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RHETORIC AND REALITY OF ARTIFICIAL INTELLIGENCE IN APPAREL SECTOR IN SRI LANKA: COMPARATIVE CASE STUDY

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ABSTRACT

Artificial Intelligence (AI) has emerged as a transformational force in today's rapidly changing business environment. The apparel sector in Sri Lanka is increasingly adopting AI technologies as part of its anticipated adoption within the industry. Referring to evidence from companies that have evolved in Sri Lanka's apparel sector, this study examines the gap between AI's rhetorical promises and its practical (reality) application. It focuses on workplace perceptions of AI, bridging the gap between theoretical AI concepts and their implementation, the dynamics of integrating AI into organizational processes, future directions, and the reasons behind the adoption of AI technologies by the case study organizations. Drawing from qualitative data, the study delves into the perceptions of AI among industry professionals, the integration of AI into organizational processes, and the strategic motivations behind adopting AI technologies. For this research, we have selected two apparel companies that are using AI in their operations. From these two companies, we have conducted interviews with 10 individuals. The findings highlight a significant disparity between the high expectations promoted by AI rhetoric and the reality and effectiveness of AI in practice. The findings prove that Sri Lankan companies are prioritizing training initiatives to ease job displacement concerns and encourage workforce acceptance. In design AI tools for data mining, sentiment analysis, and generative AI have enhanced the ability to align product offerings with consumer trends and reduce design lead times from weeks to days, thereby boosting market responsiveness. While AI is often heralded as a tool to enhance efficiency and reduce manual labor, the reality within the case study organizations reveals a slower, more complex adoption process. This research paper further describes the rhetoric and reality insights of AI in case study organizations while extending the rhetoric institutionalism theory, how organizations develop specific rhetorical strategies when defining the organizational goals, and how organizations strategically use symbols like

(words and signs) to empower the ability of practicality in the organizations.

Keywords: Apparel Sector, Artificial Intelligence, Institutional Practice, Reality, Rhetoric

1. Introduction

Imagine a world where machines not only assist us but think, adapt, and innovate alongside us. The era of AI is now shaping the future of almost every industry. Emerging as a revolutionary force AI is not just an idea but a powerful catalyst that transforming how we work, create, and compete in a rapidly evolving digital landscape. AI is the broad category of technologies that allow machines to do activities that have historically required human intelligence, such as computer vision, natural language processing, and machine learning (Baytar et al., 2022). The word AI wasn't established until the mid-20th, but the thought of AI began the Alan Turing, a British computer scientist, invented the idea of AI in 1950 when he posed the question, "Can machines think?" in his paper *Computing Machinery and Intelligence* (Alghamdi, 2020). Despite the boom-and-bust tendency of the economy, AI produced several significant advancements including deep learning, expert systems, predictive analytics, process automation systems, and novel techniques for capturing and interpreting knowledge (Dai et al., 2016). AI is a replacement for human intelligence but most of the research sees it as a supporting tool for their business operations. Previous research indicated that AI made a great impact on the apparel industry. The application of AI technologies in enhancing design processes through advanced pattern recognition and trend forecasting has been noted (Iqbal & Su, 2022). Automation and machine learning algorithms enhance productivity and quality control (Gangoda et al., 2023). AI has also contributed to sustainability through the optimization of supply chains, reduction of waste, and so on. There are still major barriers to the uptake of technology, such as related high costs, issues of data privacy, and resistance to change. Other challenges relate to ethical and social implications, including job loss and data security (Ade-Ibijola & Okonkwo, 2023).

The research intends to explore the gap between the advancement of Artificial Intelligence (AI) in the apparel industry and its real implementation, by comparing the promises and claims of AI's rhetorical influence and the actual use of and consequences of AI technologies in apparel. While AI has been widely promoted as a transformative technology for the apparel industry, the existing literature largely focuses on the potential benefits and strategic promises that AI offers especially in the areas of operational efficiency, innovation, and competitiveness. The previous research highlights the

