TECHNOLOGY BASED MARKETING FOR START-UP BUSINESS AMONG UNIVERSITY TECHNICAL MALAYSIA MELAKA (UTeM) STUDENTS.

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A report submitted
in partial fulfilment of the requirement for the degree of Bachelor of
Technology Management with Honors (Technopreneurship)

**Faculty of Technology Management and Technopreneurship University
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FEBRUARY 2025

DECLARATION

I declare that this thesis entitled "TECHNOLOGY BASED MARKETING FOR START-UP BUSINESS AMONG UNIVERSITY TECHNICAL MALAYSIA MELAKA (UTeM) STUDENTS" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Date : 27/1/2025

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APPROVAL

I hereby declare that I have checked this report entitled " TECHNOLOGY BASED MARKETING FOR START-UP BUSINESS AMONG UNIVERSITY TECHNICAL MALAYSIA MELAKA (UTeM) STUDENTS " and in my opinion, this thesis it complies the partial fulfillment for awarding the award of the degree of Bachelor of Technology Management with Honors (Technology Innovation).

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Supervisor's Name   : DR. NORUN NAJJAH BINTI AHMAT

Date   : 4 FEBRUARY 2025

Signature   :

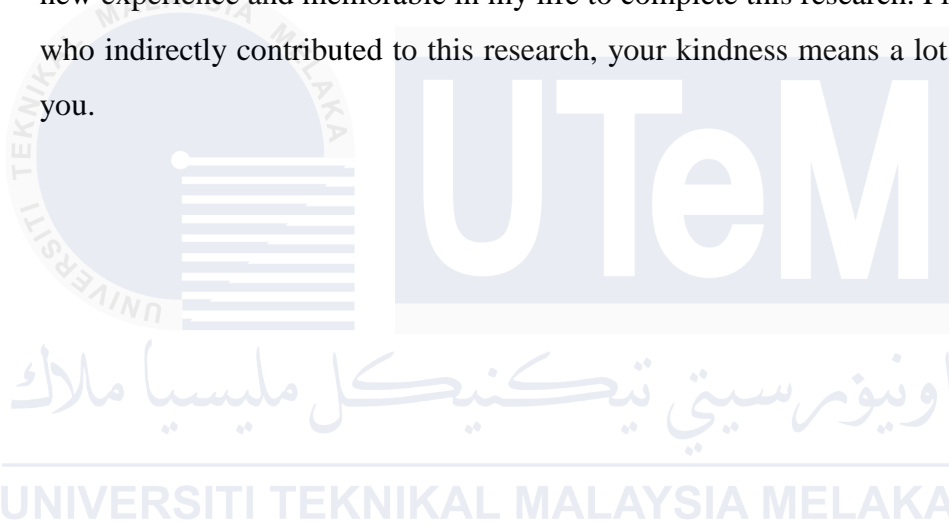Panel 's Name   : DR. KAMARUDIN BIN ABU BAKAR

Date   : 4 FEBRUARY 2025

DEDICATIONS

I would like to dedicate this research paper to my parents especially my mother for her great support and has been my main source of inspiration and fully support during my degree studies. Not forgetting to my friends, because she is ready to give me guidance on the part that I don't understand when preparing this proposal. Besides, thanks to my friends for moral support and encouragement during my research study. Thank you for supervisor, Dr. Najjah because giving me the opportunity and totally new experience and memorable in my life to complete this research. Finally, to those who indirectly contributed to this research, your kindness means a lot to me. Thank you.

ACKNOWLEDGEMENTS

ABSTRACT

This research examines how Universiti Teknikal Malaysia Melaka (UTeM) students use technology for marketing and purchasing, with particular emphasis on applications such TikTok, Instagram, Shopee. This study aims to investigate how digital marketing platforms influence the purchasing behavior, engagement and satisfaction of university students as it becomes more important to attract a younger population. The success of each platform is examined in a literature review, which also identifies important variables that influence students' purchase decisions, such as trust, service quality and usability. To investigate the relationship between these marketing tactics and customer decisions, hypotheses are developed. This study uses a quantitative research approach, with questionnaires given to more than 166 UTeM students as a sample. To verify the hypothesis, data analysis techniques include multiple regression analysis and Pearson's correlation coefficient. The results of this study will contribute to a better understanding of technology-based consumer behavior by explaining the best digital marketing strategies for businesses targeting college students. These findings are intended to assist new businesses in fine-tuning their marketing plans to improve customer happiness and engagement.

*Keywords: Technology based marketing for start-up business among University Technical Malaysia Melaka (UTeM) students.

ABSTRAK

Penyelidikan ini mengkaji bagaimana pelajar Universiti Teknikal Malaysia Melaka (UTeM) menggunakan teknologi untuk pemasaran dan pembelian, dengan penekanan khusus pada aplikasi seperti Shopee, Instagram dan TikTok. Kajian ini bertujuan untuk menyiasat bagaimana platform pemasaran digital mempengaruhi gelagat pembelian, penglibatan dan kepuasan pelajar universiti kerana ia menjadi lebih penting untuk menarik populasi yang lebih muda. Kejayaan setiap platform diperiksa dalam tinjauan literatur, yang juga mengenal pasti pembolehubah penting yang mempengaruhi keputusan pembelian pelajar, seperti kepercayaan, kualiti perkhidmatan dan kebolehgunaan. Untuk menyiasat hubungan antara taktik pemasaran ini dan keputusan pelanggan, hipotesis dibangunkan. Kajian ini menggunakan pendekatan kajian kuantitatif, dengan soal selidik diberikan kepada lebih 166 pelajar UTeM sebagai sampel. Untuk mengesahkan hipotesis, teknik analisis data termasuk analisis regresi berganda dan pekali korelasi Pearson. Hasil kajian ini akan menyumbang kepada pemahaman yang lebih baik tentang tingkah laku pengguna berasaskan teknologi dengan menerangkan strategi pemasaran digital terbaik untuk perniagaan yang menyasarkan pelajar kolej. Penemuan ini bertujuan untuk membantu perniagaan baharu dalam memperhalusi rancangan pemasaran mereka untuk meningkatkan kebahagiaan dan penglibatan pelanggan.

*Kata Kunci : Pemasaran berasaskan teknologi untuk perniagaan permulaan dalam kalangan pelajar University Teknikal Malayia Melaka (UTeM)

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter will briefly discuss on the background of the study, problem statement, research questions, research objectives, scope and limitation of the study, significance of study and summary of the study.

1.1 Background of study

Modern business operations are heavily technological in nature and it is the technological breakthroughs that play a critical role in the business world of the rapidly changing digital environment. Overall the technology progress of the past couple decades has transformed the means of business activities in marketing and purchasing areas in a new way. From marketing aptitude where you can zero in on a prospective customer digitally to platforms that allow seamless transfer of funds, technology brings new avenues for businesses to propel and excel. For startups, these technological improvements no longer only better their existence, they make a mark on their presence. A lot of the times startups don't have many resources to work with and they have to devise ways of reaching out to their customers and competing with other players in the market that are cost-effective and scalable. One of the most compelling data articulations

One of the proficient utilizations of digital marketing tools, for instance, social media, email promoting, search engine optimization (SEO), and web-based media advertising, is now greatly needed for the present-day companies. The deployment of these tools enables the startups to reach and interact with the customers in a customized manner which adds to the measurability thereby offering the insights about usefulness. Social media channels like Facebook, Instagram, and LinkedIn give enterprises the

opportunity of enhancing the perception of their brand and building up connections with their present and potential customers. Through the use of marketing, there is a huge avenue for nurturing leads in order to increase customer retention. SEO makes a business get into the results of a search engine, so that consumers could find the details on the official website. This kind of content marketing help in building ordinance and it is done through the use of blogs, videos and infographics. The aforesaid material provides useful information to the public. While addressing blogging in their research, HubSpot states, companies that have crops on blogging are 13 times more likely to see positive ROI. This demonstrates the efficiency as well as effectiveness of content marketing. Trade and buying facilities through Web and electronic channels also have changed the method in which retail is done. Examples like Shopify, WooCommerce, or mobile apps allow entrepreneurs to establish web-based markets instantly and with great ease, gaining the opportunity to serve customers all around the world. These tools are designed to give shoppers a convenient shopping, with an enhanced experience of having secure payment gateways, inventory management as well as customer support integrations. Technology solutions are and cannot be any more relevant for startups, which invariably have to be online and have plausible traffic necessitating their existence. eMarketer estimates that worldwide e-commerce sales will reach $6 total by the end of 2021. By 2024, it is forecasted to have grown more than $39 trillion, indicating that online markets will make a huge difference to the retail industry.

On the one hand, as startups adopt technology-based buying and marketing strategies, such a choice might be somewhat limited by the ensuing challenges. A typical challenge is severely lacking financial resources, expertise in technology related industry, and resistance against change. Business can be so tight in startups and thereupon driving may have low investment toward of sophisticated technology and good employees. However quickly technology changes, the process of wrapping your head around a new software, or tool, or even a platform, might be overwhelming. According to the Small Business Administration statement, in 8/20th of small businesses fail in their first year, it most time because of the lack of financial resources other competition problems. Student startups/ ventures, in particular, have their own unique challenges. Due to that academics and entrepreneurship often require great attention, it can be very hard to keep it balanced. Limited on-the-job performance and the hurdles such as financial constraints of the business handicap their efforts. Apart

from being a peer, student entrepreneurs could face a lack of a robust support network, hindering their efforts to operate within technologically advanced systems. In fact, a study done by National Center for Education Statistics concluded that and time management are two key challenges that student innovators faces.

The University Teknikal Malaysia Melaka (UTeM), which offers technical education and innovation, has gained a lot of prominence. University creates an entrepreneurial community by means of various support structures such as incubators, mentoring programmers and entrepreneurship courses, to name a few. The atmosphere which supports this environment lets the students to proceed with their innovative business ideas and provides them with a package of tools and guidance for startup development. Nevertheless, it is not a case of UTeM student startups have at their disposal enormous resources, they too confront a lot of problems at the level of marketing and technology usage. As per UTeM's entrepreneurship center, the rising number of innovators in the youth despite some technological adjustments, remains a barrier.

1.2 Problem Statement

Many UTeM student entrepreneurs face limited marketing knowledge. Specifically, many lack sufficient knowledge and experience in using digital marketing tools effectively, which hinders their ability to promote their start-up businesses. (Source: Smith, J., & Tan, K. (2020).

There is a lack of customized marketing strategies for student-run start-ups, which leads to the inefficient use of technologybased marketing platforms. As a result, many student entrepreneurs miss opportunities for growth and brand recognition. (Source: Ahmad, R., & Zain, M. (2019)

Despite the availability of digital platforms like TikTok, Instagram, and Shopee, UTeM students struggle to reach and engage their target audience effectively. This is due to factors such as increased competition and limited marketing resources. (Source: Tan, L., & Lim, P. (2021).

1.3 Research questions

The question of the research will be stated as follows:

RQ1: What are the key challenges faced by UTeM student start-ups in implementing technology-based buying and marketing?

RQ2: How effective are current technology-based tools and platform in enhancing the marketing and purchasing process of start-up businesses run by UTeM students?

RQ3: What are the best practices for UTeM student start-up to leverage technology for successful buying and marketing activities?

