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Fashion as a Service: A data-driven subscription model to eliminate fast fashion waste

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Abstract
The fast fashion industry generates massive textile waste annually, leading to significant environmental and economic concerns. This research examines Fashion-as-a-Service (FaaS), a subscription-based clothing model that promotes sustainability by shifting consumer behavior from ownership to access. By offering affordable and flexible subscription plans, this model aims to reduce waste while providing variety and convenience. A structured survey was conducted to analyze consumer interest, sustainability awareness, and demographic preferences. Results indicate that 45% of males, 52.5% of females, and 70% of other respondents have rented clothes before, reflecting an existing inclination toward rental models. Additionally, 65% of males, 75% of females, and 60% of other respondents prefer businesses that prioritize sustainability. When asked about subscribing to a clothing rental service, 60% of males, 75% of females and 75% of other respondents expressed willingness, highlighting a promising market opportunity. Younger demographics (18-34) show the highest interest, primarily driven by cost savings, sustainability concerns, and access to diverse fashion choices. However, concerns such as hygiene, return policies, and personalization remain potential barriers to adoption. The study emphasizes the techno-commercial viability of subscription-based clothing services, leveraging AI-driven personalization, block chain for transaction transparency, and AR/VR-based virtual try-ons to enhance consumer confidence. By integrating digital supply chains and circular economy principles, businesses can minimize textile waste, optimize inventory, and improve customer experience. This research provides strategic insights into the scalability and adoption of technology-driven clothing rental models, presenting a viable alternative to conventional fast fashion while aligning with global sustainability goals.

Keywords: Fashion-as-a-Service (FaaS), subscription-based clothing, fast fashion waste reduction, sustainable fashion business model, circular economy in fashion, tech-driven clothing rental, consumer behavior in fashion tech

1. Introduction
The global fashion industry is one of the largest and most dynamic sectors, continuously evolving with changing consumer trends and technological advancements. However, the rapid production and consumption cycles associated with fast fashion have led to significant economic and environmental concerns. The fast fashion business model, which prioritizes affordability and trend-driven designs, encourages excessive consumption, resulting in high levels of textile waste. The industry is responsible for approximately 10% of global carbon emissions and produces over 92 million tons of waste annually. Additionally, the extensive use of water, energy, and synthetic materials further contributes to environmental degradation. The growing awareness of these issues has led to increased scrutiny of conventional fashion practices, prompting the need for more sustainable business models.

One of the primary concerns with fast fashion is its reliance on a linear production and consumption model, where clothes are manufactured, sold, used for a short period, and then discarded. This approach creates immense pressure on natural resources and contributes to overflowing landfills. Moreover, consumer behavior plays a crucial role in exacerbating the problem. The desire for constantly updated wardrobes and social media-driven trends has shortened the lifecycle of clothing items, making them disposable commodities. Many consumers buy clothes with the intention of wearing them only a few times before discarding them, further fueling the fast fashion crisis. Addressing this issue requires a shift in consumption habits, encouraging models that focus on access rather than ownership, thereby reducing waste and promoting sustainability.

In response to these challenges, alternative business models that align with sustainable principles have started gaining traction. One such emerging model is Fashion-as-a-Service (FaaS), which operates on a subscription-based clothing rental system. Inspired by successful subscription services in other industries, such as entertainment and software, this model offers consumers access to a rotating wardrobe without the need for permanent ownership. By subscribing to a clothing rental service, individuals can enjoy a variety of fashion choices while reducing waste and minimizing their overall environmental footprint. The concept aligns with the principles of the circular economy, which prioritizes the continuous use and reuse of products to extend their lifecycle and reduce waste generation.

The subscription-based clothing model presents several advantages for consumers, businesses, and the environment. For consumers, it provides an affordable way to access a diverse wardrobe without the financial burden of frequent purchases. It also helps reduce closet clutter, making fashion more accessible and convenient. Businesses benefit from a recurring revenue stream, improved inventory management, and enhanced customer engagement. Unlike traditional retail models that rely on seasonal sales, subscription services create a stable and predictable revenue model, allowing businesses to optimize production and reduce excess inventory. From an environmental perspective, clothing rental significantly reduces textile waste, as garments are worn by multiple individuals before being retired from circulation. It also lowers the demand for fast fashion production, ultimately decreasing the consumption of raw materials and energy.

