



The integration of AI in second-hand clothing resale platforms and its impact on user trust

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Abstract

Title: The use of AI in second-hand clothing resale platforms and its impact on user trust

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The integration of artificial intelligence (AI) in the second-hand clothing resale industry has the potential to significantly enhance user trust and satisfaction. This research investigates how AI technologies are applied to tackle challenges within this sector and their impact on consumer trust. Utilizing a qualitative research approach, the study includes in-depth interviews with 15 professionals from Europe and the United States, representing second-hand resale platforms, AI-driven fashion start-ups, and industry experts. The key challenges identified include counterfeit detection, price consistency, taxonomy issues, fraud management, understanding buyer preferences and enhancing product listings. To address these challenges, AI can be used through Machine Learning (ML) algorithms to detect counterfeit items and fraudulent activity and optimize search and recommendation systems. The findings suggest that while AI can effectively address user concerns, it is crucial to quantify project risks and adapt to consumer acceptance to ensure successful implementation. This study contributes to the understanding of AI's role in the second-hand fashion market, offering valuable insights for enhancing user trust through technological innovation.

Keywords: *Artificial intelligence, Machine Learning, Second-hand fashion, User trust, Resale platform, Technological innovation*

Sumário

Título: O uso de IA em plataformas de revenda de roupas de segunda mão e seu impacto na confiança do usuário

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A integração da inteligência artificial (IA) na indústria de revenda de roupas de segunda mão tem o potencial de aumentar significativamente a confiança e a satisfação do usuário. Esta pesquisa investiga como as tecnologias de IA são aplicadas para enfrentar os desafios deste setor e seu impacto na confiança do consumidor. Utilizando uma abordagem de pesquisa qualitativa, o estudo inclui entrevistas aprofundadas com 15 profissionais da Europa e dos Estados Unidos, representando plataformas de revenda de segunda mão, startups de moda impulsionadas por IA e especialistas da indústria. Os principais desafios identificados incluem a detecção de falsificações, a consistência de preços, problemas de taxonomia, gerenciamento de fraudes, compreensão das preferências dos compradores e melhoria das listagens de produtos. Para enfrentar esses desafios, a IA pode ser usada através de algoritmos de Machine Learning (ML) para detectar itens falsificados e atividades fraudulentas e otimizar sistemas de busca e recomendação. As conclusões sugerem que, embora a IA possa abordar eficazmente as preocupações dos usuários, é crucial quantificar os riscos dos projetos e adaptar-se à aceitação do consumidor para garantir uma implementação bem-sucedida. Este estudo contribui para a compreensão do papel da IA no mercado de moda de segunda mão, oferecendo insights valiosos para aumentar a confiança do usuário por meio da inovação tecnológica.

Palavras-chave: *Inteligência artificial, Machine Learning, Moda de segunda mão, Confiança do usuário, Plataforma de revenda, Inovação tecnológica*

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1. Introduction

Artificial intelligence (AI) has emerged as an important frontier of technological innovation, with numerous applications across various industries (Hager et al., 2017). Within the fashion industry, AI has begun to revolutionize several areas, as evidenced by its integration into fashion-related processes and platforms (Amazon Fashion, 2017; Wong & Liu, 2018). A significant branch of AI, Machine Learning (ML), enhances data processing capabilities by learning from vast amounts of data and using sophisticated algorithms to identify patterns and make predictions (Ahmed et al., 2023). This technological advancement has prompted secondary luxury retailers to adopt sophisticated AI-driven technologies to meet evolving consumer demands and enhance brand awareness (Okonkwo, 2009). Trust, a critical component in consumer decision-making processes, serves as a moderating factor that bridges the intention-behavior gap (Sultan et al., 2020; Zheng et al., 2021). Consequently, as fashion and digital innovations increasingly converge, it becomes crucial for researchers and retailers to understand consumer responses to these new technologies to effectively leverage them (Bues et al., 2017; Kim et al., 2017).

The fashion industry is recognized as one of the most polluting sectors globally (Fletcher, 2014), making it crucial to address consumer concerns and ensure that resale platforms are as secure as possible. Significant advancements in digital technology, particularly AI, are acknowledged for their ability to create value in the circular economy, promoting a shift towards increased consumer engagement and sustainability (Milanova & Maas, 2017; Ferraro et al., 2016). By improving the reliability of these platforms, we can promote the reintegration of clothing, thereby mitigating the environmental impacts associated with fashion. Current literature highlights some challenges faced by second-hand resale platforms but often falls short of providing actionable solutions. This gap underscores the importance of gathering insights from individuals familiar with both AI capabilities and resale platforms, offering valuable guidance for platforms looking to expand their business while addressing consumer trust issues.

This thesis aims to answer the question: How can AI be leveraged to increase user trust in second-hand clothing resale platforms? To address this, I will first provide context by reviewing current literature. Following this, I will explain the methodology used in this research, present the results, and finally, discuss these findings in relation to existing theories while identifying the limitations of this study. Finally, I will summarize the findings of this dissertation in a way that is actionable for managers and provide recommendations for future research.

2. Literature Review

2.1. The changing perception and consumption of second-hand clothing

The fashion industry's impact, shaped by a "take-make-dispose" model, has led to doubled production in the last 15 years and reduced garment lifespans, significantly contributing to global emissions (Ellen MacArthur Foundation, 2020; Statista, 2020). This unsustainable practice, emblematic of the fast fashion model, is increasingly at odds with consumer shifts towards sustainability (Birtwistle & Moore, 2007). The principle of a circular economy, contrasting with the linear approach, emphasizes waste minimization and resource recycling (Stahel, 2016), reflecting a growing consumer demand for sustainable consumption. The literature suggests an imperative for the fashion industry to transition towards circular economy principles, aligning with evolving consumer values and environmental sustainability.

The consumer shift towards environmental consciousness, particularly among younger generations, is driving the fashion industry towards a circular economy (Yahoo Finance, 2021). This awareness underpins the slow fashion movement, advocating for quality over quantity and the extension of garment lifecycles to reduce environmental impacts (Persson & Hinton, 2023; Niinimäki, 2015). The COVID-19 pandemic has further intensified this trend, leading consumers to adopt more sustainable fashion behaviors and reevaluate their consumption patterns to lessen environmental burdens (Jian et al., 2020; Okur et al., 2023).

The collaborative fashion consumption (CFC), as outlined by Iran and Schrader (2017), is reshaping consumer behavior in the fashion industry. This trend moves away from buying new to favoring alternative ownership and usage options like swapping, second-hand buying, sharing, or renting. Rooted in the sharing economy, collaborative consumption promotes

resource efficiency and sustainability, suggesting a viable solution to the environmental impacts of clothing production (Armstrong & Park, 2017; Belk, 2014; Botsman & Rogers, 2010). Collaborative consumption is viewed as a pathway to reducing the negative consequences associated with fashion consumption, highlighting its potential to transform consumer practices towards more sustainable models (Armstrong & Lang, 2013; Becker-Leifhold & Iran, 2018). This suggests that platforms enabling such collaborative consumption can play a crucial role in fostering sustainable fashion behaviors.

Moreover, fashion plays beyond fulfilling basic needs, serving as a pivotal medium for self-expression and identity construction (Silva et al., 2021). Fashion's symbolism extends into the realm of emotional engagement, where clothing and fashion become intimately linked with self-identity, evoking potent emotional responses from consumers (Armstrong et al., 2015). The social dimension of clothing further complicates this relationship, as the desire for self-expression and self-enhancement influences consumer choices and behaviors (Hur, 2020).

Consumer motivations for engaging in second-hand clothing consumption are multifaceted, encompassing a blend of utilitarian, hedonistic, and environmental factors (Becker-Leifhold & Iran, 2018; Lang et al., 2020). Sanghi et al. (2022) position resale as key to promoting a circular economy within the fashion sector, emphasizing sustainability. This is echoed by the distinct appeal of both mass market and luxury consignment channels for different consumer segments (Kessous & Valette-Florence, 2019), and the joy found in discovering unique, low-cost items (Weil, 1999). The recent trendiness of fashion resale (Liu et al., 2023) and its role in earning social approval (Chi, 2015) highlight the growing social and environmental consciousness among consumers. The low cost and convenience of collaborative fashion consumption stand out as primary utilitarian motivators, alongside the pleasure of finding unique items and the positive environmental impact (Becker-Leifhold & Iran, 2018; Lang et al., 2020). The rise of the "Frugal Economy" (2021) reflects a shift in consumer values, where frugality becomes a sought-after trait, aligning with the pursuit of sustainability. ThredUp's (2022) findings that a 64% of U.S. consumers engage in second-hand shopping to save money or earn it underscore the economic rationale, while the allure of "vintage" items taps into desires for nostalgia, uniqueness, and sustainability (Cervellon et al., 2012). These motivations are underpinned by a desire for authenticity, with second-hand and vintage consumers valuing the unique history and

quality of pre-loved items (Ferraro et al., 2016; Guiot & Roux, 2010). This blend of economic, emotional, social, and green values indicates a complex consumer landscape where second-hand clothing is appreciated not just for its price but also for its contribution to individual identity, community belonging, and environmental sustainability (Amatulli et al., 2018; Machado et al., 2019).

