

**EXTENDING THE LIFESPAN OF HAND KNITTED  
GARMENTS:  
A CASE BASED APPROACH.**

A . B . C . PERERA

178311 H

Thesis submitted in partial fulfillment of the requirements for the degree Master of  
Science

*Textile & Clothing management*

University of Moratuwa



TH5744

Department of Textile & Apparel Engineering

University of Moratuwa

Sri Lanka

July 2023

*TH 5744*

*677° 2023°*

*677:65(043)*

**TH 5744**

## Declaration

I declare that this is my own research work, and this does not incorporate without acknowledgement any material previously published submitted for a Degree or Diploma in any other university or institute of higher learning, and to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to the University of Moratuwa the non-exclusive right to reproduce and distribute my thesis in whole or in part in print, electronic, or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

***UOM Verified Signature***

Signature:  .....  
A. B. C. Perera

Date: 03<sup>rd</sup> Aug 2023

I have read the proposal, and it is in accordance with the approved university proposal outline. I am willing to supervise the research work of the above candidate in the proposed area.

Signature of the supervisor: .....  
Dr. Rivini Mataraarachchi

Date: .....

***UOM Verified Signature***

Signature of the supervisor: .....  
Dr. Ranga Abeysooriya

Date: .....

## **Dedication**

I would be pleased to dedicate this to all the responsible humans who contribute to minimizing the landfilling of clothing waste in every possible way.

## Abstract

Clothing has become a fundamental need in contemporary society, and a fast-moving and throwaway consumer habit has produced a considerable market share. Due to seasonal and trend-driven fashion marketplaces, it is difficult to persuade consumers to extend their clothes' functional or useful lives. Countless garments end up in landfills after their intended usage, and most inactive clothes in regular consumption occupy unnecessary closet space. Consumers are similarly encouraged to update with new garments if they have had to face out existing garments for a variety of reasons and have inadequate wearable lineups in their closets as per their life patterns. These consumer behaviours are causing some of the world's existing problems to become uncontrollable future problems. This has been demonstrated by various studies, which have been described in depth in the literature review section. Extending the garments' useful lives in the same form, in an adjusted or changed form, or in a dematerialized form to produce a new industrial application are key considerations driving modern sustainable movements. This research has been carried out in an exploratory study format with two phases that have been used to collect data on the craft-based clothing sector.

Phase one was a survey focused on determining how consumers feel about extending the life of their used or everyday clothes in a general context. The results helped to understand their socio-personal attitudes and influences, cost consciousness, and behaviours towards clothing disposal and reuse, along with their commitment to attending the repairs or modifications or seeking outsourced options.

In the second phase, a set of craft clothing consumers were interviewed in a semi-structured format and documented the causes of their clothing becoming idle and non-functional, focusing on hand-knitted items. Among the group, a few consumers have been identified who are interested in executing a re-craft (repair or modification) aid on their dormant clothing to prolong the life of the items in their wardrobes. Five hand-knitted cases were selected, which covered the three major causes for the disposal of clothes: fit issues, damaged issues, and boredom with the design or style, which were the findings of phase two.

To connect skilled and knowledge input to this particular intention, a company that employs a craft making community was referred and selected a few local artisans. These local artisans were a group of highly competent hand knitters, and their re-craft opinions have been recorded to check the feasibility of extending the lifespans of worn-out hand knitted garments. A series of discussions were held with the local artisans in order to explore re-crafting possibilities for repairs and modifications to get the cases back to functional condition. There were four key aspects illustrated by them, with special attention to the pattern(s) or structure(s), tool(s), material(s), and colour(s). This was modelled as a framework for planning and achieving the goal of extending hand knitwear's functional life. The study opened the doors for future experiments with re-crafting concepts, even as possible business opportunities for existing local craft communities or for small scale businesses that are ultimately aiming to promote sustainability and reduce textile waste.

### Key words–

Disposal behaviour, Clothing lifespan, Craft Clothing, Re-crafting, Repair & Modifications, Skilled artisans.

## **Acknowledgement**

The success and outcome of this research required a lot of guidance and assistance from many people, and I am extremely fortunate to have gotten this all along the way to the completion of my research. I owe a great thanks to all of them.

Firstly, I would like to thank Mr. S. Nilhan Niles (Head of the Department, Department of Textile and Apparel Engineering, University of Moratuwa) and all the academic and non-academic staff for making and maintaining all the facilities to empower the academic knowledge of the textile and clothing industry in Sri Lanka.

