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ICWEP2022

E-B Environment - Behaviour Proceedings Journal

e-IPH e-International Publishing House Ltd., United Kingdom

Product Development of Smartphone Accessories for Solo Creators for Self-Monitoring During Video Recording for Social Media Content

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Abstract
This paper aims to explore the development of new products from the Industrial Design Approach as smartphone accessories that help solo content creators as a new career in the new media revolution. Recognizing the limitations of recording via smartphones today, with features such as slow-motion video and better quality missing from existing smartphone selfie (front) cameras, additional accessory product projects were developed as a solution for solo creators of video content on social media to record themselves they use the back of the smartphone camera. This product is developed from problem-solving and supported with features that can give users a better smartphone screen display while recording videos.

Keywords: Smartphone Accessories, Solo Creators, Self-Monitoring, Social Media Content

1.0 Introduction

Nowadays, almost all smartphone users use video recording to upload to social media sites, and even make it a new career activity, as a solo content creator in the new media revolution. Nowadays, smartphones are mobile phones that can do more than any other phone. It works like a computer but is a mobile device small enough to fit in a user's hand, including sending and receiving email, text, picture and multimedia messages, including activities for a career as a solo content creator. Several important technological advances allowed smartphone development to grow rapidly. The exponential scaling and miniaturization of MOSFETs to the sub-micron level during the 1999s-2000s made it possible to build portable smart devices such as smartphones. It enables the transition from analogue to faster digital wireless mobile networks. Other important enabling factors include lithium-ion batteries, an indispensable energy source that allows extended battery life and enables users to use smartphones as their primary daily device.

With the rapid development of technology over the past few years, smartphones have become a necessity for doing activities and a device for career support. Not only as a communication tool, but high-tech smartphones can also perform tasks in this digital and advanced world. With the capabilities and technology available, this study has studied the background through a literature review for the smartphone itself, the smartphone accessories used, and even the needs of the target users have also been studied to obtain a product solution that can be developed. Therefore, this study is focused on identifying existing accessories by exploring the activity needs of solo content creators while using additional accessories for smartphones in creating media content on the latest social media platforms. This study also explores the development of new products from the Industrial Design Approach as smartphone accessories that help solo content creators as a new career in the new media revolution.

2.0 Literature Review

The modern smartphone took 26 years to reach us in 2018, and it has changed a lot along the way. Fig.1 shows that smartphone sales to consumers worldwide increased dramatically from 2008 to 2018. In these ten years, various evolutions and factors have made smartphones a necessary product for everyone. It is an evolution that has taken the market by storm. According to Fig. 2, Malaysia's expansion of its smartphone market is to hold steady at around 1% annually in the coming years. In 2015, there were around 14.5 million smartphone users in the country. This number is projected to grow to more than 20 million in 2020. In 2015, about 45% of smartphone users in the country made purchases on their smartphones, and more than 10% of them used digital wallets. For 2021, the number of smartphone users in Malaysia was estimated to reach about 29 million. With a growing population, the number of smartphone users in Malaysia is expected to increase by another 1.74 million by 2025.

Starting with the history of the production of mobile phones towards the smartphone itself, we know that many additional accessories for the needs and demands of users in their daily routines started to be created & innovated. However, the main reason for the existence of the smartphone itself is to communicate, and smartphone accessories are also considered new products that must be designed to meet users' needs. Users' demand is among the factors in developing smartphone accessory products considered necessary for the latest activities and careers, even for a solo creator or video content designer on social media, which is the craze of young people today.
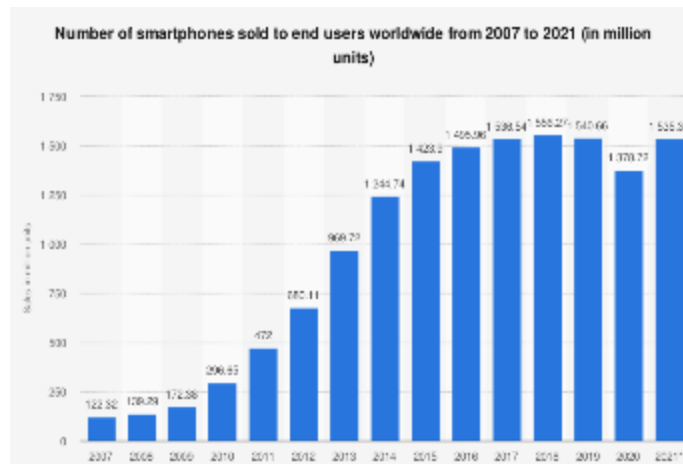