1.4 Research Objectives:

There will be three objectives of this research and they are as follows:

RO1: To evaluate the effectiveness of TikTok, Instagram, and Shopee in influencing technology-based marketing strategies for UTeM student-run start-ups

RO2: To explore how technology-based marketing tools used on TikTok, Instagram, and Shopee improve customer engagement and business outcomes for UTeM student businesses.

RO3: To assess the role of data-driven marketing strategies and platform features in driving successful marketing outcomes for UTeM student start-ups.

1.5 Scope and limitation of the study:

Examining the uptake and efficacy of technology-based purchasing and marketing tactics among startup companies run by University Teknikal Malaysia Melaka (UTeM) students is the main goal of this study. It looks for the main obstacles these firms have in incorporating digital technology into their daily operations, assesses the platforms and tools that are currently in use, and suggests best practices that are suited to the particular requirements of UTeM student entrepreneurs. This study's purview encompasses an in-depth examination of the ways in which technology influences the purchasing and marketing procedures of UTeM student businesses. It seeks to offer information that can guide the creation of educational plans, support services, and policy suggestions to improve these companies' competitiveness and technological readiness.

1.6 Significance of Study

Many stakeholders will find great value in this study. According to Kumar and Rajan (2022), the research offers start-up enterprises insights on how to optimize their marketing tactics on various platforms such as Facebook, WhatsApp, Shopee, Instagram, TikTok, and Telegram, with the goal of possibly expanding their market reach and growth. By concentrating on important elements like trust, service quality, and simplicity of use, marketers may use these insights to create ads that are effective and appealing to young, tech-savvy consumers (Gefen, Karahanna, & Straub, 2022). Students at UTeM gain from knowing which platforms are the most dependable and easy to use, which enhances their online buying experiences (Kim & Park, 2020). From an academic perspective, the study advances knowledge of consumer behavior and digital marketing, laying the groundwork for further research (Bryman & Bell, 2020). The results also emphasise the need for improved digital literacy programmers to equip students for success in the digital marketplace (Hargittai, 2022) and can help universities better promote students' digital involvement through policy changes (Creswell, 2022).

1.7 Thesis outline:

This study holds significant implications for various stakeholders:

- Chapter one discusses an overview of the study, emphasizing the critical role of technology in modern business operations. It introduced the context of UTeM student startups and outlined the research objectives, questions, scope, limitations, significance, and thesis outline.
- Chapter two will delve into existing theories and research on technology adoption in startups, digital marketing strategies, challenges faced by student entrepreneurs, and relevant theoretical frameworks. It will provide a comprehensive background against which the study's findings can be contextualized.
- Chapter three will outline the research design, including data collection methods such as surveys, interviews, or case studies. It will discuss data analysis techniques and ethical considerations to ensure the validity and reliability of the study.
- Chapter four data analysis and discussion what found when analysed research data.
- Chapter five recommendation and conclusion of the overall result of study.

1.8 Summary

The use of technology-based purchasing and marketing tactics by startup companies run by University Teknikal Malaysia Melaka (UTeM) students is examined in this study. It highlights issues like scarce resources and lack of experience in digital marketing and offers fixes to improve exposure and competitiveness in the online market. The project intends to provide customized methods for UTeM student companies to effectively harness technology, supporting innovation and growth in entrepreneurship. This will be accomplished by reviewing current tools and practices (Hargittai, 2022).

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Technology is becoming an essential component of current corporate operations in the digital age, especially when it comes to purchasing and marketing (Cooper & Park, 2020; Wonglimpiyarat, 2019). Making the most of technology might be essential for start-ups, which frequently have little funding, to survive and expand. Students in universities, particularly those at the University Technical Malaysia Melaka (UTeM), constitute a distinct group that is very tech-savvy. The purpose of this evaluation of the literature is to investigate how UTeM students use technology in their start-up enterprises, with an emphasis on technology-based purchasing and marketing tactics. The review will encompass current literature on e-commerce, digital marketing, and technology adoption in start-ups, with a particular focus on research conducted in academic settings (Tong & Hawley, 2019).

2.1 Start-up business

Start-ups are described as recently founded companies that seek to create scalable business models in response to opportunities or requirements in the market. These companies are usually distinguished by their inventive strategies, adaptability, and capacity for quick expansion. Start-ups, in contrast to established firms, which often function in uncertain situations and must constantly adapt and change in order to survive and prosper, frequently operate in these contexts. Every financing source has pros and downsides of its own, and the likelihood of attracting investment is frequently correlated with the idea's perceived feasibility and potential. Developing a new clientele is a major additional task. In order to address consumer demands, produce goods or services, and successfully communicate their value proposition,

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startups must first identify and understand their target market. In order to reach and engage potential consumers, this calls for a systematic approach to marketing and sales that makes use of both traditional and digital platforms.

Students at University Technical Malaysia Melaka (UTeM) face particular possibilities and difficulties in the entrepreneurial environment. With a range of initiatives, tools, and resources, UTeM offers aspiring business owners a helpful environment. The institution may, for example, provide mentoring programmers, incubators, accelerators, and networks of investors and business people. These tools are intended to assist students in turning their creative concepts into successful enterprises. On the other hand, there are particular difficulties that student entrepreneurs must overcome in order to effectively establish and expand their businesses. It can be difficult to juggle commercial endeavors and academic obligations; strong time management and prioritization abilities are needed. Furthermore, students could lack business acumen and professional experience, so it's critical that they go to mentors and advisers for advice and assistance.

Students at UTeM also have to manage a unique set of dynamics in the Malaysian start-up environment. This entails being aware of regional market trends, legal specifications, and cultural quirks. To succeed in the Malaysian market, one must be able to modify global business tactics to suit the local environment. In conclusion, start-up companies are vibrant organizations that are essential to promoting economic expansion and innovation. Building a start-up presents possibilities as well as obstacles for UTeM students. Student entrepreneurs may increase their chances of success by making the most of the tools offered by the institution and by taking a calculated approach to operations, marketing, and fundraising. The purpose of this project is to investigate how technology-based purchasing and marketing tactics might help UTeM students' start-ups expand and remain sustainable (Cooper & Park, 2020; Wonglimpiyarat, 2019).

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2.2 Technology-based buying

Technology-based buying is the process of facilitating purchases via the use of digital platforms and tools, changing the way that consumers and companies engage with goods and services. This change in technology has completely changed the way people shop, providing more accessibility, more choice, and more convenience. Leveraging technology-based buying may be a key driver of development and competitive advantage for start-up enterprises, especially those headed by students from University Technical Malaysia Melaka (UTeM).

A relatively new but quickly expanding platform called TikTok Shop incorporates e- commerce with the well-known social media app TikTok. It enables companies to provide interesting video content with direct connections to their storefront merchandise. TikTok Shop gives UTeM startups a special opportunity to connect with a younger audience by using original and viral content. When consumers find content that connects with them, the platform's algorithm-driven discovery process helps to increase exposure and generate purchases. Instagram is now more than just a photo-sharing app; it's a robust e-commerce platform with tools like Instagram Shopping, which lets companies set up shop right on their accounts. Instagram provides resources for new businesses, including shoppable posts, stories, and reels with direct product links. Instagram's visual format makes it perfect for product showcases, developing brand identities, and interacting with customers via direct messages and comments. With continuous, high-quality content, UTeM student entrepreneurs may utilize Instagram to target specific markets and cultivate a devoted consumer base. It provides features including live streaming for product demos, integrated payment and shipping services, and Shopee Mall for recognized companies. Shopee offers UTeM startups a ready-made infrastructure to effectively manage sales operations and reach a wide audience. The promotional options available on the platform, such discounts, coupons, and flash sales, have the potential to significantly increase traffic and revenue.

2.3 Technology-based marketing

Technology-based marketing is a broad term that refers to a variety of techniques and instruments used to market goods and services using digital platforms and technology. Technology-based marketing is crucial for start-up companies, especially those established by University Technical Malaysia Melaka (UTeM) students, since it helps them reach their target customers, establish their brands, and increase sales. The emergence of digital media has made previously unattainable marketing possibilities more affordable and scalable for start-ups. This section looks at many digital marketing tactics and resources that can help UTeM student entrepreneurs advertise their companies successfully. For new businesses, social media marketing has grown to be an effective tool that allows them to interact with potential clients, build brand stories, and increase traffic to their goods and services. TikTok, Instagram, Shopee and other platforms are especially pertinent to UTeM students because of their extensive usage and flexible functionalities. These platforms include a number of features that may be used to produce interesting content, cultivate a devoted following, and raise brand awareness.

2.3.1 TikTok marketing

TikTok's enormous user base and distinctive algorithm that encourages viral content have made it a powerful tool for digital marketing. TikTok provides startups with an innovative and dynamic approach to connect with younger audiences by means of brief, captivating videos. Students at UTeM may utilize TikTok to promote their goods, post behind-the-scenes videos, and work with influencers to increase their audience. Because of the way TikTok's algorithm surfaces material that viewers find compelling, even tiny companies may achieve a great deal of visibility. Start-ups may make advantage of TikTok's features, such challenges, hashtags, and trends, to produce engaging content that promotes user engagement and sharing. To help a start-up with their marketing, TikTok also provides advertising choices including sponsored content, branded hashtags, and in-feed adverts. Marketing messages may be directed towards the most appropriate audiences by using these sponsored promotions, which can target certain demographics and hobbies. UTeM start-ups may establish a strong online presence, interact with a worldwide audience, and increase traffic to their websites or online stores by leveraging TikTok successfully. This strategy helps build a devoted consumer base that actively interacts with the company in addition to boosting revenue (Hootsuite, 2022).

2.3.2 Instagram Marketing

Instagram is now more than just a photo-sharing app; it's a robust e-commerce platform with tools like Instagram Shopping, which lets companies set up shop right on their accounts. Instagram provides resources for new businesses, including shoppable posts, stories, and reels with direct product links. Instagram's visual format makes it perfect for product showcases, developing brand identities, and interacting with customers via direct messages and comments. Instagram is a great platform for startups to showcase the features and advantages of their goods through beautiful photos and videos. User-generated material, tutorials, and behind-the-scenes photos are examples of engaging content that may draw in and keep followers. There are more chances to draw attention with brief, captivating videos on Instagram Stories and Reels, which can include product announcements, sales, and client endorsements. Businesses may target particular demographics based on geography, hobbies, and

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behaviours by using Instagram's advertising platform. Start-ups may connect with prospective clients who are most likely to be interested in their offerings thanks to this precise targeting. Moreover, Instagram insightful metrics on reach and engagement, allowing startups to adjust their plans in light of performance information (Sprout Social, 2022).

2.3.3 Shoppe Marketing

Shopee is a prominent online retailer in Southeast Asia that offers a wide range of products and services to companies of all kinds. It provides features including live streaming for product demos, integrated payment and shipping services, and Shopee Mall for recognized companies. Shopee offers UTeM startups a ready-made infrastructure to effectively manage sales operations and reach a wide audience. The promotional options available on the platform, such discounts, coupons, and flash sales, have the potential to significantly increase traffic and revenue. Customers can locate items on Shopee with ease because to its user-friendly design and powerful search capabilities, while sellers may gain credibility and trust via Shopee's rating and review system. Shopee's advertising options, such as in-app promos and Shopee Ads, help startups become more visible and draw in more clients. Shopee's data analytics tools also give insights into customer behavior and sales success, which aids start-ups in improving their offers and marketing tactics (Paxcom, 2022).

