


Implementing the 70/30 Demand-Driven Production Model for Waste Reduction in the Global Garment Industry: A Qualitative Systematic Review

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Abstract

Purpose - This study explores how the 70/30 demand-based production model is a sustainable intervention to the problems of overproduction, deadstock building up, and environmental degradation in the global clothing sector. It attempts to evaluate the capability of such a hybrid model to be efficient and responsive, and to assess how such an implementation can overcome the risks of the traditional forecast-based systems.

Methodology - The study was conducted using a qualitative research design that entailed a Systematic Literature Review (SLR) in compliance with PRISMA guidelines, case-based analysis, and a scenario-based simulation. The thematic analysis was applied to only 49 high-quality publications published in 2020-25 to determine the primary tendencies of the production system, responsiveness to demand, and sustainability.

Findings - The findings reveal that the traditional forecast-based production system is one of the key drivers of overproduction, wasted inventory, and environmental degradation. Demand-driven models and the hybrid models, on the other hand, increase the compliance between production and the actual market demand. The 70/30 ratio of stable demand (70 percent) and flexible production (30 percent) has great potential to decrease deadstock, enhance the performance of inventory, and decrease the environmental impact of the 70/30 model.

Implications and Value - The study has implications for industry practitioners and policymakers in that it has highlighted the essence of digital tracking systems, real-time demand integration, and collaborative supply chain practices. The paper has added to the literature on sustainable supply chain management because the formalization of the 70/30 production model into an organized hybrid model has been presented. It bridges the gap between lean and agile manufacturing strategies and offers a new, viable strategy of improving sustainability and operations performance within the garment industry.

Keywords: 70/30 production model; demand-driven manufacturing; garment industry sustainability; deadstock reduction; sustainable supply chain; fast fashion; hybrid production strategy.

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Last Revised: 12 December 2025/ Accepted: 18 December 2025 /

Published online: May 11, 2026



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1. Introduction

The garment industry worldwide is faced with an overproduction crisis, which can be characterized as structural in nature due to traditional forecasting techniques that artificially adjust supply to match actual consumer demand. Large fast-fashion stores regularly produce excess stock, which can be up to 3040% of the overall production, which is then thrown away, burnt, or sold at elevated costs to liquidation. The ensuing deadstock is approximately 92 million tons of textile waste per year all over the world (Niinimaki et al., 2020), as well as huge carbon emissions and water consumption. It is in this context that the 70/30 production model, which is founded on the demand-driven approach, is a theoretically sound yet operationally realistic intervention. This paper is an overview of how this model can be used to restrict overproduction and promote sustainable production in the garment sector.

Table 1: Global RMG Sector Overproduction Losses (2023)

Metric	Value (USD)
Total annual industry losses	\$210 billion
Unsold inventory (deadstock)	\$126 billion (60%)
Markdowns & discount losses	\$63 billion (30%)
Waste disposal costs	\$21 billion (10%)
Top 3 brands' losses (2023)	
H&M	\$4.3 billion
Zara (Inditex)	\$2.8 billion
Shein	\$1.9 billion
Regional breakdown	
Europe	\$49 billion
North America	\$38 billion
Asia (excluding China)	\$28 billion
China	\$62 billion

Note: Adapted from "Slowing the Fast Fashion Industry: An All-Round Perspective," by P. Centobelli, S. Abbate, S. P. Nadeem, and J. A. Garza-Reyes, 2022, *Current Opinion in Green and Sustainable Chemistry*, 38, p. 100684; and "Closing the Loop on Take, Make, Waste," by T. Brydges, 2021, *Journal of Cleaner Production*, 293, p. 126245.

1.1 Rationale of the Study

The global clothing industry has the problem of overproduction as it is an endless circle of producing more clothing using the conventional forecasting techniques without proper surplus management and waste disposal. We discard more than 92 million tons of textile waste annually worldwide. Amazingly, less than 1 percent of these articles were reused. Environmentally friendly solutions are in high demand. The 70/30 model is a realistic trade-off between predictive performance and adaptive performance. This is a method of basing 70 percent of production on the fundamentals of the real-time market signals and maintaining a 30 percent real-time flexibility buffer to cover any variation in demand, as opposed to the pure forecast-based supply chain strategies that use the previous averages of the demand and look backward. This dual-way design directly responds to the shortcomings of traditional supply chains that were based on linear design and makes this model one of the potential ways to sustainable, waste-cut garment production.

