

Impact of Digital Transformation on Enterprise Value of U.S. Accessible Luxury Companies

Kefan Yu

College of Economics and Management, Nanjing Forestry University, Nanjing, China
1269764378@qq.com

Abstract: Driven by digital economic expansion and evolving consumer behavior, digital transformation fundamentally reshapes fashion retail value chains. This study investigates the dimensional impacts of such transformation on enterprise value within the U.S. accessible luxury sector, leveraging 2015–2024 panel data from eight listed firms. Through an entropy weight method, a three-dimensional framework is constructed to evaluate Digital Channel Construction (DCC), Digital Technology Capability (DTC), and Digital Marketing and Engagement Capability (DMEC). Empirical estimations reveal asymmetrical outcomes. DCC acts as the primary value driver, yielding a significant positive coefficient (0.004, $p = 0.007$). Conversely, DTC exerts a significant negative effect (-0.004 , $p = 0.031$), reflecting substantial upfront cost pressures, whereas DMEC only marginally approaches statistical significance (0.004, $p = 0.096$). These insights imply that firms should prioritize channel integration, phase technology deployment, and strictly monitor marketing attribution.

Keywords: Digital Transformation; Accessible Luxury; Enterprise Value; Fixed-Effects Model; Entropy Weight Method

1. Introduction

Fundamental shifts in digital technology have redrawn competitive boundaries across virtually every sector; luxury goods sit squarely within this wave of change. Where heritage houses once traded almost exclusively on exclusivity, craftsmanship, legacy lineage, accessible luxury brands carve out a different niche—they preserve aspirational brand equity yet price products within broader consumer reach. Such positioning makes digital transformation especially consequential: these firms must navigate the tension between scaling via online channels, safeguarding brand prestige ^[1].

E-commerce, social media marketing, data-driven customer engagement have together upended the global luxury market. Industry reports now place online channel share above 30% of total luxury sales, up from under 10% a decade prior. For U.S.-based accessible luxury players—Tapestry (Coach, Kate Spade), Capri Holdings (Michael Kors, Versace), PVH (Calvin Klein, Tommy Hilfiger)—digital transformation constitutes less an operational option than a strategic necessity for survival, growth. Evidence suggests that optimized information flows, eased financing constraints, accelerated technology innovation can materially lift market value ^[2].

Much existing scholarship on digital transformation clusters around technology-intensive sectors or mass-market retail; the luxury, accessible luxury segments receive comparatively scant attention. Looking at the methodology, a noticeable pattern in past research is the heavy reliance on self-reported surveys and qualitative case studies. Such approaches inevitably introduce subjective bias into the empirical data. We take a different path to bypass this vulnerability. Instead of operating on subjective feedback, this study pulls the Management Discussion and Analysis (MD&A) sections straight from official 10-K filings. We then apply text-based frequency analysis to quantify digital transformation intensity in a purely objective manner, while corresponding financial performance metrics are drawn directly from SEC filings to handle the outcome side of the equation.

When it comes to the literature on digital transformation, several analytical frameworks have already taken shape. For instance, Zhao Lijin and Hu Xiaoming ^[3] used the Technology-Organization-Environment (TOE) theory to map out specific drivers across technological, organizational, and environmental layers. They essentially broke down the transformation trajectory into three distinct steps: technology-led, customer-led, and finally, ecosystem-led. Taking a slightly different angle, Li Hui and Liang Dandan ^[4] looked closely at the underlying mechanisms. They characterized the whole

process as a systemic overhaul that involves integrating business processes, personalizing product concepts, internetizing mindsets, and platformizing organizations. Our study builds on these foundational insights but condenses the phenomenon into three practical, measurable dimensions: Digital Channel Construction (DCC), Digital Technology Capability (DTC), and Digital Marketing and Engagement Capability (DMEC). To tie everything together, dynamic capabilities theory serves as our main theoretical anchor. The core idea here is straightforward: companies that can quickly integrate, build, and reconfigure their skills are the ones that survive rapid environmental shifts. Digital transformation is a textbook example of this dynamic capability. It gives firms the concrete tools to spot new market opportunities, capture them through digital touchpoints, and reshape their internal architecture accordingly.