2.4 Importance of technology in start-ups success

A number of critical elements impact the efficacy of technology-based marketing for start-ups, including those established by students at the University Technical Malaysia Melaka (UTeM). Start-ups may improve their marketing tactics and attain greater results by being aware of these variables. This section examines the main elements—trust, service quality, and simplicity of use—that affect technology-based marketing's efficacy.

2.4.1 Trust

The efficacy of technology-based marketing and purchasing, particularly for startups, is largely dependent on trust. Customers' faith in the business's dependability, honesty, and skill is all included in the concept of trust. Establishing trust is crucial for startups, as they sometimes don't have a well-established reputation, in order to draw in and keep clients. In online context, building trust is facilitated by a number of factors. One important factor is transparency; companies have to give customers accurate, thorough, and understandable information about their goods and services. This covers thorough explanations, frank evaluations, and open pricing. Consumers are more inclined to put their faith in companies that safeguard their financial and personal information from potential breaches by providing secure payment options (Gefen, Karahanna, & Straub, 2003). Furthermore, dependable and consistent client service fosters confidence. Startups need to be quick to respond to questions and concerns from clients and offer prompt, friendly service.

Building trust is largely dependent on the business's ability to communicate effectively with consumers via platforms like Telegram and WhatsApp, where clients may speak with representatives directly. Furthermore, displaying client endorsements and ratings on social media sites like Facebook and Instagram may greatly increase reputation. Positive evaluations reassure prospective clients about the dependability of the company by serving as social proof (Kim, Ferrin, & Rao, 2008).

The idea of perceived trustworthiness encompasses both the practical and aesthetic elements of a company's internet presence. Proficiency and dependability may be communicated through a social media presence or website with a polished appearance. On the other hand, a badly made or challenging to use website can erode confidence and turn off visitors. As a result, startups need to spend money developing an online presence that is both aesthetically pleasing and easy to use (McKnight, Choudhury, & Kacmar, 2002).

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2.4.2 Platform usability

Another important component that affects how well technology-based marketing and purchasing work for new companies is platform usability. The ease and effectiveness with which people may engage with a platform—which includes aspects like navigation, layout, functionality, and overall user experience—is referred to as usability. Selecting and optimizing platforms with high usability is essential for new businesses in order to draw in and keep clients. Students at UTeM are drawn to platforms like Shopee, Facebook, WhatsApp, Instagram, TikTok, and Telegram because of their intuitive user interfaces and features (Nielsen, 2012) Usability of a platform has a big impact on user engagement and satisfaction. For instance, customers' purchasing experience is improved when they can easily access information about products or services on social media sites like Facebook and Instagram thanks to their clear, succinct content presentation and simple navigation. Easy search choices, filter features, and simple checkout procedures are just a few of Shopee's features that enhance user experience and promote repeat business and consumer loyalty (Hassenzahl & Tractinsky, 2006).

Furthermore, considering the growing number of people using smartphones for internet activities, a platform's mobile friendliness is an essential component of usability. Instant messaging, multimedia sharing, and alerts are just a few of the convenient capabilities offered by mostly mobile platforms like WhatsApp and Telegram, which let businesses interact with clients instantly. Stronger customer relationships and an improved overall shopping experience may be fostered by this immediate and simple communication (Huang & Benyoucef, 2013).

Usability also heavily depends on a platform's design aesthetics. Users may be drawn in and maintained in an engaging design if it is visually appealing and cohesive. For instance, TikTok is a well-liked option for marketing, especially with younger audiences, because to its simple interface and interesting content presentation. Furthermore, user-generated content and interactive elements like shares, likes, and comments may improve the community spirit and engagement on these platforms, drawing in more users and increasing their appeal to advertisers (Norman, 2013).

2.4.3 Marketing Strategy

For start-up companies, marketing strategies are essential to the success of their technology-based buying and marketing campaigns. These tactics cover a range of methods and strategies that new businesses might employ to draw in, interact with, and keep consumers on digital channels. Driving traffic to online retailers, building brand awareness, and turning site visitors into consumers all depend on effective marketing methods. Chaffey and Ellis- Chadwick (2019) suggest that utilizing the distinct characteristics of platforms such as Facebook, WhatsApp, Shopee, Instagram, TikTok, and Telegram may greatly improve marketing results when applied to UTeM student One of the main tactics used by start-ups is content marketing. Developing content that is valuable, pertinent, and consistent aids in drawing in and holding on to a precisely defined audience. Videos and images can work especially well on sites like TikTok and Instagram. Captivating films, tales, and articles that showcase product attributes, client endorsements, and behind-the-scenes photos have the power to draw viewers in and promote engagement. Furthermore, one may expand their exposure and reach on social platforms by utilizing popular hashtags and taking part in viral challenges (Pulizzi, 2021).

Influencer marketing is an additional important tactic. Startups may expand their audience reach and refine their target demographic by partnering with influencers that have a significant following on social media sites such as Facebook, Instagram, and TikTok. Influencers may offer sincere recommendations and endorsements, helping to establish the startup's reputation and foster trust. For instance, an influencer may create a lot of attention and boost sales on TikTok by showing a product in a unique and captivating video (Lou & Yuan, 2019).

2.5 Challenges in Technology adoption

Customer perceptions, contentment, and loyalty are significantly influenced by the quality of services provided via technology-based marketing. Providing outstanding customer service is crucial for startups to obtain a competitive advantage and cultivate enduring connections with clients. This section examines a number of service quality factors, including as fulfilment, tangibility, and responsiveness, in

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technology-based marketing.

2.5.1 Responsiveness

The readiness and ability of a company to promptly respond to questions, complaints, and requests from customers is referred to as responsiveness. Within the realm of technology- driven marketing, responsiveness comprises prompt correspondence, effective issue resolution, and customized engagements. As per the findings of Parasuraman, Zeithaml, and (Xu, Liu, & Geng, 2020)., responsiveness is a crucial aspect of service quality that impacts the opinions and contentment of customers. Startups who put a high priority on responsiveness show that they are dedicated to providing excellent customer service, which may increase consumer loyalty and brand confidence. Even beyond typical business hours, start-ups may offer prompt customer support by utilizing technologies like chatbots, live chat help, and automated email answers. Additionally, start-ups can quickly respond to client input and handle issues in real time by keeping an eye on social media channels and online review sites. Startups may foster excellent customer experiences that encourage customer advocacy and retention by being attentive to the wants and concerns of their customers.

2.5.2 Tangibility

The term "tangibility" describes the tangible, physical components of a service that clients can see and feel, such the how a website looks, how things are packaged, and how skilled customer care agents are. Even if technology-based marketing is mostly done online, tangibility still has a big impact on how customers see and interact with brands. By making investments in superior website design, eye-catching product photos, and skillfully written marketing materials, start-ups may increase tangibility. A well-designed website with easy-to- use navigation, captivating multimedia material, and a user-friendly search system enhances user experience and projects professionalism (Bevan, 2021). Product packaging that pays attention to details, including using eco-friendly materials and appealing branding, also raises the

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product's perceived worth. The skill and professionalism of customer care agents, who act as the brand's first-hand advocates, are also examples of tangible quality. Providing customer service workers with extensive training and resources guarantees consistent and favorable client encounters, which further strengthens the brand's reputation for dependability and credibility. (Magnier & Schoormans, 2017).

2.5.3 Fulfilment

The capacity of a company to fulfil client expectations and live up to expectations on product availability, quality, and delivery is known as fulfilment. Fulfilment in technology- based marketing refers to the whole consumer experience, from online product browsing to obtaining and utilizing the acquired goods. Startups need to make sure that their digital platforms can process orders from customers quickly, maintain inventory levels precisely, and offer clear shipping and delivery details. Order tracking software, inventory management systems, and logistics optimization tools are examples of cutting-edge e-commerce technology that help optimize fulfilment operations and reduce mistakes and delays. Additionally, providing clients with various shipping choices like order monitoring and quick delivery increases their convenience and happiness. Customer assurance and informational updates during the fulfilment process are provided by post-purchase correspondence, such as emails confirming orders and updates on deliveries. In the competitive digital economy, start-ups may establish a reputation for dependability and integrity and surpass consumer expectations by putting fulfilment excellence first.

2.6 Conceptual Framework
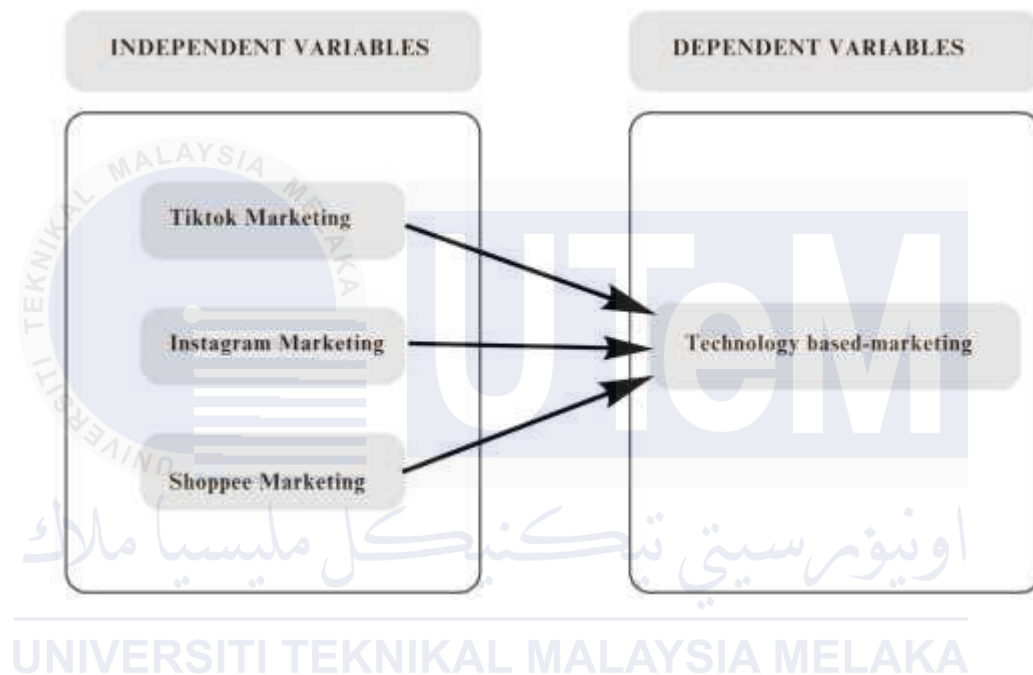
Figure 1: Conceptual Framework

2.7 Hypothesis of TikTok Marketing

H0: There is no significant relationship between TikTok marketing activities and consumer engagement among UTeM students.

H1: TikTok marketing activities positively influence consumer engagement among UTeM students.

Instagram Marketing

H0: There is no significant impact of Instagram marketing strategies on purchase intentions among UTeM students.

H1: Instagram marketing strategies positively influence purchase intentions among UTeM students. Shopee Marketing

H0: There is no significant association between customer satisfaction and Shopee marketing effectiveness among UTeM students.

H1: Higher levels of customer satisfaction are associated with effective Shopee marketing strategies among UTeM students.

