523
PhysicalEndurance_1	.724
PhysicalEndurance_3	.781
TreatmentSatisfaction_1	.743
TreatmentSatisfaction_2	.894
DiabeticSymptom_1	.562
DiabeticSymptom_2	.519
FamilyFinance_2	.882
FamilyFinance_3	.813
DietSatisfaction_1	.625
DietSatisfaction_3	.608

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Component Matrix[a]

	Component
	1
HealthS_1	.803
HealthS_2	.853
HealthS_3	.821
HealthS_4	.861
HealthS_5	.579

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

(f) Factor Analysis

Product

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.146	46.063	46.063	4.146	46.063	46.063
2	.934	10.382	56.446			
3	.890	9.887	66.332			
4	.754	8.377	74.709			
5	.648	7.196	81.905			
6	.543	6.037	87.942			
7	.446	4.955	92.897			
8	.377	4.188	97.085			
9	.262	2.915	100.000			

Extraction Method: Principal Component Analysis.

Price

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.405	62.924	62.924	4.405	62.924	62.924
2	.900	12.854	75.778			
3	.470	6.716	82.494			
4	.408	5.823	88.317			
5	.352	5.032	93.349			
6	.293	4.191	97.540			
7	.172	2.460	100.000			

Extraction Method: Principal Component Analysis.

Place

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.229	52.862	52.862	4.229	52.862	52.862
2	.974	12.169	65.031			
3	.798	9.979	75.010			
4	.622	7.773	82.783			
5	.498	6.226	89.009			
6	.460	5.749	94.758			
7	.221	2.768	97.526			
8	.198	2.474	100.000			

Extraction Method: Principal Component Analysis.

Promotion

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.150	51.872	51.872	4.150	51.872	51.872
2	.984	12.297	64.169			
3	.677	8.461	72.630			
4	.642	8.027	80.657			
5	.569	7.112	87.768			
6	.415	5.187	92.956			
7	.347	4.343	97.298			
8	.216	2.702	100.000			

Extraction Method: Principal Component Analysis.

Process

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.055	56.170	56.170	5.055	56.170	56.170
2	.959	10.654	66.824			
3	.812	9.027	75.851			
4	.597	6.634	82.485			
5	.413	4.588	87.073			
6	.365	4.053	91.126			
7	.322	3.582	94.707			
8	.276	3.067	97.774			
9	.200	2.226	100.000			

Extraction Method: Principal Component Analysis.

Professional

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.126	64.075	64.075	5.126	64.075	64.075
2	.911	11.386	75.461			
3	.604	7.546	83.008			
4	.459	5.735	88.743			
5	.323	4.042	92.785			
6	.296	3.702	96.487			
7	.165	2.057	98.544			
8	.116	1.456	100.000			

Extraction Method: Principal Component Analysis.

Performance

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.271	61.019	61.019	4.271	61.019	61.019
2	.929	13.277	74.295			
3	.676	9.661	83.956			
4	.624	8.907	92.864			
5	.302	4.312	97.176			
6	.142	2.025	99.201			
7	.056	.799	100.000			

Extraction Method: Principal Component Analysis.

Program

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.666	66.659	66.659	4.666	66.659	66.659
2	.900	12.863	79.522			
3	.796	11.371	90.894			
4	.436	6.228	97.122			
5	.094	1.343	98.464			
6	.061	.866	99.331			
7	.047	.669	100.000			

Extraction Method: Principal Component Analysis.

Behaviour Changes

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.196	51.963	51.963	5.196	51.963	51.963
2	.982	7.821	59.784			
3	.901	6.032	65.816			
4	.843	5.421	71.237			
5	.761	4.005	75.242			
6	.711	3.812	79.054			
7	.643	3.102	82.156			
8	.521	2.943	85.099			
9	.443	2.740	87.839			
10	.407	2.343	90.182			
11	.371	2.281	92.463			
12	.326	1.892	94.355			
13	.278	1.761	96.116			
14	.209	1.205	97.321			
15	.184	1.002	98.323			
16	.092	.961	99.284			
17	.034	.716	100.000			

Extraction Method: Principal Component Analysis.

Quality of Life

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.276	53.446	53.446	4.276	53.446	53.446
2	.995	8.371	61.817			
3	.863	7.012	68.829			
4	.783	6.124	74.953			
5	.642	5.081	80.034			
6	.511	4.121	84.155			
7	.432	4.061	88.216			
8	.310	3.812	92.028			
9	.245	3.184	95.212			
10	.203	2.881	98.093			
11	.136	1.234	99.327			
12	.042	0.673	100.000			

Extraction Method: Principal Component Analysis.

Health Status

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.124	62.483	62.483	3.124	62.483	62.483
2	.846	16.915	79.397			
3	.406	8.120	87.517			
4	.335	6.698	94.216			
5	.289	5.784	100.000			

Extraction Method: Principal Component Analysis.

Descriptive Statistics

Product

No.	Items	Mean
	Information	
1	Avoiding sweetening foods and eating healthy foods	4.4526
2	Avoiding smoking and alcohol drinking	4.3969
3	Risk factors for diabetic complications	4.4402
	Overall Mean	**4.4299**
	Drugs	
1	Insulin injection	4.0538
	Overall Mean	**4.0538**
	Treatment	
1	Control blood glucose level	4.4910
2	Diet and lifestyle modification	4.3910
	Overall Mean	**4.4410**
	Diagnostics Tests	
1	Fasting blood sugar level	4.3431
2	2HPP level	4.4921
3	HbA1c level	4.4725
	Overall Mean	**4.4359**
	Overall Mean of Product	**4.3402**

Price

No.	Items	Mean
	Information	
1	No need to charge for medical doctor and health staffs	4.1221
2	Information about diabetes has been learned with time saving	3.8241
	Overall Mean	**3.9731**
	Drugs	
1	Anti-diabetic drugs can be bought easily	3.9846
	Overall Mean	**3.9846**
	Treatment	
1	Treatment to diabetic patients with fair price and time saving	4.0842
2	Free consultation, free examination and treatment	4.2134
3	Charity clinics are giving free healthcare services	4.2793
	Overall Mean	**4.1923**
	Diagnostics Tests	
1	Blood and urine tests have been done very fast with fair price	4.2350
	Overall Mean	**4.2350**
	Overall Mean of Price	**4.0963**

Place

No.	Items	Mean
	Information	
1	Information about DM from medical doctors, health staffs	4.2810
2	Word of mouth among diabetic patients	3.9185
3	Knowledge about DM by learning from social media	4.1749
	Overall Mean	**4.1248**
	Drugs	
1	Drugs can easily be got from private hospitals and pharmacies	3.5387
2	Drugs can easily be got from government hospitals	3.8279
	Overall Mean	**3. 6833**
	Treatment	
1	Can easily be got from private hospitals	4.1089
2	Can also be got in an easy way at OPT from govern; hospitals	3.8323
	Overall Mean	**3.9706**
	Diagnostics Tests	
1	Blood and urine tests from government hospitals	**4.2436**
	Overall Mean	**4.2436**
	Overall Mean of Place	**4.0056**

