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E-PROCEEDINGS

INTERNATIONAL TINKER INNOVATION & ENTREPRENEURSHIP CHALLENGE (i-TIEC 2025)

"Fostering a Culture of Innovation and Entrepreneurial Excellence"



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23 January 2025
PTDI, UiTM Cawangan Johor
Kampus Pasir Gudang

ORGANIZED BY:

Electrical Engineering Studies, College of Engineering
Universiti Teknologi MARA (UiTM) Cawangan Johor
Kampus Pasir Gudang

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PREFACE

It is with great pleasure that we present the e-proceedings of International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), which compiles the extended abstracts submitted to the International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), held on 23 January 2025 at **PTDI, Universiti Teknologi MARA (UiTM) Cawangan Johor, Kampus Pasir Gudang**. This publication serves as a valuable resource, showcasing the intellectual contributions on the invention and innovation among students, academics, researchers, and professionals.

The International Tinker Innovation & Entrepreneurship Challenge (i-TIEC 2025), organized under the theme "Fostering a Culture of Innovation and Entrepreneurial Excellence," is designed to inspire participants at various academic levels, from secondary students to higher education students and professionals. The competition emphasizes both innovation and entrepreneurship, encouraging the development of product prototypes that address real-world problems and have clear commercialization potential. By focusing on technological and social innovations, i-TIEC 2025 highlights the importance of turning creative ideas into viable, market-ready solutions that can benefit users and society. The extended abstracts in this e-proceedings book showcase the diverse perspectives and depth of research presented during the event, reflecting the strong entrepreneurial element at its core.

We extend our sincere gratitude to the contributors for their dedication in sharing their innovation and the organizing committee for their hard work in ensuring the success of the event and this publication. We also appreciate the support of our collaborators; Mass Rapid Transit Corporation Sdn. Bhd. (MRT Corp), Universitas Labuhanbatu, Indonesia (ULB), Universitas Riau Kepulauan, Indonesia (UNRIKA) and IEEE Young Professionals Malaysia, whose contributions have been instrumental in making this event and publication possible.

We hope that this e-proceedings book will serve as a valuable reference for researchers, educators, and practitioners, inspiring further studies and collaborations in both innovation and entrepreneurship. May the knowledge shared here continue to spark new ideas and market-ready solutions, advancing our collective expertise and fostering the growth of entrepreneurial ventures.

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A-SS020 THE IDEATION OF MODEBORO UPCYCLING OUTFIT ON BORO SASHIKO TECHNIQUE FOR ECO-FRIENDLY PRODUCTION

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ABSTRACT

Societies around the globe have been consuming more clothes over the last decades and fast fashion has taken center stage to fulfil the rising demand which eventually contributes to the environmental impact of clothing waste. The purpose of this project is to utilize the ideation of Boro Sashiko technique that emphasizes upcycling, repair, and reuse in modular design exploration concept to further support sustainability by creating versatile garments that can be customized, repaired, and repurposed, reducing the need to produce new items constantly. The project also tackles commercialization potential through usability tests to obtain user validation while determining market acceptance. MODEBoro features the emergence of “Lazy Wear” as a form of easy making-up process and serves as a blueprint for future ready-to-wear collections. Ultimately, MODEBoro highlights the prospective for Boro Sashiko and modularity to shape the future of sustainable fashion, offering a pathway toward a more environmentally conscious, enhanced well-being and culturally enriched industry.

Keywords: Boro Sashiko, Eco-friendly Production, Modularity, Resort Wear, Upcycling.

1. Product Description

The MODEBoro is a progressive clothing line that merges the Japanese Boro Sashiko technique and modular design principle. Crafted from post-consumer garments (PCG) sourced from Life Line Clothing Malaysia under Kloth Cares supervision. MODEBoro features two complementary designs that work together, enhancing each other for a cohesive and stylish look Figure 4 & 5. The MODEBoro is equipped with a detachable component as an adaptive mechanism using fastening (jacket zipper) that provides a customizable fit, allowing for easy adjustments to suit different body types and personal style preferences. The reversible feature is included to highlight the fancy lining. The epaulette part provides the function of decorative detail and sleeve length adjustment. The belt and customized pocket are included that can be transformed into various fashion accessories. MODEBoro is the perfect blend of function, heritage, and fashion for numerous occasions. The colour coordination in the MODEBoro collection is vibrant, expressing emotions and enhancing visual appeal. This clothing line is ideal for fashion-forward, eco-conscious individuals. Durability is ensured through intricate stitching, while the easy-to-maintain fabric minimizes washing and extends the product's life, fostering a more sustainable lifestyle.

