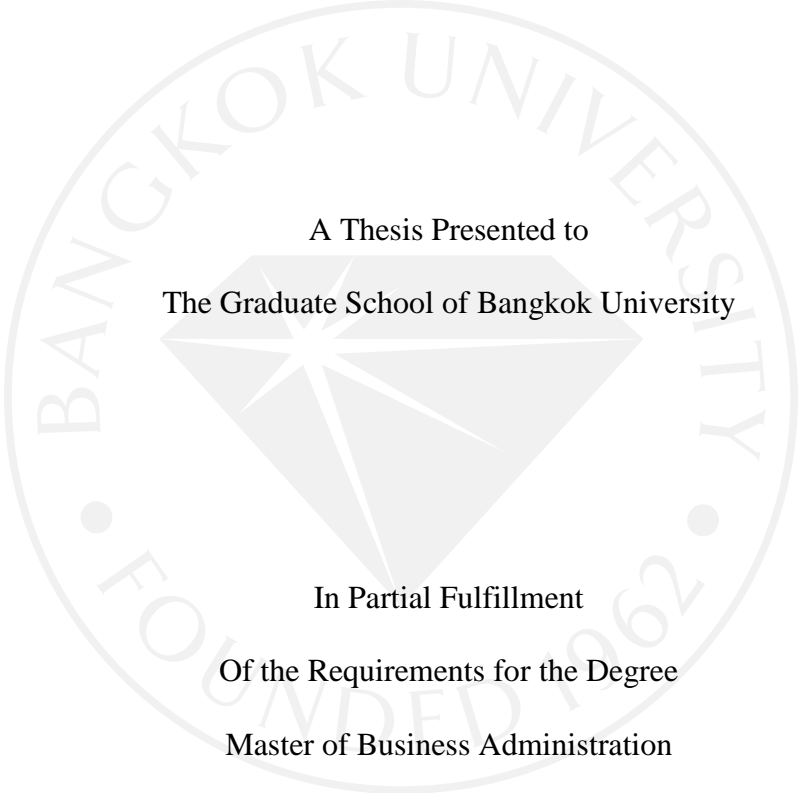


A STUDY OF EVERETT ROGERS, ADAPTATION FACTORS ACTING ON
GREEN PRODUCTS, WHILE ESTABLISHING A 9Ps FRAMEWORK IN GREEN
MARKETING MIX



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A Thesis Presented to
The Graduate School of Bangkok University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Business Administration

by
Vikita Vijay

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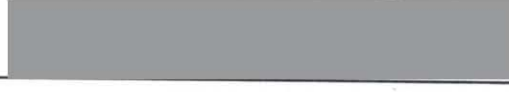
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ABSTRACT

Increased awareness of issues related to environment, building concern for environmental problems, resulting in new public policies and business shift. New public and business policies have led to drastic shift in consumer's behavior and attitude towards their life. There is change in consumer attitudes towards green products and green marketing strategy. People (consumers) are trying to purchase and use more green products, to reduce negative impact to the environment. To compete in this changing marketing, which is result of changing consumer attitude, organizations and businesses are trying to develop measures and gain edge in competitive market. Green marketing is still in its initial phase; source of information being limited in market and literature, to help consumers and marketers. The purpose of this study was to: (i) examine growing importance of green marketing in gemstone industry (ii) examine the importance of marketing mix as well as social marketing in green marketing (iii) to inculcate public relations in the list of the Ps of marketing (iv) testing relation between the Ps of marketing and Diffusion of Innovation Theory.

The primary data for this research are collected from traders, merchants, brokers, business owners in gemstone industry, in Bangkok. A questionnaire was developed to bring all information required or related elements which was examined

and compared for theories. The responses varied between business owners and brokers, end users and manufactures, and different demographics.

The purpose of this quantitative research was to understand how traders and customers in gemstone industry see green marketing as influencing factors in purchase decisions. To understand how green marketing mix, green social marketing and public relations are a sustainable part of gemstone industry while green marketing is facing Diffusion in industry. 450 questionnaires were conducted providing a thorough knowledge and understanding of how marketing Ps are related to Diffusion of Innovation theory. A combination of quantitative approach is used in order to achieve answers of the research questions.

Keywords: Green Marketing, Marketing Mix, Social Marketing, Roger's Theory.

Approved: _____

Signature of Advisor

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CHAPTER 1

INTRODUCTION

1.1 Background

For past many years, the term Green Marketing has attracted many researchers to look for more concepts about it and spread its usefulness to the world. The term Green Marketing is still going prominence worldwide. Green marketing has no clear definition. Authors define Green Marketing according to their perceptions. Green marketing is defined to be the marketing of services or products with environmentally preferable features. This implies eco- friendly marketed products. (Trade Green & Development (html) International Green Markets, 2008). Industries apply “Green” concept in their business style. Green Marketing involves Marketing Mix and Social Marketing concepts. The 8 marketing mix and Social Marketing Ps; product, place, price, promotion, public, policy, partnership, and purse strings, are similar in Green Marketing Mix. Public Relations as 9th P of marketing and social marketing mix are a strong business part today. The relation between Marketing Mix, Social Marketing 8Ps and Public Relations to the variables of Everett Rogers’ Diffusion of Innovation theory is necessary.

Green Marketing in the late 90s was known as Environmental and Ecological Marketing. Since the 1960s environment related issues gained extreme business importance among societies, and government. Government policies insulate the environment and communities. The 2008 Climate Change Act was established to scale down The UK’s greenhouse gas emissions, was the world’s legally first binding on climate change target. (Change Climate in UK, 2001).

Increasing attention towards environmental public policies brings shift in consumers' life. Modified Consumer's attitude is due to extended exposure to 'Green' lifestyle. The world competition is to preserve and protect resources of the earth. For example, this study will discuss about gemstones. Concluding, Green Marketing features in gemstone industry. Green Marketing encompasses challenges defined by many different researchers. Many industries encountered green marketing challenges, which could be overcome to achieve competitive advantage. To be successful in any industry, businesses must achieve competitive advantage. According to Joel Makower, green marketer challenges, includes the lack in standards and consensus which are common within public and constituting "Green". The concept Green Marketing is evolving all the industries worldwide.

1.2 Research Objective

This paper focuses on applying Green Marketing Mix to the Gemstone Public Relations industry. Introducing Public Relations to Marketing Mix is prime objective of this paper. It's crucial studying Public Relations influence on the Marketing Mix concepts in purchase decision of Gemstones. The research begins with literature review, which is followed by investigating and analyzing the gemstone market and how they view concepts of Marketing Mix and Social Marketing related to Rogers' Diffusion of Innovation. Finally, there will be conclusion and recommendation.

The objectives of research are:

To achieve better understanding of Green Marketing concept in Gemstone Industry.

To study involvement of Marketing Mix and Social Marketing concepts in Green Marketing with public relations as an additional P of the marketing mix.

To understand how Public Relations is relatively important to Marketing Mix and Social Marketing.

To examine and understand how Roger's Theory of Diffusion of Innovation is a part of Green Marketing influencing consumer's perspective towards the 9 Ps; product, price, promotion, place, public, purse strings, partnership, policy and public relations, of green product in gemstone industry.

1.3 Significance of Study

This paper will significantly promote Green Marketing and its related aspects (Green marketing mix, social marketing, public relations, diffusion of innovation, green production, green products, green promotions, etc.) In an unknown field of business, this study will greatly motivate all industry businesses searching for Green Marketing concepts in relation to the marketing mix, which will be applicable to business achieving competitive advantage. The thesis will state importance of Green Marketing and Green Products in customer's life. This study will be beneficial to students and instructors in Marketing, Green marketing, Gemstone and Jewelry, corporate strategies, entrepreneurs, in forming strategies related to the environment, marketing mix, social marketing, and in understanding customer's behavior. By understanding the needs of people; customers, marketers, students, environmentalist, researchers, it will benefit the quality of understanding and decision making, and being assured of competitive advantage.

Moreover, this paper will be very helpful to retail gemstone industry and emerging entrepreneurs in Gemstone Industry by providing information in areas of marketing, trends, and marketing strategies. It will serve as a future reference for researchers on Green Marketing and Gemstone Industry.

1.4 Theoretical Framework

This thesis theoretical framework describes the importance of studying Green Marketing concepts in marketing field, the difference between 4 Ps of marketing mix and 4 Ps of green marketing mix, the necessity of social marketing to green marketing, enlarging marketing mix and social marketing with Public Relations as fifth P in green marketing, and clarifying relation between Roger's Diffusion of Innovation Theory factors with nine Ps of marketing mix and social marketing: product, place, price, promotion, packaging, publics, policy, purse string, partnership and public relations. This relation will be tested in gemstone industry, due to emergence of green concepts arising gemstones purchases.

Cardinal marketing motive is exchange of processes, products, services according to (Kotler & Zaltman, 1971). Exchanges transpire “only when there are two or more than 2 parties, each having something with them to exchange, and able to carry out good distribution and communication”. Marketing management; evaluating, outlining, implementing, and regulating is required for this process.

Marketer's intention is to contrive marketing exercises, cluster integrated marketing communication programs and value delivery for consumers (Kotler & Keller, 2009). The marketing exercises are 4Ps of marketing mix: product, place, price and promotion.



Figure 1: Marketing Mix Components.

Kotler (2006) defined marketing and marketing mix “a civil, individuals and groups procedure to obtain needs and wants through creation, offering, and free exchanges of valuable products and services”.

Transformed business sustainability is serving as a “bridge in between green and business” (Grant, 2007) and safeguards “liveliness of each person today and for generations”. The fundamental green marketing purpose is to miniaturizing harm to environment and surging benefits to economy.

Professional’s Social marketing is which trains the essential conception of marketing field to branch out green marketing. Designed campaigns increases environmental awareness related to green products which causes change in customer behavior. McKenzie-Mohr and Smith declared “individuals hold strong attitudes supporting conservation energy found likely to conserve energy” also “different investigations between recyclers and non-recyclers found no difference between attitudes towards recycling”.

Social marketing enables building strong relationship in companies achieving better need understanding. Businesses which are small are based totally on word of mouth to get customer acquisition (Lomax & Stokes, 2002). Social networking sites are a major hangout (Halligan & Scott, 2009). The social media advantages to a business, market and consumer are: building closer and profitable relationships. To maximize social marketing, businesses must have convenient presence to customers.

Peattie (1995) determined green marketing to be “the comprehensive managing course responsible in classifying, forecasting and to satisfy all customers and social requirements to be sustainable and profitable way”. Ottman (2006) defined green

marketing tools meeting 2 objectives: improving quality of the environment & meeting satisfaction of customers.

The conceptual framework of Diffusion of Innovation is studied with relation the nine Ps of marketing mix and social marketing. None previous green marketing papers discussed marketing factors impact, such as marketing mix Ps or social marketing Ps to Diffusion of Innovation Theory. Green marketing is at growing stage, with huge Diffusion of Innovation Theory influences.

Roger (1995) Diffusion of Innovation Theory explains communication process of any contemporary concept or product in social merchandise market. Roger determined diffusion proceedings into two variables: occurrences overtime and requires form of information communication. Innovation is any brand-new idea, product or practice to the consumer market and decision making situation. New is not discovered or invented, but is anything newly introduced bringing change in consumer's attitude, market purchase decisions.

1.5 Conceptual Framework

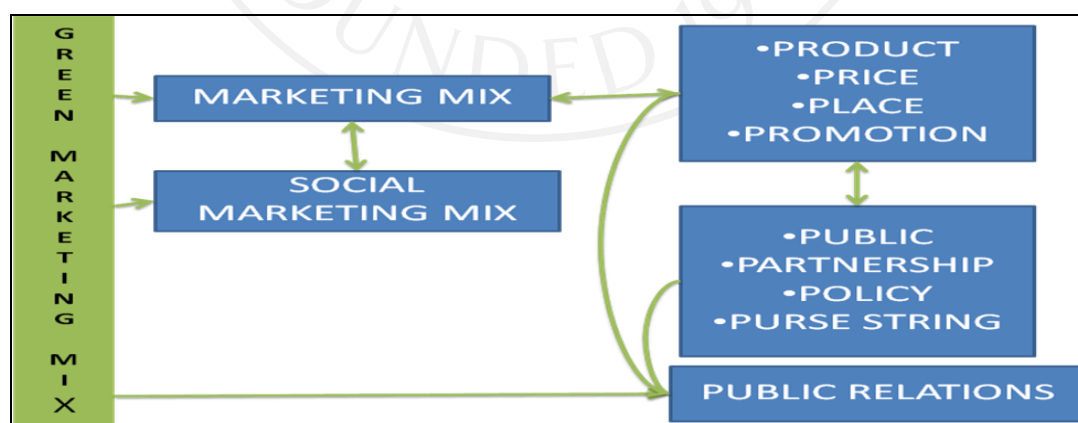


Figure 2: Marketing Mix and Social Marketing Factors and Public Relations in Relation to Green Marketing Mix.