2.8 Summary

Chapter 2 examines how UTeM students use technology for marketing and purchasing, with a particular emphasis on Shopee, Instagram, and TikTok. It examines how these platforms affect consumer behavior, highlighting their contributions to brand recognition, engagement, and purchasing decisions. In this chapter, important variables that influence customer decisions in digital marketing are identified, including trust, service quality, and user experience. In Chapter 3, the foundation for empirical research is laid with the formulation of hypotheses to examine the influence of various platforms on customer behavior (Chaffey, 2022).

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

The systematic methods and processes used in the study to guarantee that data collection, analysis, and interpretation are carried out in an organized and trustworthy manner are described in the research methodology chapter. Among University Technical Malaysia Melaka (UTeM) students, this chapter acts as a guide for the research process by outlining the design, methodological decisions, data sources, sampling strategies, and data analysis techniques used to examine the efficacy of technology-based buying and marketing for start- up businesses. To increase the reliability and repeatability of its results, the study intends to provide a comprehensive description of the research process.

Ensuring the validity and dependability of study findings requires a clearly defined research technique. According to Bryman and Bell (2019), validity is the degree to which the measurements are accurate and true, meaning that the study measures the things it claims to measure. Conversely, the stability and consistency of the measures throughout time are referred to as reliability (Creswell, 2019). The study intends to add to the body of knowledge on technology-based marketing for start-ups by producing findings that are both valid and dependable via the use of rigorous scientific techniques.

The research design, which describes the general plan and structure of the study, is presented at the beginning of this chapter. The methodological decision is next covered, whereby the advantages of quantitative approaches over qualitative or mixed methods are defended. The main and secondary data are distinguished in the sources of data section, emphasizing their varied roles in the study. The reason behind selecting UTeM and the procedures for participant selection are then explained, along with the specifics of the study site and sample strategy. While the data analysis part outlines the statistical techniques used to analyze the data, the research plan section goes into more detail on the specific instruments and strategies used for data gathering,

such as surveys and questionnaires. The chapter concludes by discussing the steps done to guarantee the study's validity and reliability.

3.1 Research Design

The strategy framework that directs data collection, measurement, and analysis in a research project is known as the research design. It offers an organized method for addressing the research questions and hypotheses, guaranteeing the accuracy and dependability of the results. To systematically investigate the relationships between various factors and their impact on marketing effectiveness, a quantitative research design has been chosen for this study on technology-based buying and marketing for start-up businesses among University Technical Malaysia Melaka (UTeM) students.

This study is suited for a quantitative research design as it enables the statistical analysis and objective measurement of data. Testing hypotheses and developing findings that may be applied often require the use of this methodology. Quantitative research, according to Creswell (2019), is gathering numerical data that may be statistically analyzed to find patterns, connections, and trends. This design offers a precise and repeatable structure for data collection and analysis, making it especially helpful for studies that want to measure the influence of certain factors on outcomes.

The descriptive survey approach, which is useful for obtaining information from a sizable sample of respondents, is incorporated into the research design for this study. In quantitative research, surveys are frequently used to gather standardized data from participants, allowing for easier comparison and result generalization (Bryman & Bell, 2019). This study uses a survey approach to gather detailed information on UTeM students' views, experiences, and actions about technology-based marketing and purchasing.

3.2 Methodological Choice

The methodological choice for this study involves selecting a suitable research approach that aligns with the research objectives and questions. The chosen methodology is a mono-method quantitative approach. This decision is driven by the nature of the research questions, which seek to quantify relationships between various factors influencing technology-based buying and marketing effectiveness among UTeM students. For this investigation, a quantitative method makes sense since it enables the gathering and examination of numerical data to spot trends, validate theories, and come to unbiased findings. The focus on measurement, statistical analysis, and the use of standardized tools like surveys and questionnaires are characteristics of quantitative research (Creswell, 2019). This method works well for research that seek to ascertain the direction and intensity of correlations between variables, which is crucial for comprehending the many ways in which various elements influence the efficacy of marketing in a technology-driven setting.

When one research technique is used for both data collection and analysis, it is referred to as the mono-method approach. In this instance, the major approach used by the research to collect data from UTeM students is a survey. The necessity of consistency and comparability in data collection, which are essential for guaranteeing the validity and reliability of the findings, justifies the adoption of a mono-method approach (Saunders, Lewis, & Thornhill, 2019). For this investigation, a quantitative method makes sense since it enables the gathering and examination of numerical data to spot trends, validate theories, and come to unbiased

3.3 Source of Data

Any research study must consider the data source since it influences the caliber and dependability of the information gathered. This research employs a combination of primary and secondary data sources to provide a thorough understanding of the variables affecting technology-based marketing and purchasing decisions made by UTeM students. Utilizing both kinds of data, the study seeks to offer a comprehensive grasp of the subject under investigation.

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3.3.1 Primary Data

Information gathered directly from the original sources using techniques like surveys, interviews, and observations is referred to as primary data. Structured questionnaires are used in this study to collect primary data from a sample of UTeM students. To guarantee that the data is accurate and relevant, there are many processes in the main data gathering process.

Because primary data is tailored to the study objectives and accurately captures the viewpoints and experiences of the respondents, it is useful (Creswell, 2019). The purpose of this study's structured questionnaire is to gather comprehensive data on how students utilize technology-based platforms for marketing and purchasing, taking into account elements like customer involvement, trust, service quality, and simplicity of use. The study may get firsthand knowledge of the attitudes and behaviors of UTeM students by gathering primary data, which lays a strong basis for analysis.

To enable quantitative analysis, the questionnaire combines Likert-scale items with closed-ended questions. While Likert-scale items quantify the degree of agreement or disagreement with various claims, allowing for more nuanced study of respondents' perspectives, closed-ended questions offer precise response alternatives, making it easier to analyze and compare the data (Fowler, 2019). In order to maximize the generalizability of the results, the main data collecting method is meticulously designed to guarantee that the sample is representative of the target population.

3.3.2 Secondary Data

Information that has already been gathered, examined, and published by other scholars or institutions is known as secondary data. In order to augment the main data and provide the research a wider perspective, this study makes use of secondary data from reputable sources such as government publications, industry reports, academic journals, and other sources. Because it provides a multitude of information that may be utilized to validate and verify the conclusions drawn from primary data, secondary data is useful (Bryman & Bell, 2019).

A detailed analysis of the body of research on technology-based marketing,

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startup companies, and consumer behavior is necessary before using secondary data. The conceptual framework and research design of the study are informed by important theories, ideas, and empirical findings that are identified in this review. The study can place its findings within a larger body of knowledge by using secondary data, emphasizing how the findings build upon and supplement earlier studies.

The availability and accessibility of secondary data is one of its benefits; it enables researchers to obtain information efficiently and economically. To make sure secondary data sources are trustworthy and suitable for the study, it is crucial to assess their quality and applicability rigorously (Saunders, Lewis, & Thornhill, 2019). Secondary data for this study is carefully chosen from reliable sources to guarantee its validity and suitability for answering the study's research questions.

In summary, the integration of primary and secondary data sources improves the study's robustness and comprehensiveness. While secondary data gives context and helps the study, primary data offers firsthand perspectives from UTeM students. The study intends to give a comprehensive knowledge of the elements impacting technology-based buying and marketing for start-up enterprises among UTeM students by utilizing both forms of data.

3.4 Research Location

The study's research site is crucial since it establishes the framework for the data collection and analysis. Research for this project is carried out at the University Technical Malaysia Melaka (UTeM). This section outlines the relevance of this setting in relation to the study objectives and provides an explanation for the choice of UTeM as the research location.

The research site, University Technical Malaysia Melaka (UTeM), was selected for a number of strong grounds that complement the goals of the study. Recognized as one of Malaysia's top technical universities, UTeM is distinguished by its emphasis on technology, engineering, and technical education. Because of this focus, it's a great place to study how students, who are probably early adopters of new technology and creative marketing tactics, engage in technology-based buying and marketing behaviours.

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A pertinent and reachable population for the study is offered by UTeM. The UTeM student body is a varied group of people who use technology to various degrees, which makes them a perfect sample for examining the study issues. Furthermore, as the research subject is fundamental to start-up businesses, students are encouraged to study and participate in them by the university's emphasis on entrepreneurship and innovation (Ministry of Higher Education Malaysia, 2021).

Beyond its technological and business focus, UTeM is significant as a research location. Understanding how students engage with technology-based platforms for purchasing and marketing is made possible by the university's culture of technological adoption and creative thinking. It is anticipated that this environment would offer extensive data on the variables impacting these platforms' efficacy for new firms.

3.5 Sampling Design

Sampling can be used to draw generalizations about current ideas or to draw conclusions about a community. It all comes down to selecting the appropriate sample technique. Additionally, the research must ascertain if the selected sampling strategy will accurately represent the findings of the entire study. Consequently, sampling techniques may be divided into two categories: probability sampling and non-probability sampling. This study's target audience consists of Shopee users and enthusiasts for online buying. Sampling is the process by which we choose and examine a subset of the total population in order to draw conclusions about it as a whole. Sampling, according to Dana P. (2019), is the process of choosing a subset of the population of interest for a research project. Sampling probability is a sampling method where every person in the population has an equal probability of being chosen to participate in the study as a responder. To characterize the complete population to be researched, a set of respondents must be selected based on certain criteria in order to do this sample. Explaining the entire population is the fundamental idea. Every variable present in the population should be represented by the individuals chosen for the sample. Researchers will thus employ probability sampling when a precise statistical explanation for a sizable population is required.

Based on figure 1, the study's research site has a total population of 37 716. The population of Universiti Teknikal Malaysia Melaka's research site students at

UTeM who participate in technology-based marketing and purchasing on platforms like Shopee, Facebook, Instagram, WhatsApp, and TikTok Shop make up the target group for this study. Women or teens who are at least 18 years old. This group was chosen in order to examine the responses provided by respondents who use Shopee's online store and customers who are willing to provide the researcher with feedback on their level of satisfaction for inclusion in the study. There must be more than 370 responders in the sample.

TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Krejcie, Robert V., Morgan, Daryle W., "Determining Sample Size for Research Activities", Educational and Psychological Measurement, 1970,

Table 1: Krejci &Morgan (1970) Population Table

The demographic table from Krejcie & Morgan (1970) must be examined by researchers in order to establish the appropriate study sample size. With a population of 37 716, this study's sample consisted of 166 respondents who completed the questionnaire. The sample was chosen by simple random selection. Krejcie & Morgan's table (1970) shows that 380 respondents were gathered by researchers out of a population of 37 716 individuals.

3.5.1 Simple Random Sampling

The researcher decided to use basic random sampling to carry out this investigation. Simple random sampling, as defined by Latpate, Gupta, Kshirsagar & Chandra (2021), is a sort of probability sampling in which the researcher chooses a selection of participants at random from a population. Because simple random sampling selects people or things at random from the population without the need for intricate processes or stratification, it is a simple and uncomplicated method to apply. Its simplicity lowers the possibility of biases or mistakes in the sampling process while also making it simple for researchers.

3.6 Research Strategy

The research plan delineates the comprehensive methodology and protocols employed to investigate the research inquiries and accomplish the study's goals. The data collection and analysis method used in this study is systematic and comprises questionnaires, surveys, and a pilot test. The constituents of the research plan are expounded upon in the next sections.

3.6.1 Survey

In quantitative studies, surveys are an essential research approach because they make it possible for researchers to effectively gather data from a large number of respondents. Students at UTeM are asked to complete a survey in order to provide information on their technology- based marketing and purchasing habits. The survey approach was used because it may yield standardised data for simple statistical analysis (Fowler, 2014).

