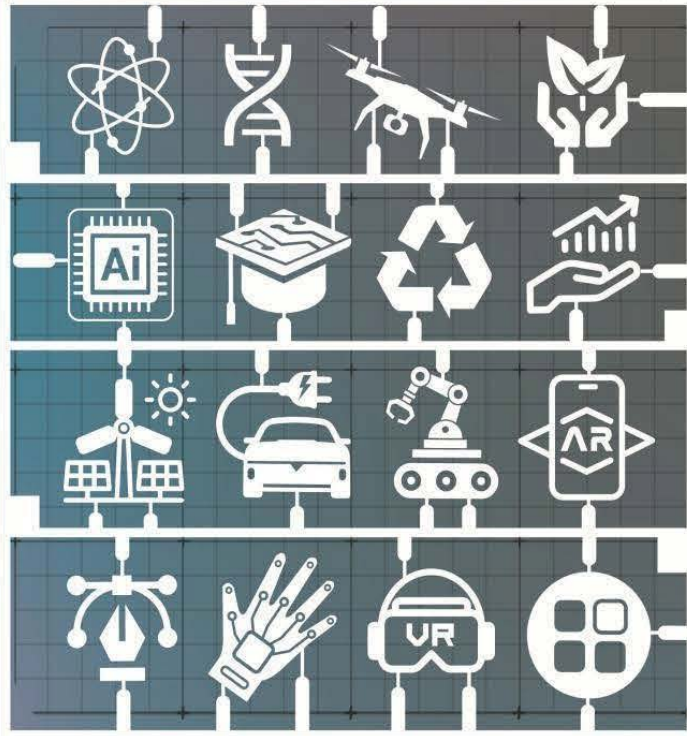




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**THE 15TH INTERNATIONAL
INVENTION, INNOVATION &
DESIGN COMPETITION 2026**

E-BOOK OF

EXTENDED ABSTRACT

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SARONG SALIN MINI: A COMPACT INNOVATION FOR PORTABLE AND MODEST CHANGING SOLUTIONS: ENHANCING PRIVACY, MOBILITY, AND COMFORT FOR OUTDOOR ACTIVITIES

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ABSTRACT

Privacy and modesty in outdoor activities have been an important concern especially among the Muslim women and those who need to have discrete changing solutions. Current portable changing garments or Sarong Salin is large, inconvenient, and unsuitable for frequent moves. In this paper, a compact and portable innovation inspired by the previous Sarong Salin, was designed to provide a practical, lightweight, and modest changing solution. The paper discusses the size, design, usability and functionality in improving user comfort and mobility. Qualitative user centred evaluation was undertaken among the outdoor users with the focus being on portability, ease of use, and perceived privacy. Results show that the Sarong Salin Mini is much more convenient, users were more confident and the product also has its modesty standards. This innovation has high potential to be expanded in wider application in travel, sports, and the use of the innovation in emergency use situations.

Keywords: portable changing solution, Sarong Salin, modesty, sarong innovation, outdoor activities, wearable design.

1. INTRODUCTION

Maintaining privacy when changing clothing in public places is a common issue, especially for Muslim women who adhere to the idea of modesty in accordance with their cultural and religious beliefs. Sports and other activities like hiking, camping, beach outings, and sports often need a change of clothes in an environment that does not have adequate private facilities. The traditional solutions, e.g., large changing robes or portable tents, have some limitations. These are bulkiness, transportation inconvenience, and inconvenience during quick changeover. With mobility acquiring an ever-growing significance in contemporary living, the necessity of compact and efficient solutions that can support modesty and utility at the same time is increasing. Sarong Salin Mini is an innovative solution to these issues. This product is inspired by the versatility of the Sarong Salin, which is inspired by the traditional sarong, and is redesigned as a compact, lightweight, and easy-to-carry changing garment. The purpose of this paper is to analyse how the Sarong Salin Mini can improve privacy, mobility, and comfort for the user in outdoor environments.

2. LITERATURE REVIEW

2.1 Modesty and Privacy in Outdoor Contexts

In many cultures, modesty in clothing is highly valued, especially in Muslim societies. According to Ahmad (2019), the lack of appropriate changing facilities often discourages participation in outdoor recreational activities among Muslim women. Privacy is not just a physical need, but it also helps with psychological comfort and confidence.

2.2 Portable Changing Solutions

To address these problems, solutions such as portable tents and changing ponchos have been developed. Nevertheless, studies suggest that these solutions are often cumbersome and not suitable to carry them around (Rahman & Lee, 2021). Even though there are numerous wearable solutions that are not compact in size and appearance, they are preferred due to their flexibility.

2.3 Wearable Innovation and Mobility

Portability, multifunctionality, and user-centred design are current themes in wearable device design (Norman, 2013). Users are more inclined to use small items that combine useful functionality with cultural relevance.

3. METHODOLOGY

3.1 Research Design

The mixed method approach adopted in the current study is a quantitative and qualitative combination. Although the qualitative component focused on the experience, attitude, and cultural acceptability of the Sarong Salin Mini, the quantitative component had concentrated on the usability assessment.

3.2 Product Development

Sarong Salin Mini prototype was designed to be a small and compact changing device. It can be folded and open (pouch size) into a mini size and this makes it easy to carry around during outdoor activities. The product is lightweight in nature (less than 640 grams) and has a customizable fastening system to guarantee a secure usage. It is also designed using opaque, breathable and quick-dry, fabric to make it more comfortable, private and practical.

3.3 Participants

Purposive sampling was used to recruit 30 participants aged 18-40. These participants were mainly composed of Muslim women who actively participate in outdoor activities which would ensure the relevance of the study to the target user group.

3.4 Data Collection Methods

Three primary data collection methods were used to collect data. To begin with, usability tests were performed to determine the duration required to complete the tasks during the changing process and measure the ease of use by using a Likert scale. Second, a survey questionnaire was issued to evaluate the perceptions of privacy, comfort, portability, and confidence when using the product. Third, semi-structured interviews were conducted to get more information on user experiences, cultural acceptability, and product-enhancement recommendations.

3.5 Data Analysis

Descriptive statistics and paired t-tests were used to analyse quantitative information and identify trends and differences in usability performance. Meanwhile, thematic analysis was used to analyse qualitative data collected during interviews, to identify key themes and insights related to user experience and acceptance.

4. FINDINGS

4.1 Usability Performance

The participants showed a substantial decrease in the time of changing as opposed to traditional ways. The ease-of-use ratings averaged 4.6/5, which means that ease of use is high.

4.2 Portability

More than 90% of the respondents rated the product as highly portable, with focus on the small size and lightweight nature of the product.

4.3 Privacy and Confidence

The participants indicated a statistically significant improvement in perceived privacy and confidence level. Many reported less fears in changing in semi-public places.

5. CONCLUSION

Sarong Salin Mini is a viable and novel solution to the problem of keeping privacy when engaging in outdoor activities. Its size, lightness and ease of use increase the mobility of the product and facilitates modesty and comfort. This work indicates that culturally competent wearable innovations can greatly enhance the user experience and engagement in outdoor activities. Future studies can be aimed at the improvement of the materials, the possibility of mass production, and the possibility of wider acceptance by the market of different demographics.

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