Unlike conventional supply chain techniques, which are mainly based on predictive estimates, this method uses a different approach. Instead, it aims to align production with market requirements, thereby reducing excess inventory and increasing profits. Research and apply comprehensive qualitative methods to evaluate the model and collect helpful

information for business leaders, political decision-makers, producers, and scholars. Researchers are looking for possible long-term answers.

1.2 Objectives of the Study

The following are the objectives of the study:

1. In order to explore the structural causes of over-production and stockpiling in the clothing industry worldwide, using qualitative research.
2. To assess the theoretical and practical prospects of the 70/30 demand-driven production model as a viable manufacturing approach in the fashion industry.
3. To examine evidence of actual cases and combine available literature in an effort to discover the most significant problems and opportunities that are related to the introduction of a demand-based production within fashion supply chains.

2. Research Methodology

The qualitative research design was applied in this paper to examine how the 70/30 production model can be used to address high volumes of production and waste management in the clothing industry. Because the objective was to understand the underlying processes, including industry practices and contextual resistance, which are not numerical measurements, the study relied on interpretive and qualitative inquiry. The research is based on two primary qualitative evidence sources: first, a Systematic Literature Review (SLR), and second, a case-based analysis.

The PRISMA guidelines were followed by SLR for ensuring both transparency and rigor. The main academic databases that include ResearchGate, Scopus, Web of Science, Google Scholar, and EE Xplore are the major searches. The first searches generated 951 records. The researchers have assessed only 126 full texts after removing a total of 436 duplicate records and screening titles and abstracts from a total of 389. Finally, the study included a last set of 49 high-quality, context-specific sources: 34 peer-reviewed journal articles, 14 industry reports, and one newspaper report. A set of strong criteria guided such selection based on the date of publication from the year 2020 to 2025, the credibility of academic record, and other relevance to demand-driven production models that align with sustainability, hybrid models, waste reduction, and supply chain responsiveness. A structured thematic analysis was conducted following the analytical steps sketched by Braun and Clarke (2006).

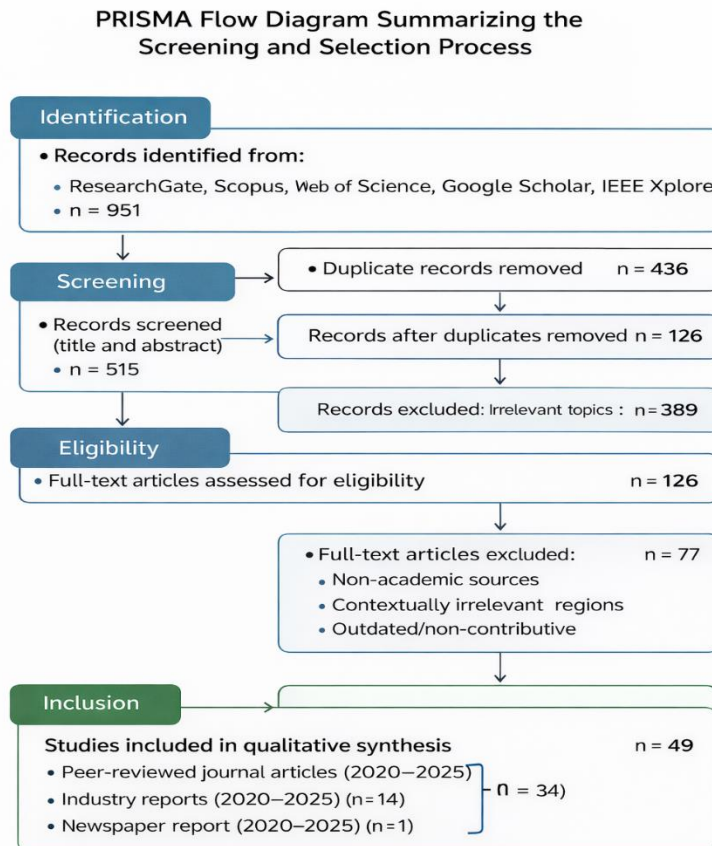


Figure 1: A PRISMA flow diagram summarizing the screening and selection process is presented

Note: Adapted from “The PRISMA 2020 statement: an updated guideline for reporting systematic reviews,” by M. J. Page, J. E. McKenzie, P. M. Bossuyt, I. Boutron, T. C. Hoffmann, C. D. Mulrow, L. Shamseer, J. M. Tetzlaff, E. A. Akl, S. E. Brennan, R. Chou, J. Glanville, J. M. Grimshaw, A. Hróbjartsson, M. M. Lalu, T. Li, E. W. Loder, E. Mayo-Wilson, S. McDonald, ... and D. Moher, 2021, *Systematic Reviews*, 10(1), p. 89; and “Using thematic analysis in psychology,” by V. Braun and V. Clarke, 2006, *Qualitative Research in Psychology*, 3(2), pp. 77-101.