Promotion

No.	Items	Mean
	Information	
1	The doctors give us more health knowledge about diabetes	4.2186
2	The doctors always inform us that diet and lifestyle	4.4308
3	The doctors always educate us that we could suffer diabetic complications	4.4558
	Overall Mean	**4.3684**
	Drugs	
1	Sale promotion and provide anti-diabetic drugs free of charge	4.3890
2	Charity clinics are also supporting anti-diabetic drugs FOC	4.2854
	Overall Mean	**4.3372**
	Treatment	
1	Health knowledge video files about exercise	4.0308
	Overall Mean	**4.0308**
	Diagnostics Tests	
1	Blood tests free of charge at World Diabetes Day	3.2864
2	Promotion events, provide some kinds of blood tests FOC	3.2520
	Overall Mean	**3.2692**
	Overall Mean of Promotion	**4.0014**

Process

No.	Items	Mean
	Information	
1	Video conferencing before giving medical treatment	4.2108
2	Read posters, journals and pamphlets about diabetes	3.8946
3	Giving educational advice about DM complications	4.0614
	Overall Mean	**4.055**6
	Management	
1	Pre-assessment about the current dietary habits	4.0887
2	Body weight measuring and necessary blood tests	4.3820
3	Changed the inappropriate lifestyle and dietary habits	3.9688
4	Patients' family members to participate in diabetic treatment	4.2785
	Overall Mean	**4.1795**
	Drugs	
1	Taking anti-diabetic drugs	4.3891
2	Giving insulin injection in required condition	4.2929
	Overall Mean	**4.3410**
	Overall Mean of Process	**4.1920**

Professional

No.	Items	Mean
	Advice and Treatment	
1	Advice and treatment from general physicians	4.2854
2	Advice and treatment from endocrinologists	4.4330
3	Advice and treatment from nutritionists	4.3943
	Overall Mean	**4.3709**
	Drugs	
1	I always buy anti-diabetic drugs from pharmacies	3.1120
2	I never take any medicines are not evidence-based	3.0932
	Overall Mean	**3. 1026**
	Diagnostics Tests	
1	I regularly do blood glucose testing	3.0866
2	I do HbA1c testing three monthly	3.0672
	Overall Mean	**3. 0769**
	Diet and Lifestyle	
1	I do regular physical exercise everyday	4.1231
	Overall Mean	**4.1231**
	Overall Mean of Professional	**3. 6684**

Performance

No.	Items	Mean

	Ability	
1	Healthcare providers give treatment to diabetic patient patiently	3.8910
2	Aware concerning with diabetes effectively and quickly	4.2119
3	The healthcare providers repeatedly give educational advice	4.0228
	Overall Mean	**4.0419**
	Responsibility	
1	The doctors always guide and treat us for occasional	4.1897
2	Careful and conscientious treatment of my doctor	4.2949
	Overall Mean	**4.2423**
	Safety	
1	My doctor uses good quality glucometer	3.9980
2	My doctor always keeps my documents	4.1738
	Overall Mean	**4.0859**
	Overall Mean of Performance	**4.1234**

Program

No.	Items	Mean
	World diabetes Day	
1	Diabetes health talk, sharing diabetes education pamphlet	3.0015
2	Public physical exercise, playing games and giving prizes	3.1008
3	The theme for Diabetes Awareness “Family and Diabetes”	3.1977
	Overall Mean	**3.1000**
	MMDA	
1	MMDA was established in 2014	3.2359
	Overall Mean	**3.2359**
	Diabetes Wiki	
1	Learned diabetes knowledge by watching in Diabetes Wiki	3.0992
2	Application concerning with diet and lifestyle modification	3.1392
	Overall Mean	**3.1192**
	WHO PEN Project	
1	It makes to get more treatment coverage for DM without the need of doctors.	3.0949
	Overall Mean	**3.0949**
	Overall Mean of Program	**3.1375**

Behaviour Changes

No.	Items	Mean

	Change in Knowledge	
1	I am used to living a correct way of lifestyle and dietary habit.	4.2950
2	I am used to having healthy dietary habit.	4.3116
3	I could change my dietary habit to a healthy way.	4.4089
	Overall Mean	**4.3385**
	Change in Attitude	
1	Healthy lifestyle and healthy dietary habit to prevent obesity	4.4986
2	Regular physical exercise and weight reduction	4.4880
3	I know the symptoms of hypoglycemia and hyperglycemia.	4.4288
	Overall Mean	**4.4718**
	Intention to Change	
1	I can also reduce my body weight.	4.0918
2	Avoid smoking and alcohol drinking, I have been practicing.	4.3183
3	Watching TV for more than three hours, I have been avoiding such bad habit.	4.4284
	Overall Mean	**4.2795**
	Change in Behaviour	
1	Walking daily by taking special time	4.1510
2	I am now having plenty of vegetables, fruits and whole grains.	4.2381
3	I have known that physically inactive lifestyle.	4.0456
	Overall Mean	**4.1449**
	Belief	
1	Eating balanced diet, reducing weight,regular physical exercise	4.2110
2	I have to change my habit to live away from anxiety and stress.	4.1895
3	I go regular follow up visit to my doctor.	4.2148
	Overall Mean	**4.2051**
	Willingness to Spend	
1	I specially take time to check my blood sugar level regularly	4.2009
2	I visited to my doctor in time for foot ulcer and nerve damage	4.1119
	Overall Mean	**4.1564**
	Overall Mean of Behaviour Changes	**4.2660**

Health Status

No.	Items	Mean
1	2hrs post-prandial (2HPP)	4.4128
2	Fasting Blood sugar (FBS)	4.3333
3	HbA1C (3 monthly)	4.4846
4	Creatinine	3.2692
5	Lipid profile	4.3872
	Overall Mean	**4.1774**
	Overall Mean of Health Status	**4.1774**