Fig. 1: Number of Smartphones sold to end users worldwide from 2007 to 2021 (in a million units)
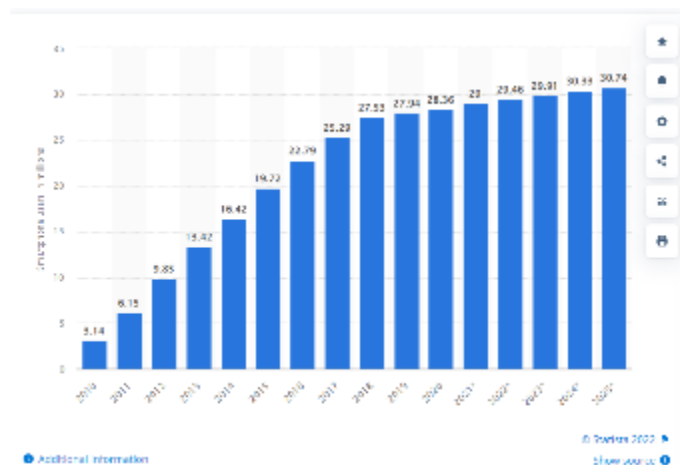*(Source: https://www.statista.com/topics/6615/smartphones-in-malaysia/#dossierKeyfigures)*

Fig. 2: Number of smartphone users in Malaysia from 2010 to 2020 and a forecast up to 2025 *(in millions)*
(Source: https://www.statista.com/statistics/494587/smartphone-users-in-malaysia/)

2.1 Smartphone Accessories

As Fig.3 shows that various accessories are sold for smartphones, including cases, memory cards, screen protectors, power charging cables, wireless power stations, USB On-The-Go adapters, MHL adapters, extra batteries, power banks, headphones, combined headphones -microphone, and Bluetooth-powered speakers that allow users to listen to media from their smartphones wirelessly. Now, with the design and customization of smartphone accessories, it is important to identify the owner and his activities and career. It shows the need for us to look at how smartphone accessories are developed.

Fig. 3: Smartphone Accessories

Smartphone accessories are design innovations with new product approaches for current and future market trends. Therefore, users must be aware of the activities and complete what is incomplete in their daily routine. These routines include career, social activities, teaching and learning, and various factors. The design of this accessory is considered a necessity. Moreover, the activity problem must be identified as an excellent start to designing new smartphone accessories according to its users. Apart from need or desire, this product must interact with the user when using it. Understand the initial research process of designing this new product, including determining user needs. With this, the product design of this solution can be produced in visual and 3D development.

2.2 Solo Creator as User Career Target for Lifestyles Product
YouTube is the largest online video platform in the world and the second most visited website. Also, the most used social platform, according to Kepios in datarepotal.com. Nothing comes close with 1.9 billion active logged-in users on the site every month. Therefore, it has a social impact in many areas. With some individual videos, the site has formed a live world event. As one of the world's most popular search engines, YouTube enables the distribution of inexpensive educational content, including course materials from educational institutions and "how-to" videos from individuals. Worldwide video access has driven innovation by enabling geographically distributed individuals to build, collaborate or crowdsource each other's work.
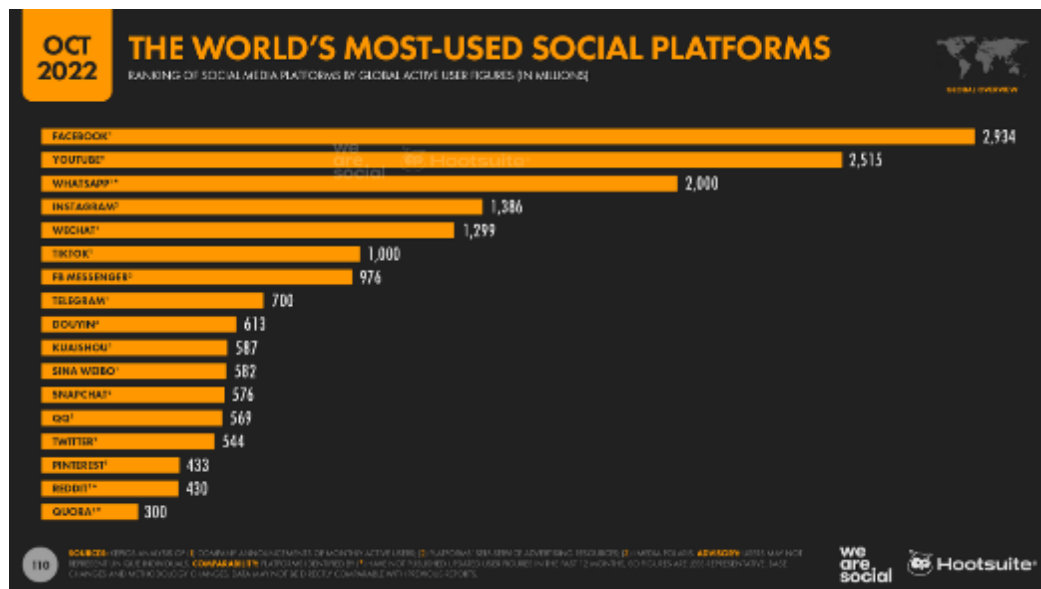

