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Understanding Consumer Perceptions of Green Software: A Study in the Online Social Media Marketing Context

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IUB, CSE

Understanding Consumer Perceptions of Green Software: A Study in the Online Social Media Marketing Context

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Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

In this thesis project report, originality is encapsulated in both the breadth of research undertaken and the innovative analysis applied. Through exhaustive literature review and primary data collection, this work ventures into unexplored territories, uncovering novel insights and contributing fresh perspectives to the field. The synthesis of diverse methodologies and theoretical frameworks enriches the discourse, allowing for a comprehensive understanding of the subject matter. By pushing the boundaries of existing knowledge and presenting unique findings, this thesis stands as a testament to its originality and significance in advancing scholarly discourse.

Signature

Date

Name

Acknowledgement

In embarking on this academic journey, I am deeply grateful to all those who have contributed to the realization of this thesis project. First and foremost, I extend my heartfelt appreciation to my supervisor, Dr. Mahady Hasan, whose guidance, expertise, and unwavering support have been invaluable throughout this endeavor.I offer my sincere thanks to esteemed faculty members, Ms. Farzana Sadia, Ms. Sabrina Alam and Ms. Nujhat Nahar for their invaluable support and mentorship. I am indebted to Independent University, Bangladesh for providing the resources and conducive environment essential for research. My sincere gratitude also extends to the co-authors who generously shared their time and insights, without whom this study would not have been possible. Additionally, I would like to thank my family and friends for their encouragement and understanding during moments of intense focus and dedication. Finally, I acknowledge the countless authors whose studies laid the foundation for this work.

Shadat Irtisamul Haque

May, 2024

Letter of Transmittal

Mahady Hasan, PhD, UNSW
Head, and Associate Professor,
Independent University of Bangladesh,
Department of Computer Science and Engineering

Subject: Letter of Submission for Thesis Project Report, Summer 2023

Dear Sir,
I, Shadat Irtisamul Haque (ID: 2211843), pleased to transmit to you the completed thesis project report titled "Understanding Consumer Perceptions of Green Software: A study in the Online Social Media Marketing Context".This document encapsulates the culmination of our experiences throughout the Master of Science program at Independent University Bangladesh.

Throughout the process of crafting this thesis project, I have endeavored to adhere to the highest standards of academic rigor and integrity.This thesis project delves into the impact of social media marketing on consumers' decisions regarding green software purchases, identifying influential factors and suggesting effective marketing strategies to promote eco-friendly technologies.

It is my sincere hope that this thesis will contribute meaningfully to the existing body of knowledge in the field of Computer Science and Engineering.I trust that you will find the contents of this report both informative and insightful.Thank you for considering this submission and I am hopeful for the approval of my report.

Yours sincerely,
Shadat Irtisamul Haque
Department of Computer Science and Engineering
Independent University, Bangladesh
Email: 2211843@iub.edu.bd

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Chapter 1

Introduction

1.1 Overview

This dissertation explores the influence of social media marketing on consumers' decisions to acquire environmentally friendly software, examining the factors that influence such decisions. Despite the potential advantages of green software, which is designed to reduce environmental harm, it has been slow to gain acceptance. Through the utilization of the Theory of Planned Behavior framework, this research delves into how attitudes, subjective norms, and perceived behavioral control affect consumers' intentions to purchase green software. The study draws on data gathered from 163 participants representing diverse demographics to uncover insights that can aid in the formulation of effective marketing strategies for promoting sustainable technologies. By underscoring the importance of sustainable software development and marketing practices, the research highlights the pivotal role that social media marketing plays as a crucial platform in shaping consumers' attitudes and decision-making processes concerning sustainable consumption. Through emphasizing the significance of environmentally friendly choices and employing persuasive techniques, social media marketing emerges as a powerful tool for advancing sustainable practices and boosting the adoption of green software.

1.2 Contribution of the thesis

The significance of this thesis project lies in its thorough exploration of the impact of social media marketing on consumers' decisions to purchase environmentally friendly software, providing valuable insights for both the academia and the industry. Through the utilization of the Theory of Planned Behavior framework, the research identifies and scrutinizes critical factors such as attitudes, subjective norms, and perceived behavioral control, illuminating the intricacies of consumer behavior in the realm of eco-friendly technology adoption.

Furthermore, the research findings contribute to the crafting of effective marketing strategies specifically designed to endorse environmentally conscious technologies, addressing an urgent requirement in today's environmentally aware society. By underscoring the importance of sustainable software development and marketing practices, the study underscores the significance of embracing eco-friendly choices in alleviating environmental impacts.

Moreover, the research underscores the essential role of social media marketing as a potent instrument for communication and engagement, particularly in shaping consumers' attitudes and decision-making processes concerning sustainable consumption. Through the utilization of persuasive techniques and the highlighting of the advantages of green software, social media platforms can be effectively utilized to advocate for sustainable practices and enhance the adoption of eco-friendly technologies.

Overall, this thesis project provides valuable insights and actionable implications for software developers, marketers, and policymakers alike, facilitating endeavors to promote environmental sustainability within the software industry and beyond.

1.3 Organization of the thesis

This thesis project is organized into four main chapters, each serving a distinct purpose in advancing the research topic. In Chapter 1,the Introduction provides a comprehensive overview of the study, including its objectives, contributions, and organization. It delineates the scope of the thesis project, outlining the significance of the research and introducing the reader to its key components the Work Breakdown Structure (WBS) and Gantt Chart for project management. Moving on to Chapter 2, delves into the existing body of knowledge surrounding the research topic, synthesizing relevant literature from published papers. This chapter serves to establish the theoretical framework and provide a foundation for the subsequent chapters' analysis and discussion.Next, In Chapter 3, describes our thesis project which include sections on Problem Statement, Research Methodology, Data Collection, Data Analysis, Result Analysis, Demographic Result, Exploratory Analysis, Proposed Solution, and Proposed Solutions. This chapter showcases the empirical findings and analyses, offering insights into the research questions and objectives. Finally, In Chapter 4, the conclusion serves as the culmination of the thesis project, summarizing the main findings and implications of the research. It discusses the sustainability, feasibility, social and environmental impact, and ethical considerations of the project. Additionally, this chapter provides a project summary and outlines potential avenues for future research, thereby contributing to the ongoing discourse in the field. Through this organizational framework, the thesis project guides readers through a systematic exploration of the research topic, from the theoretical underpinnings to the empirical findings and their implications.

1.4 Thesis Project Management

1.4.1 WBS

The Work Breakdown Structure (WBS) is a fundamental tool in project management, offering a hierarchical representation of the thesis project's components and activities. It provides a clear and systematic breakdown of tasks from initiation to write-up, enabling effective planning, execution, and documentation of the research endeavor. Each phase of the WBS corresponds to a specific stage in the project lifecycle, starting with the initiation phase where research objectives are defined and project scope is established. The planning phase elaborates on the tasks required to develop a comprehensive research plan, create a complete project plan, and collect required data efficiently. As the project moves into the execution phase, the WBS guides the implementation of the research plan, from conducting survey to designing methodologies and analyze data. Finally, the closure phase of the WBS outlines the activities related to report writing, review and paper submission to conference for the publication, culminating in the successful completion of the thesis project. Overall, the WBS serves as a roadmap for navigating the complexities of the research process, promoting clarity, organization, and effective project management.