A set of structured questions intended to extract certain data relevant to the study's goals are included in the survey. These inquiries address a range of topics related to technology- driven marketing, such as the use of platforms (TikTok, Instagram, Facebook, WhatsApp, Telegram, Shopee), confidence in online transactions, perceived service quality, usability, and general platform satisfaction.

To ensure that it is widely circulated and convenient for responders, the survey is sent electronically. Online surveys provide several benefits, including cost-

effectiveness, speedy data collecting, and ease of data administration and analysis (Bryman & Bell, 2015). Reminders are provided to participants in order to maximise response rates, and the survey is designed to be as short as possible in order to save completion time.

3.6.2 Questionnaire

The questionnaire, which consists of particular questions intended to collect information pertinent to the research topics, is an essential component of the survey approach. Likert-scale items and closed-ended questions are both included in the questionnaire used in this study in order to collect a variety of quantitative data.

It is simpler to measure and compare responses to closed-ended questions since they provide respondents predetermined response alternatives. According to Saunders, Lewis, and

Thornhill (2019), the purpose of these inquiries is to get demographic data as well as particulars on the respondents' usage of technology-based platforms for marketing and purchasing.

Likert-scale items are used to gauge respondents' opinions and views by letting them indicate how much they agree or disagree with a given statement. This style is especially helpful for evaluating concepts like simplicity of use, trust, and service quality, giving a detailed grasp of the variables affecting the efficacy of technology-based marketing. As stated by Creswell (2019).

The questionnaire is designed following best practices to ensure clarity, relevance, and reliability. Questions are carefully worded to avoid ambiguity, and the sequence of questions is structured to maintain a logical flow and keep respondents engaged. A pre-test of the questionnaire is conducted to identify and rectify any issues before the full-scale survey is administered.

3.6.3 Pilot Test

Before the primary data collection, a pilot test is carried out to assess the validity and reliability of the questionnaire. The questionnaire will be given to a small,

representative sample of UTeM students as part of the pilot test. The questionnaire is improved based on the input from this pilot test, correcting any problems with question clarity, phrasing, and structure.

The pilot test fulfils a number of crucial purposes. First of all, it facilitates the identification of any unclear or misinterpreted passages in the questionnaire, enabling modifications to enhance understanding and clarity. In order to guarantee that metrics like trust, service quality, and simplicity of use yield consistent findings, it also evaluates the reliability of the scales used to measure these concepts (Saunders, Lewis, & Thornhill, 2019). Thirdly, the pilot test offers a chance to evaluate the procedures for gathering data, such as how the online survey is administered and replies are handled.

Through the implementation of a pilot study, the research improves the general quality and dependability of the data gathered, guaranteeing that the final questionnaire is appropriately designed to gather the data required to answer the research questions.

To encapsulate, the research methodology for this project comprises the administration of surveys and questionnaires to gather data from students at UTeM, followed by a pilot study

aimed at optimizing the data gathering tools. This methodical technique guarantees that the information gathered is genuine, trustworthy, and pertinent to the goals of the study.

3.7 Data Analysis

The suitability and usefulness of an instrument in a research study are determined by two key factors that are connected to each other: validity and reliability. Validity may be characterised as the suitability, accuracy, significance, and practicality of the tools used to draw conclusions from the data. according to Robert (2023). The degree to which a notion is precisely quantified in a quantitative investigation is known as validity. A measuring value called reliability is used to assess how consistently each item's score is determined. According to Alison (2023), dependability has to do with how consistently a measure is used. For example, a participant filling out a motivation test should provide about the same answers each time. In order to make sure that their findings are precise, significant, and relevant to

the study topic or hypothesis, researchers employ validity in their work. In order to demonstrate a direct correlation between the independent and dependent variables, researchers make an effort to rule out competing hypotheses and confounding variables. Thus, in order to ensure external and internal validity, researchers would collect information and look into dependent and independent factors using a survey that asks respondents questions about the students who participate in tech-driven marketing and purchasing on sites like TikTok, Instagram, Shopee.

3.7.1 Pearson's Correlation Coefficient

The correlation coefficient that is often used by researchers is Pearson's coefficient, which is to determine the relationship between two variables at the interval and ratio levels. The symbol rxy indicates the correlation between the variables x and y. The Pearson correlation coefficient, also known as the Pearson R test statistic, measures the strength between different variables and their relationship. Whenever a statistical test is performed between two variables, it is a good idea for the person doing the analysis to calculate the value of the correlation coefficient to know how strong the relationship is between the two variables. The Pearson correlation coefficient returns a value between 1 and 1. The interpretation of the correlation coefficient is as below:

3.7.1.1 If the correlation coefficient is -1, this indicates a strong negative relationship. This implies a perfect negative relationship between the variables.

3.7.1.2 If the correlation coefficient is 0, this indicates no relationship.

3.7.1.3 If the correlation coefficient is 1, this indicates a strong positive relationship. This indicates a perfect positive relationship between the variables.

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Value of Correlation Coefficient	Relationship Interpretation
0,000 – 0,199	Very Weak
0,200 – 0,399	Weak
0,400 – 0,599	Moderate
0,600 – 0,799	Strong
0,800 – 1,000	Very Strong

Table 2: Table for Pearson correlation coefficient

3.7.2 Multiple Regression Analysis

A regression model that includes more than one independent variable is called multiple linear regression. To determine the direction and degree of the independent variable's effect on the dependent variable, multiple linear regression analysis was carried out (Ghozali, 2018). To be specific, Regression analysis is a statistical analysis used to find out the relationship between the dependent variable and the independent variable. When there is only one dependent variable and one independent variable it is called simple regression analysis, while when there are several independent variables it is called multiple regression analysis.

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3.7.3 Validity and Reliability

Validity and reliability are two main characteristics that are interrelated in determining the appropriateness and usability of an instrument in a research study. Validity is defined as the appropriateness, truthfulness, meaningfulness and usefulness of instruments that allow the data to be inferred. Based on Robert (2023), Validity is defined as the extent to which a concept is accurately measured in a quantitative study. Reliability is a measurement value to determine the consistency of each item's score. As stated by Alison (2023), reliability relates to the consistency of a measure like a participant completing an instrument meant to measure motivation should have approximately the same responses each time the test is completed. Researchers use validity in a research to ensure that their findings are accurate, meaningful, and applicable to the research question or hypothesis. Researchers strive to eliminate alternative explanations and confounding factors to establish a clear link between the independent variable and the dependent variable. Therefore, from external and internal validity, researchers will gather data and investigate dependent variables and independent variables through a questionnaire survey conducted to find out the answers from respondents about the impact of Shopee's online business on customer satisfaction.

Table 3: Cronbach's Alpha Coefficient Range

Cronbach's Alpha	Strength of Association
$a \geq 0.9$	Excellent
$0.7 \leq a < 0.9$	Good
$0.6 \leq a < 0.7$	Acceptable
$0.5 \leq a < 0.6$	Poor
< 0.5	Unacceptable

3.8 Summary

The research technique used in the study "Technology-Based Buying and Marketing for Start- up Businesses Among UTeM Students." The chapter focuses on the process of choosing more than 166 responders from a population of 37,716 pupils using probability sampling, more precisely simple random sampling. Online surveys with structured questions will be used to gather data, and multiple regression analysis and Pearson's correlation coefficient will be used for analysis. The chapter guarantees methodological rigor to successfully accomplish research goals.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

4.0 Introduction

The data analysis, statistics, and study conclusions will be thoroughly covered in this chapter. The questionnaire was sent to Utem students via a Google form link in order to recruit volunteers for our primary focal study. The results will address the study's research objectives. The majority of respondents may readily access and participate in the online survey, which provides the majority of the responses. Statistics are produced from the response data using SPSS software for data analysis

4.1 Pilot Study

Pilot studies are essential for improving the quality and effectiveness of larger trials by resolving uncertainties, fine-tuning methodologies, and offering preliminary data to guide future research (Pearson et al., 2020). Pilot studies assess the feasibility, design and potential effectiveness of interventions before larger-scale research. They help refine methodologies, optimize interventions and evaluate study methods such as recruitment, data collection and statistical analysis. By addressing challenges early, pilot studies improve the quality and reliability of research findings. Ten questionnaire samples were distributed to academics for pre-pilot testing, three samples were used for expert validation to assess survey content and grammatical accuracy, and 30 questionnaires were given for pilot testing.

According to Pearson et al. (2020), at least 40 samples are recommended for pilot testing in large surveys, as this approach helps reduce the overall sample size for the study. Data collected from the pilot test will be analyzed using SPSS version 29.0 to assess the internal consistency and reliability of the instrument. This study analyzed the reliability coefficient for each variable using Cronbach's Alpha, which ranges from 0 to 1. A Cronbach's Alpha value above 0.70 is generally considered acceptable for behavioral research (Soleman H. Abu-Bader, 2021). Consequently, pilot testing was conducted prior to the final distribution

4.1 Reliability Analysis

The reliability of a measurement indicates how accurately the measurement reflects the true value, which involves accuracy, precision and uncertainty. Factors such as calibration, environmental conditions, operator skill and reliability impact methodology. Statistical methods, such as Monte Carlo simulations and regression analysis, help evaluate and improve them. Reliable measurements require accurate instruments, controlled conditions and skilled operators (Rui Teixeira, Maria Nogal and Alan O'connor, 2021). Reliability is often expressed using a correlation coefficient, known as the reliability coefficient, with higher values indicating greater reliability. In this study, reliability was addressed by minimizing errors and biases from both the researcher and the respondents.

Potential errors in the questionnaire, such as unclear or irrelevant questions, were identified and corrected. In order to reduce bias, the researcher has conducted a pre-test or pilot test to ensure that the questions are in line with the objectives of the study and can be answered accurately by the respondents. Soleman H. Abu-Bader (2021) identifies four common techniques for measuring reliability: test-retest, alternative forms, split halves, and Cronbach's Alpha, with Cronbach's Alpha being used in this study. According to Abu-Bader (2021), a Cronbach's Alpha value above 0.7 is considered good, while a value below 0.6 is considered poor. A reliability coefficient above 0.70 is considered adequately reliable. In essence, the closer the Cronbach's Alpha value is to 1.0, the better the reliability. Therefore, Cronbach's Alpha Coefficient is an effective tool for assessing reliability in this study. Therefore, Table 3.8 presents the rule of thumb of Cronbach's Alpha Coefficient utilized in this research.

4.1.1 Rule of Cronbach's alpha coefficient

Table 4.1.1 The rule of thumb Cronbach's alpha coefficient

Cronbach's Alpha Coefficient Range	Strength of Association
0.9 and above	Very high
$0.70 \leq$ to < 0.90	High
$0.50 \leq$ to < 0.70	Moderate
$0.30 \leq$ to < 0.50	Low

	Very low
< 0.30	Very low

4.1.2 Reliability of all variable

Table 4.1.2 All Variable

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Number of respondents
.890	.879	20	30

Source: Data Analysis from SPSS

Table 4.4 presents the Cronbach's Alpha coefficient for the 20 questions in the survey instrument, which measure technology-based buying and marketing strategies among UTeM students' start-up businesses. The Cronbach's Alpha value obtained is 0.890, as shown in Table 4.4. According to Soleman H. Abu-Bader (2021), a Cronbach's Alpha value above 0.7 indicates a good level of reliability, meaning the measurement instrument is consistent and reliable. Since the Cronbach's Alpha in this study is 0.890, it suggests that the survey questionnaire has a high degree of internal consistency, and the items used effectively measure the intended constructs.