Quality of Life

No.	Items	Mean

	Physical Health	
1	How often does DM affect your efficiency at work?	4.4159
2	To what extent do you avoid travelling because of your DM.	4.2439
	Overall Mean	**4.3299**
	Physical Endurance	
1	Fail to do your vigorous activities like lifting heavy weight, running and jumping	4.3909
2	Fail to do stooping forward, sitting knee chest position and body rotation	4.4073
	Overall Mean	**4.3991**
	Treatment Satisfaction	
1	How satisfied are you with your current diabetes treatment?	4.4090
2	How satisfied are you takes to manage your diabetes?	4.3740
	Overall Mean	**4.3915**
	Diabetic Symptom	
1	How often have you had thirst or dry mouth?	4.3995
2	How often have you felt excessive hunger?	4.4023
	Overall Mean	**4.4009**
	Family Finance	
1	Your family budget got affected by the expenses	4.3810
2	Your diabetes limited your expenditure on other aspects of life	4.3164
	Overall Mean	**4.3487**
	Diet Satisfaction	
1	How many times did you have unhealthy diet for diabetes?	4.4006
2	Do you feel that you have been able to lead your life	4.3054
	Overall Mean	**4.3530**
	Overall Mean of Quality of Life	**4.3705**

Product

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Product_information	390	3.67	5.00	4.4299	.37876
Product_Drugs	390	1.00	5.00	4.0538	.74148
Product_Treat	390	3.50	5.00	4.4410	.44097
Product_Diagonosics	390	3.33	5.00	4.4359	.41435
Valid N (listwise)	390				

Price

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Price_Information	390	2.00	5.00	3.9731	.60624
Price_Drugs	390	1.00	5.00	3.9846	.69131
Price_Treatment	390	3.00	5.00	4.1923	.52832
Price_Diagnosics	390	2.67	5.00	4.2350	.46870
Valid N (listwise)	390				

Place

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Place_Information	390	3.33	5.00	4.1248	.45580
Place_Drugs	390	2.00	5.00	3.6833	.60022
Place_Treatment	390	3.00	5.00	3.9706	.47018
Place_Diagnostics	390	2.00	5.00	4.2436	.54575
Valid N (listwise)	390				

Promotion

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Promotion_Information	390	3.00	5.00	4.3684	.45559
Promotion_Drugs	390	3.50	5.00	4.3372	.44029
Promotion_Treatment	390	2.00	5.00	4.0308	.64857
Promotion_Diagnostics	390	2.00	5.00	3.2692	.63069
Valid N (listwise)	390				

Process

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Process_Information	390	2.67	5.00	4.0556	.51044
Process_management	390	3.00	5.00	4.1795	.53161
Process_drugs	390	2.50	5.00	4.3410	.51368
Valid N (listwise)	390				

Professional

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Professional_AdviceandTreat	390	3.33	5.00	4.3709	.52393
Professional_Drugs	390	3.00	5.00	3.1026	.34845
Professional_Diagnostics	390	3.00	5.00	3.0769	.25385
Professional_Diet	390	3.00	5.00	4.1231	.56934
Valid N (listwise)	390				

Performance

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Performance_Ability	390	3.00	5.00	4.0419	.51840
Performance_Responsibility	390	3.00	5.00	4.2423	.48593
Performance_Safety	390	2.00	5.00	4.0859	.54695
Valid N (listwise)	390				

Program

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Program_WorldDiabetesDay	390	3.00	5.00	3.1000	.33028
Program_MyanmarDiabetesAssociation	390	3.00	5.00	3.2359	.47643
Program_DiabetesWiki	390	3.00	5.00	3.1192	.39177
Program_PENProject	390	3.00	5.00	3.0949	.31862
Valid N (listwise)	390				

Behaviour Changes

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
BC_Knowledge	390	3.00	5.00	4.3385	.48980
BC_Attitude	390	3.00	5.00	4.4718	.49076
BC_Intention	390	3.00	5.00	4.2795	.49687
BC_Behaviour	390	3.00	5.00	4.1449	.54623
BC_Belief	390	2.50	5.00	4.2051	.51976
BC_Willngness	390	1.00	5.00	4.1564	.67542
Valid N (listwise)	390				

Health Status

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HS_2HPP	390	2.00	5.00	4.4128	.54262
HS_FBS	390	3.50	5.00	4.3333	.50363
HS_HbA1c	390	3.00	5.00	4.4846	.54938
HS_Creatinine	390	2.00	5.00	3.2692	.61929
HS_Lipid	390	2.00	5.00	4.3872	.54262
Valid N (listwise)	390				

Quality of Life

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
QL_physicalhealth	390	3.00	5.00	4.3299	.44777
QL_physicalendurance	390	3.33	5.00	4.3991	.42882
QL_TreatmentSatisfaction	390	3.00	5.00	4.3915	.47747
QL_Symptom	390	3.33	5.00	4.4009	.43320
QL_FamilyFiance	390	3.00	5.00	4.3487	.42728
QL_DietSatisfaction	390	3.33	5.00	4.3530	.39623
Valid N (listwise)	390				

Summary Table

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Product	390	3.33	5.00	4.3402	0.34859
Price	390	2.42	5.00	4.0963	0.48313
Place	390	3.13	5.00	4.0056	0.36044
Promotion	390	3.00	5.00	4.0014	0.41419
Process	390	3.25	5.00	4.1920	0.45597
Professional	390	3.33	5.00	3.6684	0.27015
Performance	390	3.00	5.00	4.1234	0.44698
Program	390	3.00	5.00	3.1375	0.39985
Behaviour Change	390	3.17	5.00	4.2660	0.42535
Quality of Life	390	3.17	5.00	4.4179	0.39841
Health Status	390	1.00	5.00	4.3705	0.33781
Valid N (listwise)	390				

Regression Analysis

(i) Social Marketing Tools Effect on Change in Knowledge

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.661[a]	.436	.425	.37152	2.114

a. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

b. Dependent Variable: BC_knowledge

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.734	8	5.092	36.889	.000[b]
	Residual	52.589	381	.138		
	Total	93.323	389			

a. Dependent Variable: BC_knowledge

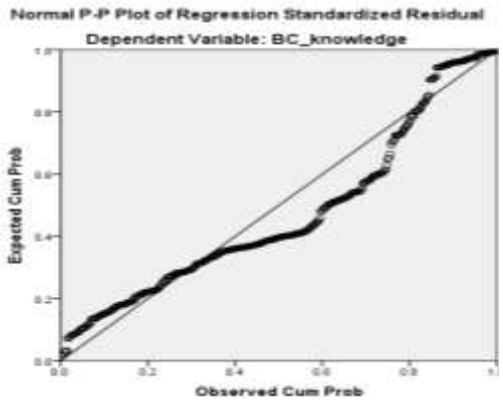
b. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

