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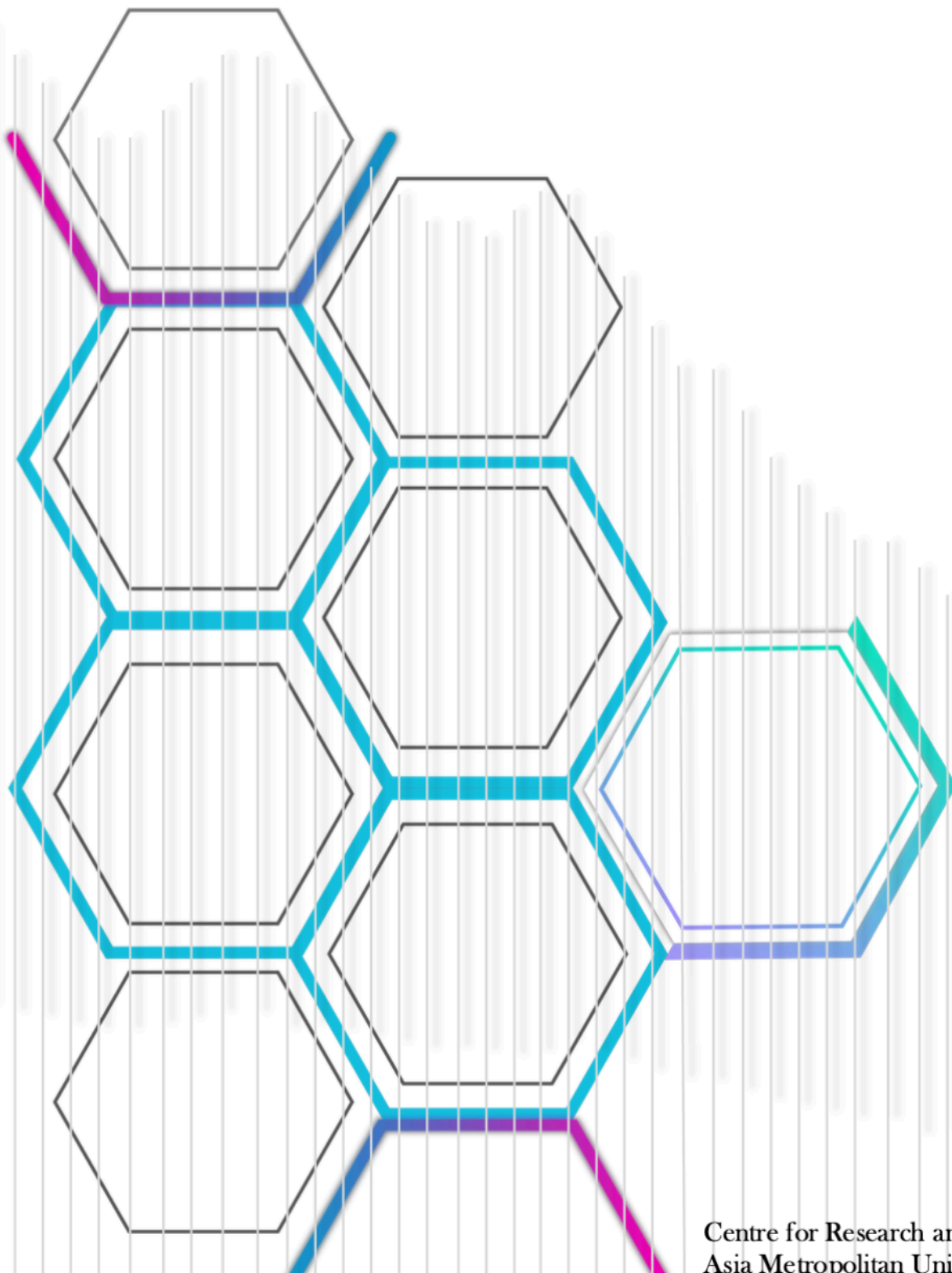
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Scope

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Sairun Syakira Saiman

Sabah Women and Children Hospital Radiation Therapists' Perspectives on Participating in Research

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Abstract

Radiation therapy is a rapidly growing healthcare sector that requires precision in planning and delivering high-dose radiation treatment to cancer patients while minimizing damage to adjacent organs. The involvement of radiation therapists (RTs) in research has increased over the past decade, with more RTs participating in clinical trials and pursuing higher degrees in research. However, it is unclear how many RTs are leading research initiatives, and whether they have sufficient opportunities to enhance their research abilities. This study aims to be a preliminary study to determine the perspectives of RTs on participating in research. This study used quantitative data using an online survey of the 40 RTs in the Radiotherapy department, Sabah Women and Children Hospital (HWKKS). Fisher's Exact Test, Kruskal-Wallis Test and Descriptive analysis were used to analyse the data. Half of RTs in HWKKS (52%) had participated or were currently leading an investigation. Of these, 43.1% (n = 9) had experience as an investigator in a university bachelor program, 33.3% (n = 7) had experience conducting informal or self-directed research in a departmental setting, and 23.8% (n = 5) had experience with departmental research. Involvement in research was associated with the intention to leave RTs profession early. Participants identified a range of potential research interests, impacts and benefits in participating research and its barriers which include lack of opportunities, and lack of research culture and funding. This study's data suggest that it is imperative to provide more support and establish a positive research culture to encourage more RTs participation in research projects.

Keywords: Radiation therapists; Perspective; Research participation

Introduction

The rapid pace of technological advancements in the medical realm has prominently reshaped the sector of medical imaging and radiotherapy over recent decades. With breakthroughs ranging from novel imaging modalities to more precise and patient-centred therapeutic strategies, the evolution of this field is largely a testament to the dedicated research undertaken by professionals. Historically, the mantle of research within this realm has predominantly been shouldered by radiologists and medical physicists, the experts who delve deep into the intricacies of imaging mechanisms and radiation techniques. However, this conventional model often overlooks a cohort of professionals whose vantage point offers a unique blend of clinical practice and patient interaction—radiation therapist technicians (RTTs).

RTTs stand at the crossroads where technological advancements meet actual patient care. Their roles entail harnessing the capabilities of advanced equipment while ensuring a patient-centric approach, ensuring treatments are both effective and empathetic. This unique position offers them unparalleled insights, which, if incorporated into research, could provide a holistic view, bridging gaps that exist between technical feasibility and actual patient outcomes (Ludwig et al., 2019).

In 2011, Higgins et al., highlighted that almost all of the thirty RTTs in his study were participating in some form of research activity, however this might be due to enablers such as the 4-year degree program's incorporated research project. In 2023, Middleton & Bolderston illustrated that none of their 31 participants (Scholarly Practitioner of the University of Alberta's Radiation Therapy

Program (RADTH)) engaged in research post-graduation. This is due to limitation such as limited local opportunities, topic ideas and lack of interests.

As of today, it is unknown how many RTTs are now creating and leading research initiatives, or whether RTTs have the opportunity to participate in research and enhance their research abilities. There were a few publications done to find the RTTs participation and their perception of research, namely a few in Australia by Wright et al. (2009), Halkett et al. (2017), in Canada by Higgins et al. (2011), in Norway by K.G. Vikestad et al. (2017), in Uganda by Aloysius Gonzaga Mubuke & Francis, (2019) and in Italy by Piro et al. (2020).

The following hurdles to research participation were identified: lack of time, lack of interest, limited local opportunity and workplace support as contributing factors for not undertaking postgraduate research. (Brown et al., 2018; Moran & Davis, 2020; Chau et al., 2022; Middleton & Bolderston, 2023).

On the other hand, the elements that encouraged research participation included promoting research in job descriptions, recognizing research output in career promotion, and providing more opportunity to actively participate in clinical trials. Chau et al. (2022) also emphasized that targeted support mechanisms should be implemented to address perceived or real barriers to continue to grow research capacity within the profession. In Australia and Norway, the national research interests of RTTs have been mapped (Halkett et al., 2017; Egestad & Halkett, 2016). According to studies on research interests in radiotherapy, these interests are related to patients, technical radiotherapy issues, radiation safety, and staff issues (Egestad & Halkett, 2016).

Recent advances in radiotherapy highlight the importance of research in professions, as research provides the evidence required to fulfil the concept of evidence-based practice. Radiotherapy research is as important as research in other medical fields, and the increase in the quality and quantity of medical imaging research output is encouraging. Thus, research is needed as part of role expansion and as a necessary tool to improve the treatment and care delivery. As the necessity of RTs being involved in research is now recognized as part of the profession, it is critical that we assess how actively RTs are involved in research and investigate current hurdles and benefits of research participation.

Methods

This is a quantitative method study where cross-sectional design was used. Online survey was set up in Google Form and distributed to RTTs in HWKKS using the WhatsApp application. The online questionnaire, which was adopted from Halkett et al. (2017) was used and modified where necessary. The survey contained 3 main sections; section 1: sociodemographic data, section 2: participation in research and section 3: perceived benefits, barriers and research topics. The response item used closed-ended question in multiple choices and Likert type scales.

The research was conducted in Radiotherapy department, HWKKS. All RTTs was included in the online survey. HWKKS is located in the north and 10 km away from the city centre of the Kota Kinabalu, thus, Radiotherapy department, HWKKS is bound to accommodate cancer patients from all around Sabah, Labuan and neighbouring Sarawak's district, such as Limbang and Lawas. Radiotherapy department, HWKKS has 42 RTTs working to deliver treatment to the patients. However, two of the RTT has been transferred to west Malaysia. As a result, this study is only geared towards the remaining 40 RTTs.

Total population sampling method from purposive sampling was used in this study. Purposive sampling is used to more precisely match the sample to the research's objectives and goals, thereby improving the study's integrity and the trustworthiness of the data and results. This idea has already been represented in four ways: credibility, transferability, dependability, and confirmability (Campbell, 2020). This study was first done in small setting to the RTTs in Radiotherapy department, HWKKS. Thus, the sample is purposely targeted at 40 RTTs.

The instruments for this study are Google Form application and also WhatsApp platform. The online questionnaire, which was adopted from Halkett et al. (2017) was used and modified where necessary. The survey contained 3 main sections; section 1: sociodemographic data, section 2: participation in research and section 3: perceived benefits, barriers and research topics. The response item used for section 1 and 2 was closed-ended question in multiple choices and Likert type scales for

section 3. The questionnaire will firstly include a brief explanation and consent. The respondent who proceeds to answer the questionnaire was regarded as agreeing to participating.

A WhatsApp messages containing the survey link to the Google Form was sent in the primary group chat of the RTT. The link was updated every week on Mondays for the month of April and May 2023. The data was finally finished collected on end of May.

Results and discussion

Among the 40 HWKKS RTTs, 52% ($n = 21$) have experience participating in research studies of some kind. Some RTTs in this study may have taken part in research while performing clinical duties. Twenty percent of the participants are currently enrolled in higher education, with eight of them studying for bachelor's degrees and one for a PhD in philosophy. Six of the eight RTTs were enrolled in comparable bachelor's programmes. Prior involvement in research projects was linked to those who had a different qualification, such as a bachelor's degree and post-basic CT scan. The level of participation in their research projects was correlated with those who are actively seeking higher education and RTTs who have the aim to quit the profession early owing to early retirement, change of workplace, or change of profession. It's interesting to note that RTTs who intended to leave their profession early and wanted to change careers tended to be RTTs who were already enrolled in higher education. This is consistent with Mickan et al. (2019), who found that experienced health professionals who choose to pursue a postgraduate degree had a specific aim in mind. This was frequently influenced by the workplace or a desire for advancement prospects.

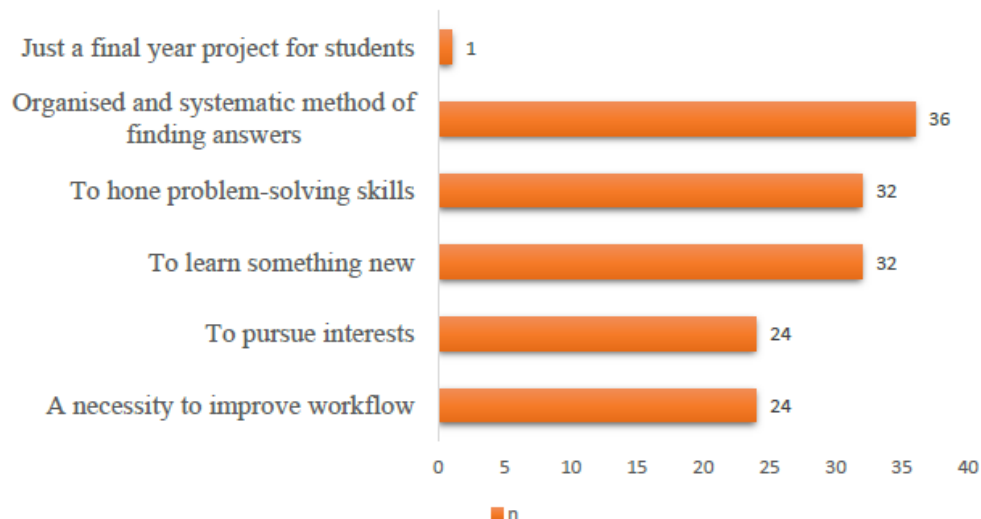


Figure 1: HWKKS RTTs' personal understanding about research in general

As there are several checkboxes for this question's answers, participants can select more than one in accordance with their overall view and knowledge. Only one RTT (2.5%) seemed to think that participating in research is only a student's final-year project and did not check any additional boxes. The progression of personal understanding is as follows: a methodical, organized approach to answering inquiries (90%); a desire to learn something new (80%); a need to enhance workflow (60%); and a want to pursue interests (60%). Years of work experience and individual knowledge of research in general are correlated ($p = 0.028$, FET). There were no appreciable variations in RTTs' understanding of the research that retains them in the RTT field and their employment or demography, according to univariate analyses.

The association was created because RTTs with additional qualifications would have to do a research study for their senior project. Seven of the nine RTTs who are enrolled in higher education had plans either to leave their current positions early or go to work for the Ministry of Education/ private hospital. It is clear that RTTs are continuing their education to advance their careers and use it as a springboard to gain more valuable jobs in the RT sector.

Project start and conceptualization-related tasks were almost non-existent for non-pursuing higher education RTTs (the research for the bachelor's final year project was extracted from the report), correlating to the barrier of limited local opportunities (Middleton & Bolderston, 2023); this may severely indicate the need to give RTTs more opportunities for research education and participation in generating and disseminating results.

Participating in a research study is viewed as having career flexibility and employment autonomy (Cordrey et al., 2022). The outcomes of the study will assist the RT community, cancer patients, and the RT profession as a whole. It is also seen as being up to date by using evidence-based treatment. However, HWKKS RTTs do not genuinely believe that taking part in a research study would be rewarding or contribute to their sense of job satisfaction based on the result showed in Table 1.

Table 1: The impacts and benefits of participating in research

	Min	Max	Sum	Mean	SD
Become an expert/ teach other	3	5	164	4.10	0.591
Benefit to community/ patients/ profession	3	5	176	4.40	0.545
Career advancement	3	5	171	4.28	0.554
Collaboration (MDT and within profession)	3	5	163	4.08	0.526
Develop new skills/ increase knowledge	3	5	176	4.40	0.545
Evidence-based practice	3	5	179	4.48	0.554
Flexibility of research and job autonomy	3	5	175	4.38	0.628
Keeps RTT interested in RT field	3	5	163	4.08	0.417
Rewarding/ job satisfaction	3	5	155	3.88	0.563
Recognition of work	3	5	169	4.23	0.620
As a self-challenge to improve	3	5	174	4.35	0.533

Lack of opportunity, a lack of research cultures, and a lack of financing were the main obstacles to performing research (Moran & Davis, 2020; Chau et al., 2022; Middleton & Bolderston, 2023) and this is in congruence with data in Table 7: Barriers of conducting research. This discovery in RT is not brand-new, as other studies have reported on comparable obstacles to conducting oncology-related research. In the absence of research platforms or projects, RTTs are frequently unable to develop or contribute to scientific inquiry. This dilemma is compounded when there is no prevalent research culture within institutions. Without an established research culture, professionals may regard these attempts as secondary, lacking incentive to enter this crucial subject. Furthermore, budgetary constraints play a key impact in limiting the depth and range of study.