Thereafter, I would like to thank Dr. Rivini Mataraarachchi (Supervisor / Lecturer, Department of Textile and Apparel Engineering, University of Moratuwa) for pointing out my potentials and making them to use in real and particular contexts. She was extending her knowledge towards me and creating the perfect research background. I am extremely grateful to her for providing such valuable guidance and support, even though she had a busy schedule managing the educational affairs.

Similarly, I owe my profound gratitude to Dr. Ranga Abeysooriya (Co-Supervisor / Lecturer, Department of Textile and Apparel Engineering, University of Moratuwa), who took a keen interest in my research work and guided me well all along by providing all the necessary information for developing a good research influence in my mind and making this into a real project.

Then, my inmost thanks to all the survey respondents of the questionnaire survey study in this research as they took their valuable time to help me with collecting the necessary data to build the facts to support this research. Furthermore, the consumers who paid the interest and their valuable time discussed it with me at the semi-structured interviews as well. And it is always a pleasure to remind the management of the referred company and the great local artisans of the sincere support I received to uphold my research as well as its completion.

Also, I would like to extend my sincere regards to all the non-mentioned people for their timely support.

# TABLE OF CONTENTS

<b>Declaration</b> .....	i
<b>Dedication</b> .....	ii
<b>Abstract</b> .....	iii
<b>Acknowledgement</b> .....	iv
<b>LIST OF FIGURES</b> .....	viii
<b>1. Introduction</b> .....	1
1.1. Contribution .....	2
1.2. Research questions.....	2
1.3. Research objectives.....	3
1.4. The scope of the study .....	4
1.5 Thesis Outline .....	5
<b>2. Literature Review</b> .....	6
2.1. Preface.....	6
2.2. Global challenges related to clothing waste.....	6
2.3. Generation of clothing waste due to varied consumption trends .....	7
2.4. The longevity of clothes in terms of social, economic, and environmental implications ...	8
2.4.1. Social impacts .....	9
2.4.2. Economic impacts .....	10
2.4.3. Environmental impacts .....	10
2.5. Practices for extending the lifespan of clothing.....	11
2.6. Consumer involvement in clothing for long-term use .....	13
2.7. Consumer perspectives on extending clothes lifespans through various methods.....	14
2.8. Repairing clothes as a strategy of extending the lifespan .....	15
2.9. Consumer behaviour in approaching for repair and modification of clothing .....	16
2.10. Hand Knitting – A craft in the contemporary society .....	18
2.10.1. Hand knitting as a leisure and knitting in groups.....	19
2.10.2. Hand knitting, as a form of art .....	20
2.10.3. Revolutionary hand knitting.....	21
2.12. The significance of re-knitting.....	25
2.13. Re-knitting on the literary archives.....	26
2.14. Repaired and reworked (modified) clothing: Examples .....	27

<b>3. Methodology</b> .....	30
3.1. Experiments and Research Design .....	30
3.2. Data Collection .....	35
3.3. Selection of the local artisans (hand knitters) for the study .....	36
3.4. A concise description of the research methodology .....	37
<b>4. Results and Analysis</b> .....	39
4.1. Results from Phase 01:.....	39
Consumer perceptions on repairing or modifying hand craft clothes .....	39
4.1.1. Characteristics of Consumer pool responded in this study .....	40
4.1.2. Consumers' practices for increasing the lifespan of their clothes .....	41
4.1.3. Consumers' preferences for repairing or modifying clothes .....	44
4.1.4. Gain vs. Cost by the practices of lengthening clothing lifespans.....	44
4.1.5. Consumers' decisions or concerns if they do outsource repairs or modifications of their clothes.....	45
4.1.6. Consumers view of reliability of repaired (or modified) clothing .....	46
4.1.7. A summary of Phase 01's outcomes and conclusions.....	46
4.2. Results from Phase 02:.....	48
Reasons for knitwear discard .....	48
4.2.1. Fit problems .....	48
4.2.2. Damaged problems .....	50
4.2.3. Boredom of the style / design .....	51
4.3. Reference to the cases for re-crafting processes to support product longevity. ....	53
4.4. A summary of Phase 02's outcomes .....	58
4.5. Artisans' involvement for product longevity.....	59
4.5.1. Repair techniques to restore obsolescence due to damage issues .....	59
4.5.2. Size change techniques to restore obsolescence due to size issues.....	60
4.5.3. Tools required to perform techniques for product longevity.....	60
4.5.4. Sourcing the compatible yarn material/s of the subjected garment/s.....	62
4.5.5. Selection of the suitable yarn colour/s for the subjected repairs or modifications .....	63
<b>5. Discussion</b> .....	65
5.1. Challenges of re-crafting.....	68
5.2. Overview of the discussion .....	69
<b>6. Conclusion</b> .....	71
<b>References</b> .....	73