However, not everyone is willing to consume second-hand clothes. Issues range from the diminished pleasure of impulse shopping due to the complexities of collaborative consumption (Armstrong et al., 2015), to a discrepancy between consumers' environmental values and their actual purchasing behaviors (Connell, 2011; Grasso et al., 2000). Concerns over contamination, particularly with items worn close to the skin (Xu et al., 2014), and societal stigma associated with wearing second-hand clothes perceived as indicative of lower socioeconomic status (Laitala & Klepp, 2018; Sanderson, 1997), further complicate consumer acceptance. Additionally, the inability to physically inspect goods on digital platforms challenges quality verification (Lang & Zhang, 2019).

The examination of existing literature on the consumption of second-hand clothing reveals a marked interest in the resale of luxury products, underscoring a distinctive shift in consumer behavior towards high-end fashion items. Studies indicate that motivations such as financial gain, the allure of variety, the quest for uniqueness, and the accessibility of luxury items at lower costs are driving consumers towards online platforms (Machado et al., 2019). This focus is further evidenced by the rapid growth of the second-hand luxury market, now valued at over 30 billion USD and projected to exceed 50 billion USD by 2026, significantly outpacing the overall luxury market growth (Statista, 2022). Younger generations, notably Millennials and Generation Z, are at the forefront of this transformation, with a substantial percentage expressing a preference for pre-owned luxury goods, reflecting a profound change in the perception and consumption of luxury fashion (Abtan, 2019). The digital acceleration, led by online secondary luxury retailers such as Vestiaire Collective and The RealReal, has been instrumental in expanding the reach and appeal of second-hand luxury goods, offering global visibility and accessibility previously unattainable through traditional retail models (Beauloye, 2023).

The future of the second-hand market promises substantial growth, with projections indicating its value could nearly double by 2027, largely powered by digital platform proliferation and Generation Z's growing purchasing power (Statista, 2023). This generation, already accounting for a significant share of second-hand purchases, is reshaping market dynamics by integrating sustainability and digital convenience into their consumption patterns (Francis & Hoefel, 2018; Gutfreund, 2016). Reflecting this trend, ThredUp (2023) reports an influx of new shoppers, with 60% of the growth attributed to them, and highlights that younger generations are expected to drive nearly two-thirds of the incremental secondhand spend, with 40% of items in Gen Z's closets being secondhand, underscoring the pivotal role of digital adoption and sustainability values in the future market landscape.

2.2. Business model features of second-hand clothing resale platforms

The emergence of Multi-Sided Platforms (MSPs), particularly within the fashion resale sector since the 2010s, underscores a pivotal shift in marketplace dynamics (Barker, 2023). These platforms have revolutionized the way transactions are facilitated by bridging two or more distinct, yet interdependent, customer groups - buyers and sellers - thereby acting as critical intermediaries (Muzellec et al., 2015). The value of MSPs lies in their ability to streamline interactions and reduce transaction costs, making the buying and selling process more efficient and accessible (Hagiu & Wright, 2015; McIntyre et al., 2021). The rapid growth and adoption of digital technologies, alongside the rise of the sharing economy, have catalyzed the development and success of various digital MSPs, including giants like Airbnb, Amazon, and Uber (Michelini et al., 2018; Trabucchi & Buganza, 2020). However, the sustainability and expansion of MSPs are intrinsically tied to their user base, emphasizing the importance of continuously attracting and retaining users to maintain and enhance the platform's value (Song, 2019).

The evolution of second-hand clothing resale platforms through collaborative consumption and Product-Service Systems (PSSs) has introduced disruptive business models that not only challenge traditional retail but also promote sustainability and ethical consumption (Holtström et al., 2019; Jin & Shin, 2020; Mont, 2002; Piscicelli et al., 2015). The differentiation between B2C and C2C transactions on platforms like TheRealReal, Vestiaire Collective, Depop, and Poshmark, highlights the diverse approaches to facilitating consumer interactions and enhancing trust through authentication services (Hultberg & Pal, 2023).

The critical challenge within these platforms, however, lies in ensuring product authenticity, a factor that significantly influences consumer trust and decision-making processes (Turunen & Leipämaa-Leskinen, 2015; Zampier et al., 2019). Addressing these concerns, MSPs have emerged as powerful orchestrators, offering infrastructure and regulatory frameworks that not only enhance market power but also provide a controlled environment for verifying authenticity and fostering consumer confidence (Parker et al., 2016). In this evolving landscape, revenue generation models such as consignment or direct purchase by platforms before resale, represent innovative financial strategies that align with the goals of sustainability, customer satisfaction, and market expansion (Buffalo Exchange, 2021; Plato's Closet, 2021; Shopify, 2022).

Scaling MSPs in the second-hand fashion market faces challenges linked to the unpredictability of supply, as inventory relies on consumers listing their unwanted items (Becker-Leifhold & Iran, 2018; Gopalakrishnan & Matthews, 2018; Henninger et al., 2019). This issue is exacerbated by the delicate balance between encouraging the sale of second-hand items while not diminishing the demand for new products, a dynamic that can affect platform growth and sustainability (Brooks, 2015; Henninger et al., 2019). Operational hurdles, such as non-standardized shipping processes in consumer-to-consumer transactions, further complicate scalability and can negatively impact user experiences (Lang & Xia, 2022).

Enhancing the customer journey in second-hand fashion platforms involves creating a seamless and engaging shopping experience that not only caters to the consumer's desire for value and uniqueness but also addresses concerns regarding authenticity and quality. Ferraro et al. (2016), Park et al. (2020), Rudawska et al. (2018) emphasize the joy and satisfaction consumers derive from discovering unique items, likening it to a treasure hunt that promotes responsible consumption behaviors. This experience can be further enriched by ensuring a diverse and unique inventory is easily navigable and presented in a way that excites consumers. Furthermore, Focusing on the overall user experience (UX), utility, usability, and desirability is crucial (Arribas-Ibar et al., 2022). Platforms should offer easy navigation, efficient system design, and interactive experiences that meet diverse shopper needs while promoting the resale value's emerging dimension (Ferraro et al., 2016; Turunen & Pöyry, 2019).

Building and leveraging community within second-hand clothing resale platforms emerge as pivotal strategies to address the unique challenges these platforms face. Armstrong et al. (2015) and Pedersen and Netter (2015) underscore the significance of social interactions in collaborative consumption, suggesting that fostering a sense of community among users can be a key driver of customer engagement. In C2C platforms, the interaction between buyers and sellers is crucial (Hasan et al., 2022). Sihvonen et al. (2016) note the importance of discussions around brand authenticity, origin, design, price, and quality in creating value during the sales process. However, challenges such as unresponsive sellers and canceled orders can undermine trust and community sentiment (Lang & Zhang, 2019). Addressing these issues through effective network management and infrastructure development is essential for fostering a positive, collaborative environment (Agostini et al., 2019; Markovic, 2017). Moreover, the diverse motivations of consumers, from trendsetting Gen Zs to pragmatic Baby Boomers, highlight the necessity of cultivating a community that transcends mere transactions to embrace shared values and sustainable behaviors (Barker, 2023). Platforms that successfully manage to create and nurture these spaces for interaction not only enhance the resale experience but also build a loyal and engaged user base, contributing to the platform's long-term success and trustworthiness.

2.3. The adoption of artificial intelligence by second-hand resale platforms

The integration of AI into platforms selling second-hand fashion items marks a pivotal shift towards enhancing online capabilities and fostering sustainable and innovative business models (Dana et al., 2022). Okonkwo (2009) highlights the adoption of sophisticated technologies by secondary luxury retailers aiming to meet the evolving consumer demands and enhance brand awareness. AI's broad definition, as provided by Brooks (1991), underscores its potential to replicate tasks typically requiring human intelligence. Significant strides in digital technology, including AI, are recognized for their capacity to unlock value in the circular economy, facilitating a transition that emphasizes consumer engagement and sustainability (Ferraro et al., 2016; Milanova & Maas, 2017). With empirical evidence supporting AI's centrality in digital platform operations (Brynjolfsson et al., 2018), the challenge now lies in leveraging AI to actualize sustainable business models that cater to modern consumer expectations and competitive differentiation (Dana et al., 2022; Kamalaldin et al., 2020). Moreover, the profound impact of AI on consumer-brand relationships, especially among digital natives like Generation Z, points to a transformative shift in consumption behaviors (Guerra-Tamez et al., 2024). This

generation's seamless interaction with AI technologies sets new standards for personalized, efficient, and trust-enhancing online shopping experiences in the second-hand fashion sector.