Collaboration with both local and international organizations can be critical in breaking down these barriers and creating opportunities customized to RTT. Introducing specific training programs can

further prepare RTTs for research roles. Furthermore, by incorporating research into the RTT curriculum and implementing mentorship programs, a strong research culture may be fostered from the ground up. On the financial front, pursuing grants from national and international organizations, forming public-private partnerships, and even looking into crowdfunding can help ensure that the resources needed for oncology-related research are available. It is critical that institutions acknowledge research's revolutionary potential in improving patient care, emphasizing that investing in research involves investing in the future of healthcare.

HWKKS RTTs highlighted a wide range of research interests or subjects, such as advanced practice, treatment compliance, rural patients, closely followed by QA and decreasing errors, workforce concerns, and SRS/SRT/SBRT. RTTs are gradually being introduced to advanced practice thanks to increased autonomy in making initial decisions based on expertise (Wong et al., 2021). It is an essential practice that will effectively bring Malaysian RTTs up to par with those from other countries. Rural patients and treatment compliance appear to be seen by HWKKS RTT as a single problem that requires constant attention. There is only one general hospital in the sizable state of Sabah that offers radiation therapy care. Rural patients are a result of the vast state's still-large number of undeveloped areas (Mbuti et al., 2020; Pan et al., 2022). The issue with rural patients is that they are more likely to seek out spiritual and herbal remedies as opposed to the standard treatment options.

Working for fewer than ten years with no plans to exit the profession was linked to a desire to be active in research. A fresher workforce with a desire to conduct research is advantageous for the field, especially when compared to developments in other branches of health research like primary care. This might be a chance for the RT profession to step up its research efforts and strengthen the research culture in HWKKS.

As the advantages of participating as a researcher have not been sufficiently acknowledged, ordinary clinical responsibilities frequently take the place of research capabilities in radiation oncology (Halkett et al., 2016). With so many people expressing interest in taking part in research studies, it might be able to transform this attitude toward research and push for more chances and time set aside for it.

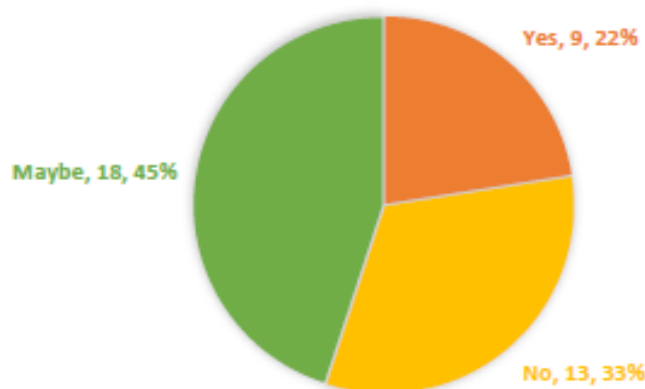


Figure 2: HWKKS RTTs' interest in participating in research study given the opportunity

The ability for RTTs to support one another and the multidisciplinary team will increase as more RTTs participate in research. To encourage and give HWKKS RTTs opportunity to develop a positive research attitude, HWKKS can build its research capacity through the establishment of a research committee, research education, and other initiatives.

Clearly the limitation of this study is, it is only intended for RTTs working in HWKKS. Data will not accurately reflect Malaysia's entire RTT community. However, this study helps to understand how HWKKS RTTs view research, their areas of interest, and its perceived advantages and disadvantages. Additionally, it shows that despite an increase in the number of RTTs who have participated or are

presently engaged, there is still a requirement to promote RTTs' participation in research and encourage a positive outlook.

Conclusion

This study explored the research experiences, aspirations, and challenges faced by RTTs in HWKKS. Many RTTs are involved in research and pursuing further education to advance their careers. However, those seeking higher education may be considering leaving the profession due to a desire for more career flexibility. The study also highlights that RTTs without higher education opportunities face barriers to engaging in research, with limited local research options being a significant challenge. Despite the potential benefits of research for career growth and improved patient care, many RTTs do not find research intrinsically rewarding. Barriers such as lack of research culture, financial limitations, and institutional challenges must be addressed to support growth in the field. Collaboration with local and international organizations, targeted training, and research integration into the RTT curriculum can help overcome these obstacles. RTTs' research interests are diverse, including topics like advanced practice and rural patient care, an area of increasing importance due to unique challenges faced by rural patients. Interestingly, newer RTTs (with less than ten years of experience) show strong interest in research, offering hope for the future of research in radiation oncology. However, it's important to ensure research opportunities are not overshadowed by regular clinical duties. While the study is limited to one institution, it highlights the need to promote research participation among RTTs, create a more research-positive environment, and encourage innovation in the field.

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Factors Influencing Customer Decision Making in Malaysia Online Retail E-Commerce

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Abstract

The primary objectives of this study are to assess the impact of product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements on customer decision-making. A quantitative research approach was employed, utilizing surveys and questionnaires to gather data from 248 Generation Y online shoppers in Selangor and Kuala Lumpur. Data analysis techniques included descriptive analysis, reliability analysis, normality tests, correlation analysis, and multiple regression analysis to examine the relationships between variables. Findings reveal that all five factors significantly impact customer decision-making in online retail e-commerce. High-quality product information, effective promotional pricing strategies, a positive customer experience, strong social media influence, and advanced technological features enhance customer satisfaction and loyalty. Social media influence emerged as the most significant factor, highlighting the critical role of digital engagement in shaping customer perceptions and purchase intentions. These insights provide a foundation for e-commerce businesses to develop targeted strategies that enhance customer engagement and drive sales. Businesses can leverage high-quality product information and effective promotional pricing to attract and retain customers. Enhancing customer experience and utilizing social media effectively can lead to higher customer satisfaction and loyalty. Policymakers can create a supportive regulatory environment that promotes fair competition and customer protection.

Keywords: Customer Decision-Making, Online Retail E-Commerce, Product Information Quality, Promotional Pricing Strategies, Social Media Influence, Technological Advancements

1.0 Introduction

1.1 Overview

Since the early 1980s, the use of the internet has grown dramatically. This rise may be attributed to its adaptability, interactivity, convenience, and personalisation possibilities. These properties make it essential in a wide range of industries, including communication, security, media, education, investment, entertainment, and electronic commerce (Svatosova, 2020). Significant technological advancements, including the internet, have dramatically affected client habits and lives (Shafiee and Bazargan, 2019). Vasudevan and Arokiasamy (2021) suggest that the COVID-19 pandemic has accelerated the shift towards online shopping, leading to an increase in time spent online.

Recent data from Malaysia's Department of Statistics show a thriving digital ecosystem. Malaysia has an internet penetration rate of 97.4%, with 33.59 million users, and mobile phone penetration is as outstanding, at 98.7%. Individuals aged 15 and above now use computers at a rate of 83.5%, with 96.8% utilising the internet, indicating widespread digital involvement. Furthermore, digital engagement in Malaysia is deepening, with a significant rise in time spent online. As of January 2024, 28.68 million people, or 83.1% of the population, were actively engaged on different social media sites.

According to these trends, knowing the consumer decision-making process is critical for the success of online enterprises, especially in Malaysia, where e-commerce has substantially impacted buying habits.

1.2 Background of the Study

Online retail e-commerce has transformed customer buying habits and company operations by offering unprecedented ease, accessibility, and global reach. This industry encompasses a variety of transactions, including B2B sales, digital marketplaces, online retail shopfronts, and C2C platforms. Advancements in delivery and logistics, secure payment methods, and ongoing technology innovations have all contributed considerably to the rise of online retail e-commerce (Speed Commerce, 2024).

Globally, the expansion of online retail e-commerce has been exponential. In 2024, global online retail e-commerce sales reached approximately US\$6.86 trillion, reflecting an 8.8% increase from the previous year. Consequently, global e-retail sales accounted for 10.2% of all retail sales worldwide, with projections indicating a rise to 17.6% by 2027 (Vakulenko et al., 2019). In Malaysia, e-commerce sales are projected to reach US\$7.88 billion in 2024, positioning the industry as a significant contributor to the national economy (Statista, 2024). At the macro level, e-commerce growth is expected to supercharge Malaysia's digital economy, making up an estimated 21.8% of the nation's GDP by 2024 (Digital News Asia, 2024).

Several factors drive this remarkable progression in Malaysia's e-commerce landscape. With an average age of 28, Malaysia boasts a digitally literate population, which plays a crucial role in fuelling e-commerce growth. Additionally, the strong rate of internet penetration enhances the market's digital edge. Furthermore, the increase in disposable income and rapid urbanization continuously steers more customers toward digital platforms for their shopping needs. These factors combined create a robust foundation for the thriving e-commerce industry in Malaysia.

Numerous research has examined the complexities of customer decision-making in e-commerce. Researchers have concentrated on specific factors such as product features, price sensitivity, and consumer feedback. They have also evaluated the impact of external elements such as social media influence, technology improvements, and influencers on consumer decisions. Product information quality has a big influence on customer decisions in online shopping. Good consumer perceptions of high-quality product information inspire loyalty activities, such as good word-of-mouth, which boosts brand loyalty and accelerates online retail business growth. Customer satisfaction influences loyalty both directly and indirectly via trust (Ali & Anwar, 2021).

Customers make purchasing decisions based on promotional price methods. Price skimming, penetration pricing, premium pricing, psychological pricing, and competitive pricing are all effective tactics for favourably influencing client behaviour. Rebates, discounts, and buy-one-get-one-free offers are all successful ways to influence client decisions (Ali & Anwar, 2021). Customer experience is another important component that influences customer decision-making in online shopping. Businesses must understand their customers' requirements and preferences in order to provide products and services that meet their expectations. Improved customer experience leads to improved satisfaction, better decision-making, and an increased possibility of acquiring things online (McFee, 2024).

Social media has a significant impact on customer behaviour in online retail e-commerce. Platforms like Facebook, Instagram, TikTok, Twitter, and YouTube are crucial marketing tools for engaging customers and collecting feedback. Effective social media marketing may greatly increase consumer attention and influence purchasing decisions (Utari et al., 2023; Meliawati et al., 2023; Vasudevan & Arokiasamy, 2021). AI, AR, VR, and blockchain technologies have all altered the online retail experience. These advances offer personalised suggestions, interesting shopping experiences, and secure transactions, all of which have a substantial influence on customer purchasing decisions. Despite the fast growth of these technologies, more academic research is needed to determine their influence on consumer decision-making (Santos & Gonçalves, 2021; Song et al., 2022).

The purpose of this research is to look at the elements that impact consumer decisions in online retail e-commerce in Malaysia, with an emphasis on product information quality, promotional price strategy, customer experience, social media influence, and technological issues. This research presents a thorough and critical examination of the factors that influence customer behaviour in the digital marketplace. As the world undergoes digital transformation and customers increasingly rely on online platforms for their shopping needs, the findings of this study provide valuable guidance for businesses and researchers seeking to understand and navigate the complex dynamics of e-commerce customer behaviour.

1.3 Problem Statement

Customers may now directly access an unmatched choice of items with exceptional ease. Without having to visit actual businesses, they may study things online, compare prices, read customer reviews and comments, and make purchases from the comfort of their homes via smooth payment channels (Jie et al., 2024). Free delivery is cited by 64.8% of Malaysian e-commerce users as a major inducement to purchase online, per the Digital 2024 Online Shopping Data Analysis. Discounts and coupons are important; 51.2% of users are motivated to finish their purchases as a result of these deals. Furthermore, 43.3% of potential customers are influenced by customer reviews, while 40.4% place importance on loyalty points and 40.1% like simple online checkout processes.

However, despite its simplicity of use and prevalence, online retail e-commerce provides considerable challenges and impediments for businesses attempting to establish themselves in the competitive internet market. Many firms have now shifted their attention to e-commerce, resulting in a saturated and highly competitive market. The fundamental issue addressed by this study is the lack of awareness of the precise aspects that influence customer decision-making in Malaysia's online retail e-commerce. While there is significant study on customer behaviour in broad e-commerce contexts, there is a scarcity of targeted studies on the Malaysian market, which has distinct cultural, economic, and technological aspects. This gap is crucial because it inhibits firms' capacity to build focused strategies that cater to individual demands.

Furthermore, businesses must continuously upgrade plans to sustain customer involvement and pleasure, understanding customer motives behind online purchasing behaviors. They should explore various approaches, including social media and AI and VR, to differentiate themselves from competitors. The quality of product information is crucial for consumer trust and happiness, and improving it can lead to educated selections. Promotional pricing techniques can also hinder customer satisfaction. To maintain perceived product value and profitability, it's essential to establish price strategies that attract and retain customers. Customer experience is crucial for loyalty and retention, with website design, user interface, and customer service influencing it (Jusoh et al., 2022). Social media's power is undeniable, but effective use is challenging due to changing trends. Reacting quickly to these trends is essential for maintaining engagement. Artificial intelligence, augmented reality, virtual reality, and blockchain technologies have also changed the online retail experience.

Therefore, this study aims to fill gaps in existing research on customer purchase decisions in e-commerce, particularly in Malaysia, by examining factors like product information quality, promotional pricing strategies, customer experience, social media, and technological aspects.

1.4 Research Objectives

The research objective is to identify key factors influencing customer decision-making in Malaysian online retail e-commerce, evaluate their interaction, and provide practical recommendations for businesses and policymakers to develop effective marketing strategies and business models to enhance customer satisfaction and loyalty. The summary of the research objectives is shown in Table 1. below:

Table 1

1.	To analyze the relationship between product information quality and Customer decision-making in online retail e-commerce.
2.	To assess the impact of promotional pricing strategy on Customer decision-making in online retail e-commerce.
3.	To examine how customer experience influences Customer decision-making in online retail e-commerce.
4.	To investigate the influence of social media on Customer decision-making in online retail e-commerce.
5.	To determine the effect of technological factors on Customer decision-making in online retail e-commerce.

1.5 Research Questions

This study aims to examine customer decision-making factors in Malaysian online retail e-commerce, using research questions to guide focus and direction. The summary of the research questions is shown in Table 2. below:

Table 2

1.	What is the effect between product information quality and Customer decision-making in online retail e-commerce?
2.	How promotional pricing strategy impact Customer decision-making in online retail e-commerce?
3.	Does customer experience influence Customer decision-making in online retail e-commerce?
4.	What is the influence of social media on Customer decision-making in online retail e-commerce?
5.	What is the effect of technological factors on Customer decision-making in online retail e-commerce?

1.5 Significance of the study

1.5.1 Theoretical Significance

This study adds to the current body of information by including multiple factors such as technical improvements, social media influence, and conventional customer satisfaction measurements. By evaluating these aspects together, the study gives a full picture of their combined influence on consumer decisions, hence improving theoretical frameworks in customer behaviour research. The Customer Choice Theory is the theoretical framework used in this investigation. This theory focusses on how buyers choose amongst a collection of choices. It includes a variety of aspects such as individual preferences, perceived worth, and external influences like social media and marketing efforts. Understanding this idea is critical for analysing how customers make decisions in online shopping environments.

1.5.2 Practical Significance

The study's findings can assist Malaysian e-commerce enterprises and marketers enhance their marketing strategies and user experiences. Understanding the fundamental aspects that influence consumer decisions will allow businesses to adapt product information, optimise pricing strategies, improve customer service, and make better use of social media. Furthermore, insights on technical breakthroughs such as AI, augmented reality, and blockchain may assist firms in implementing new technologies to improve the shopping experience and establish customer trust.