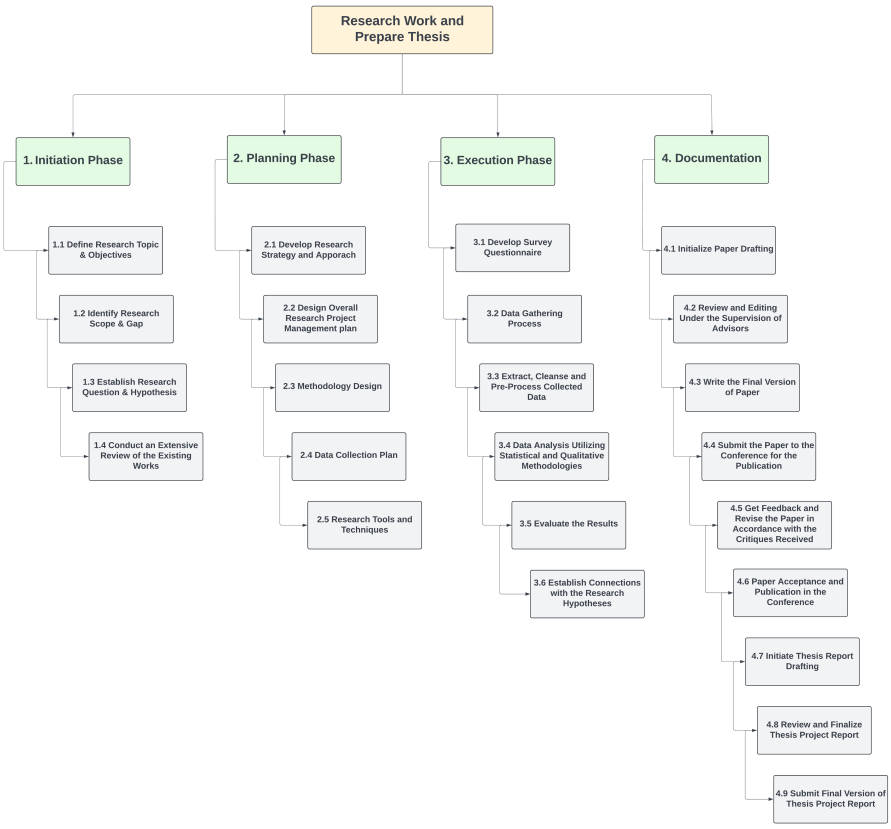

Figure 1.1: Work Breakdown Structure of Thesis Project

In addition to its role in guiding the various phases of the thesis project, the Work Breakdown Structure (WBS) also facilitates communication and collaboration among project team members. By clearly delineating tasks and responsibilities, the WBS ensures that everyone involved understands their roles and contributes to the project's success. Moreover, the hierarchical structure of the WBS allows for easy tracking of progress and identification of dependencies between tasks. This enables effectively allocate resources, manage timelines, and address any potential bottlenecks or delays. Furthermore, the WBS serves as a valuable tool for documentation, providing a structured framework for recording project activities, milestones, and outcomes. This documentation not only helps in project monitoring and evaluation but also serves as a reference for future research endeavors or academic publications. Overall, the WBS plays a crucial role in streamlining the research process, fostering collaboration, and ensuring the successful completion of the thesis project.

1.4.2 Gantt Chart

The Gantt chart provides a detailed roadmap for the thesis project, delineating key phases and tasks essential for its successful completion. In the Initiation Phase, the foundational groundwork is established by defining the research topic and objectives, identifying the scope of inquiry, and pinpointing existing gaps in literature that necessitate investigation. This phase also involves formulating research questions and hypotheses, setting the stage for subsequent inquiry. Moving into the Planning Phase, meticulous planning and strategizing take precedence. Here, the research strategy and approach are meticulously crafted, encompassing methodological considerations, project management plans, and delineation of research tools and techniques. Additionally, the phase involves designing a comprehensive methodology, outlining data collection plans, and selecting appropriate research instruments to gather relevant data effectively.

As the project transitions into the Execution Phase, the theoretical groundwork laid in the preceding phases is put into practice. This phase encompasses the practical implementation of the research plan, from the development of survey questionnaires to the execution of data gathering processes. Moreover, tasks involve the extraction, cleansing, and pre-processing of collected data to ensure its quality and integrity. Subsequently, data analysis commences, utilizing a combination of statistical and qualitative methodologies to derive meaningful insights from the gathered data. The evaluation of results is a critical component of this phase, involving the assessment of findings against established research hypotheses and objectives.

Finally, the Documentation Phase focuses on synthesizing and disseminating research outcomes. Here, the initial steps involve drafting academic papers, incorporating research findings, and undergoing rigorous review and editing processes under the guidance of

project advisors. Following this, the final version of the paper is prepared for submission to conferences for publication, with subsequent revisions made in response to feedback received. Simultaneously, the thesis report is initiated, undergoing review, finalization, and submission in its ultimate form.

Tasks	Duration	Start Date	End Date
1. Initiation Phase	118d	07/05/23	01/09/23
1.1 Define Research Topic & Objectives	33d	07/05/23	08/06/23
1.2 Identify Research Scope & Gap	29d	09/06/23	07/07/23
1.3 Establish Research Question & Hypothesis	24d	08/07/23	31/07/23
1.4 Conduct an Extensive Review of the Existing Works	32d	01/08/23	01/09/23
2. Planning Phase	101d	02/09/23	11/12/23
2.1 Develop Research Strategy and Approach	19d	02/09/23	20/09/23
2.2 Design Overall Research Project Management plan	10d	21/09/23	30/09/23
2.3 Methodology Design	35d	01/10/23	04/11/23
2.4 Data Collection Plan	27d	05/11/23	01/12/23
2.5 Research Tools and Techniques	10d	02/12/23	11/12/23
3. Execution Phase	76d	12/12/23	25/02/24
3.1 Develop Survey Questionnaire	21d	12/12/23	01/01/24
3.2 Data Gathering Process	31d	02/01/24	01/02/24
3.3 Extract, Cleanse and Pre-Process Collected Data	7d	02/02/24	08/02/24
3.4 Data Analysis Utilizing Statistical and Qualitative Methodologies	6d	09/02/24	14/02/24
3.5 Evaluate the Results	4d	15/02/24	18/02/24
3.6 Establish Connections with the Research Hypotheses	7d	19/02/24	25/02/24
4. Documentation	96d	26/02/24	31/05/24
4.1 Initialize Paper Drafting	20d	26/02/24	16/03/24
4.2 Review and Editing Under the Supervision of Advisors	9d	17/03/24	25/03/24
4.3 Write the Final Version of Paper	5d	26/03/24	30/03/24
4.4 Submit the Paper to the Conference for the Publication	2d	31/03/24	01/04/24
4.5 Get Feedback and Revise the Paper in Accordance with the Critiques Received	30d	02/04/24	01/05/24
4.6 Paper Acceptance and Publication in the Conference	2d	02/05/24	03/05/24
4.7 Initiate Thesis Report Drafting	5d	04/05/24	08/05/24
4.8 Review and Finalize Thesis Project Report	16d	09/05/24	24/05/24
4.9 Submit Final Version of Thesis Project Report	7d	25/05/24	31/05/24

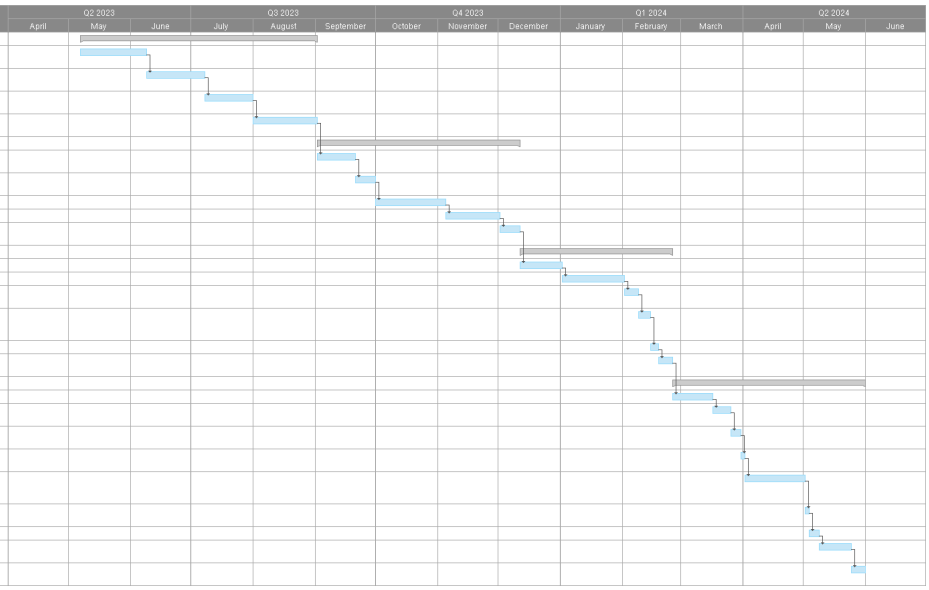

Figure 1.2: Gantt Chart of Thesis Project

Collectively, the Gantt chart provides a comprehensive and structured framework guiding the thesis project from inception to dissemination. Each phase and task are meticulously planned and executed, ensuring that the research objectives are met, and the findings are effectively documented and shared.