Figure 2: shows 8Ps of Green Marketing Mix belonging to marketing mix and social marketing mix. Marketing mix 4Ps are product, place, price and promotion. Social marketing mix 4Ps is public, partnership, policy and purse string, Public relations as the 9th marketing variable. The figure shows relation between 9Ps in green marketing mix.

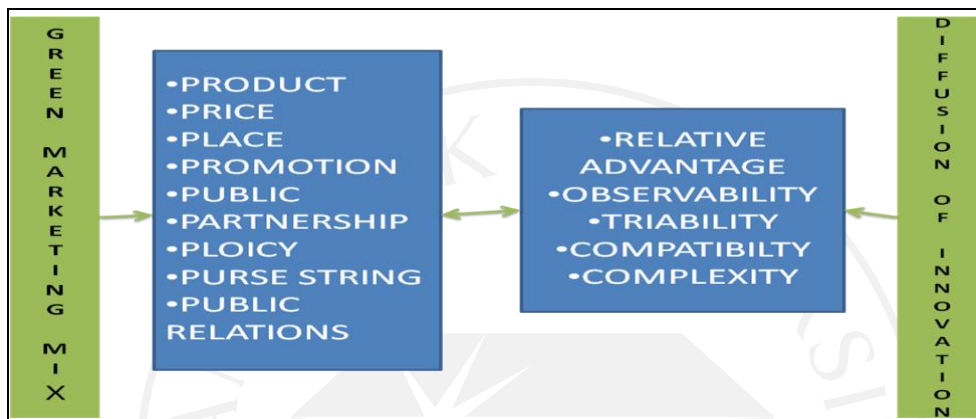


Figure 3: Marketing Factors Related to Factors of Everett Rogers' Diffusion of Innovation Theory.

Figure 3 shows green marketing mix variables relation with factors of Diffusion of Innovation Theory by Everett Roger's. Each marketing variable is related to all 5 factors of Diffusion of Innovation Theory by Everett Rogers'.

Hypotheses

$$H^0: \beta_{p1}, \beta_{p2}, \beta_{p3}, \beta_{p4}, \beta_{p5}, \beta_{p6}, \dots, \beta_{p9} = 0$$

$$H_a: \text{AT LEAST ONE OF } \beta_p\text{'s} \neq 0$$

Here p represents the marketing mix and social marketing Ps. Product is represented by p1, p2 is place, p3 is price, and the last marketing mix P is promotion p4. Where social marketing is Ps are also related and represented by public is p5, policy is p6, partnership is p7, purse strings is p8, and the additional p is public relations p9.

CHAPTER 2

LITERATURE REVIEW

2.1. Green Marketing

There is no particular definition of the concept Green Marketing involving marketing activities undertaken by businesses to promote positive environmental impact and reduce negative environmental activities. Being aware of importance of “Green Marketing” in marketing field brings opportunities. Green Marketing is represented as vital component of marketing, with increased media exposure and pressure preventing firm harming environment. Consumers’ role is to drift purchasing trends, stated by (Cherian & Jacob, 2012); Consumerism used in movement identification initially processes in consumer protection and Green products. Companies recognizing emergence of new trends in market are survivals with positive growth. There is growth of Green Marketing in all industries around the world with extended and broader nature. Green is beyond product containing environmentally friendly elements: green product, green production, green marketing, green packaging, etc. Expanding Green Marketing concept and consumer’s preference towards Green Products is “conceivably the vast opportunities for any enterprise and invention commerce the world has ever witnessed” (Cairncross, 1993). Green Marketing is known as Environmental and Ecological Marketing also.

Green Marketing first appeared in late 1980s and starting of 1990s, in the academic research of Coddington, 1993; Fuller, 1999; Ottman, 1994. Fuller’s (1999) definition of Green Marketing:

Course devising, implementing, regulating developments, valuation, and promoting, satisfactory product distribution following three criteria: (1) customer

needs must be met, (2) organizational goals must be attained, and (3) process must be compatible with ecosystems.

Ecological Marketing titled book focused on workshop, had the term “Green Marketing” held by American Marketing Association (AMA) in the 1975. Being at its early stage, little or no attention was paid to Green Marketing. The Green Marketing first definition given by (Henion, 1976) is “the marketing programs implementation environmentally directed to conscious market segment” (Banerjee, 1999). Later, Green Marketing was recognized, and acquired status in the early 1990s, when (Weiner & Doescher, 1991) exemplified Green Marketing and Consumers who are green are environmentally conscious consumers. Until in (1984) determined Green Consumers to be socially conscious and construct social image behavior. No Green marketing particular definition raised many different definitions depending on the field of study. Polonsky (1994) said Green Marketing is marketing style defining designed activities generating and facilitating goods and service exchange satisfying need and want, and this satisfaction is achieved with minimal negative impact on environment.

Green Marketing involves a broad range of activities; production process changes, product modification, sustainable packages, and modified advertisement (Belz & Peattie, 2009). The concept of Product Life Cycle resulted in Production Modification, to extend life of a particular product. Green Products market requirements led company’s struggle in achieving Green advantage, are experiencing product modification necessity in introducing Green feature. Green features achieved through product modification involve changes made in production process.

Companies developing and using sustainable packages results in improving the

sustainability of product and its use (Zabaniotou, 2003). Modifying advertising with company's message to result in large number of members posting minimal negative impact on environment.



Figure 4: Green Marketing and its Branches in Marketing Field.

Ottman, famous work “The Rules which are new to Green Marketing: Tools, Strategies, and Inspiration to Branding sustainably”, claimed organization’s environmental considerations integrated into marketing aspects with product modification, new product development, and communications between all points. Green Marketing is stated as management which is holistic, responsible to identify anticipating consumer need in society with profit and sustainability (Crane & Peattie, 2005). Crane declared Green Marketing early development in the late 1980s, appearing in market due to growing consumer’s interest in green products. Increased awareness’s and need of green product shows consumers willing to spend for green features. Told that Green Marketing has holistic nature, suggesting that besides any supplier and retailers, new stakeholders are enlisted, which can be educators, members of the community, regulators and NGOs. Green Marketing encountered many challenges, despite these challenges Green marketing sustained advancing adherent, primarily in growing global interest towards climate changes. (Mendleson,

Nicola, & Polonsky, 1995) The concern towards environment's climate change resulted in companies advertising to reduce climate impacts, and products and services modification (McDaniel, Stephen, & David, 1993).

Green Marketing is known as environmental marketing and sustainable marketing which refers to organization's work on design, promotion, pricing and distribution of product or service not harming the environment (Sarkar, 2012).

Marketing falls in Green Marketing with its Marketing Mix 4Ps, adapted to achieve Green features.

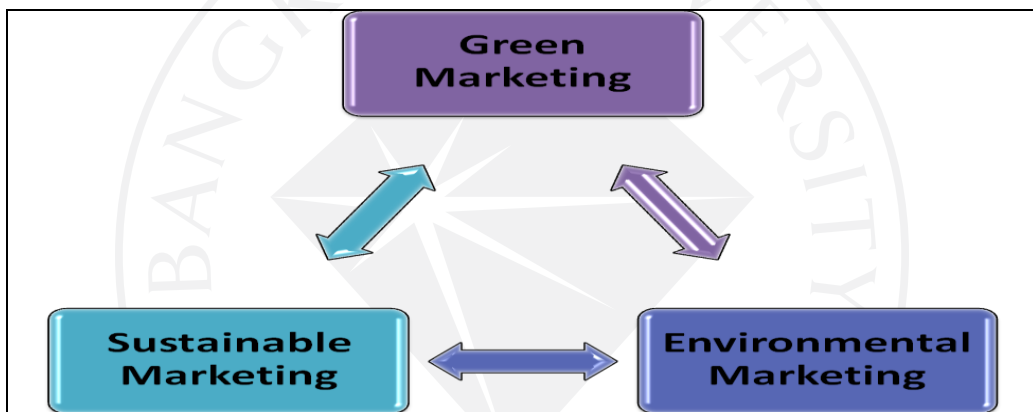


Figure 5: Green Marketing with its Established Field of Studies in Marketing.

Green Products

Alike Green Marketing, Green Products has no specific definition with unclear features and field applicable to Green concept. Green Products are known as environmental or ecological friendly products. Green Products are products with no or minimal pollution caused to the earth and its environment, or depletes natural resources, and is recycled having environmentally friendly content in product or packaging which reduces negative impact on the environment (Elkington & Wasik, 1996). Green Products are product with recyclable content or strategies to reduce

packaging and using less toxic materials to reduce negative impact on natural environment.



Figure 6: Requirements of a Green Product.

Demand of Green Products caused due to increasing environment concern and number of Green Consumers. Consumers aware and interested in environmental issues are known as Green Consumers (Soonthonsmai, 2007). Green Consumers are organized manufactures, retailers who actively promote preservation of the earth (Fergus, 1991). An important part of Green Marketing activity is Green labeling, also known as Eco- Labeling, which makes relevant information available to the environmental products to consumers through green labels on products (Truffer & Wustenhagen, 2001). Green Labeling promotes and differentiates Green Products from other products in the market. Green Products are generally Green labeled for example: no-pesticide, organic or natural fibers, no synthetic dye, and radiation free license/certificates.

Developing sustainable packages to reduce negative impact on the environment is necessary. Plastic packaging is major form of packaging used in all the

industries. The concern is how Green is plastic green packaging modified to be Green Marketing.

Firms adopting to appear more responsible towards society are in terms of the consequences of activities in company adding responsibilities to shareholders (Bowen, 1953). Green Marketing offers promoting Green life styles opportunities to companies and consumers. Green Marketing provides business innovative opportunity to solve and achieve targets in profit with strong customer relationship. Green objectives further described as business means in changing company's competitor's perspective "change the way they see the world" (Grant, 2007).

Government involvement in deciding and implementing Green concept in market is important. Government policies and regulations encourages marketers to introduce Green products, Green advertisements, Green Labeling, etc. to the market. The country's government enforces company's concern towards humankind (Petkovic, 2009). Role of the government is to form buying power, consumer activism or armchair activism. Green energy are resources of a country used in production of energy causing no or minimal harm to the environment. Green energy is important concept to government which wants to safeguard the planet earth for its future generations. (Sciencedaily.com, 1995)

2.2 Marketing Mix

Marketing plays an important role in business activities. Company developing resource and capability matching marketing strategies to satisfy customer's changing needs and wants to achieve profit goals. Marketing is management process responsible for identifying, anticipating and satisfying all customer requirements at a profit (Cartwright, 2002). Marketing plays an important role in business strategy,

suggested by (Ansoff, 1987) to firms meant for having defined scope and growth direction. Product market scope must specify particular sectors in firm confines a suitable position to grow in defined direction. This helps plot current market pasture of a moving firm.

Developing products and providing services are firm's major functions. Company's marketing strategy involves concern towards building strong customer relationship. Concept of marketing is defined as company's competitive process providing goods and services to consumers at profit (Pettinger, 1998).



Figure 7: The Marketing Mix 4Ps.

Marketing Mix is known as a dominant idea in modern marketing (Kotler, 1996). Kotler (1996) proclaimed marketing mix as set controllable tactical tools of marketing blending firms in response production required in targeted markets. Mixture of marketing variables is controlled more precisely amounts for choice of situation (Randall, 1994). Marketing elements are dependent on overall mixture interaction and integrated between each other (Randall, 1994).

The main well known marketing mix consists of 4Ps, including: Product, Price, Promotion, and Place (McCarthy, 1994).

McCarthy (1960) 4Ps are organized and prominently defines the marketing concept and the marketing mix. The 4Ps of marketing is all about the right combination of products, price place and promotion used within a particular product. Marketing is about right combination of product in the right place, at that right price with the right promotion. Marketing mix is used to describe different desirable and a different kind of choices made by an organization wholly process brings product or service to that market.

Product

Product is any tangible purchase. In Marketing Mix, product accounts all goods and services companies offers to target market for attention, acquisition, consumption or use, or to satisfy consumers' needs and wants (Kotler, 1996). Product is broken down into many ways according to physical attributes; quality of product, style of product, features offered in that product, is it branded product, the before and after sales service and guarantee policy of that product (Randall, 1994).

Three levels of product presented by Hollensen (2003) the first or bottom level is basic core product benefit, or service benefit customer buys. The second level is product attributes or actual product composition of factors and conditions that buyer expects to purchase. For example: quality level of product, features, design of product, the brand name it carries and its packaging. The last, third level is supporting services purchased on purchase of a product, additional consumer service and consumer benefits (Dibb, 1994) and (Kotler, 2003). Product integrity is sum of all features of product properties a customer purchased to achieve consumer satisfaction,

known as combination of performance product with full understanding of how it affects client's future.