This research moves the conversation forward in several distinct ways. To begin with, we construct a composite digital transformation index designed specifically for the accessible luxury market, built around the DCC, DTC, and DMEC triad. Existing literature often points out that digital upgrades in traditional industries require a mix of technology, talent, and policy support^[5], but hard, quantitative measurements of these outcomes are still quite rare. This new index solves that specific data scarcity. Next, we use the entropy weight method to calculate indicator weights mathematically. This choice is deliberate because it completely removes personal bias from the weighting process. Finally, our empirical foundation relies on a solid eight-year panel dataset (2015–2024) of listed U.S. accessible luxury firms, offering a clear, data-driven look at how digital transformation actually moves the needle on enterprise value.

2. Research Hypotheses

Grounded in dynamic capabilities theory, the multi-dimensional digital transformation framework outlined above, this paper derives hypotheses linking each transformation dimension to enterprise value.

2.1 Digital Channel Construction and Enterprise Value

Digital Channel Construction (DCC) spans e-commerce platform development, omni-channel retail integration, online sales infrastructure. For accessible luxury firms, digital channels function as pivotal touchpoints that extend market coverage without diluting brand control. Proprietary web stores, partnerships with third-party luxury platforms, seamless online-to-offline experiences can all directly boost revenue, improve asset turnover. Textile, apparel sector evidence already documents positive sales effects from omni-channel strategy adoption^[1]. This paper advances:

H1: Digital Channel Construction has a positive effect on enterprise value (ROA).

2.2 Digital Technology Capability and Enterprise Value

Digital Technology Capability (DTC) captures spending on cloud computing infrastructure, Enterprise Resource Planning (ERP) systems, data analytics platforms. These technologies promise long-run efficiency gains; they also demand substantial upfront capital, ongoing maintenance expenditure. Over short-to-medium horizons, cost burdens frequently outweigh productivity improvements, particularly during complex system migration episodes. Corporate governance research in textiles documents how technology investments can strain financial resources before yielding measurable returns^[6]. This paper advances:

H2: Digital Technology Capability has a negative or insignificant effect on enterprise value (ROA) in the short term.

2.3 Digital Marketing and Engagement Capability and Enterprise Value

Digital Marketing Engagement Capability (DMEC) reflects resource commitment to social media marketing, mobile application development, digital customer engagement. For accessible luxury brands, social platforms—Instagram, TikTok, WeChat prominently—have evolved into essential venues for brand narrative, influencer collaboration, direct consumer dialogue. Mobile apps enable personalized shopping journeys, loyalty program integration. Together these capabilities strengthen brand awareness, customer acquisition, retention, ultimately flow through to revenue expansion. This paper advances:

H3: Digital Marketing and Engagement Capability has a positive effect on enterprise value (ROA).

3. Research Design

3.1 Data Source

Eight U.S. listed accessible luxury firms constitute the sample: Capri Holdings (CPRI), Ralph Lauren (RL), Tapestry (TPR), PVH Corp (PVH), Movado Group (MOV), Signet Jewelers (SIG), G-III Apparel Group (GIII), Steven Madden (SHOO). Fiscal years 2015 through 2024 are covered, producing 80 firm-year observations. Revenue, net income, total assets, total liabilities, shareholders equity data come from SEC EDGAR 10-K filings. Digital transformation indicators are built via keyword frequency counts in MD&A sections of those same 10-K reports.

3.2 Variable Selection

3.2.1 Dependent Variable

Return on Assets (ROA) functions as the dependent variable, computed as net income attributable to parent-company shareholders divided by total assets. ROA enjoys wide currency in the literature as a composite gauge of profitability, value-creation efficiency; it captures how effectively a firm converts its asset base into earnings.

