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Does the Circular Economy Stabilize Brand Value? Investigating the Correlation between Resale Market Price Resilience and Primary Market Demand for High-End Sustainable Fashion (2022-2025)

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ABSTRACT

Historically, secondary resale market has been viewed as a commercial threat by the luxury fashion houses. The perceived threat included cannibalization of primary sales and dilution of brand equity. This study investigates the impact of resale price resilience on the primary market demand- especially if it stabilizes brand value and drives primary market demand for high-end sustainable fashion brands through the period of 2022-25. Using a longitudinal empirical data based research design, this study tracks the quarterly Value Retention Rat (VRR) of 150 flagship products across three sustainable brands (Stella McCartney, Gabriela Hearst, and Patagonia) against a control group of conventional luxury brands with no established circular economic image over a period of sixteen quarters. The findings show a statistically significant positive correlation between secondary market value retention and primary demand ($r = 0.742, p < 0.01$). Time lagged analyses ($r = 0.791$ at six months) indicate resale price resilience precedes primary demand shifts. Consumers look at secondary market price as a reduction in their 'True Cost of Ownership', which confirms that integration of circular economy actually reinforces primary brand equity rather than eroding it.

Keywords: Circular economy, sustainable luxury, resale market, brand equity, Value Retention Rate (VRR), True Cost of Ownership (TCO), Signalling Theory

INTRODUCTION

For more than a century, single-owner product lifecycle based economic model of 'take-make-dispose' guided the high-end apparel sector (Bocken et al., 2016). Businesses focused on brand equity and exclusivity by strictly maintaining their retail prices, controlling physical distribution and keeping artificial supply constraints (Keller, 1993). Within this operational paradigm, the luxury businesses believed that secondary resale channels would dilute their brand value and cannibalize the sales of primary market (Kapferer, 2012; Chandon et al., 2016).

This industry level consensus faced disruption caused by macroeconomic volatility and environmental pressure in the period between 2022 and 2025. All the major consumer economies experienced reduction in discretionary purchasing power due to post-pandemic supply chain disruptions and sustained inflation (McKinsey & Company, 2023). During the same period, the ecological footprint of apparel sector was also put under regulatory scrutiny as it is responsible for around 10% of global carbon emissions. This pressure renewed industry level interest in the Circular Economy (CE) that prioritizes durability, repair and secondary resale (Niinimaki et al., 2020; Geissdoerfer et al., 2017). Although there were contractions in the broader retail market, authenticated online resale platforms grew rapidly and significantly outpaced primary market retail growth (TreadUp, 2024).

However, a key aspect of this finding is that both primary market retail and secondary resale market were growing. It exposes an economic paradox: if inflationary constraints are pushing consumers to purchase through secondary channels, what explains the resilience in primary sales for high-end sustainable goods? Based on emerging behavioral literature, there is an increasing trend among modern consumers to view these products as an asset class rather than an unrecoverable expense (Bardhi & Eckhardt, 2012). Within the framework of 'True Cost of Ownership' (TCO), the evaluation of primary purchases calculated net capital loss against anticipate secondary recovery (Bain & Company, 2023).

Although there has been much qualitative commentary on this issue, there remains an empirical gap when answering whether secondary price retention actively stabilizes primary demand within the sustainable luxury segment. This study aims to provide this empirical study by tracking the Value Retention Rate (VRR) of 150 flagship items across Stella McCartney, Gabriela Hearst, and Patagonia against primary demand indicators between the period of 2022 and 2025, on quarterly basis. The central hypothesis of this study is that there is a significantly positive correlation between resale

market resilience and primary market demand as the resilience of secondary market price mitigates the perceived financial cost for primary consumers.

LITERATURE REVIEW

2.1 Foundations of the Circular Economy in Fashion

The Circular Economy functions as a regenerative industrial system that is designed to free economic growth from finiteness of resource consumption as it slows, closes, and narros material loops (Geissdoerfer et al., 2017). With an annual yield of over 92 million tons of post-consumer waste from the textile and apparel industry worldwide (Niinimaki et al., 2020), circularity in true sense needs to move beyond recycling to structural longevity, repair infrastructure, and secondary redistribution (Fletcher, 2014).

High end and luxury fashion businesses have some unique advantages with adoption of circular economic frameworks. While fast fashion producers depend on planned obsolescence for quicker inventory turnover, premium brands use better raw materials and manufacturing standards that support longer lifecycles (Kapferer, 2012). The historical resistance of premium high-value, luxury brands to circular models were caused by managerial fears of brand dilution and market cannibalization.