The rapid expansion of the online second-hand fashion market has brought product authenticity and counterfeit detection to the forefront of platform challenges. As highlighted by Green and Smith (2002), the prevalence of counterfeit items not only undermines consumer trust but also poses significant threats to legitimate businesses. Kennedy (2020) notes that fraudulent listings disadvantage genuine sellers, affecting their sales and market share. Traditional methods, such as manual inspections, are often inadequate due to their cost, time consumption, and potential for human error (Rathnayake and al., 2023). In response, the adoption of AI and ML techniques has emerged as a powerful solution for enhancing the authentication and verification process (Lang and al., 2023; Tamerler, 2021). ML, as a branch of AI, enhances data processing by learning from vast amounts of data and using algorithms to identify patterns, and make predictions (Ahmed et al., 2023). These technologies allow for the analysis of large datasets to identify patterns and anomalies indicative of counterfeit listings, offering a more efficient and reliable means of ensuring product authenticity (Rathnayake and al., 2023). Furthermore, innovations such as RFID and blockchain technology, alongside AI-driven computer vision for product authentication, are setting new standards for securing consumer trust in the second-hand luxury market (Rathnayake and al., 2023; Srinivasan and al., 2017). This shift towards integrating AI in authentication processes not only aids in combating fraud but also supports platforms in maintaining customer satisfaction and trust (Barker, 2023). As ML algorithms continue to evolve, their ability to detect even the most sophisticated counterfeits, including "superfake" items (Srinivasan and al., 2017), demonstrates the potential of AI to revolutionize the trustworthiness and security of online second-hand fashion marketplaces.

The integration of AI in second-hand fashion retail platforms significantly enhances personalized recommendations, catering specifically to the preferences and behaviors of digitally native millennials and Gen Z customers (Cho and al., 2022). By deploying sophisticated AI and taxonomy systems, these platforms can offer highly personalized shopping experiences, leveraging live streaming, augmented reality, and try-on technologies to match user preferences with fashion trends (Amed and al., 2020). Such technology-driven personalization not only improves user engagement but also streamlines the discovery process

through algorithms, filters, and recommendation tools like "you might like" or weekly "top picks" (Charnley, 2022). Indeed, AI has the capability to deliver customized recommendations for products or services by analyzing consumers' historical behaviors and preferences (Ahmed et al., 2023).

Furthermore, AI's capability to predict fashion trends and recommend attire based on social media content analysis (Pittman & Reich, 2016) underscores its potential to revolutionize how consumers find and select fashion items online. By utilizing advanced ML techniques, such as convolutional neural networks (CNNs) for image analysis, platforms can offer more accurate and relevant fashion recommendations (Kang and al., 2017; Sun and al., 2018).

AI is reshaping the landscape of customer service in second-hand fashion platforms, making significant strides toward overcoming the limitations of traditional customer support methods (IEEE Xplore, 2019). McKinsey (2020) reports that AI's role in facilitating customer interactions is increasingly becoming mainstream, streamlining communication between platforms and their users. This evolution addresses critical issues such as the lack of prompt responses and the restricted service availability that consumers face, especially in high-value transactions where service expectations are significantly higher (Amoako, 2012; Hasan and al., 2022). By blending AI with human customer service efforts, platforms can offer a seamless, around-the-clock service experience that enhances productivity and customer satisfaction (BrandGarage & Linc, 2018). Moreover, AI-powered tools like chatbots and virtual assistants are revolutionizing the way customer inquiries are managed, providing instant, accurate responses to common questions and freeing human agents to tackle more complex issues (Chattaraman et al., 2015; Khan & Das, 2018). This synergy between AI and human intelligence not only reduces operational costs but also significantly improves the customer service experience, leading to higher levels of customer trust and loyalty (Microsoft, 2018). The strategic deployment of AI in customer service not only aims to resolve present inefficiencies but also positions these platforms to lead in a market where consumer satisfaction is paramount for business success and differentiation (Fallah, 2011; Khalid et al., 2018).

2.4. The impact of AI integration on consumer trust

The integration of AI in second-hand fashion platforms has emerged as a pivotal strategy for fostering trust among consumers. Vestiaire Collective's co-founder, Fanny Moizant, has notably

stated, "We didn't invent second-hand (shopping), but we disrupted that market by building trust" (Godart & Henry, 2017). This insight underscores the essential role of trust in the transformative impact of AI on the second-hand market. Further exploration into the subject reveals that AI exposure significantly influences consumer behavior, accentuating AI's crucial role in shaping shopping experiences (Abrardi et al., 2022). Trust, serving as a moderating factor, effectively bridges the intention-behavior gap, signifying its vital position in consumer decision-making processes (Sultan et al., 2020; Zheng et al., 2021). The literature suggests that brand trust not only mitigates perceived risks but also engenders consumer loyalty, which is manifested through repeat purchases and favorable brand endorsements (Arruda Filho et al., 2020; Kim & Chao, 2019; Menidjel et al., 2017; Quaye et al., 2022).

Perceived risks significantly impact consumer trust, especially in the context of second-hand fashion sales platforms where concerns over product authenticity and functionality are paramount. The literature indicates that consumers' anxiety about potential negative outcomes after purchase, known as perceived risk, plays a crucial role in decision-making processes (Cox & Rich, 1964; Taylor, 1974). Particularly in the second-hand luxury market, the fear of inauthentic products stands out as a major concern, undermining trust in the platforms (Turunen & Leipämaa-Leskinen, 2015). Furthermore, the uncertainty regarding whether a product will perform as expected, referred to as functional or performance risk, adds another layer of complexity to consumers' trust (Horton, 1976; Shimp et al., 1982).

The Technology Acceptance Model (TAM), developed by Davis (1989), is a crucial framework for understanding how users come to accept and use technology. In the context of AI integration in second-hand clothing resale platforms, TAM provides insights into consumer acceptance of these technologies. According to TAM, perceived usefulness and perceived ease of use are major factors that influence technology acceptance. This model has been extended in various studies to include additional factors such as trust and perceived risk (Pavlou, 2003; Pikkarainen et al., 2004; Venkatesh et al., 2000), which are particularly relevant in online platforms where concerns about authenticity and quality are prevalent (Green & Smith, 2002).

In the realm of second-hand fashion platforms, the integration of AI significantly influences the foundation of consumer trust. Guerra-Tamez et al. (2024) emphasize that trust in AI systems plays a crucial role in shaping purchasing decisions, underscoring the necessity for platforms

to not only implement AI but to ensure its trustworthiness. This trust is further nuanced by the perception of AI's accuracy, as highlighted by Figueroa-Armijos et al. (2023), suggesting that the precision of AI's recommendations directly impacts brand trust. Consumers are more inclined to trust AI when they believe in its reliability, a sentiment echoed by Ameen et al. (2021), Chi et al. (2021), and Shin (2021). Additionally, the overall attitude towards AI, as discussed by Ahn et al. (2022), Qin et al. (2020), and Yang and Wibowo (2022) significantly affects brand trust.

The role of AI in enhancing customer service and thereby influencing trust in second-hand fashion platforms is gaining critical attention. Anthropomorphism, or giving AI human-like qualities, has been identified as a significant factor that could increase consumers' acceptance and enjoyment of AI technologies (Ciechanowski et al., 2019). This implies that when AI appears more human-like, customers are more likely to trust and enjoy their interactions with the technology. Moreover, the empathic response of AI, as suggested by Chi et al. (2021), can substantially elevate customer trust. This insight points to the potential of AI not just in executing tasks but in connecting on a more personal level with users. However, the research exploring how AI interactions specifically affect communication quality and subsequently customer trust remains limited (Pelau et al., 2021). This gap in literature signals an important area for future investigation, given the growing integration of AI in customer service.

The findings of Cheng et al. (2022) highlight three key antecedents of trust in AI chatbots: perceived warmth, competence, and the delay in communication. Particularly, perceived competence in AI, such as the ability of chatbots to handle complex queries effectively, is identified as having the most significant impact on building consumer trust. This emphasizes that for consumers to trust AI, they must see it as capable and reliable, mirroring the expectations they would have from human customer service. Trust, as defined by Shin (2021), is the belief in the AI's reliable service and outcomes, a concept increasingly discussed in various domains including teamwork and the sharing economy. This suggests a broadening understanding that for AI to positively impact trust, it must not only be technologically advanced but also exhibit human-like qualities that foster a genuine connection with users.

Regarding the exploration of AI's impact on consumer trust and perception within second-hand fashion sales platforms, it is essential to consider the broader spectrum of factors influencing this dynamic relationship. The findings from Cho (2022) invite a nuanced understanding that the effectiveness of AI in building brand trust and influencing purchasing decisions might vary across different demographic segments like Generation Z, affected by variables such as cultural nuances, socio-economic status, and individual variances in technology acceptance (Priporas et al., 2017; Puiu et al., 2021; Verma et al., 2021). Global research trends indicate a growing consumer comfort with AI, especially when it adds convenience to business interactions (McLean et al., 2021; Meyer-Waarden & Cloarec, 2021; Pitardi & Marriott, 2021). This comfort, coupled with AI's ability to offer personalized recommendations and assist based on individual behaviors and preferences, can significantly enhance customer experiences. However, the impersonal nature of AI underscores the importance of integrating human interactions to maintain warmth in customer service (Ahmed et al., 2023). Therefore, while leveraging AI for trust and credibility, platforms must ensure a balanced approach that values transparency and genuine communication.

Based on the review provided above, a conceptual framework is provided in Figure 1 to better understand the role of AI in improving user trust in multisided platforms.