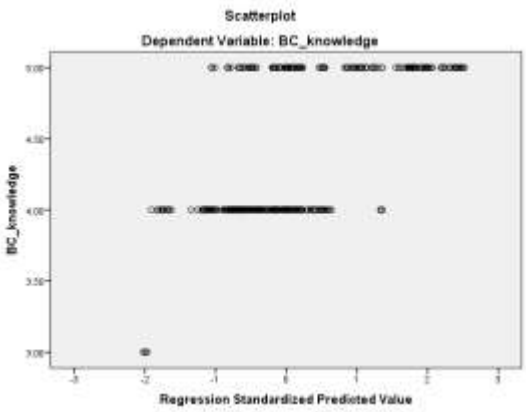
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.104	.422		2.614	.009		
	Product	.089	.083	.063	1.074	.284	.424	2.361
	Price	.130	.072	.118	1.808	.071	.296	3.378
	Place	-.050	.064	-.037	-.788	.431	.673	1.486
	Promotion	.357	.079	.302	4.512	.000	.328	3.049
	Process	.137	.052	.127	2.634	.009	.637	1.570
	Professional	.222	.105	.122	2.119	.035	.444	2.250
	Performance	.470	.085	.429	5.522	.000	.246	4.072
	Program	-.008	.083	-.005	-.101	.920	.575	1.740

a. Dependent Variable: BC_knowledge

Charts





(ii) Social Marketing Tools Effect on Change in Attitude

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.680[a]	.462	.451	.36367	1.626

a. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

b. Dependent Variable: BC_attitude

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.300	8	5.413	40.925	.000[b]
	Residual	50.389	381	.132		
	Total	93.690	389			

a. Dependent Variable: BC_attitude

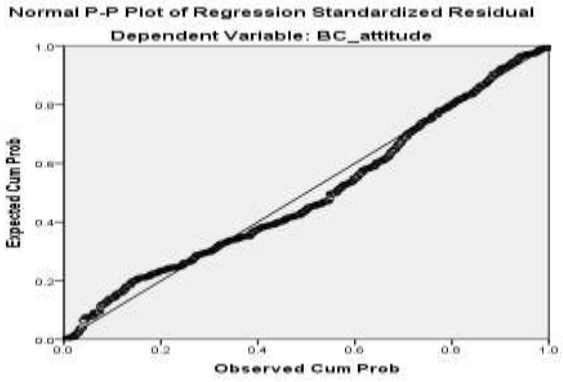
b. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

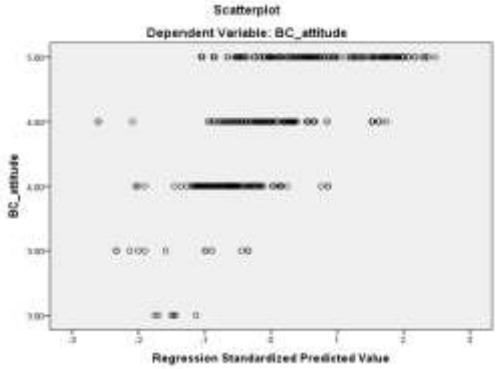
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.484	.413		1.171	.243		
	Product	.412	.081	.293	5.079	.000	.424	2.361
	Price	.174	.070	.171	2.484	.014	.296	3.378
	Place	.091	.062	.067	1.456	.146	.673	1.486
	Promotion	.055	.078	.046	.708	.479	.328	3.049
	Process	.068	.051	.064	1.331	.178	.637	1.570
	Professional	.166	.102	.092	1.624	.105	.444	2.250
	Performance	.236	.083	.215	2.833	.005	.246	4.072
	Program	.001	.081	.001	.013	.990	.575	1.740

a. Dependent Variable: BC_attitude

Charts





(iii) Social Marketing Tools Effect on Intention to Change

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.624[a]	.389	.376	.39247	2.369

a. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

b. Dependent Variable: BC_Intention

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.348	8	4.669	30.308	.000[b]
	Residual	58.688	381	.154		
	Total	96.036	389			

a. Dependent Variable: BC_Intention

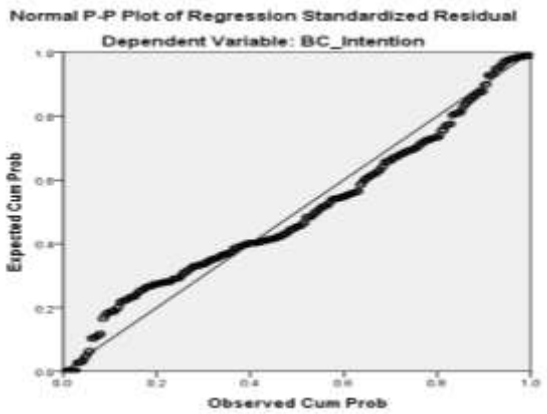
b. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

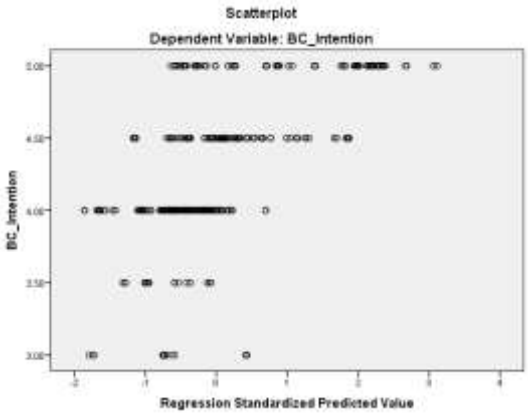
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.283	.446		.636	.525		
	Product	-.067	.088	-.047	-.762	.447	.424	2.361
	Price	.154	.076	.150	2.036	.042	.296	3.378
	Place	.004	.067	.003	.059	.958	.673	1.486
	Promotion	.483	.084	.402	5.755	.000	.328	3.049
	Process	-.009	.055	-.008	-.168	.867	.637	1.570
	Professional	.209	.110	.114	1.891	.059	.444	2.250
	Performance	.094	.090	.085	1.051	.294	.246	4.072
	Program	.189	.088	.174	2.154	.032	.575	1.740

a. Dependent Variable: BC_Intention

Charts





(iv) Social Marketing Tools Effect on Change in Behaviour

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.719[a]	.517	.506	.38378	2.005

a. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

b. Dependent Variable: BC_Behaviour

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.948	8	7.494	50.877	.000[b]
	Residual	56.117	381	.147		
	Total	116.065	389			

a. Dependent Variable: BC_Behaviour

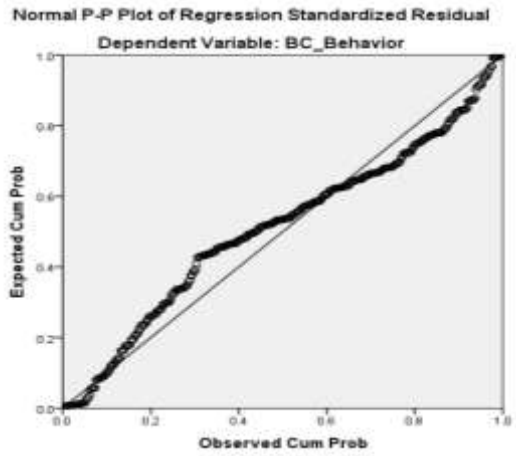
b. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