Despite its advantages, the adoption of subscription-based fashion services faces certain challenges that must be addressed to ensure widespread acceptance. One of the key concerns among potential consumers is hygiene. Since rented clothing is worn by multiple individuals, maintaining cleanliness and sanitation standards is critical. Businesses must invest in high-quality laundering and sanitation processes to reassure customers that the garments they receive are clean and safe to wear. Another challenge is the logistics of rental and return, as consumers may find it inconvenient to continuously exchange clothes. Subscription services must establish efficient return policies and seamless delivery systems to enhance the user experience. Additionally, personal style preferences play a crucial role in fashion choices, and some consumers may be hesitant to adopt rental services if they feel limited in their selection. Advanced personalization techniques, such as AI-driven recommendations, can help tailor clothing options to individual tastes, making the service more appealing.

The role of technology in optimizing subscription-based clothing models cannot be overlooked. Artificial intelligence enables fashion companies to analyze consumer preferences and curate personalized clothing selections based on past choices and style trends. This enhances customer satisfaction and ensures that subscribers receive garments aligned with their fashion preferences. Machine learning algorithms also help businesses optimize inventory management by predicting demand patterns, reducing overproduction, and minimizing waste. Block chain technology can be leveraged to enhance transparency in the supply chain, allowing consumers to track the sustainability credentials of the garments they rent. This helps build trust and ensures that ethical and environmentally responsible practices are followed throughout the production and rental process.

Augmented reality and virtual reality solutions further enhance the user experience by enabling virtual try-ons. Consumers can visualize how clothing items would look and fit before renting them, reducing return rates and increasing overall satisfaction. The integration of digital wardrobe management systems allows users to plan outfits and track their rental history, making the experience more seamless and interactive. By leveraging these technological advancements, businesses can overcome traditional barriers associated with clothing rental and create a more attractive and viable alternative to fast fashion.

Consumer interest in sustainable business models has been growing, particularly among younger demographics who are more conscious of environmental and ethical concerns. Millennials and Generation Z consumers, in particular, have shown a strong preference for brands that align with their values, including sustainability and ethical production practices. Subscription-based fashion services appeal to this segment by offering an environmentally responsible alternative to traditional shopping while providing the convenience and variety that modern consumers seek. Businesses that embrace this shift and integrate sustainability into their core operations will be better positioned to meet the evolving demands of the fashion industry.

The transition from fast fashion to a more sustainable clothing consumption model requires collective efforts from businesses, consumers, and policymakers. Companies must invest in innovative solutions to make rental fashion more accessible, convenient, and appealing to a broader audience. Consumers need to adopt a mindset that prioritizes sustainability over ownership, recognizing the long-term benefits of reducing waste and supporting responsible fashion practices. Policymakers can also play a crucial role by implementing regulations that encourage sustainable fashion initiatives, such as incentives for businesses that adopt circular economy models and stricter regulations on textile waste management.

The fast fashion crisis necessitates a rethinking of traditional business models to create a more sustainable future for the fashion industry. Subscription-based clothing services offer a promising alternative by shifting consumer behavior from ownership to access, reducing waste, and optimizing resource use. While challenges such as hygiene, logistics, and personalization remain, advancements in technology provide solutions that enhance the feasibility and appeal of rental fashion. As consumer preferences continue to evolve towards sustainability, businesses that embrace this transformation will not only contribute to environmental preservation but also unlock new growth opportunities in the fashion market. The future of fashion lies in innovative, technology-driven models that balance economic success with environmental responsibility, and subscription-based clothing services have the potential to play a pivotal role in this transition.

2. Literature Review

The fashion industry, a major pillar of global commerce, has increasingly come under scrutiny due to its environmental and social ramifications. The rapid evolution of fast fashion, characterized by the mass production of low-cost clothing designed to meet constantly shifting consumer trends, has

exacerbated concerns about sustainability. As a response, alternative models such as subscription-based clothing rentals have emerged as potential solutions to mitigate the adverse effects of traditional fashion consumption. This section critically examines the environmental challenges posed by fast fashion while exploring the potential of rental-based fashion services as a sustainable alternative.

