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Unlocking Insights: Malaysian Teen Perspectives on Modern Smartphone Design Trends

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ABSTRACT

This study investigates the complex realm of modern smartphone design through the lens of Malaysian teenagers, aiming to uncover significant insights into their preferences and viewpoints. Understanding the way teenagers perceive and interact with smartphones remains crucial, despite the ubiquity of these devices in today's digital society. This research addresses a notable gap in the existing literature by specifically examining the perspectives of Asian individuals, particularly Malaysian teenagers. It aims to shed light on their unique cultural backgrounds and technological inclinations. A meticulously organised workshop was conducted, involving ten teenagers from Perak State, Malaysia. The participants engaged in talks and creative exercises, delving into different facets of smartphone design elements and applications. The research identifies five key areas to consider when designing smartphones: the physical shape and materials used, the type of display technology employed, the security measures and user identification methods, the audio and multimedia capabilities, and the networking options and charging mechanisms. Additionally, there are three themes that can be used to customise the features of smartphone applications to meet the requirements of teenagers: security and authentication, productivity and creativity tools, and cutting-edge features and technologies. This project aims to develop culturally responsive and user-friendly smartphone designs, enhancing user experiences by bridging global technological trends with local consumer behaviours.

1. INTRODUCTION

Smartphones have become widely used devices in today's digital culture, influencing multiple facets of everyday life such as communication, entertainment, education, and productivity. Their multifaceted functionality and continually evolving designs have a significant impact on individuals of all ages (Busch & McCarthy, 2021). Teenagers, specifically, have a significant impact on embracing and moulding

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technological patterns, therefore making their viewpoints particularly crucial. Understanding smartphone design trends from the viewpoint of teenagers is crucial in the consumer electronics industry. Adolescence is a critical developmental stage characterised by increased sensitivity to peer influence, self-expression, and identity formation. Therefore, teenagers' preferences and opinions on smartphone design are key indicators of current commercial trends and broader societal and cultural shifts. The prevalence of smartphones highlights the imperative to examine their design patterns, as design significantly impacts purchase choices (Hazwan et al., 2024). Recently, smartphones have evolved from basic communication devices to indispensable instruments for accessing information, entertainment, and social interaction (Nuhel, 2021). Their seamless integration into daily life has transformed how individuals navigate the world, manage relationships, and engage with content (Jumaan et al., 2020; Mohamad Zamani et al., 2022; Zulkifli, 2021).

Despite the pervasive influence of smartphones, there is a significant gap in the literature regarding Asian perspectives, particularly those of Malaysian teenagers. Although numerous studies have investigated the preferences for smartphone design among adolescents in Western countries (Abeele et al., 2017; Blair et al., 2015), there is a scarcity of research on Asian markets (Yoon & Yun, 2023), where there can be significant variations in cultural nuances and technological adoption patterns. This disparity is particularly evident in Malaysia, a rapidly developing Southeast Asian country with a diverse cultural landscape and a growing youth population. This study aims to examine smartphone design trends among Malaysian teenagers, thereby providing valuable insights into the disciplines of marketing, design, and consumer psychology. By bridging the gap between global technological discourse and specific consumer behaviours, this research seeks to influence the development of more culturally sensitive and user-centric smartphone designs.

2. RELATED WORKS

2.1 Smartphone Design Trends: A Global Overview

The landscape of smartphone design is continually evolving, shaped by technological advancements, consumer preferences, and cultural influences (Andreallo, 2019; Dirin et al., 2023; Hazwan et al., 2024). A comprehensive understanding of current smartphone design trends provides valuable insights into the trajectory of the consumer electronics industry and informs strategic decisions by manufacturers. Recent studies have identified several notable trends in smartphone design on a global scale. The evolution of smartphone design has been characterized by a shift towards sleeker, more minimalist aesthetics, driven by advancements in materials and manufacturing techniques (Farajzadeh et al., 2019). Manufacturers increasingly prioritize seamless integration of hardware and software, resulting in devices that offer a more intuitive and immersive user experience. Additionally, there is a growing emphasis on sustainability and eco-friendliness, with many companies incorporating recyclable materials and energy-efficient components into their designs (Hirose & Mishima, 2019; Poppe et al., 2020). Across different regions, certain design elements have emerged as universally appealing. For example, large, edge-to-edge displays have become a standard feature, providing users with immersive viewing experiences for multimedia content and gaming. Moreover, the adoption of biometric and touch screen authentication methods, such as facial recognition and fingerprint scanners, underscores the importance of security and convenience in smartphone design (Ibrahim et al., 2019; Syalevi et al., 2024). Related works aim to provide a comprehensive overview of the current trends in smartphone design globally, examining historical developments, contemporary design practices, technological innovations, ergonomic considerations, and regional preferences. By analysing these aspects, the research aims to highlight the key factors shaping smartphone design today and predict future trends in this dynamic field.