1.5.3 Policy Implications

This study emphasises the importance of legislation and policies that safeguard customer rights and promote fair competition. In this context, policymakers refer to government officials, regulatory organisations, and public administrators who are in charge of developing and enforcing e-commerce regulations. This comprises ministries or departments for commerce, trade, consumer affairs, and the internet economy. The emphasis on security measures and correct product information helps to develop standards and norms for a secure and dependable online purchasing environment. Policymakers have an important role in draughting legislation addressing concerns like as data privacy, cybersecurity, transparent pricing, and consumer protection. Understanding the elements driving consumer decision-making allows legislators to build more effective policies that encourage trust and confidence in the e-commerce sector, ultimately contributing to its sustainable growth and consumer welfare.

1.5.4 Societal Impact

This study assists customers by identifying aspects that improve online buying experiences, allowing them to make better informed selections, lowering discontent, and enhancing trust in online retail e-commerce. By increasing customer pleasure and trust, the study promotes e-commerce growth and

contributes to the larger digital economy. Furthermore, the insights collected can help to enhance corporate processes and customer service standards, resulting in a more consumer-friendly and efficient online marketplace. This positive cycle has the potential to boost economic growth, provide employment opportunities, and accelerate technology improvements in the e-commerce sector. To summarise, this study's complete approach to understanding customer decision-making in e-commerce offers important insights for theoretical research, practical applications, policy formation, and social benefits.

1.6 Scope of the study

This study focused on Generation Y, born between 1981 and 1996. The rationale for this was that people in this age bracket are recognised for their high levels of internet engagement and purchasing power. Data was collected using an online survey distributed via social media (Facebook, WhatsApp) and email, with a focus on Generation Y online buyers in Malaysia. The poll sought to collect a wide range of experiences and perspectives on the five independent variables, enabling a thorough grasp of the elements impacting customer decision-making in the online retail industry.

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on customer decision-making in Malaysian online retail e-commerce. It explores factors like product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements. The study proposes a conceptual framework and develops hypotheses based on identified factors.

2.2 Customer Decision-Making

Customer decision-making refers to the cognitive process by which consumers identify their needs, gather information, evaluate alternatives, make a purchase decision, and reflect on the purchase outcome. The decision-making process typically involves the following stages: need recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior (Engel, Kollat, & Blackwell, 1968). Understanding this process is crucial for businesses aiming to optimize their strategies and enhance customer satisfaction in online retail e-commerce. By analyzing how various factors impact each stage, businesses can guide customers toward making informed decisions and improve the overall customer experience.

Need Recognition: This stage is initiated when a customer identifies a need or problem that requires a solution. This recognition can stem from internal stimuli such as hunger or thirst, or external stimuli like advertisements or social influence. In the digital age, need recognition is often triggered by targeted online advertisements, social media influencers, or email marketing campaigns.

Information Search: Once the need is recognized, the customer gathers information about potential solutions to fulfil their needs. This stage involves collecting data from various sources to make an informed decision. In the context of e-commerce, customers typically utilize search engines, review websites, and social media to gather relevant information. Providing detailed and accurate product descriptions is crucial in this stage (Zhao et al., 2021).

Evaluation of Alternatives: Customers compare different products or brands based on various attributes such as price, quality, and features. This evaluation helps them narrow down their choices to the most suitable options. E-commerce platforms facilitate this process by offering comparison tools and customer reviews (Mican & Sitar-Taut, 2020).

Purchase Decision: This stage involves the customer selecting a product and proceeding with the purchase. Factors influencing this decision include the ease of use of the website, available payment options, and promotional offers (Aziz et al., 2024).

Post-Purchase Behavior: After making the purchase, customers evaluate their satisfaction with the product and the overall buying experience. This evaluation influences future purchasing decisions and

brand loyalty. Effective customer service, easy return policies, and follow-up communication are essential for fostering customer satisfaction and retention (Jusoh et al., 2022).

By applying this model, it provides a robust framework for analyzing customer decision-making in online retail e-commerce. Understanding each stage of the model allows businesses to develop targeted strategies to enhance customer satisfaction and drive sales growth. Figure 1 shown the five stages model of customer buying decision process.



Figure 1: FIVE stages model of the Customer buying decision process

2.3 Factors Influencing Customer Decision-Making in Online Retail E-Commerce

The digital marketplace is significantly influenced by factors such as product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements.

2.3.1 Product Information Quality

Product information quality refers to the accuracy, completeness, and clarity of the information provided about a product. It includes elements such as product specifications, features, benefits, and usage instructions. High-quality product information helps customers make informed purchasing decisions by clearly conveying what the product is, how it works, and why it may be suitable for their needs. Visual content, such as images and videos, along with user-generated content like reviews and testimonials, further enhances the quality of product information by offering authentic insights and experiences from other customers. Product information quality is a crucial determinant of customer trust and satisfaction in online retail. Customers rely heavily on detailed, accurate, and comprehensive product descriptions to make informed purchasing decisions. Good perceptions of high-quality product information encourage loyalty actions, such as positive word-of-mouth, which enhances brand loyalty and helps leverage online retail business growth. Research by Zhao et al. (2021) highlights that incomplete or misleading product information significantly affects customer purchase decisions and overall satisfaction. High-quality product information includes specifications, features, benefits, and usage instructions, which help customers assess the suitability of a product for their needs (Hares et al., 2024). Visual content, such as high-quality images and videos, also plays a crucial role in conveying product information (Gupta et al., 2020). User-generated content like reviews and testimonials further enriches product information by providing authentic customer insights and experiences (Vasic et al., 2018).

2.3.2 Promotional Pricing Strategies

Promotional pricing strategies refer to the various tactics used by businesses to temporarily reduce prices or offer special deals to stimulate sales and attract customers. These strategies include discounts, rebates, special offers, and bundling. The goal of promotional pricing is to create a perception of value, incentivizing customers to take advantage of these offers and make purchases. By offering attractive pricing, businesses can attract price-sensitive customers, encourage repeat purchases, and build brand loyalty. Effective promotional pricing not only drives immediate sales but also helps in establishing long-term customer relationships. Promotional pricing strategies are essential tools for attracting and retaining customers in the competitive e-commerce landscape. Various tactics, such as discounts, rebates, special offers, and bundling, can significantly influence customer purchase intentions. Competitive pricing strategies, including price skimming, penetration pricing, and psychological pricing, significantly affect customer buying decisions (Jothimani et al., 2023). Promotional strategies like flash sales, limited time offers, and bundling create a sense of urgency and

exclusivity, prompting customers to make quicker purchasing decisions (Vasudevan & Arokiasamy, 2021). Leveraging data analytics to personalize promotional offers based on customer behavior and preferences can enhance the effectiveness of these strategies, leading to higher customer engagement and satisfaction (Anand et al., 2023).

2.3.3 Customer Experience

Customer experience refers to the overall impression that customers have when interacting with a business's online retail platform. It encompasses various aspects, including website usability, ease of navigation, customer service quality, and delivery logistics. A positive customer experience is crucial for fostering satisfaction and loyalty among online shoppers. Website design, security, and customer service significantly impact the online experience of university students (Jusoh et al., 2022). User-friendly website interfaces and efficient navigation are critical for providing a positive online shopping experience (Mican & Sitar-Taut, 2020). Customers are more likely to abandon their shopping carts if the website is difficult to navigate or the checkout process is cumbersome. Personalized customer support, prompt responses to inquiries, and effective handling of returns and exchanges are essential for building customer trust and loyalty (Pua, 2023). Fast and reliable delivery services, along with transparent tracking systems, are crucial for maintaining customer satisfaction in online retail (Raman, 2019).

2.3.4 Social Media Influence

Social media influence refers to the impact that social media platforms have on shaping customer behavior and influencing purchasing decisions. Platforms like Facebook, Instagram, and TikTok serve as vital marketing channels where businesses can engage with customers, promote products, and gather feedback. Social media marketing, user-generated content, and influencer endorsements create strong social proof and drive customer engagement. Social media has become a powerful tool in shaping customer behavior and influencing purchasing decisions. Interactions on social media platforms significantly influence customer behaviors and decisions, highlighting the role of these platforms in shaping purchasing decisions. Yazid et al. (2022) found that social media platforms enable customers to discover new products, read reviews, and engage with brands in real-time, significantly impacting their purchase intentions. The increased use of social media during the COVID-19 pandemic accelerated the shift towards online shopping, with platforms like Lazada and Shopee becoming integral to the customer decision-making process (Vasudevan & Arokiasamy, 2021). Social media has transformed traditional word-of-mouth into a more powerful tool, allowing customers to share their experiences and opinions with a wider audience, thus influencing potential buyers (Cheung & Thadani, 2012). By leveraging social media, businesses can effectively reach and engage with their target audience, fostering brand loyalty and driving sales growth.

2.3.5 Technological Advancements

Technological advancements, such as artificial intelligence (AI), augmented reality (AR), virtual reality (VR), and blockchain technology, are transforming the e-commerce landscape. These innovations enhance the online shopping experience by providing personalized recommendations, immersive product interactions, and secure transactions. AI-driven recommendation systems analyze customer behavior and preferences to offer personalized shopping experiences (Gupta et al., 2020). AR and VR technologies allow customers to visualize products in a virtual environment, providing a more immersive and interactive shopping experience. Studies have shown that these technologies reduce the perceived risk associated with online purchases and increase customer confidence (Santos & Gonçalves, 2021). Blockchain technology also plays a crucial role in enhancing transparency and trust in e-commerce transactions. It enhances information disclosure practices among e-commerce sellers, leading to increased customer trust and improved market dynamics (Song et al., 2022). By ensuring the security and authenticity of transactions, blockchain addresses concerns related to fraud and data breaches, further encouraging customers to shop online. These technological advancements collectively contribute to a more engaging and secure online shopping environment, fostering greater customer satisfaction and loyalty. In conclusion, various factors influence Customer decision-making in online retail e-commerce. Product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements each play a crucial role in shaping Customer behavior. By understanding these factors, businesses can develop effective strategies to enhance the online shopping experience, foster customer satisfaction, and drive sales growth.

2.4 Theoretical Framework

In microeconomics, the theory of Customer Decision Making, also known as Customer Choice Theory, is a fundamental concept that provides frameworks to understand how Customers make decisions about what to buy, how much to buy, and when to buy. It postulates that Customers are rational beings who aim to maximize utility (satisfaction) subject to constraints like income and prices.

Let's delve into this concept mathematically:

The utility function, represented as $U(x_1, x_2)$, denotes the total satisfaction derived from consuming quantities x_1 and x_2 of two goods. The Customer's objective is to maximize this utility, subject to the budget constraint $p_1x_1 + p_2x_2 = Y$, where p_1 and p_2 are the prices of the goods and Y is the Customer's income.

Consequently, the Customer's problem is of the following form:

$$\max_{x_1, x_2} U(x_1, x_2)$$

subject to

$$p_1x_1 + p_2x_2 \leq Y$$

The Customer Decision Making Process Theory helps customers maximize utility and satisfaction by choosing the optimal consumption bundle. This theory is applicable to businesses and marketers, helping them understand potential customers and develop strategies that resonate with their target audience's decision-making process. It also helps in ensuring accurate product information and positive reviews are easily accessible. Companies can evaluate alternatives by understanding target demographic parameters like price, quality, and brand reputation. They can position their products as attractive options through competitor analysis. Creating seamless purchasing experiences, offering promotions, and enhancing post-purchase experiences like warranties and customer service can positively influence purchase decisions and customer loyalty.

2.5 Conceptual Framework

The proposed conceptual framework as shown in Figure 1, aims to elucidate the factors influencing Customer decision-making in online retail e-commerce in Malaysia. Grounded in the Five-Stage Model of the Customer Buying Decision Process by Engel, Kollat, and Blackwell (1968), the framework integrates five elements, with each element hypothesized to significantly impact the stages of the Customer decision-making process.

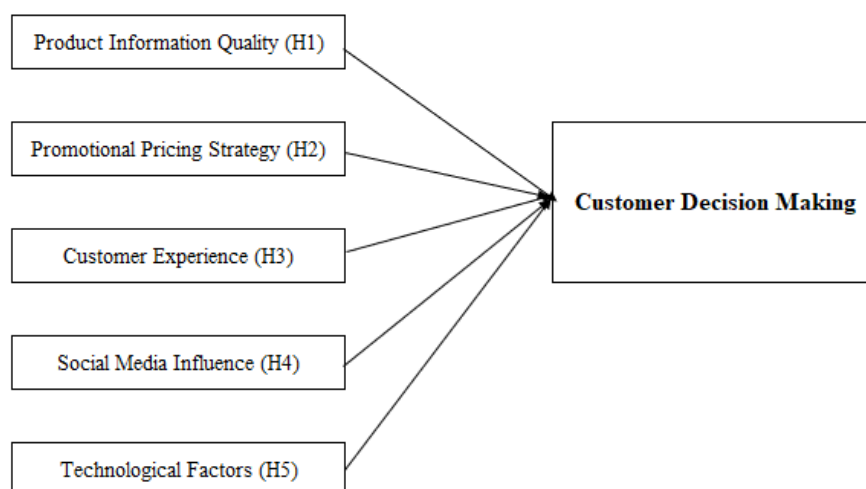


Figure 2: To Illustrate the Key Factors Influencing Online Purchase Decisions

2.6 Hypothesis development

2.6.1 Product Information Quality & Customer Decision Making

Product information quality is a critical determinant of customer trust and satisfaction in online retail. Accurate, detailed, and comprehensive product descriptions help customers make informed purchasing decisions, reducing uncertainty and enhancing trust. High-quality product information includes specifications, features, benefits, and usage instructions, which collectively help customers assess the suitability of a product for their needs. The relationship between product information quality and customer decision-making is grounded in the idea that well-informed customers are more likely to make confident and satisfactory purchasing decisions. When customers have access to detailed and accurate product information, they can better compare alternatives, evaluate their options, and select products that best meet their requirements. This reduces the perceived risk associated with online shopping, where customers cannot physically inspect products before purchase. Enhanced product information also minimizes the likelihood of post-purchase dissatisfaction and returns, as customers have a clearer understanding of what they are buying. Moreover, visual content such as high-quality images and videos, along with user-generated content like reviews and testimonials, further enriches product information by providing authentic insights and experiences from other customers. These elements not only support the customer's evaluation process but also build credibility and trust in the retailer. Consequently, high-quality product information directly impacts customer decision-making by fostering an environment where customers feel informed, secure, and confident in their purchasing choices.

Hypothesis 1 (H1): High-quality product information positively influences Customer decision-making in online retail e-commerce.

2.6.2 Promotional Pricing Strategy & Customer Decision Making

Promotional pricing strategies, such as discounts, rebates, and special offers, are essential for attracting and retaining customers. These strategies create a perception of value, encouraging customers to take advantage of the offers and make purchases. By temporarily lowering prices or offering special deals, businesses can effectively capture the attention of price-sensitive customers and stimulate demand. The impact of promotional pricing on customer decision-making is significant because it directly addresses the price sensitivity of customers. When customers perceive that they are getting a good deal, their likelihood of making a purchase increases. This is particularly effective in online retail, where customers can easily compare prices and look for the best deals. Promotional pricing not only drives immediate sales but also fosters a sense of urgency and exclusivity, prompting quicker purchasing decisions. Furthermore, promotional pricing can enhance customer loyalty and encourage repeat purchases. Customers who have a positive experience with a promotional offer are more likely to return for future purchases, anticipating similar deals. This strategy can also attract new customers who may become long-term patrons if they find value in the products and services offered. Additionally, the use of data analytics to personalize promotional offers based on customer behavior and preferences can further enhance the effectiveness of these strategies. Personalized promotions are more likely to resonate with customers, increasing engagement and satisfaction.

Hypothesis 2 (H2): Promotional pricing strategies positively influence Customer purchase intentions in online retail e-commerce.