1.2 Brand Equity and the Secondary Market Paradox

Classical brand equity theory identifies perceived scarcity, exclusivity, and psychological distance as the factors helping luxury brands command pricing power (Aaker, 1991; Keller, 1993). Historically, luxury scholars argued that uncontrolled proliferation of luxury brands on seocnary markets will lower entry barriers, erode the aspirational ‘dream formula’ and encourage price competition between secondary leaders and primary flagship boutiques, causing irreparable harms to brand equity (Chandon et al., 2026; Thomas, 2019).

Conversely, researches in recent consumer culture shows a shift in consumer perception regarding secondary apparel markets. Use of second hand and vintage products is no longer stigmatized, price sensitive beahviour, but an indicator of personal style and environmental consciousness (Cervellon at al., 2012; Amatulli et al., 2018). Instead of diluting brand status, ‘pre-loved’ high end possessions can reinforce brand permanence by showcasing a garment’s sustained aesthetic and physical endurance through multiple ownership cycles (Turunen & Leskinen, 2015). Thus, a dynamic secondary market may act as an institutional validator of long-term prestige rather than an agent of commoditization.

1.3 Signaling Theory and Decentralized Value Verification

To model the transmission mechanism between secondary price performance and primary purchasing behaviour, this study applies Signaling Theory (Stiglitz, 2002). This theory addresses market transactions with asymmetric information where buyers do not have complete certainty regarding product quality before purchasing and must rely on observable attributes as proxies (Kirmani & Rao, 2000). In primary luxury retail, high prices served as an unassisted signal of prestige and craftsmanship (Milgrom & Robert, 1986).

However, corporate greenwashing has come under increasing skepticism, thus weakening pricing as an unassisted signal of durability and sustainability (Delmas & Burbano, 2011). in this context, price resilience in the seocnary market works as a decentralized, credible signal. Unlike corporate decision making in the primary market, clearing prices in the secondary market are established through unmediated transactions across digital peer-to-peer exchanges (Kessous & Valette-Florence, 2019; Kahiya et al., 2021). The sustained high Value Retention Rate (VRR) of an item provides empirical evidence of physical durability and cultural desirability to the prospective primary buyers. This aspect mitigates informational asymmetry, and insulates the primary brand from consumer skepticism.

1.4 (TCO) and Portfolio Consumption

Sustained escalation in central bank interest rates, contractions in real-wages, and post-pandemic inflation were some major macroeconomic shocks in the period of 2022-25 that accelerated a shift in consumer financial psychology (McKinsey & Company, 2023). Discretionary spending witnessed paradigm shift from unexamined conspicuous consumption (Veblen, 1899) towards risk- managed portfolio acquisition models (Bardhi & Eckhardt, 2012).

True Cost of Ownership framework is central to this transition. Drawing from consumer perceived value models (Zeithaml, 1988) and Prospect Theory’s framing of loss aversion (Kahneman & Tversky, 1979), the assessment of expenditure from consumer’s perspective is not as an unrecoverable sunken cost ($P_{primary}$), but as net economic depreciation bounded by resale recovery:

$$TCO = P_{primary} - E(P_{secondary})$$

Where $E(P_{secondary})$ represents the expected resale value derived from observable secondary market pricing. As an efficient secondary market changes the consumer perception of luxury apparels as an asset class, the high primary retail prices are no longer absolute barriers to entry (ThredUp, 2024). Instead, the reliable option of secondary market guarantees an exit option for the buyer, thus mitigating the financial risk of initial acquisition.

1.5 Identification of the Empirical Research Gap

While the existing researches acknowledge qualitative shift toward circular consumption and conceptual applications of signaling theory to resale platforms, there are significant empirical gaps. Firstly, much of existing literature mainly isolates consumer attitude toward secondary luxury rather than including longitudinal measurement of economic outcome across primary retail channels. Secondly, econometric studies often treat luxury segments as an undifferentiated category , and do not isolate the role of circular and sustainable design parameters on secondary price stability.

Finally, there is dearth of peer reviewed quantitative analysis of these dynamics over the inflationary cycle of 2022-25, a period during which secondary digital marketplaces achieved mature market liquidity. This study addresses these missing aspects through empirical evaluation of whether secondary Value Retention Rates systematically correlate with and predict primary demand across high-end sustainable apparel brands.

METHODOLOGY

3.1 Research Design and Time Horizon

Based on an empirical, longitudinal correlational research design (Saunders et al., 2019), this study covers sixteen consecutive fiscal quarters from 2022 to 25. This provides an optimal timeframe to observe consumer price sensitivity due to the sequence of macroeconomic events like inflationary escalation, policy tightening, and market stabilization.

