



**CREATIONS de UiTM**  
INTERNATIONAL MEGA INNOVATION CARNIVAL **2023**  
*Fostering Innovation to Global Communities*

**LET'S CRAFT A BETTER WORLD TOMORROW!**

ePROCEEDING

20<sup>th</sup> MAY 2023

---

UNIVERSITI TEKNOLOGI MARA  
CAWANGAN SELANGOR, KAMPUS DENGKIL  
MALAYSIA

ORGANISED BY:



UNIVERSITI  
TEKNOLOGI  
MARA

Pusat  
Asasi



## Design and Development of Handle Packaging for Croffle with QR Code and Augmented Reality Technology

\*<sup>1</sup>Qurratu Huda Ahmad, <sup>1</sup>Mastura Omar, <sup>1</sup>Shalida Rosnan, <sup>2</sup>Andrialis Abdul Rahman, <sup>3</sup>Nur Aniza Mohd Lazim

<sup>1</sup> College of Creative Arts, Department of Printing Techology, Kompleks Alam Bina Universiti Teknologi MARA Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor, Malaysia

<sup>2</sup> College of Creative Arts, Department of CCA, Creative Photomedia, Kompleks Alam Bina Universiti Teknologi MARA Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor, Malaysia

<sup>3</sup> College of Creative Arts, Department of CCA, Creative Motion Design, Kompleks Alam Bina Universiti Teknologi MARA Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor, Malaysia

\*E-mail: hudaqurratu@gmail.com

### ABSTRACT

The packaging of food products plays an important role in attracting customer interest. There are many quality products that have been produced by Small and Medium Enterprises (SME) entrepreneurs, but fail to enter the foreign market. In era of Industrial Revolution 4.0, most packaging printing technology is more focused on the development and improvement of comfort for customers. Because, today most customers do not accept certain packaging, especially food packaging, which is food packaging in plastic containers, food is put in a plastic bag. So, it will easily roll in the plastic bag and can cause the condition of the food to be affected. Packaging comes out with the name handle packaging; it is designed with the objective to produce stable food packaging to maintain food quality and easy for customers to take anywhere. In addition, the material used is from 270 gsm art cards, which is easy to recycle and environmentally friendly. This packaging innovation renewal has been done as an additional feature to give a wide impact on a brand and also includes elements of Augmented Reality and QR codes, this is a current technology that allows customers to easily obtain information by simply scanning.

**Keywords:** Handle packaging; Augmented Reality (AR); QR code (QR)

### INTRODUCTION

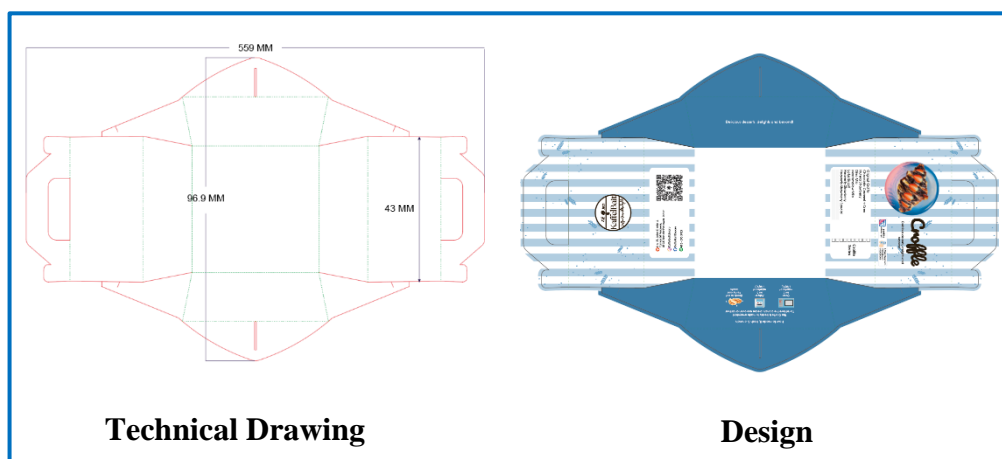
Referring to the Dictionary and Library, packaging is defined as a container that has a direct relationship with the product itself, it holds, protects, stores, and identifies the product in addition to facilitating the management process and commercializing the product. There are various types of packaging including handle packaging. Handle packaging, sometimes known as packaging summary is a process to protect and inform, but packaging can be used as an instrument to promote marketing offers as well as to increase sales. This packaging handle is usually made of paper that is not thin or thick according to the product's characteristics. In addition, good packaging helps to identify and differentiate the product from consumers. Packaging is used for easy shipping and safety purposes. In this paper, we examine innovation

in food packaging, to produce stable food packaging to maintain food quality and easy for customers to take anywhere and design packaging with an interesting and innovative concept integrated with Qr code and augmented reality for products food.