Fig. 4: The World's Most-Used Social Platforms
(Source: Kepios-https://datareportal.com/social-media-users)

With the existence of these social media platforms adapted to today's lifestyle, everyone wants to generate secondary income through the existing platform by using the camera in the smartphone. However, some do not want to invest in equipment or accessories to improve the use of smartphones as video recording devices, for example, to begin a career as a solo content creator or content designer for social media platforms. This career started to become popular with the use of smartphones as the primary device that can be taken anywhere, even with the presence of social media platforms and the latest technology. Everyone can do it.

2.3 Statement of Identified Problems
This literature review has been brainstormed with and identified the capabilities and capabilities of the smartphone itself. It visually examines activities using existing smartphones and accessories for solo content creators as target users. In this literature method, the problem statement has been identified. For the literature study on smartphones, to record activities using the camera on smartphones,

we need to know the capabilities of existing smartphones with the activities performed by the target user. Every smartphone today has at least two cameras, one on the front and one on the back. As we all know, the rear camera has better quality and has more features than the front camera. Some features, such as slow-motion video and specially coded high-definition quality not available in selfie (front) cameras, are a strong reason for developing this additional accessory product. It is complicated to record video using the rear camera while monitoring the recorded video feed, which is a particular problem for solo social media creators who only use smartphones as their recording devices.

For the existing smartphone accessory literature review, although there are some accessory designs in recording activities, there are still deficiencies in the purpose and design produced. Existing designs can only be used in landscape mode, not portrait mode. The existing design does not provide a suitable grip to hold the smartphone securely and requires various additional accessories to support its use. Mainly, the sold designs are more focused on professional videographers only, such as DSLR camera users, whose prices are high for those just starting as solo content creators on social media. Moreover, for social media users who download footage from their smartphones, most social media platforms use a 9:16 ratio where the smartphone placement is vertical. It shows the adjustable need for vertical and horizontal modes required for functional features for related accessories.

3.0 Methodology

The idea to develop a smartphone accessory product for solo creators to monitor themselves during video recording for social media content came from a research method done by looking at problem-solving. Developing these accessories will open new opportunities for smartphone users to explore new solutions and discover unexpected potential in their activities.

The research method combines traditional data collection exercises with an Industrial Design Approach aligned to the design process or product development process (PDP). Innovation, as a result, focuses on outputs, one of which is product innovation from creation. Meanwhile, the type of product innovation can be generalised to solve problems identified through the literature review of smartphones, target users, and the activities carried out, as previously stated. The overlap between the innovation function and the traditional New Product Development process is no coincidence. It has common roots in the corresponding fields, providing a basis for both approaches to be used and practised simultaneously. Using qualitative research as a methodology and five approaches such as literature review, visual study, SWOT analysis, 5W1H method, and offering a cultural map of activities focused on maintaining rich meaning while interpreting data. The interpretation of the obtained data is analysed and sought to design a design concept as a solution product.