The process involved:

- Open Coding is the first step, which is applied to extract initial concepts relating to overproduction, demand uncertainty, and concerns of sustainability, flexibility, and challenges.
- Axial Coding or Cluster Coding is then applied to grouping related codes that are parallel to all types of categories, for example, “forecast limitations”, “hybrid production strategies”, and “agile responsiveness.”
- Selective Coding is the third step, which is applied to integrate these categories into overarching themes in order to support the theoretical basis of the model 70/30.
- Theme Consolidation is finally applied to ensure clarity, coherence, and elimination of overlaps.

This systemic procedure resulted in three (03) major themes: (a) Failures of forecast-driven production, (b) Rise of hybrid and demand-driven systems, and (c) New production models leading to Sustainability.

To ensure reliability and validation of the data, the following steps have been followed to enhance methodological rigor. Firstly, triangulation was applied for cross-verifying insights

across academic articles, papers, sources, industry reports, and case reports. Then, a codebook was developed to ensure the consistency of application of the categories of coding. Finally, cross-checking and an audit trail were conducted for the recoding of random excerpts to maintain reliability and to maintain detailed documentation of the search and screening. Nevertheless, to complement the SLR, the research also incorporated qualitative case-based knowledge of companies that utilized the strategy of demand-driven and situation-based manufacturing. A scenario-based simulation was carried out to supplement the SLR and demonstrate how the 70/30 model acts in a stochastic demand situation. The simulation was based on two demand scenarios in a 12-week production cycle: stable and volatile demand. The 70 percent fixed allocation was used as the control, and the 30 percent flexible buffer took on the fluctuations in demand. Although this simulation was not calibrated to real-life industrial data, it did offer a descriptive foundation of the way the model would help to reduce deadstock and enhance service levels. Future investigations are to use agent-based or discrete-event simulation models that are calibrated against empirical data.

3. Literature Review

The problem of waste management in the clothing business has been a widely debated issue, and researchers have also highlighted the economic and environmental relevance of its production. Due to traditional supply chain models mostly depending on demand forecasting, the approach frequently results in overproduction or subcontractor dependency (Fletcher, 2014). Not only are a large number of fashion firms becoming hampered by inventory overload, but it also leads to financial losses and considerable environmental risks, such as pollution (Niinimäki et al., 2020). The reason the fashion industry is a significant contributor to environmental problems around the world is that it is a highly resource-intensive industry in its production and consumption processes. The industry produces more than 92 million tons of waste annually and consumes approximately 79 billion liters of water per year (Niinimäki et al., 2020). Therefore, there is an urgent need for sustainable waste management in the fashion industry. The concept of a circular economy has emerged as a potential solution to address degradation, transforming the system into a more durable and practical one (Brydges, 2021).

Table 2: Climate Impact of the RMG Sector

Climate Impact Factor	Annual Global Impact
CO ₂ Emissions	2.1 billion tons (4%)
Energy Consumption	1,074 TWh (5%)
Water Use	93 billion m ³
Textile Waste	92 million tons
Microplastic Pollution	500,000 tons (35%)

Note: Adapted from *Sustainability and Circularity in the Textile Value Chain*, by United Nations Environment Program (UNEP), 2023, pp. 12–15.

Economic and environmental challenges are the main factors driving control issues in internal enterprise complex supply chains in this place, which contribute to water and air pollution, excessive resource consumption, and microplastic production (Jacometti, 2019). Moreover, due to quick production and change of fast-fashion goods, waste is increased, and pollution intensifies (Hu et al., 2014). The rapid manufacturing cycles and the use of low-value

manufacturing in the enterprise are some of the factors that arise and lead to carbon emissions, water scarcity, and biodiversity loss (Singh & Bansal, 2024). The environmental effects of over-manufacturing are very high. The Ellen MacArthur Foundation (2017) estimated that the textile sector produces 92 million tons of textile waste every year, and less than 1 percent of the textile waste is recycled into new garments. Also, the fact that the manufacturing processes are not needed has significantly increased carbon emissions, with the industry contributing about 10 percent of the global emissions of the sector (UNEP, 2019).

Table 3: Presents a short overview of waste statistics, capturing both global trends and the severity of carbon emissions.

