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BLOCKCHAIN ADOPTION FOR ANTI-COUNTERFEITING IN PEER-TO-PEER LUXURY RESALE

TREO Paper

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Abstract

We attempt to identify opportunities that may spur blockchain adoption for anti-counterfeiting in peer-to-peer luxury resale. From a systematic literature review of existing studies in relevant fields, we summarize the motivating and inhibiting factors for adopting blockchain for anti-counterfeiting in peer-to-peer luxury resale. Preliminary economic analysis shows that both luxury manufacturers and peer-to-peer resale platforms need proper incentives to adopt blockchain technology. Based on the literature review and economic analysis, we will conduct case studies to advance the understanding of different perspectives of luxury manufacturers, peer-to-peer resale platforms, and platform users including both buyers and sellers.

Keywords: Blockchain adoption, anti-counterfeiting, peer-to-peer resale, luxury resale.

1 Introduction

The secondary market for luxury goods, spanning from designer handbags to jewelry, is experiencing rapid growth, outpacing the expansion of the original luxury market itself. Bain & Company (Bain, 2023) reports a staggering \$45 billion in luxury item resale across all categories in 2022, projected to grow five times faster than the primary market in the coming years. This burgeoning resale sector not only enhances affordability but also promotes sustainability by encouraging a circular economy, as highlighted by Wangsa et al. (2022).

The rise of the luxury resale market has been paralleled by a significant increase in counterfeiting. Certilogo's study (Certilogo, 2022) reveals alarming figures, indicating that 20% of fashion items in resale markets are counterfeit, with 80% of these purchases occurring online. Blockchain technology emerges as a promising solution for combatting counterfeiting and advancing sustainability in the peer-to-peer luxury resale market. While luxury manufacturers can leverage blockchain for product verification and lifecycle tracking, resale platforms stand to benefit from its use in transactional records and authenticity verification. Yet, major peer-to-peer resale platforms have been slow to adopt blockchain for anti-counterfeiting, prompting further investigation into the factors influencing its adoption.

2 Literature Review

We review existing literature from three encompassing areas: blockchain use in luxury markets, blockchain use in resale markets, and luxury resale markets. By querying ProQuest's ABI/Inform Global database up to 2023, we retrieve a total of 230 peer-reviewed journal articles in three subject areas: blockchain in luxury markets, luxury resale markets, and blockchain in resale markets. Upon reviewing

the abstracts of these 230 articles, we select 50 articles that are more related to peer-to-peer resale marketplaces and explored additional, newer articles that reference these 50 articles.

Based on the analysis of these articles, we compile the primary motivating and inhibiting factors for the adoption of blockchain technology by luxury manufacturers and peer-to-peer resale platforms.

	Manufacturers	Peer-to-sale platform
Motives	<p>Enhanced supply chain transparency and social responsibility, which fosters brand differentiation.</p> <p>Improved post-sale customer engagement, leading to increased customer loyalty.</p> <p>Higher resale value and simplified upcycling processes.</p>	<p>Improves platform credibility and cultivates consumer confidence.</p> <p>Mitigates fraud and minimizes financial risks.</p>
Inhibitors	<p>Reselling on third-party platforms compromises new sales and exclusivity.</p> <p>Transparency may disclose excessive information to competitors or imitators.</p>	<p>Alienating customers due to privacy apprehensions.</p> <p>Decreased revenue and commission from restricting resale product options.</p>

Table 1. Factors for blockchain adoption in peer-to-peer luxury resale markets.

3 Economic Analysis

We undertake an initial economic examination to explore the motivations for luxury manufacturers and peer-to-peer resale platforms to embrace blockchain technology for combating counterfeiting. Below is a list of notations:

p	Price of the second-hand item in excellent condition on the peer-to-peer resale marketplace
c	Commission percentage of resale marketplace. Payout to individual seller is $(1-c)p$.
p_N	Price of the new item
p_a	Price of the authenticated secondhand item in excellent condition, directly sold by the brand
p_r	Buyback price paid by the brand to individual seller, for item in excellent condition
p_f	Price of fake item if the item is known to be non-authentic

We operate under the assumption that a pre-owned luxury item can undergo upcycling via two avenues: either through a luxury brand's buyback initiative or through a resale marketplace. It is presumed that products resold by the brand's own program are entirely authentic and in optimal condition. However, some items available on third-party marketplaces may be counterfeit or in subpar condition. For the resale marketplace to entice sellers of second-hand items, the payout offered by the marketplace must exceed the buyback price set by the brand. Similarly, to attract second-hand buyers, the prices listed on the marketplace should be lower than those offered by the brand's own resale program. Below is the anticipated series of inequalities:

$$p_r \leq (1-c)p < p \leq p_a \quad (1)$$

In the case of substantial expenses associated with inspecting second-hand products, the discrepancy between the resale price p_a and the buyback price p_r is likely to be significant. This considerable margin will attract competition from third-party markets. Informed sellers are inclined to sell on the third-party market if $(1-c)p > p_r$, while buyers may opt to purchase from the market if $p < p_a$. Assuming a proportion

f of items on the marketplace are counterfeit, and considering that platform-agnostic buyers perceive the price differential between the marketplace and the manufacturer as indicative of the risk associated with counterfeit items, we can express p as $p = (1-f)p_a + fp_f$.

Implementing blockchain technology for instant and free product authentication by luxury manufacturers could eliminate counterfeit items from resale marketplaces, maintaining equal resale prices as the manufacturer's own products, $p = p_a$. This could attract more sellers to the marketplace due to its cost efficiency and lower commission rates. However, manufacturers like LVMH may hesitate due to the potential loss of control over product authenticity verification.

Compensating manufacturers for product authentication could incentivize blockchain adoption. Resale platforms can reduce authentication costs and improve customer loyalty with blockchain integration. Moreover, multiple rounds of resale can increase total trading value, potentially surpassing the original price. Recording authentication on a blockchain could save authentication expenses and enhance consumer confidence for future resale.

4 Planned Research

Drawing upon the findings from our literature review and preliminary economic analysis, we are embarking on case studies involving luxury manufacturers and peer-to-peer luxury resale platforms. These case studies aim to delve deeper into the reasons behind the limited adoption of blockchain technology in peer-to-peer luxury marketplaces and explore strategies to promote its uptake. Our case study subjects encompass a diverse range, including Poshmark, a premier peer-to-peer social marketplace focusing on second-hand fashion; The RealReal, a prominent online and offline fashion marketplace specializing in authenticated luxury items; Breitling, a renowned Swiss luxury watch manufacturer with its proprietary peer-to-peer resale platform; and LVMH, the world's largest luxury company. Additionally, we are developing surveys targeting users of peer-to-peer resale platforms, including both buyers and sellers, to gain insights into their perspectives regarding the integration of blockchain technology in luxury resale transactions.

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