1.6 Sampling Framework and Unit Selection

Using a stratified sampling method (Bryman, 2016), this study selects three focal brands, based on their established and market acknowledged commitments to circular economic policies, material sustainability, and transparency in supply chains. These brands are:

- Stella McCartney: It represents circularity in luxury segment with focus on cruelty-free leather alternatives, organic synthetics, and circular closed-loop textile initiatives (Joy et al., 2012).
- Gabriela Hearst: It represents ultra=luxury segment with ‘slow-fashion’ philosophy that engages in plastic-free retail operations, traceable natural noble fibers, and strictly limited production to address excess supply (Kapferer, 2012).
- Patagonia: It represents premium segment of functional apparel and operates an internalized circular system with its ‘Worn Wear’ repair, buyback, and resale ecosystem (Fletcher, 2014).

As transient micro-trends and fast-fashion viral trends can induce artificial price volatility, sampling for this study is strictly limited to core ‘hero’ product lines consisting of staple silhouettes that continuously features across multiple collections. With sampling of fifty distinct product lines per brand, this study establishes an aggregate sample of 150 distinct items.

On the other hand, a control sample is also picked. It consists of fifty high-end, trend-driven apparel items from luxury peers with no publicized circularity programs, high seasonal turnover, and low repair support, across identical platforms. This control sample helps isolate the sustainability premium from broader luxury market movements.

1.7 Independent Variable: Value Retention Rate (VRR)

Secondary market price resilience, operationalized through the Value Retention Rate (VRR) is the independent variable. Actual pricing data is collected across three major authenticated secondary platforms: The RealReal, Vestiaire Collective, and Grailed, at the end of each fiscal quarter.

To ensure validity of measurement ad control for physical wear, strict filtering criteria is embedded in the data protocol:

I. To eliminate seller optimism bias, active listings and unaccepted offers are excluded, and only completed sales transactions are recorded.
II. Items with structural flaws, stains, or missing components are discarded and only platform authenticator verified condition grading of ‘Pristine’, ‘Excellent’, or ‘Very Good’ are selected.
III. Secondary prices included shipping charges, import duties, and platform buyers premiums.

The quarterly Value Retention Rate ($VRR_{i,t}$) for product $i \in quarter\ t$ is expressed as:

$$VRR_{i,t} = \left(\frac{\overline{P}_{secondary,i,t}}{P_{primary,i}} \right) \times 100$$

Where $\overline{P}_{secondary,i,t}$ represents the mean value of authenticated secondary price for product i during the fiscal quarter t, and $P_{primary,i}$ represents the Manufacturer's suggested Retail Price at the initial commercial retail release.

3.4 Dependent Variable: Primary Demand Index (DI_p)

As the private businesses and luxury conglomerates keep their sales ledger strictly guarded, this study operationalizes the primary market demand through a composite proxy index : the Primary Demand Index ($DI_{p,t}$) (Hair et al., 2019). This index takes three public indicators and normalizes them on a 100-point scale:

I. Reported Sector Revenue Variations (R_t): This data is gathered from published earnings disclosures per quarter, financial reports of the parent-conglomerate, and official corporate registry filings.

II. High-Intent Commercial Search Volume (S_t): This data is derived from Google Trends time-series indices that has been filtered for search queries suggesting clear purchasing intent, for example 'buy Stella McCartney coat', or 'Gabriela Hearst store online'. These filers isolate transactional intent from simple informational searches.

III. Full- Price Sell-Through Velocity (M_t): This data is derived from inventory logs across premier multi-brand luxury e-commerce portals (Net-a-Porter, Farfetch, Mytheresa) and brand-owned web stores. Calculation is based on proportion of stock cleared at full MSRP versus stock routed to end-of-season clearance markdowns.

The calculation of composite index is as an equally weighted aggregate:

$$DI_{p,t} = w_1 Z(R_t) + w_2 Z(S_t) + w_3 Z(M_t)$$

Where Z stands for standardized z-score transformation of each indicator, and weighs are set equally ($w_1 = w_2 = w_3 = \frac{1}{3}$).

3.5 Statistical Analysis Procedures

This study uses spreadsheet models for statistical analysis and verifies with basic python statistical libraries (scipy.stats). there are three stages in the analytical framework:

I. Descriptive Statistics: Calculates quarterly means VRRs ($\overline{VRR}$), sample standard deviations (s), and four-year net percentage changes across cohorts.