3.2.2 Explanatory Variables

Ten sub-indicators (Sub-indicators), grouped under three dimensions (Dimensions), quantify digital transformation. Each dimension contains multiple sub-indicators; each sub-indicator maps onto a set of extended keywords (Keywords) used for MD&A text frequency analysis. Entropy weighting assigns indicator weights objectively, drawing on frequency variation across the full sample, as shown in Table 1:

(1) Digital Channel Construction (DCC) contains three sub-indicators. E-commerce (keywords: e-commerce, ecommerce, electronic commerce); omni-channel (keywords: omni-channel, omnichannel, multi-channel, multichannel); online (keywords: online sales, online store, online channel, online retail, online platform). DCC gauges firm capacity to broaden market reach through e-commerce platforms, omni-channel integration, online sales channels.

(2) Digital Technology Capability (DTC) contains three sub-indicators. Cloud (keywords: cloud computing, cloud-based, cloud infrastructure, cloud technology, cloud services); data analytics (keywords: data analytics, big data, data analysis, data mining, business intelligence); ERP (keywords: enterprise resource planning, ERP system, SAP, Oracle ERP). DTC measures how far a firm has built out technology capabilities in cloud infrastructure, data analytics, enterprise resource planning.

(3) Digital Marketing Engagement Capability (DMEC) contains four sub-indicators. Social media (keywords: social media, Facebook, Instagram, Twitter, TikTok, Snapchat, Pinterest); digital marketing (keywords: digital marketing, online marketing, internet marketing, email marketing, search engine marketing, SEO, SEM); mobile app (keywords: mobile app, mobile application, smartphone app, iOS app, Android app, WeChat); customer engagement (keywords: customer engagement, consumer engagement, client engagement, customer interaction, customer experience, user engagement). DMEC reflects firm ability to deploy social media, digital marketing, mobile applications, customer engagement tactics for brand communication, consumer outreach.

Table 1 Digital Transformation Indicator System: Dimensions, Sub-indicators, and Entropy Weights

Dimension	Sub-indicator	Weight
DCC	e-commerce	0.1910
DCC	omni-channel	0.5491
DCC	online	0.2599
DTC	cloud	0.3217
DTC	data analytics	0.4745
DTC	ERP	0.2038
DMEC	social media	0.2255
DMEC	digital marketing	0.2042
DMEC	mobile app	0.3936
DMEC	customer engagement	0.1767

Note. Each sub-indicator corresponds to a group of extended keywords for MD&A text frequency

analysis (see Section 3.2.2 for details). Weights are determined by the entropy weight method based on sub-indicator frequencies across all 80 firm-year observations.

3.2.3 Control Variables

We draw on corporate governance and firm performance research in the textile industry to select our control variables [6]. This study includes:

- (1) Firm Size (SIZE): the natural logarithm of total assets, controlling for scale effects.
- (2) Leverage Ratio (LEV): total liabilities divided by total assets, a proxy for financial risk exposure.
- (3) Revenue Growth Rate (GROWTH): the year-over-year change in operating revenue, reflecting how fast the business is expanding.

4. Empirical Analysis

4.1 Descriptive Statistics

Table 2 lays out descriptive statistics across all variables. ROA averages 0.072, translating into a 7.2% mean return on assets among sample firms. Among the three transformation dimensions, Digital Channel Construction (L1_DCC) posts the highest mean (5.832); Digital Technology Capability (L1_DTC) follows at 3.086; Digital Marketing Engagement Capability (L1_DMEC) trails at 1.022. This ranking points to heaviest investment in digital sales channel buildout. Mean leverage stands at 0.548, suggesting moderate indebtedness. Revenue growth averages 6.4%, though with sizable variation (standard deviation = 0.130).

Table 2 Descriptive Statistics

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	80	.072	.069	-.086	.327
l1 dcc	72	5.832	4.552	0	16.574
l1 dtc	72	3.086	4.746	0	22.759
l1 dmec	72	1.022	2.475	0	20.6
size	80	22.004	.966	20.184	23.336
lev	80	.479	.157	.168	.784
growth	80	.056	.192	-.35	.734

Note. L1_ denotes one-period lagged variables. N = 72 due to lagged variable construction (80 - 8 missing).