Chapter 2

Literature Review

2.1 Literature Review of Papers

The literature on green software and consumer behavior provides a useful starting point for understanding the context of this research. Several studies have investigated the adoption of green technologies, including green software, and have identified a range of factors that influence consumers' decision-making.

In this paper, many existing literature has been reviewed on green products (software) and social media marketing. This study has tried to address and identify the relevant variables, theories, and research gaps.

Several studies have examined the adoption of green technologies, including green software, and identified factors influencing consumer decision-making. For instance, Sun et al. [1] found that sensitivity to green advertising, promotion focus, and trust positively influenced purchase intention. Their study seeks to explain customers' intentions to purchase eco-labeled items. The study gathered information from 671 surveys, and the findings show that sensitivity to green advertising positively influences intention. Promotion focus and system and personal trust also play a role in this relationship. The report proposes using realistic green advertising campaigns to allay consumer concerns and using several green marketing and advertising initiatives to target different consumer groups to boost sales.

Nik Mahmud et al. [2] demonstrated that environmental concern, perceived benefits, pricing awareness, willingness to buy green, and future expectations significantly impacted customers' decisions to adopt green software. Their work aims to comprehend Bangladeshi customers' purchasing choices concerning green products. It uses the Theory of Planned Behavior (TPB) paradigm and extends it with new components like environmental concerns, perceived greenness, and projected future green levels. Using both qualitative and quantitative methods, the study collected data from a sample of 638 young, educated Bangladeshi consumers. The results demonstrate that factors such as

environmental concern, perceived benefits of going green, pricing awareness, willingness to buy green, and future expectations of green marketing have a significant beneficial impact on customers' decisions to go green.

Wu et al. [3] emphasized consumer awareness of green marketing and perceived innovation as key factors influencing perceived quality, value, and purchase intention. This research creates a relationship model between consumer knowledge regarding marketing for the environment, perceived- innovation, quality, pricing, risk, and value, and buy intention using the examples of energy-efficient lamps and an environmental purifier. According to a study of 310 surveys for an environmental cleanser and 320 for energy-saving lamps, innovation and customer perception of green marketing are the primary influences on perceived value and quality, which in turn affect buy willingness. Consumer awareness of green marketing has a greater impact on their willingness to purchase than does consumer perception of innovation.

Cherian and Jacob [4] explored the relationship between green marketing and consumer attitudes towards a green lifestyle. In connection to green marketing, it evaluates customer traits and provides a conceptual framework. The study demonstrates how companies and organizations are taking advantage of the green market industry's potential to acquire a competitive edge.

While Boztepe et al. [5] focused on the impact of green marketing on consumer buying behavior, considering factors such as environmental awareness, product features, promotion, price, and demographics. According to a poll of 540 consumers in Istanbul, these variables have a beneficial impact on consumers' green purchasing decisions.

Putria et al. [6] found that environmental attitudes and green software positively influenced purchase intentions, but social media marketing had a limited impact. Their study emphasizes the need to reduce plastic waste and use environmentally friendly items, such as stainless steel straws. Social media can also be used to affect consumer behavior and raise environmental awareness.

Okadiani et al. [7] highlighted the positive impact of green software on customer purchasing behavior but also noted the limited impact of social media marketing. Using nonprobability sampling, the study involved 100 participants. While green software development positively affects consumer behavior, businesses should prioritize it.

Insyra et al. [8] found that word-of-mouth and social media activities significantly predict a positive attitude towards green software among Indian consumers. Manotas [9] highlighted the impact of energy concerns on application design in green software engineering.

Kern [10] [11] emphasized the importance of considering the software product's life cycle, promoting energy efficiency measures, and creating an eco-label for software products. In their work, they identify the features of green software that pique public interest and the elements that would affect whether green software will be accepted for certi-

fication. They performed a user poll about environmental concerns with software and certification from August 16 to October 5, 2016. The main goal was to build a bridge between science and society. Understanding the interests of society is necessary for this. Hence, the information was gathered using an anonymous online survey that was directed at German software customers. Data from 712 completed questionnaires were used to analyze the results. Both descriptive approaches and correlations between variables were used to analyze the data. Over half of the survey participants never gave an environment for software products a second thought, despite being aware of corresponding labels and having an interest in the environment . A gender-based study of the data reveals that while there are variations in men's and women's agreeing positions, the differences in disagreeing replies are greater: In contrast to the 2 percent of women who disagree, 11 percent of males said they cannot comprehend how environmental concerns with software may be a deciding factor when purchasing software. Expanding managers', users', and developers' awareness of green IT is crucial (including students and professionals). They must: (1) acknowledge that ICT, including hard- and software, has an impact on the environment; (2) acquire information, tools, methods, and guidance; and (3) raise general awareness of these issues in their communities and workplaces to apply their knowledge. Another study found that there are five subgroups of sustainable software: social, environmental, technological, economic, and individual sustainability. To create sustainable software, a method based on a measuring setup that complies with ISO/IEC 14756 for continuous energy efficiency monitoring is utilized. It makes it possible to record how much energy a system uses while running the software under test. A power meter is used to determine how much energy is expended by the SUT to run the software.

Raisian [12] identified the environmental, social, and economic dimensions of sustainable software and proposed incorporating green measurements throughout the software development life cycle. Bozzelli [13] categorized various measures for software "greenness," showcasing the diversity of green software metrics. Using research questions, a predetermined list of data sources was searched using a set of appropriate keywords. This study demonstrated the number of green software metrics that have been cited in the literature on software engineering. It also demonstrated how these metrics can be categorized according to the resources that are being measured, the outcomes that are being produced, the type of results, the context, and the utilization.

Kern [14] presented a model to assess software's energy efficiency and stressed the integration of sustainability concepts into both software and hardware development processes. They discovered that the software-induced power consumption is influenced by how the operating systems, runtime environment, and software products are implemented. The computer housing the application program, or SUT, is the subject of the evaluation of induced energy usage. The operating system, runtime environment, application program, and the hardware that together make up the computer system serve to define it.

Their research led them to conclude that concepts of utilizing ICT for Sustainability, are not isolated issues. Instead, every step in the creation of software and hardware should consider SD. The ideas must be naturally compelling.

These works of literature on green technology adoption present a nuanced exploration of the factors influencing consumer decision-making processes. It explores the intricate dynamics between environmental consciousness, economic considerations, and social influences, shedding light on the complexities inherent in promoting sustainable consumption behaviors[15] [16]. Sensitivity to green advertising, coupled with promotion focus and trust, emerges as pivotal determinants shaping consumers' intentions to embrace eco-friendly solutions. These findings underscore the importance of effective marketing strategies that not only highlight the environmental benefits of green technologies but also foster consumer trust and confidence in their efficacy. Moreover, studies elucidate the role of pricing awareness and perceived benefits in balancing economic concerns with environmental values, highlighting the need for pricing strategies that align with consumers' sustainability preferences while delivering tangible value.

In addition, these related kinds of literature emphasize the evolving landscape of digital platforms, particularly social media, as influential channels for promoting green products and services. Insights into the impact of social media marketing on consumer attitudes and behaviors provide valuable guidance for marketers seeking to leverage these platforms to drive eco-friendly purchasing decisions. Furthermore, research into software development practices, energy efficiency measures, and eco-labeling initiatives contributes to a deeper understanding of sustainable software practices and their potential to mitigate environmental impacts. By synthesizing these diverse perspectives, the literature on green technology adoption offers valuable insights into the challenges and opportunities facing efforts to promote sustainable consumption behaviors and advance environmental stewardship in the digital age.

Chapter 3

Understanding Consumer Perceptions of Green Software: A Study in the Online Social Media Marketing Context

Shadat Irtisamul Haque, Marzan Binte Hassan, Farzana Sadia, Mahady Hasan, Mohammad Rokonuzzaman. Understanding Consumer Perceptions of Green Software: A Study in the Online Social Media Marketing Context. iSCSi'23 - International Conference on Industry Sciences & Computer Sciences Innovation in Lisbon 4-6 October 2023.