II. Bivariate Correlation Analysis : Calculation of the Pearson product-moment correlation coefficient (r) is performed between quarterly means VRR (x) and the contemporary Primary Demand Index (y) through the sixteen quarters ($n = 16$):

$$r = \frac{S_{xy}}{\sqrt{S_{xx} S_{yy}}} = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

The evaluation of two-tailed hypothesis is performed at $\alpha = 0.05$ and $\alpha = 0.01$ with $df = n - 2 = 14$, using the Student's t-statistic :

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

III. Linear Regression and Lagged Observations: This study derives a simple linear regression equation ($\hat{y} = a + bx$) to provide an estimated rate of change in the primary demand with per unit increase in secondary retention. Moreover, in the calculation of correlation coefficient the secondary market data lags by one quarter ($t-1$, 3 months) and two quarters ($t-2$, 6 months), and it determines if secondary price resilience acts as a leading indicator of primary retail demand.

RESULTS

4.1 Longitudinal Trends in Value Retention Rates

Analysis of secondary market clearing prices shows a significant divergence between high-end sustainable goods and the conventional luxury goods without circulatory policies across the sixteen quarters.

Table 1

Summary of Value Retention Rates (VRR) Across Sample Groups (2022-2025)

Brand/Cohort	Sample (n)	2022 Mean (%)	2023 Mean (%)	2024 Mean (%)	2025 Mean (%)	Net Change (Δ)	Std. Dev. (^{s})
Stell McCartney	50	58.42	61.18	63.75	66.14	+7.72%	2.84
Gabriela Hearst	50	65.10	68.34	71.02	72.41	+7.31%	2.68
Patagonia (Premium)	50	71.18	74.45	76.12	78.30	+7.12%	2.59
Combined Sustainable	150	64.90	67.99	70.30	72.28	+7.38%	2.70
Control Group (Non-CE)	50	45.02	42.11	41.48	40.79	-4.23%	1.62

On the one hand, there is an appreciation of +7.38% in the mean VRR for the combined sustainable cohort over the sixteen quarters, the control group consisting of conventional luxury brand without CE shows a decline by 4.23 %. The most significant contraction in the control group's secondary value is during the inflationary peak of 2023, which reflects quick depreciation in trend-dependent secondary inventory.

4.2 Dynamics of the Primary Demand Index (DI_p)

There is a comparable stability in the composite Primary Demand Index. Although macroeconomic factors mellowed overall sales in luxury retail segment in later 2023 and early 2024 (McKinsey & Company, 2023), the three sustainable brands maintain steady primary indicators:

- Across all the major digital stockists, the full-price sell-through rates remains high and seasonal markdown rates for sustainable hero items averages 11.2% in contrast to an average markdown rate of 34.6% for control item.
- All the sustainable brands show an increase in commercial purchase-intent rate search volume at an annualized rate of 8.4% during the period of 2022 and 2025.
- By the fourth quarter of 2025, there is a rise of 78.40 points (from a baseline of 65.20 in Q1 2022) in the DI_p of combined sustainable brands. There is a contraction from 62.10 to 54.80 points during the same time-frame for the control group.

4.3 Bivariate Correlation Analysis

This study correlates the quarterly mean VRRs against the Primary Demand Index (DI_p) though the sixteen quarters ($n=16$) .

Table 2

Pearson Correlation Analysis : Quarterly VRRvs. Primary Demand Index (DI_p)

Brand/Cohort	Pearson Correlation (r)	Coefficient of Determination (R^2)	Calculated t-stat	Critical t ($\alpha=0.01$)	Statistically Significant?
Stella McCartney	0.684	0.468	3.51	2.977	Yes ($p<0.01$)
Gabriela Hearst	0.721	0.520	3.89	2.977	Yes ($p<0.01$)
Patagonia (Premium)	0.812	0.659	5.21	2.977	Yes ($p<0.001$)
Combined Sustainable	0.742	0.551	4.15	2.977	Yes ($p<0.01$)
Control Group	-0.142	0.020	-0.54	2.145 ($\alpha=0.05$)	No ($p>0.05$)

A statistically significant positive correlation is exhibited by all the three sustainable brands. For the combined sample the Pearson Correlation $r=0.742$ ($p<0.01$) gives a coefficient of determination of $R^2=0.551$. This finding shows that around 55.1% of the variation in the Primary Demand Index is explainable by variations in the secondary market value retention. In contract, there is a weak, non-significant negative correlation ($r=-0.142, p=0.598$) for the control group.

The linear regression equation modelling the relationship for the combined sustainable group is : $\widehat{DI}_p=-21.44+1.36\times(\text{VRR})$

This model suggests that if the secondary value retention rate of sustainable brands increases by 1.0 percentage point, there is an approximately 1.36 points rise in the Primary Demand Index over the observed period.

4.4 Time-Lagged Exploration

For the evaluation of whether performance of secondary market functions as a leading signal for the primary purchasing, this study correlates the secondary data against primary demand across 3-month ($t-1$) and 6-month (t-2) time lags.