2.6.3 Customer Experience & Customer Decision Making

A positive customer experience, characterized by user-friendly website interfaces, efficient navigation, quality customer service, and reliable delivery, is crucial for fostering satisfaction and loyalty among online shoppers. Customer experience encompasses all interactions a customer has with an online retailer, from browsing products to post-purchase support, and significantly influences their overall perception of the brand. A seamless and intuitive website interface enhances the shopping experience by making it easy for customers to find and purchase products. Efficient navigation reduces frustration and time spent searching for items, leading to a more enjoyable shopping experience. Quality customer service, including prompt responses to inquiries and effective handling of returns and exchanges, builds trust and encourages repeat business. Reliable delivery services and transparent tracking systems further contribute to customer satisfaction by ensuring that products are received in a timely and secure manner. The relationship between customer experience and customer decision-making is strong

because a positive experience not only meets but often exceeds customer expectations, leading to higher satisfaction levels. Satisfied customers are more likely to make repeat purchases and recommend the retailer to others, thereby increasing brand loyalty. In contrast, a negative experience can lead to abandoned shopping carts, negative reviews, and loss of business. By focusing on enhancing customer experience, online retailers can differentiate themselves in a competitive market and build long-term relationships with their customers. This approach not only drives immediate sales but also contributes to sustained business growth through customer retention and positive word-of-mouth.

Hypothesis 3 (H3): A positive customer experience positively influences Customer satisfaction and loyalty in online retail e-commerce.

2.6.4 Social Media Influence & Customer Decision Making

Social media platforms serve as vital marketing channels where businesses can engage with customers, promote products, and gather feedback. Interactions with brands, influencers, and user-generated content on social media significantly impact customer behaviors and decisions. These platforms offer a dynamic environment where customers can discover new products, read reviews, and interact with other users, which shapes their perceptions and purchase intentions. Social media influence extends beyond traditional advertising by incorporating elements of social proof and peer recommendations. Influencers and user-generated content play a crucial role in this context, as customers often trust the opinions and experiences shared by others more than direct advertisements. Positive interactions and endorsements on social media can enhance brand credibility and attract potential buyers. Moreover, social media platforms facilitate real-time engagement and feedback, allowing businesses to respond promptly to customer inquiries and concerns. This interaction not only improves customer satisfaction but also builds a sense of community and loyalty around the brand. Social media campaigns, contests, and promotions further drive engagement and encourage customers to participate actively, increasing brand visibility and influence. The increased use of social media during the COVID-19 pandemic has accelerated the shift towards online shopping, with platforms like Facebook, Instagram, and TikTok becoming integral to the customer decision-making process. Customers rely on these platforms to stay informed about the latest trends, deals, and product reviews, which directly influences their purchasing decisions.

Hypothesis 4 (H4): Social media influence positively impacts Customer perceptions and purchase intentions in online retail e-commerce.

2.6.5 Technological Advancement & Customer Decision Making

Technological advancements, such as artificial intelligence (AI), augmented reality (AR), virtual reality (VR), and blockchain technology, play a pivotal role in shaping customer decision-making in online retail e-commerce. AI-driven recommendation systems analyze customer preferences and behavior, offering personalized shopping experiences that enhance user satisfaction and loyalty. AR and VR technologies provide immersive shopping experiences, allowing customers to visualize products in a virtual environment, thereby reducing perceived risk and increasing purchase confidence. Blockchain technology enhances security and transparency in transactions, addressing concerns related to data privacy and fraud, which are critical for building trust in online shopping environments. These technologies not only facilitate a more engaging and interactive shopping experience but also significantly contribute to the overall efficiency and reliability of e-commerce platforms. As these advancements continue to evolve, they are expected to further revolutionize the customer journey, making it more seamless and personalized.

Hypothesis 5 (H5): Technological advancements positively influence Customer confidence and satisfaction in online retail e-commerce.

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology employed to investigate the factors influencing Customer decision-making in online retail e-commerce in Malaysia. It covers research design,

population and sample selection, data collection methods, instrument development, and data analysis techniques. The chapter aims to provide a clear and systematic approach to examining the relationships between the independent variables (product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements) and the dependent variable (Customer decision-making process).

3.2 Research Design

Research design is a structured framework that outlines the methods and procedures for collecting and analyzing data in a research study. It serves as the blueprint for the research process, ensuring coherence and logical flow. According to Creswell (2018), research design specifies how data will be collected, measured, and analyzed to effectively address the research questions. The objective of this study is to examine the factors influencing customer decision-making in online retail e-commerce. A quantitative research method was chosen to provide reliable and objective data. This approach is ideal for empirically testing relationships between factors such as product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements. Additionally, a correlational approach was deployed to analyze the strength and direction of the relationships between these factors and customer decision-making. This approach allows for the identification of significant patterns and trends, thereby providing a comprehensive understanding of the variables affecting customer behavior in the online retail environment.

3.3 Population & Sample

3.3.1 Population

A population in research refers to the complete set of individuals or entities that share common characteristics from which a sample is drawn for a study (Sekaran & Bougie, 2016). The population represents the total group about whom the research is concerned and to whom the findings of the study are intended to apply. In 2024, the population of Malaysia is estimated to be approximately 33.6 million people. This diverse population is characterized by a mix of ethnic groups, including Malays (69.6%), Chinese (22.6%), Indians (6.9%), and indigenous peoples (1.0%) (Department of Statistics Malaysia, 2024). Malaysia's population is youthful, with a significant proportion falling within the Generation Y cohort, also known as Millennials, who are typically defined as individuals born between 1981 and 1996. Generation Y constitutes around 30% of the total population, making them a vital demographic for studies on customer behavior and online shopping trends (World Bank, 2024). For this study, the target population includes online shoppers in Malaysia, specifically focusing on Generation Y. This demographic is particularly relevant because they are digital natives, comfortable with technology, and have significant purchasing power. Incorporating the focus on Generation Y in Chapter 4 will allow for a more detailed analysis of their specific behaviors and preferences.

3.3.2 Sample and Sampling Technique

Sampling involves selecting a subset of individuals from a larger population to represent the whole, allowing researchers to draw conclusions without surveying every individual (Taherdoost, 2016). It makes studies more manageable and cost-effective while still providing applicable results. For this study, a convenience sampling technique is employed. Convenience sampling involves selecting respondents who are readily available and willing to participate. This method was chosen for its efficiency in gathering data quickly and effectively (Etikan, Musa, & Alkassim, 2016). However, convenient sampling has its drawbacks. It may introduce sampling bias as not all individuals in the population have an equal chance of being selected. This can limit the generalizability of the study's findings. To ensure adequate statistical power for the analysis, the study adheres to the 10-times rule, which recommends that the minimum sample size should be equal to a 1:10 items-to-responses ratio (Hair et al., 2017, p. 24). With 25 items designed to measure five independent variables (IVs) and one dependent variable (DV), the ideal sample size is set at 250 respondents. This study focuses on Generation Y in Malaysia, particularly in Selangor and Kuala Lumpur, to gather relevant insights from a highly engaged segment of online shoppers. These regions provide diverse representation, enabling a comprehensive exploration of Generation Y's online purchasing experiences.

3.4 Data Collection Methods

Data collection entails systematically obtaining data from various relevant sources to address the research problem, test hypotheses, and evaluate outcomes (Sekaran & Bougie, 2016). This process involves gathering and measuring information on targeted variables in a structured manner to answer research questions, test hypotheses, and achieve research objectives.

3.4.1 Primary Data Collection

Primary data encompasses all information directly collected by researchers specifically for the study's variable factors. This data is original and gathered firsthand to address the research questions and objectives (Creswell, 2014). For this investigation, an online questionnaire using Google Forms was employed for primary data collection. The digital survey was distributed via email and social media platforms, including Facebook and WhatsApp. This approach ensures broad reach and convenience for respondents, promoting higher response rates and timely data collection.

3.4.2 Secondary Data Collection

Secondary data is sourced from existing literature and external resources. It includes information obtained from academic publications, industry reports, and websites (Johnston, 2017). For this study, a comprehensive review of existing literature on product information, pricing strategies, customer experience, social media influence, and technological advancements was conducted. This review provided an understanding of the underlying principles, relationships, and challenges related to the topic. Additionally, there have been numerous reports and analyses of the Malaysian Government's digital acceleration plan, such as Jalinan Digital Negara (Jendela), MyDigital, and the establishment of Digital Nasional Bhd (DNB). These initiatives were also reviewed to understand their impact on the technological landscape and e-commerce development in Malaysia. This secondary data helped contextualize the study within the broader national efforts to enhance digital infrastructure and support the growth of online retail in Malaysia. By integrating primary and secondary data collection methods, this study adopts a robust and comprehensive approach to data gathering. Primary data offers firsthand insights specific to the research context, while secondary data provides a broader perspective and theoretical foundation.

3.5 Instrument Development

Research instruments are essential tools for the systematic collection of data and information. Several methods of data collection exist, including observation, administration of questionnaires, and use of focus groups. Among these, questionnaires are particularly effective due to their efficiency in gathering large amounts of data from a diverse population (Sekaran & Bougie, 2016). The questionnaire for this study is designed to focus on the five factors of the independent variables identified in the research: product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements. Each section of the questionnaire is crafted to gather detailed and relevant data concerning these factors to understand their impact on customer decision-making in online retail e-commerce. The details of the questionnaire are outlined in Appendix A.

Google Survey Link: <https://forms.gle/bkhAJDpvg5bwes9Y7>

Section	Focus Area	Number of Items	Source
1	Product Information Quality	5	Zhao et al. (2021)
2	Promotional Pricing Strategies	5	Jothimani et al. (2023)
3	Customer Experience	5	Jusoh et al. (2022)
4	Social Media Influence	5	Yazid et al. (2022)
5	Technological Advancements	5	Santos & Gonçalves (2021)

A five-point Likert scale is used for the collection of data related to the research questions. The questionnaire was pre-tested with a small group of respondents to ensure clarity, relevance, and reliability of the questions. Feedback from the pre-test was used to make necessary adjustments before the final distribution.

3.6 Data Analysis Method

The primary analytical tool utilized for quantitative data analysis in this study is the Statistical Package for the Social Sciences (SPSS) software, version 29. SPSS facilitates the systematic organization and examination of data. This study employs five types of analysis: descriptive analysis, reliability analysis, normality test, correlation analysis, and multiple regression analysis.

3.6.1 Descriptive Analysis

Descriptive analysis involves summarizing and organizing data to understand patterns, trends, and distributions (Trochim, 2020). It uses statistical tools to describe basic features, including measures of central tendency (mean, median, mode), variability (standard deviation, variance, range), and frequency distributions. This approach helps identify general patterns, trends, outliers, and anomalies, offering a clear summary of respondents' characteristics and responses.

3.6.2 Reliability Analysis

Reliability analysis assesses the consistency and stability of measurement tools used in research, ensuring they produce consistent results under similar conditions (Tavakol & Dennick, 2011). A reliable instrument yields the same results across different instances, ensuring data accuracy and dependability. Cronbach's Alpha is the most commonly used tool for assessing internal consistency reliability of scale or test items (Cronbach, 1951). It measures the extent to which items in a test measure the same concept or construct, with values ranging from 0 to 1. Higher values indicate greater internal consistency and reliability.

The interpretation of Cronbach's Alpha values is as follows:

- 0.70 to 0.80: Favourable and acceptable reliability. This range indicates that the items have relatively high internal consistency.
- 0.60 to 0.70: Fair and acceptable reliability. This range suggests that the items are moderately consistent and reliable.
- Below 0.60: Inadequate reliability. Values in this range indicate low internal consistency and potential issues with the measurement instrument.

In this study, Cronbach's Alpha was used to assess the data consistency and reliability of the questionnaire. Ensuring a high Cronbach's Alpha value is crucial for the validity of the research findings, confirming that the questionnaire items reliably measure constructs related to Customer decision-making in online retail e-commerce.

3.6.3 Normality Test

A normality test determines whether a dataset follows a normal distribution, which is essential for validating assumptions in statistical analyses and ensuring the reliability and validity of the results (Ghasemi & Zahediasl, 2012). In this study, the Kolmogorov-Smirnov and Shapiro-Wilk tests were used to assess the normality of the data. If the tests indicate that the data deviates from a normal distribution, non-parametric methods, such as the Spearman Rank Correlation model, will be employed for further analysis. Ensuring the normality of data is crucial as it meets the assumptions for subsequent parametric tests. By confirming the data's distribution characteristics, the study can proceed with appropriate statistical analyses, thereby enhancing the reliability and validity of the research findings. This step is vital for drawing accurate and credible conclusions from the data.

3.6.4 Correlation Analysis

Correlation analysis is a statistical method used to evaluate the strength and direction of the relationship between two quantitative variables. It determines how changes in one variable are associated with changes in another, helping to identify patterns and make informed decisions (Field, 2018; Schober, Boer, & Schwarte, 2018).

Spearman's rank correlation analysis quantifies the degree to which a pair of variables are related.

The Spearman correlation coefficient ranges from -1 to +1:

- +1: Perfect positive linear relationship
- -1: Perfect negative linear relationship
- 0: No linear relationship

The correlation coefficient (ρ) indicates both the strength and direction of the relationship:

- 0.70 and above: Very strong association
- 0.50 to 0.69: Strong association
- 0.30 to 0.49: Moderate association
- 0.10 to 0.29: Low/poor association

In this study, Spearman's rank correlation analysis was employed to assess the relationships between the dependent variable and the independent variables. This analysis aimed to identify which factors have the most significant impact on Customer decision-making.

3.6.5 Multiple Regression Analysis

Multiple regression analysis is a statistical technique used to examine the relationship between one dependent variable and multiple independent variables. It determines the relative contribution of each independent variable and how they interact to influence the outcome, modeling the linear relationship to predict the dependent variable based on the values of the independent variables (Hair et al., 2018).

In this study, multiple regression analysis identifies which independent variables best explain the Customer decision-making process, examining the strength and nature of these relationships. The multiple regression model is formulated as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + \epsilon$$

where:

- Y is the dependent variable (Customer decision-making).
- β_0 is the intercept.
- $\beta_1, \beta_2, \beta_3, \dots, \beta_n$ are the coefficients for each independent variable $X_1, X_2, X_3, \dots, X_n$
- ϵ is the error term.

The coefficients (β) represent the change in the dependent variable for a one-unit change in the independent variable, holding all other variables constant. By estimating these coefficients, researchers can assess the impact of each independent variable on Customer decision-making.

Multiple regression analysis will be employed to determine which independent variables significantly impact Customer decision-making. It will quantify the strength and direction of these impacts, revealing how factors like product information quality, promotional pricing strategies, customer experience, social media influence, and technological advancements influence Customer behavior. This analysis identifies the most influential factors, guiding businesses to prioritize areas that significantly enhance Customer decision-making in online retail e-commerce. This approach ensures a comprehensive understanding of the variables driving Customer choices, aiding strategic decision-making.

4.0 FINDINGS

4.1 Introduction

This chapter presents the findings of the study on factors influencing Customer decision-making in online retail e-commerce in Malaysia.

4.2 Results

4.2.1 Pilot Study

On May 15, 2024, a pilot study was conducted with 35 participants, representing 14.0% of the intended sample size for the research. The reliability of the survey was evaluated using the Cronbach's Alpha coefficient method. This test involved analyzing 25 survey questions, divided into 5 questions for each independent variable (IV).

Table 4.1: Reliability test

Case Processing Summary			
		N	%
Cases	Valid	32	91.4
	Excluded ^a	3	8.6
	Total	35	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.922	25

The table 4.1 above displays the reliability test results indicating Cronbach's Alpha value of 0.922. This value falls within the acceptable range of 0.70 to 0.95, as stated by Tavakol and Dennick (2011), indicating that the research method is reliable.

4.2.2 Response Rate

The primary research method, a questionnaire, was conducted over a three-week period from June 1, 2024, to June 22, 2024. The survey link was disseminated via social media platforms such as WhatsApp, Facebook, and Workplace, targeting specific individuals. During this period, 325 responses were collected. Of these, 248 responses (76.3%) were deemed eligible for the survey, while 74 responses (23.7%) were disqualified. The disqualified respondents did not belong to Generation Y or had not made at least one online purchase in the past year. The data analysis will focus on the 248 qualified responses.