3.1 Problem Statement

This research [17] investigates the impact of social media marketing on customers' inclinations to purchase environmentally friendly software. Green software refers to environmentally friendly programs that are designed to consume as little energy and trash as possible during their lifespan. The Theory of Planned Behavior framework is used in the study to determine the elements influencing customer decisions. The findings help to design efficient marketing strategies for promoting green technology and environmentally friendly software.

RQ1: How does a consumer's perception of the effects green software has on the environment affect their decision to buy it?
RQ2: How do factors such as money, age, and gender affect consumers' willingness to purchase green software in the context of online social media marketing?
RQ3: How do consumers' attitudes toward social media marketing affect their intentions to purchase green software?

This study [6] explores customers' purchasing Green Software considerations in the context of online social media marketing. Its goal is to discover the major aspects that influence customer decision-making, such as subjective norm, perceived behavioral control, pricing consciousness, perceived consumer efficacy, product knowledge, social media marketing, and intention [7]. The findings will help to improve marketing tactics for promoting sustainable software solutions and decreasing environmental impact [10].

3.2 Research Methodology

This study have adopt a quantitative research design that involves collecting and analyzing numerical data to test hypotheses and answer research questions. The study have utilized an online survey to collect data from participants.
The target consumers of this study are who use social media platforms and are interested in purchasing software. The sample size will be determined using a power analysis to ensure that it is large enough to achieve statistical significance.
This study examined the data using structural equation modeling. A statistical method called structural equation modeling (SEM) enables the analysis of intricate correlations between numerous variables.This analysis demonstrate the key factors that influence consumers' choices to purchase eco-friendly software in the area of marketing via social media.These factors could include demographic variables, social media usage, environmental attitudes, and perceived benefits and costs of purchasing green softwares.
The analysis shed light on the effectiveness of social media marketing for promoting green softwares. This could include an assessment of the relationship between social media usage and consumers' intentions to purchase green softwares.The analysis provide insights into consumers' behavior and decision-making processes when it comes to green software purchases.

3.2.1 Purpose of the Study

In order to elucidate the aim of the Study, the Research Hypothesis plays a fundamental role in defining the overall aims and objectives of the research undertaking.The Research Hypothesis serves as a guiding framework for the investigation, providing a clear and testable proposition that aims to address the research questions and contribute to the existing body of knowledge in the field. Here the key hypotheses that will be explored and tested throughout the study, highlighting their significance in advancing understanding and informing decision-making processes. By establishing the Research Hypothesis at the outset, the study sets the stage for rigorous inquiry and systematic analysis, ultimately

aiming to uncover insights, validate theories, and generate new knowledge to address the research objectives effectively.

Theory of planned Behavior:

Ajzen (1991), Wang et al. (2016), Sun et al. (2017), and Shi et al. (2017) have utilized the Theory of Planned Behavior (TPB) to examine behavioral intentions and actual behavior[17]. The TPB framework consists of attitudes toward conduct, subjective norms, and perceived behavioral control as the key factors influencing behavioral intentions (Ajzen,1991). It has been applied in various studies to analyze pro-environmental behavior [8]. Chen and Tung (2010) found the TPB model suitable for studying consumers' intentions to recycle, while Klo¨ckner et al. (2013) used it to predict consumer propensity for adopting new energy vehicles [17]. Positive attitudes toward green software have been found to significantly predict consumers' intentions to purchase such software in previous studies (Dickinger and Kleijnen, 2008; Wang et al., 2016; Han et al., 2017; Ru et al., 2018) [17]. This aligns with earlier findings showing that positive attitudes toward green software positively impact purchasing intentions (Kim and Han, 2010; Go¨c¸er and Sevil Oflac¸, 2017) [17]. In light of this, the analysis assumes the following:

H1: Attitudes toward green software have a beneficial impact on consumer intent to buy it.

The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, Ajzen (1991) defined subjective norms as impressions of outside social pressure that have an impact on an individual's performance in some way.These perceptions of social pressure are connected to how people feel about specific behaviors. Several studies have found that people's intentions to purchase organic food, stay in green hotels, and engage in environmentally friendly behavior are significantly influenced by subjective norm (Teng et al. (2014), Chen and Tung (2014), Ha and Janda (2012), Dean et al. (2012), etc.). Sun et al., 2017; Khare, 2015; Javed et al., 2019)[17].
China is an example of a collective state. Because it emphasizes the importance of interpersonal harmony, emotional dependence, collective identification, and shared obligations and rights., the collectivist mentality is prized in Chinese society (Carroll et al., Ru et al., and Ali et al., 2019). As a result, Chinese people are expected to uphold both their own and other people's standards. They are also susceptible to being swayed by those they

consider to be powerful (Yen et al., 2017). Recent studies have found that if consumers find that their "significant others" favor them, they are more inclined to buy sustainable and environment products [17]. This study therefore makes the following assumptions:

H2: Subjective Norms have a favorable impact on intentions of consumers to buy green software.

How simple or challenging a certain behavior is perceived to be is known as perceived behavioral control (Ajzen, 1991).While buying green software, several external factors may be out of a person's control. These factors include time, money, knowledge, and abilities. When people expect fewer obstacles, more opportunities, and resources, they will feel more in control of their actions and are more inclined to make green purchases. According to past studies (Wang, Lin, and Li, 2018), consumers are more likely to make environmentally responsible purchases when they feel like they have some control over the situation[17]. As a result, the following claim is made:

H3: The perception of behavioral control positively affects consumers' desire to purchase green software.

Ahmetoglu et al. (2014). A major factor in green consumer behavior is price. The high prices of being green can make consumers less able and motivated to buy environmentally friendly goods. There has been extensive research on the influence of customer pricing information on purchase intentions and actions According to Ahmetoglu et al. (2014) and Arce Salazar and Oerlemans (2016). Ahmetoglu et al. (2014)[17] claim that consumers frequently choose cheaper pricing because investing in environmentally friendly items makes sense from a selfish and logical perspective. Price sensitivity, according to Van Doorn and Verhoef (2015), hurts consumers' decisions to buy ecofriendly items. Because green software tends to cost more than regular goods, it is plausible to forecast that consumers who are price conscious may be less likely to acquire green software due to the perceived high cost (Bezawada and Pauwels, 2013). But, when consumers have enough money and the chance to buy eco-friendly products, they might pay less attention to pricing (Wang, Lin and Li, 2018). In other words, consumers' price consciousness is more likely to decrease when they believe they have more behavioral control. In light of this, the following recommendation is made:

H4: Consumer intents to purchase green software are severely impacted by price consciousness.
H5: Consumers' price consciousness is negatively impacted by perceived behavioral control.

Knowledge of the product and perceived effectiveness of the market:

"Product knowledge" refers to a consumer's retained knowledge of the rules and information belonging to a particular category of goods (1999 by Philippe and Ngobo). According to Cho et al. (2013) and McEachern andWarnaby (2008)[17], one of the most significant elements influencing consumers' attitudes toward making environmentally responsible purchases is product knowledge. A buyer's opinion of a particular item might be influenced by product knowledge (Cho et al., 2013). When compared to similarly-quality goods, users who are more knowledgeable and informed about green software may more quickly comprehend how to conserve resources and energy (Lin, 2009; Wikoff et al., 2012). It is simpler to be able to influence consumers' green attitudes and propensities to engage in sustainable consumption when one has the necessary product knowledge regarding green software[17]. Thus, the following is recommended by this study:

H6a: Consumer attitudes about green software are positively impacted by product knowledge.
H6b: Knowledge of the product has a favorable influence on consumer intention to buy green software.

PCE refers to consumers' domain-specific optimism that their activities can contribute to the resolution of issues (Ellen et al., 1991). Many studies have found that PCE significantly affects consumers' environmental-friendly behavior. PCE is a judgment that evaluates the degree to which customers can affect environmental resource problems (Webb et al., 2008; Vermeir and Verbeke, 2008). Consumers are more likely to have favorable opinions toward and plans to purchase sustainable goods when PCE is high (Webb et al., 2008). When customers are aware that they can make a difference for the environment, they start to think about the social implications, have a favorable mindset about green software, and plan tobuy it[17]. Hence, the following claim is made[11]:

H7a: Consumers' attitudes of green software are favorably impacted by PCE.
H7b: Positive effects of PCE on consumer inclinations to buy green software.