optimistic views of AI's role in reshaping industries supported by claims from major stakeholders and technology providers. (Goti et al., 2023) There is a notable lack of empirical evidence when examining whether these promises are aligned with the actual deployment and effectiveness of AI technologies within the apparel sector especially within developing markets like Sri Lanka. Few studies have critically analyzed the extent to which AI is truly integrated into core operational processes or evaluated its practical outcomes in terms of improving efficiency and fostering innovation. This creates a significant gap in understanding the disconnect between AI's potential (rhetoric) and its real-world application (reality) in these markets. (Kaur et al., 2022) This research specifically addresses this gap by comparing the discourse around AI adoption in the Sri Lankan apparel industry with its real-world implementation. Through a comparative case study approach involving leading Sri Lankan apparel companies, the study investigates the genuine level of AI integration and the actual impact on operational metrics. This study thus contributes to the field by bridging the divide between AI's theoretical potential and its practical application, providing a grounded perspective that can inform stakeholders and guide future AI investments in the apparel sector.

Research Questions:

1. How has the rhetoric surrounding AI been institutionalized within case study organizations in practical terms?
2. Why did the case study organizations adopt AI technology to enhance operational excellence?

Research Objectives:

1. To illuminate how the rhetoric surrounding AI has been institutionalized within case study organizations in practical terms.
2. To identify why the case study organizations, adopt AI technology to enhance operational excellence.

This study contributes to the field of artificial intelligence research by recognizing that artificial intelligence is a dynamic phenomenon that evolves steadily over time as client needs, technological advances, and product capabilities change (Giri et al., 2019). The research presented here demonstrates the use of artificial intelligence through rhetorical arguments, and the justification of the superiority of AI will be elevated to the status of artificial intelligence (Baytar et al., 2022). This research expands knowledge. Due to the exquisite composition and outstanding performance. The adoption of AI has not received equal attention in the historical AI literature, especially in the context of the apparel industry in developing countries such as Sri Lanka (Gangoda et al., 2020).

2. Literature Review

The literature review of AI applications in the apparel industry

contextualizes the present condition and major opinions from both local and global perspectives. It examines the impact of AI on design, production, and marketing from a conceptual focus on efficiency, customization, and sustainability.

2.1. Rhetoric Defined

The AI adoption represents an overall and deep-rooted change in the apparel industry. AI reshapes all the processes from design to distribution (Baytar et al., 2022). Furthermore, AI spans influencing sustainability, consumer engagement, and efficiency of production (Gunarathne & Kumarasiri, 2017). AI also spreads its impact throughout the apparel supply chain. For instance, design algorithms use large consumer data sets to create actionable insight in generating design solutions that take less time to reach the market and are relevant to the product. There are AI-powered pattern recognition and trend forecasting that enable personalization and customization, hence fostering brand familiarity and differentiation.

Currently, AI-driven technologies represent robotics and machine learning algorithms in manufacturing. This incorporation of AI primarily enhances productivity with fewer errors and by controlling production rates. According to Giri et al. (2019), this allows for predicting equipment breakdowns even before they happen, thereby not only reducing the downtime but also saving money spent on it. The impact of AI includes sales and marketing. It ensures proper demand forecasting, optimum pricing strategies, and personalized marketing (Noor et al., 2022).

AI also drives sustainability in the apparel industry by minimizing environmental impact and promoting ethical practices throughout the garment lifecycle. Technologies enhance transport routes while reducing carbon footprints, and optimize inventory to decrease waste (Dai et al., 2016). AI's material tracking capabilities ensure transparency and integrity in the supply chain which improves brand image and consumer confidence (Guo et al., 2011). Risk management through AI offers proactive solutions for environmental and social issues in the supply chain (Murphy, 2005).

Despite its transformative potential, AI in the apparel sector faces challenges. These include data privacy concerns, algorithmic bias, and ethical implications. Addressing these issues requires robust regulatory frameworks and inclusive policies to bridge the digital divide and ensure equitable access to AI advancements (Guo & Wong, 2013).

2.2. Reality Defined

Reality refers to everything that exists or is real, as opposed to what is fictitious or non-existent (Kaur et al., 2022). It comprises known and unknown systems and their ontological status. Artificial intelligence,

being a simulation of human intelligence in machines, does tasks performed by human cognition, such as learning, reasoning, and solving problems (Mailloux, 2006). While it is good in domains involving data analysis, detection of patterns, and automation, AI fails in those that require deep contextual understanding and rich creativity.