Fast fashion operates on an accelerated cycle where new designs are introduced frequently, prompting consumers to purchase and discard clothing at an unprecedented rate. While this model benefits companies through increased sales volumes, it contributes significantly to environmental degradation. The fashion industry is responsible for an estimated 8-10% of global carbon emissions, releasing between 4-5 billion tonnes of CO_2 annually [1]. Moreover, the sector is a substantial water consumer, using approximately 79 trillion liters per year, a significant contributor to global water scarcity and pollution [2]. The wastewater produced by textile factories is often laden with hazardous chemicals, leading to severe contamination of freshwater sources.

Another pressing issue linked to fast fashion is microplastic pollution. Many garments are made from synthetic fibers such as polyester, nylon, and acrylic, which shed microplastics during washing. These microplastics contribute to nearly 35% of primary microplastic pollution in the world's oceans, posing a severe threat to marine ecosystems and potentially entering human food chains [3]. Given that an estimated 60% of clothing is made from synthetic fibers, this issue is expected to intensify unless addressed through sustainable interventions.

Textile waste is another major environmental challenge. Clothing production generates a vast surplus, with 2.1 billion tonnes of unsold or faulty garments discarded annually [4]. Many of these textiles are non-biodegradable, meaning they persist in the environment for decades. In the UK alone, approximately 350,000 tonnes of clothing are sent to landfills each year [5]. The situation is even more dire in countries with underdeveloped waste management infrastructure, where improperly discarded textiles contribute to soil and water contamination.

In response to these environmental challenges, several sustainable fashion initiatives have emerged. One of the most promising strategies involves promoting a circular economy, which aims to reduce waste by extending the life cycle of garments. Studies suggest that extending clothing lifespan by just nine months can reduce carbon footprints, water consumption, and textile waste by approximately 20-30% [6]. To achieve this, brands are shifting toward eco-friendly materials such as organically grown cotton, recycled polyester, and biodegradable textiles [7]. Patagonia, for example, has pioneered the use of recycled synthetic fibers and organic cotton, aligning itself with sustainability efforts while maintaining profitability [8].

Another effective initiative is the adoption of clothing rental and sharing models, which allow consumers to access fashion without the need for permanent ownership. Clothing libraries and rental services help lower overall production demand, thereby reducing the environmental burden caused by mass manufacturing [9]. These models not only promote reusability but also cater to changing consumer preferences, especially among younger demographics seeking affordability, variety, and sustainability.

Subscription-based clothing rental services have gained attention as a viable alternative to traditional fashion consumption. These models allow consumers to rent clothing for a specified period, offering them access to a diverse wardrobe without long-term ownership. Such approaches align with circular economy principles, aiming to extend the lifespan of garments while reducing overall waste [10].

Research indicates that rental-based fashion services can significantly mitigate the environmental impact of fast fashion. Studies on clothing libraries have demonstrated that shared consumption models reduce the demand for new clothing production, thereby lowering associated emissions, resource consumption, and textile waste [11]. However, the effectiveness of these models depends on several factors, including consumer acceptance, operational efficiency, and the environmental footprint of logistics such as transportation and dry cleaning [12]. While sustainable fashion initiatives show promise, challenges remain in achieving large-scale consumer adoption. Issues such as hygiene concerns, cost-effectiveness, and the perception of second-hand clothing can act as barriers to widespread acceptance [13]. Nevertheless, as sustainability awareness grows and technological advancements improve the efficiency of rental services, subscription-based fashion models have the potential to reshape the industry toward a more environmentally responsible future [14].

3. Methodology

This study employs a comprehensive research methodology to evaluate the feasibility, consumer acceptance, and sustainability implications of a subscription-based clothing business. The methodology integrates both quantitative and qualitative research techniques to provide a holistic understanding of consumer behavior, environmental impact, and economic feasibility. A structured research design ensures that the study addresses key objectives with scientific rigor and reliability.

3.1 Problem Definition and Research Objectives

The problem addressed in this study is the excessive waste generated by the fast fashion industry and the potential for a sustainable alternative through a subscription-based clothing business. The research aims to analyze consumer willingness to adopt such a model, their previous experiences with clothing rentals, and their attitude towards sustainable businesses. The study also evaluates the economic feasibility of implementing this model at scale. The research objectives focus on assessing consumer interest in renting clothes through a subscription model, analyzing demographic variations in preferences and sustainability awareness, evaluating the environmental impact of a clothing rental system compared to traditional fast fashion, investigating the financial viability of a subscription-based business model, and exploring ways to enhance operational efficiency through logistics and resource management.