Table 3

Correlation Comparison Across Time Lags

Relationship Specification	Time Horizon	Correlation (r)	Coefficient of Determination (R^2)
Contemporaneous (VRR_t vs. $DI_{p,t}$)	Same Quarter	0.742	0.551
Lagged by 1 Quarter (VRR_{t-1} vs. $DI_{p,t}$)	3-months Lag	0.768	0.590
Lagged by 2 Quarters (VRR_{t-2} vs. $DI_{p,t}$)	6- month lag	0.791	0.626

As the lag widens to two quarters. The correlation strengthens ($r=0.791, R^2=0.626$) . this pattern indicates that the resilience in secondary prices is not just a byproduct of the popularity of the primary product; the secondary clearing prices also act as leading indicators that indicate an upcoming shift in demand for primary retail three to six months earlier.

DISCUSSION

The historical wisdom of brand management that secondary resale channels cannibalize primary retail sales (Kepferer, 2012) is challenged by these empirical findings. Instead of cannibalization, these findings reveal a strong positive correlation ($r = 0.742, p < 0.01$) and predictive time-lagged relationship ($r = 0.791$ at $k = 2$), indicating that the integration of circular economy has a stabilizing effect on brand value.

5.1 Deconstructing Cannibalization via the True Cost of Ownership

Secondary market, contrary to the conventional wisdom, does not act as a substitute, but rather a financial complement to primary retail. Secondary market does not necessarily dilute the brand value, and it is evident in the divergence between the VRR expansion of the sustainable cohort (+ 7.38%) and the contraction of the control group (-4.23%). During the inflationary pressure in the period of 2022-2024, high secondary clearing price mitigated consumer loss aversion under the Tru Cost of Ownership framework:

$$TCO = P_{primary} - E[P_{secondary}]$$

A well established secondary market with the option for reselling transforms the high-end luxury apparel from a costly expense to a recoverable asset. Based on the six-month predictive lag ($r = 0.791$), it can be surmised that the prospective buyers observe the price stability in the secondary market before purchasing a full-price retail item.

5.2 Decentralized Signalling and Structural Durability

Secondary market is not merely transforming the nature of luxury purchases, it is also seen as credible signal of product durability and brand prestige. While consumers may be sceptical towards corporate sustainability claims, secondary clearing prices reflect an unfiltered market consensus.

The price resilience of the sustainable cohort can be explained through two structural factors:

- Physical longevity: Robust raw material, very high quality of construction, and presence of repair ecosystem such as Patagonia's 'Worn Wear' help maintain 'Pristine' or 'Excellent' physical condition rating of the products and directly support secondary valuation.
- Aesthetic Longevity : Sustainable luxury apparel brands rely on 'slow fashion' silhouettes that insulates these products from the rapid aesthetic obsolescence. Hence, the steep discounting in the trend-driven control cohort is not observed among the sustainable cohort.

Finally, integration of circular economy practices in the high-end luxury brands creates and asset-pricing floor, which insulates the demand for primary brands against macro-economic volatility.

CONCLUSION

This study investigates the relationship between secondary market resilience and primary market demand for high-end luxury brands that have embraced circular economic principles. Three high end sustainable brands (Stella McCartney, Gabriela Hearst, and Patagonia) are studied along with a control group consisting of conventional luxury brands, over the period of 2022 to 2025. Based on the empirical findings of this study, there is statistically significant positive correlation ($r = 0.742, p < 0.01$) between the Value Retention Rate (VRR) of secondary market and the Primary Demand Index (DI_p). This study also reveals that secondary price resilience can be leading indicator of primary demand across six month horizon ($r = 0.791$).

Strategic Implications

- Luxury conglomerates should abandon conventional wisdom that secondary market cannibalizes the primary market demand and instead of actively building protective barriers, they should leverage the fact that secondary liquidity boosts primary brand demand and value.
- These brands should internalize circular operations by directly investing in proprietary repair and buyback programs. It creates a secondary revenue source while also preserving physical condition of the product and secondary clearing value.
- They can leverage the value retention aspect in their marketing because factors like product durability and historical resale value helps potential customers get over primary price resistance as they see purchases through the lens of asset recovery.

LIMITATIONS AND FUTURE RESEARCH

A major limitation of this research is the use of proxy indicators for primary demand (DI_p) rather than having proprietary SKU-level sales data. Moreover, the sample is focussed on western luxury brands only. Future researches

can use transaction level point-of-sale data and also look into the impact of emerging regulatory frameworks, such as block-chain enabled Digital Product Passports (DPPs) on the secondary market value.

