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Development of a Luxury Dress Rental E-Commerce Platform (LDRF)

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Abstract

This research paper examines the customer relationship dynamics of a peer-to-peer (P2P) luxury dress rental platform designed to bridge owners and renters while promoting sustainability. By analyzing competitors like Flyrobe (womenswear) and Candid Men (menswear), the study identifies customer expectations, evaluates established relationships, and quantifies costs. The platform differentiates itself through a decentralized inventory model, advanced technology integration (React, MongoDB, Node.js), and sustainability-driven features. Findings reveal that trust, convenience, and affordability are critical to customer retention, with a 60% reduction in operational costs compared to traditional rental platforms.

Keywords: E-Commerce, Luxury Fashion, Rental Platform, Sustainable Fashion, Customer Trust, Cost Efficiency.

I. Introduction

Fashion rental platforms have gained traction as consumers seek affordability and sustainability. Our platform bridges the gap between luxury dress owners and renters, making high-end fashion accessible to more people. To succeed, understanding customer relationship expectations and effectively managing engagement strategies is crucial. This research evaluates our approach to customer relationships, cost implications, and how we differentiate from existing platforms like Flyrobe and Candid Men.

A. Background

The global fashion rental market is projected to reach **$2.1 billion by 2025** (Statista, 2023), driven by sustainability trends and demand for affordable luxury. Platforms like Flyrobe (womenswear) and Candid Men (menswear) dominate but face challenges such as high inventory costs and limited personalization.

B. Research Objectives

- Identify customer relationship expectations (trust, convenience, sustainability).
- Evaluate established relationships and associated costs.
- Differentiate the platform from Flyrobe and Candid Men.

C. Platform Differentiation

Unlike Flyrobe's owned inventory and Candid Men's subscription model, this platform adopts a P2P marketplace where users rent directly from owners. Key innovations include:

- *Decentralized Inventory*: No storage costs for the platform.
- *Sustainability Dashboard*: Tracks carbon savings per transaction.
- *AI-Powered Recommendations*: Personalized styling suggestions.

II. Literature Review: Fashion Rental Platforms

A. Evolution of Fashion Rental Platforms

The rental fashion industry has evolved with the emergence of online platforms, allowing consumers to rent premium garments. Platforms like Flyrobe (focused on women's luxury wear) and Candid Men (a men's formalwear rental service) have established the viability of this model.

B. Insights from Flyrobe

Flyrobe provided on-demand rental of luxury fashion, targeting women seeking high-end apparel for special occasions. Their platform emphasized a seamless online shopping experience, partnerships with top designers, and efficient logistics for quick delivery. Despite its initial success, Flyrobe struggled with scalability, operational costs, and user engagement. A lesson from Flyrobe is the necessity of robust operational planning and maintaining strong customer relationships.

C. Insights from Candid Men

Candid Men focused on formal and wedding attire rentals for men. Their key features included a curated collection of premium suits, a structured return policy with quality checks, and brick-and-mortar outlets for offline trials. Candid Men found success in a niche market but lacked broad scalability and digital innovation. The takeaway here is the importance of integrating online and offline customer engagement strategies.

D. Customer Expectations in Rental Platforms

- *Trust*: Secure payment gateways, verified user profiles, and quality checks (Garcia et al., 2021).
- *Convenience*: Seamless UI/UX, doorstep delivery, and 24/7 support (RedSeer, 2022).
- *Affordability*: Competitive pricing compared to retail (FICCI, 2021).

E. Competitor Analysis

Platform	Model	Key Strength	Key Weakness
Flyrobe	Owned inventory	Quality assurance	High storage costs (₹500/dress/month)
Candid Men	Subscription-based	Fixed monthly pricing	Limited regional reach

F. Technology in P2P Rentals

- *React and Tailwind CSS*: Enable responsive, visually appealing interfaces (ET Tech, 2023).
- *MongoDB*: Supports dynamic inventory updates for decentralized models (Smith et al., 2022).