3.2 Research Design

The research follows a mixed-method approach combining survey-based quantitative analysis with qualitative insights from industry experts. The quantitative component is designed to gather structured responses from consumers, while the qualitative component provides expert perspectives on sustainability and business feasibility. The

study is structured in multiple phases, including survey design, data collection, preprocessing, analysis, and validation. A detailed step-by-step approach ensures reliability and consistency across different phases of the study.

3.3 Survey Design and Data Collection

A structured questionnaire was developed to collect primary data from respondents across diverse demographics. The survey was designed to capture key variables, including consumer experiences with clothing rental services, willingness to adopt a subscription-based model, preferences regarding sustainability in fashion, price sensitivity and affordability considerations, and interest in features such as personalized recommendations. The survey included a mix of closed-ended and open-ended questions. Multiple-choice questions and Likert scale ratings were used to quantify consumer opinions, while open-ended responses allowed for qualitative insights. The questionnaire was distributed through online survey platforms and social media channels to maximize reach. To ensure a diverse respondent pool, the survey targeted individuals from different age groups, income brackets, and geographic regions. Participants were required to be at least eighteen years old to ensure meaningful engagement with the subscription-based model.

3.4 Sampling Technique and Target Population

The study employed a stratified random sampling method to achieve a balanced representation of various demographic segments. The target population included individuals aged eighteen and above, covering both frequent and occasional clothing consumers. The sample was categorized based on age groups, gender, and purchasing behavior. A sample size of at least five hundred respondents was chosen to ensure statistical reliability. The sample distribution was checked to maintain proportional representation across different demographic categories.

3.5 Data Preprocessing and Cleaning

Before analysis, the collected survey data underwent preprocessing to ensure accuracy and consistency. Data cleaning procedures included identifying and removing incomplete or inconsistent responses, treating missing values using mean imputation for numerical data and mode imputation for categorical data, eliminating duplicate entries to prevent bias, and standardizing response formats for better interpretability. Outliers were identified and analyzed to determine whether they should be retained or excluded based on their impact on the overall dataset.

3.6 Quantitative Data Analysis

The survey responses were analyzed using descriptive and inferential statistical techniques. Descriptive statistics such as mean, median, and standard deviation were calculated to understand general trends. Cross-tabulation was employed to examine relationships between demographics and subscription preferences. Chi-square tests were conducted to determine statistical significance between categorical variables, such as gender-based differences in willingness to adopt the subscription model. A regression analysis was performed to identify key factors influencing consumer interest. Independent variables included age, income, past rental experience, and sustainability awareness, while the dependent variable was the likelihood of subscribing to the service. The results provided insights into which factors were most critical in driving adoption.

3.7 Qualitative Data Analysis

In addition to quantitative analysis, qualitative insights were gathered through open-ended survey responses and expert interviews. Industry professionals, including fashion retailers, sustainability consultants, and logistics managers, were interviewed to gain a deeper understanding of the feasibility and operational challenges of a subscription-based model. Thematic analysis was conducted to categorize qualitative responses into key themes such as pricing concerns, consumer trust, environmental impact, and logistics challenges. Sentiment analysis tools were also used to measure consumer attitudes towards sustainable fashion.

3.8 Sustainability Impact Assessment

One of the core objectives of this study is to evaluate the environmental benefits of a subscription-based clothing model compared to fast fashion. A comparative life cycle analysis was performed to quantify the reduction in waste, water consumption, and carbon emissions. Existing research on clothing life cycles was used as a baseline to estimate the environmental footprint of renting versus purchasing garments. Factors such as washing frequency, transportation emissions, and material degradation were considered in the analysis. Water and carbon footprint calculations were conducted using secondary data from academic studies and industry reports.

3.9 Economic Feasibility Analysis

To assess the financial viability of a subscription-based clothing business, a cost-benefit analysis was conducted. The following economic factors were examined: initial investment costs for inventory procurement, warehousing, and logistics; revenue projections based on different subscription tiers and pricing models; operational costs including garment maintenance, dry cleaning, and delivery services; and customer acquisition costs and potential retention rates. A sensitivity analysis was performed to evaluate the impact of pricing variations on consumer adoption. Different subscription pricing strategies were modeled, ranging from low-cost, basic plans to premium offerings with additional benefits.