Metric	Value
Annual textile waste generated	92 million tons
Percentage of recycled textiles	<1%
Carbon emissions from fashion	10% of global emissions
Fast fashion overproduction rate	30–40% unsold

Note: Adapted from *A New Textiles Economy: Redesigning Fashion's Future*, by Ellen MacArthur Foundation, 2017; "UN Alliance for Sustainable Fashion Addresses Damage of Fast Fashion," by United Nations Environment Program (UNEP), 2019; and "The Global Apparel Industry as a Source of Plastic Leakage," by A. Kounina et al., 2024; *Nature Communications*, 15(1).

To address environmental and operational challenges in the fashion industry, production-based solutions have traditionally been emphasized by the fashion advocates. Agile Production that prioritizes flexibility and responsiveness to the needs of the customers has been considered as a main strategy for managing or reducing waste (Amed et al., 2019). However, applying demand-focused models remains an obstacle due to the complexity of supply chain logistics and the lack of real-time data integration (Turker & Altuntas, 2014). Traditional predictive methods in the fashion industry contribute significantly to excess inventory and waste. These methods are also ineffective at forecasting consumer demand, leading to overproduction and inventory obsolescence (Kumar et al., 2024). Modern supply chains have become increasingly complex and hard to manage due to a lack of adaptability and inadequate development capacity inherent in traditional forecasting approaches (Nweje & Taiwo, 2025). On the other hand, AI models are capable of analyzing vast amounts of data to identify demand patterns and generate more accurate forecasts. Hence, AI can optimize inventory and can minimize redundant stock, thus reducing waste (Amosu et al., 2024).

On the other hand, the blockchain era improves the transparency and assurance of the supply chain contributors by presenting data that can be traced and verified (Nweje & Taiwo, 2025). This transparency can appreciably lessen the dangers of issues and fraud, finally selling an extra resilient supply chain (Han & Fang, 2023). In addition, AI integration with Blockchain can further enhance the supply chain model by combining prediction analysis with safe and transparent data management practices, thus overcoming flexible limits and integrating data inherent in traditional models (Adama et al., 2024).

Thus, the literature can be divided into three streams elaborated by this analysis. The first stream focused on forecast-driven models, which amplified inventory hazards or risks. The second stream involved responsive, postponement-driven models that delayed commitment until demand was discovered. Finally, the third stream was a hybrid model, which offered a balance of stability and flexibility. The 70/30 model, which is comprised of these streams, is most aligned with the hybrid paradigm model because it builds demand-driven responsiveness within a predefined ratio.

Collectively, the literature demonstrates a clear trend toward forecast-driven, hybrid, and demand-responsive production paradigms. Although the lean manufacturing concepts (waste eradication, stable processes) and the agile manufacturing concept (responsiveness, flexibility) have been extensively researched separately, the combination of both in a fixed ratio operation model has not been widely investigated. The 70/30 model helps to fill this gap by introducing a preset split that operationalizes agile logic into a practical planning heuristic and approach, which has hardly been formalized or empirically tested within the garment manufacturing context.

3.1 Theoretical Framework

The 70/30 production model encompasses a broader set of hybrid supply-chain strategies that combine forecast-driven and demand-driven tactics. The present study is based on established theories, including Demand-Driven Material Requirements Planning (DDMRP), postponement theory, and leagile supply-chain design, to provide a stronger theoretical foundation for the model.

DDMRP pays attention to the decoupling points and strategically located buffers in order to react quickly to the real demand in the market and minimize the bullwhip effect. The same logic is also applied to the 70/30 model. Under this strategic setup, 70 percent of the total production is allocated towards the stable, predictable base demand that acts as a strategic buffer. The remaining 30 percent is maintained as flexible as necessary to allow the companies to react to the changes in demand in real-time.

It is recommended that managers should not depend too much on precise demand forecasts because they are usually based on past averages and might not be accurate for the present market conditions. Postponement strategies enable the company to defer final production choices, including finishing, customization, or distribution, when more precise demand information is available. This is a delay that ultimately assists in minimizing the risk of surplus inventory and obsolescence of the products. The 30 percent does this postponement in the 70/30 model because the 30 percent is flexible and, therefore, decisions are made closer to actual demand.

Meanwhile, the 70 percent ratio indicates lean principles, such as stability of operations, workflow predictability, and cost-effectiveness. The other 30 percent embraces agile concepts, including fast responsiveness, market responsiveness, and flexibility. These factors make this model a practical approach to choosing between responsiveness and efficiency.

Contrary to all-conceptual models, this 70/30 model suggests an established operational ratio that a lot of clothing and garments firms are already non-aggressively working towards due to unpredictable fast-fashion demand. Hence, the balance is formalized in this work as the organized production planning approach. In order to lend more empirical support to the research, further research should incorporate simulation-based analysis to determine the performance of the 70/30 model in rather uncertain and fluctuating demand environments.