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2.1.1 Historical Context

The evolution of smartphone design has been characterised by key innovations that have profoundly transformed user interactions. The first generation of smartphones, such as the IBM Simon Personal Communicator introduced in 1994, were notable for their bulky design and limited functionality (Schneiderman, 2011). The introduction of the Apple iPhone in 2007 marked a significant shift towards touch-based interfaces and minimalist design. As a result of this significant shift in thinking, the adoption of capacitive touchscreens and the gradual disappearance of physical keyboards became common among other manufacturers.

2.1.2 Current Design Trends

Recently, there has been a trend in smartphone design towards simplicity and elegance. Notable industry trends include the implementation of foldable and flexible screens, the use of premium materials like ceramics and metals, and the quest for improved screen-to-body ratios. Smartphone manufacturers have broadened their range of colour choices, offering glossy and matte finishes and exploring gradient colour schemes. This section will examine these elements and demonstrate how prominent corporations are integrating them into their latest models. Smartphone design continues to be predominantly influenced by minimalism. Companies such as Apple and Google place a high importance on minimalist and organised designs, with a strong emphasis on the smooth integration of their hardware and software (Pangarkar et al., 2021). This trend emphasizes smooth edges, reduced bezels, and a focus on user-friendly interfaces.

2.1.3. Ergonomics and User Experience

The use of ergonomic design is essential to ensure that smartphones provide a comfortable user experience and meet the varied requirements of users (Le Guillou et al., 2023). This involves factors such as the dimensions and configuration of the device, the positioning of buttons and ports, and the overall design of the user interface (UI) and user experience (UX) (Li & Luximon, 2023). Consumers increasingly value customisation and personalisation options that align with their individual styles and preferences. This section will examine the latest developments in ergonomic design and user experience, emphasising the interaction between hardware and software design components.

2.2 Cultural Influence on Smartphone Design Preferences

Cultural factors exert a substantial influence on preferences for smartphone design, impacting various aspects such as physical structure, colour palettes, and user interface design (Farajzadeh et al., 2019). The significance of cultural sensitivity in designing smartphones for diverse markets cannot be overstated. Manufacturers must meticulously evaluate consumer preferences and cultural subtleties to ensure the success of their products in an increasingly globalised world. Neglecting to do so may result in misalignment with local preferences and values, potentially leading to a decrease in market share and adoption rates.

2.3 Teen Perspectives on Smartphone Design

Valuable insights into adolescents' preferences and behaviors have been found in previous studies that concentrated on their perceptions of smartphone design. The preference for intuitive user interfaces, customizable features, and sleek, stylish designs is a common theme across various cultural contexts (Cesário & Nisi, 2022). Smartphones significantly impact the daily lives, social interactions, and educational experiences of adolescents (Jee et al., 2021). It is imperative for manufacturers to comprehend teenagers' viewpoints regarding smartphone design to attract this demographic. Aesthetic appeal, technological features, usability, and practical considerations all influence teenagers' perspectives on

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smartphone design. To effectively satisfy the requirements and expectations of teenage consumers, manufacturers must address these preferences to capture this market segment.

3. METHODOLOGY

3.1 Participants Demographic

The study recruited a sample of 10 teenagers, consisting of 5 males and 5 females, with ages ranging from 18 to 23, from Perak State, Malaysia. The participants were enrolled in diverse educational programmes, encompassing pre-foundation, diploma, and degree courses, spanning multiple disciplines such as computer science and actuarial sciences. A smaller group of ten teenagers is easier to manage and ensures that each participant receives adequate attention and support from the facilitators (Stige et al., 2021). The researchers employed purposive sampling to ensure a diverse representation of perspectives and experiences concerning smartphone usage and design preferences among Malaysian teens. The recruitment strategy targeted educational institutions in Perak State, leveraging existing networks and ties within the academic community to identify potential participants. Individuals who met the necessary age range and resided in Perak State were approached either face-to-face or via online communication channels, on the condition that they satisfied the inclusion criteria.

