

EMPLOYING WEARABLE TECHNOLOGY IN DESIGNING DIGITAL BAGS TO ACHIEVE SAFETY REQUIREMENTS FOR PILGRIMS

Prof. Nermeen Abdel Basset Mohamed

Professor of Fashion Design, College of Art and Design, King Abdulaziz University, Saudi Arabia, naamohamad@kau.edu.sa

Fatima Ahmed Al-Shamrani

PhD student, Fashion Design, College of Art and Design, King Abdulaziz University, Saudi Arabia, falshamrani0054@stu.kau.edu.sa

Abstract:

Mecca occupies a significant religious position even before the advent of Islam, as it hosts the Kaaba inside the Holy Mosque. Mecca has long been a destination for pilgrims to perform the Hajj (Al-Matrafi, 2021). Hajj is a religious obligation that is obligatory once in a lifetime for every sane adult Muslim who can afford it, while Umrah is an act of worship related to Hajj, and it is often described as the lesser Hajj. However, both Hajj and Umrah must be performed at the Holy Mosque (Muneeza & Mustapha, 2021). It is one of the largest annual religious gatherings in the world which takes place from the eighth to the twelfth of the month of Dhul-Hijjah, of the Islamic calendar. On the other hand, Umrah can be performed at any time of the year

Umrah is one of the factors of real and comprehensive economic development for the Kingdom of Saudi Arabia, as it has become one of the most important drives of the comprehensive flow of private financial resources. Among the benefits of Umrah is the engagement with global cultures, as well as the active participation in stimulating economic activity and being one of the axes of the Kingdom's Vision 2030, which aims at enabling about (30) million Umrah pilgrims by 2030. Besides, according to the statistical indicators of the Umrah sector in the Kingdom, Madinah is visited annually by (11) million visitors from inside and outside the Kingdom (Seasonal Bulletin of the Chamber of Commerce, Madinah, 1439 AH) (Al-Harbi, 2021).

The Hajj includes many rituals that must be performed in various places in a certain chronological order. It begins with the intention for Hajj and then wearing Ihram clothing (Shafi et al, 2016), and ends with the farewell circumambulation around the Kaaba (Tawaf al-wada'a) and the departure from Mecca. During this sacred journey (Khan & Shambour, 2021) and considering the fact that Hajj is the most crowded gathering of Muslims, and since it has unique characteristics with regard to the people who attend it (i.e., Hajj pilgrims), the place where they meet, and the rituals they perform, these characteristics pose a set of challenges for officials regarding controlling the crowd and identifying pilgrims' identities. What makes the situation more difficult is that pilgrims wear similar clothing and perform identical rituals collectively (Muneeza & Mustapha, 2021), so efforts are exerted in order to achieve the directions of the Kingdom's vision 2030, in line with the "Guests of Rahman (pilgrims)" program, which is one of the Kingdom programs to make a qualitative shift in the service of pilgrims, aiming to enrich the religious and cultural experience of Hajj and Umrah pilgrims (Mlibari, 2021).

As indicated in the study done by Khan & Shambour (2021), many governments, companies and individuals provide numerous services and facilities to overcome the difficulties that pilgrims may face. And as recommended by Al-Sharif (2021), there is a need to take advantage of modern technology to facilitate the pilgrims during the various rituals, especially when losing their official documents. Consequently, the two researchers were keen to review the studies and research related to the current study, to build bases aimed at improving the experience of the pilgrims on their spiritual journey. Therefore, and in the interest of developing the Hajj and Umrah industry led by the government of HH the Custodian of the Two Holy Mosques towards serving the pilgrims and proceeding from the Kingdom's vision 2030 to prepare to serve the pilgrims, and the national transformation initiatives 2020 (Al-Khelawi, 2017), the two researchers conducted this study.

Hence the desire of the two researchers to serve the Hajj and Umrah pilgrims through designing an artistic product (smart bag) that performs a utilitarian function by making use of the science of ergonomics. Because there is a shortage of smart bags for Hajj and Umrah pilgrims while performing the rituals, and since most of the bags available in the market do not focus on the needs of Hajj and Umrah pilgrims, the two researchers see the significance of studying the consideration of the safety factor during the design of Hajj and Umrah bags. On the other hand, the results of the study done by Shambour & Khan (2021) showed a relative weakness in research studies and quotes related to the Two Holy Mosques and the Holy Sites compared to other branches of science. Accordingly, the study problem can be identified in the following questions: What are the statistically significant differences between the patterns of smart bags designed to achieve safety, according to the opinions of specialists? What are the statistically significant differences between the patterns of smart bags designed to

achieve safety, according to the opinions of Hajj and Umrah pilgrims?

Objectives of the study: Design of digital bags that comply with the safety requirements of Hajj and Umrah pilgrims. Determination of the differences between specialists in achieving smart bag patterns designed for safety. Determination of the differences between Hajj and Umrah pilgrims in accepting the **proposed designs** for smart bags.