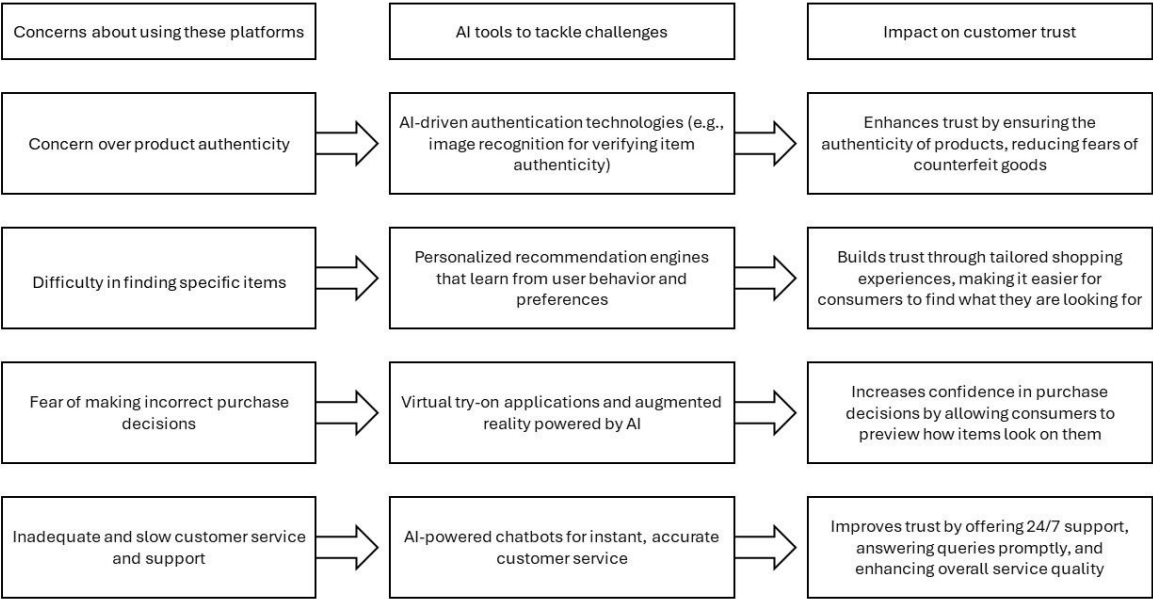


Figure 1. Enhancing consumer trust in second-hand fashion platforms: A conceptual framework for AI integration and impact

3. Methodology

3.1. Research type and design

The study employs a qualitative research approach, focusing on gaining a deep understanding of the impact of AI technologies on trust within the second-hand fashion industry. This method is chosen for its ability to explore complex social phenomena from a sector-based perspective (Cresswell, 2007). Specifically, the research aims to uncover detailed insights into the actions companies are taking and the solutions they are implementing to meet consumer demand for trust in second-hand clothing platforms. The research follows a case study design, which is instrumental in providing a detailed and in-depth exploration of AI implementations within specific second-hand fashion resale platforms.

3.2. Population and Sample

The selection of participants was based on the criteria defined in the methodology. Thanks to their input, I was able to gather the views of 15 professionals from Europe and from the United States, with 4 second-hand product resale platforms covered, 4 people working in start-ups using AI in the fashion industry, two experts in luxury and fashion, as well as two consultants and tech professionals. In this way, exchanging with them gave me a better understanding of the second-hand fashion industry.

Participants were selected using a purposeful sampling strategy to ensure they hold relevant insights into the integration and impact of AI in this sector.

The sampling strategy includes the Maximum Variation Sampling method to capture a broad spectrum of opinions across different areas of expertise within the industry (Rai & Thapa, 2015). This method ensures a diverse range of viewpoints from various stakeholders, including technical experts, industry analysts, and professionals working directly on AI integration within second-hand fashion platforms.

Participants were selected based on their expertise in the following areas: (I) Technical expertise in AI: Professionals in technical roles specifically related to ML and AI, focusing on how these technologies can enhance the user experience and increase trust on P2P platforms. (II) Fashion industry and consumer behavior expertise: Individuals with knowledge of fashion industry dynamics, including changes due to technological advancements and evolving consumer

behaviors towards second-hand clothing. (III) Technological innovation on Multi-Sided Platforms: Experts who understand the impact of digitalization and AI on user interactions and trust in multi-sided platforms. This includes how technological innovations influence both the marketplace and the consumer experience.

3.3. Data Collection

Connections were made on LinkedIn to profiles that seemed interesting in relation to the topic of the dissertation at the beginning of April. Between 16 April and 1 May 2024, the people who had accepted a request were reached. Of the 46 people contacted on LinkedIn, 11 agreed to be interviewed, 3 said they did not have the time at the moment, 1 wished to receive the list of questions and finally decided that he did not have the right to divulge any information on this subject. As a result, the positive return rate was 23.91% and the response rate 32.60%. In addition, there were 4 interviews with the organization where the researcher is employed. All the interviews were conducted between 22 April and 6 May 2024.

Semi-structured interviews are the primary method of data collection. These interviews are designed to explore specific areas of expertise and allow for flexibility to pursue in-depth discussions based on respondents' experiences and knowledge. The interviews were conducted in English and in French, lasted between 20 and 50 minutes, and were recorded with consent from the participants. Among the 15 interviews, 2 were conducted face-to-face and 13 were conducted through a video call.

All the interviews were carried out using the same guideline questions, with a few additional questions added to the interview guide depending on the interviewee's specific area of interest. The interview guide can be found in Appendix 2.

3.4. Data Analysis Technique

Data will be processed using the grounded theory method, involving open coding, axial coding, and selective coding:

1. Open Coding: Identifying initial themes by analyzing interview transcripts line-by-line.

2. Axial Coding: Linking these themes to form coherent categories, focusing on how these categories interrelate and influence each other within the context of AI and trust in second-hand fashion platforms.
3. Selective Coding: Concentrating on the core categories that are central to the narrative of AI's role in enhancing trust, thereby integrating all categories around a central theme that aligns with the research question.

This methodology is designed to provide a structured framework for investigating the complex impact of artificial intelligence on trust within the second-hand fashion resale market. By utilizing a qualitative case study approach and selective sampling strategies, the study aims to gather detailed and relevant insights. The use of grounded theory coding techniques for data analysis is intended to ensure a thorough and nuanced exploration of the collected data. This approach seeks to contribute thoughtfully to the broader academic discussion on technological innovation in second-hand fashion markets, aiming to offer useful insights for both academia and industry practitioners.

4. Results

4.1. Challenges

4.1.1. Counterfeit products

As **Interview 12** stated, “The first issue, which is very natural to the nature of what we do, is counterfeiting.” **Interview 2**, **Interview 3**, and **Interview 7** shared their experiences of encountering counterfeit markets and expressed their astonishment at the high quality of some of the products. **Interview 9** observed that “Counterfeits are becoming so good, the fakes are so good, sometimes made with the same leather and the same buckles as the original, that it's almost impossible these days to tell.” Consequently, as the quality of counterfeit luxury products improves, it becomes increasingly difficult for humans, even experts, to distinguish genuine products from counterfeit ones. **Interview 3** explained, “A module can only detect what we as humans detect as well. So, if I am sitting here and you are 100 feet away from me, and if I see you wearing a shirt, I am sure I cannot tell what the fabric of your shirt is.” The complexity is further compounded by the fact that there can be thousands of ways to counterfeit the same product, making it impossible for a model to capture this information, and even when compared to the original product, the model cannot necessarily identify the exact differences

(**Interview 3, Interview 15**). If a product has specific and recognizable clues that indicate it is fake, such as a color that does not exist, it is possible to inform the module (**Interview 3**), but knowing what to look for is very challenging (**Interview 2**). Training a module is difficult because “the model concentrates on the important part, if you only have it once, because they are all built differently, the model cannot learn from them” (**Interview 15**). Even TheRealReal, a company that specializes in authentication, has faced challenges and sometimes allowed fake Chanel items to slip through (**Interview 2**).

4.1.2. Price consistency

Identifying the resale value of an item is a significant challenge for second-hand clothing resale platforms. As **Interview 14** noted, “Pricing is also important, for sellers, for buyers, and for us too because the fairer the prices, the more conversions there are among users.” He explained that when a seller is recommended a fair price, chooses that price, and sells the item within ten days, the seller is likely to return to the platform, satisfied with the transaction. This approach boosts the platform's Gross Merchandise Value (GMV) by avoiding the risk of the seller setting an excessively high price that prevents the item from selling. “He's happy because he's selling, but we're boosting our GMV” (**Interview 14**).

For platforms, determining the right price depends on the item's condition and current trends. “An item, perhaps 6 months later, doesn't have the same price because it's not as sexy” (**Interview 12**). Additionally, items continuously decrease in value the more they are used (**Interview 4**). Proposing the right price to sellers is crucial as it directly affects the platform's credibility (**Interview 1, Interview 12**). Sellers often struggle to determine the appropriate price for their items (**Interview 10**), and if the platform suggests a price that is too low, sellers may feel offended (**Interview 2**). When approaching resellers, sellers frequently question whether the offered price is fair or if they are being cheated, which is a significant barrier to comfort and confidence in the second-hand market (**Interview 8**). As **Interview 1** pointed out, understanding and comparing the value of second-hand items across different categories is one of the biggest challenges for platforms.