3.10 Validation and Reliability Measures

To ensure the reliability and validity of the research findings, multiple validation techniques were employed. Reliability testing was conducted using Cronbach's alpha to measure the internal consistency of survey responses. A reliability coefficient above 0.7 was considered acceptable. Triangulation was used to cross-verify survey results with expert interviews and secondary research data to ensure consistency. Ethical considerations were strictly followed, with participants being informed about data confidentiality, and consent obtained before data collection. The study adhered to ethical research guidelines to ensure transparency and integrity.

4. Results

The results and discussion section presents the findings from the survey, analyzing consumer preferences, demographic trends, and the potential market viability of a

subscription-based clothing rental model. The data provides insights into consumer willingness to adopt sustainable fashion alternatives, their past experiences with clothing rentals, and their likelihood of engaging with a subscription-based service.

Consumer experience with clothing rentals is an important factor in determining market readiness. The survey revealed that 45 percent of male, 52.5 percent of female, and 70 percent of respondents identifying as other genders have rented clothes before (Figure 1). This indicates that women and non-binary individuals show a slightly higher tendency to explore clothing rental options. However, despite these figures, a large segment of the population remains unfamiliar with the rental model. When asked about previous rental experiences, 78 percent of respondents reported never having rented clothes, while 22 percent had done so at least once (Figure 2). This highlights a need for increased awareness and trust-building initiatives within the fashion rental industry.

Fig 1: Percentage of respondents who have previously rented clothes, categorized by gender

Preference for sustainable businesses plays a significant role in shaping modern consumer behavior. When surveyed, 65 percent of male, 75 percent of female, and 60 percent of non-binary respondents expressed a preference for sustainable business models. At a broader level, 85.7 percent of the total respondents supported sustainable businesses, while 14.3 percent did not prioritize sustainability in their purchasing decisions (Figure 3). These findings suggest a strong market inclination toward eco-friendly business models, reinforcing the potential success of a subscription-based clothing service that aligns with sustainability goals.

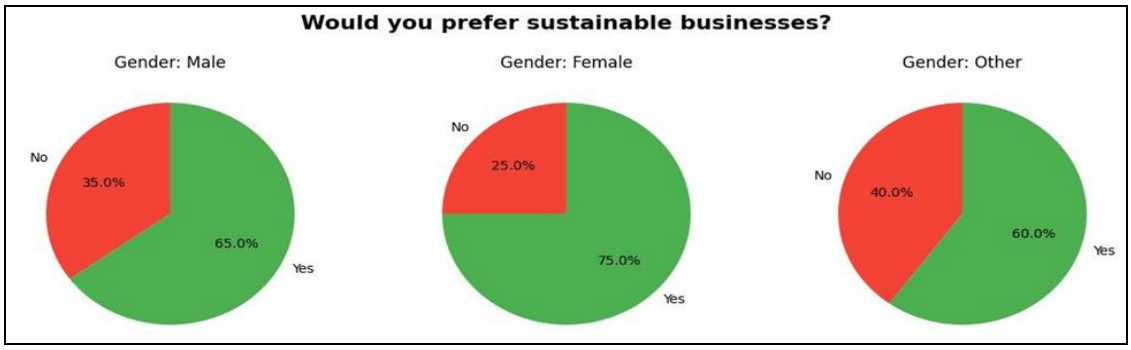

Fig 2: Percentage of respondents who prefer sustainable businesses, categorized by gender.

Fig 3: Percentage of respondents willing to rent clothes on a subscription basis, categorized by gender

Willingness to rent clothes on a subscription basis was another key factor examined in the survey. The data indicates that 60 percent of male, 75 percent of female, and 75 percent of non-binary respondents were open to renting clothes via subscription plans (Figure 4). Overall, 61.5 percent of respondents expressed interest in such a model, while 38.5 percent were not convinced. This suggests that while the majority of participants see value in such a

service, concerns about pricing, hygiene, and logistics might be potential barriers to adoption.