Participants received detailed information about the research goals, procedures, and their rights before participating in the study. Prior to initiating any data collection activity, all participants provided informed consent. To protect confidentiality and privacy, participants were assigned pseudonyms or identity codes during the process of analysing and reporting the data. All personal information gathered throughout the study, including demographic information and individual responses, was handled with the utmost confidentiality and stored securely in accordance with ethical guidelines and data protection rules.

3.2 Workshop Procedures

A workshop technique was employed to investigate the viewpoints of teenagers regarding contemporary smartphone design trends. This format allowed participants to actively engage and exchange their perspectives and preferences. The workshop was structured with the following organized activities, as illustrated in Fig. 1.

i. Group Formation: The first step involved dividing the participants into small focus groups, each consisting of 3 to 4 students. This grouping method aimed to create an environment that fosters intimate conversations and a wide range of viewpoints while ensuring equal participation from both male and female attendees in each group. By incorporating individuals of various genders, the workshop aimed to foster inclusivity and encourage diverse perspectives and experiences about smartphone design trends. This strategy also sought to minimise the potential impact of gender bias on discussions and promote collaborative exchanges among participants from diverse backgrounds.

ii. Explanation of the Task: The facilitator carefully and precisely explained the goals and activities of the workshop to each group, providing specific instructions and defining the scope of the discussion. The task was titled 'Characteristics of an Ideal Cell Phone.' Participants received clear descriptions of the main topics to be examined, including aesthetic preferences, functional requirements, usability considerations, and cultural impacts on smartphone design.

iii. Group Discussion: Each group was allocated a specific time slot of 30 minutes for an intensive and focused discussion on smartphone design. Guiding questions and prompts were strategically incorporated to stimulate conversation, foster critical thinking, and encourage participants to thoroughly explore their preferences, experiences, and views on smartphone design.

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iv. Design and Specification Drawing: Following the discussion session, participants received paper and sketching materials to transform their conceptual ideas and preferences into visual representations. This interactive activity allowed participants to express their creativity, explore innovative design concepts, and clearly communicate their desired smartphone designs along with the corresponding specifications.

v. Presentation of Designs: Each group was given the opportunity to showcase and promote their smartphone designs to a large audience. Over the course of 10 minutes, groups explained the rationale behind their design choices, highlighted distinctive features, and discussed the practical implications of their designs. This segment fostered collaborative learning among peers, encouraged the exchange of ideas between groups, and enhanced the overall understanding of preferences in smartphone design.

vi. Facilitator Wrap-Up: The facilitator carried out a comprehensive wrap-up to conclude the workshop. The purpose of this session was to present a concise overview of the main points, observations, and insights obtained from the workshop activities. Participants were invited to reflect on their personal and group encounters, provide feedback on the workshop's efficacy, and share any additional thoughts or ideas that emerged. This final segment prepared the ground for the subsequent analysis and interpretation of the collected data.

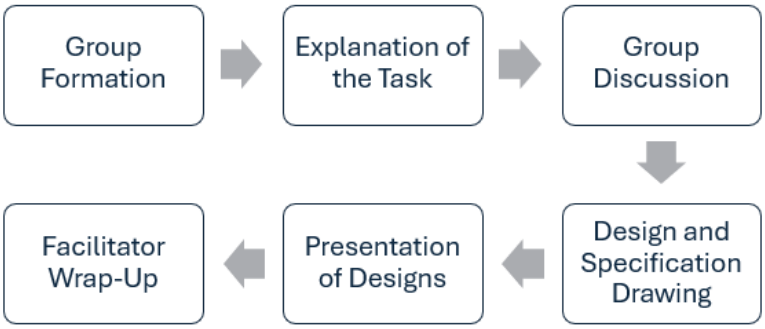

Fig. 1. Diagram of workshop procedure

Through the implementation of a structured workshop framework, participants were actively involved in discussions, exhibited their creativity by generating design concepts, and collaboratively explored various aspects of smartphone design. The workshop provided an interactive environment for gathering insightful viewpoints from teenagers regarding contemporary smartphone design trends, thereby making a substantial contribution to the research goals of the study.

4. RESULT AND DISCUSSION

A group discussion session was conducted during the workshop, as shown in Fig. 2. Three teenagers participated in brainstorming discussions about smartphone design elements and applications. The participants presented their ideas, which were then analysed by academics based on two key themes: design elements and mobile applications. The following subsection will discuss the findings related to these themes.