4.1.3. Taxonomy issues

As explained by **Interview 14**, taxonomy encompasses all the fields that define a product, such as brand, model, category, subcategory, and more. This taxonomy varies across different e-

commerce websites. For multi-sided platforms, it is particularly challenging because users input the product information. Therefore, achieving precision is very difficult (**Interview 13**). **Interview 8** highlighted that on Vestiaire Collective, there are significant issues with Dior or Louis Vuitton bags, where sellers often do not provide the correct model names. According to **Interview 8**, while this mistake may not impact buyers who rely on the pictures, it poses a significant problem for data optimization. **Interview 14** further explained that at Vestiaire Collective, humans manually check whether the picture, description, and taxonomy are correct because some users do not know the difference between, for instance, a crossbody bag and a handbag, resulting in errors in the dataset. Condition is one of the primary challenges in this context. “Quality is very tough to determine. It's subjective.” (**Interview 1**). **Interview 7** added that currently, condition assessment is done manually and lacks standardized criteria for what constitutes a product in very good condition, good condition, or satisfactory condition. This lack of standardization can lead to buyer dissatisfaction and increase the likelihood of returns (**Interview 1**).

4.1.4. Understanding the buyer’s wishes

Interview 10 explained that as a consumer, it is challenging to find what one is looking for on second-hand clothing resale platforms due to the overwhelming number of products. This search process can be frustrating. She noted that we live in an "Amazon world," where if a buyer needs something urgently, they can order it on Amazon and receive it the same day. “With resale, with all these circular models, we're inevitably competing with this type of consumption.” (**Interview 10**). Therefore, improving the discovery process is crucial for multi-sided platforms to meet new consumption habits. For these platforms, this represents a significant challenge. Each item is unique (**Interview 2**), unlike traditional e-commerce websites that have “skews of the same product in different sizes, different colors” (**Interview 2**). Platforms must have a deep understanding of their catalog and users to match items accurately.

When users visit resale platforms, they have access to hundreds of thousands of products (**Interview 1, Interview 2, Interview 5**). “With such a diverse array of listings and user behaviors, it's challenging to deliver personalized recommendations efficiently.” (**Interview 5**). Platforms must help users refine their queries by analyzing what others have searched for and using AI to surface potential search queries (**Interview 1**). Often, buyers are unsure of what

they are looking for and struggle to articulate their needs. “This is where you get into the whole realm of synonyms and polynomials” (**Interview 1**). **Interview 7** illustrated this by explaining that if a seller lists an item as a “blue leather jacket” and a buyer searches for a “navy blue suede jacket,” they might not find the item even though it is the same product. The platform must assist buyers in articulating their searches accurately, correcting typing mistakes, understanding relevant signals, and suggesting items that fit their needs (**Interview 1**). “The more precise you are with your recommendations, the more you can understand the person doing the search, the more users you'll have coming back to the platform because it matches what they're really looking for” (**Interview 14**). **Interview 14** also mentioned that if the platform's recommendations are constantly off the mark, it becomes difficult to search, especially for second-hand goods where there are millions of items. Within this recommendation process, it is also essential to satisfy sellers. Platforms must quickly recommend newly listed products to avoid discouraging sellers from listing their items (**Interview 2, Interview 5**).

4.1.5. Fraud management

Interview 12 explained that C2C luxury platforms, such as Vestiaire Collective, are prime targets for fraud because they serve as intermediaries between two customers, making them attractive to fraudsters. These fraudsters may attempt to cause return failures, put pressure on leadership through public escalations, divert sellers from the platform by promising sales outside the platform to save on commission fees, or obtain personal data from users (**Interview 12**).

The first type of fraud that occurs on the Buyer-Seller chat is circumvention, where sellers are pushed to sell their items outside of Vestiaire Collective to avoid paying the platform's fees, resulting in a monthly loss of €800,000 for Vestiaire Collective (**Interview 14**). The other type involves scammers attempting to defraud sellers. As **Interview 14** explained, the platform needs to distinguish between these types of fraud: for the first, educating users is the best approach, while for the second, banning the scammers is necessary.

On Vestiaire Collective, as of June 2023, 40% of sellers were encountering spammers on the Buyer-Seller chat, highlighting the severity of the problem and the importance of addressing it, especially for companies that emphasize trust (**Interview 13**). Furthermore, **Interview 13** noted that 80% of scammers send their messages within 15 to 20 minutes of creating an account,

underscoring the need for a robust algorithm to detect and prevent fraudulent activities promptly.

4.1.6. Making the offer attractive

It is crucial to entice buyers to purchase products, which is why attractive visuals are so important. On platforms where sellers post their own pictures, the platforms lack control over the visual quality. **Interview 1** explained that trust is built by understanding the value of the product, and this includes having high-definition, clean pictures; otherwise, buyers will not trust the product. The pictures on second-hand e-commerce websites, such as Vinted, often lack appeal and do not encourage purchases (**Interview 3, Interview 11**).

Interview 7 mentioned that she lacks the patience and skill to make a product visually appealing. Therefore, as **Interview 11** explained, it is necessary to understand the power of image enhancement and to make the product attractive. This can be achieved by displaying the item on a mannequin or associating it with other pieces of clothing to enhance its appeal.

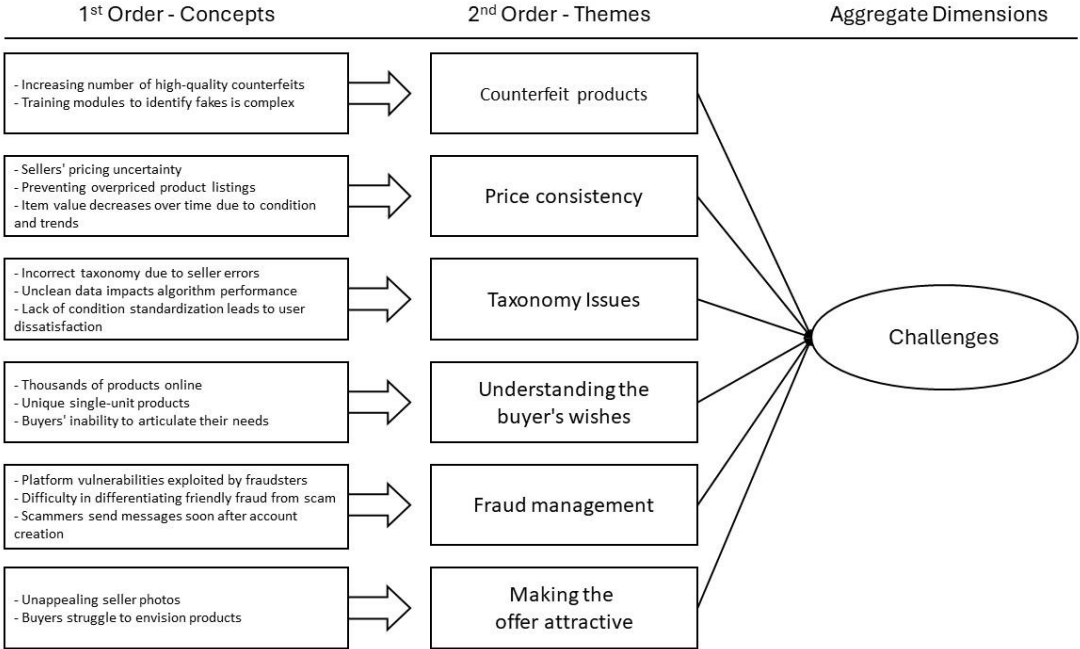


Figure 2. Data coding structure according to the Gioia Methodology for Challenges

4.2. AI applications

4.2.1. Identity counterfeits

At Vestiaire Collective, the identification of counterfeit items is a critical aspect of the business, as the company emphasizes its trustworthiness. The algorithm being implemented, called Crime, identifies items that are potentially at risk based on product characteristics. These items are then manually checked by a team of digital authenticators before being listed on the platform (**Interview 14, Interview 15**). As **Interview 13** explained, since 2018, the number of deposits has increased more than sixfold, costs have been reduced by five times, and the number of digital authenticators has been halved, thanks to the algorithm. Crime assigns a risk probability score based on the characteristics entered by the seller, and the team of authenticators also inspects the pictures.

Although "The easiest would be to visually differentiate" (**Interview 3**), spotting counterfeits "just from images, it's very difficult" (**Interview 2**). Therefore, some companies are developing sensor machines that can read the material of an item and compare it with the material of a genuine product (**Interview 3**). These devices are not necessarily designed to authenticate but to flag items if something seems off.

4.2.2 Define the right price

ML algorithms can be developed to define the right price for a product. At Vestiaire Collective, the algorithm identifies ten sold items with the most similar taxonomy and suggests that sellers set the average selling price for these items. Based on this data, it is also possible to determine the probability of a specific item being sold at a given price within a given period (**Interview 14**). **Interview 2** explained that it would be beneficial to ask the seller, when listing a product, whether they want to maximize the selling price or sell the item quickly, and then suggest a corresponding price range.