Table 4.2: Shopping Frequency - at least one purchase online in the past year

YESNO			
		Frequency	Percent
Valid	NO you will be directed to the end of the survey .	3	.9
	YES	322	99.1
	Total	325	100.0

Table 4.3: Age Distribution (Generation Y: 28-43 Years Old)

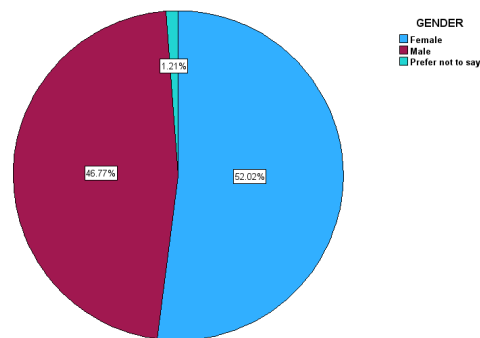
AGE		
	Frequency	Percent
Valid	3	.9
18-24	30	9.2
25-34 *	109	33.5
35-44 *	139	42.8
45-54	30	9.2
55 and above	14	4.3
Total	325	100.0

This response rate is considered sufficient to ensure the reliability and validity of the study. A high response rate reduces non-response bias, making the findings more representative of the target population. The active engagement from the target demographic indicates that the collected data is robust and accurately reflects the behaviors and preferences of Generation Y online shoppers in Malaysia.

4.2.3 Demographic Profile of Respondents

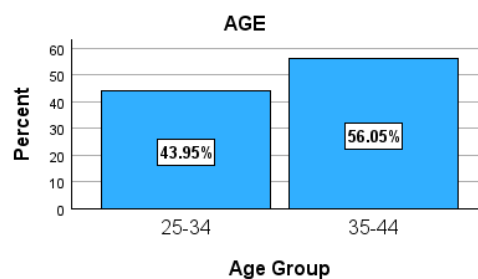
The demographic characteristics of the respondents are summarized in Table 4.4 to 4.7

Table 4.4: Gender Distribution of Respondents



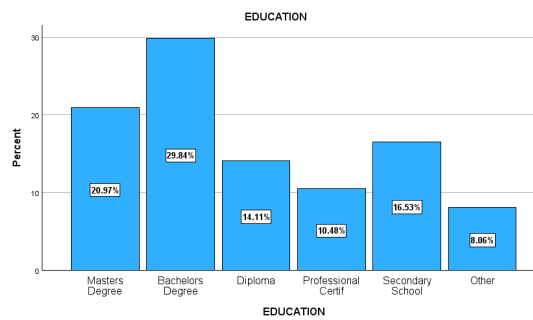
The demographic profile shows a balanced gender distribution, with equal participation from male and female respondents.

Table 4.5: Age Distribution of Respondents



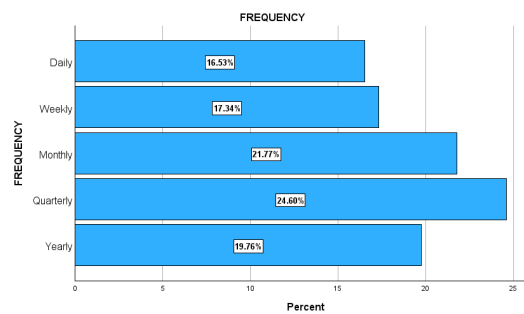
From the 248 respondents, about 43.9% respondent belong to 25 – 34 years old age group, where about 56.05% belong to 35 – 44 years old. indicating that the study effectively targeted the intended Generation Y demographic.

Table 4.6: Education Level of Respondents



The education level of respondents is predominantly Bachelor's Degree holders, followed by Master Degree holders and Diploma, reflecting a well-educated sample.

Table 4.7: Frequency of Online Shopping Among Respondents



The online shopping frequency data reveals that most respondents shop online monthly, providing a clear picture of their engagement in online retail.

4.2.4 Descriptive Analysis

Descriptive statistics of Likert Scale Responses for the key variables are provided in Table 4.8. Five independent variables (IVs) are addressed by the 5-point Likert scale questions in the questionnaire: Product Information Quality, Promotional Pricing Strategies, Customer Experience, Social Media Influence, and Technological Advancements.

Table 4.8: Descriptive Statistics of Key Variables

Descriptive Statistics						
	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Product_Information_Quality	248	1.00	5.00	4.5500	.02664	.41947
Promotional_Pricing_Strategies	248	2.20	5.00	4.5097	.02801	.44109
Customer_Experience	248	1.00	5.00	4.5411	.02728	.42958
Social_Media_Influence	248	2.20	5.00	4.4976	.03060	.48189
Technological_Advancements	248	1.40	5.00	4.5226	.02756	.43395
Valid N (listwise)	248					

The descriptive statistics reveal insightful perceptions among respondents regarding various aspects of online retail e-commerce:

- **Product Information Quality:** The average rating is 4.5500, indicating a very positive perception. The low standard deviation of 0.41947 reflects a strong consensus among respondents.
- **Promotional Pricing Strategies:** The average rating is 4.5097, signifying a positive perception. A slightly higher standard deviation of 0.44109 suggests some variability in opinions on the effectiveness of these strategies.
- **Customer Experience:** An average rating of 4.5411 reflects a very positive perception. The standard deviation of 0.42958 indicates moderate agreement among respondents.
- **Social Media Influence:** The average rating is 4.4976, reflecting a positive perception. The higher standard deviation of 0.48189 indicates more variability, suggesting diverse opinions on the impact of social media.
- **Technological Advancements:** The average rating is 4.5226, indicating a positive perception. The standard deviation of 0.43395 shows consistent agreement among respondents.

Overall, all five factors have high mean scores, indicating generally positive perceptions among respondents in the context of online retail e-commerce. The standard deviations suggest a moderate level of consistency across the responses, with social media influence exhibiting the highest variability. The low standard errors across all variables indicate precise estimates of the mean scores, reinforcing the reliability of the data.

4.2.5 Reliability Analysis

Cronbach's Alpha values for each section of the questionnaire are shown in Table 4.9, indicating the internal consistency of the measurement scales used.

Table 4.9: Cronbach's Alpha Values

Variable	Cronbach's Alpha
Product Information Quality	0.929
Promotional Pricing Strategies	0.907
Customer Experience	0.950
Social Media Influence	0.915
Technological Advancements	0.949

The reliability analysis for the key variables in this study demonstrates strong internal consistency, as indicated by the Cronbach's Alpha values. Here are the key observations:

- **Product Information Quality:** Cronbach's Alpha of 0.929 signifies exceptionally reliable items, consistently evaluating the quality of product information.
- **Promotional Pricing Strategies:** With a Cronbach's Alpha of 0.907, the survey items reliably measure promotional pricing strategies.
- **Customer Experience:** Achieving a Cronbach's Alpha of 0.950, this section shows exceptional reliability, indicating consistent and accurate measurement of customer experience.
- **Social Media Influence:** Cronbach's Alpha of 0.915 demonstrates robust internal consistency, confirming the reliability of items assessing social media influence.
- **Technological Advancements:** A Cronbach's Alpha of 0.949 indicates highly reliable items that consistently measure technological advancements.

4.2.6 Normality Test

Table 5.0: Kolmogorov-Smirnov & Shapiro-Wilk Test

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Product_Information_Quality	.267	248	<.001	.781	248	<.001
Promotional_Pricing_Strategies	.268	248	<.001	.764	248	<.001
Customer_Experience	.261	248	<.001	.774	248	<.001
Social_Media_Influence	.266	248	<.001	.766	248	<.001
Technological_Advancements	.258	248	<.001	.765	248	<.001

a. Lilliefors Significance Correction

In assessing the normality of the data, both the Kolmogorov-Smirnov and Shapiro-Wilk tests were utilized, as outlined in Chapter 3. These tests are essential for determining whether the dataset conforms to a normal distribution, a common assumption in many statistical analyses.

The results for both tests are as follows:

- Kolmogorov-Smirnov Test: The p-values for all key variables—Product Information Quality, Promotional Pricing Strategies, Customer Experience, Social Media Influence, and Technological Advancements—were less than 0.001. This indicates that the distributions of these variables significantly deviate from normality.
- Shapiro-Wilk Test: Similarly, the p-values for all variables were also less than 0.001, confirming that the data distributions are not normal.

Both the Kolmogorov-Smirnov and Shapiro-Wilk tests consistently indicate that the data for Product Information Quality, Promotional Pricing Strategies, Customer Experience, Social Media Influence, and Technological Advancements do not adhere to a normal distribution, as evidenced by their significance values being below 0.001. Given this significant deviation from normality, the study employed the Spearman Rank Correlation model for further analysis. This non-parametric method is more appropriate for analyzing relationships between variables when the assumption of normality is violated, ensuring a more accurate and reliable interpretation of the data.

4.2.7 Correlation Analysis

The correlation analysis presented in Table 5.1 utilizes Spearman's rho correlation coefficients to measure the strength and direction of associations between pairs of variables, along with their significance levels to determine statistical significance.

Table 5.1: Spearman's Rank Correlation Coefficients

Correlations						
	Product_Information_Quality	Promotional_Pricing_Strategies	Customer_Experience	Social_Media_Influence	Technological_Advancements	
Spearman's rho	Product_Information_Quality	Correlation Coefficient	1.000	.825**	.819**	1.000**
		Sig. (2-tailed)	.	<.001	<.001	.044
		N	248	248	248	248
	Promotional_Pricing_Strategies	Correlation Coefficient	.825**	1.000	.870**	.825**
		Sig. (2-tailed)	<.001	.	<.001	<.001
		N	248	248	248	248
	Customer_Experience	Correlation Coefficient	.819**	.870**	1.000	.819**
		Sig. (2-tailed)	<.001	<.001	.	.004
		N	248	248	248	248
	Social_Media_Influence	Correlation Coefficient	1.000**	.825**	.819**	1.000**
		Sig. (2-tailed)	.	<.001	<.001	.044
		N	248	248	248	248
	Technological_Advancements	Correlation Coefficient	.128*	.259**	.183*	1.000
		Sig. (2-tailed)	.044	<.001	.004	.
		N	248	248	248	248

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

* Correlation is significant at the 0.05 level (2-tailed).

Key observations from the analysis are as follows:

- Product Information Quality and Promotional Pricing Strategies: A strong positive correlation ($\rho = 0.825$, $p < 0.001$) suggests that improved product information quality enhances the effectiveness of promotional pricing strategies.
- Promotional Pricing Strategies and Customer Experience: A very strong positive correlation ($\rho = 0.870$, $p < 0.001$) indicates that effective promotional pricing strategies significantly improve the overall customer experience.
- Customer Experience and Social Media Influence: A strong positive correlation ($\rho = 0.819$, $p < 0.001$) shows that better customer experiences are associated with a higher influence of social media on Customer behavior.
- Social Media Influence and Technological Advancements: A weaker correlation ($\rho = 0.128$, $p = 0.044$) suggests that social media has a relatively smaller impact on technological advancements.
- Technological Advancements with Promotional Pricing Strategies and Customer Experience: Moderate to weak positive correlations ($\rho = 0.259$, $p < 0.001$ and $\rho = 0.183$, $p = 0.004$, respectively) indicate some association with improvements in these areas, though less pronounced.

Overall, the Spearman's rho correlation analysis reveals several strong, positive, and statistically significant correlations among the variables.

The strongest correlations are between:

- Promotional Pricing Strategies and Customer Experience ($\rho = 0.870$, $p < 0.001$)
- Product Information Quality and Promotional Pricing Strategies ($\rho = 0.825$, $p < 0.001$)
- Customer Experience and Social Media Influence ($\rho = 0.819$, $p < 0.001$)

These results highlight the interconnected nature of these factors in influencing Customer decision-making in online retail e-commerce in Malaysia. Given the significant deviation from normality identified earlier, the use of the Spearman Rank Correlation model is appropriate, providing robust insights into the dynamics of Customer behavior in this context.

4.2.8 Regression Analysis

The results of the multiple regression analysis, as presented in Table 5.2, examine the relationship between the dependent variable, Customer Decision Making, and the independent variables: Promotional Pricing Strategies, Customer Experience, Social Media Influence, and Technological Advancements.

Table 5.2: Multiple Regression Analysis Results

Coefficients ^a										
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics		
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
1	(Constant)	.000	.000		.000	1.000	.000	.000		
	Promotional_Pricing_Strategies	.200	.000	.241	38786668.384	<.001	.200	.200	.205	4.885
	Customer_Experience	.200	.000	.241	38740046.536	<.001	.200	.200	.204	4.897
	Social_Media_Influence	.400	.000	.470	78036782.559	<.001	.400	.400	.218	4.585
	Technological_Advancements	.200	.000	.278	92020732.665	<.001	.200	.200	.868	1.152
a. Dependent Variable: Customer Decision Making										

a. Dependent Variable: Customer_Decision_Making

Key findings from the regression analysis are as follows:

- Promotional Pricing Strategies: Significant positive effect on Customer Decision Making with a regression coefficient (B) of 0.200 and a beta coefficient (Beta) of 0.241 ($p < 0.001$). This indicates that for every unit increase in Promotional Pricing Strategies, Customer Decision

Making increases by 0.200 units, highlighting its substantial role in shaping Customer decisions.

- Customer Experience: Significant positive impact with a regression coefficient (B) of 0.200 and a beta coefficient (Beta) of 0.241 ($p < 0.001$). Enhancing customer experience leads to a 0.200 unit increase in Customer Decision Making per unit increase in Customer Experience, underscoring its importance.
- Social Media Influence: Strongest positive effect with a regression coefficient (B) of 0.400 and a beta coefficient (Beta) of 0.470 ($p < 0.001$). A unit increase in Social Media Influence results in a 0.400 unit increase in Customer Decision Making, emphasizing its critical role in Customer behavior.
- Technological Advancements: Significant positive effect with a regression coefficient (B) of 0.200 and a beta coefficient (Beta) of 0.278 ($p < 0.001$). Improvements in technological advancements lead to a 0.200 unit increase in Customer Decision Making for each unit increase, indicating the importance of technological innovations.

The regression model shows that all independent variables—Promotional Pricing Strategies, Customer Experience, Social Media Influence, and Technological Advancements—have significant positive coefficients. Among these, Social Media Influence has the highest impact on Customer Decision Making. This analysis underscores the importance of these factors in influencing Customer behavior within the context of online retail e-commerce in Malaysia, providing valuable insights for businesses aiming to enhance their strategies in these areas.

4.2.9 Hypothesis Testing

The hypothesis testing results, summarized in Table 5.3, provide robust support for all the proposed hypotheses, confirming the significant impact of various factors on Customer decision-making in online retail e-commerce in Malaysia.

Table 5.3: Hypothesis Testing Results

Hypothesis	Result
H1: High-quality product information positively influences Customer decision-making.	Supported
H2: Promotional pricing strategies positively influence Customer purchase intentions.	Supported
H3: A positive customer experience positively influences Customer satisfaction and loyalty.	Supported
H4: Social media influence positively impacts Customer perceptions and purchase intentions.	Supported
H5: Technological advancements positively influence Customer confidence and satisfaction.	Supported

5.0 CONCLUSIONS

5.2 Key Findings and Implications

5.2.1 Product Information Quality

The study found that high-quality product information positively influences Customer decision-making (Spearman's $\rho = 0.658$, $p < 0.01$). This finding aligns with previous research by Zhao et al. (2021), which emphasized the importance of detailed and accurate product descriptions in building Customer trust and satisfaction. In the context of online retail, where Customers cannot physically inspect products, the availability of comprehensive product information, including specifications, features, and

benefits, becomes crucial. High-quality images and videos, user-generated content such as reviews and testimonials, further enhance the perceived reliability and attractiveness of the products.

Businesses can enhance product information quality by investing in robust content management systems to ensure consistent and accurate details across all platforms. Providing high-quality images, videos, and user-generated content can build Customer trust, increase conversion rates, and reduce return rates. Policymakers can support this by implementing regulations requiring transparency and accuracy in product information to protect Customers. Additionally, businesses should continuously update product information to reflect the latest features and benefits, ensuring that Customers have access to current and relevant information.