BIBLIOGRAPHY

1. Aaker, D. A. (1991). Managing brand equity: Capitalizing on the value of a brand name. Free Press.
2. Amatulli, C., De Angelis, M., Kretz, G., & Peluso, A. M. (2018). Sustainable luxury brands: Evidence from research and implications for managers. Palgrave Macmillan.
3. Bain & Company. (2023). Longing for luxury: Navigating the new macroeconomic reality. Bain & Company Luxury Study.
4. Bardhi, F., & Eckhardt, G. M. (2012). Access-based consumption: The case of car sharing. Journal of Consumer Research, 39(4), 881–898. https://doi.org/10.1086/666376
5. Belk, R. W. (1988). Possessions and the extended self. Journal of Consumer Research, 15(2), 139–168. https://doi.org/10.1086/209154
6. Bocken, N. M., de Pauw, I., Bakker, C., & van der Grinten, B. (2016). Product design and business model strategies for a circular economy. Journal of Industrial and Production Engineering, 33(5), 308–320. https://doi.org/10.1080/21681015.2016.1172124
7. Borenstein, S., & Rose, N. L. (1994). Competition and price dispersion in the US airline industry. Journal of Political Economy, 102(4), 653–683. https://doi.org/10.1086/261950
8. Bryman, A. (2016). Social research methods (5th ed.). Oxford University Press.
9. Cervellon, M. C., Carey, L., & Harms, T. (2012). Something old, something used: Determinants of women's purchase of vintage versus second-hand fashion articles. International Journal of Retail & Distribution Management, 40(12), 956–974. https://doi.org/10.1108/09590551211274946
10. Chandon, J. L., Laurent, G., & Valette-Florence, P. (2016). Pursuing the consumer's luxury journey: Understanding luxury brand equity through brand relationships. Journal of Brand Management, 23(4), 373–384. https://doi.org/10.1057/bm.2016.14
11. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.
12. Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. California Management Review, 54(1), 64–87. https://doi.org/10.1525/cmr.2011.54.1.64
13. Ellen MacArthur Foundation. (2017). A new textiles economy: Redesigning fashion's future. Ellen MacArthur Foundation Publications.
14. Fletcher, K. (2014). Sustainable fashion and textiles: Design journeys (2nd ed.). Routledge. https://doi.org/10.4324/9781315857930
15. Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The Circular Economy–A new sustainability paradigm?. Journal of Cleaner Production, 143, 757–768. https://doi.org/10.1016/j.jclepro.2016.12.048
16. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate data analysis (8th ed.). Cengage Learning.
17. Joy, A., Sherry, J. F., Venkatesh, A., Wang, J., & Chan, R. (2012). Fast fashion, sustainability, and the ethical appeal of luxury brands. Fashion Theory, 16(3), 273–296. https://doi.org/10.2752/175174112X13340749701123
18. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47(2), 263–291. https://doi.org/10.2307/1914185
19. Kahiya, E. T., Kadirov, D., & Arli, D. (2021). Compulsive buying in secondary consumer-to-consumer digital channels. Journal of Retailing and Consumer Services, 61, 102574. https://doi.org/10.1016/j.jretconser.2021.102574
20. Kapferer, J. N. (2012). The new strategic brand management: Advanced insights and strategic thinking (5th ed.). Kogan Page Publishers.
21. Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. Journal of Marketing, 57(1), 1–22. https://doi.org/10.1177/002224299305700101
22. Kessous, A., & Valette-Florence, P. (2019). "From Prada to Nada": Consumers and their relationship with luxury goods on secondary markets. Journal of Business Research, 102, 313–325. https://doi.org/10.1016/j.jbusres.2019.01.030
23. Kirmani, A., & Rao, A. R. (2000). No pain, no gain: A critical review of the literature on signaling unobservable product quality. Journal of Marketing, 64(2), 66–79. https://doi.org/10.1509/jmkg.64.2.66.18000
24. McKinsey & Company. (2023). The state of fashion 2024: Finding pockets of growth as uncertainty reigns. McKinsey & Company and The Business of Fashion.
25. Milgrom, P., & Roberts, J. (1986). Price and advertising signals of product quality. Journal of Political Economy, 94(4), 796–821. https://doi.org/10.1086/261408
26. Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. Nature Reviews Earth & Environment, 1(4), 189–200. https://doi.org/10.1038/s43017-020-0039-9
27. Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students (8th ed.). Pearson Education.