All products involve mixture of physical tangible product and services. Kotler defined product service in four different categories; pure service, major service with accompanying minor goods and services, tangible good with accompanying service, and pure tangible product. Product in market is mixture of physical and service features. Kotler's four categories of product are tangible with services to accompany. Kotler (1996) stated that any good designer will consider the appearance the most, but also creates a design that is easy, safe, inexpensive in using, and simply economical to manufacture. Comfort provides product structured material quality producing product with features (Kotler, 1996). Branding is marketing strategy developing reputation, adding value to products. Value added to products is intangible benefit interprets consumer's confidence in brand to perceive desired quality and competitive advantage in the market (Kotler, 1996).

Service is activity or Benefits Company offers to customers intangibly with no result in ownership of any tangible product. Service production is not tied with physical product (Kotler, 1996). Three types of marketing styles applied in marketing of services are: External marketing is normal work that prepares price, distribution and promotion of service (Kotler, 2003). Internal marketing work trains and motivates customers and employees with supporting services to act as a team providing customer satisfaction. Interactive marketing is perceived quality service depending on quality of buyers – seller interactions.

Price

Price is amount of money being charged for a product or service that is purchased. Price is known as value of product that is exchanged by consumer to have benefit of that product or service (Kotler, 1996). Price is marketing mix element able to produce revenue, other elements are represented as costs. Price is most flexible marketing mix element.

Important feature of pricing is formation of price competition strategy faced by marketing executives. Pettinger (1998) price or pricing is based on many different combinations of market expectations, buyer affordability and ability to increase finance, nature of competition in market, developer's affordability, specific conserving factors to a particular job- such as time, quality constraints, location, materials, agreed payment terms.

Price is a crucial factor in purchase decisions (Adcock, 2001). Comparative prices are set against direct competition considering product affordability to customers. Testing affordability and acceptability is important. A competitive price is influenced by customers of affordable products. Judging product's attributes is difficult relying on price indicator (Dibb, 1994). Dibb stated company considers importance of product's price to target markets of importance by absolute price. Price varies from different market segments and customer to customer. Customers in market segment react differently towards different products and prices.

Nine factors influencing price sensitivity of customers by Nagle (1987) are; distinctive products, perceived greater product quality, low consumer substitutes awareness in market, difficulty in comparison, smaller proportion representation of priced products expenditure to customers, increased customer's benefits, used

products bought previously, shared costs with other parties, disorganized product or service.

Promotion

Promotion is product or service communication activities to target customers and persuade for product purchase (Kotler, 1996). Promotion is to build, develop and enhance reputation and confidence, present achievements, capabilities and expertise with relation to the needs and wants of customers and potential customers (Pettinger, 1998).

Five promotion mix tools defined by Kotler (2003) are; advertising, sales promotion, public relations and publicity, personal selling and direct and interactive marketing. Advertising is paid form of personal promotion and presentation of goods or services with sponsor identification (Kotler, 2003).

A sale promotion is incentive encourages trial purchase and sales of product or service (Kotler, 1996). Public relations and publicity are unpaid organizational activities communicating with target audiences. Personal selling is face to face selling or interaction with one or more buyers with presentation purpose, answering questions, and procures orders (Kotler, 1996). Direct and interactive marketing refers to indirect communication such as mail, telephone, fax, emails or even the internet, used in communicating directly with customers and prospects (Kotler, 1996).

Place

Place is placement of products, the distribution channels (McCarthy, 1994). Pettinger (1998) describes place as the meeting point of the buyer and sellers of any goods and services. Hellensen (2003) stated that place is distribution channel, which consist of producers and customers. Most companies use several channels, and most

channels use more intermediaries that help in moving products to customers. First it was unstated, but Adcock (2001) introduced that distribution channels consist direct and indirect marketing channel which gives them choice of channel structure. Direct marketing is when product is delivered direct from manufacturer to customers. Indirect marketing is which consists of more intermediaries, who are working independently and acts as a link to move a particular product in market to its end users (Hutchings, 1995).



Figure 8: The Marketing Mix 4Ps and its Features.

2.3 Social Marketing

Social marketing is related to perspectives of society's wellbeing with human behavior. Personal habits and addictions eventually damages individual benefits. For example, emission of carbon, carbon footprints contribute to factors of consideration such as climate change contributing as greatest environmental threat to mankind.

“Societies are never perfect” nearly perfect. “Many are dramatically imperfect. Problems such as hunger, poverty, crime, and disease found everywhere but especially in less developed parts of the world.” Problems are all around the world at different levels. “Societies are also constantly seeking change; seeking ways to

overcome problems both grand and trivial and to make the lives of individuals and their environment significantly (or at least somewhat) better.” (Alan, 2006).

Social marketing is individual and social conceptual changes figured by techniques from commercial marketing. Commercial marketers encourage consumers to exchange money with products or services. Social marketer encourages individuals to have exchange of products or services with money, to exchange unhealthy lifestyles for healthy ones (Kotler & Roberto, 1989). Marketers apply different commercial marketing principles, behavioral theories, and social marketing designed campaigns promoting public health, safety, social development and environmental protection (Kotler, 2002).

Important behavioral impact among public awareness and attitude change is social marketing’s only “bottom line” (Andreasen, 2002).

Social marketing theory in marketing goes along with other marketing theories and fields; psychology, sociology, anthropology, and communications influencing behaviors (Gordon, 2006).

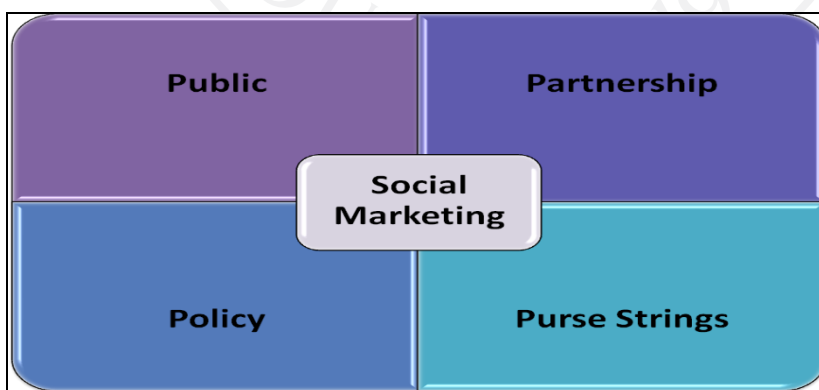


Figure 9: Social Marketing and its 4Ps.

Social marketing is application in commercial marketing of social issues.

Social marketing is related to marketing mix and its 4Ps. Product a company sells

must be healthy as part of social marketing; product's price required is time and energy; place is advocated or practices company's behavior; and promotion of referred message reaching target audience and market.

Social marketing is having different definitions depending on criteria. The term and definition of social marketing evolved during time. At first social marketing described all the activities that falls in social advertising (Fox & Kotler, 1980).

The four most important definitions of social marketing are: "Social marketing is the design, implantation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution, and marketing research." (Kotler & Zaltman, 1971).

"Social marketing is the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences in order to improve their personal welfare and that of their society." (Andreasen, 1995)

"Social marketing is the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify, or abandon a behavior for the benefit of individuals, groups, or society as a whole." (Kotler, 2002)

"Social marketing is the systematic application of marketing alongside other concepts and techniques to achieve specific behavioral goals, for social or public good." (National Social Marketing Centre, 2006)

Four definitions are important to understand social marketing role in marketing and society, reflecting core principles and major changes in marketing field.

Social marketing is related to commercial marketing, which was not described in Kotler and Zaltman's (1971) definition. Kotler, Roberto, and Lee in 2002 introduced changes in theory of behavior as core market changing element. Influenced definition of Andreasen's (1995) helped in understanding social marketing better. In 2006, the UK's National Social Marketing Centre defined social marketing into two different elements: marketing and behavioral change. This integrated commercial marketing into marketing campaigns social to the environment.

Social marketing is defined on bases of criteria Andreasen (2002) stated six different criteria claiming part of social marketing approach (Andreasen, 2002). Researchers found measuring social marketing difficult on criteria bases proclaimed by Andresen (2002), starting better search approach in studying social marketing. Four studies labeled social marketing out of 200 were described by McDermott (2005). Summarized criteria are: behavior change, audience research, segmentation, exchange, marketing mix, and competition. Social marketing adopted included broader range of theories influencing measurement criteria (National Social Marketing Centre, 2007) consisting of: customer orientation, behavior and behavioral goals, information based theories, insight-driven, exchange analysis, competition analysis, segmentation and targeting and intervention and marketing mix.

Third way introduced to clarify social marketing consists of comparing differences between three common factors resulting in behavior changes: education, marketing, and laws. Education refers to intended messages influencing target audience's behavior by providing direct reward or punishment. Marketing is a part influencing behavior offering reinforcing incentives and/or disincentives. A law uses

financial incentives and/or disincentives to increase or decrease the behavior expected (Rothschild, 1999).

2.4 Green Marketing Mix and Social Marketing

Marketing have different branches, such as Marketing mix and social marketing. Marketing mix and social marketing concepts are applicable to Green marketing. Making an idea, product, production, packaging or any other feature green involves modifying marketing mix and social marketing from its original format to something green.

Marketing mix in original form consist of product, price, place, and promotion. Products and industries specializing in green concept targets niche market with green products are modifying marketing mix 4Ps. Marketing mix is a tool used by marketers in marketing (McCathy & Jerome, 1964). Marketing mix is crucial to companies' deciding products or brands associated with 4Ps: product, price, promotion, and place. Booms (1981) found difference in marketing applied to services. In service marketing 4Ps remains the same with additional 2Ps, which states the different nature of services.

Needham & Dave (1996) claimed the concept of 4Cs before introduction of marketing mix, in 1990s, on bases of consumer products or services. Four C's is consumer driven and replaced by marketing mix 4 Ps. Four Cs theories are still in market, but not applicable. Four Cs are consumer factors: cost of production or cost of opportunity, communication method and convenient to everyone. Four Cs in Shimizu's theory are: commodity, cost, communication and the channel used. Kotler (2012) introduced four Ps: people involved or not involved processes, place in

marketing, programs which were organized, and performance. Many studies show variety in marketing concepts; four Cs sometimes, or four Ps or seven Ps.

Borden (1967) work had different names and words describing the one concept of marketing mix. He started teaching the term marketing mix after it was described by James 1948 as a mixer of ingredients.

Needham (1996) four Ps proposed by McCarthy as concepts used throughout the world.

There is difference between marketing mix 4Ps and green marketing mix 4Ps. Marketing mix 4Ps are: product which is item that satisfies consumers' demands and part of product mix. Product life cycle concept is applied to products helping in successful marketing mix. Needham (1996) defined product development strategies as part of marketing mix by marketers. Price is amount of payment customer pays for any product. Price differs depending on the quality, type of product, while profit to the company, which helps in survival. Marketing mix price requires adjusting price according to price elasticity and demand and supply. Needham (1996) determined marketers' special attention to price decision to choose best complementing elements of marketing mix.

There are three pricing strategies: market penetration pricing, market skimming pricing and neutral pricing. Major considered factors are Needham(1996), customer's product perspective towards attributes and competitor's products – are differently valued, and compared competitor's product prices with quality – is reference value.

Promotion method used by marketers to communicate with target market. Needham (1996) introduced promotion elements: advertising, sales organization,

public relations, and sales promotion. Well known and effortless worthy promotion technique is word-of-mouth.

Placement or channel of distribution is way to reach appropriate target consumer. Kerin (2001) various strategies used to decide appropriate distribution channel, such as intensive distribution, selective distribution, exclusive distribution and franchising.

Green marketing mix is modified concept of marketing mix paying more attention to green characteristics to product, price, place, promotion and packaging. In early 1970s, environmental concern and environmentally friendly products adaptation was considered different out of society (Bohlen, 1993). During the end of 1980s, being environmentally friendly and environmental issues were cared with huge quantity of materials published on environment issues and solutions (Bragd, 1999); demand for green products grew across different market segments (Ottman, 1993).



Figure 10: Marketing Mix, Social Marketing and Public Relations in Relations.

Green products contain less environmental harmful elements depending on demand of green products and ethnical social belief, attitude and behavior towards environment concerns (Johnson, 2004). Researchers found old people spending more

time recycling after reading than young people. Green product strategy offers marketers and organizations establishing opportunity and strong environmental communication creating competitive advantage to both organization and consumers (Bohlen, 1993).