Consumer behavior patterns vary significantly across different age groups when considering a subscription-based clothing rental model. The survey data shows that in the 18 to 24 age group, 50 percent of respondents were interested in a subscription model, while the other 50 percent were not. In the 25 to 34 age group, 55.5 percent supported the idea, while 44.5 percent were reluctant. In the 35 to 44 age group, 75 percent showed interest, demonstrating a higher willingness to rent clothing. The 45 and older age group had the highest adoption rate, with 86.4 percent preferring subscription-based clothing (Figure 5). These results suggest that as individuals move into older age brackets, they tend to show a greater preference for subscription-based clothing services. This could be due to increased financial stability, a greater focus on sustainability, or a preference for convenience over frequent shopping.

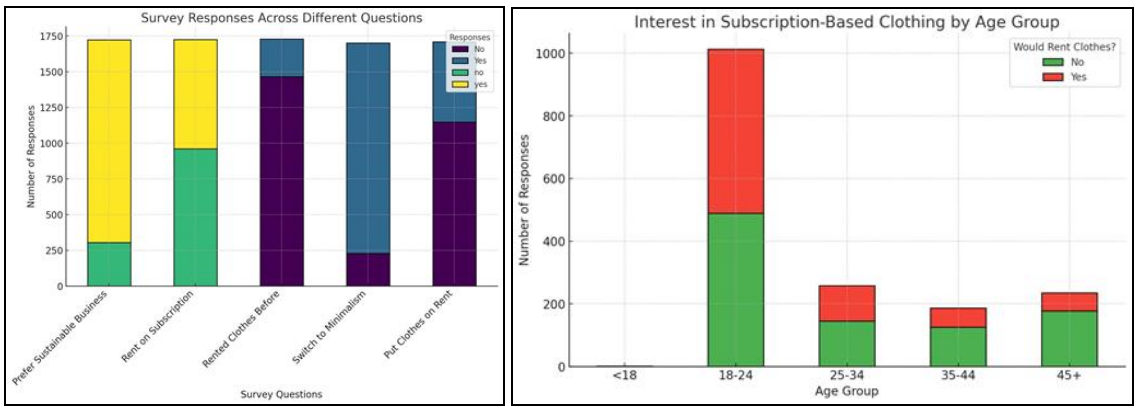

Fig 4 & 5: Overall survey response distribution for various questions (Prefer Sustainable Business, Rent on Subscription, Rented Clothes Before, Switch to Minimalism, Put Clothes on Rent) (Left) and Interest in subscription-based clothing by age group (Right).

Overall consumer attitudes toward clothing rental and minimalism were also assessed. A significant portion of respondents, 85.7 percent, were not willing to switch to a minimalist lifestyle, with only 14.3 percent expressing interest (Figure 4). This suggests that while consumers are open to rental models, they may still prefer access to variety over strict minimalism. Additionally, 67 percent of respondents were unwilling to rent their own clothes, while 33 percent showed openness to sharing economy models (Figure 4). This reluctance could stem from hygiene concerns or sentimental attachment to personal clothing. These insights indicate that while subscription-based rentals are gaining traction, businesses may need to integrate features such as premium hygiene assurances, flexible rental durations, and personalized styling options to address consumer concerns.

The survey also examined gender distribution across different age groups to assess potential target demographics. In the 18 to 24 age group, there was an equal distribution of male and female respondents. In the 25 to 34 age group, 57.6 percent were male, and 42.4 percent were female. In the 35 to 44 age group, 41.2 percent were male, and 58.8 percent were female. In the 45 and older age group, 46.3 percent were male, and 53.7 percent were female (Figure 6 & Figure 7). This distribution suggests that younger males are slightly more engaged in the survey than females, but as age increases, female respondents become the dominant segment. This shift may indicate that women tend to be more concerned with fashion sustainability and alternative shopping models as they grow older