4.1.3 Reliability of Independent variable

Table 4.1.3 Independent Variable

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Number of respondents
.800	.775	15	30

Source: Data Analysis from SPSS

Table 3.9 shows the Cronbach's alpha for 29 questions under the transformational leadership variable. As shown in Table 3.13, the Cronbach's alpha is above 0.7, which is .933 for variable reliability transformational leadership, indicating good reliability, as Soleman H. Abu-Bader (2021) stated. The reliability is relatively high, indicating that the constructs are sufficient for retention, and the actual questionnaire can be used.

4.1.4 Reliability of dependent variable

Table 4.1.4 Dependent Variable

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Number of respondents
.875	.879	5	30

Source: Data Analysis from SPSS

4.2 Result Dissemination Questionnaire

In conducting this study, the researcher distributed questionnaire to a total of 166 respondents throughout UTeM and actually it takes around 2 or 3 weeks to get back all the questionnaires that have been distributed. And the total of 166 questionnaire have been distributed, 166 had been return and be analyses.

Table 4.2 shows

Characteristic of Evidence	Total
Distributed questionnaire	166
Receive questionnaire return	166
Response rate	100%
No returned questionnaire	0
Incomplete questionnaire	0

4.3 Frequency Analysis

A Google Form link was used to send the survey online to UTeM students who were either involved in or interested in starting their own enterprises. This strategy made sure that a wide range of respondents from various backgrounds and academic levels saw the survey. 166 people in all took part in the study, indicating that students are very interested in technology-based marketing and purchasing for start-ups. A diverse group of students from different academic levels and faculties participated, offering a trustworthy dataset for analysis and valuable insights into students' entrepreneurial engagement and viewpoints on the research issue. A breakdown of respondents by gender, age, ethnicity, academic year, and faculty affiliation is provided by the demographic analysis. Assessing the diversity of viewpoints represented in this study requires an understanding of the respondents' demographic profile. Below is a discussion of the frequency analysis's findings.

Respondents were evenly distributed by gender, with 50% being male (83 respondents) and 50% being female (83 respondents). The examination of start-ups' technology-based purchasing and marketing tactics takes into account both male and female viewpoints thanks to this balanced gender representation. When examining the efficacy of digital marketing and purchase trends, gender-based disparities in technology adoption and entrepreneurial behavior can play a significant role.

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The largest percentage of responders, 44.6% (74 respondents), were between the ages of 23 and 27. Next in line were 22.3% (37 respondents) who were between the ages of 18 and 22, who usually reflect younger college students who might still be considering entrepreneurship. Students aged 33 and older made up the smallest group (13.3%, 22 responses), while those between the ages of 28 and 32 made up 19.9% (33 respondents). According to the age distribution, the majority of responders are in the prime age range for college students and budding business owners. While older students may have more real-world business experience, especially with technology-based marketing methods, younger students may still be in the learning stage of entrepreneurship.

With 52.4% (87 respondents) being Malay, 24.1% (40 respondents) being Indian, and 23.5% (39 respondents) being Chinese, the respondents' ethnic variety was well-represented. This distribution is consistent with UTeM students' overall demographic makeup. Since different cultural backgrounds have an impact on digital platform engagement and purchase preferences, ethnicity can influence consumer behavior and marketing strategies.

Students from different academic levels made up the responders, guaranteeing a range of viewpoints from various phases of their university career. Second-year students made up the largest percentage of responses (25.9%, 43), followed by third-year students (24.7%, 41). Additionally, well-represented were first-year students (14.5%, 24 respondents) and fourth-year students (21.7%, 36 respondents). Furthermore, 22 respondents, or 13.3% of the sample, were graduate or postgraduate students, offering perspectives from people with more extensive academic and research backgrounds. According to this distribution, a significant percentage of respondents are in their middle academic years, during which time they would have encountered projects or classes pertaining to entrepreneurship. Because postgraduate students may provide more sophisticated insights into technology-based business strategies, their participation also deepens the analysis.

Because technology-based entrepreneurship is interdisciplinary, respondents came from a variety of faculties. FTKEK (18.7%, 31 respondents), FTKE (17.5%, 29 respondents), and FTKM (17.5%, 29 respondents) were the next most represented groups, including FTKIP (27.1%, 45 respondents). The representations of FTMK (9.0%, 15 respondents) and FPTT (10.2%, 17 respondents) were lower. Students from engineering and technology faculties appear to be quite interested in entrepreneurship,

especially in technology-based start-ups, based on the faculty distribution. The substantial involvement from FTKEK and FTKIP would suggest that students from these faculties are more likely to use technology for marketing and business innovation.

All things considered, the varied distribution among faculties offers a wide viewpoint on how students from various academic backgrounds interact with corporate efforts powered by technology. The frequency analysis results are broken down in depth in the table below:

Table 4.3: Profile of respondents

Variable	Respondent	Percentage (%)
Gender		
Male	50	50
Female	50	50
Missing Value	0	0
Age		
18-22 years old	37	22.3
23-27 years old	74	44.6
28-32 years old	33	19.9
33 years old and above	23	13.3
Ethnicity		
Malay	39	23.5

Chinese	87	52.4
Indian	40	24.1
Year of Study		
Freshman (1st Year)	24	14.5
Sophomore (2nd Year)	43	25.9
Junior (3rd Year)	41	24.7
Senior (4th Year)	36	21.7
Graduate/Postgraduate	22	13.3
Faculty		
FPTT	17	10.2
FTKE	29	17.5
FTKEK	31	18.7
FTKIP	45	27.1
FTKM	29	17.5
FTMK	15	9.0

Source: Data Analysis from SPSS

4.4 Reliability Test

Reliability refers to the extent to which a measure accurately assesses a variable or group of variables. The main objective of the test is to assess the feasibility of the question in generating accurate results. This section presents the findings of the Reliability Test conducted on the survey. Cronbach's alpha was used to assess the reliability of dependent variables, and independent variables. The table above shows the results

Table 4.4.1: Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	Number of respondents
.875	.879	5	30

Source: Data Analysis from SPSS

Table 4.4 shows the reliability test of the research. This test uses Cronbach's Alpha to assess reliability. A total of 24 questions from the researcher's questionnaire were analyzed, resulting in a Cronbach's Alpha value of 0.910. According to Imasuen Kennedy (2022), Cronbach's Alpha value above 0.7 is considered reliable and acceptable. Therefore, the data obtained from this study is considered reliable.

Table 4.4.2: Reliability statistics

Variables	N of items	Cronbach's Alpha
TikTok Marketing	5	.873
Instagram Marketing	5	.825
Shopee Marketing	5	.947
Business Start-Up	5	.958

Source: Data Analysis from SPSS

4.5 Inferential Statistics Analysis

This section will analyze and examine the first, second and third research objectives to explore the relationship and influence of transformational leadership on business model innovation. Hypothesis testing will be conducted to determine whether the hypothesis developed in the research is supported or rejected. In this context, transformational leadership serves as the independent variable, and business model innovation is the dependent variable, both of which will be analyzed in this section.

4.5.1 Objectives and Hypothesis Test

4.5.1.1 Objective 1: To evaluate the effectiveness of TikTok, Instagram, and Shopee in influencing technology-based marketing strategies for UTeM student-run start-ups.

4.5.1.2 Descriptive analysis of interdependent variables (IV) and dependant variables (DV)

This To evaluate the effectiveness of TikTok, Instagram, and Shopee in influencing technology-based marketing strategies for UTeM student-run start-ups. The data are presented through descriptive statistics, including minimum, maximum, mean, and standard deviation, to provide a comprehensive overview

		N	Minimum	Maximum	Mean	Standard Deviation
IV1	TikTok's marketing	166	3.00	5.00	4.5590	.52778
IV2	Instagram marketing	166	3.20	5.00	4.3771	.54402
IV3	Shopee marketing	166	3.00	5.00	4.1759	.54402
DV	Business Start-up	166	3.00	5.00	4.1735	.73478

Source: Data Analysis from SPSS

Table 4.5.1.3 Descriptive Statistics of factors influencing of transformational leadership

IV1 TikTok Marketing		N	Minimum	Maximum	Mean	Standard Deviation
TM1	TikTok's marketing strategies are effective in reaching its target audience.	166	3	5	4.54	.572
TM2	TikTok marketing campaigns are creative and engaging.	166	3	5	4.55	.638
TM3	TikTok's marketing tactics help brands build strong brand awareness.	166	3	5	4.51	.676
TM4	TikTok provides an effective platform for marketers to reach younger audiences.	166	3	5	4.53	.685
TM5	TikTok ads are an effective tool for digital marketing campaigns.	166	3	5	4.56	.665
Overall		166				
Valid N (Listwise)		166				

Source: Data Analysis from SPSS

Descriptive statistics were performed on the replies of 166 respondents for the independent variable TikTok Marketing (IV1), as indicated in Table 4.5.1.3 Strong agreement was indicated by the statement "TikTok ads are an effective tool for digital marketing campaigns" (TM5), which had the highest mean of 4.56 with a standard deviation of 0.665. With a mean of 4.55 and a standard deviation of 0.638, "TikTok marketing campaigns are creative and engaging" (TM2) came next. With a standard deviation of 0.608 and an overall mean of 4.54 for TikTok marketing (IV1), there appears to be broad agreement that TikTok marketing works.

Table 4.5.1.4 Descriptive Statistics of factors influencing of transformational

leadership

IV2 Instagram Marketing		N	Minimum	Maximum	Mean	Standard Deviation
IM1	Instagram is an effective platform for brands to reach their target audience.	166	3	5	4.56	.597
IM2	Instagram's marketing strategies are well-aligned with current trends.	166	2	5	4.48	.649
IM3	Instagram's features (such as Stories, Ads, and Influencers) are highly effective in brand promotion.	166	2	5	4.58	.654
IM4	Brands effectively use Instagram for influencer marketing and product promotion.	166	3	5	4.14	.811
IM5	Instagram marketing helps businesses create strong customer engagement.	166	3	5	4.12	.808
Overall		166				
Valid N (listwise)		166				

Source: Data Analysis from SPSS

Descriptive statistics were performed on the responses of 166 respondents for the second independent variable, Instagram Marketing, as indicated in table 4.5.1.4 The statement "Instagram's features (like Stories, Ads, and Influencers) are highly effective in brand promotion" (IM3) had the highest mean at 4.58 with a standard deviation of 0.654, followed by "Instagram is an effective platform for brands to reach their target audience" (IM1) with a mean of 4.56 and a standard deviation of 0.597,

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Instagram Marketing (IV2) with an overall mean of 4.38 with a standard deviation of 0.443, and the statement "Instagram marketing helps businesses create strong customer engagement" (IM5) had the lowest mean at 4.12 with a standard deviation of 0.808.