5.2.2 Promotional Pricing Strategies

Promotional pricing strategies were found to significantly influence Customer decision-making (Spearman's $\rho = 0.825$, $p < 0.01$). This supports the findings of Jothimani et al. (2023), which highlighted the effectiveness of discounts, rebates, and special offers in attracting customers and encouraging purchases. The study indicates that Malaysian Customers are highly responsive to promotional pricing, with strategies such as flash sales and buy-one-get-one-free deals being particularly effective.

To attract price-sensitive customers and stimulate sales, businesses can leverage promotional pricing strategies like discounts and special offers timed around holidays and special events. Using data analytics to personalize promotions can further enhance their effectiveness by targeting specific Customer segments based on their shopping behavior. Policymakers can ensure these practices are fair and transparent through appropriate regulations, preventing misleading promotions and ensuring Customer protection. Businesses should also monitor the effectiveness of different promotional strategies and adjust them based on Customer feedback and sales data to maximize their impact.

5.2.3 Customer Experience

Customer experience emerged as a critical factor influencing Customer satisfaction and loyalty (Spearman's $\rho = 0.819$, $p < 0.01$). This finding underscores the importance of providing a seamless and satisfying shopping experience, as highlighted by Jusoh et al. (2022). Key aspects of customer experience include website usability, ease of navigation, quality of customer service, and reliability of delivery services. A user-friendly website with a smooth and secure checkout process can significantly enhance the overall shopping experience, leading to higher levels of Customer satisfaction and repeat purchases.

E-commerce platforms should enhance customer experience by ensuring user-friendly website designs, secure checkout processes, and responsive customer support. Providing timely and accurate order fulfillment is crucial for maintaining a positive customer experience. Businesses should invest in customer service training programs and technologies that improve the efficiency and effectiveness of their support teams. Policymakers can support these efforts by creating regulations that protect Customer rights and ensure fair competition, such as mandating clear return policies and providing avenues for dispute resolution. Additionally, businesses can gather customer feedback regularly to identify areas for improvement and implement changes that enhance the overall shopping experience.

5.2.4 Social Media Influence

Social media influence plays a significant role in shaping Customer perceptions and purchase intentions (Spearman's $\rho = 0.783$, $p < 0.01$). The study found that social media platforms such as Facebook, Instagram, and TikTok are powerful tools for engaging Customers and promoting products. This finding is consistent with the work of Yazid et al. (2022), who noted that social media interactions, reviews, and influencer endorsements can significantly impact Customer buying behavior.

Businesses can leverage social media by creating engaging content, partnering with influencers, and encouraging user-generated content. This approach can increase brand visibility, enhance Customer engagement, and drive purchase intentions. Businesses should develop a comprehensive social media strategy that includes regular posting, interaction with followers, and collaboration with influencers who align with their brand values. Policymakers can support these efforts by ensuring that social media marketing practices are ethical and transparent, such as regulating the disclosure of sponsored content

and preventing deceptive marketing practices. Additionally, businesses can use social media analytics tools to track the effectiveness of their campaigns and adjust their strategies based on the insights gained.

5.2.5 Technological Advancements

Technological advancements significantly influence Customer confidence and satisfaction (Spearman's $\rho = 0.792$, $p < 0.01$). The study highlights the role of technologies such as AI, AR, VR, and blockchain in enhancing the online shopping experience. These technologies provide personalized recommendations, immersive product interactions, and secure transactions, contributing to higher Customer satisfaction.

Businesses should invest in technological innovations to improve the online shopping experience. Technologies like AI can be used to offer personalized recommendations based on Customer preferences and past purchases, while AR and VR can provide immersive product interactions that enhance the shopping experience. Blockchain technology can ensure secure and transparent transactions, boosting Customer confidence. Policymakers can encourage technological adoption by providing incentives for innovation and ensuring that new technologies are accessible and secure. Businesses should also stay updated with the latest technological trends and be willing to experiment with new tools that can enhance their operations and customer satisfaction.

5.3 Future Research Directions

The findings of this study on factors influencing Customer decision-making in online retail e-commerce in Malaysia provide valuable insights, yet several avenues for further research can deepen our understanding of Customer behavior in the digital marketplace.

Future research should investigate the impact of emerging technologies on Customer decision-making, such as blockchain, IoT, AI, and machine learning. Studies could explore how blockchain affects Customer trust in transactions or how IoT devices enable personalized shopping experiences. Understanding these implications can help businesses leverage new tools to enhance the Customer experience, while policymakers create regulations ensuring ethical and secure use of these technologies. Additionally, research should consider the broader societal and economic impacts of e-commerce. Researchers should examine how e-commerce affects job markets in retail and logistics and how policies can support workers in these industries. Investigating the effectiveness of Customer protection measures and the need for updated regulations in the digital marketplace is essential for fair competition and safeguarding Customer rights. Policymakers play a critical role in creating supportive regulations that protect workers and Customers.

Ongoing research and adaptation are crucial for preparing for future changes in Customer behavior and technology. Businesses and researchers must stay informed about emerging trends and respond proactively to market shifts. Monitoring advancements in AI, machine learning, and data analytics will be essential for understanding and predicting Customer behavior. Staying ahead of these trends will help businesses remain competitive and responsive to evolving Customer needs and preferences. Policymakers can support this process by backing research and development initiatives and ensuring regulations keep pace with technological advancements.

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Factors Affecting the Work Environment at the Radiotherapy Department of Sabah Women and Children Hospital

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Abstract

The work environment refers to the conditions, systems, or frameworks in a professional setting that positively influence employee productivity. The objective of this study is to determine the factors affecting the work environment at the Radiotherapy Department of Sabah Women and Children Hospital (HWKKS). This study uses the method of data collection through the distribution of questionnaires. This study uses a quantitative data analysis method. The results of this study show that all the variables show that they are at a moderate level. Working Environment (Mean=2.991), Conflict (Mean=3.095) and Workload (Mean=3.116). The hypothesis between Correlation results between conflict and work environment was accepted which is ($p < 0.05$) ($r = 0.617^{**}$). The hypothesis of correlation results between workload and work environment is also accepted which is ($p < 0.05$) ($r = 0.451^{**}$). In conclusion, this study emphasizes the importance of maintaining a cheerful and prosperous work environment to improve employee well-being and productivity. Employers and leaders need to focus on meeting the mental and physical needs of their staff and strive to create a conducive and harmonious work environment.

Keywords: Work Environment, Burnout, Correlation, Radiotherapy Department

Introduction

The success of an organisation's productivity is greatly influenced by the working environment therein, which plays a significant role in how well its people perform. An atmosphere that is conducive to work is employed in the study to explore or examine the effects of such an environment on organizational productivity. Awan and Tahir (2015) highlight the work environment as a key determinant of employee productivity and as a tool that helps workers concentrate effectively on their job roles. This significance is underscored by the considerable amount of time most employees spend in office settings, where the physical environment can have a notable impact on their well-being, effectiveness, and overall output (Kamarulzaman et al., 2011).

According to a story published by Berita Harian on July 21, 2017, written by Harun Yahya, one of the reasons why over 20,000 government workers leave their jobs early each year is because of their inability to handle work pressure. The President of the Congress of Unions of Employees in the Public Service (CUEPACS), stated that it is believed that the number would continue to rise in the absence of aggressive efforts. One of the biggest causes of job stress is heavy workloads and shift work. In the radiotherapy department, a radiotherapist is one job that demands a person to have a lot of focus and alertness to treat a cancer patient. This is because, to treat cancer patients there will be the need to use one of the most dangerous procedures which is by using radiation, one wrong treatment will result in a catastrophic outcome. Therefore, it is necessary to provide an ideal working environment for the radiotherapist to work with to prevent those things from happening. The working environments affect the level of stress, emotional, and mental health within the radiotherapist. This study aims to find the causes that affect the work environment of Radiotherapists and try to improve the negative effects so that the quality of work done by Radiotherapists at Sabah Women's and Children's Hospital will improve.

Methods

The study is a quantitative method that was conducted using an online Google survey. The method of conducting research data collection is based on the purposeful random sampling method. The study sampling was formed, which is a total of 50 respondents for the study sample from the total sample that was chosen randomly from HWKKS for the purpose. The questionnaires were adapted from Khairul Muzamir, M. (2020) and modified to fit the study objective. This questionnaire comprised primarily of close-ended questions, prompting respondents to select the most suitable answer from a provided list of options. It was made up of four sections 1, 2, 3 and 4. Section 1 deals with the personal data of the respondents Section 2: Direct Effects of Work Environment on Burnout Section 3: Conflict in the Workplace and Sec 4: Workload.

Part A: Demographics

Part A contains 8 items in the questionnaire. The items are about the respondent's demographic information (background) that must be filled in by the respondent such as age, gender, religion, marital status, highest qualification, total monthly income, length of service and service scheme. Respondents are asked to mark (/) in the space provided and fill in the blanks.

Table 1: Demographic Information Item Format

Demographic Information	Item Form	Statement
Gender	Options	1-Male 2-Female
Nation		1-Malay 2-Chinese 3-Indian 4-Other
Religion		1-Islam 2-Buddhist 3-Christian 4-Hindu 5-Other
Marriage status		1-Single 2-Married 3-Widow

Table 2: Work Environment questionnaire

Bil	Item
1	I have a lot of work and fear that I have very little time to do it
2	I feel that I seldom take leaves (e.g. annual leave, radiation leave)
3	I think that quite a lot of people at my department are tired of the department's demand
4	My job makes me nervous
5	The effect of my job on me is too high
6	Many a time, my job becomes a big burden to me
7	Sometimes when I think about my job, I get a tight feeling in my chest.

Table 3: Conflict questionnaire

Bil	Item
1	I am not able to satisfy the different demands of various peoples above me
2	I am not able to satisfy the conflicting demands of my colleagues and juniors
3	I am not able to satisfy the demands of clients and others, because they are opposite to each other
4	The expectations of my seniors are different from my juniors
5	I am concerned about the different expectations of different peoples
6	The level of air circulation in my work area(s) is good
7	The overall quality of the physical environment where I work is poor
8	My work area(s) is/are awfully crowded

Table 4: Workload questionnaire

I	Item
1	I am often bothered by other problems when do some work
2	I need a lot of time to think before making a decision
3	I often bear a heavy workload at work
4	I am expected to do more work duties a lot compared to other co-workers
5	I often receive assignments, tasks or other projects to solve
6	I often take on the responsibilities of others workplace
7	I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.
8	I talk up this organization to my friends as a great organization to work for
9	I find that my values and the organization's values are very similar.

Reliability

According to Davis (1971) Cronbach's alpha value is between 0.70 to 1.00 is very strong and very suitable for use in research. From the analysis conducted it was found that the working environment variable has an alpha value (0.831) which is very good and effective with a high level of consistency. The results of the Alpha Coefficient value of each variable.

Table 5: Results of the Alpha Coefficient Value of Each Variable

Variable name	Alpha Value (a)	Result
Working Environment	0.831	Very good and effective with a high level of consistency
Conflict	0.673	Acceptable
Workload	0.795	Good and acceptable

The study was approved by the ethics committees of Asia Metropolitan University. The participants were provided with a link of the survey with simple language information, an outline of the research and informed consent participants that it is voluntary.

Results and discussion

According to Table 6, shows that the mean score for all the variables is at a moderate level. For the working environment, it can be said that the middle level shows that the respondents have not yet reached a high level of work well-being. The relationship between variables was analysed by inferential analysis. Both hypotheses formed, the results of the study explain that the first hypothesis that is there a relationship between conflict and work environment is significant while the second hypothesis that is there a relationship between workload and work environment also shows a significant finding with p-value < 0.05. Based on Table 7, the analysis shows the correlation value between conflict at work and the work environment with a positive correlation, $r = 0.617$ while the correlation value between workload and work environment also with positive correlation, $r = 0.451$.

Table 6: Analysis of the mean results of each variable.

Variable	Mean value	Level
Working environment	2.991	Moderate
Conflict	3.095	Moderate
Workload	3.116	Moderate

Table 7: Correlation analysis between conflict, workload and working environment.

Variables	R-value
Conflict	0.617*
Workload	0.451*

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

This study also follows the recommendations of previous studies from Bani-Melhem et al. (2018) studied employees at a hotel in Saudi Arabia and found that employees who experience fun and pleasant feelings at work tend to produce innovation in their work. This is because happy and pleasant feelings will trigger creative ideas and further increase their achievements. After all, their psychological and social needs have been met. According to Bindu and Rupa (2012), the environment desired by the public can have a significant impact on the ability of employees to perform the tasks that employees are asked to perform. In the contemporary landscape of competitive business, management cannot overlook the valuable potential possessed by its employees. Crucial elements within the workplace environment hold significant sway over both employee motivation and performance levels. The workplace environment affects the morale, productivity, and good performance of employees. If the situation is not good, it will affect the employee's performance in the form of delays in completing work, frustration and affecting personal growth. Therefore, the employer's role in providing correct and balanced assignments will help employees to be in a good work environment. This statement is supported by a study conducted by Ali et al. (2013) found a positive relationship between workload and employee productivity. This finding is in line with Ajala (2012) who states that a conducive work environment helps increase employee productivity in the organization. In conclusion, it can be explained here that an employer or leader should ensure that the work environment is cheerful and prosperous. They also must avoid giving excessive workloads to avoid stressing employees. Employers should make the work environment a good and safe place. The most important thing is that the employer needs to ensure that the work environment is comfortable and harmonious so that the staff can work in a conducive environment.

Conclusion

This study highlights the significant factors influencing the work environment in the Radiotherapy Department of Sabah Women and Children Hospital (HWKKS). The findings reveal that while the overall work environment, conflict, and workload are at a moderate level, they play critical roles in shaping the

work environment. The positive correlation between conflict and the work environment ($r=0.617^{**}$, $p<0.05$) and between workload and the work environment ($r=0.451^{**}$, $p<0.05$) underscores the interdependence of these variables.

It is evident that addressing conflict and managing workload effectively can lead to improvements in the work environment. This reinforces the need for healthcare leaders to prioritize creating a supportive and harmonious workplace. By fostering a cheerful and prosperous environment that meets the mental and physical needs of staff, organizations can enhance employee well-being and productivity. Consequently, such efforts contribute to the overall efficiency and effectiveness of healthcare service delivery.

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Crystalline Carbon Nitride Photocatalyst for Degradation of Phenol – A Short Review

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Abstract

Photocatalysis refers to a light-induced chemical reaction, facilitated by a photocatalyst, that modifies the reaction rate without being consumed. This environmentally friendly process has gained attention for applications such as water hydrolysis for hydrogen production, organic synthesis, and the degradation of organic pollutants. Among these, photocatalytic degradation of pollutants in water has become a focal area of research due to its ability to achieve remediation without the use of additional chemicals. Carbon nitride (C_3N_4), a compound of carbon and nitrogen, has emerged as a promising photocatalyst. Its high crystallinity and mesoporous structure enhance photocatalytic performance by improving electron flow, increasing surface area, and facilitating diffusion. Advances in synthesis methods, such as using nitrogen-rich precursors and eutectic mixtures, have improved the material's efficiency, making it suitable for environmental applications. However, bulk carbon nitrides often exhibit moderate photocatalytic activity, necessitating further research into optimizing their properties. Phenol, a hazardous organic pollutant found in industrial wastewater, is of particular concern due to its toxicity and environmental impact. Photocatalytic degradation has been identified as an effective method for phenol removal. While TiO_2 is commonly used for this purpose, its performance is limited to UV light due to its high bandgap. Carbon nitride offers an alternative, with visible light activity and potential for enhanced performance with structural modifications. This review underscores the importance of exploring carbon nitride-based photocatalysts to address environmental challenges, particularly in the removal of phenol from wastewater.