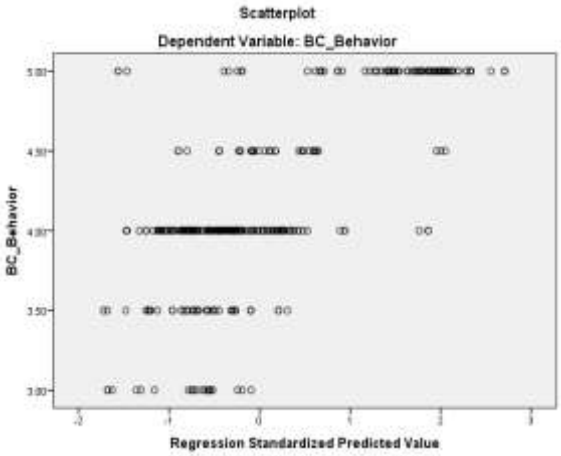
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.249	.436		.572	.568		
	Product	.233	.086	.149	2.716	.007	.424	2.361
	Price	.115	.074	.102	1.555	.121	.296	3.378
	Place	.005	.066	.003	.077	.939	.673	1.486
	Promotion	.362	.082	.274	4.407	.000	.328	3.049
	Process	-.051	.053	-.043	-.958	.338	.637	1.570
	Professional	-.065	.108	-.032	-.604	.546	.444	2.250
	Performance	.273	.088	.223	3.107	.002	.246	4.072
	Program	.247	.086	.135	2.880	.004	.575	1.740

a. Dependent Variable: BC_Behaviour

Charts





(v) Social Marketing Tools Effect on Belief

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.713[a]	.508	.498	.36823	1.646

a. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

b. Dependent Variable: BC_Belief

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53.429	8	6.679	49.256	.000[b]
	Residual	51.660	381	.136		
	Total	105.090	389			

a. Dependent Variable: BC_Belief

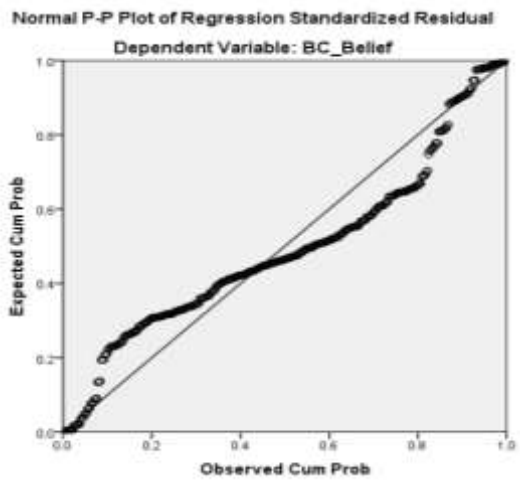
b. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

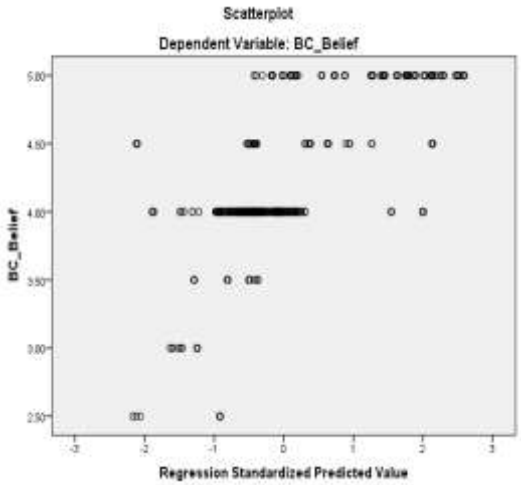
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.422	.418		1.009	.314		
	Product	-.046	.082	-.031	-.557	.578	.424	2.361
	Price	.234	.071	.218	3.300	.001	.296	3.378
	Place	-.070	.063	-.049	-1.113	.266	.673	1.486
	Promotion	.325	.079	.259	4.113	.000	.328	3.049
	Process	.110	.051	.096	2.147	.033	.637	1.570
	Professional	.298	.104	.155	2.872	.004	.444	2.250
	Performance	.344	.084	.296	4.085	.000	.246	4.072
	Program	-.015	.082	-.009	-.189	.850	.575	1.740

a. Dependent Variable: BC_Belief

Charts





(vi) Social Marketing Tools Effect on Willingness to Spend

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.595[a]	.354	.340	.54853	2.070

a. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

b. Dependent Variable: BC_Willngness

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.821	8	7.853	26.098	.000[b]
	Residual	114.638	381	.301		
	Total	177.459	389			

a. Dependent Variable: BC_Willngness

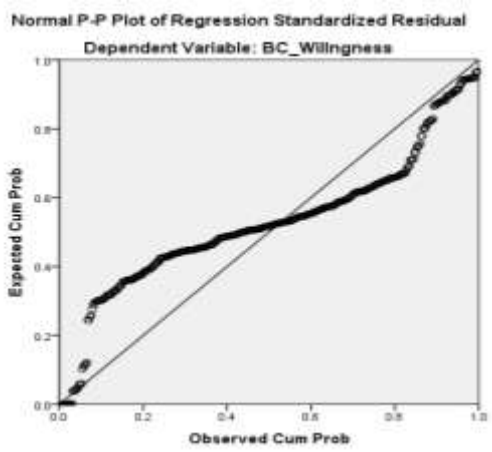
b. Predictors: (Constant), Product, Price, Place, Promotion, Process, Professional, Performance, Program

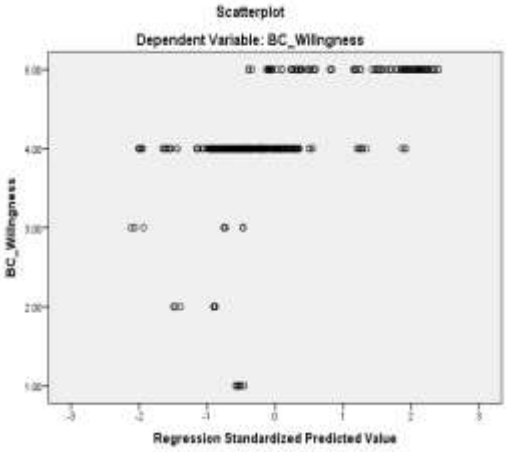
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.862	.623		1.384	.167		
	Product	.125	.123	.065	1.022	.307	.424	2.361
	Price	.172	.106	.123	1.622	.106	.296	3.378
	Place	.085	.094	.045	.902	.368	.673	1.486
	Promotion	.335	.117	.205	2.857	.005	.328	3.049
	Process	-.025	.076	-.017	-.331	.741	.637	1.570
	Professional	.114	.154	.046	.738	.461	.444	2.250
	Performance	.356	.126	.236	2.839	.005	.246	4.072
	Program	.099	.122	.044	.807	.420	.575	1.740

a. Dependent Variable: BC_Willngness

Charts





(vii) Social Marketing Tools (Product,Price,Place,Promotion,Process,Professional, Performance,and Program) Effect on Behaviour Changes