3.1 Research Procedure and Design Process

This product study starts by gathering facts and reading sources through a literature review at the beginning of the design study. The following figure (Figure 5) conceptualises the framework for new accessory product development design based on the current study's dual-data-collection approach. Research Procedures and Design Process is formulated, and qualitative and mixed methods are used to develop design concepts from analysed problem solutions. Types of smartphone accessories, a career as a solo content creator, types of social media that are widely used, ready product studies, and content analysis are studied in the literature. All these topics and issues can be analysed through a planned methodology.
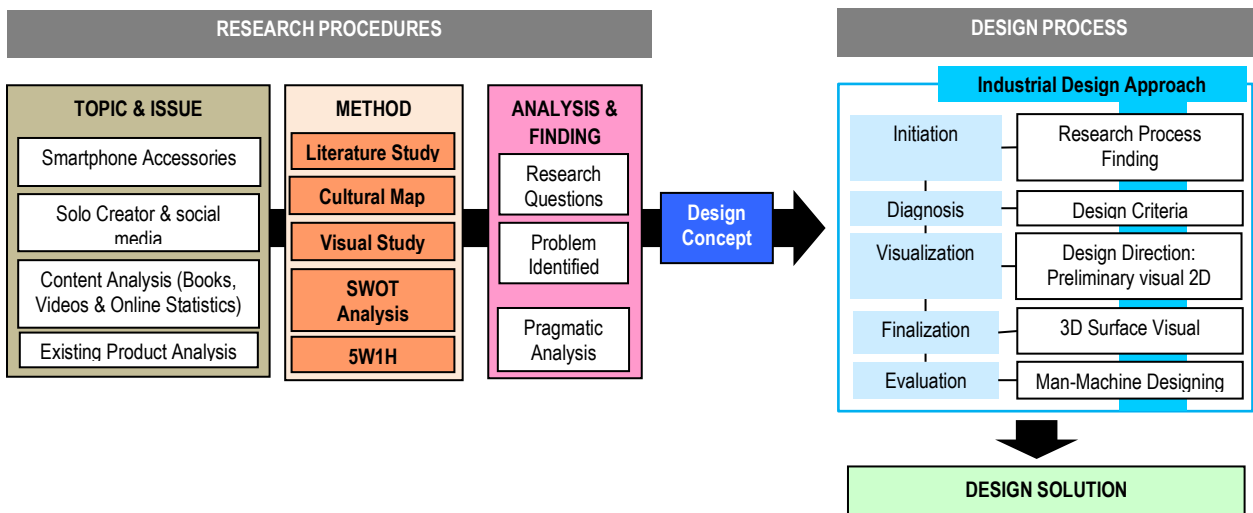

Fig. 5: Research Procedures and Design Process

In addition to the literature-based methodology, the culture map method is used in designing these accessory products to determine the accessories that are a priority in the design as a solution product. Culture map activities are used to explore innovation opportunities by shifting the focus on product needs and activities away from target users. Smartphone accessories and target users are categorised through cultural maps and searched for when and where the accessories will be used. With this, the justification and needs of the target user can be determined.

Through visual observation, videos and items designed for related studies have been used to identify problems. Online searches, books, and statistical references containing information about smartphone users as solo creators of social media video content were also identified. In identifying the content creators of media sites as users, the comparison of situations is compared with the 5W1H method. Problems are also identified based on the use of the smartphone itself with a SWOT analysis study. After identifying suitable careers and activities based on problem findings, the observation method is made directly to the solo creator of social media content based on the achievement objectives in designing.

The study's objectives and research questions are identified by placing research questions focused on solutions to existing problems. Problem statements are identified and seen as characteristics of improvements that need to be made and adapted to be included in the accessory product design process. Analysis of existing products is also done analytically to identify problems more clearly and can be proposed in terms of the requirements of the available features. This method uses pragmatic analysis to find the position of the view, placement characteristics, and distance of the mirror reflection (for the proposed design features) required in the proposed new product design. Through all these methods, design problems and objectives are identified in Design Concepts with propositional statements.

This Design Concept allows it to be translated into a Design Process for developing a new product based on an Industrial Design Approach through 5 design phases (Carl Liu, 2004), namely 1) Initiation, 2) Diagnosis, 3) Visualisation, 4) Finalization & 5) Evaluation. Through these 5 phases, the design process is designed visually in sketches and 3D. In this Design Process approach, Research Process Findings are taken from the Initiation phase, and Design Criteria are selected from the provisions obtained from the diagnosis phase, in addition to visualising the design in 2D Visual & 3D Surfaces Visual before revealing it early after going through the Evaluation process in the form of mock-up production from the Man-Machine Designing. The production of this mock-up is also analysed pragmatically to understand the practicality, and suitability of materials for the design concept, mechanisms, and essential features required. This process is entirely a Design Solution process for developing product smartphone accessories for solo creators for self-monitoring during video recording for social media content.