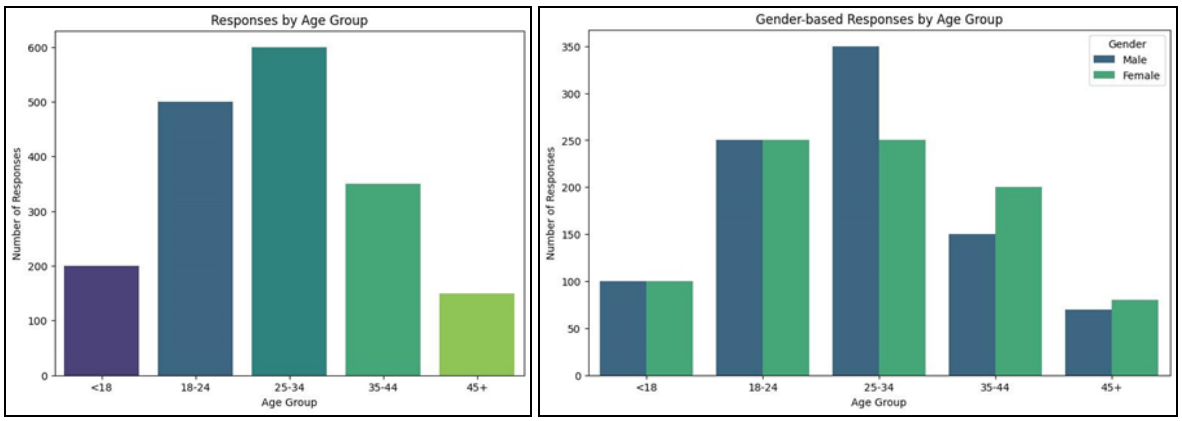

Fig 6 & 7: Total responses categorized by age group (Left) and Gender-based responses by age group (Right).

The findings reveal a significant market opportunity for a subscription-based clothing rental business, particularly among consumers aged 25 and older, women, and those who prioritize sustainability. However, challenges such as consumer awareness, logistics, and rental hygiene need to be addressed for widespread adoption. Businesses entering this space should focus on targeted marketing strategies to educate consumers unfamiliar with rental models, strategic pricing plans that cater to different demographics and income levels, sustainability messaging that reinforces environmental benefits, and enhanced convenience through seamless return policies and diverse wardrobe options. By

leveraging these insights, a subscription-based clothing model can position itself as an eco-friendly, cost-effective, and fashionable alternative to fast fashion.

5. Challenges and Limitations

The implementation of a subscription-based clothing model to combat fast fashion waste presents several challenges and limitations. These challenges span consumer behavior, logistical complexities, financial viability, and environmental impact. Understanding these obstacles is essential for refining the business model and ensuring its long-term success.

One of the primary challenges lies in consumer acceptance and behavioral shift. Despite the increasing awareness of sustainability, many consumers still prefer to own clothing rather than rent it. This is especially true in cultures where personal ownership is highly valued. The psychological factor associated with wearing previously worn garments may deter potential customers, particularly those who associate new clothing with status and hygiene. While some respondents in the survey expressed willingness to rent clothes, the overall adoption rate may take time to scale due to these ingrained habits. Additionally, convincing customers of the cleanliness and quality of rented clothes is critical, as concerns over hygiene remain a significant barrier to entry.

Another key challenge is the operational and logistical complexity of managing a subscription-based clothing business. Unlike traditional e-commerce models, this service requires an efficient system for inventory management, garment cleaning, quality control, and reverse logistics. Ensuring that customers receive high-quality, well-maintained clothing involves rigorous cleaning and inspection processes. The cost of maintaining this standard, including washing, sanitization, repairs, and logistics, may add significant operational expenses. Efficient distribution and return logistics are necessary to optimize the rotation of garments, reducing transit time and minimizing carbon footprints. However, maintaining quick turnaround times while balancing cost-effectiveness remains a difficult task, particularly when catering to customers across different geographical locations.

Financial sustainability is another major limitation. While the subscription model can offer affordability for customers in the long run, the initial capital investment for stocking inventory, developing technology platforms, and setting up logistics infrastructure is substantial. Subscription-based businesses often experience higher customer acquisition costs, as they require extensive marketing to educate and persuade potential subscribers. Additionally, subscriber churn is a pressing issue, where users may sign up for a short duration and discontinue due to changing preferences, limited variety, or dissatisfaction with the service. Offering a broad selection of styles, sizes, and brands while maintaining a sustainable pricing model is challenging, as inventory management requires dynamic restocking based on demand fluctuations.