Standardizing listed prices makes the market more transparent (**Interview 10**) and structured (**Interview 8, Interview 10**), and contributes to building trust (**Interview 12**). **Interview 7** noted that understanding that prices are standardized reassures her from a buyer's perspective. From a seller's perspective, it saves time as she will not list the item if the prices of other similar

products are significantly below her expectations, thereby making the process more efficient overall.

4.2.3. Automate Listing

Second-hand clothing resale platforms aim to attract the best supply, and to achieve this, they need to offer sellers a more cost-effective way of digitizing products by streamlining the manual input of fields (**Interview 4**). This can be facilitated through ML algorithms that recognize an item's features—such as color, size, model, condition, and brand—directly from an image (**Interview 4, Interview 8, Interview 12**). The algorithm could also suggest a description (**Interview 5, Interview 8, Interview 12**) and a title (**Interview 1**).

Interview 1 explained that providing sellers with insights on the types of buyers who typically purchase specific products, the types of listings that sell better, and those that do not, helps them market their goods more effectively than their competitors. Offering information on how buyers search is part of the platform's responsibility. Regarding item condition, automating the listing process can set standards and provide more reliable criteria for buyers, enhancing the quality of information by reducing human error (**Interview 7**). Prefilling listings helps “to reduce manual errors, providing more accurate and complete information for buyers” (**Interview 5**). **Interview 13** mentioned that Vestiaire Collective has a project to implement an algorithm similar to Crime, using computer vision to detect and correct incorrectly chosen fields by the seller. **Interview 2** explained that at ThredUp, sellers send their items to the company, which is responsible for listing them for sale. Algorithms based on computer vision recognize the product and determine whether the same product has been listed before, reusing the input fields, description, and photos as needed.

Making listings more appealing and the data more reliable benefits buyers by improving search functionality (**Interview 4, Interview 14**) and enhancing the performance of recommendation algorithms (**Interview 14**). Encouraging sellers to digitize their products more easily also contributes to a more attractive offer, thereby increasing the adoption of second-hand goods (**Interview 4**).

4.2.4. Optimize recommendations and search

Recommendations and search functionalities are critical components of second-hand resale platforms. **Interview 5** highlighted that “AI at Leboncoin is responsible for showing similar ads, accounting for 30% of ad views.” Given the uniqueness of each item, AI-based algorithms are invaluable for suggesting similar items through image recognition (**Interview 4**) that best match the consumer profile (**Interview 10**). “Users appreciate having similar ads recommended to them, which helps build trust in the platform's ability to meet their needs” (**Interview 5**).

AI can also enhance search capabilities by allowing buyers to upload a picture of an item they like and suggesting the closest products available in the catalog (**Interview 14**). **Interview 11** emphasized that all marketplaces should feature search by image, which shifts the focus from supply to demand (**Interview 9**). AI can inquire about buyers' preferences in terms of style (**Interview 1**, **Interview 6**, **Interview 11**) or specific types of products they are looking for, such as “80s dress in the Oscars style” (**Interview 14**) and recommend products accordingly. Additionally, AI can provide a personalized and customized experience for buyers (**Interview 4**, **Interview 6**) by incorporating user behavior (**Interview 11**). As **Interview 4** noted, the current browsing experience on platforms is outdated. **Interview 1** explained that on eBay, they analyze user behavior and detect signals most relevant for each buyer, such as price and condition, highlighting these specific product features to foster trust in the platform. “There is ranking and relevance with AI at the back end to understand what kind of items should be surfaced and then there is user experience at the front end which is again using AI to understand what signals such as price, trending hotness” (**Interview 1**).

Regarding trends, AI can analyze social media to identify trending items in different countries and promote these products at the top of the platform's pages (**Interview 3**). As **Interview 1** stated, “AI will write 30,000 rules for you, whereas a human, it will take you 200 years to write those 30,000 rules, and AI will figure out which rule to apply when a new user shows up or an existing user shows up.”

4.2.5. Identify Fraudsters

With visual recognition algorithms, platforms can detect fake listings that use slightly modified pictures retrieved from the internet (**Interview 12**). These algorithms should be designed to determine if an image is real or manipulated with Generative AI (**Interview 12**). **Interview 13**

explained that visual recognition can also catch trolls who repeatedly use the same pictures. **Interview 5** added that “AI moderates content to prevent prohibited items like weapons or adult content from being posted.” Beyond image recognition, AI can detect fraudulent behavior by comparing user actions against typical behaviors on the site, such as making listings, browsing the platform, creating accounts, and requesting returns (**Interview 12**). “In my view, the only way to identify anomalous behavior is to use AI-assisted tools” (**Interview 12**). On Vestiaire Collective, AI is used to detect scam attempts and off-platform sales in the Buyer-Seller chat (**Interview 12, Interview 14**). **Interview 1** emphasized that platforms must ban users who engage in fraudulent activities. “With vast amounts of data, detecting fraudulent patterns becomes possible, although it is a continuous challenge to adapt to new fraud techniques” (**Interview 5**). As fraudsters employ increasingly sophisticated tactics, it is essential for platforms to develop stronger AI tools to adapt, as the signals currently used will eventually become ineffective (**Interview 12**).

4.2.6. Improve product visualization

AI can be used as an image enhancer to improve listings with better pictures (**Interview 4, Interview 5**) and to generate images showcasing how items look (**Interview 3**). AI-based tools can also remove backgrounds (**Interview 4**), a feature implemented at Vestiaire Collective, where an internally developed ML algorithm replaced an image cropping service provider (**Interview 13**). On second-hand resale platforms, the challenge is to entice users to buy by showing them how the product would look or what they could combine it with (**Interview 1**). As **Interview 1** explained, eBay uses the feature "Shop The Look" to suggest items that match the product consulted by the user, based on what other users have purchased. **Interview 11** stated, “If you have the ability to combine items to create outfits and display them in your catalog or on your website, this will inevitably increase the likelihood that users will buy them, and even make them buy more items.” Generative AI can help users visualize how products will look on them by displaying items on an avatar (**Interview 2, Interview 3, Interview 4, Interview 10, Interview 11**) or a mannequin resembling the user (**Interview 2, Interview 3, Interview 10, Interview 11**). This assists users in making the right purchase decisions (**Interview 10**) while creating a fun experience (**Interview 6**). **Interview 3** added that generative AI can help preview the look of a product on second-hand websites, similar to

traditional e-commerce sites, but with even greater impact due to the unique user experience typically offered by second-hand platforms.

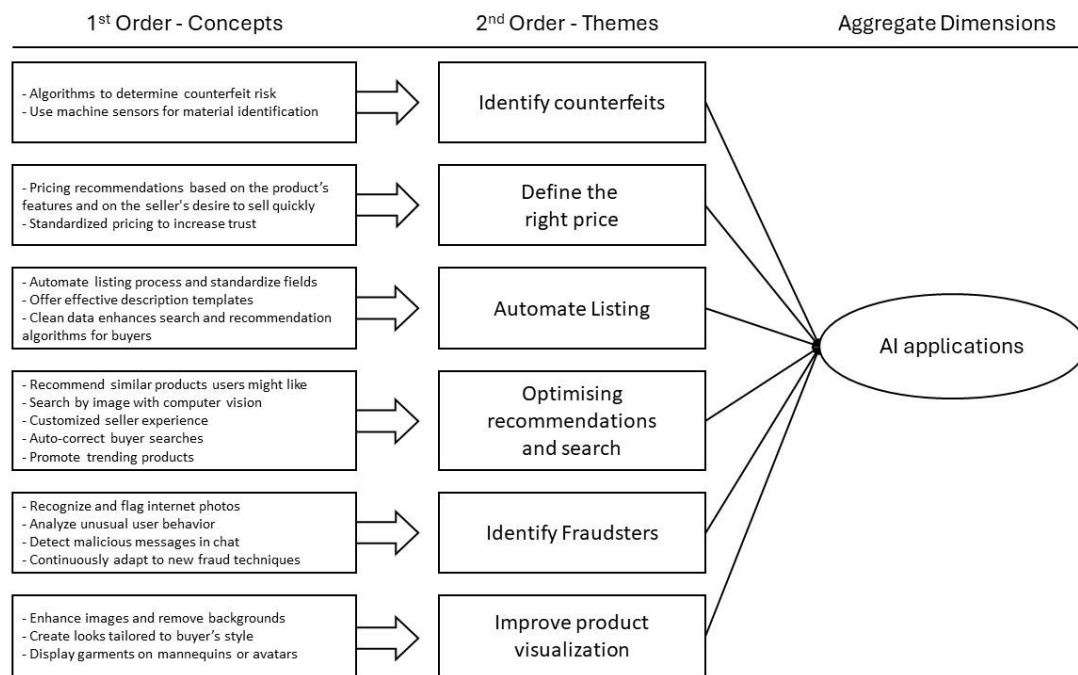


Figure 3. Data coding structure according to the Gioia Methodology for AI Applications

4.3. Strategic recommendations

4.3.1. Addressing mistrust issues

Before implementing AI, companies should always start with use cases and consider how AI can be used to better serve customers (**Interview 1, Interview 2, Interview 12**). AI should be viewed as “just a tool” (**Interview 1**). Platforms need to understand their weaknesses in terms of trust and then consider what AI could do to address those issues (**Interview 6**). **Interview 3** suggests conducting interviews to truly understand customer needs. Furthermore, AI should not be used just for the buzz (**Interview 2, Interview 3, Interview 12**); it should only be implemented when it is genuinely useful. If it is cheaper to have a human perform a task, it is better not to use AI (**Interview 3**). “Technology is only there to help us reduce our costs and grow scalably” (**Interview 3**). Additionally, AI cannot function independently; it must be trained (**Interview 13**), calibrated, and maintained (**Interview 12**).