4.2 Regression Analysis

Digital transformation costs concentrate at the front end; benefits materialize with a lag. Accordingly, this study uses one-period lagged explanatory variables throughout the regression exercise. Hausman test results favor fixed effects over random effects (Prob > chi2 = 0.0016), justifying fixed-effects estimation as a vehicle for controlling unobservable firm-specific heterogeneity.

Table 3 presents fixed-effects regression outcomes. Model (1) sets the baseline with lagged transformation variables.

Digital Channel Construction (L1_DCC) has a coefficient of 0.004 ($p = 0.007$). The effect is statistically significant and positive, which supports H1. What we gather from this timeline is that front-end investments in e-commerce infrastructure and omni-channel frameworks require roughly a one-year gestation period before translating into bottom-line returns. Looking at the sheer economic magnitude, the real-world impact is substantial. A single standard deviation increase in DCC (5.024) triggers a 0.02-unit lift in ROA, a shift that represents nearly 28% of the sample mean.

Meanwhile, Digital Technology Capability (L1_DTC) surfaces with a significant negative coefficient of -0.004 ($p = 0.031$), validating the operational friction anticipated in H2. This financial drag stems directly from the capital-intensive nature of deep-tier tech overhauls, including cloud migration, ERP rollouts, and big data architecture. These massive upfront expenditures inevitably squeeze short-term profitability long before systemic efficiencies can kick in. We are essentially witnessing a textbook manifestation of the classic "productivity paradox" frequently documented in

technology adoption literature.

Turning to Digital Marketing and Engagement Capability (L1_DMEC), the metric yields a positive coefficient of 0.004 ($p = 0.096$). This marginal significance offers only tentative, weaker backing for H3. This softer statistical link makes sense given how indirectly marketing efforts trickle down to net profitability. While targeted social media campaigns and mobile applications clearly accelerate top-line expansion, as confirmed by the revenue growth rate coefficient of 0.166 ($p < 0.001$), converting that consumer buzz into immediate profit margins is a much slower process.

The control variables provide additional context for these underlying dynamics. Leverage (LEV) penalizes corporate performance heavily, carrying a significant negative coefficient of -0.246 ($p = 0.011$). Heavy debt loads clearly erode profitability as borrowing costs and financial risks mount. On the flip side, the Revenue Growth Rate (GROWTH) emerges as a dominant driver with a highly significant coefficient of 0.166 ($p < 0.001$). This confirms that top-line commercial momentum remains an exceptional predictor of overall profitability. Interestingly, corporate scale appears irrelevant here; Firm Size (SIZE) fails to achieve significance ($p = 0.599$), indicating that traditional scale advantages do not dictate ROA outcomes within the accessible luxury space. Collectively, the econometric model demonstrates solid explanatory power, yielding a within R-squared of 0.551 that accounts for 55.1% of the within-firm variance in ROA.

Table 3 Fixed-Effects Regression Results

Regression results							
roa	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
l1_dcc	.004	.002	2.78	.007	.001	.008	***
l1_dtc	-.004	.002	-2.21	.031	-.007	0	**
l1_dmec	.004	.003	1.69	.096	-.001	.01	*
size	-.022	.041	-0.53	.599	-.103	.06	
lev	-.246	.093	-2.64	.011	-.433	-.059	**
growth	.166	.03	5.44	0	.105	.227	***
Constant	.638	.862	0.74	.462	-1.087	2.364	
Mean dependent var		0.067	SD dependent var			0.065	
R-squared		0.551	Number of obs			72	
F-test		11.848	Prob > F			0.000	
Akaike crit. (AIC)		-247.921	Bayesian crit. (BIC)			-231.984	

*** $p < .01$, ** $p < .05$, * $p < .1$

5. Conclusion and Recommendations

5.1 Key Findings

We use panel data from eight U.S. accessible luxury firms (2015—2024) to examine how digital transformation affects enterprise value. Our approach combines an entropy-weighted three-dimensional transformation index with a one-period lagged fixed-effects model to deal with endogeneity concerns. Three findings are worth highlighting.