Innovation and evolution are essential for individuals, people, and nations to survive and progress. Innovation in food products aims to improve resource efficiency, eliminate waste and reduce environmental impact through better design and the use of alternative materials. In packaging design, innovation renewal is done to greatly impact a brand. Augmented Reality is one of the new and latest technologies more and more popular. Augmented Reality is now more widely used in the field of entertainment and is no exception also in the field of education [1]. Handle packaging that uses augmented reality and QR codes is an innovation that can increase creativity and improve branding. AR technology on packaging handles is an added value to apply fun elements and attract customers to approach new markets [1]. AR is a state between reality and the virtual world [7]. In addition, a quick response (QR) code is a two-dimensional barcode (see opposite) that can be read on a device such as a mobile device (camera phone) or laptop which, once accessed, will allow you to complete an action [6]. Therefore, the use of Augmented reality and QR codes in the field of entertainment or food can increase the innovation of customer attraction in developing a company more technologically. This study aims to design packaging with an interesting and innovative concept that is integrated with QR codes and Reality as the delivery of information and reading material can have a positive and effective effect on users, especially regular customers from KaffelBait.

## INNOVATION DEVELOPMENT

KaffelBait has no packaging for its products. In addition, products purchased by customers to take home only use plastic food containers and will be placed in plastic bags only. This causes the food to easily roll in the plastic bag. The development of innovation by creating a handle packaging design aims to protect the product from any damage or easily roll up, especially when you want to handle it to take it anywhere.



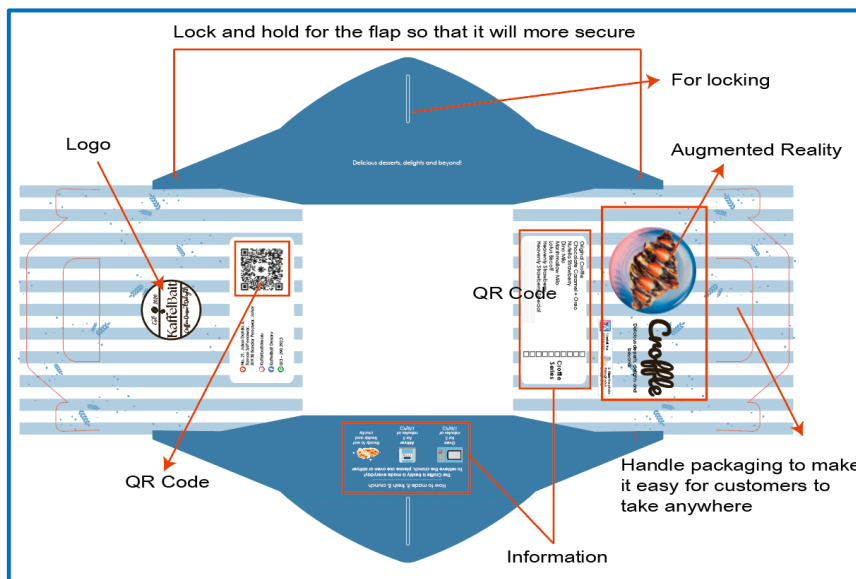
**Figure 1:** Handle Packaging Technical Drawing

Innovation development in handle packaging also has its Augmented Reality (AR), which enables digital information to be superimposed and integrated into our physical environment. Additional features with a combination of Augmented reality have been widely used using interesting rendering techniques to display 3D objects, animations, audio, and video by simply scanning the smartphone camera toward a specific image that has been

designed. AR is a tool that can help us transform our immediate surroundings into learning, work, and entertainment spaces as its novelty, as shown in figure 4. Figure 4 shows that this packaging contains a QR Code, so that customers can scan the qr code using a smartphone to deliver information quickly. The handle packaging has also used the benefits of social media, such as WhatsApp, Instagram location and so on for advertising, inquiry and commercials. To produce the handle packaging using material suitable for the product on this packaging is an Art card 270 gsm one side coated and the selection of this Art card is suitable because it can withstand durability when the item is inside the box. The result of the combination of Augmented reality and Qr code on the packaging handle is intended to facilitate the delivery of information and can be used as promotional material to further introduce a company. Handle packaging is used for commercial purposes, a marketing strategy to attract customers.