4.3.2. User empowerment

With regard to banning users for fraud, it is important that users have the ability to challenge the machine's decision, which should then be reviewed by a human to avoid blind automation (**Interview 7**). At Vestiaire Collective, **Interview 14** explained that the majority of users banned by the algorithm are reinstated after they complain to customer service. He suggested that the best approach is to implement educational steps, starting with sending a warning message to the user, who can report if the platform made a mistake.

4.3.3. Risk management

When implementing an AI algorithm, companies need to quantify the risks and predict the impact (**Interview 14**). Additionally, “model tuning, model safeguards, and technologies that help do that, such as RAG, will become very important” (**Interview 1**). At Vestiaire Collective, the key lesson from launching algorithms is the importance of rigorously monitoring the accuracy of the data provided by the algorithm (**Interview 13**).

Companies should also adopt a startup mindset, embracing a test-and-learn approach and conducting A/B testing (**Interview 1, Interview 6**). An agile approach is recommended, starting small to avoid large investments that may not yield results (**Interview 6**). The implementation of AI tools should consider the user's willingness to adopt new technologies. Users who are more resistant to change should be introduced to AI gradually to prevent them from leaving the platform (**Interview 1**). **Interview 3** emphasized that “suddenly coming up with something and not creating this synergy with your users is going to create trust issues, while collaborating slowly and learning with your users can help.”

Moreover, companies can create business rules that act as safeguards for the model. **Interview 15** highlighted that at Vestiaire Collective, all Chanel products are digitally authenticated to ensure that no Chanel product is published without verification, thereby minimizing risks.

4.3.4. Human touch maintained

AI is a very useful tool, but it is crucial to “maintain a balance to avoid a loss of personal touch” (**Interview 5**), “especially on platforms like Leboncoin where the community feel is very appealing” (**Interview 5**). AI can be used in the background to improve the customer experience, but as **Interview 6** stated, “if you still want humans to buy on the platform, please

make sure that you treat your customer like a human.” Customers want to see the benefits of using AI without it being overly apparent (**Interview 6**).

Customers do not necessarily trust AI itself, but rather the company providing the service (**Interview 2**). Therefore, AI should be used in the background and not prominently displayed (**Interview 2, Interview 11**). In every industry and company, using AI internally is beneficial, but promoting its use to consumers can potentially damage the brand image, as some consumers are reluctant to embrace technology, particularly in the fashion industry (**Interview 3**).

The role of human experts remains crucial in detecting counterfeits, as consumers prefer experts to verify items rather than relying solely on AI (**Interview 3**). For customer service, companies should use AI-powered chatbots to offer quick and efficient responses, but they must also provide the option for customers to speak to a human (**Interview 2, Interview 9**), otherwise this can lead to frustration (**Interview 6**).

4.3.5. Raising awareness

Interview 3 argues that the fashion industry should place greater emphasis on scientists and foster open collaborations with data scientists and AI researchers. This could involve holding workshops or collaborative events where consumers can observe how fashion brands incorporate advanced technologies. Such transparency would help build trust, as consumers typically recognize fashion brands for their products and may be skeptical of their technological capabilities. By showcasing their learning processes and collaborations, brands can demonstrate their commitment to innovation. **Interview 3** notes that while a few brands, such as Nike, have adopted this approach, the industry as a whole is lacking. She believes that a gradual introduction of these initiatives, allowing users to follow and understand the process, would create synergy and foster trust.

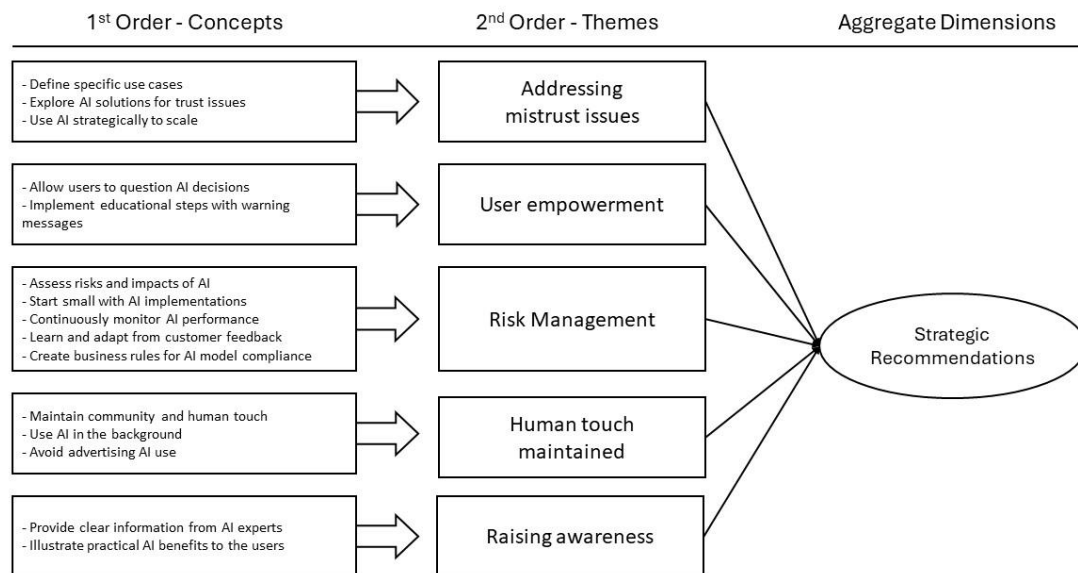


Figure 4. Data coding structure according to the Gioia Methodology for Strategic Recommendations

The integration of AI in the fashion industry offers significant potential for increased efficiency and cost savings, yet it also faces substantial challenges. **Interview 4** underscores the promising start of AI but notes the uncertainty surrounding its long-term capabilities. This reflects a broader hesitation within the industry to fully embrace AI without a clear understanding of its future impact.

Interview 12 delves into the paradox of investing in AI, highlighting the significant costs and the challenge of achieving a competitive advantage. AI requires continuous training by experts to remain effective, and this process must be regularly updated to accommodate new collections. Furthermore, advancements such as encrypted chips from brands or emerging blockchain standards could render these investments obsolete, presenting a significant risk.

In summary, while AI holds considerable promise for the fashion industry, realizing its benefits requires navigating investment risks, the necessity of ongoing expert training, and an evolving technological landscape. The industry must strategically balance these factors to fully capitalize on AI's potential.

5. Discussion

5.1. General overview of findings

The analysis revealed that second-hand clothing resale platforms face significant challenges, particularly in terms of managing fraud, dealing with counterfeit products, and the complexity of recommending products with a single SKU. The variety and uniqueness of these items requires sophisticated recommendation algorithms tailored to the unique aspects of second-hand products. The lack of standardization in product descriptions highlights the reliance on the integrity and accuracy of sellers in categorizing items. AI offers solutions by standardizing product descriptions and conditions, improving consistency and reliability, which has a direct impact on user trust. The balance between technological progress and human interaction is essential to maintain the community feeling of these platforms. A thoughtful and targeted implementation of AI, aligned with specific user needs, can enhance rather than replace the human components of the experience. Building trust is fundamental; platforms that fail to do this will struggle to retain customers. New AI capabilities, such as generative AI, present both fraud management challenges and opportunities to enhance the user experience through improved visual presentations and interactive features.

5.2. Comparison of findings with previous research

According to the results of data analysis, AI is used to moderate the interactions between the users on the Buyer-Seller chat to ensure a safe space for discussions. Also, the interviewees emphasized the fact that it is good to keep authentic descriptions written by customers and not just have impersonal descriptions. This is in line with the studies by Armstrong et al. (2015) and Pedersen and Netter (2015) which underscore the significance of social interactions in collaborative consumption, suggesting that fostering a sense of community among users can be a key driver of customer engagement. The study by Hasan et al. (2022) also confirms the notion that the interaction between buyers and sellers is crucial in C2C platforms.

The findings indicate that AI plays a crucial role in addressing the negative impacts of counterfeit items on consumer trust. This is consistent with the insights of Green and Smith (2002), who point out that counterfeit goods erode consumer trust and pose serious threats to legitimate businesses. Kennedy (2020) also highlights that fraudulent listings put genuine sellers at a disadvantage, impacting their sales and market presence. The interviewees reiterated

these concerns, highlighting the inadequacies of traditional manual inspections. Rathnayake et al. (2023) suggest that AI-driven computer vision provides a more efficient way to ensure product authenticity by analyzing large datasets to detect patterns and anomalies associated with counterfeit items. Interviewees mentioned the Crime tool at Vestiaire Collective as an effective AI solution that significantly reduces verification costs and limits the posting of counterfeit items online. However, interviewees noted that as counterfeit goods become more sophisticated, AI algorithms struggle to identify high-quality fakes. Although Srinivasan et al (2017) suggest that ML algorithms have the potential to detect even “superfakes”, the data analysis reveals the inability of AI to catch all counterfeit products.