Introduced the world to “green movement” (Iyer & Zinkhan, 1994). Green movement is fear to behave positively when felt threat to the environment (Tanner, 1999). Barber (2010) stated consumers being ‘green’ are truly selecting to purchase environmentally friendly green products. Green marketing mix products offers consumers benefits while offering environmental claims: recyclable, reusable, refillable etc.

Green purchase influencing factors are price and availability (place) of green products (Young, 2008). (Mainieri, 1997) stated higher prices and inefficient green products supply are weak green marketing results contrasting huge influence on green purchase.

Green marketing pricing mix of green products is slightly higher to other conventional products. Companies educating consumers of environmental contents involved product and sustainability. Enforcing customers ready to pay little extra for green products and its green features.

Place makes product available to customer through right channel of distribution (Elena & Martinez, 2006). Channel of distribution logistics of product refers to placement. Green products research suggests more ways in taking less packaging space to less transportation network reducing emission of carbon footprints to the environment. Encouraging franchising instead of importing products from other was retailing country in domestic market (Clare, 2007).

Promotion is important part of marketing mix involving activities such as sales promotion, advertising, personal selling, and public relations (Mario, 2009). Research indicates less promoting green products work in comparison to non-green products with few advertisements building acknowledgement.

Green marketing and green products faces many challenges: lack of awareness of green products leads low involvement and willingness to pay extra for green feature, green products are renewable and recycle is hard and expensive to build material's high cost, to develop successful green product requires high research and development cost is lengthy process for companies not ready to wait for return, and emerging green marketing concept are not fully established in all industries so small companies are not ready to spend on it.

Packaging promotes products representing catching opportunity and persuading target consumers in purchasing decision (McDaniel and Baker, 1977). Green consumerism is about purchasing and using less environmental harmful products (Mainieri, 1997). According to Barber (2010), green purchasing consumers packaged products are environmentally conscious consumers. Research by Young (2008) supported consumer's environmental green marketing knowledge (green marketing mix- product, price, place, promotion, and packaging) influences purchase experiences. Green packaging attracts new and retains old consumers

Companies are going for green marketing due to some reasons. Customer pressure is major driving force of green marketing emergence (Nik, 2009). Customer's influences business and work styles. Developing country's customers show concern towards the environment purchasing environmentally friendly products.

Survived companies in hard competition products in customer's demands environment needs and wants.

Government pressure results in proposed different acts and regulations in country to protect society and consumers from the use and production of products which harms the country's environment (Abdul, 2009). Competitors and community pressure is built to achieve better position and comparative advantage to attract customers with better approach (Tanika, 2009). Green products production can result in reduction of production cost to the environment makes a company appear socially responsible providing advantage (Nai & Fong, 2010).

Smith (1776) stated in his most famous work "The Wealth of Nations": "Consumption is the sole end purpose of all production interesting producers ought to attend far necessary consumer promotions. The maxim is so self-evident, that it would be absurd to attempt to prove it. But in the mercantile system, the interest of the consumer is almost constantly sacrificed to that of producer; and it seems to consider production and not consumption as the ultimate end and object of all industry and commerce...." (p.2)

Social marketing was prominent before green marketing mix (Prothero, 1990). Green social marketing is a growing concept in primary marketing as a commercial activity. Green social marketing is a broader marketing concept which entailed confusing ideas in marketing (Luck, 1969). Luck (1969) stated "Examination of several authors' apparent concepts of these terms suggests that confused terminology may be epidemic in marketing and, therefore, an impediment to others' efforts to think clearly about the discipline".

International Social Marketing Association defines Social marketing as a development strategy integrating marketing concepts with other approaches influencing consumer behavior benefiting individuals and community. Social marketing is used in achieving noncommercial goals through basic commercial marketing practices (Truss, 2010).

The four Ps of social marketing are: publics, partnership, policy and purse strings (Weinreich, 2010). Marketers attain to have different target audiences for different programs to accelerate adoption of any idea or product. Public are both the external and internal groups, where external includes the target audience, policymakers, and gatekeepers and internal groups including trained sales teams for a particular program. Partnership talks about the lifestyle and social issues faced by a consumer and changes in real challenges. Facing challenges organization teams build more effective strategies.

Organizations set same goals and missions collaborate forming a strong identity. Co-creation of any market with its competitors is necessary in achieving in hard competition.

Policy makers and policy followers are all in same market. In social marketing a campaign is to stimulate individual behavior change to achieve sustainability, environmental change which is necessary. Any policy change from government is very important and is pitching a product or service to policy makers crucial for sustainability.

Purse string is when most social marketing campaigns are operated with the help of funds from NGOs, foundations, governmental grants, private donations and CSR funds.

2.5 Public Relations

Public relations are considered a part of marketing with confused communication goals and strategies. (Grunig, 1992) introduced theory of Excellence, defines public relations separately from marketing. The theory defines public relations as the “management of communication between an organization and its publics” and practices public relations with people who “manage, plan, and execute communication for the organization as a whole” (Grunig & Hunt, 1984).

Stated by Grunig & Dozier (2002) public relations is important organizational activity helping organizations achieve goals through strong relationship between organization and strategic publics. “Successful individual communication programs such as media relations, community relations, or customer relations affect publics and organization member’s cognitions, attitudes, and behavior - the cognitive, attitudinal, and behavioral relationships among organizations and publics”. In an organization usually achieving effective public relations is stated as organization’s mission, goals and bottom line as contribution to the organization.

Public relations programs are ongoing strategies resulting in improved communication and developing strong organization public relationships (Grunig & Dozier, 2002). Campaigns are major part of public relations used as communication strategy. Mainly campaigns are related to health issues, the Heart Truth is a qualified public relations campaign because of its ongoing movement.

There are 10 normative principles of any excellent public relations programs:

1. Public relations must be involved in strategic management;
2. Public relations empowerment is directly reported to the relationship to any management;

3. Functions in public relations are integrated;
4. Public relations are referred as a function in management;
5. Public relations are part of a manager's task rather than a technician;
6. Public relations are a two-way symmetrical model;
7. Public relations are a symmetrical system of internal communication;
8. Public relations play a role of knowledge provide for managers;
9. Diversity embodied in all roles;
10. Organizational context for excellence.

Public Relations is not considered as a profession (Agee, 1995), (Bivins, 1993), Cameron et al, 1996, Hainsworth, 1993, Ryan & Martinson, 1990, & Sallot, 1998 a single person claimed that it's a profession (Jackson, 1988). Many authors proposed different methods proving public relations to be a profession serving public interest (Bivins, 1993); using public relations teaching negotiation models (Saunders & Perrigo, 1988); defining professional standards (Cameron, 1996); certifying professional education programs (Hainsworth, 1993); accrediting practitioners and encouraging education (Paluszek, 1988); developing code of standards (Bivins, 1993); understanding social science research (Ryan & Martinson, 1990); and licensing (Wylie, 1994).

Many scholars set criteria to judge Public Relations as profession. Cameron et al. (1996) summarized the criteria into five elements of a profession: intellectual tradition, professional norms, professional values, membership in professional organizations and technical skills. Some other criteria by Cameron (1996) are identified as having code of ethics, working for the public interest, providing a unique service, and having autonomy.

Following criteria by Ryan & Martinson (1990) must be achieved by Public Relations to be considered as a profession:

Using special skills and esoteric knowledge.

Contributing to an esoteric body of knowledge.

Committing to public welfare and the profession.

Professional organizations and other professional's responsibilities.

Independence from control by people outside the profession.

Membership in organization that can discipline members.

Adherence to a written code of ethics.

Five necessary public relations criteria to gain professional status: specialized education involving body of knowledge, skills and researches; unique and specialized services provision recognized by community; people emphasis public service and social responsibility; autonomy and responsible decision making; enforces ethical code of self-governing association of colleagues (Saunders & Perrigo, 1998).

Wylie (1994) four characteristics of profession: a well-defined organized scholar knowledge body, with complete course standard of graduate study, followed by state given exams and certificates, and necessary oversight and discipline. Criteria make real profession such as medicine and law.

Some argued public relations is already a profession (Jackson, 1988), claiming public relations as a profession. Public relations argued as profession defines essential functional performance helping building relationships. Used psychological, sociological and many other fields data with social sciences influencing public interest relationship. Work stating Code of Professional Standards and PRSA with Public Relations Body of Knowledge (PRSA, 1988).

Agee et al. (1995) argued public relations is not a profession stating public relations is not yet qualified as a profession similarly to professions such as medicine and law. No prescribed educational public relations standards resulting in mandatory apprenticeships stated laws. Agee et al. progressed in public relations professional status through theory of development, research, and publications in journals.

Cameron et al. (1996) with Sallot et al. (1998) noticed public relations as not a profession with any consensus standards of any performance. Listed profession elements standards professionalism and public relations professions are: technical skills, research competency, salary levels, organizational status, education, ethical performance, accreditation, gender and racial equity.

Efforts made in developing public relations profession (Hainsworth, 1993) stated “it is not realistic for public relations practitioners to expect to see themselves recognized as true professionals by anyone other than themselves”, argued professional educations are major elements of true profession, and public relations important education is helping elevate public relations to professional status.

Public relations met professional traditional criteria models (Ryan & Martinson, 1990). Used specialized research techniques knowledge contributed to body of esoteric knowledge.

Public Relations not being a profession resulted in research and theories explaining how it can be a profession. Bivins (1993) argued public relations to be some set of values or ethics serving public interest before stated as a profession. Four paradigms guiding public relations studies: firstly, public relations must be in public interests serving practitioner act in the best way interesting clients. Secondly, practitioner must serve public interest causes. Thirdly, everyone wants or needs public

relations services must receive. Finally, continues quality improvement is public debated issues. Meeting all public relations paradigms helps achieving occupation professional status.

Matter of concern with no effort made in making public relations a profession, “it is not realistic for public relations practitioners to expect to see themselves recognized as true professionals by anyone other than themselves” (Hainsworth, 1993). Public relation is a very important education part helping understand true elements of professional education and its elements.

2.6 Roger’s Diffusion of Innovation

Rogers developed a theory known as Diffusion of Innovation in 1962, which is one of the oldest social science theories. It was developed to explain how an idea or product can gain momentum and spreads through that specific population or the social system (Rogers, 1995). Diffusion of Innovation also known as DOI, talks about the quality and time it takes for an idea or product to spread in a market. The result of this diffusion concept is that people who are referred as part of social system and adopts ant new idea, behavior or product. Adoption in this theory is referred to the behavior of a person, and what that person does differently than what they had previously. This behavior can be anything like purchase, or acquiring new products, or performing new behavior towards existing products. Diffusion is possible when there is adoption of ideas, behavior or product as something new or innovative by that person.

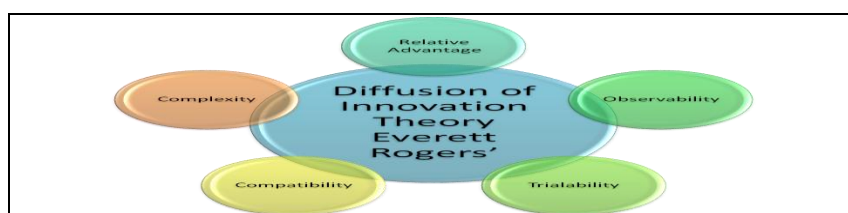


Figure 11: Diffusion of Innovation Theory and its 5 Variables.

Many studies proved that people act differently to these new ideas and products. Researchers found that adaptation of innovation by people is at different level by different people. It is very important to understand the characteristics of public that falls in our target population and how they adopt to innovations. There are five adopter categories, which applies different strategies to appeal to public in these different categories. Firstly, innovators are people who are first movers. They are the first one to try all the innovations, are interested in new ideas. They are willing to take risk of trying something before knowing fully about it. Not just trying something, they are also ready to develop something new, like any trend. Very little effort is made to attract this population, they are self-attracted by any new concept.

Secondly, early adopters are people who are represented as opinion leaders. They act as leaders and can change any opportunity. They keep all the knowledge about world and in need of change, are able to change and adopt new ideas and products easily, and comfortable with new ideas. How to manuals and information sheets on implementation are some strategies used to appeal to this type of population. They are self-convinced; need no information to change their behavior. Thirdly, early majority are people who are not part of leaders group but are ready to adopt new ideas before the rest of the world. They need security before adopting any new idea, which encourages them to adopt. This type of people is attracted by success stories and evidence of that new idea or product. Fourthly, late majority, members belonging to this group are skeptical of change. They believe in trying something new after a large population being part of that innovation. Mostly, convinced by promotions showing how many people have tried the innovation and that it's successful in around the world in quantity. Lastly, laggards are people who believe in old traditions and are

very conservative. They are the hardest group to convince and bring to board.