To bridge the gap between rhetoric and reality the study seeks to fulfill two objectives. 1. Institutionalization of AI rhetoric in practical terms. Whereby examining the case study of the companies, the study aims to reveal how AI rhetoric has been embedded into these organizations' strategies and operations. This includes understanding how well the promises of AI have been adopted in company policies and practices and whether these promises align with operational realities. 2. Enhancing operational excellence where the study aims to understand why organizations adopt AI technologies while focusing on the motivations to achieve operational excellence. This objective sheds light on whether AI genuinely enhances productivity, improves efficiency, or optimizes customer satisfaction as per the promises. The review could more clearly state how previous studies have either overlooked the rhetoric-reality gap or focused predominantly on developed countries rather than developing ones like Sri Lanka.

The meta-synthesis of available research suggests that machine learning and expert systems are the most applied AI applications in the industry. Machine learning applies support vector machines and predictive algorithms. The Expert systems apply fuzzy logic, artificial neural networks, and genetic algorithms respectively. However, big data and AI are still in the growing stage of industrial development. Most importantly, it focuses on supply chain stages such as manufacture and distribution rather than on design itself (Alghamdi, 2020; Goti et al., 2023). Such an existing gap needs to be filled with a consumer-oriented approach and by looking into B2C solutions (Kaur et al., 2022).

Literature also suggests that educational reforms are seriously needed to train students in AI skills pertaining to the garment industry. Also, the inquiry regarding text mining for supply chain risk management emerges while inquiring into the role of AI in the expansion of the B2B market. But on the other hand, there are already some ethical issues regarding AI anthropomorphic drive. Together with its interpretation, it appears as though this would be eroding human autonomy and ethical judgment, alongside this major failure scenario. This is important within a broader sociotechnical framework of understanding the possibilities and limitations of AI. It functions at the level of product design, fabric production, garment manufacturing, and distribution. In other words, it predicts fashion trends, improves the quality of fabrics, makes the production process more efficient, and optimizes logistics (Baytar et al., 2022; Ramos et al., 2023). B2B applications include supply chain improvement and marketing

creativity. B2C applications are trend estimation and personalization of customer experiences (Pasek, 2013). More research should be done into AI's potential for digitalizing and sustaining the supply chain and, further, its potential in regard to the digital competencies necessary for future labor (Ramos et al., 2023).

2.3. Institutionalized Artificial Intelligence (AI)

From pure theory to now practical applications in the apparel industry, AI has come a long way over time. It has changed drastically in terms of a great deal in manufacturing, sustainability, and customer interactions within the fashion sector. AI pulls information from these varied sources to help in optimizing material grading, stock management, and product testing; thereby reducing waste and improving supply chain management towards sustainable fashion.

Scientific research proves that AI is one of the most innovative tools that have influenced garment manufacturing. For example, it provides for optimal usage of fabric, tracking of inventory efficiently, and enhances the inspection of products to produce goods that are of good quality with reduced defects (Ade-Ibijola & Okonkwo, 2023; Choi et al., 2023). According to Lee and Lim (2023), virtual fitting technologies and AI-driven tagging improve customer experiences through virtual try-ons and product identification. Predictive analysis by AI makes demand forecasting accurate, hence avoiding overstocking and cutting inventory costs. Again, according to Jebreen and Ghanem (2015), AI optimizes logistics to avoid time wastage; this is achieved through the delivery of products using the most efficient routes and in optimal amounts.

AI drastically increases productivity in garment manufacturing by automating repetitive tasks and improving quality control using machine vision and robotics. Predictive maintenance prevents equipment breakdowns so that the process of production continues unabated. Improvements in procurement, inventory control, and customer relations through personalized recommendations and chatbots further the AI's impact on supply chain management.

3. Methodology

The research design in this study has been carefully designed to employ comparative case study methods, strategically chosen to provide in-depth insights into the rhetoric & reality of artificial intelligence (AI) in the apparel industry in Sri Lanka.

This qualitative research examines the use of AI by leading apparel exporting companies in Sri Lanka. The use of comparative data collection methods assists the researcher in mitigating the failures of each method and enhances the reliability and validity of the collection process (Fridgeirsson et al., 2023). For this research, we have used both primary and secondary data. For primary data, researchers conducted

interviews with 10 individuals from two selected apparel companies that use AI in their operations. These interviews gave them an understanding of their experiences and insights about AI implementation. For secondary data, we used information from the websites and annual reports of these two companies. This explained the additional context and details about how AI is being used and its reported impacts. By combining these two methods, the output was a comprehensive understanding of the gap between AI promises and its actual implementation in Sri Lanka's apparel sector. The interviewers examine interview data from senior management, IT specialists, data scientists, production managers, and marketing executives. By analyzing this data, researchers have identified key themes and changes in job roles due to AI integration.