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.816[a]	.666	.659	.24855	1.990

a. Predictors: (Constant), Program, Place, Product, Process, Price, Professional, Promotion, Performance

b. Dependent Variable: BehaviourChange

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.841	8	5.855	94.775	.000[b]
	Residual	23.538	381	.062		
	Total	70.379	389			

a. Dependent Variable: BehaviourChange

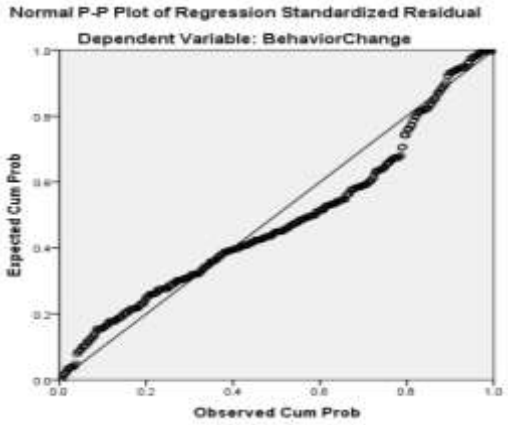
b. Predictors: (Constant), Program, Place, Product, Process, Price, Professional, Promotion, Performance

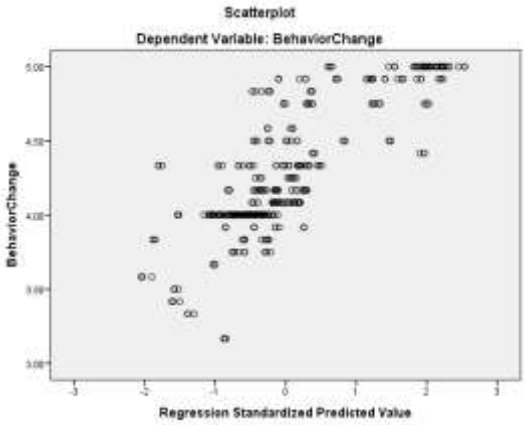
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.036	.282		.126	.900		
	Product	.124	.056	.102	2.240	.026	.424	2.361
	Price	.120	.048	.136	2.500	.013	.296	3.378
	Place	.011	.043	.009	.249	.803	.673	1.486
	Promotion	.320	.053	.311	6.014	.000	.328	3.049
	Process	-.044	.035	-.047	-1.271	.205	.637	1.570
	Professional	.157	.070	.100	2.247	.025	.444	2.250
	Performance	.296	.057	.301	5.195	.000	.246	4.072
	Program	.085	.055	.060	1.536	.125	.575	1.740

a. Dependent Variable: BehaviourChange

Charts





(viii) Behaviour Changes Effect on Health Status

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.213[a]	.046	.031	.38873

a. Predictors: (Constant), BC_Willngness, BC_Intention, BC_knowledge, BC_attitude, BC_Behaviour, BC_Belief

b. Dependent Variable: HealthStatus1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.760	6	.460	3.044	.006[b]
	Residual	57.875	383	.151		
	Total	60.634	389			

a. Dependent Variable: HealthStatus1

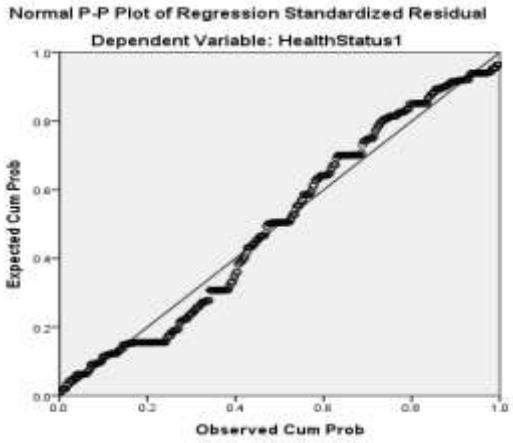
b. Predictors: (Constant), BC_Willngness, BC_Intention, BC_knowledge, BC_attitude, BC_Behaviour, BC_Belief

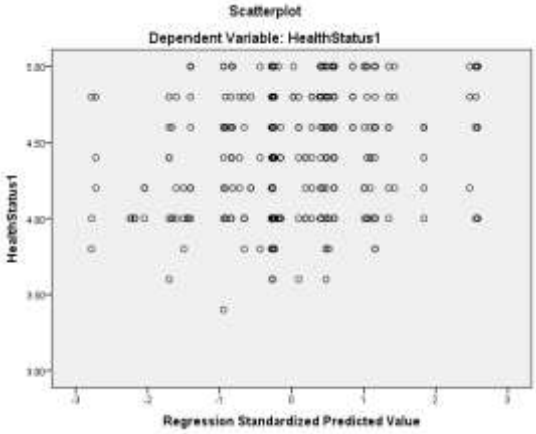
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.398	.208		21.174	.000		
	BC_knowledge	.238	.071	.295	3.340	.001	.320	3.124
	BC_attitude	.240	.063	.298	3.796	.000	.403	2.479
	BC_Intention	.115	.059	.144	1.925	.055	.445	2.249
	BC_Behaviour	.096	.059	.132	1.626	.105	.376	2.663
	BC_Belief	.110	.071	.145	1.557	.120	.286	3.494
	BC_Willngness	.095	.039	.162	2.430	.016	.559	1.788

a. Dependent Variable: HealthStatus1

Charts





(ix) Behaviour Changes Effect on Quality of Life

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.660[a]	.436	.427	.30307	1.485

a. Predictors: (Constant), BC_Willngness, BC_Intention, BC_knowledge, BC_attitude, BC_Behaviour, BC_Belief

b. Dependent Variable: QualityOfLife

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.187	6	4.531	49.331	.000[b]
	Residual	35.180	383	.092		
	Total	62.367	389			

a. Dependent Variable: QualityOfLife

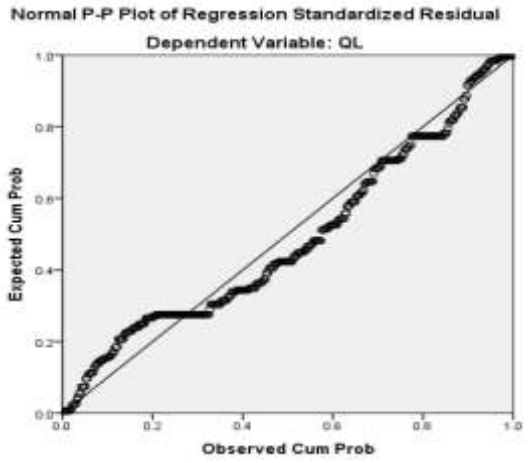
b. Predictors: (Constant), BC_Willngness, BC_Intention, BC_knowledge, BC_attitude, BC_Behaviour, BC_Belief