4.0 Findings

This study discovered the Design Process as a step to develop a product smartphone accessory specifically designed for solo creators to monitor themselves during video recording for social media content. Through the identified problems and the design objectives through the methodology created, the study procedure, and the stated design process, this product is designed with minimalistic criteria and an elegant and user-friendly design. It is explicitly aimed at solo video content creators for social media platforms. The design considerations of this accessory are safe to use, easy to use, light and affordable.

In the visualisation phase, illustrations are presented, starting with a thumb sketch, followed by an idea based on the design concept created. A design must be according to the design concept identified after the results are obtained in all methodological applications. The proposed idea can be illustrated in various designs that meet the needs of potential users. A sketch of the proposed ideas developed is sketched and even identified to make a decision based on the needs closest to the study's results. Manual rendering drawings (Fig. 6(a)) are presented after selecting ideas from concept to idea development in the initial sketch to the final development sketch.

(a)   (b)

Fig. 6. (a) Manual Rendering Sketching; (b) Mock-up (Final Design)

Through pragmatic testing of mock-ups made (Fig. 6 (b)) as demonstrative evidence and taking data about target users, the researcher examines every action related to the smartphone's recording activity by relating visceral, behavioural, and reflective to gaps in the form of design considerations.

This accessory product design is also produced in 3D development to ensure it can be virtually visualised. It is more convenient and quicker to see the detailed features of the design and how to use it visually in 3D (Fig. 7. (a). 3D visuals are also presented to show interesting colour variant suggestions and aesthetically, as shown in Fig. 7 (b), show it user-friendly for target users of various levels to choose their favourite colour. Indirectly, 3D visuals speed up the product image to produce these accessory products. Furthermore, the data from the 3D development is also used to generate final concept images and technical drawings and to produce prototypes for product evaluation in the physical model.

(a)　　　　　　　　　　　　　　　　　　　　　　　　　(b)

Fig. 7. (a) 3D Visual Detailing Product Usage; (b) 3D Visual Color Proposal

5.0 Discussion

Through the product development solution produced, in line with the product concept design of the solution, the development of this accessory product achieves its objective to be produced and its implications can be used by those who make their recordings and as solo creators of video content to upload. on social media sites. Named 'ViewFinder', it offers valuable features for landscape and portrait shooting modes using the smartphone's rear camera as a simple and user-friendly accessory concept. This accessory can be mounted with a universal holder as it has universal screw holes for all holder accessories and even existing tripods. It is also easy to operate, emphasizing self-monitoring for self-recording positions. It is visually depicted in 3D for the user mode as Figure 8 (a) and visually depicted in 3D in the packing view.

(a)　　　　　　　　　　　　　　　　　　　　　　　　　(b)

Fig. 8. (a) 3D Visual in User Mode; (b) 3D Visual in Packaging Display.

6.0 Conclusion & Recommendations

This study successfully developed a concept solution product as an additional essential accessory for solo content creators or designers to monitor self-recording to upload video content on social media. Smartphone accessories are now essential in problem-solving and even support the creation of better-quality work. As for the design objective, the designed accessories must be suitable for the activities and tools used mainly by the user. These accessories can be produced by smartphone accessory companies and commercialized and can become a new wearable culture. Solo video content creators can use these accessories as additional tools and support to produce homemade footage. This also provides an opportunity for other researchers in design or production fields to examine more detailed aspects. With features available for troubleshooting and design objectives, this product is very accurate to use and should be owned by all smartphone users. These accessory products can also be fashionable items for targeted consumers. Its features can be upgraded to meet future design needs and trends. Variant products can be introduced in the market to develop more functions and specific requests for the encouragement of its users. Mass production for a larger market should be introduced to meet the education system of the future and suit the revolution of smartphone technology & social media users.

Acknowledgement

Paper Contribution to Related Field of Study

As a project study, this paper successfully went through a research process for a product development concept for a problem solution. Indirectly, it provides design input in the field of Industrial Design. The physical development of this product is also able to provide an example of academic learning and teaching. This study also contributed to the victory of the product design competition participated in IIDEX2021 which successfully won the Gold Award along with the Best Video Special Award and MTE2022 by winning the Silver Award. The resulting product has also received intellectual property protection in terms of copyright.

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