2. Method Flow Chart and Making-up Process

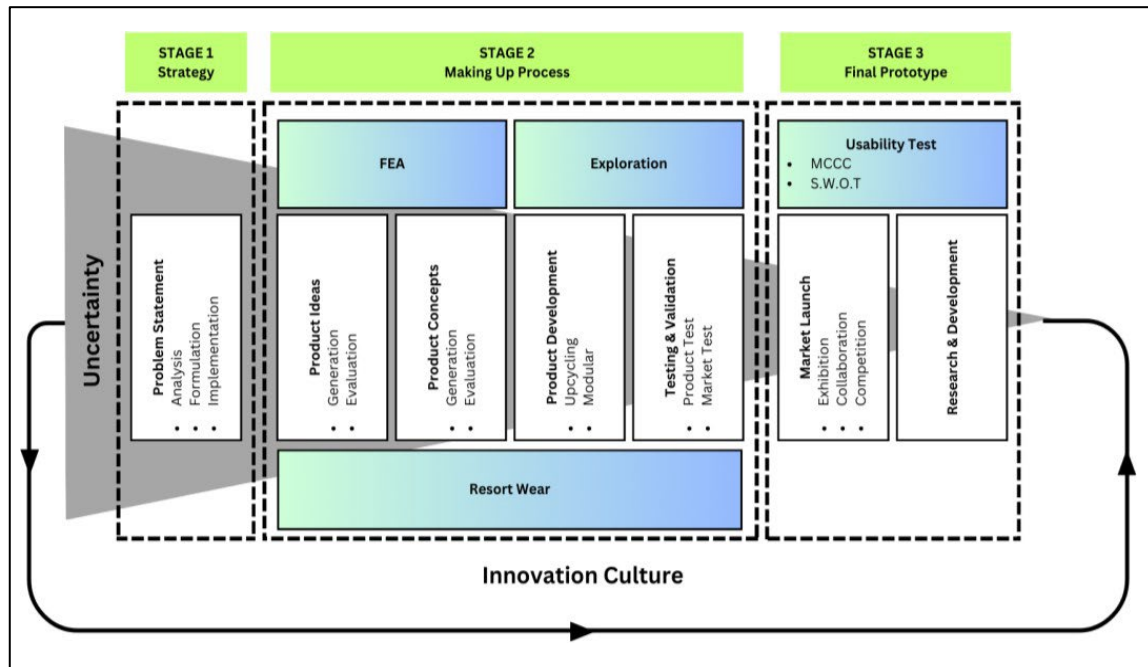


Figure 1. MODEBoro Interrelation Formulation of Design Process for The Fashion Industry Flow Chart.