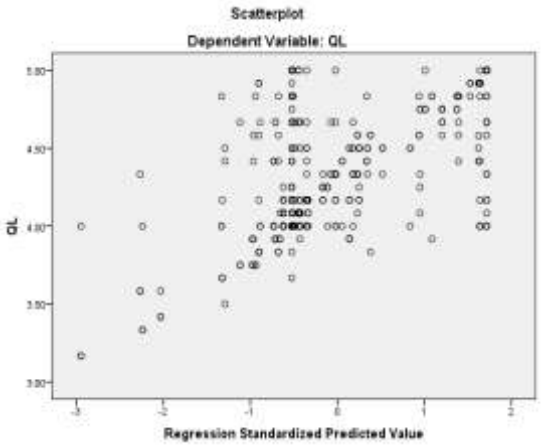
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.813	.162		11.195	.000		
	BC_knowledge	.084	.055	.103	1.511	.132	.320	3.124
	BC_attitude	.049	.049	.060	.997	.319	.403	2.479
	BC_Intention	.041	.046	.050	.877	.381	.445	2.249
	BC_Behaviour	.100	.046	.136	2.169	.031	.376	2.663
	BC_Belief	.233	.055	.303	4.219	.000	.286	3.494
	BC_Willngness	.086	.030	.144	2.812	.005	.559	1.788

a. Dependent Variable: QualityOfLife

Charts





(x) Behaviour Changes Effect on Outcomes

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.513[a]	.263	.252	.23736

a. Predictors: (Constant), BC_Willngness, BC_Intention, BC_knowledge, BC_attitude, BC_Behaviour, BC_Belief

b. Dependent Variable: Outcomes

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.705	6	1.284	22.793	.000[b]
	Residual	21.578	383	.056		
	Total	29.282	389			

a. Dependent Variable: Outcomes

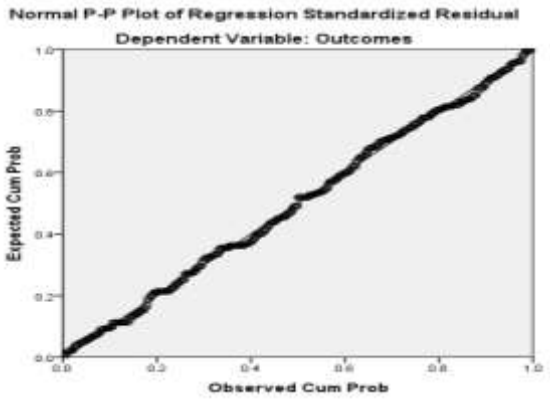
b. Predictors: (Constant), BC_Willngness, BC_Intention, BC_knowledge, BC_attitude, BC_Behaviour, BC_Belief

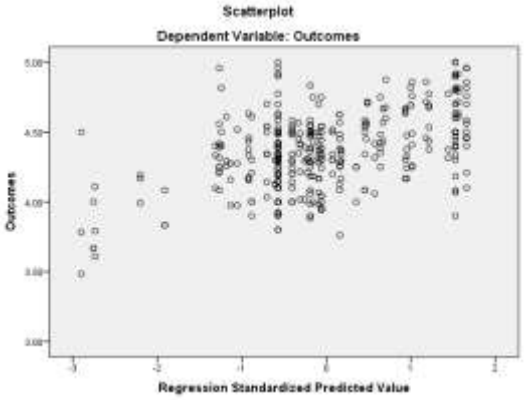
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.106	.127		24.486	.000		
	BC_knowledge	-.077	.043	-.137	-1.770	.077	.320	3.124
	BC_attitude	.145	.039	.259	3.745	.000	.403	2.479
	BC_Intention	-.037	.036	-.067	-1.016	.310	.445	2.249
	BC_Behaviour	.098	.036	.194	2.717	.007	.376	2.663
	BC_Belief	.172	.043	.325	3.968	.000	.286	3.494
	BC_Willngness	-.005	.024	-.011	-.194	.846	.559	1.788

a. Dependent Variable: Outcomes

Charts





Moderating Analysis

(i) Social Marketing Tools Effect on Behaviour Changes

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.742[a]	.551	.550	.28547

a. Predictors: (Constant), SocialMarketing

b. Dependent Variable: BehaviourChange

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.759	1	38.759	475.595	.000[b]
	Residual	31.620	388	.081		
	Total	70.379	389			

a. Dependent Variable: BehaviourChange

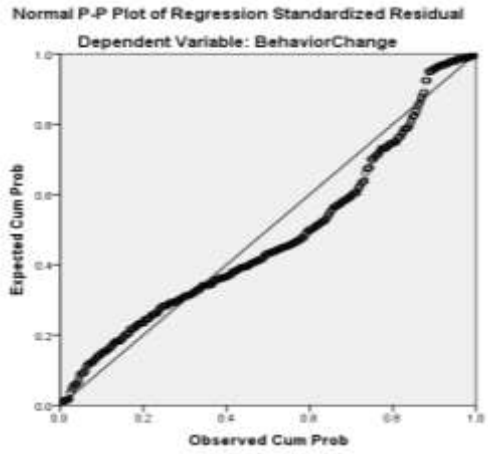
b. Predictors: (Constant), SocialMarketing

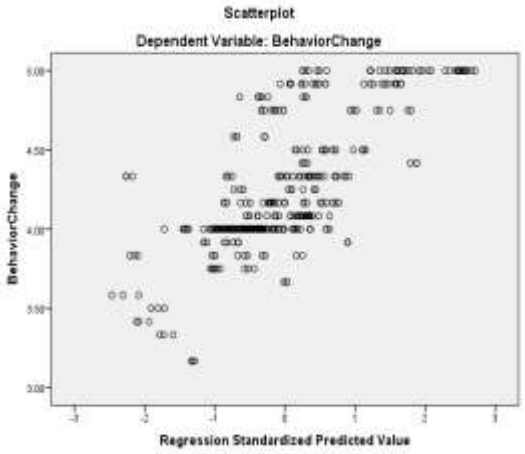
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.139	.248		4.587	.000		
	SocialMarketing	1.370	.063	.742	21.808	.000	1.000	1.000

a. Dependent Variable: BehaviourChange

Charts





(ii) Social Marketing Tools, Education, and Self-Control Effect on Behaviour Changes