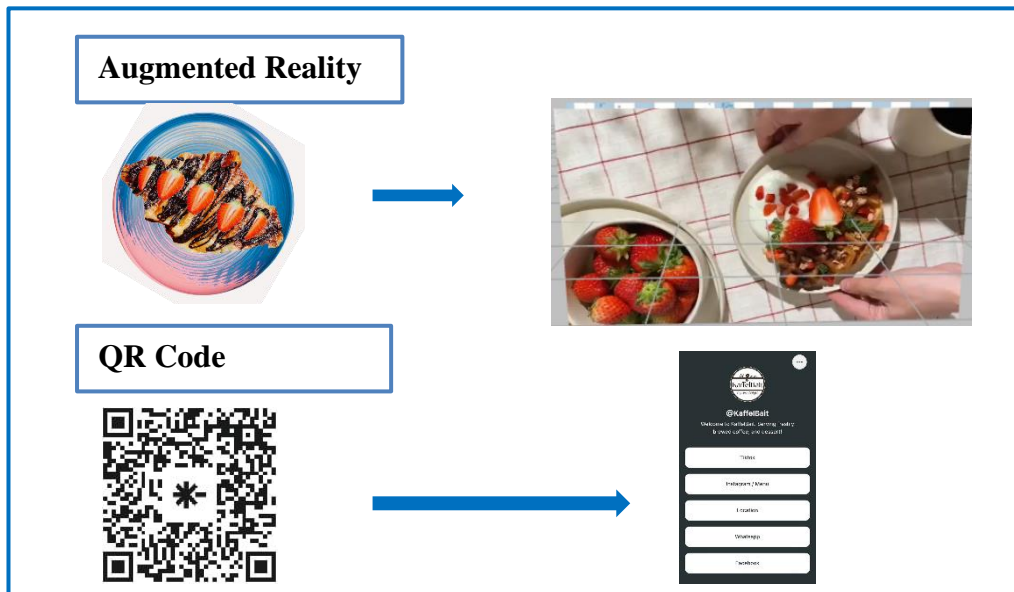
**Figure 2: Product Mock up**



**Figure 3: Handle packaging with labelling**



**Figure 4:** Handle Packaging Innovation



**Figure 5:** Handle Packaging Innovation with Augmented Reality and QR code

## COMMERCIAL POTENTIAL

Commercialization potential is moving an innovative technology or concept from the idea stage to the market. In other words, technology commercialization is usually defined as creating a product suitable for a specific market at a reasonable price that meets market demand. Nevertheless, the commercialization potential in the food field is important because it is a market where there are many opportunities for companies to provide innovative products and services such as designing new packaging handles with the addition of advanced technology such as augmented reality and QR codes. This innovation can develop and market handle packaging specifically designed for use in the community by scanning a smartphone.

## CONCLUSION

In conclusion, the use of handle packaging on this food is very important because it serves to preserve food quality and minimize food waste. The right packaging handle will protect the food product from any physical damage or easy rolling when you want to handle it to take it anywhere. The production of handle packaging has also been innovated by combining augmented reality and QR codes so that the public or customers can find out more information

about the KaffelBait company. When this packaging handle is fully used, then this means that the objective has been achieved to meet the needs of KaffelBait.

## ACKNOWLEDGEMENT

Firstly, I want thankful to Allah SWT, because he us a whole of planning and able me to completed this project. Also thankful to the other author members Ts. Mastura Omar, Andrialis Abdul Rahman, and Ts. Nur Aniza Bt Mohd Lazim together completed this work. This researchis also part of the work supported by Universiti Teknologi MARA (UiTM) Puncak Alam Campus.

## REFERENCES

- [1] Aziz, S. A., Abd Rahman, K., & Othman, H. (2020). Analisis Rekabentuk Aplikasi “Augmented Reality” bagi pembelajaran Komponen Sistem Unit Komputer. In *Proceeding of 6th International Conference on Information Technology & Society (ICITS)*.
- [2] Abas, H., & Badioze Zaman, H. (2011). Visual learning through augmented reality storybook for remedial student. In *Visual Informatics: Sustaining Research and Innovations: Second International Visual Informatics Conference, IVIC 2011, Selangor, Malaysia, November 9-11, 2011, Proceedings, Part II 2* (pp. 157-167). Springer Berlin Heidelberg.
- [3] Han, J.H. (2014). A review of food packaging technologies and innovations. *Innovations in food packaging*, 3-12
- [4] Phyu, T. M., Chaoruangrit, A., & Pasuwa, P. (2019). Food safety assessment of food handlers in the canteens of Khon Kaen University. *Asia-Pacific Journal Of Science and Technology*, 24(2).
- [5] Raheem, D. (2013). Application of plastics and paper as food packaging materials-An overview. *Emirates Journal of Food and Agriculture*, 177-188.
- [6] Ramsden, A. (2008). The use of QR codes in Education: A getting started guide for academics. *Accesible desde* < <http://zabdulkhaaliqcapstone.yolasite.com/resources/ge>
- [7] Ramli, R., Nordin, F., Nordin, A., Ahmad Sokri, N. E., & Sokri, A. (2018). TEKNOLOGI REALITI LUASAN: SATU KAJIAN LEPAS Augmented Reality Technology: A Literature Review. *no. May*.
- [8] Tiwari, S. (2016, December). An introduction to QR code technology. In *2016 international conference in information technology (ICIT)* (pp. 39-44). IEEE
- [9] Waheed, S., Khan, M. M., & Ahmad, N. (2018). Products packaging and consumer purchase intentions. *Market Forces*, 13(2).