Overall, the study proposes a sustainable production planning approach through a novel hybrid model that effectively justifies the use of the 70/30 framework in the apparel industry, where demand uncertainty and short product life cycles are the foremost operational challenges.

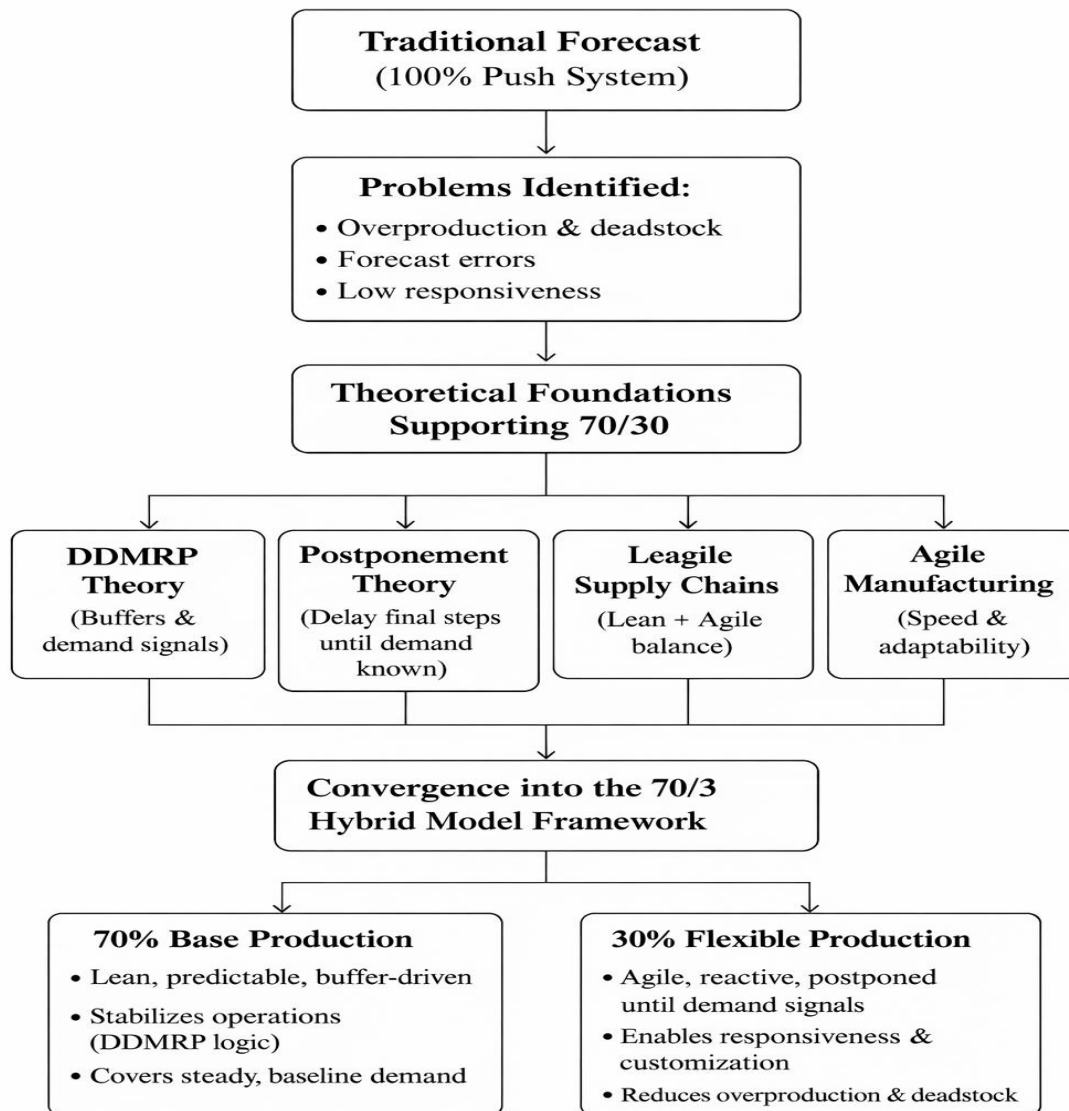


Figure 2: Theoretical Framework of the 70/30 Production Model

Note: Author's Compilation

The figure shows how the 70/30 model is derived from four major supply-chain theories: DDMRP, postponement, leagile supply-chain design, and agility in manufacturing. The 70% is lean and stable production in accordance with buffer-based planning, whereas the rest 30% is agile, postponed, and demand-based production. The purpose of this model is to create a hybrid model that reduces overproduction, enhances responsiveness, and promotes sustainability in the garment industry.