Social Media Marketing:

A collection of internet tools known as social media promote cooperation, communication, and the sharing of information (Erkan and Evans, 2016). Platforms for social media include, among others, blogs, and websites like Facebook and Twitter. Users of social media can interact with people who share their interests. Social media marketing is beneficial

for businesses since these people select social media groups with similar lifestyles (Lee et al., 2018).With social media, marketers can identify groups that engage in sustainable consumption, and they can then contact them using environmentally friendly software. Social media can aid in the creation and sharing of information (Lee et al., 2018). On social media, users can post and distribute their original ideas and opinions[17].
Since customers may access information on social media and use it as the foundation for their purchasing decisions, social media marketing gives businesses the chance to develop online marketing strategies. Social media marketing can also be viewed as a reliable kind of advertising because it places a strong emphasis on customisation (such as interactions, networks, and interpersonal ties). Studies show that social media marketing significantly affects customers' desire to engage in environmentally friendly activity (Froehlich, 2009; Hynes and Wilson, 2016)[9].
Communication through social media characteristics make it possible for users to compare their own behavior to that of others, which can result in social comparison in the sense of perception of social pressure on users (Allcott, 2011). In terms of prosocial conduct, this analogy may be more useful than parallels drawn from other media (Allcott, 2011). By taking advantage of how social comparisons affect people's subjective norms, social media marketing can offer a special chance to promote prosocial behavior (Allcott, 2011). Those who are receptive to social media marketing are probably also receptive to the artificial standards of sustainable consumption organizations[17].
Consumers that participate in more social comparison are probably better at copying the actions of others and show greater subjective standards. Around 50So, it becomes more difficult to compare pricing of green software to those of ordinary items when social media marketing is used. Additionally, Marketers on social media stress that pricing may increase people's awareness of costs and provide them with pertinent information about the value and grade of products (Schuitema and De Groot, 2015)[8]. The internet is used to disseminate the product knowledge information that social media sites supply (Froehlich, 2009).
Customers learn more about products when they conduct more research on green software. As a result, Consumers' price sensitivity is negatively impacted by social media marketing, but their product awareness is positively impacted. One method of persuasion is social media marketing (Froehlich, 2009). Social media has been used to inspire people to learn about sustainability, from emphasizing personal environmental impact to encouraging group prosocial behavior (Froehlich, 2009)[18].
Moreover, social media content that highlights how awful it is to harm the environment [17] encourages people to attain PCE by spending money on eco-friendly software. PCE and the decision-making process for purchases are significantly impacted by social media marketing (Mangold and Faulds, 2009; Laroche et al., 2013). As a result, the following is assumed in this research:

H8a: Social media marketing's beneficial effects on subjective norm.
H8b: Price consciousness is adversely affected by social-media marketing.
H8c: PCE is positively affected by social media marketing.
H8d: Product knowledge is positively impacted by social-media marketing.

3.2.2 Data Collection

Data have been collected using an online survey instrument, which have been designed to collect information on consumer attitudes towards Green Software and their intent to purchase. The survey include questions on demographic characteristics, environmental attitudes, software usage, and online social media behavior. The survey instrument has been pretested to ensure its reliability and validity.

3.2.3 Data Analysis

Both descriptive and inferential analyses of the collected data have been performed using statistics. Descriptive statistics have been used to summarize the data, and inferential statistics, including such structural model testing, used to test hypotheses and identify correlations between variables. The study also conducts a factor analysis to identify the key factors that influence consumer intent to purchase Green Software.

3.2.4 Research Method

Here, In Figure 3.1 shows the main Research Model which we got from our base paper[4]. We use all these variables to find out the hypothesis's result.

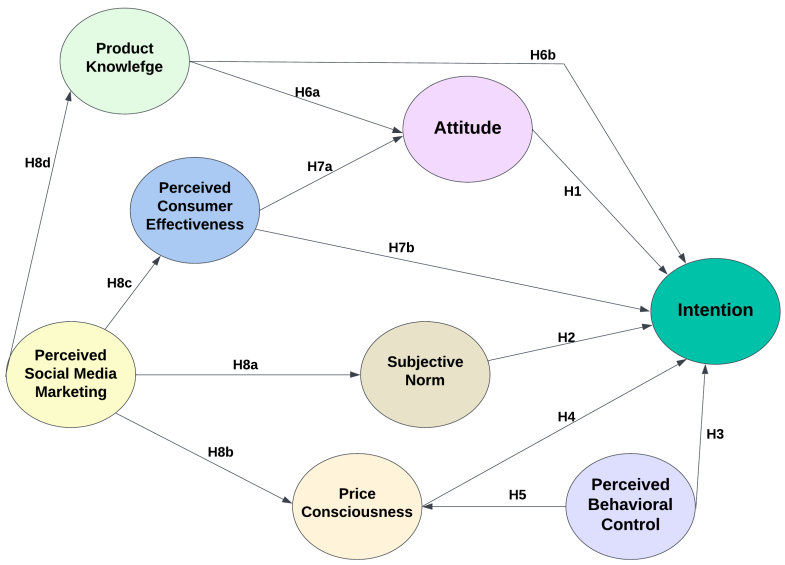

Figure 3.1: Research Model

After collecting the data, the first step is to optimize and organize it. After then, the data were examined using statistical software like "Smart PLS". Inferential statistics, such as regression analysis and factor analysis, have been used to test the study hypotheses and investigate the relationships between variables. Descriptive statistics used to summarize the data[4],[7].

Based on the analysis, the findings, and results are presented in tables and graphs(in the later part of this paper), along with written descriptions and interpretations. The research hypotheses are either supported or rejected based on the results.

The findings and results are discussed in the context of previous research and theory.Future study directions as well as the ramifications of the findings for social media marketing and green software programs also highlighted.

Ethical considerations such as informed consent, confidentiality, and anonymity of participants will be ensured throughout the research process. Participants will be provided with clear information on the purpose of the study, their right to withdraw, and how their data will be used. Data collected will be kept confidential and anonymous to protect the participants' privacy. The study may be limited by factors such as sampling bias, social desirability bias, and self-selection bias. The results may also be limited to the specific context of the study and may not be generalizable to other populations or contexts.

3.3 Result Analysis

In this thesis project we have done a multifaceted analysis encompassing demographic data, measurement model assessment, and structural model evaluation. Beginning with

an exploration of demographic data, the analysis delves into the demographic characteristics of the study participants, providing insights into the sample composition and demographic trends that may influence the research outcomes. Subsequently, the measurement model analysis scrutinizes the construct reliability and validity, assessing the robustness and accuracy of the measurement instruments employed in the study. This evaluation encompasses an examination of construct reliability as well as an assessment of construct validity through convergent and discriminant validity analyses. Furthermore, the analysis extends to investigating discriminant validity, ensuring that the measurement instruments adequately differentiate between the constructs under study. Finally, the structural model analysis focuses on elucidating the path coefficients, which delineate the strength and direction of the relationships between the latent constructs in the research model. By meticulously scrutinizing these key components, it aims to provide a comprehensive understanding of the empirical findings, validate the research hypotheses, and offer insights into the underlying mechanisms driving the phenomena under investigation.

3.3.1 Demographic Result

We used Demographic Questions to collect in- formation about the characteristics of our study population. Demographic questions are designed to gather information about Age, gender, income, level of education, and other important demographic parameters that may influence Consumers' behavior or attitudes toward Purchasing Green Software in the Context of Online Social Media Marketing.