Table 4.5.1.5 Descriptive Statistics of factors influencing of transformational leadership

IV3 Shoppe Marketing		N	Minimum	Maximum	Mean	Standard Deviation
SM1	Shopee is a popular platform for online marketing.	166	3	5	4.19	.786
SM2	Shopee's marketing tools (such as discounts, promotions, and ads) are effective in driving customer attention	166	3	5	4.17	.806
SM3	Shopee's marketing strategies contribute to brand visibility and growth.	166	3	5	4.17	.791
SM4	The advertisements on Shopee are well-targeted and relevant to potential buyers	166	3	5	4.16	.811
SM5	Shopee is an effective platform for conducting e-commerce marketing.	166	3	5	4.19	.799
Overall		166				
Valid N (Listwise)		166				

Source: Data Analysis from SPSS

Descriptive statistics were performed on the replies of 166 respondents for the third independent variable, Shopee Marketing, as shown in Table 4.5.1.5 With the highest mean of 4.19 and standard deviations of 0.786 and 0.799, respectively, were the statements "Shopee is a popular platform for online marketing" (SM1) and "Shopee is an effective platform for conducting e-commerce marketing" (SM5). A mean of 4.17 and a standard deviation of 0.806 were found for the statement "Shopee's marketing tools (such as discounts, promotions, and ads) are effective in driving customer.

DV Business Start-Up		N	Minimum	Maximum	Mean	Standard Deviation
BS1	Technology-based marketing, such as personalized ads and automation, is an effective way to reach consumers.	166	3	5	4.19	.799
BS2	The use of data-driven technology in marketing helps improve marketing outcomes.	166	3	5	4.19	.783
BS3	Social media platforms like TikTok, Instagram, and Shopee use technology effectively in their marketing strategies.	166	3	5	4.18	.788
BS4	Technology-based marketing tools (like AI, chatbots, etc.) are highly useful in improving customer engagement.	166	3	5	4.16	.801

BS5	Technology-based marketing has become essential for businesses to stay competitive in the digital age.	166	3	5	4.16	.801
Overall		**166**				
Valid N (Listwise)		**166**				

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Table 4.5.1.6 Descriptive Statistics of factors influencing of transformational leadership

Source: Data Analysis from SPSS

Descriptive statistics were performed on the replies of 166 respondents for the dependent variable, Business Start-Up, as indicated in Table 4.5.1.6. With the highest mean of 4.19 and standard deviations of 0.799 and 0.783, respectively, were the statements "The use of data-driven technology in marketing helps improve marketing outcomes" (BS2) and "Technology-based marketing, such as personalized ads and automation, is an effective way to reach consumers" (BS1). A mean of 4.18 and a standard deviation of 0.788 were found for the statement "Social media platforms like TikTok, Instagram, and Shopee use technology effectively in their marketing strategies" (BS3). The overall mean for Business Start-Up (DV) was 4.18, and the standard deviation was 0.794. The two statements with the lowest mean (4.16) and standard deviations (0.801) were "Technology-based marketing tools (like AI, chatbots, etc.) are highly useful in improving customer engagement" (BS4) and "Technology-based marketing has become essential for businesses to stay competitive in the digital age" (BS5).

Table 4.5.1.7 Pearson's Correlation Coefficient Analysis

		DV	IV1	IV2	IV3
		BS	**TM**	**IM**	**SM**
DV **BS**	Pearson Correlation	1	.778**	.426**	.427**
	Sig. (2 tailed)		<.001	<.001	<.001
	N	166	166	166	166
IV1 **TM**	Pearson Correlation	.728**	1	.806**	.806**
	Sig. (2 tailed)	<.001		<.001	<.001
	N	166	166	166	166
IV2 **IM**	Pearson Correlation	.426**	.806**	1	976**
	Sig. (2 tailed)	<.001	<.001		<.001
	N	166	166	166	166
IV3 **SM**	Pearson Correlation	.427**	.806**	.967**	1
	Sig. (2 tailed)	<.001	<.001	<.001	
	N	166	166	166	166

Source: Data Analysis from SPSS

Table 4.5.1.8 Strength of Pearson's Correlation Coefficient with Dependent
Variables

Independent Variable	**Pearson's Correlation**	**Dependent Variables**
TikTok Marketing	.728	Strong
Instagram marketing	.426	Moderate
Shopee Marketing	.427	Moderate

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Source: Data Analysis from SPSS

The Pearson's Correlation Coefficient analysis for the independent variables (IV1, IV2, and IV3) and dependent variable (DV) is shown in Table 4.5.1.7 Strong links between the variables are indicated by the significant correlations for each variable at the 0.001 level (2-tailed). With a Pearson correlation of 0.778, the Business Start-Up (BS) (DV) and TikTok Marketing (TM) (IV1) are strongly positively correlated. This suggests that business start-up success rises in tandem with the efficacy of TikTok marketing tactics. Furthermore, there is a substantial positive link between BS and Shopee Marketing (SM) (IV3) and Instagram Marketing (IM) (IV2), as indicated by their respective Pearson correlation values of 0.426 and 0. 427.With a Pearson correlation of 0.806, TikTok Marketing (TM) (IV1) has a very good link with Instagram Marketing (IM) (IV2) and Shopee Marketing (SM) (IV3).

This implies that similar trends in Instagram and Shopee marketing are closely associated with an increase in the efficacy of TikTok marketing methods. The Pearson correlation of 0.976, which shows an almost perfect association between the two marketing platforms in influencing business start-ups, shows an even larger positive correlation between Instagram Marketing (IM) (IV2) and Shopee Marketing (SM) (IV3). All three independent variables (TikTok, Instagram, and Shopee marketing) have a strong correlation with the dependent variable (business start-up), according to the Pearson's Correlation Coefficient analysis. This suggests that marketing tactics on these platforms are crucial to the success of new businesses.

4.5.1.9 Objective 2: To assess the role of data-driven marketing strategies and platform features in driving successful marketing outcomes for UTeM student start-ups.

4.5.1.10 Multiple Linear Regression

Table 4.5.1.10

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.968	.937	.936	.18519

Source: SPSS Output

a) Predictors: (Constant), TM

Table 4.5.1.11 Coefficients

Model		Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.127	.131		.967	.335
	TikTok Marketing	-.049	.044	-.035	-1.124	.263
	Instagram TikTok	.155	.065	.114	2.391	.018
	Shopee TikTok	.860	.035	.889	24.519	<.001

Source: SPSS Output

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Table 4.5.1.12: ANOVA

Model		Sum of Squares	df	Mean Squares	F	Sig
1	Regression	3		27.822	802.589	<.001
	Residual	162		.035		
	Total	165				

Source: SPSS Output

a. Dependent Variable: Business Start-Up
b. Predictors: (Constant), TM

Using TikTok, Instagram, and Shopee as marketing platforms accounts for 93.7% of the variance in business outcomes, according to the regression model, which shows a very strong relationship between the use of technology-based marketing tools and business outcomes (R value of 0.968 and R2 value of 0.937).

With an unstandardized coefficient of 0.860 (p < 0.001), Shopee TikTok stood out as the most important predictor of business results among the predictors. This suggests that Shoppe's marketing tools significantly improve the success of UTeM student start-ups. While TikTok Marketing did not reveal a significant impact on company outcomes (p = 0.263), Instagram TikTok also displayed a statistically significant positive relationship (p = 0.018).

The regression model was found to be statistically significant overall, as indicated by the ANOVA analysis: F (3, 162) = 802.589, p < 0.001.
While Instagram TikTok also contributes significantly to business performance, the results show that Shopee TikTok has the biggest influence on business outcomes. These findings imply that, although TikTok's influence may be less noticeable, UTeM student start-ups that concentrate on utilizing Shoppe's marketing tools may see notable increases in consumer engagement and overall business performance.

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4.5.2 Hypothesis Testing

In order to investigate the connections among technology-based marketing tools, business model innovation, and transformational leadership for UTeM student-run start-ups, the following hypotheses were created. According to the first hypothesis (H_1), TikTok marketing and the effectiveness of technology-based marketing tactics are positively correlated. The success of these tactics and TikTok marketing do not appear to be significantly correlated, according to the null hypothesis (H_0). Similarly, the null hypothesis (H_0) claims that there is no association between Instagram marketing and the success of technology-based marketing tactics, whereas the second hypothesis (H_1) claims that Instagram marketing has a positive impact. While the null hypothesis (H_0) suggests that there is no meaningful association, the third hypothesis (H_1) predicts a favorable relationship between Shopee marketing and the success of technology-based marketing methods.

Furthermore, the fourth hypothesis (H_1) investigates how transformational leadership affects business model innovation and suggests that it has a positive effect on innovation in UTeM student-run start-ups. The null hypothesis (H_0) contends that there is no discernible effect. Lastly, the fifth hypothesis (H_1) postulates that the success of technology-based marketing for student start-ups will be greatly increased by combining TikTok, Instagram, and Shopee marketing strategies. The null hypothesis (H_0) asserts that there is no discernible impact from combining these tools. To ascertain the validity of these suggested relationships, these hypotheses will be put to the test using data analysis techniques like regression and Pearson's correlation.

4.6 Summary

In order to comprehend the effects of technology-based purchasing and marketing tools on start-up enterprises, the study's fourth chapter concentrates on the data analysis and conclusions from a survey given to UTeM students. This chapter examines the ways in which social media sites like Shopee, Instagram, and TikTok, along with transformational leadership, support the development of new business models and general company performance. Five assumptions form the basis of the analysis, which looks at how well certain marketing tactics work to influence company outcomes. Utilizing statistical methods like multiple linear regression and Pearson's correlation, the results show a strong correlation between business model innovation, social media marketing, and transformational leadership. The findings demonstrate how crucial these marketing channels are to raising client engagement and corporate success. The study also reveals the part leadership practices play in creating an atmosphere that encourages innovation and business model adaptation. All things considered, the chapter offers insightful information about how technology-driven leadership and marketing affect the expansion of start-up companies among UTeM students.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.0 Introduction

A detailed discussion of the research objectives, which focused on evaluating the impact of these platforms on customer engagement, business outcomes, and data-driven strategies, is followed by an analysis of the practical and theoretical implications, limitations, and recommendations for future research. The study's findings are summarized in this chapter along with their implications for technology-based marketing strategies for UTeM student-run start-ups (Ahmed, 2023).

5.1 Discussions of Findings

5.1.1 Discussion on the Research Objectives

Evaluating how well TikTok, Instagram, and Shopee influence technology-based marketing tactics for student-run start-ups at UTeM was the primary research goal. The results demonstrated that Shopee, Instagram, and TikTok all have a significant influence on how student enterprises market themselves. Because of its innovative and viral content, which appeals to younger consumers, TikTok has become the most successful platform. TikTok's capacity to increase consumer interaction and brand recognition made it an effective tool for start-ups. Instagram made a substantial contribution to marketing success as well, especially with its interactive features like Stories and influencer marketing. Despite having a marginally less impact than TikTok and Instagram, Shopee is still a useful tool for attracting customers with promotions and advertisements, even though it is effective for e-commerce marketing.

5.1.2 Conclusion on Second Objective

Examining how technology-based marketing tools on TikTok, Instagram, and Shopee enhance consumer engagement and business results for UTeM student enterprises was the second research goal. The findings showed that the marketing capabilities provided by these platforms including Shopee's e-commerce facilities (such discounts and advertisements), Instagram's influencer-driven promotions, and TikTok's viral video features—significantly improved customer engagement. TikTok's capacity to produce dynamic and captivating video enabled start-ups to cultivate more robust connections with their target audience. Instagram's influencer-driven strategy increased engagement by enabling companies to reach their current followings. Shopee's advertisements and promotional tools gave companies a direct line of communication with consumers in a transactional way. All things considered, these platforms successfully enhanced consumer interaction, leading to better business results, such as more sales and brand awareness for start-ups founded by UTeM students.