Marketers apply statistics fear appeals and pressure from people of other groups to persuade them.

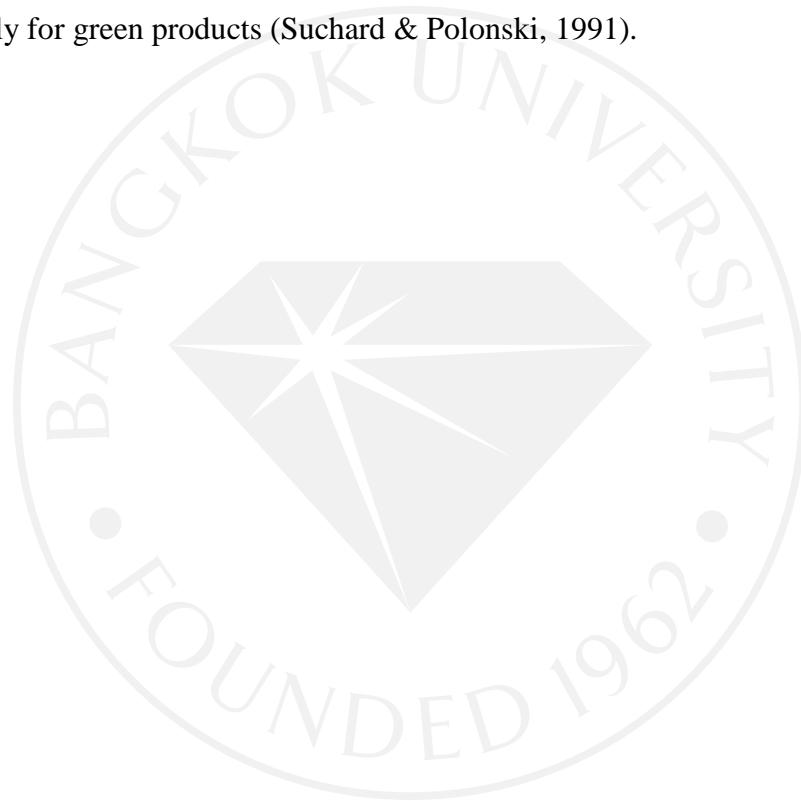
There are stages through which any person passes during adaptation of innovation and diffusion is accomplished. This starts with awareness of need for an innovation, followed by decision to adopt or reject that innovation, where it's required to test the initial use of the innovation, eventually leading to continued use of the innovation.

Five factors were introduced (Rogers, 1995) that can influence adoption of any innovation. Where each factor plays a different extent to these five adopter categories. The first factor is relative advantage, is about the degree to which innovation in comparison is seen well than the idea, program or any product which it is going to replace. Second factor is compatibility, referring to how consistent an innovation is to its values, experiences, and needs of the potential adopters. Third factor is complexity, which helps in understanding or using the innovation even while it's very difficult. Fourth factor is friability, where innovations are tested or experimented before a commitment is made. Fifth factor is observability, which refers to the observability or tangibility of the innovations and its results.

Diffusion of Innovation theory came with some limitations just like other theories, and is still developing. This theory lacks the concern of public health and was not developed to be applied to any adoption of new behavior or health innovations. There is no foster to participatory approach to adoption of public health program. This theory talks better of adoption of behavior but is not used in same way for prevention of behavior. The theory is not good enough to talk about individual's

resources or social support to adopt new behavior or innovation. The Diffusion of Innovation theory is most popular and used in many fields such as communication, public health, agriculture, criminal justice, social work, and marketing.

This adoptability theory is related to the diffusion of green marketing in many industries (Coddington, 1990). In 1991 environmentally conscious people were researched resulting in willingness to pay between 15-20 percent more than what paid regularly for green products (Suchard & Polonski, 1991).



CHAPTER 3

METHODOLOGY

Chapter 3 states the methodology of this Thesis. This chapter begins with stating the purpose of the study. The questionnaire questions are also presented. Followed by, description on the research participants, sampling procedures, and data collection process. In order to answer the research question quantitative approach was used. A methodology may be useful when quantitative questions like “diffusion”, “factors” are needed to be answered and must be presented well.

3.1 Purpose of Study

The purpose of this thesis is to develop a thorough understanding of marketing factors in green marketing which influences the perspective of consumers towards product with influence of Diffusion of Innovation theory in gemstone industry. This study employed a quantitative research method, using online questionnaires to explain relation of marketing Ps with Diffusion of Innovation theory.

Hypotheses

$$H^0: \beta_{p1}, \beta_{p2}, \beta_{p3}, \beta_{p4}, \beta_{p5}, \beta_{p6}, \dots, \beta_{p9} = 0$$

$$H_a: \text{AT LEAST ONE OF } \beta_p\text{'s} \neq 0$$

The purpose of this research is to gain primary data, when there are very few works on green marketing, to check the influence of green marketing and marketing concept in gemstone industry. A survey will be conducted to get primary data related to the relativity of marketing Ps and Diffusion of Innovation factors, as there was no previous study on the concept. There will be 450 respondents, who will be part of this study through their questionnaires. This questionnaire will be collected online. Survey is easier to test the hypothesis in this study. It is quick, inexpensive, efficient, and

accurate to assess any information about a large population. In this study, random sampling will be applied.

This research will search the truth of relationship between marketing Ps and how it is viewed by green consumers through Diffusion of Innovation, while introducing public relations as a variable. This research can be considered as a business research. Business research is a research which applies scientific methods to find some truth about any business theory. Here we will analyze opportunities and problems, generating and evaluating ideas, monitoring performance, and understanding the business process.

3.2 Description on Research Participants

This research is a type of basic business research, because it was conducted in order to get answers to concepts of green marketing which will be helpful and open to all organizations. This research is evaluating the spread of Green Marketing, which can be studied again in future to find its new levels of involvement in same market. This is a performance monitoring research which will indicate how important green marketing is in market and the level of its involvement. This research is a type of market tracking research which observed and analyzed trends in gemstone industry volume and compared the brand sharing process.

The research focuses on marketing mix Ps and social marketing Ps as the dependent variables which are affected by independent variables of Diffusion of Innovation Theory. Marketing Ps being the dependent variables are process outcomes which will be predicted by the independent variables of Diffusion of Innovation Theory. This research objective is to mainly introduce public relations as a part of marketing Ps.

A self-administered questionnaire was carried out giving descriptive, correlative results to describe the relation between Green Marketing mix and social marketing Ps and the concept of Diffusion of Innovation. This approach of research was first established by Glaser & Strauss (1967) to link data which is collected with systematic set of theories.

3.3 Data Collection Process

This research is a quantitative business research. It can be used to define the green marketing business research which is resulting in search of result objectives, which is through empirical assessments involving numerical measurement and analysis approach. Quantitative research is appropriate in this case because it involves research questions which will be answered to establish some standards in management decisions. When research is related to consumers and consumer behavior, quantitative research is the best approach to find all answers in an efficient and effective way. Quantity brings the results to somewhat near to the actual situation, bringing accuracy of nearly 95 percent or 90 percent confidence. Quantitative research technique is used to get direct or indirect numeric values. This numeric values are used to compute statistics and test hypothesis.

3.4 Data Analysis Description

Testing hypothesis will involve comparison of numbers. SPSS (statistical package for the social science) will be used to analyze all data collected. SPSS is a statistic software package which is used for statistical analysis. This software is applied to Microsoft excel, which makes it easier to use. SPSS is used by all market researchers, companies surveying, education researchers, researchers of health issues,

the government, organizations in marketing, and others. In this thesis SPSS will be used to form all the numeric resulted diagrams and analysis.

This thesis is testing relationship between marketing variables and diffusion of innovation factors. Testing relationship between more variables is possible by MANOVA analysis. MANOVA analysis will be used to estimate relationship between variables. MANOVA analysis involves modeling and analyzing variables focusing on the relation on dependent and independent variables. MANOVA analysis displays how value of a dependent variable changes when independent variable value changes, while other variables are fixed. MANOVA analysis is to estimate the value of dependent variable at any value of independent variable, known as conditional expectation. MANOVA analysis plays a major role in forecasting figures in business.

MANOVA is appropriate statistical technique for analysis is desired for more than one dependent variable. MANOVA goal is to test whether mean differences among the groups which are independent variables on a combination of dependent variables are likely to have occurred by chance. The measure will be achieved by creating a single dependent measure from a combination of all dependent measures that will maximize the between groups differences. More than one dependent measure is included to improve the research and chance of discovery that changes between different treatments or measures that more clearly defines the groups. MANOVA determines the statistically reliable mean differences among groups, even after adjusting the newly created dependent measure.

MANOVA research assumes because an effect while assuming that diffusion is part of marketing. Multivariate analysis of variance (MANOVA) is a generalization of ANOVA to a situation in which there are several dependent variables. MANOVA

tests if differences among groups on a specific combination of dependent variables have occurred by chance (Tabachnick, 2008). The purpose of using it is to check if the models of all dependent variables are significantly belonging to the groups. This analysis measures all variables together as a group. To measure the results of the MANOVA SPSS software is used. The variables which form the dependency of the target group with the marketing Ps are variables shown in the questionnaire – product, place, price, promotion, public, policy, purse strings, partnership, and public relations. The mentioned variables should be related through correlations or there should be concrete reason why these are entering the MANOVA test (Tabachnick, 2008).

Missing data is a very common problem in the research. When dealing with missing data, the percentages of the missing responses is important. If they are less than 5% the problem is not very serious. Missing data can reduce the precision of calculated statistics as there is less information than it is planned originally. Missing value analysis in SPSS highlights the patterns of missing data (Tabachnick, 2007). Considering the sample size and the size of missing data in this case, it is appropriate to use mean substitution for the missing data. The means are calculated from the available data set and are used to replicate the missing data (Tabachnick, 2007). In the online version of the study there was a requirement to answer to all questions except the “e-mail” one which was optional. This decreased the possibility for missing data. Anyway, on the paper based and the online based questionnaire there was some missing data. To obtain the missing data missing data analysis is performed on SPSS. The variables are defined as categorical.

3.5 Questionnaire Design

The questions technique used was likert scale. Likert scale helped in knowing respondents level of satisfaction related to all marketing Ps. All questions were fixed-alternative questions, with simple terminology. Random sampling style was used with few errors occurring in difference between sample results and result obtained using identical procedures. Each trader in Bangkok had equal chance of being selected as respondent, being a part of probability sampling.

This study was conducted in Bangkok with participants who were all traders in gemstone industry in Bangkok. Traders were considered to be green consumers in gemstone industry. Green consumers are consumers who shows concern towards the environment when purchasing gemstones (Peattie, 2001) or traders who are in search of gemstones which have minimal negative impact on the environment and society (Ottman, 1993). The study respondents were chosen on the bases of knowledge of gemstones and green marketing. At first exploring respondent's personal values, environmental attitude and knowledge, green purchasing behavior, and decision making was very important. The respondents were selected regardless of age, gender, education, income or social class. Respondents were asked some questions to explore their awareness towards the environment. Respondents were voluntary, and their responses were guaranteed confidential.

In this research, introduced by Glaser & Strauss (1967), based on grounded theory questionnaires were conducted. This theory aimed at analyzing data into patterns and themes which are discussed. The data was coded in binary numbers as process of interpretation as a number of procedures. Binary coding helped in developing proper graphs and figures, resulting in proper comparison and analysis of

data. Strauss and Corbin (1990), causes and consequences were to clarify relations between phenomenons of interest.

3.6 Sample size calculator

The data in any statistics, for example the number of births, the number of employees are descriptive statistics. Descriptive statistics describes basic characteristics and summarizes the data in a much straightforward and understanding manner. Inferential statistics are used as inferences or to project sample to total population size. This is used to generalize data from a sample to a population.

A sample is a subset or a small proportion of the total population. Sample statistics are data obtained from sample. These are variables in a sample or computed measures from sample data size. The main purpose of inferential statistics is defined as judging a population, or collecting elements of information in interest of a researcher, from a subset of population.

The measured characteristics of a specific population are referred as population parameters. These are information about entire universe. Sample size data are used to make assumptions about population parameters.

The action of choosing number of respondents/ observation in a research is sample size determination act, to include statistical sample. Sample size is an important feature for any study where goal is to make inferences on a particular population from a targeted sample. The sample size is determined on the bases of data collection expenses, sufficient need of statistical power.

In a study different sample size are involved; stratified survey – different sample sizes for each. Census data is collected on the total population. Experimental design studies the divided treatment groups. The sample size was chosen depending

on expedience, which includes items readily available. This gave us idea of gemstone industry in Bangkok. A small sample size was chosen from there as results of confidence intervals and statistical hypothesis testing errors. Target variance was also estimated to derive sample obtained. Statistical test was applied once the sample was ready.