Importance of the study: Strengthening interest in Hajj and Umrah pilgrims, in line with the vision of the Kingdom of Saudi Arabia 2030 by providing the finest services to Hajj pilgrims, from their arrival in the Kingdom until their departure to their country after God blessed them to perform their rituals with ease and tranquility.

Design of the study: The two researchers adopted the pragmatic philosophy for its relevance to the research objectives, and the mixed research methodology, in order to reach a deeper understanding of the study population. This information will help the two researchers in formulating questions related to the research tools. In this methodology, the two researchers used the simultaneous embed design to reach a better understanding of the research questions, objectives, and theories that guided the course of the study. The methods of this study include the data collection tools used by the researchers, and methods of data analysis and processing, in addition to the methods of drawing conclusions that the researchers suggest using in the study.

Population and sample of the study: Population of the study is composed of Hajj and Umrah pilgrims for the Hajj season (1442 AH). It was determined based on the study's objective, which is to design bags that comply with the safety requirements of Hajj and Umrah pilgrims. The sample in the current study consists of an intentional sample of (301) Hajj and Umrah pilgrims. The sample size was chosen according to the statistical equation to calculate the sample size with a confidence interval of 5.6% and a confidence level of 95%. The electronic questionnaire was distributed through campaigns for the services of domestic pilgrims.

Results: Based on the study and analysis conducted, the most important results of the study can be summarized as follows: The results showed that there are differences between the six proposed designs for the smart bags in safety, according to the opinions of specialists, as the value of (D) was (33.538), which is a statistically significant value at the level of (0.01). So, we find that the "first" design was the best designs in achieving safety. Thus, the fifth hypothesis is true. The results showed that there were statistically significant differences between the six proposed designs for the smart bags at a significance level of (0.01). So, we find that the "first" design was the best design, according to the opinions of Hajj and Umrah pilgrims. Thus, the eighth hypothesis is true.

Keywords :

Safety, Pilgrims Bags, Wearable Technology

References :

1. Ahmed, Hassouna Hassan. (2021). Digital environment applications (Paint 3D) as a source for fashion design inspired by the Egyptian heritage. *Journal of Architecture, Arts and Humanities*, 6(29), 308-334.
2. Ali, M. T., Islam, N. S., Rakib, M. W., Al Ahmed, R., & Kaicher, M. H. (2021). Designing of A Handbag for Women Safety. In 2021 2nd International Conference on Robotics, Electrical and Signal Processing Techniques (ICREST) (pp. 274-277). IEEE.
3. Chauhan, A. S., & Nigam, D. (2021). Smart Bag based on RFID and Internet of Things. *AIJR Proceedings*, 102-105.
4. Ibrahim, Rehab and Abdel Khaleq, May. (2021). Employing some hand embroidery techniques to produce handbags with a national character, *Journal of Architecture, Arts and Humanities*, Volume VI, Issue 28.
5. Ibrahim, A., and Al-Saud, I. a. (2021). The ergonomics of the medical mask design and its impact on comfort, use and safety. *Journal of Research in Specific Education*, 7(32), 1029–1100.
6. Kim, G. M., Lee, S. H., Lee, D. Y., Hong, J. H., Kim, J. S., & Yu, J. H. (2021). The Comparison Between Before and After Cross Bag Walking Intervention on Gait Parameter and Center of Pressure. *Annals of the Romanian Society for Cell Biology*, 911-917.
7. Malibari, Weddings (2021) Guests of the Most Merciful in the King Abdullah University Library the Honor of Knowledge and the Reward of Service, The Twentieth Scientific Forum for Hajj and Umrah Research and Visitation for the year 1442, the custodian of the two holy mosques institute for hajj and umrah research, umm al-Qura university.
8. Al-Matrafi, Haitham (2021) Towards a Virtual Reality Model to Improve the Hajj Experience as an Application to the Holy Sites, Twentieth Scientific Forum for Hajj and Umrah Research and Visitation for the year 1442, the custodian of the two holy mosques institute for hajj and umrah research, umm al-Qura university.

Citation: Nermin Mohamed & Fatma Al-Shamrani (2023), Employing Wearable Technology in Designing Digital Bags to Fulfil Safety Requirements of Pilgrims, International Design Journal, Vol. 13 No. 4, (July 2023) pp 43-53

9. Muneeza, A., & Mustapha, Z. (2021). COVID-19: its impact in Hajj and Umrah and a future direction. Journal of Islamic Accounting and Business Research.
10. Procedures for domestic pilgrims. (2021). The Ministry of Hajj and Umrah on the website <https://haj.gov.sa> Access date 8/5/2021
11. Shambour, M. K., & Gutub, A. (2021). Progress of IoT Research Technologies and Applications Serving Hajj and Umrah. Arabian Journal for Science and Engineering, 1-21.
12. Shukla, R., Jadhav, R., & Veerya, M. (2021). Smart Bag Pack IRJET Journal. International Research Journal of Engineering and Technology (IRJET), Volume: 08 Issue: 05.
13. "What is Safety and Security?", www.coursera.org, accessed 12-6-2018. Edited.

Paper History:

Paper received 2nd March 2023, Accepted 6th May 2023, and should appear online on July 1, 2023.