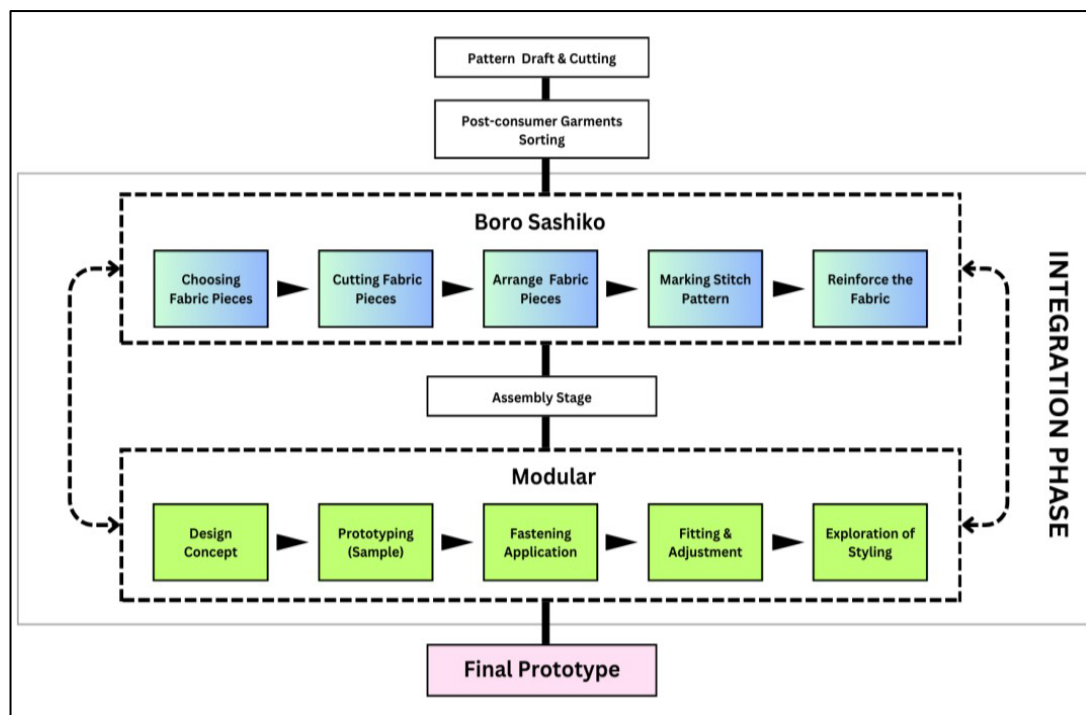


Figure 2. MODEBoro Product Development Process.



Figure 3. MODEBoro Concept Board of Design Direction.



Figure 4. MODEBoro Design 1 Making-up Process & Exploration of Styling.



Figure 5. MODEBoro Design 2 Making-up Process & Exploration of Styling.