Sampling is selection of a subset of individuals from big large population. Each observation measures one or more properties of observable bodies distinguished as independent objects or individuals. In survey sampling weights are applied to data as adjusted for sample design.

Results are probability theory and statistical theory. The sampling process comprises of defining population, specifying sample frame, specifying the sampling method, determining the sample size, implement the sample plan, sampling and collecting data, and data selection.

Survey data collection is numbers of ways data can be collected or a study. This method collects information from a sample.

In unknown parameters larger sample size was required. Increased precision for larger sample sizes is minimal. The result is presence of systematic errors or strong dependence in data.

CHAPTER 4

ANALYSIS

4.1 Introduction

This chapter was devoted to analysis of the data collection by the method described in previous chapter: MANOVA. The objectives of the study are to find relationship between the 4 marketing mix Ps when modified for green marketing, 4 social marketing Ps when modified for green marketing, to the adaptation factors of Diffusion of Innovation Theory by Everett Roger's. Introducing public relations as an additional 9th P to the Green Marketing Mix which consists of 4Ps of marketing Mix and 4Ps of social Marketing. A questionnaire was used to collect the data. Findings were analyzed through the Statistical Package for the Social Sciences (SPSS).

4.2 Participant's Profiles

Participants for the study were recruited through filter technique. Visiting gemstones trader's offices and factories. First filtration was to have a gemstone trader working in Bangkok. A total of 458 respondents took part in this study, where 8 were defaulters. In total we had 450 respondents in our study. These 450 respondents were all locally based in Bangkok; working in gemstone industry.

This study required fieldwork before data collection. A fieldwork can be done in many different forms; personal interview – administering a questionnaire door to door, telephone interviewer calling. In this study for first 50 we did door to door questionnaire, to get accuracy of data collection and test questionnaire responses. 400 respondents were emailed the questionnaire to be filled.

Data collected was stored in excel file to rearrange and organize. This storage process excluded errors tool place in data collection. 8 respondent's answers where unclear as they selected many options, they are placed as defaulters. This data was organized in a spreadsheet. Spreadsheet files stores data from a research project and is typically represented in a rectangular arrangement of rows and columns. Rows represent a respondent's score as variables and each row represents a variable which is having a value for every respondent. Using SPSS, a statistical program, to form formulas on data collection.

A computerized survey data processing is being used in this study. Computerized survey data processing is transferring of data from a research project; from hard or soft copy the answers to survey questionnaire, to computers as data entry. There are many different forms of entering data into a computerized program; optical scanning system- read material directly which require paper and pencil questionnaire for mark sensed questionnaire. 100 percent accuracy is required in transferring the codes, and must be verified twice. The process of verifying data must be performed by a second or third party, to ensure error detection.

Error checking process is preformed after the transformation of original data by respected advisors. This is the final stage of data coding, known as data error checking and verification, or data cleaning to check wild codes. While data error checking there were many miscodes were found, which were fixed.

This study results were analyzed in form of descriptive analysis. Descriptive analysis transformation of data at elementary stage in a way that could be described in basic characteristics; central tendency, distribution and variability. The mean, median, variance, range and standard deviation are also part of descriptive statistics analysis.

This study will use all types of graphs to determine results. Histogram is a graph which shows frequency distribution, where the height of a bar shows the frequency of a category. These are useful for one type of data, with continues variables. These can also be used to form assessment distribution of data. A normal distribution line is imposed over histograms, to compare data skewed or multimodal.

To examine and understand how Roger's Theory of Diffusion of Innovation is a part of Green Marketing influencing consumer's perspective towards the 9 Ps; product, price, promotion, place, public, purse strings, partnership, policy and public relations, of green product in gemstone industry.

4.3 Research Findings

Data from independent variables Roger's Theory of Diffusion there are 5 variables: relative advantage, observability, trialbility, compatibility, complexity the data collected from the questionnaire 7 code to a new 3 level are as follows

Strongly disagree			Neither	Strongly agree		
1	2	3	4	5	6	7
1			2	3		
disagree			Neither	Agree		

There are nine variables and the dependent variable product, price, promotion, place, public, purse strings, partnership, policy, public relations

Multivariate analysis of variance (MANOVA analysis) is appropriate when there are several dependent variables, which are also correlated in between. The MANOVA test creates a new combined variable for all dependent variables. The results show if there is a significant difference between the groups on this composite dependent variable (Tabachnick, 2007). The null hypothesis in this analysis is that

there all the Ps of marketing and social marketing and public relations has same diffusion effect in green marketing in gemstone industry in Bangkok.

In order to use MANOVA the dependent variables should be correlated. As seen in the previous section, there are many correlations with different power.

MANOVA is also sensitive toward multi co linearity. In case there are correlations higher than 0.8-0.9 then these dependent variables provide unnecessary information. Thus, these variables need to be removed from the MANOVA analysis. In this study there are no such variables.

The assumptions which have to be met for MANOVA are several. Firstly, the sample size should be considered. Each cell should consist of more cases than the number of the dependent variables. Also missing data should not be presented. In the validation part this problem is solved.

MANOVA also requires testing for normality. According to the theory, a normal distribution is designed for continuous data. The variables which are tested with MANOVA in this study are latent because the answers are distributed on a likert scale and they measure attitudes or personality factors. The data with likert scale has only 3 categories. A likert scale is analyzed under the assumption of normality the results might be distort (Lubke, 2004). Thus, the use of transformations for normality is questionable. Some tests “assume that the response variable is normally distributed within groups, and the variances in the different groups are identical. However, such assumptions are generally not observed by the data collected through Likert Scales” (Wu, 2007). Since the distribution of the responses on the participating in the MANOVA test variables is spread on the positive scale and the outliers with the

5% trimmed mean calculation, do not cause any problems, it can be assumed that the data is normally distributed.

The next assumption is the absence of outliers. MANOVA is sensitive on outliers. Outliers are cases with scores which are different from the remaining part of the sample, either much higher or much lower. In the descriptive table each question is presented with a regular mean calculated. The aim here is to see another mean score called 5% Trimmed mean (95% confidence level). This mean is calculated as the top and the bottom 5% of the extreme values are removed. Then, a new mean is calculated. If a big difference between the old and the new mean is observed, then a further analysis should be considered. In this particular case for all variables it is shown that there are no significant differences between the old and the new means. The differences vary in a very small matter and some of them are even the same. Thus, the assumption for an absence of outliers is met for MANOVA.

The next assumption is the Multivariate homogeneity of variances. In order to check if this assumption is violated the Box's Test of Equality of Covariance Matrices is used. In this study's case significance value is 0.013 which is less than $P < 0.05$, thus, the assumption of homogeneity of variances is not met. If the result is significant as it is in this case, the reason for this could be the violation of the multivariate normality assumption. However, the results are fairly strong if the sample sizes are equal. Thus, the results can be reported.

We developed a comparative analysis of using MANOVA, discriminates analysis on the researched data. The researcher performed the following:

Perform data screening (assessing missing data, outliers and assumption violations of linearity, normality and homogeneity of variance-covariance matrices to be addressed).

The correlation matrix: this gives the opportunity in which examinations of interrelationships of the variables are conducted, between dependent and independent variables, also between independent variables. The regression coefficients and tests. MANOVA table summary.

Outliers were detected using uni-variate summary measures and bivariate techniques. The sample size was large enough for correlations to be estimated reliably. Correlation coefficients were less reliable showing little significant in the study.

Multivariate statistical analysis is concerned with the data collected on same dimensions. The interest is to compare corresponding single variable. The research is on multiple independent variables in study and is opt to analyze independent variable of one time.

The data analyzed each independent variable by one way MANOVA and the results were as follows:

1. Results of multivariate analysis of variance of the variable relative advantagewith variables product, price, promotion, place, public, purse strings, partnership, policy, public relations.

Results of the monitoring agreement

First, analysis of variance, Researchers have examined the agreement behind the scenes about the independence of the matrix of variance - covariance of variables, all variables with statistically Box's M value $p = 0.020$, which is less than the

significance level set 0:05 show. The matrix of variance - covariance of variables, all independent variables are statistically significant.

Results of multivariate analysis of variance

The analysis of the difference of the centroid of the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations fees Pillai's Trace = 0.998, Wilks' Lambda = 0.002, Hotelling's Trace = 418.265 and Roy's Largest Root. = 418.265, respectively, and the value $F = 20402.029$ $p = 0.000$ indicates that the centroid of the nine variables are different variables significant at 0.05

Considering the influence (variable relative advantage) found that p values obtained from tests Pillai's Trace, Wilks' Lambda, Hotelling's Trace levels of statistical significance at the 0.05 level indicates that the relative advantage has no influence on product, price, promotion, and place. , public, purse strings, partnership, policy, and public relations , but the tests Roy's Largest Root with p values less than the significance level of 0.05 indicating that the relative advantage influences the product, price, promotion, place, public., Purse strings, partnership, policy, public relations detailed in table 1.

Table 1: Comparative Analysis Centroid (Centroid) of the Nine Variables.

Effect		Value	F	Hypothesi s df	Error df	p-value
Intercept	Pillai's Trace	0.998	20402.029	9.000	439.00	0.000
	Wilks' Lambda	0.002	20402.029	9.000	439.00	0.000
	Hotelling's Trace	418.265	20402.029	9.000	439.00	0.000
	Roy's Largest Root	418.265	20402.029	9.000	439.00	0.000

(Continued)

Table 1 (Continued): Comparative Analysis Centroid (Centroid) of the Nine Variables.

Relative advantage	Pillai's Trace	0.051	1.288	18.000	880.00	0.187
	Wilks' Lambda	0.949	1.293	18.000	878.00	0.184
	Hotelling's Trace	0.053	1.297	18.000	876.00	0.181
	Roy's Largest Root	0.044	2.158*	9.000	440.00	0.024

*p<0.05

Using the test overall. Meet the influence of variables relative advantage on the dependent variables, so it examined the relative advantage that the differing opinions with the product, price, promotion, place, public, purse strings, partnership, policy, public relations.

The results revealed that the relative advantage that the differing opinions with the product, price, promotion, place, public, purse strings, partnership, policy has no difference, but those relative advantage with the comments. The average public relations and significant at the 0.05 level is detailed in table 2.

Table 2: Results of the Multivariate Analysis of Variance Between the Relative Advantages on 9Ps.

Source	Dependent Variable	Type III SS	df	MS	F	p-value
Relative advantage	Product	1.070	2	0.535	1.405	0.246
	Price	0.297	2	0.148	0.504	0.605
	Place	0.277	2	0.138	0.425	0.654
	Promotion	0.001	2	0.001	0.002	0.998
	Publics	1.046	2	0.523	1.598	0.204
	Partner	1.268	2	0.634	2.003	0.136
	Policy	0.159	2	0.079	0.223	0.801
	Purse	1.146	2	0.573	1.680	0.188
	P_Relation	2.505	2	1.253	3.509*	0.031

(Continued)

Table 2 (Continued): Results of the Multivariate Analysis of Variance Between the Relative Advantages on 9Ps.

Error	Product	170.145	447	0.381		
	Price	131.655	447	0.295		
	Place	145.678	447	0.326		
	Promotion	136.255	447	0.305		
	Publics	146.264	447	0.327		
	Partner	141.451	447	0.316		
	Purse	152.426	447	0.341		
	P_Relation	159.564	447	0.357		
Total	Product	171.215	449			
	Price	131.952	449			
	Place	145.955	449			
	Promotion	136.256	449			
	Publics	147.309	449			
	Partner	142.718	449			
	Policy	159.744	449			
	Purse	153.572	449			
	P_Relation	162.069	449			

*p<0.05

Table 2 showed that the influence of relative advantage on public relations has different significant at the 0.05 level, so the researchers examined the pair subsequently. Scheffe statistical tests showed that those with the comments Agree Disagree on public relations, with an average difference significant at 0.05 levels, detailed in Table 3

Table 3: Analyzes the Difference of the Pair Relative Advantage and Public Relations.

	mean	Disagree	Neither	Agree
Disagree	4.830	-	0.092	0.191*
Neither	4.922	-	-	0.099
Agree	5.021	-	-	-

1. Results of the multivariate analysis of variance. The variable observability with variables product, price, promotion, place, public, purse strings, partnership, policy, public relations.

Results of the monitoring agreement

First, analysis of variance, many researchers have examined the agreement behind the scenes about the independence of the matrix of variance - covariance of variables, all variables with statistically Box's M value $p = 0.353$, which is greater than the significance level set at 0.05 shows. Matrix variance - covariance of variables, all the variables are dependent.