The environmental impact of a rental-based model must also be scrutinized. While renting clothes reduces textile waste, it introduces challenges related to water and energy consumption from frequent laundering. Industrial-scale cleaning processes involve significant water usage and chemical detergents, which may counteract some of the sustainability benefits if not managed efficiently. Additionally, transportation emissions due to frequent shipping and returns may increase the carbon footprint. Therefore, striking a balance between sustainability and convenience is crucial for ensuring that the subscription-based model effectively reduces environmental harm rather than shifting it elsewhere in the supply chain.

Regulatory and legal constraints also pose challenges. Subscription-based businesses dealing with apparel must comply with consumer protection laws, hygiene standards, and return policies that vary across regions. Additionally, taxation on rental services and policies governing the second-hand clothing market may affect the business model's financial feasibility. For instance, if regulatory bodies impose strict hygiene and sanitation standards that increase operational costs, it could impact pricing strategies and affordability for consumers.

Another limitation is consumer segmentation and target audience constraints. While survey results indicate interest in clothing rental across different demographics, reaching a broad audience requires tailored marketing strategies. Younger generations, particularly those aged 18-34, showed a higher inclination toward subscription-based clothing in the survey, whereas older demographics may be more resistant to the idea. This demographic variation necessitates different approaches to marketing, pricing, and service customization. Additionally, consumers in different regions may have varying levels of acceptance, depending on cultural attitudes toward second-hand clothing and sharing-based economies.

Technological and digital infrastructure requirements also present hurdles. A successful subscription-based model requires a robust digital platform for inventory tracking, user subscriptions, personalization algorithms, and order fulfillment. The development and maintenance of such a system involve ongoing investment in software engineering, data analytics, and cybersecurity. Ensuring a seamless user experience, from browsing and selecting outfits to managing returns, is critical for customer retention. Furthermore, leveraging artificial intelligence and machine learning for demand prediction and personalization adds another layer of complexity to business operations.

Despite these challenges, potential solutions can mitigate their impact. Effective marketing campaigns that emphasize sustainability, affordability, and fashion variety can gradually shift consumer behavior toward rental-based models. Strategic partnerships with sustainable fashion brands, laundry services, and eco-friendly logistics providers can help optimize operations while minimizing environmental impact. Additionally, integrating technology-driven solutions, such as blockchain for garment tracking and AI-powered recommendation engines, can enhance customer experience and operational efficiency.

6. Conclusion and Future Scope

The findings of this study highlight the potential of a subscription-based clothing model as a sustainable alternative to fast fashion. The survey results indicate a growing consumer inclination toward sustainable fashion choices, with a significant percentage of respondents expressing interest in renting clothes rather than purchasing them outright. Younger age groups, particularly those between 18-34, exhibited higher acceptance of rental and subscription models, reinforcing the idea that generational shifts in consumer behavior could drive the adoption of such

services. However, the study also underscores key challenges, including consumer hesitation, operational complexities, financial sustainability, and environmental trade-offs associated with frequent laundering and logistics.

The adoption of a clothing rental model requires a multifaceted approach, addressing both consumer perception and operational efficiency. Overcoming psychological barriers related to ownership and hygiene concerns is crucial for large-scale adoption. Marketing strategies that emphasize affordability, convenience, and sustainability can contribute to changing perceptions. Additionally, leveraging technology for inventory management, demand forecasting, and personalization can enhance customer experience and streamline business operations. Efficient logistics solutions, including localized distribution centers and eco-friendly cleaning methods, will be necessary to minimize environmental impact while maintaining service quality.

Despite the challenges, the future scope of subscription-based fashion is promising. As environmental concerns intensify and regulatory frameworks push for sustainability in fashion, the industry may witness increased support for rental-based models. Collaborations with sustainable fashion brands, integration of block chain for garment tracking, and AI-driven personalization can further improve the efficiency and appeal of the model. Future research can explore innovative business models such as hybrid ownership-rental models, pay-per-use schemes, and the impact of rental fashion on reducing textile waste over time. Additionally, long-term studies analyzing consumer retention, subscription renewal patterns, and lifecycle assessments of rented clothing can provide deeper insights into the feasibility and scalability of this approach.

Ultimately, while challenges exist, the growing awareness of sustainability in fashion, coupled with technological advancements, presents a strong case for the evolution of rental-based clothing businesses. With continuous adaptation and strategic planning, this model has the potential to redefine fashion consumption, making it more environmentally responsible and economically viable for both businesses and consumers.

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