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.771[a]	.594	.591	.27206

a. Predictors: (Constant), SelfControl, Education_1, SocialMarketing

b. Dependent Variable: BehaviourChange

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.809	3	13.936	188.289	.000[b]
	Residual	28.570	386	.074		
	Total	70.379	389			

a. Dependent Variable: BehaviourChange

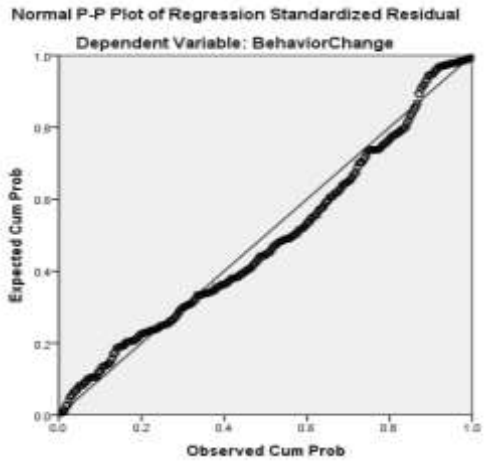
b. Predictors: (Constant), SelfControl, Education_1, SocialMarketing

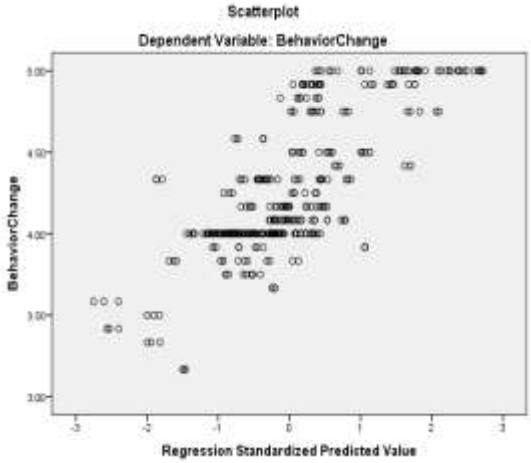
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.671	.277		2.421	.016		
	SocialMarketing	1.299	.063	.704	20.787	.000	.917	1.090
	Education_1	.035	.009	.130	3.905	.000	.951	1.051
	SelfControl	.215	.052	.142	4.109	.000	.877	1.140

a. Dependent Variable: BehaviourChange

Charts





(iii) Social Marketing Tools,Education,Self-Control, Social Mkt*Education, and Social Mkt*Self Control Effect on Behavior Changes

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.778[a]	.605	.599	.26923

a. Predictors: (Constant), SoMkt_SelfControl, SocialMarketing, Education_1, SoMkt_Edu, SelfControl

b. Dependent Variable: BehaviourChange

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	42.546	5	8.509	117.396	.000[b]
	Residual	27.833	384	.072		
	Total	70.379	389			

a. Dependent Variable: BehaviourChange

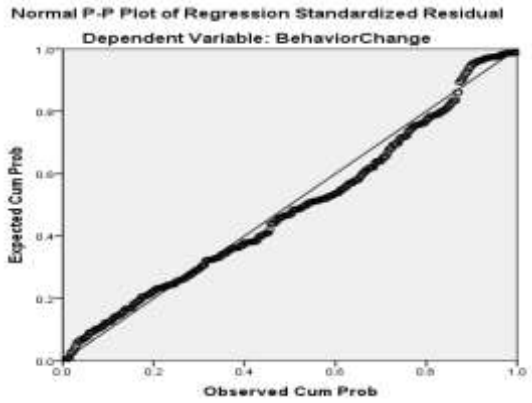
b. Predictors: (Constant), SoMkt_SelfControl, SocialMarketing, Education_1, SoMkt_Edu, SelfControl

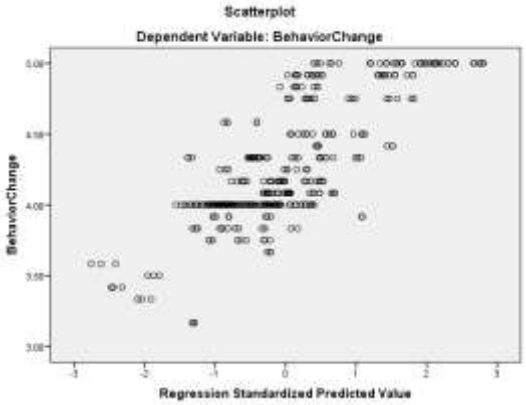
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.890	1.404		2.770	.006		
	SocialMarketing	2.125	.360	1.151	5.899	.000	.027	6.976
	Education_1	.515	.155	1.890	3.323	.001	.003	4.226
	SelfControl	1.317	.964	.871	1.367	.172	.003	4.403
	SoMkt_Edu	.123	.040	1.775	3.104	.002	.003	7.449
	SoMkt_SelfControl	.395	.249	.972	1.587	.113	.003	4.231

a. Dependent Variable: BehaviourChange

Charts





Correlations (Moderation Variables: age, gender, occupation, education, income and self- control and Behaviour Changes)

		Age	Gender	Occupation	Education	Income	SelfControl	Behaviour Changes
Age	Pearson Correlation	1	-.057	.011	.073	-.086	.017	-.006
	Sig. (2-tailed)		.262	.835	.153	.088	.732	.907
	N	390	390	390	390	390	390	390
Gender	Pearson Correlation	-.057	1	.224**	-.307**	-.507**	.037	.093
	Sig. (2-tailed)	.262		.000	.000	.000	.468	.067
	N	390	390	390	390	390	390	390
Occupation	Pearson Correlation	.011	.224**	1	-.500**	-.394**	.141**	-.036
	Sig. (2-tailed)	.835	.000		.000	.000	.005	.479
	N	390	390	390	390	390	390	390
Education	Pearson Correlation	.073	-.307**	-.500**	1	.333**	.209**	.151**
	Sig. (2-tailed)	.153	.000	.000		.000	.000	.003
	N	390	390	390	390	390	390	390
Income	Pearson Correlation	-.086	-.507**	-.394**	.333**	1	.077	-.024
	Sig. (2-tailed)	.088	.000	.000	.000		.131	.640
	N	390	390	390	390	390	390	390
Self-Control	Pearson Correlation	.017	.037	.141**	.209**	.077	1	.366**
	Sig. (2-tailed)	.732	.468	.005	.000	.131		.000
	N	390	390	390	390	390	390	390
Behaviour Change	Pearson Correlation	-.006	.093	-.036	.151**	-.024	.366**	1
	Sig. (2-tailed)	.907	.067	.479	.003	.640	.000	
	N	390	390	390	390	390	390	390

**. Correlation is significant at the 0.01 level (2-tailed).