Results of multivariate analysis of variance

The analysis of the difference of the centroid of the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations fees Pillai's Trace = 0.997, Wilks' Lambda = 0.003, Hotelling's Trace = 378.932 and Roy's Largest Root. = 378.932, respectively, and the value $F = 18483.454$ $p = 0.000$ indicates that the centroid of the nine variables are different variables significant at 0.05

Table 4: Comparative Analysis of Centroid (Centroid) of the Nine Variables.

Effect		Value	F	Hypothesis df	Error df	p-value
Intercept	Pillai's Trace	0.997	18483.454	9.000	439.00	0.000
	Wilks' Lambda	0.003	18483.454	9.000	439.00	0.000
	Hotelling's Trace	378.932	18483.454	9.000	439.00	0.000
	Roy's Largest Root	378.932	18483.454	9.000	439.00	0.000

(Continued)

Table 4 (Continued): Comparative Analysis of Centroid (Centroid) of the Nine Variables.

Observability	Pillai's Trace	0.046	1.145	18.000	880.00	0.303
	Wilks' Lambda	0.955	1.142	18.000	878.00	0.305
	Hotelling's Trace	0.047	1.140	18.000	876.00	0.307
	Roy's Largest Root	0.026	1.267	9.000	440.00	0.253

*p<0.05

Considering the influence (variable observability) showed that p values obtained from tests Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root greater significance level of 0.05 indicating that the observability has no influence on product, price, promotion, place, public, purse strings, partnership, policy, public relations detailed in Table 4.

Table 5: Results of the Multivariate Analysis of Variance between Observability on 9Ps.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	p-value
observability	Product	0.136	2	0.068	0.177	0.838
	Price	1.594	2	0.797	2.733	0.066
	Place	0.819	2	0.409	1.261	0.284
	Promotion	0.107	2	0.053	0.175	0.840
	Publics	0.676	2	0.338	1.031	0.357
	Partner	0.657	2	0.328	1.033	0.357
	Policy	0.500	2	0.250	0.702	0.496
	Purse	0.774	2	0.387	1.132	0.323
	P_Relation	1.888	2	0.944	2.634	0.073

(Continued)

Table 5 (Continued): Results of the Multivariate Analysis of Variance between
Observability on 9Ps.

Error	Product	171.079	447	0.383		
	Price	130.358	447	0.292		
	Place	145.136	447	0.325		
	Promotion	136.149	447	0.305		
	Publics	146.633	447	0.328		
	Partner	142.062	447	0.318		
	Policy	159.244	447	0.356		
	Purse	152.798	447	0.342		
	P_Relation	160.181	447	0.358		
Total	Product	171.215	449			
	Price	131.952	449			
	Place	145.955	449			
	Promotion	136.256	449			
	Publics	147.309	449			
	Partner	142.718	449			
	Policy	159.744	449			
	Purse	153.572	449			
	P_Relation	162.069	449			

*p<0.05

Table 4 shows that observability has no influence on product, price, promotion, place, public, purse strings, partnership, policy, public relations. Research and testing its observability shows differing opinions on the average product, price, promotion, place, public, purse strings, partnership, policy, public relations.

The results showed that respondent's observability has differing opinions on the average product, price, promotion, place, public, purse strings, partnership, policy, public relations.

3. Results of multivariate analysis of variance Trialbility between variables on the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations.

First, analysis of variance, Researchers have examined the agreement behind the scenes about the independence of the matrix of variance - covariance of variables, all variables with statistically Box's M value $p = 0.975$, which is more significant given 0.05 shows. Matrix variance - covariance of variables, all the variables are not independent.

The analysis of the difference of the centroid of the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations fees Pillai's Trace = 0.997, Wilks' Lambda = 0.003, Hotelling's Trace = 380.447 and Roy's Largest Root. = 380.447, respectively, and the value $F = 18515.066$ $p = 0.000$ indicates that the centroid of the nine variables are different variables significant at 0.05

Table 6: Comparative Analysis of Centroid (Centroid) of the Variable Public Relations.

Effect		Value	F	Hypothesis df	Error Df	p-value
Intercept	Pillai's Trace	0.997	18515.066 *	9.000	438.00	0.000
	Wilks' Lambda	0.003	18515.066 *	9.000	438.00	0.000
	Hotelling's Trace	380.44 7	18515.066 *	9.000	438.00	0.000
	Roy's Largest Root	380.44 7	18515.066 *	9.000	438.00	0.000
trialbility	Pillai's Trace	0.019	0.468	18.000	878.00	0.971
	Wilks' Lambda	0.981	0.467	18.000	876.00	0.971
	Hotelling's Trace	0.019	0.467	18.000	874.00	0.971
	Roy's Largest Root	0.013	0.642	9.000	439.00 0	0.761

Considering the influence (variable trialbility) showed that p values obtained from tests Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root greater significance level of 0.05, indicating that trialbility no influence on product, price, promotion, place, public, purse strings, partnership, policy, and public relations detailed in table 6.

Table 7: Results of the Multivariate Analysis of Variance between Trialbility on 9Ps.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	p-value
trialbility	Product	0.136	2	0.068	0.177	0.838
	Price	0.105	2	0.052	0.178	0.837
	Place	0.673	2	0.337	1.035	0.356
	Promotion	0.010	2	0.005	0.016	0.984
	Publics	0.621	2	0.310	0.950	0.387
	Partner	0.034	2	0.017	0.053	0.948
	Policy	0.037	2	0.019	0.052	0.949
	Purse	1.052	2	0.526	1.540	0.216
	P_Relation	0.130	2	0.065	0.180	0.835
Error	Product	170.607	446	0.383		
	Price	131.662	446	0.295		
	Place	145.110	446	0.325		
	Promotion	135.876	446	0.305		
	Publics	145.740	446	0.327		
	Partner	142.663	446	0.320		
	Policy	158.762	446	0.356		
	Purse	152.376	446	0.342		
	P_Relation	160.994	446	0.361		
Total	Product	170.743	448			
	Price	131.767	448			
	Place	145.783	448			
	Promotion	135.886	448			
	Publics	146.361	448			
	Partner	142.697	448			
	Policy	158.799	448			
	Purse	153.428	448			
	P_Relation	161.124	448			

Table 6 does not influence the overall trialbility on product, price, promotion, place, public, purse strings, partnership, policy, public relations, and the researchers tested whether trialbility with the differing opinions have value. The average product, price, promotion, place, public, purse strings, partnership, policy, public relations have no difference. The results showed that those who have differing opinions trialbility average product, price, promotion, place, public, purse strings, partnership, policy, public relations have no difference.

4. The results of multivariate analysis of variance. The variable compatibility a variable product, price, promotion, place, public, purse strings, partnership, policy, public relations.

Results of the monitoring agreement

First, analysis of variance, pluralist Researchers have examined the agreement behind the scenes about the independence of the matrix of variance - covariance of variables, all variables with statistically Box's M value $p = 0.747$, which is more significant given 0.05 shows. Matrix variance - covariance of variables, all the variables are not independent.

Results of multivariate analysis of variance

The analysis of the difference of the centroid of the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations fees Pillai's Trace = 0.998, Wilks' Lambda = 0.002, Hotelling's Trace = 426.181 and Roy's Largest Root. = 426.181, respectively, and the value $F = 20788.150$ $p = 0.000$ indicates that the centroid of the nine variables are different variables significant at 0.05.

Considering the influence (variable compatibility) showed that p values obtained from tests Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root greater significance level of 0.05, indicating that compatibility. No influence on product, price, promotion, place, public, purse strings, partnership, policy, public relations detailed in Table 8

Table 8: Comparative Analysis Centroid (Centroid) of the Nine Variables.

Effect		Value	F	Hypothesis df	Error df	p-value
Intercept	Pillai's Trace	0.998	20788.150 *	9.000	439.00	0.000
	Wilks' Lambda	0.002	20788.150 *	9.000	439.00	0.000
	Hotelling's Trace	426.18 1	20788.150 *	9.000	439.00	0.000
	Roy's Largest Root	426.18 1	20788.150 *	9.000	439.00	0.000
compatibility	Pillai's Trace	0.032	0.785	18.000	880.00	0.720
	Wilks' Lambda	0.969	0.784 ^b	18.000	878.00	0.721
	Hotelling's Trace	0.032	0.783	18.000	876.00	0.723
	Roy's Largest Root	0.021	1.048 ^c	9.000	440.00	0.400

*p<0.05

Table 8 does not influence overall compatibility with the product, price, promotion, place, public, purse strings, partnership, policy, public relations and research that were tested. Compatibility has been differing opinions on the average product, price, promotion, place, public, purse strings, partnership, policy, public relations.

The results showed that respondents compatibility are differing opinions on the average product, price, promotion, place, public, purse strings, partnership, policy, public relations has no difference detailed in Table 9.

Table 9: Results of the Multivariate Analysis of Variance between Compatibility 9Ps.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	p-value
compatibility	Product	0.663	2	0.331	0.869	0.420
	Price	0.019	2	0.010	0.033	0.968
	Place	0.999	2	0.499	1.540	0.216
	Promotion	1.129	2	0.565	1.868	0.156
	Publics	0.536	2	0.268	0.816	0.443
	Partner	0.266	2	0.133	0.417	0.660
	Policy	0.046	2	0.023	0.064	0.938
	Purse	0.749	2	0.374	1.095	0.336
	P_Relation	0.481	2	0.240	0.665	0.515
Error	Product	170.552	447	0.382		
	Price	131.932	447	0.295		
	Place	144.956	447	0.324		
	Promotion	135.127	447	0.302		
	Publics	146.773	447	0.328		
	Partner	142.453	447	0.319		
	Policy	159.699	447	0.357		
	Purse	152.823	447	0.342		
	P_Relation	161.588	447	0.361		
Total	Product	171.215	449			
	Price	131.952	449			
	Place	145.955	449			
	Promotion	136.256	449			
	Publics	147.309	449			
	Partner	142.718	449			
	Policy	159.744	449			
	Purse	153.572	449			
	P_Relation	162.069	449			

*p<0.05

5. The results of multivariate analysis of variance. The complexity of variables on the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations.

Results of the monitoring agreement

First, analysis of variance, pluralist Researchers have examined the agreement behind the scenes about the independence of the matrix of variance - covariance of variables, all variables with statistically Box's M value $p = 0.759$, which is more significant given 0.05 shows. Matrix variance - covariance of variables, all the variables are not independent.

Results of multivariate analysis of variance

The analysis of the difference of the centroid of the variable product, price, promotion, place, public, purse strings, partnership, policy, public relations fees Pillai's Trace = 0.925, Wilks' Lambda = 0.075, Hotelling's Trace = 12.369 and Roy's Largest Root. = $F = 603.351$ 12.369 respectively by value and $p = 0.000$, indicating that the centroid of the nine variables are different variables significant at 0.05.

Table 10: Comparative Analysis of the Centroid (Centroid) of the Nine Variables.

Effect		Value	F	Hypothesis df	Error df	p-value
Intercept	Pillai's Trace	0.925	603.351*	9.000	439.000	0.000
	Wilks' Lambda	0.075	603.351*	9.000	439.000	0.000
	Hotelling's Trace	12.369	603.351*	9.000	439.000	0.000
	Roy's Largest Root	12.369	603.351*	9.000	439.000	0.000

(Continued)

Table 10 (Continued): Comparative Analysis of the Centroid (Centroid) of the Nine Variables.

complexity	Pillai's Trace	0.049	1.226	18.000	880.000	0.233
	Wilks' Lambda	0.952	1.225	18.000	878.000	0.233
	Hotelling's Trace	0.050	1.223	18.000	876.000	0.234
	Roy's Largest Root	0.034	1.638	9.000	440.000	0.102

Considering the influence (variable complexity) showed that p values obtained from tests Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root greater significance level of 0.05, indicating that complexity did not affect the product, price, promotion, place, public, purse strings, partnership, policy, public relations detailed in table 10.

The results revealed that the complexity has undergone differing opinions with the product, price, promotion, place, public, purse strings, partnership, policy is not different, but the answer complexity with the differing opinions. The average public relations are significant at the 0.05 level as detailed in table 11.

Table 11: Results of the Multivariate Analysis of Variance between the Complexities on 9Ps.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	p-value
complexity	Product	0.243	2	0.121	0.318	0.728
	Price	1.378	2	0.689	2.359	0.096
	Place	0.399	2	0.199	0.612	0.543
	Promotion	0.630	2	0.315	1.038	0.355
	Publics	0.001	2	0.000	0.001	0.999
	Partner	1.232	2	0.616	1.946	0.144
	Policy	0.600	2	0.300	0.842	0.431
	Purse	0.413	2	0.207	0.603	0.548
P_Relation	2.265	2	1.133	3.168*	0.043	

(Continued)

Table 11 (Continued): Results of the Multivariate Analysis of Variance between the Complexities on 9Ps.