Introduction

Photocatalysis

Photocatalysis is defined as a reaction that uses light such as ultraviolet (UV), visible or infrared (IR) to activate a substance that can change or modify the rate of chemical reaction without it is being consumed itself. The substance is usually called as photocatalyst. Photocatalysis can be used in various applications such as in water hydrolysis for producing hydrogen as fuel, organic synthesis, and the organic depollution. The last application, which is the photocatalytic degradation of organic and non-organic pollutants or water purification, has become one of the major interests of researchers nowadays. Here, the ecological advantage is apparent since remediation does not make recourse to the stoichiometric addition of chemicals, potentially themselves polluting, while the photocatalytic degradation is achievable by irradiation in the presence of oxygen (Hoffman, et al., 1995).

Carbon Nitride

Carbon nitride or CN is a compound that consists of element of carbon and nitrogen that obtained from carbon materials through substitution of the carbon atoms by nitrogen (Cohen, 1985). The history of carbon nitrides can be dated back to 1834, when Berzelius and Liebig prepared a carbon-nitrogen material from the thermolysis of mercury (II) thiocyanate.

In synthesis of carbon nitride, the most common precursor used is reactive nitrogen-rich and oxygen-free compounds containing pre-bonded C-N core structure such as cyanamide (Maya et al., 1991). The synthesis can be conducted either in inert (e.g., N_2 , Ar) or in air atmosphere, with no significant changes in the bulk structure; but may lead to differences in the product yield, degree of

condensation and, especially, surface properties. In application of catalyst and especially gas storage, the introduction of controlled porosity at the nanoscale in bulk carbon nitride is mandatory in order to enhance its function (Osterloh, 2013). Mesoporous carbon nitride materials with two dimension pore architecture possess higher specific surface area and larger pore volume, which results in enhanced performances in such applications due to higher surface density of active sites exposed on the surface and their easier accessibility by strengthened diffusion (Yang et al., 2011).

The high crystallinity of carbon nitride gives a good performance in photocatalysis field as the directional flow of electrons largely depends on the organization of the molecules in the structure in relation to their crystallinity (Seto et al., 2001). It was reported that eutectic mixture, lithium chloride and potassium chloride are regarded one of the factor in successful synthesis of carbon nitride compound as the good solvating properties in small molecular precursor and subsequent aggregates of higher molecular weight facilitated the condensation of the carbon nitride network (Sundermeyer, 1965).

Phenol

Phenol was first discovered when it was extracted from coal tar in 1834 by German chemist and defined as carboic acid (Busca, et al., 2008). Even though phenolic compounds can be very useful for various applications, phenolic compounds are found to be the most commons organic pollutant found in wastewaters and most of them are generated from chemical and petroleum-based industries. Uncontrolled phenolic compound introduced to wastewater caused a cumulative hazardous effect on the environment. Nowadays, phenols are considered as organic pollutants with high priority concerns due to their toxicity and negative impact to the environment (Lin, et al., 2009).

Removal of Phenol

Due to its toxicity to the environment, the removal of phenol in waste water is highly required. Photocatalytic degradation of phenol using semiconductor has been proved to be the most efficient and popular method as it is a stable and low-cost photosensitized material especially TiO₂ photocatalyst. However, due to its large band gap, TiO₂ only works excellently under UV light irradiation. Recently, carbon nitride materials have become a new generation of polymeric semiconductor that is relevant in catalysis and environmental fields. However, it was noted that the given examples using bulk carbon nitrides showed a moderate photocatalytic activity (Cui et al., 2012).

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The Legal Framework for Child Protection in Malaysia

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Abstract

This study examines the legal framework for child protection in Malaysia, which is essential for ensuring the safety, welfare, and rights of children. Over the years, this framework has been developed to prioritize the rights of children and highlight the government's responsibility to protect them. The Child Act 2001 (Act 611) serves as a fundamental component of this framework, designed to consolidate and revise laws related to the care, protection, and rehabilitation of children. This study offers a comprehensive analysis of the Malaysia legal provisions and mechanisms established to shield children from various types of harm, while also encouraging their development, education, and overall well-being. By assessing the effectiveness of the current legal framework, this research seeks to pinpoint areas for enhancement and guide policy reforms aimed at bolstering child protection in Malaysia.

Keywords: *child protection, child legislations, Malaysia, Child Act 2001, legal framework*

1.0 OVERVIEW OF THE CHILD PROTECTION IN MALAYSIA

Protecting children is a crucial element of any community, guaranteeing that young people are shielded from harm, mistreatment, and exploitation. Like many other countries, Malaysia acknowledges the significance of upholding children's rights and welfare, establishing a thorough legal structure to ensure their protection. This structure includes various laws, policies, and agencies aimed at providing a safe environment for children, free from abuse, neglect, and exploitation. In this article, the researcher has examined the main elements of Malaysia's child protection legal framework, focusing on pertinent legislation, government bodies, challenges in execution, and recent advancements in this area. Safeguarding children is not just a moral duty but also a collective responsibility, as they are the most at-risk members of society and need unique care, attention, and protection to flourish¹. In every community, children symbolize the future, and ensuring their well-being is essential for achieving long-term progress in society. Protecting their rights to safety, dignity, and development is vital for securing not only their individual prospects but also the overall stability and success of the community. In the absence of adequate protections, children become vulnerable to various types of harm, including violence against children, neglect, child labor, and exploitation, which can result in lasting negative impacts on their mental, physical, and social growth. According to United Nations Children's Fund (2023), the word 'violence' encompasses to any intentional, undesired, and unnecessary action, either threatened or enacted, directed at a child or several children that causes or has a significant potential to cause death, injury, or other types of physical and emotional harm.² Whilst the child labor refers to the situation where the children have been enter into the employment until it deprives children of their childhood, their potential and dignity, endangers their health and well-being, and hinders their personal development (both physical and mental)³. In other words, child labor often prevents children from attending school and also causes mental, social and physical harm. Despite in other studies shows there are positive impact of child labor towards the children especially in term of cultivating of discipline, responsibility, self-assurance, and autonomy; instructing children in financial management; and offering useful examples to educate them about job skills⁴. However, according to the Committee on the Health and Safety Implications of Child Labor (1998), there are also negative impacts will affect the children in

¹ Masgras, A. (n.d.). *Child protection is a shared responsibility*. European Social Network. <https://www.esn-eu.org/news/child-protection-shared-responsibility>

² Sufari, N. (2024). (rep.). *Reporting Mechanisms and Helplines in Malaysia* (pp. 1–15). UNICEF Malaysia. Retrieved from <https://www.unicef.org/malaysia/media/5271/file/MCO%20Reporting%20Mechanism%20Brief%20w%20table%20v4.pdf.pdf>

³ What is child labour. International Labour Organization. (2024). Retrieved from <https://www.ilo.org/international-programme-elimination-child-labour-ipecc/what-child-labour>

⁴ Fassa, A. G., Facchini, L. A., Dall'Agnol, M. M., & Christiani, D. C. (2000). Child Labor and Health: Problems and Perspectives. *International Journal of Occupational and Environmental Health*, 6(1), 55–62. <https://doi.org/10.1179/oeh.2000.6.1.55>

terms of health and development of the children especially when it disrupts education, leisure activities, and sleep; includes an inconsistent work schedule, extended hours or regular night shifts; or involves dangerous jobs and low pay⁵.

Understanding the vital need for child protection, Malaysia has put in place a thorough legal system aimed at shielding children from such abuses. This system comprises national laws, international obligations, policies, and institutions that collaborate to promote and uphold children's rights. The government of Malaysia has enacted various laws, such as the Child Act 2001 and the Penal Code, which criminalize numerous forms of abuse and exploitation, ensuring that there are legal repercussions for those who harm or mistreat children. Furthermore, Malaysia's agreement to the United Nations Convention on the Rights of the Child (CRC) highlights the nation's dedication to adhering to global standards and acknowledging the basic rights of children, including their right to safety from any form of harm. Alongside the legal structure, numerous government agencies and organizations are instrumental in child protection efforts such as the Ministry of Women, Family, and Community Development and Department of Social Welfare (JKM), is charged with overseeing the welfare and protection of children. These bodies are responsible for investigating abuse claims, providing care services, and taking necessary actions to remove children from harmful situations. On the other hand, the Royal Malaysian Police and the judiciary, including specialized Family Courts, also play significant roles in enforcing child protection laws and handling cases pertaining to children's welfare. Even with a well-established legal and institutional framework, there are still hurdles in achieving the effective application of child protection laws. Factors like underreporting, inadequate awareness among the public, limited resources, and societal views towards various forms of abuse or neglect hinder complete enforcement. Additionally, the collaboration between different government agencies and NGOs dedicated to child protection can occasionally be ineffective, impeding the prompt response necessary in urgent situations.

Cultural attitudes in specific communities also pose challenges, as practices like corporal punishment, child labor, or early marriage are sometimes accepted, complicating the full enforcement of child protection laws. In recent times, Malaysia has made notable progress in enhancing its child protection systems. For instance, changes to the Child Act 2001 have established stricter guidelines for addressing child abuse and neglect, providing better safeguards for children. There has been a rise in efforts to raise public awareness concerning the significance of child protection, along with initiatives aimed at informing both parents and professionals about recognizing and reporting abuse cases. These advancements illustrate Malaysia's ongoing dedication to fortifying its child protection framework and tackling the evolving challenges in this field. This article provides an in-depth analysis of Malaysia's legal framework for child protection, centering on the key elements of the legislation, the functions of important government bodies and agencies, as well as the challenges and progress within the system. By investigating these aspects, the study intends to shed light on how Malaysia strives to protect its children from harm while also pointing out areas that still require enhancement to foster a safer, more nurturing environment for children.

2.0 THE CHILDREN PROTECTION LEGAL FRAMEWORK IN MALAYSIA

The Malaysian governments have established various legislative frameworks to protect children's rights and well-being. These frameworks usually consist of a mix of international agreements, governmental bodies, and initiatives designed to prevent and address child abuse, exploitation, and neglect. Hence, this subsection, will thoroughly discuss about the child protection provisions and the role of institutions in safeguarding children safety and wellbeing.

2.1 CONSTITUTIONAL AND INTERNATIONAL FOUNDATIONS

The Federal Constitution of Malaysia provides broad protections against discrimination and ensures fundamental rights that indirectly enhance child welfare. For example, liberty⁶, education⁷, and equal treatment⁸ under the law can serve as a basis for safeguarding children's rights. As mentioned

⁵ *Ibid*

⁶ The Federal Constitution of Malaysia ensures fundamental liberty in Articles 5 to 13. These fundamental of liberty include the right to life, freedom of speech, and freedom of religion.

⁷ The Federal Constitution of Malaysia ensures that every citizen has the right to education as stated in Article 12. This entitlement encompasses free and mandatory education, and it disallows discrimination on the grounds of race, religion, descent, or place of birth.

⁸ Article 8 (1) of Federal Constitutions stated that, "every individual is treated equally under the law and is entitled to equal legal protection," indicating that citizens cannot face discrimination due to their race, religion, gender, birthplace, or ancestry, unless explicitly permitted by the Federal Constitution.

above, the federal constitutions is not only promote the physical and emotional health of children but also foster an environment that meets their developmental requirements. Despite of the Federal Constitution does not explicitly mention child welfare, its extensive safeguards against discrimination and its focus on fundamental rights both directly and indirectly improve children's overall quality of life, guaranteeing fair treatment, access to essential services, and a safe and nurturing environment for their growth.

Internationally, Malaysia is a signatory to the United Nations Convention on the Rights of the Child (CRC), which it ratified in 1995. The Convention on the Rights of the Child (CRC) is a global agreement designed to safeguard children's rights around the globe. It defines a child as any individual below the age of 18 and urges States Parties to implement all necessary measures to guarantee the protection of children's rights including the rights to a name and nationality; freedom of expression and thought; access to medical care and education; and protection from exploitation, torture, and abuse⁹. Adopted in September 1990, the CRC has been ratified by 193 nations (including Malaysia), making it the most widely accepted human rights treaty internationally¹⁰. The CRC outlines a thorough set of legal standards designed to shield children from abuse, exploitation, and neglect, while also guaranteeing their rights to education, healthcare, and a secure environment. As stated above, Malaysia is one of the countries that has joined the treaty, having acceded on 17 February 1995, and is ratifying the CRC regarding articles 2, 7, 14, 28 paragraph 1(a), and 37 of the Convention. The execution of the selected articles will align with the Constitution, national laws, and policies of the Government of Malaysia. Malaysia has ratified articles of the Convention that primarily safeguard children's rights based on the following principles:

- i. No discrimination or punishment shall occur based on the status, actions, opinions, or beliefs of the child's parents, legal guardians, or family members¹¹,
- ii. A child must be registered immediately after birth (entitled from birth to a name, nationality, and the right to parental care) and ensure that these rights are honored in accordance with national law¹²,
- iii. The child is granted freedom of thought, conscience, and religion¹³,
- iv. Every child has the right to education on an equal opportunity basis¹⁴, and
- v. No child shall be subjected to torture or any cruel, inhumane, or degrading treatment or punishment¹⁵.

To conclude, the Federal Constitution of Malaysia offers extensive safeguards against discrimination and reinforces fundamental rights that benefit child welfare, including liberty, education, and equal legal treatment. While child welfare is not directly addressed, these protections support the well-being of children by guaranteeing fair treatment, access to vital services, and a secure environment for development. On an international level, Malaysia ratified the United Nations Convention on the Rights of the Child (CRC) in 1995, which seeks to safeguard children's rights worldwide, addressing matters such as nationality, the right to express oneself, access to education and healthcare, and protection from abuse. Malaysia has undertaken commitments to specific CRC articles that resonate with its Constitution, ensuring that children's rights are respected, such as non-discrimination, the right to a name and nationality, freedom of thought, equal access to education, and protection from torture or inhumane treatment.

2.2 KEY LEGISLATION IN CHILD PROTECTION

The Malaysian government has established several provisions to regulate the children safety and well-being such as the Child Act 2001 (Act 611), Domestic Violence Act 1994 (Act 521), Children and Young Persons (Employment) Act 1966, and Sexual Offences Against Children Act 2017 (Act 792). Below is the further explanation for the following Acts.

Child Act 2001 (Act 611)

The Child Act 2001 (Act 611) serves as the foundation of Malaysia's legal framework for child protection. This legislation was established to consolidate and amend the laws relating to the care,

⁹ Blanchfield, L. (2013). The United Nations Convention on the Rights of the Child. Congressional Research Service, 1–18.
<https://sgp.fas.org/crs/misc/R40484.pdf>

¹⁰ *Ibid*

¹¹ Article 2 of the Convention on the Rights of the Child

¹² Article 7 of the Convention on the Rights of the Child

¹³ Article 14 of the Convention on the Rights of the Child

¹⁴ Article 28 paragraph 1(a) of the Convention on the Rights of the Child

¹⁵ Article 37 of the Convention on the Rights of the Child

protection and rehabilitation of children and to provide for matters connected therewith and incidental thereto¹⁶. Generally, the Act 611 outlines regulations aimed at safeguarding children who are abused or require care and protection in several key areas: (1) limitations on media coverage and publications, (2) the responsibilities of protectors and police officers when taking a child into temporary custody and placing them in a safe environment, and (3) the obligation to report abuse cases to the appropriate authorities¹⁷. In 2016, the Child Act 2001 underwent amendments, leading to the establishment of the Child Act (Amendment) 2016. The four primary changes introduced in this amendment include the establishment of a child registry, Community Service Order (CSO), family-based care, and increase the penalties towards the offenders of the child maltreatment or abuse¹⁸. As mentioned above, the establishment of Act 611 can be seen as vital, where it shaping the legal framework for child protection in Malaysia. It effectively underscores the main areas addressed by the Act, including the care, protection, and rehabilitation of children, particularly those who are abused or vulnerable. The discussion of restrictions on media coverage and publications, the duties of authorities when involving a child in custody, and the necessity to report abuse illustrates the Act's thorough approach to child welfare.

From the researcher points of view, amendment of the Act 611 is also crucial, as it demonstrates the advancement of child protection legislation in response to new challenges. Based on the above explanation, there are four key amendments introduced such as; establishing a child registry, introducing Community Service Orders (CSOs), encouraging family-based care, and imposing stricter penalties for child abusers. It indicate a proactive effort to enhance both the legal framework and practical measures for safeguarding children. These modifications show a dedication to strengthening legal protections for children and increasing accountability for offenders.