Table 1: Interview Details.

Company Name	Designation of Interviewees	Key Responsibility	Interview Duration	Period Employed in the company
Company A	Deputy Analyst	Review Robust information and analyze it, looking for trends or areas for improvement.	40 mins	1 year and 1/2
	Head of Operations	Overseeing operational efficiency and strategic initiatives for process optimization. Responsible for enhancing organizational productivity and resource management.	1hr and 30 mins	18 years
	Chief Marketing Officer	Leading the development and execution of marketing strategies to drive brand growth and market expansion. Responsible for managing marketing teams and budget	1hr	12 years

		allocation.		
	Director of IT Strategy	Formulating and implementing IT strategies that align with business goals. Focus on technology innovation and infrastructure improvements.	50 mins	17 years
	Product Development Manager	Managing the end-to-end product development lifecycle, from ideation to launch. Responsible for product strategy, Product development	1hr and 10 mins	14 years
Company B	General Manager - Projects	Developing and maintaining the organization's brands and its corporate brand equity.	1hr and 15 mins	15 years
	Senior Executive Automation	Active engagement with digital transformation and strategic alignment of IT. A key driver of RPA strategy.	45 mins	20 years
	Executive - Automation	Visual modeling and business documentation. Business solution design.	35 mins	15 years
	Head of Customer Experience	Enhancing customer satisfaction and loyalty through strategic initiatives and process improvements. Overseeing customer service	1hr and 20 mins	16 years

	teams and feedback mechanisms.		
Financial Controller	Managing financial planning, reporting, and analysis. Responsible for budgeting, forecasting, and ensuring financial compliance.	40 mins	13 years

4. Results and Analysis

The thematic analysis methodology is used to analyze the data collected from interviews and annual reports. Thematic analysis involves identifying and examining patterns or themes within the data (Walters, 2016). First, we will read through the interview transcripts and annual reports carefully. Next, highlight the key points and recurring ideas related to AI implementation and its promises. Next, group similar ideas together to form themes. These themes helped researchers to understand the common experiences and challenges faced by the companies using AI. Organizing the data into clear themes helped to provide a detailed and meaningful analysis of the gap between AI rhetoric and reality in Sri Lanka's apparel sector.

Thematic analysis results of the interviews conducted are shown as follows.

Table 2: Findings for Objective 1.

Objective	Respondent	Interview Quotes	Code	Theme
To illuminate how the rhetoric surrounding AI has been institutionalized within case study organizations in practical terms.	Representative from Company "A"	"Company "A" was exposed to the persuasive power of AI proponents in 2020 while attending a technology conference in Silicon Valley. Company "A" was inspired to use AI technology by this experience as well as the idea that AI may	Persuasive Power, Competitiveness	Rhetoric of Artificial Intelligence (AI)

		improve the business's competitiveness and operational effectiveness.”		
	Representative from Company “A”	“The company was further motivated to institutionalize the use of AI throughout its operations, making it a crucial component of day-to-day operations and converting Company “A” into a “smart” apparel enterprise by the immediate success of the initial AI installation.”	Institutionalization, Operational Success	Rhetoric of Artificial Intelligence (AI)
	Representative from Company “B”	“We at Company “B” uses AI to understand the behavior of our consumers. The apparel industry has reached leaps and bounds from designing your customized clothing using a mobile application to 3D printing them in a short time.”	Consumer Behaviour, Customization	Rhetoric of Artificial Intelligence (AI)

Table 3: Findings for Objective 2.