Error	Product	170.972	447	0.382		
	Price	130.574	447	0.292		
	Place	145.556	447	0.326		
	Promotion	135.626	447	0.303		
	Publics	147.308	447	0.330		
	Partner	141.487	447	0.317		
	Policy	159.145	447	0.356		
	Purse	153.159	447	0.343		
	P_Relation	159.804	447	0.358		
Total	Product	171.215	449			
	Price	131.952	449			
	Place	145.955	449			
	Promotion	136.256	449			
	Publics	147.309	449			
	Policy	159.744	449			
	Purse	153.572	449			
	P_Relation	162.069	449			

Table 10 does not influence the overall complexity of the product, price, promotion, place, public, purse strings, partnership, policy, public relations and research tests that complexity with the differing opinions has value. The average product, price, promotion, place, public, purse strings, partnership, policy, public relations are different.

The development of factor analysis which can be seen as the only solution to statistical techniques that may be applied to a group of different variables in which there is no specified dependent variable even independent variable.

The table defines all the variables of marketing mix and social marketing. Authors defined each variable differently. Questions in questionnaire are formed according to the definition of different authors. Data triangulation is an important

technique used in formation of questionnaires (Rothbauer, 2008). This is used to check the results in a study with two or more methods. It builds surety of result if more methods lead to same results. The technique validates data when cross verified from different methods.

Three groups of references are used to verify all the questions for questionnaire. The first group is literatures. Past work on different variables were studied. Different meanings were adopted from different authors. These meanings were applied to form questions for questionnaire. Alone literature is not sufficient for formation of questions. Experts in gemstone industry were also involved. Experts group involves high established business owners in gemstone industry, graduated gemologists, gemstone researchers, and gem and jewelry association members. The experts concluded variables definition applicable to gemstone industry. Experts defined gemstone industry to all variables to apply green marketing mix to gemstone industry.

Thirdly gemstone customers provided clear definition on all the green marketing mix variables. Customers are the main source of clear defined formations of questions. Consulting with all three groups in gemstone industry provided clear questions for questionnaire. A solid concluded table of questionnaires was formed when all the three groups resulted to bring the same definition. It is a result of data triangulation which resulted in satisfactory questionnaire result

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Discussion of Green Marketing and this study results.

Protection and preservation of earth's resources and the environment have become prime considerations both in business and public policy. As society became more concerned with the natural environment, businesses have begun to change their strategy in an attempt to address the radioactive concerns. These strategies "Green Marketing" and "Environmental Marketing" became one of the most prominent in emerging marketing sector, attracting the great deal of discussion among the popular and professional.

People are actively trying to reduce their impact on environment. Product, price, place, promotion, public, policy, partnership, purse strings, and public relation had little significance of diffusion of innovation theory factors: relative advantage, observability, triability, compatibility and complexity.

A one way between subject's multivariate analysis of variance, known as MANOVA, was conducted on the nine dependent variables: product, price, place, promotion, public, policy, purse strings, partnership, and public relations. The independent variables were the factors of diffusion of innovation theory: relative advantages, observability, triability, compatibility, and complexity.

Single factor independent variable assessments do not allow researchers to determine independent variables jointly which affects dependent variables results. MANOVA enables researchers to examine relationships between dependent variables the diffusion of innovation theory factors and provides researchers with statistical

guidance to reduce a large set of dependent variables the 9 Ps of green marketing mix as concluded by this study.

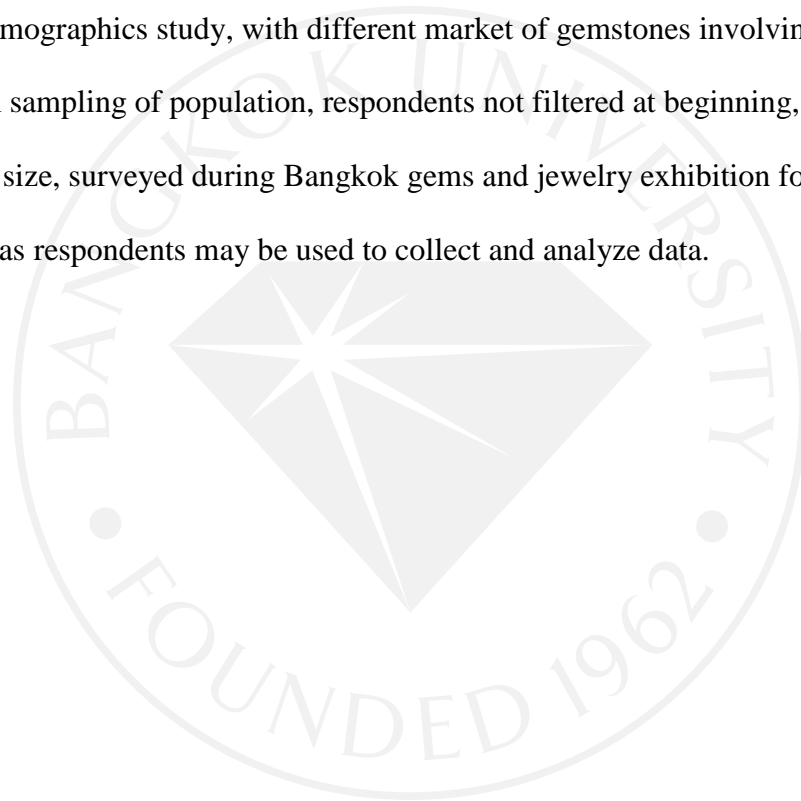
The primary data for the purpose of this study were collected from Bangkok gems and jewelry market, traders with registered gemstone companies, offices in Bangkok, traders from foreign countries and exhibitors in Bangkok gem and jewelry show locally and overseas. The questionnaire was designed to elicit information on general elements.

5.2 Conclusion

The current study is a compilation of various aspects of customers dealing in gemstones facing innovation factors unknowingly and applying green marketing. It is quite evident from the study previously done on gemstone market or green marketing, none combined gemstones industry with green marketing and there is no study on the innovation.

The study is based on the need to study Everett Rogers adaptation factors acting on green products, while establishing a 9Ps framework in green marketing mix. The current study will knowledge of adaptation factors of Diffusion of Innovation Theory by Everett Rogers in relation to Green Marketing Ps framework. The current study will provide a valuable insight of both Diffusion of Innovation Theory and Green Marketing Mix 9P framework, to all practitioners and theoreticians who want to understand Green Marketing innovations in different industries through Diffusion of Innovation stages impacting growth of Green Marketing Mix. Since the success of green products depends of adaptation factors customer's faces and diffusion of that innovation, it is imperative that green marketing is defined as all factors that encourages all industries. Thus, the current study will also benefit green marketers as

it may assist them in developing a marketing strategy that multiples growth of innovation factors and green products awareness to seek value of collective gain over self-interest. Despite significance of current study, there are major limitations on survey sampling. The study is limited to only gemstone traders in Bangkok dealing in gemstones. Who are not characterized by demographics, traders who frequently fly to Bangkok to trade in gemstones are not involved. For further research, a questionnaire with demographics study, with different market of gemstones involving Bangkok, a random sampling of population, respondents not filtered at beginning, and a larger sample size, surveyed during Bangkok gems and jewelry exhibition for all level traders as respondents may be used to collect and analyze data.



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APPENDIX

Questionnaire

		Strongly disagree			Neither	Strongly agree		
	Question	1	2	3	4	5	6	7
Product								
1	The available gemstone satisfies the want of green gemstone market.							
2	gemstones are easier to be retailed than wholesale.							
3	gemstones are available in rough and finished cut polished form in market.							
4	gemstones are similar in tangible form but carries intangible higher value with it.							
5	gemstones are less injuries to health.							
Price								
6	gemstones price is reasonably higher.							
7	The fluctuation demand of gemstones results in unstable price of gemstones.							
8	gemstone is less available in market resulting in higher price.							

9	Price of gemstones must be same.							
10	Depending on origin of gemstone reasonable price is determined. .							
Place/ Distribution								
11	gemstones are far much difficult to export in market.							
12	gemstones needs much care in storing.							
13	gemstones are available in widely in all retail and wholesale markets.							
14	Distribution system of gemstones is satisfactory making licensed gemstones available for all customers at every place at all time.							
15	Choice of distribution of gemstones is mainly retail shops making it available at some high end showrooms.							
Promotion								
16	Advertisements in gems and jewelry magazine builds strong licensed gemstones awareness.							
17	Advertising in gems and jewelry magazine results in generating sales.							
18	Advertising in gems and jewelry magazine shows company's stability resulting in brand loyalty.							
19	Advertising in gems and jewelry magazine results in direct marketing of							

	company and gemstones.							
20	Advertising in gems and jewelry magazine results in company's publicity.							
Publics								
21	gemstones are targeted to individuals in group differently.							
22	gemstones are popular depending on type of group belonging.							
23	Purchases of gemstones are influenced concepts and beliefs in society.							
24	Purchase of gemstone depends on targeted community wants and needs.							
25	gemstones influences using methods and sales of non-licensed gemstones.							
Partnership								
26	gemstone business is safe if it's in partnership.							
27	Partnership provides gemstones more popularity and greater return.							
28	Government encourages gemstones companies to work with other country's companies which are partner with them.							
29	Partnership raised challenges faced by gemstones companies due to tough competition.							
30	Few people work in partnership in gemstone industry.							

Policy								
31	gemstone policy deliberated system of purchasing in gemstone market.							
32	gemstone policy became a need in gemstone market.							
33	gemstones made compulsory in some countries by the government.							
34	gemstones are concern of policy makers.							
35	gemstones are provided by certificates as to government policy.							
Purse strings								
36	gemstone is a real large expense which involves control of politicians and established companies.							
37	gemstones increase expenditure of a company to 50 percent.							
38	Companies and government decides if gemstone will be developed in their company and market.							
39	gemstone gives families guarantee of spending money on worthy items.							
40	Government decides who will be part of gemstone market.							
Public Relations								
41	gemstone helps in spreading information about a stone and company of its							

	quality.							
42	gemstones spread awareness of health issues related to radiated gemstones.							
43	gemstones carry certificates building trust and strong customer relationship.							
44	gemstones are a way of trade which is for publicity.							
45	gemstones introduced new trusted purchase trend in market.							
Roger's Diffusion								
46	gemstones are relatively better than none NRC gemstones.							
47	gemstones are easier to be identified among all gemstones because of its better observability.							
48	gemstones give a choice to all to try something unknown.							
49	gemstones prove to be compatible with current purchase behavior.							
50	gemstones are much reliable and reduces the complexity to understand details before purchase.							

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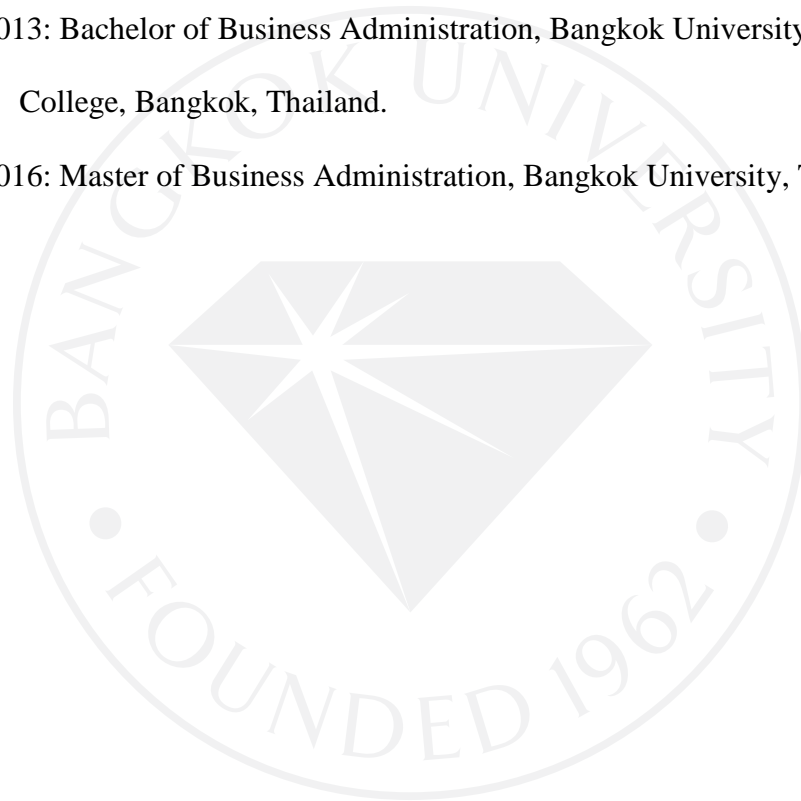
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