3.2 Manufacturing focused on demand and producing Agile

Production that focuses on demand is increasingly recognized as a sustainable solution approach and is closely aligned with fast production strategies. Producing Agile helps improve competitiveness by enhancing responsiveness and flexibility, enabling prompt adaptation to ever-changing customer needs and wants, as well as external conditions

(Eppinger, 2022). This is especially necessary in unpredictable environments in which rapid personalization or preference is necessary (Yusuf et al., 2003).

This 70/30 model is an original contribution that uses a fixed hybrid ratio, resulting in 30% postponement flexibility and a 70% demand-locked base. This clear proportional design offers companies changing from forecasting to responsive systems with a useful heuristic for decision-making. The model combines DDMRP's decoupled buffering and postponement's delayed differentiation into an agile, unique, and flexible hybrid planning approach.

3.3 Advantages of models focusing on needs

3.3.1 Excessive production reduction

This is in contrast with the traditional production models, which tend to create large inventories and wastage because they target products that are compatible with the actual consumers. This strategy will go a long way in minimizing overproduction and manufacturing old-fashioned products. Digital and progressive manufacturing technologies, such as additive manufacturing and process monitoring via the Internet of Things, are used to streamline production processes so that output would be better aligned with the current market demand (Christopher & Ryals, 2014). Agile structures can easily cope with personalization with wants that are fast to address in meeting the particular customer priority without lagging behind the schedule or spending full-scale costs. It is achieved by means of smart and distributed manufacturing networks that enhance flexibility and local responsiveness, maximize customer satisfaction, and also sustainability (Gunasekaran et al., 2017; Abbate et al., 2023).

3.3.2 Challenge Implementation

With conversion on call, the complexity of the delivery chain requires substantial operational adjustments. The use of Megadonts' assessment and innovative production is essential to look ahead and meet the demands accurately. However, challenging circumstances such as organizational resistance, technological training, and regulatory requirements can delay and hinder such implementations (Gunasekaran et al., 2017; Wang & Cheng, 2019).

3.3.3 Infrastructure and funding desires

Due to the financial burden of technology upgrades and workforce training, small and medium-sized companies face many challenges in adopting agile manufacturing. Although strategies and tactics based on the axiom layout can streamline processes, they require preliminary funding for infrastructure and talent development (Raach et al., 2018; Nweje & Taiwo, 2025). The integration of the 70/30 tracking system and the advantage of call-for-in real-time shows a rising trend in handling the delivery chain in line with current strategies in this field. This model provides a strategic framework allocating 70% of resources to monitor demand in real time while maintaining 30% flexibility to adapt to changes and unforeseen requirements. This approach resonates with the increasing agreement on the necessity to integrate agile production principles to improve supply chain efficiency as well as to address the limitations of traditional forecasting methods (Tiwari et al., 2024).

3.3.4 Integrated with Agile production principles

Producing Agile is very compatible with the 70/30 model, which is characterized by its responsiveness to changes in demand by reducing the amplifying effect of the supply chain. The fact that Agile promotes a dynamic supply chain, which is capable of responding quickly to changes, significantly reduces the impact of influence. Agile supply chain principles have been empirically associated with meaningful reductions in the bullwhip effect, with studies reporting improvements in supply chain responsiveness through tighter demand-production coupling (McCullen & Towill, 2001). The Agile principles support the 70% emphasis on monitoring actual needs, ensuring that supply reactions are accurate to current market conditions (McCullen & ToWill, 2001). Furthermore, the production of Agile accelerates the "Leagile" supply chain approach, combining lean and fast characteristics to optimize the supply chain strategy. The Liege model supports a flexible component of 30%, which allows companies to adjust their operations to meet unstable demand without incurring excessive costs, or generating waste (Mason-Jones et al., 2000).

3.3.5 Fill the gap in traditional forecasts

Conventional supply chain models are often limited and ineffective due to their reliance on historical demand data, which can result in forecasting errors and inventory imbalances (R et al., 2025). The dependence on the 70/30 model for real-time data helps to minimize these problems by combining current market signals and consumer behavior models in decision-making processes. This approach improves prediction accuracy because real-time information helps to reduce the delay associated with data-based adjustments (Tiwari et al., 2024). Monitoring real-time needs in the 70/30 model aligns with the concept of management of the management chain, which drives the thrust of the supply (Christopher & Ryals, 2014).