Channel construction has the strongest positive effect on enterprise value, and this effect becomes statistically significant about a year after implementation. Investments in e-commerce platforms and omni-channel integration deliver real returns for accessible luxury brands, most likely because they bring in more customers and improve sales conversion.

Technology capability shows a negative short-term effect, driven by the heavy upfront costs of cloud infrastructure, ERP systems, and data analytics platforms. This is essentially the 'productivity paradox' at work: firms need to manage investor expectations about how long technology investments take to pay off.

Marketing engagement capability reaches only marginal positive significance. Social media marketing and mobile engagement do seem to help create value, but probably through indirect channels rather than by directly improving profit margins.

5.2 Policy Recommendations

Given how potently channel effects sustain firm performance, strategic weight must tilt decisively toward front-end infrastructure. This mandates aggressive capital injection into maturing e-commerce platforms and knitting together seamless omni-channel ecosystems. On a practical level, this requires a complete overhaul of legacy interfaces. Firms need to prioritize intuitive mobile-first platforms, scale Buy Online, Pick Up in Store (BOPIS) frameworks, and establish absolute, real-time cross-channel inventory visibility.

Managing back-end technology infrastructure requires an entirely different tempo rooted in strategic patience. Deep-tier overhauls almost always spark immediate financial friction, meaning an all-at-once launch invariably backfires. A far more effective approach involves a multi-tiered, phased rollout tied directly to data-driven return milestones. Here, managing shareholder expectations is critical. Clear communication about long-term strategic rationales and realistic ROI timelines protects corporate valuation from sudden, short-term shocks to profitability.

Simultaneously, the marginal statistical significance tied to digital marketing exposes a glaring need for tighter financial calibration. Consumer engagement holds obvious value, yet its muted statistical footprint points to a disconnect between promotional spending and actual bottom-line performance. No firm can afford to operate blindly here. Deploying sophisticated marketing attribution analysis serves as the necessary fix, isolating exactly which digital touchpoints fuel genuine margin expansion instead of yielding mere vanity metrics.

Overlaying these operational shifts is the persistent drag of financial leverage on ROA, a reality that demands unwavering capital discipline. Massive digital overhauls routinely suffocate internal cash flows. Consequently, leveraging up to fund these transitions creates a highly dangerous risk profile. Maintaining a prudent capital structure is simply not optional during intensive investment phases. Protecting baseline liquidity ensures that balance sheet vulnerabilities never threaten the long-term survival of the broader digital transformation.

References

- [1] Chen Y X, Qu H J, Dong H Y. *Impact of Digital Transformation on Enterprise Value of Textile and Apparel Enterprises [J]. Journal of Silk*, 2024, 61(4): 1-8.
- [2] Huang D Y, Xie H B. *Impact of Enterprise Digital Transformation on Market Value and Its Mechanism: Empirical Evidence from Chinese Listed Companies [J]. Asia-Pacific Economic Review*, 2022(6): 93-104.
- [3] Zhao L J, Hu X M. *The Basic Logic, Driving Factors, and Realization Path of Enterprise Digital Transformation [J]. Enterprise Economy*, 2022, 41(10): 16-26.
- [4] Li H, Liang D D. *The Mechanism, Path, and Countermeasures of Enterprise Digital Transformation [J]. Guizhou Social Sciences*, 2020(10): 120-125.
- [5] Chen W Y. *Trends and Path Exploration of Digital Transformation in Traditional Industries: A Case Study of Urban Investment Companies [J]. International Development Cooperation*, 2023(11): 112-114.
- [6] Wang Z W. *Research on the Impact of Corporate Governance Structure on the Return of Listed Companies in the Textile and Apparel Industry [J]. South China Finance*, 2013(3): 71-74.