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Fig. 2. Focus Group Session

4.1 Design Elements of Smartphone

In the context of this study, the term "design elements" of smartphones refer to the visual and functional characteristics that contribute to the device's overall appearance, feel, and usability. Within a half-hour timeframe, participants generated ideas and sketched their concepts on paper provided by the researchers. Fig. 3 illustrates some examples of the design elements suggested by the participants.

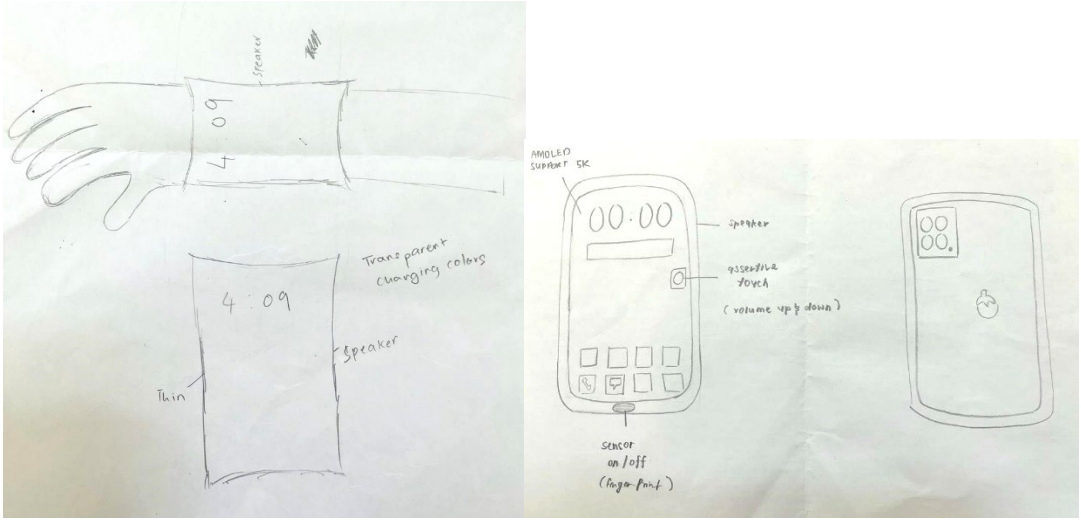

Fig. 3. Design elements drawing proposed by teens

For the design element theme, five (5) subcategories were identified, as presented in Table 1.

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Table 1. Smartphone Design Element's Themes

Theme	Design Element
Form Factor and Material	Thin size Rollable phone Titanium body shield Split cell 6000mAh battery Wrist smartphone design
Display Technology	Transparent changing colours AMOLED support 5K New gen in-display camera Second display at backside
Security and User Authentication	Sensor on/off using fingerprint In-display new gen ultrasonic scanner
Audio and Multimedia	Quad speaker Main camera 200MP Ultra-wide camera Built-in S-pen
Connectivity and Charging	MagSafe Qi-wireless (50W) External fan

Source: Authors

Table 1 above highlights the specific features or attributes of smartphone design that fall under each design element category.

i. Form Factor and Material: This theme includes elements related to the smartphone's tangible architecture and makeup. The device boasts features like a wrist-worn smartphone design, a slim form factor, a rollable phone, a titanium protective body shield, and a 6000 mAh dual-cell battery. These features prioritise the device's physical design, robustness, and ease of transportation.

ii. Display Technology: This theme addresses the technological aspects of the smartphone's screen. The device features dynamic colour-changing capabilities, supports AMOLED screens with resolutions up to 5K, incorporates superior in-display camera technology, and includes an extra rear display for improved functionality and notifications.

iii. Security and User Authentication: This theme focuses on elements designed to enhance security and user authentication. The device is equipped with a sophisticated fingerprint sensor that has an on/off function and an innovative in-display ultrasonic scanner, offering enhanced biometric security choices.

iv. Audio and Multimedia: This theme covers attributes related to audio capabilities and multimedia functions. The device is equipped with four speakers to deliver a captivating music experience, a main camera with an astounding resolution of 200 megapixels, an ultra-wide camera for recording wider perspectives, and an integrated S-pen for stylus input and creative tasks.

v. Connectivity and Charging: This theme highlights features related to networking capabilities and charging technology. The device incorporates MagSafe Qi-wireless charging technology, which provides a power output of 50W for rapid and convenient charging. Moreover, it is equipped with an external fan, likely designed to cool the device during intensive activities like gaming or video streaming.