3.3.6 Comparative and meaningful analysis

The 70/30 model resembles the production-focused model; therefore, it aims at minimizing the cycle time and enhancing the supply chain transparency. The researchers who followed helped to reveal the way highly developed analytics and technology may help to increase the response and reduce the effects of the disruption within the clothing sector (Nilisetty, 2025; Han & Fang, 2023). In addition, using a mix of technological infrastructure like IoT and real-time data processing, businesses that deploy the 70/30 model can obtain a quick reaction and efficiency of operation equivalent to the Agile systems (Yang et al., 2025).

3.3.7 The 70/30 Production Model: Reducing Waste, Boosting Efficiency

The 70/30 production model of the clothing industry aligns with the latest literature on agile manufacturing and demand-driven production. This model addresses the rules and regulations of conventional forecasting strategies and promotes sustainability and efficiency through allocating 70% of production to real-time name and retaining 30% for flexibility (Raj et al., 2017; Christopher & Ryals, 2014).

The model operates on the following principles:

- 70% Real-Time Demand Production: The majority of the production is mainly based on real-time customer demand, ensuring that output aligns cautiously with market preferences. (Christopher & Ryals, 2014; Gunasekaran et al., 2017).

- Flexible Production is flexible by 30%: A smaller part of manufacturing is preserved for flexibility, as permitted by businesses, which helps to respond to developing trends. (Yusuf et al., 2003; Raj et al., 2017).

For the purpose of integrating real-time information and preserving a buffer for adaptability, the 70/30 model complements operational resilience, aligns with sustainable manufacturing, fulfills demands, and provides a balanced approach in line with the responsiveness of the marketplace (Ramkalaon & Sayem, 2020).

4. Research Gaps

Although there is an increasing discussion regarding the idea of the new fashion of circular and sustainable supply chain management, a number of major gaps in research remain. First, there is a factual scarcity of empirical assessment of hybrid demand-driven production models, specifically, the 70/30 structure, especially in regard to new economies like the RMG industry in Bangladesh. The vast majority of extant literature is devoted to either theoretical lean-agile models or the working performance of merely forecast-based models. Second, although it is becoming popular that Artificial Intelligence and Blockchain technologies can be used to optimize the supply chain, the issues of their integration into the fixed-ratio model of hybrid production are under-researched. Third, the demand-driven models that have already been studied in the garment industry rarely consider the dynamics of consumer behavior, limitations on the adoption of technologies, or the regulatory context of developing economies. The proposed research fills these gaps by establishing the theoretical arguments of the 70/30 model and determining whether it is viable or not by using that theoretical argument based on qualitative case analysis and simulation based on scenarios, which will subsequently provide conceptual understanding and practical implications to the developing body of knowledge on sustainable garment production.

Table 4: Highlights the key causes of deadstock within Bangladesh’s RMG sector in the emerging market context.

Cause	Contribution
Overproduction (buyer demands)	60%
Quality rejections	20%
Forecasting errors	15%
Logistics delays	5%

Note: Adapted from Textile Today Survey Report, by Textile Today, 2023.

5. Findings

Thematic analysis of 49 chosen sources provided three main results in accordance with the identified themes during coding. First, the forecast models of production were always linked to overproduction, inventory discrepancies, and loss of finances in various geographical settings. Second, demand-based and hybrid models, especially those with the integration of real-time data, were more compatible with the volumes of production and the real market needs, and less deadstock is generated. Third, it was determined that the environmental and economic sustainability of the garment manufacturing process depended on the adoption of flexible and responsive production architectures in a meaningfully dependent manner. The 70/30 model integrates these results by modeling a fixed hybrid ratio between predictive base production and agile demand-responsive capacity.

The 70/30 model has proven to operate efficiently in managing deadstock and reducing waste. One significant result is a clear reduction in unsold products. Companies that use similar demand-driven models can produce goods more carefully based on what customers essentially want. As a result, they avoid overproduction, which results in fewer unsold items, less waste, and better inventory management.

Table 5: Shows the information on the amount of unsold clothing in the Bangladesh RMG sector

Metric	Annual Figure
Total Deadstock Generated	~450,000 tons
Financial Loss	\$1.3 billion
Primary Causes	1. Order cancellations (50%) 2. Overproduction (30%) 3. Quality issues (20%)
Disposal Methods	1. Landfill (60%) 2. Incineration (25%) 3. Downcycling (15%)

Note: Adapted from Annual Report 2022–2023, by Bangladesh Garment Manufacturers and Exporters Association (BGMEA), 2023, pp. 45–47.