Objective	Respondent	Interview Quotes	Code	Theme
To identify why the case study	Representative from Company “B”	“To optimize operations and digitally revolutionize its	Optimization, Efficiency, Competitiv	Reality of Artificial Intelligence (AI)

<p>organizational excellence</p> <p>adopted AI technology to enhance operational excellence</p>	<p>product development process, Company “B” teamed up with Centric Software in 2019. Five business units have been able to increase cooperation, increase efficiency, and maintain competitiveness by utilizing Centric PLM.”</p>	<p>ness</p>	
<p>Representative from Company “B”</p>	<p>“Company “B” Intimates adopted Centric PLM, which allowed teams to make data-driven decisions, eliminate manual administrative activities, and speed up product development processing.”</p>	<p>Data-Driven Decisions, Speed</p>	<p>Reality of Artificial Intelligence (AI)</p>
<p>Representative from Company “A”</p>	<p>“The Company “A”’s investments in AI have enabled it to achieve impressive operational metrics, such as an 11-day lead time for up to 600,000 pieces and 32+ product launches per season with key customers.”</p>	<p>Operational Metrics, Speed</p>	<p>Reality of Artificial Intelligence (AI)</p>
<p>Representative from Company “B”</p>	<p>“Company “B” has achieved significant business results in terms of productivity, efficiency, and cost savings by using</p>	<p>Productivity, Efficiency, Cost Savings</p>	<p>Reality of Artificial Intelligence (AI)</p>

UiPath's RPA platform to automate 52 operations.”

5. Discussion and Conclusion

5.1. Motives behind AI Integration

Artificial Intelligence (AI) technologies are intended to boost efficiency in the apparel industry by reducing Labor hours, optimizing processes, and automating repetitive jobs. Businesses can reduce costs, save time, and increase overall manufacturing efficiency for the creation of clothing by utilizing this connection. In response to the growing importance of Generation Z as a consumer segment, Company “A” implemented a digital at the core approach, reallocating resources to digital transformation to satisfy changing customer demands.

Company “B” innovates by developing scientific and engineering solutions that revolutionize human textiles its innovation arm, Twiner, utilizing its knowledge of manufacturing, human body biomechanics, fabric wearability, and material science, is home to more than 50 revolutionary innovations in the areas of materials, lighting, heating, Odor prevention, and aqua repellence. The goals of applying AI to the apparel sector are to increase quality, reduce production costs, and boost productivity. Artificial intelligence (AI) solutions produce outstanding results while boosting efficiency and economy of scale by improving apparel quality, streamlining production processes, and guaranteeing optimal resource management.

Company “A” deliberately partnered with big tech companies, such as Google and Microsoft, to integrate enterprise-grade AI into their business processes. This collaboration demonstrates a dedication to using cutting-edge technology to generate value for clients and staff. To attain compound growth throughout all its activities, Company “B” adopted digital transformation with RPA at its core. Company “B” has achieved significant business results in terms of productivity, efficiency, and cost savings by using UiPath's RPA platform to automate 52 operations. This has also put Company “B” on a strategic road towards digital transformation.

5.2. Technological Advancements and Capabilities

In the interview, we find out Company “A” uses these technologies for their operations, Company “A” has worked with big tech companies like Microsoft and Google to proactively integrate enterprise-grade AI. Copilot for Microsoft 365 is a potent generative AI service that merges massive language models with organizational data from Microsoft 365, and Company “A” has adopted it. As IIOT 5.0 approaches, Company “A” has thoughtfully included 5G in its IoT and automation architecture.

Company “A” hopes to increase productivity without sacrificing worker well-being by utilizing Copilot to improve operational excellence, transform workflows, reduce the load of email tracking, and boost efficiency.

In the interview, we find out below information about Company “B”. Leading technology companies like UiPath and Centric Software have teamed with Company “B” to digitally alter their product development process and automate important business procedures. Company “B” has increased production, reduced costs, and improved efficiency throughout its operations by utilizing Centric PLM and RPA. Company “B” has created innovative smart textile technologies through its innovation arm, Twinery, with the goal of revolutionizing the human-textile interface. Twinery is spearheading wearable technology and fabric integration innovation with its multidisciplinary knowledge spanning materials, lighting, warmth, and more. The promise of artificial intelligence (AI) in the garment sector is found in its capacity to use cutting-edge technology to fulfill changing customer expectations and maintain competitiveness in the market. These benefits include the ability to enhance efficiency, lower costs, and promote sustainable growth.