Table 3.1: Respondent demographic data

Demographics	Frequency	Percentage
Age		
18 - 24	12	7.36
25 - 34	84	51.53
35 - 44	46	28.22
45 - 54	16	9.82
55 or Older	5	3.07
Gender		
Male	98	60.12
Female	65	39.88
Non-binary	0	0
Education		
High school or equivalent	14	8.59
Bachelor's degree	78	47.85
Master's degree	52	31.9
Doctoral degree	18	11.04
Other	1	0.61
Employment Status		
Employed full-time	92	56.44
Employed part-time	30	18.4
Self-employed	13	7.98
Unemployed	15	9.2
Student	7	4.29
Retired	6	3.68
Household Income		
Less than 25,000 Taka	37	22.7
25,000 - 50,000 Taka	52	31.9
51,000 - 75,000 Taka	36	22.09
76,000 - 100,000 Taka	18	11.04
100,000 Taka or More	20	12.27
Use duration of Social Media		
Several times a day	95	58.28
Once a day	35	21.47
Several times a week	23	14.11
Once a week	5	3.07
Rarely or never	5	3.07
Most used Platforms		
Facebook	93	57.06
Instagram	22	13.5
TikTok	13	7.98
Twitter	12	7.36
LinkedIn	21	12.88
Other	2	1.23

We gathered the information from 163 respondents. The majority of responses (51.53%) fall into the 25–34 age range. 60.12% of the responders were men and 39.88% were women. The majority of respondents (47.85%) hold a bachelor's degree, although respondents with master's degrees (31.9%) and doctoral degrees (11.04%) also took part. The majority (56.44%) of participants are full-time employees in terms of employment status. When asked about their household income, respondents said that 12.27% had an income of more than 100,000 taka and 31.9% were in the range of 25,000 to 50,000 taka. Facebook is

used by the majority of respondents (57.06%), who use social media platforms frequently (58.28%).

3.3.2 Exploratory Analysis

The items for each variable are shown in Table 3.2, which is essentially what we used for our survey questionnaire. The Variables & Measurement Instruments used here got from Sun, Y. et al. study [4]. The majority of the loading values, which we have measured, are noticeably higher, as can be seen after obtaining the loading value for each variable. It indicates that the variables' relationships with their contributing factors are sufficiently high. This shows that the factor's impact on the variables is stronger. Table 3.2 has a null value for the PCE1 item because we had to eliminate it during the factor analysis (discussed in the later part).

Table 3.2: Measuring Instruments and Loading values

Variables	Measurement Instruments	Code	Loading Value
Attitude (ATT)	To save the environment, it is a good idea to get green software.	ATT1	0.709
	Purchasing green software is a smart move.	ATT2	0.827
	I am in favor of purchasing green software.	ATT3	0.846
	I have a positive outlook on purchasing green software	ATT4	0.805
Intention (INT)	In the future, I want to buy green software	INT1	0.764
	I'll pay to buy green software	INT2	0.816
	I'm going to start buying green software now	INT3	0.81
	For the purchase of green software, I intend to spend more	INT4	0.778
Perceived Behavioral Control(PBC)	I have sufficient, both money and time, to purchase green software	PBC1	0.654
	I am aware of the source for green software	PBC2	0.734
	I am able to choose whether or not to buy green software	PBC3	0.798
	To buy green software, I have the necessary resources	PBC4	0.743
Price Consciousness (PC)	The price is what I consider while buying software, personally	PC1	0.763
	When I choose to purchase software, price is a key factor for me	PC2	0.813
	Normally, I look for the best deals on software	PC3	0.528
	When I buy software, I have to be careful to check the pricing	PC4	0.728
Perceived Consumer Effective-ness(PCE)	Consumers should consider the value of environmental protection	PCE1	-
	When I buy software, I often consider how it will affect the environment	PCE2	0.785
	On the environmental protection, I have a great impact	PCE3	0.743
	The actions of individuals can have a significant impact on the environment, such as buying green software	PCE4	0.735
Product Knowledge (PK)	Green software is a thing, I'm quite knowledgeable with it	PK1	0.775
	When I go to the app store or software store to buy software, I usually notice green software	PK2	0.692
	Through publications or the news, I frequently discover about green software	PK3	0.744
	My knowledge of green software is extensive	PK4	0.721
Social Media Marketing (SMM)	Using social media, I get feedback from consumers who have acknowledged themselves about how green software may help protect the environment and improve people's health	SMM1	0.726
	Using social media to voice my opinion regarding green software that I'm considering purchasing is pretty simple	SMM2	0.751
	It's very relevant to use social media to research green software that I'm considering purchasing	SMM3	0.694
	To notify my friends about green software, I would like to share data and news obtained from social media	SMM4	0.738
Subjective Norm (SN)	The majority of the essential people in my life agree with my decision to buy green software	SN1	0.795
	Those who are essential people to me will buy green software if I do	SN2	0.817
	Those I value more than others would appreciate that I purchase green software	SN3	0.788

Measurement Model:

Construct reliability and validity:

Our collected amount of data crossed our minimum sample size, which is 146 (got from G*Power). At first we got AVE value for PCE is less than 0.5. So, we removed an item (PCE1) from Perceived Consumer Effectiveness and got the value greater than 0.5.

Table 3.3: Factor Analysis

Construct	Composite reliability (rho_c)	Average variance extracted (AVE)
ATTITUDE	0.875	0.637
INTENTION	0.871	0.628
PERCEIVED BEHAVIORAL CONTROL	0.823	0.539
PERCEIVED CONSUMER EFFECTIVENESS	0.799	0.57
PRICE CONSCIOUSNESS	0.805	0.513
PRODUCT KNOWLEDGE	0.823	0.538
SOCIAL MEDIA MARKETING	0.818	0.529
SUBJECTIVE NORM	0.842	0.64

The degree to which the items in a construct assess the same underlying notion is shown by the construct's composite reliability, which measures the construct's internal consistency. The range of composite reliability values is 0 to 1, with values over 0.7 being seen as indicating strong internal consistency. When a construct's components measure the same fundamental idea, it is said to have a composite reliability rating of at least 0.7, meaning the construct is trustworthy.

The average variance extracted (AVE), which measures how much a construct's component parts share a common variance, is a sign of convergent validity. The AVE scales from 0 to 1, with values over 0.5 often indicating excellent convergent validity. AVE evaluates how much variance is captured by a construct's items in comparison to how much variance is caught by measurement error. The construct is assessing a distinct and meaningful concept when the AVE value is 0.5 or above.

When both composite reliability and AVE are above corresponding cut-off values (0.5 for AVE and 0.7 for composite reliability), this suggests that the construct is both internally consistent and valid. To be more precise, it shows that the construct is distinct from the study's other constructs. The construct is distinct from the study's other constructs.and that the items in the construct measure the same fundamental idea. This demonstrates the validity and reliability of the measurement tool employed in the study and confirms its usage in subsequent studies.

Since every construct in this case satisfies the cut-off value, the average extracted variance and composite reliability are both higher than 0.5 and 0.7, respectively.

Discriminant validity:

Most commonly, to compare the correlation between two constructs, the square root of the AVE for every construct is utilized. If there is less correlation between two constructs than the square root of the AVE for each construct, discriminant validity has

been demonstrated.

Table 3.4: Constructions' Correlations

	ATT	INT	PBC	PCE	PC	PK	SMM	SN
ATT	0.798							
INT	0.599	0.792						
PBC	0.587	0.677	0.734					
PCE	0.565	0.564	0.532	0.755				
PC	0.337	0.314	0.335	0.36	0.716			
PK	0.543	0.584	0.655	0.685	0.37	0.733		
SMM	0.556	0.61	0.622	0.587	0.296	0.665	0.728	
SN	0.535	0.561	0.538	0.515	0.322	0.492	0.544	0.8

The diagonal value represents the square root of the AVE for every construct, whereas the inner value reflects the correlation between two construct. The two notions may be distinguished from one another, and discriminant validity has been proven if the diagonal value (AVE) is higher than the inside value (correlation). Here shows that, All our constructs are discriminant as the diagonal value is higher than the inside value.