According to the research results, AI significantly enhances personalized recommendations by catering to user preferences and behaviors. The analysis highlights the importance of offering personalized user experiences and using AI to study trending products on social networks for promotion on platforms. This is consistent with the literature, which indicates that AI caters to the preferences and behaviors of younger, digitally native consumers (Ahmed & Hussain, 2023; Charnley, 2022; Choo et al., 2023). Additionally, the literature review underscores AI's capability to predict fashion trends and recommend attire based on social media content analysis, which has the potential to revolutionize how consumers discover and select fashion items online (Pittman & Reich, 2016). This aligns with the data analysis findings that confirm the literature's stance on AI's transformative role in fashion recommendations.

Literature indicates that AI-powered tools like chatbots and virtual assistants are transforming customer service by providing instant, accurate responses to common inquiries, thereby allowing human agents to focus on more complex issues (Chattaraman et al., 2015; Khan & Das, 2018). Moreover, the perceived competence of AI, particularly its ability to handle complex queries effectively, is crucial in building consumer trust. For consumers to trust AI, it must be seen as capable and reliable, much like human customer service. According to the results of this research, virtual assistants and chatbots play a significant role in enhancing user interactions and service efficiency. The interviewees highlighted that while AI can significantly improve the customer experience, it should operate subtly in the background to avoid overshadowing the human element of customer service. They stressed that maintaining a personal touch is crucial, especially on platforms with a strong community focus. Studies by Armstrong et al. (2015) and Pedersen and Netter (2015) confirmed this by underscoring the

importance of personal interactions in building consumer trust, suggesting that fostering a sense of community among users can be a key driver of customer engagement. Overall, both the data analysis and the literature review emphasize the necessity of a balanced approach, where AI enhances service efficiency while preserving the crucial human touch in customer interactions.

Guerra-Tamez et al. (2024) emphasize that trust in AI systems is crucial for shaping purchasing decisions. The interviews underscored the importance of trust in platforms but noted the absence of clear performance indicators to quantify the evolution of trust and the impact of AI implementations. This suggests a gap in current metrics for assessing AI's effectiveness in building trust.

5.3. Theoretical contributions

This research addresses significant gaps in the existing literature on AI implementation in second-hand clothing resale platforms. The literature lacks comprehensive studies on the challenges platforms face in converting customers and how these can be overcome with AI. This research offers a clear understanding of strategies and implementations within companies, filling the gap left by existing studies that are narrowly focused on topics like user authentication and chatbot trust. By providing a holistic view of platform issues and AI-driven solutions, this study delivers new insights and practical advice for implementing these solutions while maintaining user trust.

Additionally, the research identifies six key themes, noting that while existing literature covers counterfeits, recommendations, fraud prevention, and visual quality enhancement, it lacks depth on the importance of taxonomy for data clarity and price consistency. This study highlights the crucial role of taxonomy in AI applications, contributing valuable insights to these underexplored areas.

5.4. Managerial implications

The findings offer practical insights for deploying AI in second-hand clothing resale platforms, guiding investments in key areas such as authenticity, user engagement, and fraud prevention. These insights provide platform workers with a comprehensive view of the challenges faced by second-hand clothing resale platforms. The reflections from the interviewees can guide companies in exploring how AI can be used to address issues. Additionally, the strategic

recommendations discussed can be highly beneficial for businesses looking to integrate AI into their operations. For effective AI implementation, it is recommended to start with clear use cases, quantify risks and impacts, and adopt a rigorous methodology before embarking on AI projects. This approach can prevent costly missteps and ensure that AI tools are effectively integrated to enhance platform performance and user trust. While AI can automate and optimize many processes, preserving personal touch is important to maintain users' trust. By following the recommendations, companies can successfully integrate AI into their business models, ensuring sustained growth and user satisfaction.

5.5. Research limitations

Potential biases could result from the researcher's professional involvement with the industry, which could influence the interpretation of the data. The qualitative nature of the research introduces subjectivity in data interpretation, which could affect the findings. Additionally, the research primarily includes professional perspectives, lacking direct input from end-users such as buyers and sellers, limiting insights into user experiences and trust factors. Moreover, the study may not fully capture the diverse challenges and opportunities across various second-hand platforms due to the limited number of platforms represented. Finally, the research might overly focus on certain AI applications like recommendation systems and fraud detection, potentially overlooking other critical areas like customer service.

5.6. Future directions

Future research should include quantitative methods to statistically measure AI's impact on user trust, providing robust validation of AI's effectiveness in enhancing engagement and loyalty. Exploring conversational AI technologies and their impact on user satisfaction, particularly AI-driven chatbots, can offer valuable insights. Research could also focus on predicting fit and size to enable virtual fitting rooms, assessing customer perceptions, and quantifying the added value of such projects. Examining how different demographic groups perceive and interact with AI features, and exploring AI's role in promoting sustainable fashion practices are also important areas for future research.

6. Conclusion

This thesis aimed to investigate the potential of AI to enhance user trust in second-hand clothing resale platforms by addressing key challenges within the sector. Through a comprehensive literature review and in-depth interviews with industry professionals, several critical issues were identified and analyzed. The literature review highlighted the significant environmental impact of the fashion industry and the growing consumer demand for sustainable practices. It also emphasized the crucial role of trust in consumer decision-making and the potential of AI to offer solutions to address customer concerns. The qualitative research, involving interviews with 15 professionals from Europe and the United States, shed light on the primary challenges faced by these platforms, including counterfeit detection and fraud management. The insights gained from these interviews were instrumental in understanding the practical applications and limitations of AI in this context. AI technologies, particularly ML algorithms, were found to be effective in tackling these challenges. They can detect counterfeit items, manage fraudulent activities, automate and enhance product listings, and optimize search and recommendation systems. Additionally, AI can standardize pricing, improve product visualization, and provide personalized user experiences, which are essential for building and maintaining consumer trust. However, the implementation of AI must be approached strategically, with a focus on continuous expert training and adaptation to consumer acceptance. It is essential to quantify project risks and ensure a balanced integration of AI and human elements to achieve user satisfaction and trust. The findings of this research contribute to a deeper understanding of AI's role in the second-hand fashion market. They provide valuable insights for industry practitioners and academics on how to effectively leverage AI to enhance user trust. Addressing these challenges through AI can significantly improve the reliability and appeal of second-hand clothing resale platforms, ultimately fostering a more sustainable and trustworthy fashion ecosystem.

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Appendices

Appendix 1: Profile of interviewees

#	Organization type	CE activity launch	Number of followers on LinkedIn	Interviewee's title	Company size	Business Model
1	Resale platform	1995	1,6k	Group product manager, ML and AI within Search	12,300	B2B2C
2	Clothing Resale platform	2009	1,9k	(Former) Head of product	2,890	C2C
3	Demand forecasting company for fashion	2013	1,6k	Product manager in the data and operations	42	B2B
4	SaaS platform for professional fashion resellers	2022	3,7k	Co-founder	3	B2B
5	Resale platform	2006	910	ML Engineer, focus on recommendations	1,500	C2C
6	University	1972	3,6k	Professor, Go-to-Market strategy course	X	X
7	Firm developing technological solutions for industries including fashion	1973	5k	Co-research director of the Lectra-ESCP Chair in Fashion and Technology	2,500	B2B
8	AI-based price recommendation tool for second-hand luxury bags	2022	930	Founder & CEO	1	B2B
9	Consumer research, consultancy company	2002	14,2k	Founder & CEO	8	B2B
10	Ecosystem providing innovative solutions for circular commerce	2021	4k	Independent Circularity Consultant	4	B2B
11	Outfit-building	2024	970	Co-founder & CTO	3	B2B2C

	application					
12	Luxury & premium resale platforms	2009	1,8k	VP Authentication, QC & Community Trust	800	C2C
13	Luxury & premium resale platforms	2009	710	Curation Director	800	C2C
14	Luxury & premium resale platforms	2009	1,1k	Senior Data Scientist	800	C2C
15	Luxury & premium resale platforms	2009	720	Staff Data Scientist	800	C2C

Appendix 2: Interview guide

1. Can you briefly describe your role and experience with AI in the context of second-hand goods platforms?
2. What are the main challenges online platforms for second-hand goods currently face?
3. How is AI being used (or could be used, if you have any plans in future, for example) to tackle these challenges?
4. What do you think about the role of AI on user trust (buyers and sellers) in second-hand clothing resale platforms?
5. What AI developments do you see making a significant impact in the short and long term on the second-hand goods market?
6. What advice would you offer to platforms that are considering integrating new AI technologies?
7. Is there anything else you think is interesting to share when discussing the integration of AI in second-hand goods platforms?