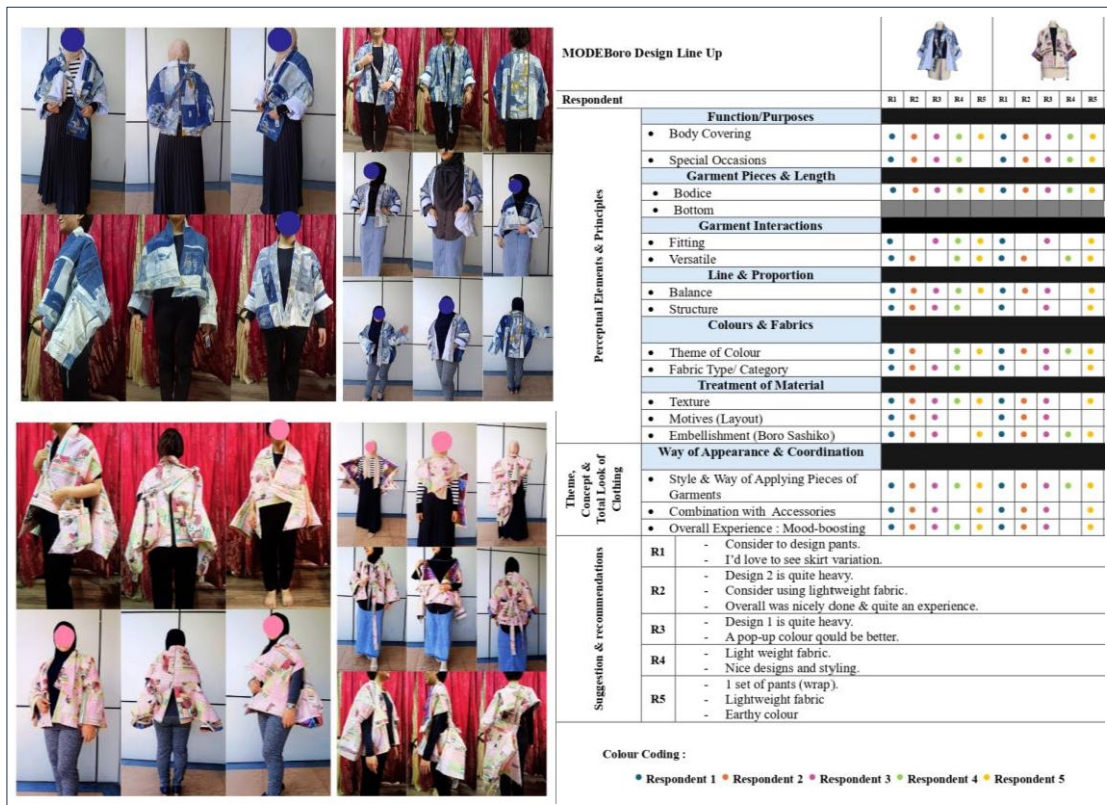


Figure 6. MODEBoro Usability Test on Versatility of The Wearer Styling Appearances.

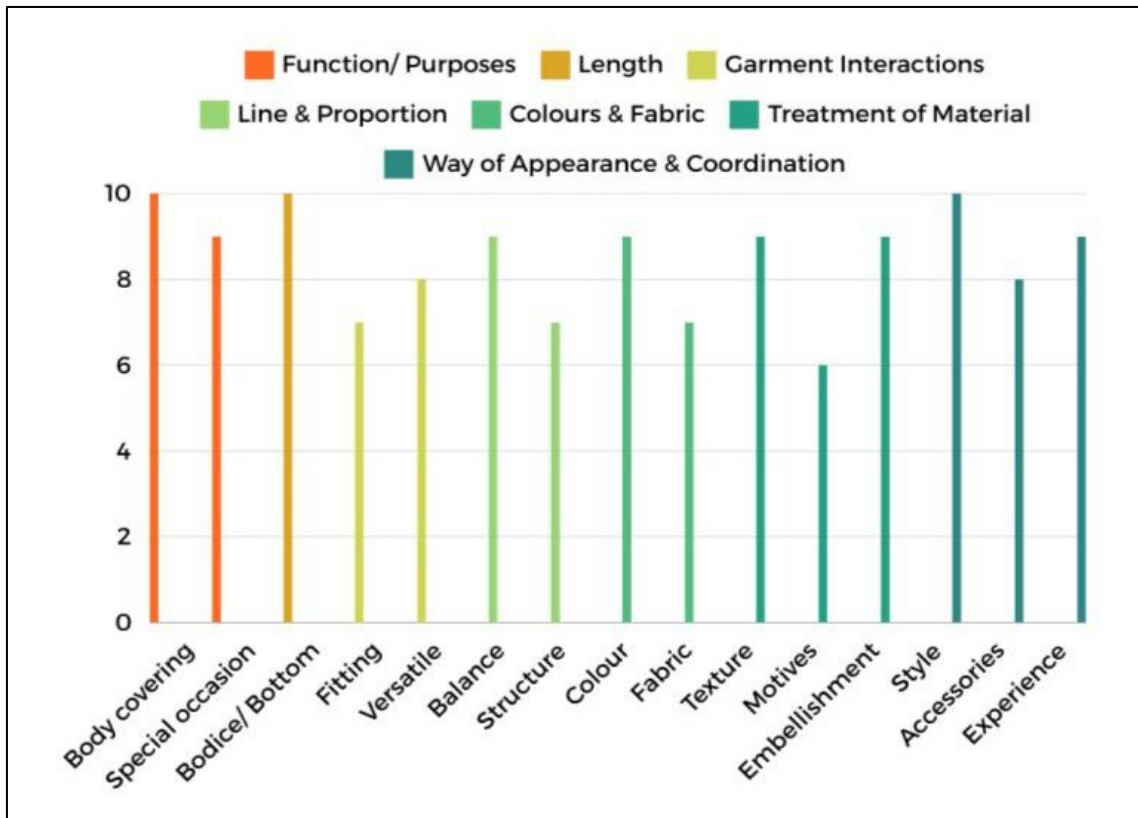


Figure 7. Key Findings of Usability Test Rated by Participants.