The table classifies design features into distinct themes, highlighting various aspects of current smartphone design trends as perceived by teenagers. This structure facilitates the analysis and understanding of the characteristics and their implications.

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4.2 Proposed Smartphone Applications

The rapid growth of smartphones and ongoing technological advancements have fostered a conducive environment for the creation of innovative and impactful mobile applications that address the unique needs, preferences, and challenges faced by teenagers. Hence, it is imperative for this study to include smartphone applications as a focal point in participant discussions and suggestions. The results of the brainstorming session were recorded on paper and handed over to the researcher. Fig. 4 depicts the participants' ideas for smartphone applications that they consider to be crucial for smartphones, while Table 2 illustrates the categories of the themes.

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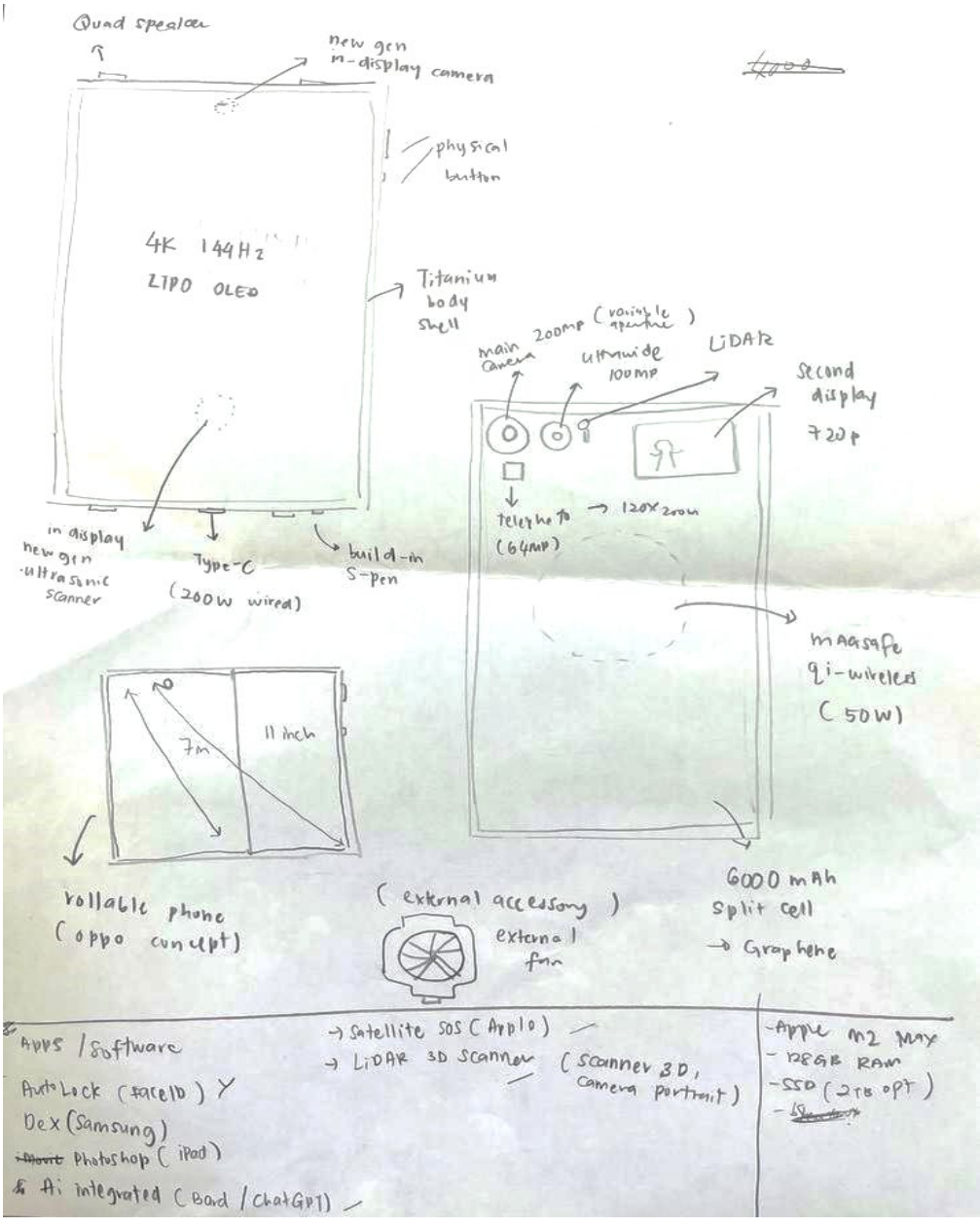