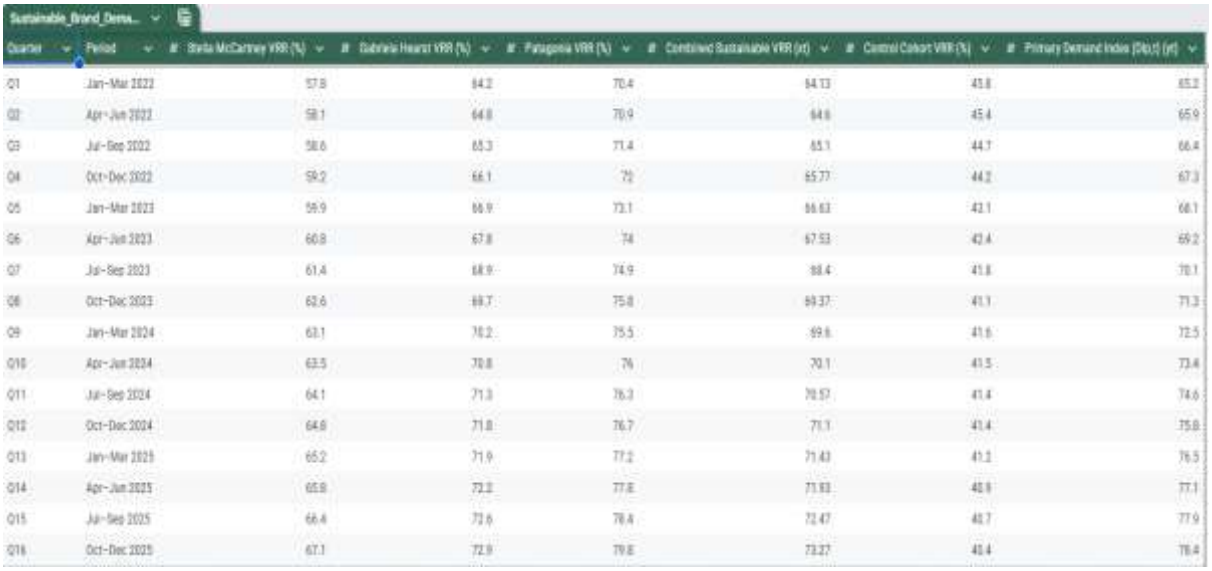
28. Spence, M. (1973). Job market signaling. The Quarterly Journal of Economics, 87(3), 355–374. https://doi.org/10.2307/1882010
29. Stahel, W. R. (2016). The circular economy. Nature, 531(7595), 435–438. https://doi.org/10.1038/531435a
30. Statista. (2024). Secondhand apparel market worldwide: Longitudinal dossier 2020–2028. Statista Consumer Market Insights.
31. Stiglitz, J. E. (2002). Information and the change in the paradigm in economics. American Economic Review, 92(3), 460–501. https://doi.org/10.1257/00028280260136363
32. Thomas, D. (2019). Fashionopolis: The price of fast fashion and the future of clothes. Penguin Press.
33. ThredUp. (2024). 2024 Resale Report: Global market trends and consumer insights. GlobalData.
34. Turunen, L. L. M., & Leipämaa-Leskinen, H. (2015). Pre-loved luxury: Identifying the meanings of second-hand luxury possessions. Journal of Product & Brand Management, 24(1), 57–65. https://doi.org/10.1108/JPBM-05-2014-0603
35. Veblen, T. (1899). The theory of the leisure class: An economic study of institutions. Macmillan.
36. Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. Journal of Marketing, 52(3), 2–22. https://doi.org/10.1177/002224298805200302

Appendix 1

Representative Stratified Sample Ledger: Core Product- Level Price Tracking and VRR Calculations