Domestic Violence Act 1994 (Act 521)

The Domestic Violence Act 1994 was enacted to provide for legal protection in situations of domestic violence and matters incidental thereto¹⁹. This Act further enhances Malaysia's child protection laws by providing legal measures to protect children who are victims of domestic violence. The phrase "domestic violence" in Malaysia does not solely safeguard women, but also encompasses other individuals such as husbands, former husbands, children, incapacitated adults, or any other family member²⁰. It encompasses various forms of violence and addresses multiple family dynamics. Therefore, the broad nature of the Act is intended to confront the reality that domestic violence is an issue affecting not only women but also the other victim categories previously mentioned²¹. Besides, this legislation allows courts to issue protection orders for children residing in abusive households, ensuring their safety from violent circumstances within their homes.

Children and Young Persons (Employment) Act 1966 (Act 350)

The Children and Young Persons (Employment) Act 1966 (Act 350) was established to regulate the employment of children and young persons²². This Act provides a crucial legal framework aimed at safeguarding the rights and welfare of children and young people in the workplace in Malaysia. It is also been enacted to establish age restrictions, outline permissible working hours, and define suitable work environments and roles for young individuals. According to Section 1A of the Act, a child can be referred as anyone who has not yet reached the age of 15, whereas a young person is someone who is not classified as a child and has not yet turned 18²³. Another significant element has been stipulated under this Act such as; (1) classification of allowable employment²⁴, (2) interpretation of hazardous

¹⁶ Child Act 2001 (Act 611)

¹⁷ Abas, A. (2012). Child Abuse in Malaysia: Legal Measures for The Prevention of The Crime and Protection of the Victim. *International Journal of Social Sciences and Humanity Studies*, 4, 1-10. Retrieved June 16, 2019, from dergipark.gov.tr/download/article-file/257239

¹⁸ *Ibid*

¹⁹ Domestic Violence Act 1994 (Act 521)

²⁰ Na'aim, M. S. M., Rajamanickam, R., & Nordin, R. (2022). Intimate partner violence within the frame of Malaysian laws. *UUM Journal of Legal Studies*, 13(1), 131-154. <https://doi.org/10.32890/uujls2022.13.1.6>

²¹ *Ibid*

²² Children and Young Persons (Employment) Act 1966 (Act 350)

²³ Haswaniza Hanafi et al. (2024). A SocioLegal Study on Issues and Factors of Child Labour in Malaysia. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 9(6), e002865. <https://doi.org/10.47405/mjssh.v9i6.2865>

²⁴ Section 2 of the Children and Young Persons (Employment) Act 1966 (Act 350)

workplace²⁵, and (3) working hours for child labor²⁶. The Act plays a vital role in establishing clear limits on the kinds of work that children and young people can undertake, setting age limits, allowable working hours, and ensuring that work environments are secure. The differentiation between a "child" (under 15) and a "young person" (under 18) is significant, as it clarifies legal protections based on age. Furthermore, the inclusion of critical provisions such as the categorization of permissible employment, definitions of hazardous workplaces, and regulations regarding working hours for child labor highlights the Act's thorough approach to safeguarding youth in the workforce. However, based on the previous studies in discussing the comprehensiveness of this Act, some of the research findings urged that, there is a need to revamp and amend the Act 350 in order to safeguard children from exploitation and abuse, when necessary employment is involved²⁷. Thus, the Act 350 was enacted to limits the child employment, thereby safeguarding them from exploitation in the labor market. It specifies age limits for employment and establishes the conditions under which young individuals may work, ensuring that their education and well-being are not compromised by their employment.

Sexual Offences Against Children Act 2017 (Act 792)

The Sexual Offences Against Children Act 2017 (Act 792) aims to provide for certain sexual offences against children and their punishment in addition to other sexual offences against children and their punishment in other written laws, and in relation to it to provide for the administration of justice for children and connected matters²⁸. The Act 792 applies to the individual who are under 18 years old. According to Section 3 of the Act, authorities are empowered to take action against any Malaysian citizen who commits sexual offenses against a child, regardless of whether the offenses occur outside of Malaysia. Offenders may be arrested, prosecuted, and convicted for acts committed outside the country as if they had taken place anywhere within Malaysia²⁹. In other words, the Act 792 is vital for enhancing legal safeguards for minors, outlining specific provisions related to sexual offences and their respective penalties. Its application to all persons under 18 years of age is fundamental in ensuring that all children receive thorough protection especially related to the sexual offences. A notable aspect of the Act is its extraterritorial jurisdiction, permitting Malaysian authorities to pursue legal action against nationals involved in sexual offences against minors, regardless of whether these acts take place outside Malaysia as long as the preparator is Malaysian citizen. This illustrates a robust dedication by the Malaysian government to safeguarding children on a global scale and holding perpetrators accountable, no matter where they commit their crimes. Nevertheless, from the researcher's point of view, any intriguing area in Act 792 that requires further enhancement could be considered to ensure the effectiveness of its application in different contexts, particularly when offences occur beyond national borders.

In summary, the significant laws regarding child protection in Malaysia are essential for ensuring the safety, rights, and welfare of children throughout the nation. Legislation such as the Child Act 2001 (Act 611), Domestic Violence Act 1994 (Act 521), Children and Young Persons (Employment) Act 1966, and Sexual Offences Against Children Act 2017 (Act 792). establish a thorough legal framework that addresses various types of abuse, exploitation, and neglect, while also guaranteeing that children receive the care and protection they require. These laws not only ensure that offenders are held responsible but also offer a systematic approach to assist and rehabilitate at-risk children. As Malaysia works to enhance its child protection systems, these legislative measures act as vital instruments in fostering a safer environment where children's rights are upheld, their views are acknowledged, and their futures are secured.

2.3 INSTITUTIONAL FRAMEWORK RELATED TO THE CHILD PROTECTION IN MALAYSIA

In Malaysia, there are two main government bodies that are responsible to ensure the child safety and well-being are; (1) the Ministry of Women, Family and Community Development (MWFCD) and (2) the Social Welfare Department (SWD). The MWFCD is tasked with developing national policies,

²⁵ Section 2 (6) of the Children and Young Persons (Employment) Act 1966 (Act 350) defines hazardous work as work that has been classified as hazardous work based on the risk assessment conducted by a competent authority on safety and health determined by the Minister.

²⁶ Section 5 (1)(b) and section 6 (1)(c) of the Children and Young Persons (Employment) Act 1966 (Act 350)

²⁷ Haswaniza Hanafi et al. (2024). A SocioLegal Study on Issues and Factors of Child Labour in Malaysia. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 9(6), e002865. <https://doi.org/10.47405/mjssh.v9i6.2865>

²⁸ Sexual Offences Against Children Act 2017 (Act 792)

²⁹ Mooi, T. G, & Awal, N. A. M. (2020). Sexual Offences against Children Act 2017 (Act 792) - A Boost to Police Investigation and Prosecution. *International Journal of Asian Social Science*, 10(6), 273–286.

<https://doi.org/10.18488/journal.1.2020.106.273.286>

coordinating inter-agency collaboration, and ensuring the efficient execution of child protection initiatives throughout the nation. It collaborates closely with a range of stakeholders, including governmental and non-governmental organizations, to raise awareness about child rights, avert abuse, and encourage early intervention for vulnerable children³⁰. While, the SWD, functioning under the MWFC, plays a vital role in the direct care and safeguarding of at-risk children. SWD supports children who have suffered abuse, neglect, and exploitation by providing shelter, rehabilitation, counseling, and family reunification services³¹. Apart from its responsibilities in managing child protection cases, SWD also conducts evaluations and investigations to determine the best approach for ensuring each child's safety and well-being³². Here, the MWFC plays a critical role in policy development, coordination, and collaboration among agencies, which is essential for establishing a cohesive and effective national strategy for child protection. Its partnership with both governmental and non-governmental organizations to enhance awareness and prevent abuse exemplifies a wide-ranging and inclusive approach. While, the SWD's function as the entity responsible for meeting the needs of at-risk children is also important. Offering services such as shelter, rehabilitation, counseling, and family reunification demonstrates a thorough, child-focused strategy that extends beyond simple intervention, aiming for lasting support and recovery for affected children. Additionally, the SWD's role in case assessments and investigations guarantees that child protection strategies are customized to fit each specific situation, which is critical for achieving the best results for vulnerable children. On the other hand, the law enforcement bodies, like the Royal Malaysia Police, are crucial in responding to and probing instances of child abuse and exploitation. They maintain a close partnership with the MWFC and SWD to ensure that those who commit child abuse face justice and that the affected children receive suitable care and protection³³. The police also play a critical role in enforcing laws related to child trafficking, online exploitation, and other abuse forms. For example, in the Global Ikhwan Service and Business Holding (GISBH) scandal, the victims of this case (especially children and women) have been safely protected and are under the care of the Royal Malaysia Police and SWD³⁴.

As mentioned above, Malaysia also provides a comprehensive insight into the essential function that law enforcement agencies, particularly the Royal Malaysia Police, have in combating child abuse and exploitation. It underscores the significance of partnering with the Ministry of Women, Family, and Community Development (MWFC) and the Social Welfare Department (SWD) to ensure accountability for offenders and safety for victims. The reference to the GISBH scandal serves as a pertinent example, demonstrating how the police and SWD collaborate to protect at-risk individuals, particularly children and women. The paragraph could be enhanced by incorporating specific instances of how these organizations work together in practice, offering readers a more detailed understanding of the procedures involved.

In summary, Malaysia's framework for child protection is a complex and collaborative network that includes essential government agencies, law enforcement, the judiciary, and non-governmental organizations. Collectively, they strive to ensure children's safety, welfare, and rights through coordinated initiatives, legal structures such as the Child Act 2001, and services provided by organizations like the Ministry of Women, Family, and Community Development, the Department of Social Welfare (SWD), and the Royal Malaysia Police. Although the system is thorough and effective in many respects, continuous efforts to boost resources, increase public awareness, and reinforce policy implementation are crucial to tackle new challenges and further enhance child protection in the nation.

3.0 THE NEEDS TO REFORM CHILD PROTECTION LEGAL FRAMEWORK IN MALAYSIA

Reforming the child protection legal framework in Malaysia is essential to guarantee that children's rights and safety are adequately protected in a changing social environment. Although there are current laws and policies focused on child protection such as the Sexual Offences Against Children Act 2017 (Act 792), issues like enforcement gaps and outdated regulations need to be taken into

³⁰ Kementerian Pembangunan Wanita, Keluarga dan Masyarakat. (n.d.).

<https://www.kpwkm.gov.my/kpwkm/index.php?r=portal%2Fabout&id=NE1HWWd2eVZHWEt2ZHIMy9IL2luZz09>

³¹ Jabatan Kebajikan Masyarakat. (n.d.). <https://www.jkm.gov.my/main/article/jabatan-pembangunan-kanak-kanak>

³² *Ibid*

³³ Bernama. (2024). Op global: 223 pegawai jkm bantu pdrm uruskan kanak-kanak - nancy. Astro Awani. Retrieved from <https://www.astroawani.com/berita-malaysia/op-global-223-pegawai-jkm-bantu-pdrm-uruskan-kanakkanak-nancy-487857>

³⁴ Muzamir, M. Y. (2024). "Semua kanak-kanak itu selamat, dijaga jkm dan polis." *BH Online*. Retrieved from <https://www.bharian.com.my/berita/nasional/2024/09/1298273/semua-kanak-kanak-itu-selamat-dijaga-jkm-dan-polis>

consideration. Below are the suggestions for reforming the child protection legal framework in Malaysia.

3.1 Proposed Amendments to the Child Act 2001 (Act 611)

One significant development is the current evaluation and suggested changes to the Child Act 2001 (Act 611). These proposed changes seek to bolster the existing regulations by broadening protections against new challenges such as cyberbullying, online exploitation, and child trafficking. As mentioned earlier, the Act 611 serves as the primary legal framework for safeguarding the rights and welfare of children; however, due to increasing dangers in the digital landscape, it is essential to enhance this legislation to tackle particular offenses such as cybercrime and online sexual exploitation³⁵. The current digital era introduces new challenges that necessitate specific legal protections. The point about the absence of particular clauses concerning digital platforms is valid, as existing laws may not adequately consider the intricacies of online spaces where children may be at risk of abuse. The idea of expanding the Act to encompass provisions regarding cybercrime and online sexual exploitation is both crucial and timely. It would enhance the framework by tackling the increasing digital dangers that children encounter.

3.2 Strengthening Enforcement Mechanisms of the Current Key Legislations

Although law enforcement organizations play an essential role in protecting children, challenges exist concerning the inconsistent enforcement of laws and the obstacles faced in monitoring and prosecuting abuse cases. Enhancing the legal framework could include better training for police officers, social workers, and legal experts to identify, investigate, and address child protection concerns³⁶. This statement highlights that although law enforcement agencies play a vital role in safeguarding children, challenges such as uneven enforcement and obstacles in tracking and prosecuting abuse cases continue to exist. These issues can weaken the effectiveness of child protection laws, underscoring the necessity for further action to tackle them. The proposal to strengthen the legal framework by offering improved training for police officers, social workers, and legal professionals is a well-founded suggestion. Targeted training can enhance these professionals' capacity to identify signs of abuse, carry out comprehensive investigations, and navigate the intricacies of child protection legislation. By providing these individuals with the appropriate knowledge and skills, the system could become more effective in dealing with abuse cases.

Hence, reforming Malaysia's child protection legal framework is vital to ensure children's rights and safety are effectively protected in a swiftly changing social and digital landscape. Although current legislation, such as the Sexual Offences Against Children Act 2017 (Act 792), lays a groundwork, issues like gaps in enforcement and outdated provisions must be tackled. The suggested revisions to the Child Act 2001 (Act 611), which seek to broaden protections against emerging threats such as cyberbullying, online exploitation, and child trafficking, represent a timely and essential advancement. These modifications would confront the increasing dangers in the digital realm, where existing laws fall short in safeguarding children from online risks. Moreover, fortifying enforcement mechanisms is crucial for enhancing the impact of child protection laws. Law enforcement agencies have a pivotal function, yet inconsistent enforcement and difficulties in monitoring and prosecuting abuse cases persist as considerable obstacles. Improving the legal framework through more effective training for police officers, social workers, and legal professionals is vital to enhance their capacity to recognize and address child protection issues. By providing these individuals with the essential skills and knowledge, Malaysia can develop a more effective system to protect children from abuse and neglect. Collectively, these reforms can establish a stronger, more efficient legal structure that better shields children in an increasingly complicated world.

4.0 CONCLUSION

In conclusion, Malaysia's legal framework for child protection is consistently developing to meet new challenges and ensure the rights and welfare of its children. The nation has enacted several important legal measures, such as the Child Act 2001, the Domestic Violence Act 1994, and the Sexual

³⁵ Stronger laws to protect children from social media harm. The Malaysian Reserve. (2024). <https://themalaysianreserve.com/2024/12/03/stronger-laws-to-protect-children-from-social-media-harm/>

³⁶ Leong, T. (2025). Strengthen the future for Malaysia's children. New Straits Times. Retrieved from <https://www.nst.com.my/opinion/letters/2025/01/1161434/strengthen-future-malaysias-children>

Offences Against Children Act 2017, which are crucial for the safety and well-being of children. Nevertheless, there remain areas that need enhancement, especially in improving the effectiveness of inter-agency collaboration and updating legal structures to tackle contemporary threats like cybercrime and online exploitation. The suggested changes to the Child Act 2001 reflect Malaysia's dedication to evolving its child protection laws in response to these challenges. To further bolster the system, ongoing training for law enforcement, social workers, and legal professionals is essential. In summary, while Malaysia's child protection system is thorough, continuous reform and resource improvement are vital to address changing societal demands and ensure the protection of all children in all facets of their lives.

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