**Appendix A:** CONSUMER PERCEPTION OF REPAIRING OR REWORKING GARMENTS TO EXTEND THEIR LIFESPAN (Online Questionnaire - Google Forms)

**Appendix B:** Recorded Responses – General Clothing Category CONSUMER PERCEPTION OF REPAIRING OR REWORKING GARMENTS TO EXTEND THEIR LIFESPAN (Online Questionnaire - Google Sheets)

**Appendix C:** Semi Structured Interview (Recorded Responses) - Craft Clothing Category (Hand Knitwear)

## LIST OF FIGURES

<i>Figure 2.1. Lifecycle Sliders - "longevity" and "speeds" from a lifecycle perspective. (Goldsworthy K. 2017).....</i>	<i>11</i>
<i>Figure 2.2. Speed cycle - a "cost per use" model that is utilized by environmental scientists. 2017's (Goldsworthy, K.) .....</i>	<i>12</i>
<i>Figure 2.3. "Jigsaw Jacket" A child's nursery school that purchased this garment from a service provider was envisioned as the user. (Goldsworthy, K., and Early, R. 2017).....</i>	<i>13</i>
<i>Figure 2.4. - A group knitting with their fingers at the project "Connections" (Ljubljana, Slovenia 2012) (Source: <a href="http://www.oloopdesign.com/en/projects/connections/">http://www.oloopdesign.com/en/projects/connections/</a>) .....</i>	<i>20</i>
<i>Figure 2.5. The Ink Blot Test by Sandra Backlund (Fashion Designer): (Source: <a href="http://sandrabacklund.com/previous-collection.php?page=28">http://sandrabacklund.com/previous-collection.php?page=28</a>) .....</i>	<i>21</i>
<i>Figure 2.6. Irena Erzen's "Guerilla knitting" garbage can decorations (Koper Slovenia, 2017) .....</i>	<i>22</i>
<i>Figure 2.7. The "Cable Jumper" (Earley, R. et al, 2016) .....</i>	<i>23</i>
<i>Figure 2.8 - Knitwear by darning around a tear or hole. Picture courtesy of Tom of Holland/ Gansey Commission.....</i>	<i>28</i>
<i>Figure 2.9 - Norwegian re-knitted stockings (Sunbo, 2000) .....</i>	<i>29</i>
<i>Figure 3.1. Structure of the interview performed with the consumers. ....</i>	<i>36</i>
<i>Figure 3.2. Overview of the research methodology.....</i>	<i>37</i>
<i>Figure 4.1. The questionnaire data analysis plan, including the main considerations set by the objectives.....</i>	<i>39</i>
<i>Figure 4.2. Frequencies of gender, age, current employee status, educational level and approx. annual income range in the primary sample .....</i>	<i>40</i>
<i>Figure 4.3. Frequencies of using craft clothing, readymade clothing and tailor made clothing in the primary sample .....</i>	<i>41</i>



<i>Figure 4.4. The idea of increasing clothing life against the frequencies of using craft clothing</i> .....	42
<i>Figure 4.5. The idea of increasing clothing life depends on the places where the clothes are worn</i> .....	43
<i>Figure 4.6. The idea of increasing clothing life depends on the frequency of clothes are worn</i> .....	43
<i>Figure 4.7. The commitment to attend any repair work on consumers' clothes</i> .....	45
<i>Figure 4.8 – The overall picture and summery of the findings of Phase 01</i> .....	47
<i>Figure 4.9 – Hand-knitted garment (Consumer: C4) to determine rework possibilities.</i> .....	54
<i>Figure 4.10 – Hand-knitted garment (Consumer: C11) to determine rework possibilities.</i> .....	55
<i>Figure 4.11 – Hand-knitted garment (Consumer: C12) to determine rework possibilities.</i> .....	56
<i>Figure 4.12 – Hand-knitted garment (Consumer: C3) to determine rework possibilities</i> .....	57
<i>Figure 4.13 – Hand-knitted garment (Consumer: C7) to determine rework possibilities.</i> .....	58
<i>Figure 5.1 – The combination of the key sectors of the study</i> .....	65
<i>Figure 5.2. – A developed chart based on the four specific considerations uttered from the artisans' knowledge to identify possible pathways</i> .....	66
<i>Figure 5.3. – Re-craft to repair or modify fit problems, damaged, and bored designs—Hand knitted case examples</i> .....	67