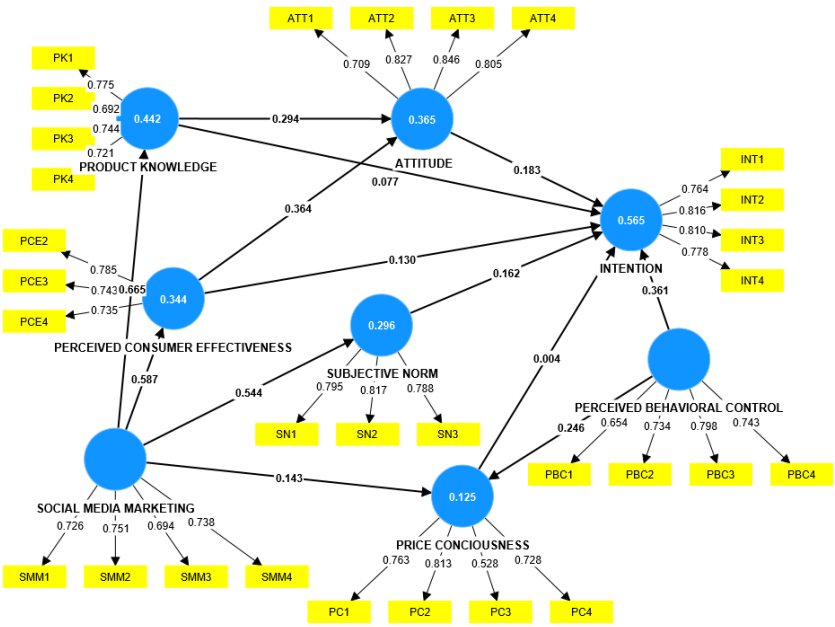

Figure 3.2: The loadings with relations are shown by the SmartPLS model design

Structural Model

Path coefficients:

To get the final result we have done the Structural Model testing, which shows if the described paths are supported or not.

Table 3.5: Outcomes of the testing of the structural model

Hypothesis	Path	Beta Value	t-value	P-value	Decision
H1	ATTITUDE → INTENTION	0.183	2.524	0.012	SUPPORTED
H2	SUBJECTIVE NORM → INTENTION	0.162	2.033	0.042	SUPPORTED
H3	PERCEIVED BEHAVIORAL CONTROL → INTENTION	0.361	4.289	0	SUPPORTED
H4	PRICE CONSCIOUSNESS → INTENTION	0.004	0.06	0.952	NOT SUPPORTED
H5	PERCEIVED BEHAVIORAL CONTROL → PRICE CONSCIOUSNESS	0.246	2.321	0.02	SUPPORTED
H6a	PRODUCT KNOWLEDGE → ATTITUDE	0.294	2.994	0.003	SUPPORTED
H6b	PRODUCT KNOWLEDGE → INTENTION	0.077	0.941	0.347	NOT SUPPORTED
H7a	PERCEIVED CONSUMER EFFECTIVENESS → ATTITUDE	0.364	4.301	0	SUPPORTED
H7b	PERCEIVED CONSUMER EFFECTIVENESS → INTENTION	0.13	1.836	0.066	NOT SUPPORTED
H8a	SOCIAL MEDIA MARKETING → SUBJECTIVE NORM	0.544	8.162	0	SUPPORTED
H8b	SOCIAL MEDIA MARKETING → PRICE CONSCIOUSNESS	0.143	1.334	0.182	NOT SUPPORTED
H8c	SOCIAL MEDIA MARKETING → PERCEIVED CONSUMER EFFECTIVENESS	0.587	10.072	0	SUPPORTED
H8d	SOCIAL MEDIA MARKETING → PRODUCT KNOWLEDGE	0.665	12.627	0	SUPPORTED

Here, All of the P-values and T-values are below 0.05 and above 1.6, respectively.So,those Hypotheses that follow this cut-off value have the final decision Supported. So, the result shows that H7b,H4, H6b and H8b hypotheses are not accepted . Consumer intention to purchase green software are favorably impacted by PCE [H7b](p value is greater than 0.05) , So, not supported. Consumer intentions to purchase green software are severely impacted by price consciousness [H4] (p value is greater than 0.05) , so not supported.Consumer intention to purchase green software are positively impacted by product knowledge [H6b] (p value is greater than 0.05), so, not supported. Price consciousness is adversely affected by social media marketing [H8b] (p value is greater than 0.05), so, not supported.

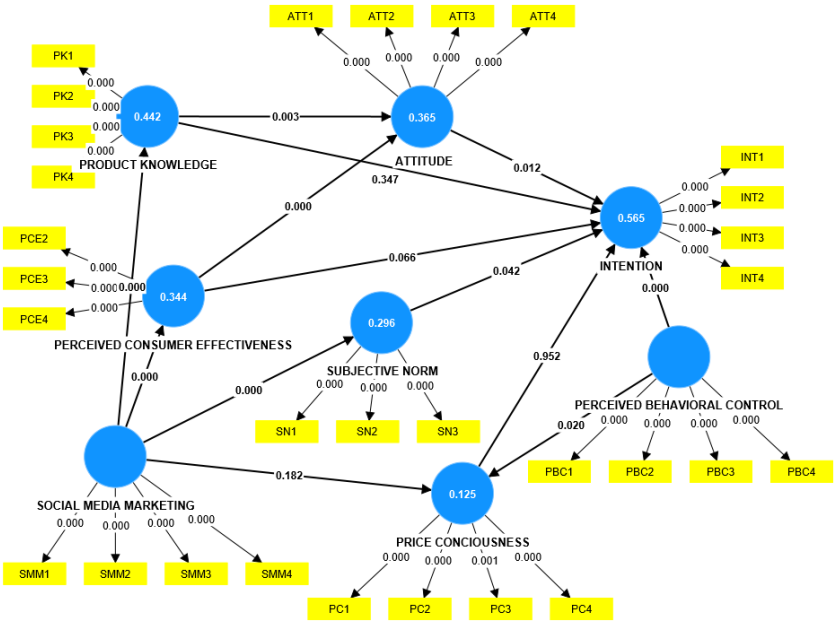

Figure 3.3: The P-values of each hypothesis is shown by the SmartPLS model design

3.4 Proposed Solution

The results indicate that several hypotheses, including H7b, H4, H6b, and H8b, were not supported, suggesting that certain factors do not significantly impact consumer intentions to purchase green software. To address this, several proposed solutions and discussions can be considered:

3.4.1 Discussions

It's essential to delve deeper into the factors that were not supported by the results. Conducting additional research to explore the nuances of these variables could provide a more comprehensive understanding of their influence on consumer behavior. For example, examining different dimensions of perceived consumer effectiveness (PCE) or exploring alternative measures of price consciousness might reveal subtleties that were not captured in the current study.

The lack of support for certain hypotheses may be attributed to limitations in the measurement of variables. Refining the measurement instruments used to assess constructs such as PCE, price consciousness, and product knowledge could enhance the validity and reliability of the findings. This might involve incorporating additional items or using different scales to capture the nuances of these constructs more accurately.

It's crucial to recognize the contextual factors that may influence consumer behavior in the context of purchasing green software. Factors such as cultural norms, socio-economic status, and environmental awareness levels could moderate the relationships between

variables. Future research should consider these contextual factors and explore how they shape consumer intentions to purchase eco-friendly technologies.

While the current study focused on the impact of individual factors on consumer intentions, future research could explore the effectiveness of integrated marketing strategies in promoting green software adoption. Combining social media marketing with other marketing tactics, such as educational campaigns or incentives, could amplify the impact on consumer behavior and foster greater adoption of eco-friendly technologies.

Longitudinal studies tracking changes in consumer behavior over time could provide valuable insights into the dynamics of green software adoption. By assessing how consumer intentions evolve in response to various marketing interventions and external influences, researchers can identify trends and patterns that may not be apparent in cross-sectional data.

So, the lack of support for certain hypotheses highlights the complexity of consumer behavior in the context of purchasing green software. By addressing methodological limitations, considering contextual factors, and exploring integrated marketing strategies, future research can contribute to a more nuanced understanding of the factors influencing consumer intentions and inform more effective marketing approaches for promoting eco-friendly technologies.

Chapter 4

Conclusion

In the culmination of this thesis endeavor, we contemplate the significant findings and implications from the exploration of consumer behavior, social media marketing, and the advocacy for the adoption of environmentally friendly software. Throughout this analysis, we have delved into the impact of attitudes, social influences, and perceived control on consumer inclinations towards purchasing eco-conscious technologies, utilizing the Theory of Planned Behavior as a foundational framework. By scrutinizing the role of social media platforms in molding consumer perceptions of sustainable consumption and decision-making processes, we have unearthed valuable insights into the potential of targeted marketing strategies to propel favorable environmental results. In this concluding segment, we outline the principal discoveries, deliberate on their implications for theory and application, and suggest avenues for future research, ultimately enriching the ongoing dialogue on sustainability and consumer behavior in the digital era.