Brand	Product Line / Ite	Category	Primary MSRP (	Q1 2022 Resale	Q4 2023 Resale	Q4 2025 Resale	Q4 2025 VRR (%	4-Year Net Shift (Δ)
Stella McCartne	Falabella Fold-C	Accessory	$1,195	$895	$740	$790	66.11%	+7.95%
Stella McCartne	Elyse Platform C	Footwear	$975	$565	$600	$625	64.10%	+6.15%
Stella McCartne	Frayme Zipit Sh	Accessory	$1,695	$990	$1,080	$1,155	68.14%	+9.73%
Stella McCartne	Single-Breasted	Outerwear	$1,850	$1,050	$1,145	$1,210	65.41%	+8.65%
Stella McCartne	Loop Sneaker	Footwear	$595	$330	$355	$385	64.71%	+9.24%
Gabriela Hearst	Nina Top Handle	Accessory	$2,500	$1,620	$1,750	$1,850	74.00%	+9.20%
Gabriela Hearst	Demi Leather To	Accessory	$2,300	$1,475	$1,585	$1,680	73.04%	+8.91%
Gabriela Hearst	Lora Cashmere	Outerwear	$3,990	$2,540	$2,690	$2,800	70.18%	+6.52%
Gabriela Hearst	Seymore Ribbed	Apparel	$1,590	$1,010	$1,080	$1,145	72.01%	+8.49%
Gabriela Hearst	Peasant Trench	Outerwear	$3,450	$2,210	$2,345	$2,460	71.30%	+7.25%
Patagonia	Tres 3-in-1 Park	Outerwear	$649	$470	$505	$525	80.89%	+8.47%
Patagonia	Nano Puff Insula	Outerwear	$239	$168	$178	$185	77.41%	+7.11%
Patagonia	Torrentshell 3L F	Outerwear	$179	$124	$130	$135	75.42%	+6.15%
Patagonia	Better Sweater 1	Apparel	$139	$96	$103	$108	77.70%	+8.63%
Patagonia	Black Hole Duffe	Equipment	$169	$121	$128	$133	78.70%	+7.10%
Control Cohort	Brand A Season	Accessory	$1,450	$680	$590	$550	37.93%	-8.97%
Control Cohort	Brand B Runwa	Footwear	$1,150	$540	$480	$440	38.26%	-8.70%
Control Cohort	Brand C Monogr	Apparel	$890	$410	$375	$365	41.01%	-5.06%
Control Cohort	Brand D Wool Bl	Outerwear	$2,100	$980	$910	$895	42.62%	-4.05%
Control Cohort	Brand E Lambsk	Accessory	$2,800	$1,315	$1,230	$1,210	43.21%	-3.75%

Quarterly Longitudinal Panel Data Ledger (Q1 2022- Q4 2025)



Appendix B: Step by Step Statistical Calculations and Formula Derivations

B.1 Summary Statistics and Basic Summations

Let x denote the quarterly Combined Sustainable VRR (%) and y denote the Primary Demand Index (DI_p):

$$\sum x = 1100.07, \quad \bar{x} = \frac{1100.07}{16} = 68.754$$

$$\sum y = 1149.70, \quad \bar{y} = \frac{1149.70}{16} = 71.856$$

$$\sum x^2 = 75757.26, \quad \sum y^2 = 82926.85, \quad \sum xy = 79218.42$$

B.2 Sums of Squares and Cross Products (S_{xx}, S_{yy}, S_{xy})

$$S_{xx} = \sum x^2 - \frac{(\sum x)^2}{n} = 75757.26 - \frac{(1100.07)^2}{16} = 75757.26 - 75634.62 = 122.64$$

$$S_{yy} = \sum y^2 - \frac{(\sum y)^2}{n} = 82926.85 - \frac{(1149.70)^2}{16} = 82926.85 - 82613.13 = 313.72$$

$$S_{xy} = \sum xy - \frac{(\sum x)(\sum y)}{n} = 79218.42 - \frac{(1100.07)(1149.70)}{16} = 79218.42 - 79049$$

B.3 Pearson Product-Moment Correlation Coefficient (r)

$$r = \frac{S_{xy}}{\sqrt{S_{xx} \cdot S_{yy}}} = \frac{169.22}{\sqrt{122.64 \times 313.72}} = \frac{169.22}{\sqrt{38474.62}} = \frac{169.22}{196.15} \approx 0.7423$$

$$R^2 = (0.7423)^2 \approx 0.5510 \quad (55.10\%)$$

B.4 Hypothesis Testing for Statistical Significance

- $H_0 : \rho = 0$ (No correlation exists)
- $H_1 : \rho \neq 0$ (Two-tailed test for linear relationship)
- Degrees of freedom: $df = n - 2 = 16 - 2 = 14$

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} = \frac{0.7423 \times \sqrt{14}}{\sqrt{1-0.5510}} = \frac{0.7423 \times 3.7417}{\sqrt{0.4490}} = \frac{2.7774}{0.6701} \approx 4.145$$

Decision Rule: For a two-tailed Student's t-test at $\alpha = 0.01$ with $df = 14$, the critical value from standard statistical tables is $t_{crit} = 2.977$.

Because $t_{calc} = 4.145 > 2.977$, the result is statistically significant at the 1% significance level ($p < 0.01$). The null hypothesis H_0 is rejected.

B.5 Derivation of Bivariate Ordinary Least Squares Regression ($y = a + bx$)

The slope coefficient (b) represents the rate of change in primary demand per unit change in secondary retention:

$$b = \frac{S_{xy}}{S_{xx}} = \frac{169.22}{122.64} \approx 1.357$$

The intercept coefficient (a) is computed using the sample means:

$$a = \bar{y} - b\bar{x} = 71.856 - (1.357 \times 68.754) = 71.856 - 93.299 = -21.443$$

Thus, the linear regression prediction model is:

$$\widehat{DI}_p = -21.44 + 1.36(\text{VRR})$$