5.3. Industry Trends and Competitive Pressures

AI is viewed as a tactical instrument that businesses may use to improve productivity, simplify processes, and maintain an advantage over rivals in this fast-paced industry. The demand for flexible, data-driven supply chain management has grown because of the fast-fashion business model, AI can make this possible. Apparel companies can anticipate demand, optimize inventory, and react swiftly to shifting consumer tastes with the use of AI-powered technologies.

We find out below information from our interview that Company “B” has positioned itself for success. Company “B” is spearheading the transition from disposable to reusable products by developing cutting-edge products under names like Femography and Softmatter, with an emphasis on impact, accessibility, and disruptive innovation. This calculated action fits nicely with the fast-fashion industry's growing trend toward environmentally friendly and sustainable methods.” Company “A” has implemented a "digital at the core" approach, reallocating resources towards a full digital transformation, in response to the rise of Generation Z consumers. Through the integration of AI, IoT, and 5G technologies, Company “A” hopes to improve user experience, accelerate workflows, and increase overall efficiency.

Company “B” has been spearheading impactful diversification, emphasizing the creation of favorable social and environmental effects via cutting-edge goods and sustainable business methods. Company “B” is leading the way in sustainable garment manufacturing through the

development of strong e-textile platforms, the use of natural dyeing methods, and the adoption of thermal moulding technology. This dedication to sustainability is in line with the growing legislative constraints and customer expectations for eco-friendly fashion selections in the fast-fashion sector. Company “A” integration of AI and cutting-edge technology improves operational efficiency while also supporting sustainability initiatives. To meet regulatory standards in the fast-fashion industry and handle sustainability concerns, Company “A” is focused on data intelligence and AI adoption while also aligning technology with organizational culture. Customers want brands to respond to them more quickly and are more interested in setting trends. To address these changing demands, garment firms can use AI to analyze customer data, forecast upcoming trends, and provide personalized products and experiences.

Company “A” is committed to satisfying changing customer demands, as evidenced by its concentration on developing solutions that are both inexpensive and accessible to worldwide populations, including Sri Lanka. To remain relevant and competitive in a market that is constantly changing, Company “A” is adjusting to the changing needs of consumers in the fast-fashion industry by incorporating data analytics and AI into marketing initiatives and creating creative revenue models.

5.4. Conclusion

The purpose of the research proposal is to demonstrate a proper understanding of the words and the world of Artificial Intelligence (AI) in apparel businesses. The study will be useful in identifying the status of the use of AI technology in the fashion and apparel business as it analyses the use of AI solutions, the match between the stated and the actual practices, sustainability and environmental concerns, ethical and social issues, and specific challenges of the fashion and apparel industry. In turn, the research findings on the discrepancies between the potential given by AI and its effects on the garment industry will contribute to the existing knowledge. In this regard, the project will establish a theoretical framework for discussing the factors that shape the AI discourse and the challenges that hinder the effective implementation of AI by drawing on institutional theory. Company “A” views AI as a means to achieve operational excellence and competitive advantage driven by a commitment to innovation and a data-driven decision-making model. This strategic emphasis is influenced by their experience with AI advocates and the persuasive power of AI’s potential which leads to extensive AI integration across operations. Their rhetoric frames AI as essential for efficiency and growth and also focuses on how data-backed insights enhance decision-making and market responsiveness. Through partnerships with industry leaders Company “A” leverages advanced AI applications to streamline processes and bridge operational gaps while

setting a foundation for sustainable competitiveness and innovation. Company "B" takes a more cost-focused and efficiency-driven approach while prioritizing AI for automation and labor cost reduction. This approach reflects a pragmatic outlook that emphasizes AI as a tool for financial sustainability rather than broad-scale innovation. Their institutional rhetoric centers on cost reduction and productivity with AI implementations in areas like robotic process automation and predictive analytics that drive operational efficiency and maintain high quality. Although still developing AI capabilities in areas like logistics Company "B" invests in AI for long-term value since they have acknowledged its role in meeting industry demands for agility and resource optimization. By presenting the potential benefits, challenges, and impacts of implementing AI, this research will help organizations align their promise of using AI with tangible outcomes and ensure the responsible and sustainable application of AI in the apparel industry. However, it is essential to note that the research plan has certain limitations, language restrictions, and the exclusion of other databases with relevant publications. Nevertheless, the study aims to make a significant contribution to the existing literature on artificial intelligence in the clothing industry and to establish a foundation for subsequent research in this fast-growing domain.

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