4.0.1 Sustainability

The sustainability of this thesis project transcends its immediate research findings, encompassing its potential long-term influence on both academia and industry. By delving into consumer intent to purchase green software and elucidating the role of social media marketing in promoting environmentally friendly technologies, this study contributes to advancing knowledge in the field of sustainability and consumer behavior. The insights derived from this research have implications for the development of effective marketing strategies that bolster eco-friendly technologies and advocate for environmental sustainability. Additionally, the methodological approach employed in this study, including the utilization of statistical tools for data analysis and the collection of data from diverse socio-demographic groups, establishes a precedent for future research endeavors seeking to explore similar research inquiries. Furthermore, the focus on addressing challenges and proposing solutions in promoting green software adoption through social media marketing channels underscores the project's dedication to practical implications and real-world

impact. Therefore, the sustainability of this thesis project lies in its capacity to inform and inspire future research, industry practices, and policy decisions aimed at fostering sustainable consumption patterns and promoting eco-friendly technologies in the digital age.

4.0.2 Feasibility

The feasibility of this thesis project is underscored by its economical, technical, and operational aspects, each contributing to its viability and potential for success. Economically, the project demonstrates feasibility through its efficient utilization of resources, including budget allocation for data collection, analysis, and dissemination. By leveraging online survey methods and open-access statistical tools, the project minimizes costs associated with data gathering and analysis, ensuring cost-effectiveness without compromising the quality of research outcomes. Moreover, the project's focus on investigating consumer behavior and marketing strategies in the context of social media platforms aligns with current trends and industry demands, enhancing its economic feasibility by addressing pertinent research questions with practical implications for businesses and marketers.

From a technical standpoint, the project demonstrates feasibility through its adoption of robust methodological approaches and statistical techniques for data analysis. By employing established theories such as the Theory of Planned Behavior and utilizing statistical software for data cleaning and analysis, the project ensures the accuracy and reliability of its findings. Additionally, the use of online survey platforms facilitates data collection from a diverse range of participants, enhancing the project's technical feasibility by enabling efficient data gathering across different demographic groups and geographical locations.

Operationally, the project exhibits feasibility through its systematic approach to project management and execution. Clear delineation of tasks and responsibilities, as outlined in the Work Breakdown Structure (WBS), ensures smooth coordination and collaboration among project team members. Moreover, regular monitoring and evaluation of project progress enable timely identification and mitigation of potential risks or challenges, enhancing operational efficiency and ensuring the project stays on track towards its objectives. Overall, the project's adherence to sound research methodologies, efficient resource utilization, and systematic project management practices collectively contribute to its feasibility and potential for generating valuable insights into consumer behavior and marketing strategies in the context of promoting eco-friendly technologies through social media platforms.

4.0.3 Social and Environmental Impact

The social and environmental impact of this thesis project is multifaceted, reflecting its potential to influence both societal attitudes towards sustainability and environmental practices within the software industry. Socially, the project contributes to raising awareness and fostering a deeper understanding of sustainable consumption patterns among consumers. By investigating consumer intent to purchase green software and elucidating the role of social media marketing in promoting eco-friendly technologies, the project empowers individuals to make informed choices that align with their values and contribute to environmental conservation efforts.

Furthermore, the project's emphasis on addressing challenges and proposing solutions to promote green software adoption through social media marketing channels has broader societal implications. By highlighting the benefits of eco-friendly technologies and addressing pricing concerns, the project encourages businesses and marketers to adopt more sustainable practices, thereby catalyzing a shift towards a greener economy.

From an environmental perspective, the project contributes to reducing carbon emissions and minimizing environmental degradation associated with traditional software development and consumption practices. By promoting the adoption of green software, which is designed to have a lower environmental impact throughout its lifecycle, the project supports efforts to mitigate climate change and conserve natural resources. Additionally, by emphasizing the importance of sustainable software development and marketing practices, the project fosters a culture of environmental responsibility within the software industry, inspiring stakeholders to prioritize eco-friendly solutions and innovate towards more sustainable business models.

So, the social and environmental impact of this thesis project extends beyond its immediate research outcomes, encompassing its potential to inspire positive change in consumer behavior, business practices, and industry norms towards a more sustainable and environmentally conscious future.

4.0.4 Ethics

Ethics play a crucial role in every stage of this thesis project, ensuring the integrity, respect, and accountability of the research process. At the outset, ethical considerations are paramount in the design and implementation of the research methodology, with careful attention paid to protecting the rights and well-being of study participants. Informed consent is obtained from all participants, outlining the purpose of the study, the nature of their involvement, and any potential risks or benefits associated with participation. Additionally, measures are taken to safeguard the confidentiality and anonymity of participant data, with strict protocols in place for data storage, access, and usage.

Furthermore, the research is conducted in accordance with ethical guidelines and

principles outlined by relevant professional bodies and regulatory authorities. Ethical approval is sought from the appropriate institutional review board or ethics committee, ensuring that the research complies with established ethical standards and safeguards. Throughout the data collection and analysis process, ethical considerations inform every decision, from ensuring the accuracy and reliability of data to maintaining transparency and integrity in reporting research findings.

Moreover, ethical considerations extend to the dissemination of research outcomes, with a commitment to sharing findings in a responsible and ethical manner. Efforts are made to ensure that research findings are communicated accurately, clearly, and objectively, avoiding misrepresentation or sensationalism. Additionally, proper attribution and acknowledgment are given to all sources and contributors, respecting intellectual property rights and academic integrity.

Consequently, ethics serve as the guiding principles that underpin the entire thesis project, ensuring that research is conducted in a manner that upholds the highest standards of integrity, transparency, and respect for all stakeholders involved. By adhering to ethical guidelines and principles, the project aims to contribute knowledge that is not only scientifically rigorous but also ethically sound and socially responsible.

4.0.5 Project Summary

This thesis project primarily explores consumer behavior and marketing strategies in relation to promoting the adoption of environmentally sustainable software through social media platforms.By applying the Theory of Planned Behavior, the study investigates how attitudes, social influences, and perceived control influence consumer intentions to purchase eco-friendly technologies. The research underscores the significance of social media marketing in molding consumer perceptions of sustainable consumption and decision-making processes. Through an online survey conducted among diverse socio-demographic groups in Bangladesh, data is gathered and analyzed using statistical tools to evaluate construct reliability, validity, and path coefficients. The results aid in the formulation of effective marketing strategies to bolster eco-friendly technologies and advocate for environmental sustainability. Additionally, the study poses crucial questions for future research, such as the varying impacts of different social media platforms on consumer behavior and the efficacy of diverse marketing strategies in promoting the adoption of green software. In essence, this thesis project offers a thorough exploration of the interplay between consumer behavior, social media marketing, and environmental sustainability, with implications for both academia and industry.

4.0.6 Future Work

Expanding upon the discoveries and insights yielded by this thesis project, several avenues for prospective research arise, providing chances to enhance comprehension and tackle outstanding inquiries in the realm of sustainable consumption and social media marketing:

1. Comparative Examination of Social Media Platforms: Subsequent research could delve into the varying impacts of different social media platforms, such as Facebook, Instagram, and Twitter, on consumer inclinations towards purchasing environmentally friendly software. Through scrutinizing the distinct features and functionalities of each platform, scholars can pinpoint which platforms are most efficient in advocating for eco-friendly technologies and shaping consumer attitudes and actions.

2. Efficacy of Marketing Strategies: Further exploration into the effectiveness of diverse marketing strategies implemented on social media platforms could yield valuable insights for marketers. By evaluating the consequences of various tactics, such as user-generated content, sponsored posts, and influencer endorsements, researchers can pinpoint the most influential approaches for endorsing the adoption of green software and encouraging sustainable consumption practices.

3. Cross-Cultural Investigation: Comparative research across varying cultural contexts could illuminate the cultural elements that impact consumer attitudes towards sustainable consumption and social media marketing. By analyzing how cultural norms, values, and beliefs mold consumer perceptions and actions, scholars can devise more sophisticated and contextually suitable marketing approaches for advocating eco-friendly technologies on a global scale.

In essence, these potential avenues for future research present thrilling prospects to further delve into the intricate interplay between consumer behavior, social media marketing, and environmental sustainability, ultimately propelling knowledge and guiding evidence-based strategies for championing eco-friendly technologies in the digital era.

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