3. Novelty and Uniqueness

A novel concept of “Lazy Wear” has emerged within the fashion industry as the rigor of finding in this project. The researcher’s interpretation of enhanced modularity in styling introduces a new way of thinking about garments and opens paths for creativity and customization. The core idea behind “Lazy Wear” is to enhance the making-up process of modular outfits (SDG9) that cater to every individual. MODEBOro enables individuals to modify their appearance using simple adjustments like repositioning elements such as sleeves, pockets, or accessories rather than requiring an entirely new outfit for different occasions. This concept challenges traditional notions of fashion by promoting sustainability and reducing the need for excessive wardrobes allowing multiple looks without altering the fundamental structure of the piece itself Figure 7. It allows for a more sustainable approach to fashion, encouraging consumers to invest in a few high-quality, adaptable pieces rather than constantly purchasing new items (SDG 12).

4. Benefit to Mankind

The significance of this project encourages creativity and skill development among a diverse group of individuals, including artisans, students, homemakers, and children, by incorporating the Boro Sashiko technique alongside modular design principles (SDG4). The Boro Sashiko technique, rooted in Japanese tradition, not only promotes artistic expression but also serves as a form of mind therapy, offering individuals a calming, meditative

experience that improves focus and mental well-being (SDG3). For young innovators, modularity presents a unique challenge that fosters critical thinking and problem-solving skills, as they explore how to create adaptable, multifunctional designs. Generally, this project reveals a new way of profitable hobby that generates income for personal growth and entrepreneurial pursuits, inspiring individuals to take pride in their creations while contributing to a broader culture of innovation. This initiative has the potential to uplift entire communities by nurturing both creativity and intellectual development (ESG).

5. Innovation and Entrepreneurial Impact

This project fosters innovation and entrepreneurial impact in several key ways. Firstly, the concept integrates modular design and uses upcycled materials, promoting a sustainable approach to fashion (SDG13). This not only reduces waste but also appeals to eco-conscious consumers, encouraging environmentally responsible business practices and setting a new standard for slow fashion. Secondly, market differentiation and product customization are achieved through the introduction of modular "lazy wear," which allows businesses to offer customizable, adaptable fashion. This innovation provides a competitive edge, as entrepreneurs can cater to diverse customer preferences, driving sales and enhancing customer loyalty through unique, personalized products (SDG9). Lastly, the project empowers local artisans and small businesses by involving them in the growing slow fashion movement. By combining traditional techniques with modern modular design, artisans and small entrepreneurs can create high-quality, distinctive products, opening new business opportunities and fostering entrepreneurship within their communities (SDG8).

6. Potential Commercialization

The traditional Boro Sashiko technique, used for mending, involves five key stages. However, for "MODEBoro" custom-made pieces in ready-to-wear lines, the process is streamlined into three main stages to enhance productivity Figure 2. These stages include fabric selection, efficient stitching using a machine and hand stitch, and final garment assembly. This concentrated methodology maintains the essence of Boro while enabling economical production without compromising craftsmanship or quality. Future designers can also explore using Boro Sashiko with discarded Malaysian batik fabric to celebrate Malaysia's promotes eco-friendly fashion. It strengthens Malaysia's cultural identity in the global fashion industry, contributing to the Environmental, Social and Governance (ESG) movement.

7. Acknowledgment

Special thanks to UiTM IPSIS for the opportunity to enroll in further study at this prestigious institution. We extend our heartfelt gratitude to Kloth Cares and Life Line Clothing Malaysia for their generous contribution as material providers for this project. Their support has been invaluable in bringing this innovative design concept to life, promoting sustainability and creativity.

8. Authors' Biography



Muhammad Iqmal Roslan, a postgraduate student pursuing a Master's degree in Design Technology at UiTM, has demonstrated a strong commitment to ongoing learning and creativity. As part of his advanced studies, he conducted in-depth research for his thesis titled "MODEBoro Upcycled Women's Modular Resort Wear Using Boro Sashiko for an Eco-design Approach to Sustainable Fashion in Malaysia."



With over 20 years of experience, Dr. Hasma Ahmad, a Senior Lecturer at UiTM, specializes in fashion design and solution development. She excels in creating innovative clothing concepts and integrating practical solutions. Her expertise plays a key role in driving design ideation, enhancing creativity, and promoting sustainability in the fashion industry.