Fig. 4. Smartphone applications proposed by teens

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Table 2. Smartphone Application Themes

Theme	Proposed Smartphone Applications
Security and Authentication	Auto lock (FaceID) Dex (Samsung)
Productivity and Creativity Tools	Photoshop (Pad) Al integrated (Board/ChatGPT) Auto charge apps Auto translate program
Advanced Features and Technologies	Satellite SOS (Apple) LIDAR 3D Scanner (Scanner 3D. Camera Portrait) VR Camera Changing casing colour Al fusion style

Source: Authors

Table 2 above highlights the specific applications that fall under each application category.

i. Security and Authentication: This theme encompasses applications that prioritise the protection of the smartphone and the verification of user identity. It incorporates Auto Lock (FaceID) and Dex (Samsung), which provide sophisticated security functionalities, including facial recognition.

ii. Productivity and Creativity Tools: Productivity and Creativity Tools: This theme encompasses applications specifically developed to optimise efficiency and foster innovation on cellphones. The package includes Photoshop (iPad) for photo editing, AI integrated (Board/ChatGPT) for AI-powered assistance, auto-charge apps for battery charging, and an auto-translate program for language translation. The design of these tools aims to boost productivity and foster creativity.

iii. Advanced Features and Technologies: It highlights applications that leverage advanced features and technology to enhance the overall smartphone user experience. The smartphone is equipped with various cutting-edge features, including Satellite SOS (Apple) for emergency communication, a LiDAR 3D scanner for 3D scanning (Scanner 3D, Camera Portrait), a VR camera for creating virtual reality content, customisable casing colours, and an AI fusion style for creative effects. Collectively, these characteristics enhance the state-of-the-art performance of the smartphone.

The table categorises the recommended smartphone applications into specific categories, which aids in the comprehension of their impact on current smartphone application trends, particularly from the perspective of teenage users. It demonstrates the diverse range of technologies, features, and requirements that are influencing the smartphone industry and fostering innovation.

5. CONCLUSION

This study provides valuable insight into the intricate relationship between the design and usage of modern smartphones among teenagers in Malaysia. Through the implementation of organised sessions, useful insights were acquired that challenge traditional concepts of smartphone design and usage by analysing individuals' preferences and perspectives. The research highlights the necessity for smartphone manufacturers to go beyond generic, one-size-fits-all methods and instead embrace inclusive and user-centric design techniques. Moreover, our research uncovers a nuanced comprehension of teenagers' preferences, encompassing both aesthetic elements and practical attributes. This is a deviation from the

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traditional paradigms of smartphone design, where the focus on technology features occasionally overshadows the significance of the user experience.

Although our research offers essential insights, it also raises important issues and challenges that need to be addressed in future investigations. For instance, how can smartphone designers effectively manage the complexities of cultural diversity while maintaining a uniform and appealing product? How do the interplay of socioeconomic circumstances and cultural preferences shape individuals' smartphone usage? In order to address these challenges, it is essential to adopt a multidisciplinary strategy that integrates insights from psychology, sociology, design theory, and consumer behaviour studies. Furthermore, the research highlights the significance of ongoing communication and collaboration among scholars, designers, policymakers, and consumers to ensure that smartphone design effectively reflects the many needs and aspirations of society. Additionally, expanding the sample size in future studies could enhance the generalizability of the findings. The future success of smartphone designs hinges on our ability to fully accept diversity, foster inclusivity, and prioritise user well-being over profit-driven motives. As we adapt to the ever-evolving landscape of technology and society, it is crucial that we actively advocate for design approaches that empower and enhance the lives of all people, irrespective of their cultural heritage or socioeconomic status.

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7. CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest in the subject matter or materials discussed in this manuscript.

8. AUTHORS' CONTRIBUTIONS

Nur Hasni Nasrudin; conduct data collection, analysis and drafting articles. **Nahdatul Akma Ahmad;** conduct data collection, analysis and drafting articles. **Samsiah Ahmad**; conduct data collection, analysis and drafting articles. **Khairulliza Ahmad Salleh**; drafting article and camera ready. **Rosida Ahmad Junid**; drafting article and Language editing.

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