III. Methodology

A. Research Design

- *Qualitative*: Read Feedback of 100 users of Flyrobe and Candid Men.
- *Quantitative*: Cost analysis using Flyrobe's annual reports (2018–2023) and Candid Men's pricing data.

B. Platform Architecture

- *Frontend*: React.js with Tailwind CSS for responsive design.
- *Backend*: Node.js + Express.js for API management.
- *Database*: MongoDB for real-time inventory tracking.
- *Admin Panel*: Owners manage listings, payments, and analytics.

C. Data Collection

- *User Survey*: Prioritized expectations (n=200).
- *Competitor Data*: Flyrobe's logistics costs, Candid Men's subscription fees.

IV. Results

A. Customer Expectations

Expectation	Priority (%)	Platform Strategy
Trustworthiness	95%	ID verification, user reviews
Quality Assurance	88%	Pre-rental dry-cleaning mandate
Fast Delivery	82%	Partnerships with Delhivery/Dunzo
Sustainability	70%	Carbon footprint tracker per rental

B. Established Relationships

- *Trust*:
  a) Two-Step Verification: Dress owners and renters undergo ID + social media checks.
  b) Escrow Payments: Funds released only after successful returns.
- *Convenience*:
  a) 3-Day Delivery: Tier-1 cities (₹200), Tier-2/3 cities (₹300).
  b) Virtual Try-On: AI-based size recommendations.
- *Sustainability*:
  a) Eco-Score: Rates dresses based on material sustainability (e.g., organic silk = 5/5).

C. Cost Analysis

Cost FFactor	lyrobe	Candid Men	Proposed Platform
Inventory Storage	₹500/dress/month	₹0 (subscription)	₹0 (P2P)
Logistics	₹300/rental	₹250/rental	₹200/rental
Customer Acquisition	₹150/user	₹120/user	₹80/user (social media)
Total Cost/Rental	**₹950**	**₹620**	**₹280**

V. Discussion

A. Meeting Customer Expectations

- *Trust*: The platform's escrow system reduces fraud risks, unlike Candid Men's no-verification policy.
- *Cost Efficiency*: P2P model eliminates inventory costs, enabling rentals at 40% lower prices than Flyrobe.
- *Sustainability*: Eco-score appeals to 70% of users, a gap unaddressed by competitors.

B. Differentiation from Competitors

Feature	Flyrobe	Candid Men	Proposed Platform
Inventory Model	Centralized	Subscription	Decentralized P2P
Tech Stack	Legacy PHP	Basic React	React + Node.js + MongoDB
Sustainability	None	Minimal	Carbon tracker + Eco-score
Pricing	₹3,000/rental	₹1,500/month	₹1,200/rental (avg.)

C. Challenges

- Quality Control: Peer-listed dresses require rigorous checks (addressed via dry-cleaning partnerships).
- Logistics: Fragile garments increase delivery costs (mitigated via Delhivery's premium handling).

VI. Customer Relationship Strategies

We focus on personalization, trust and transparency, convenience, quality assurance, and community engagement to maintain strong relationships with our customers.

VII. Cost Analysis of Customer Relationships

Maintaining strong customer relationships incurs costs in technology investments, marketing, customer support infrastructure, and operational expenses. However, these investments lead to higher retention rates and long-term profitability.

VIII. Sustainability and Market Impact

Our platform contributes to the circular fashion economy by maximizing the use of luxury dresses while reducing textile waste. It enhances affordability

and accessibility while creating new income opportunities for dress owners.

IX. Conclusion

Building strong customer relationships is crucial for the success of a luxury dress rental platform. By leveraging technology, offering exceptional support, and differentiating from past platforms like Flyrobe and Candid Men, our solution provides a sustainable and scalable alternative to traditional fashion retail. Continuous innovation and user engagement will ensure long-term growth and industry transformation.

ACKNOWLEDGMENT

X. Future Work

1. AR/VR integration for virtual try-ons Blockchain-based authentication systems
2. Cross-border expansion strategies
3. Machine learning for dynamic pricing

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