By minimizing overproduction and disposal fees, companies have achieved better earnings and increased profitability. This tactic reduces high costs and minimizes waste from waste materials. It further benefits the environment by reducing fabric waste and lowering the carbon footprint, thus contributing to sustainability.

Table 6: Exhibits the environmental cost of unsold clothing (dead stock) in Bangladesh

Impact	Annual Damage
CO ₂ emissions from incineration	2.5 million tons
Water is wasted in production	6 billion liters
Landfill space consumed	25 sq. km

Note: Adapted from Bangladesh Country Climate and Development Report, by World Bank, 2023; and Environmental Impact Study, by University of Dhaka, 2022.

These findings underscore the transformative potential of demand-driven, pull-based manufacturing models. The evidence demonstrates that shifting from traditional push-based forecasting toward real-time demand alignment can substantially reduce overproduction, minimize financial losses from deadstock, and contribute to measurable improvements in environmental sustainability across the garment sector. The power of production systems driven by customer requests is clearly shown in the results, which demonstrate that they can transform the clothing business.

6. Recommendations

To facilitate broader adoption of the 70/30 demand-driven production model, the following recommendations are proposed for industry practitioners, policymakers, and technology providers. These digital tracking systems use end-to-end stock and monitoring tools that allow real-time tracking of inventory. Thus, firms and companies can forecast demand more accurately and precisely and improve the efficiency of the delivery chain. In the clothing industry, collaboration-based suppliers, long-term partner suppliers, and technology-driven

companies can support the shift toward full digital operations. At the same time, growing consumer awareness about the environmental impact of fashion is increasing demand for sustainable products. Promoting eco-friendly alternatives can encourage consumers to choose responsibly produced goods and support sustainable business practices. However, there is a need for government support to establish a firm policy that makes manufacturing methods sustainable through appropriate incentives, along with tax breaks or rewards for green practices, to encourage wider organizational adoption.

In the context of Bangladesh's RMG sector specifically, it is recommended that industry associations such as BGMEA support pilot implementations of the 70/30 model among mid-sized export-oriented manufacturers, coupled with capacity-building programs in digital readiness and real-time demand sensing. International development finance institutions could facilitate access to technology investments for smaller manufacturers, enabling a more equitable transition to demand-driven production across the sector's supply chain tiers.

7. Conclusion

The garment industry is at a critical juncture where the demands of sustainability and profitability must, as far as feasible, be balanced within the actual realms of operations. The demand-driven production model with a 70/30 split offers a more systematic and theoretically grounded approach to addressing the ongoing problems of overproduction, deadstock buildup, and environmental damage. This model offers manufacturers a viable path to leaner, more responsive, and more sustainable operations by dedicating most of their production capacity to real-time demand signals while maintaining a flexible reserve to adapt to market conditions. Its effective application will entail concerted investment in digital tracking infrastructure, supply chain coordination, consumer education, and the facilitation of policy frameworks. This analysis provides a conceptual basis for the 70/30 model and identifies the situations in which it is most likely to yield quantifiable, sustainable, and efficient improvements. Further contributions require validation and improvement in future empirical studies, especially through primary fieldwork in Bangladesh's RMG sector and calibrated simulation studies.

7.1 Limitations

The study may be limited by the use of secondary qualitative data. Since there are no reported interviews, factory-level observations, or private production data, operational validation of the 70/30 model cannot be taken further.

Then the authors present a simulation in the study for illustration only. Simplification of real-world production economics through elimination of lead times, cost structures, capacity constraints, supply disruptions, uncertainties relating to demand behavior, and multi-product issues. A more advanced simulation or one calibrated to the industrial world could further enhance our insights into the model.

Moreover, the feasibility of the 70/30 approach varies across contexts (the ready-made garment industry) in Bangladesh, which suffers from structural limitations. In addition, low levels of digital infrastructure, limited real-time demand data, lower technological readiness, and capacity constraints constitute the limitations companies face in developing economies. It could be too costly for small and medium-sized producers to switch to hybrid or demand systems.

Finally, the model's efficiency may be influenced by differences in the supply chain development among global fashion brands, fast-fashion retailers, and subcontracting manufacturers. When evaluating the stated model's theoretical and practical contributions, the above factors should be taken into special consideration. Future research may include more qualitative approaches, such as primary fieldwork, cost-benefit analysis, and multi-tier supply chain modeling, to strengthen the study's external validity.

Informed Consent Statement: *Not applicable, as this study is a systematic review of previously published research.*

Conflicts of Interest: *The authors declare no conflicts of interest.*

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