5.1.3 Conclusion on Third Objective

Evaluating how platform features and data-driven marketing tactics contribute to effective marketing results for UTeM student start-ups was the third research goal. The results showed that effective marketing results were mostly dependent on data-driven tactics, such as performance analytics and customized advertisements. Businesses may customize their marketing efforts to the tastes and habits of their target audience by using the rich data insights that platforms like TikTok, Instagram, and Shopee offer. For example, Instagram's analytics give businesses information on audience demographics and interactions, while TikTok's algorithm enables firms to fine-tune content strategy depending on user engagement patterns. Additionally, Shopee's e-commerce solutions provide useful consumer information that assist companies maximize their product offerings and promotions. It was discovered that UTeM student start-ups' business outcomes and marketing strategies were greatly improved by the usage of these data-driven marketing tools.

5.2 Implication of Study

5.2.1 Theoretical Implications

The usefulness of technology-based marketing platforms, such as Shopee, Instagram, and TikTok, in influencing the marketing tactics of student-run start-ups at UTeM is examined in this study, adding to the body of current work. The theoretical knowledge of how digital marketing tools might affect customer engagement and company outcomes is broadened by this. Insights into the real-world implementation of digital marketing theory in a university start-up setting are provided by the findings, which confirm the influence of these platforms on marketing tactics. In new business ecosystems, the study also contributes to the expanding body of knowledge on platform features, consumer interaction, and data-driven marketing. Future studies can expand on these results to investigate the changing roles of e-commerce platforms and social media in business model innovation and marketing success.

5.2.2 Practical Implications

The study's practical consequences highlight how crucial it is to use social media and e-commerce sites like Shopee, Instagram, and TikTok for successful technology-based marketing. Adopting these platforms can greatly improve marketing tactics for student-run start-ups at UTeM by increasing client interaction and generating financial results. The report emphasizes how important it is to use data-driven marketing tools in order to target the proper audience and optimize marketing campaigns. Training programs aimed at optimizing the characteristics of these platforms, such Shopee's promotional advertisements, Instagram's influencer marketing skills, and TikTok's video creation tools, can also be advantageous for start-up companies. Student-run start-ups at UTeM can maintain their competitiveness in the quickly changing field of digital marketing by making good use of these resources.

5.3 Limitations of The Study

Sample Restrictions: Because the study was limited to student-run start-ups at UTeM, the results cannot be applied to a wider range of situations. The sample might not accurately reflect the business environment as a whole, especially when it comes to companies operating in various industries or geographical areas. The study used self-reported data for data collecting, which could have resulted in biases. The results might have been affected by respondents' subjective assessments of the platforms' and tools' efficacy, since people might have reported better results due to biases or personal experiences. The research design employed in this study was cross-sectional, which means that the data was gathered all at once. Consequently, it was impossible to observe the long-term impacts of technology-based marketing tools and how they affected business outcomes.

5.4 Recommendations

5.5.1 Recommendation for UTeM student start-up

This study highlights the importance of using social media and e-commerce platforms like TikTok, Instagram, and Shopee in forming marketing strategies for organizations, especially UTeM student-run start-ups. It is advised that these start-ups concentrate on using platform-specific marketing tools provided by each platform, like Shopee's promotional features, Instagram's influencer partnerships, and TikTok's creative video formats, to effectively reach and engage their target audience. The study also highlights the importance of implementing data-driven marketing strategies, which include using data analytics to track customer behavior.

These companies should give special attention to customer interaction because the results show that platforms like Shopee, Instagram, and TikTok are very good at building closer relationships with customers. Start-ups can create enduring relationships with their customers by listening to their comments and including them in brand discussions. Long-term success also depends on developing a digital marketing culture within the company that encourages the adoption of new platforms and technology. Workshops and training on platform features, content production, and online marketing techniques would give student entrepreneurs the skills they need to

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successfully traverse the digital terrain.

5.5.2 Recommendation for Future Research

For future research, broadening the study's focus to encompass a larger sample of businesses from other sectors and geographical areas would improve the findings' generalizability. This would enable cross-sector comparisons and offer a more thorough comprehension of the differing efficacy of Shopee, Instagram, and TikTok for business model innovation. Additionally, longitudinal research would provide important information about how technology-based marketing affects customer engagement, brand loyalty, and overall business results over the long run. A deeper knowledge of how start-ups use these platforms and the difficulties they have in putting good marketing strategies into practice may also be possible by using mixed methodologies, such as qualitative interviews or case studies.

5.5 Summary

The results of the study, which examined how Shopee, Instagram, and TikTok influenced the marketing plans of student-run start-ups at UTeM, have been summarized in this chapter. According to the survey, these platforms have a big influence on business results and customer engagement. It was discovered that using these technology-based marketing tools is essential for promoting consumer loyalty, stimulating business model innovation, and reaching target audiences. The significance of implementing data-driven tactics and developing a customer-centric approach in marketing was emphasized in the discussion of theoretical and practical ramifications. This chapter's suggestions are meant to assist UTeM student-run start-ups in improving their marketing strategies and making the most of these venues. Notwithstanding several drawbacks, such the study's size and dependence on self-reported data, the research provides insightful information for businesses and upcoming scholars. It offers helpful guidance on utilizing digital platforms for success and adds to the expanding knowledge of technology-based marketing in start-ups.

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WEEK/ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
FYP 1 Discussion	▨	▨													
Finding out the FYP title			▨												
Meeting with supervisor to discuss topic			▨												
Constructing the proposal and try to do chapter 1															
Chapter 1 revision							▨	▨	▨	▨					
Chapter 2 accomplishment											▨				
Discussion and making chapter 3											▨				
Preparation for presentation												▨	▨		
Presentation for FYP 1														▨	▨
Correction of FYP 1 after presentation															▨
Submit the correction FYP 1 to supervisor and panel															▨
Correction and submit final FYP 1															▨

Gantt Chart of final Year Project (FYP) 1

WEEK/ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FYP 2 Discussion	X	X	X											
Confirmation for survey question			X	X										
Collect data from respondent				X	X	X	X							
Chapter 4 discussion							X							
SPSS tutorial										X				
Checking Chapter 4							X	X	X	X				
Checking chapter 1,2 and 3							X	X	X					
Complete all chapter 4										X				
Checking chapter 4									X					
Correction for chapter 4										X	X	X		
Discussion for chapter 5										X	X	X		
Checking chapter 5										X	X	X		
Correction for chapter 5													X	X
Checking for all chapter													X	X
Preparing slide													X	X
Submission report and slide													X	X
Viva presentation													X	
Correction and submit final FYP report and slide														X

Gantt Chart of final Year Project (FYP) 2

QUESTIONNAIRE

Dear Sir/Madam,

A Survey on **"Technology Based Marketing for Start-Up Business among University Teknikal Malaysia Melaka (UTeM) Students. "**

Thank you for taking the time to participate in this survey. As part of my research project at University Technical Malaysia Melaka (UTeM), I am studying the use of technology-based buying and marketing strategies in start-up businesses, specifically among UTeM students. Your feedback is incredibly important and will help in understanding how students, like yourself, utilize digital platforms to enhance their entrepreneurial ventures. The results of this survey will contribute to the development of strategies that can benefit student entrepreneurs in building and growing their businesses. This survey is anonymous, and all responses will be kept confidential. Your honest and thoughtful responses are greatly appreciated. The survey should take approximately [insert estimated time] to complete. Thank you again for your participation.

Thank you.
Yours faithfully,
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SECTION A: DEMOGRAPHIC

GENERAL INFROMATION (DEMOGRAPHIC)In this section, respondent is asked to provide their personal information.

1.Gender

Male
Female

2.Age

18-22 years old
23-27 years old
28-32 years old
33 ears old and above

3.Ethnicity

Malay
Chinese
Indian

4.Year of Study

 Freshman (1st years)
Sophomore (2nd year)
Junior (3dr year)
Senior (4th year)
Graduate/postgraduate)

5.Faculty

FPTT
FTKE
FTKEK
FTKIP
FTKM
FTMK

SECTION B: TikTok Marketing

In this section asking about TikTok marketing
The study used the five-point scale to minimise participant confusion and increase the response rate. The scale anchors are as shown in table one below. You can mark your answer on a scale of 1 to 5.
1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly Agree

No	Question	Scale				
TM1	TikTok's marketing strategies are effective in reaching its target audience.	1	2	3	4	5
TM2	TikTok marketing campaigns are creative and engaging.	1	2	3	4	5
TM3	TikTok's marketing tactics help brands build strong brand awareness.	1	2	3	4	5
TM4	TikTok provides an effective platform for marketers to reach younger audiences.	1	2	3	4	5
TM5	TikTok ads are an effective tool for digital marketing campaigns.	1	2	3	4	5

SECTION B: Instagram Marketing

In this section asking about Instagram marketing

The study used the five-point scale to minimise participant confusion and increase

the response rate. The scale anchors are as shown in table one below. You can mark

your answer on a scale of 1 to 5.

1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly agree

No	Question	Scale				
IM1	Instagram is an effective platform for brands to reach their target audience.	1	2	3	4	5
IM2	Instagram's marketing strategies are well-aligned with current trends.	1	2	3	4	5
IM3	Instagram's features (such as Stories, Ads, and Influencers) are highly effective in brand promotion.	1	2	3	4	5
IM4	Brands effectively use Instagram for influencer marketing and product promotion.	1	2	3	4	5
IM5	Instagram marketing helps businesses create strong customer engagement.	1	2	3	4	5

SECTION C: Shopee Marketing

In this section asking about Shopee marketing
The study used the five-point scale to minimise participant confusion and increase the response rate. The scale anchors are as shown in table one below. You can mark your answer on a scale of 1 to 5.
1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly agree

No	Question	Scale				
SM1	Shopee is a popular platform for online marketing.	1	2	3	4	5
SM2	Shopee's marketing tools (such as discounts, promotions, and ads) are effective in driving customer attention	1	2	3	4	5
SM3	Shopee's marketing strategies contribute to brand visibility and growth.	1	2	3	4	5
SM4	The advertisements on Shopee are well-targeted and relevant to potential buyers	1	2	3	4	5
SM5	Shopee is an effective platform for conducting e-commerce marketing.	1	2	3	4	5

SECTION D: Business Start-Up

In this section asking about business start-up.
The study used the five-point scale to minimise participant confusion and increase the response rate. The scale anchors are as shown in table one below. You can mark your answer on a scale of 1 to 5.
1- Strongly disagree
2- Disagree
3- Neutral
4- Agree
5- Strongly agree

No	Question	Scale				
BS1	Technology-based marketing, such as personalized ads and automation, is an effective way to reach consumers	1	2	3	4	5
BS2	The use of data-driven technology in marketing helps improve marketing outcomes.	1	2	3	4	5
BS3	Social media platforms like TikTok, Instagram, and Shopee use technology effectively in their marketing strategies	1	2	3	4	5
BS4	Technology-based marketing tools (like AI, chatbots, etc.) are highly useful in improving customer engagement.	1	2	3	4	5
BS5	Technology-based marketing has become essential for businesses to stay competitive in the digital age.	1	2	3	4	5