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EXAMINING THE RELATIONSHIP BETWEEN HR DECISION-MAKING, MARKETING BUDGET ALLOCATION, AND ECONOMIC VALUE CREATION

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ABSTRACT

This study examines the relationship between HR decision-making, marketing intensity, and economic value creation in publicly listed firms. While prior research has largely treated human resource management and marketing as separate functional drivers of performance, this study adopts an integrative perspective grounded in a complementarity framework. Using an unbalanced panel of public firms from 2013 to 2023, HR decision-making is operationalized as workforce productivity measured by revenue per employee, and marketing intensity is captured through a three-year moving average of revenue growth. Economic value creation is assessed using both accounting-based and market-based measures. Fixed-effects panel regressions reveal that workforce productivity and marketing intensity do not consistently exhibit strong direct effects on value creation when examined independently. However, their interaction is positively and significantly associated with operating performance, indicating that sustained demand outcomes translate into higher returns when supported by efficient human capital deployment. This complementarity effect is less evident in market-based valuation measures, suggesting differences in how internal alignment is reflected in realized performance versus investor perceptions. Overall, the findings underscore the importance of cross-functional alignment between HR decision-making and marketing outcomes for sustained economic value creation.

KEYWORDS: Human resource decision making; marketing intensity; economic value creation; workforce productivity; strategic complementarities

1 INTRODUCTION

Organizations face persistent pressure to create economic value while navigating uncertainty in labor markets, customer demand, and competitive dynamics. Strategic decisions in human resource management and marketing are central to this challenge. Human resource decision-making shapes how firms attract, develop, and deploy talent, which influences productivity and adaptability. Marketing decisions shape how firms generate and sustain demand by building customer relationships and strengthening market positions. These activities are commonly managed as separate functional domains, yet they operate jointly in practice. Firms execute marketing strategies through people, and human capital generates value partly through market-facing outcomes.

Recent research in strategic human resource management has emphasized that HR effects are often system-level rather than practice-level. The performance consequences of any single HR practice may depend on how it fits with other practices and with broader organizational processes (Boon et al., 2018; Boon et al., 2019). This view aligns with a complementarity perspective. It suggests that the returns to one investment may increase when it is paired with another investment that enables it. In this framing, HR decision-making should not be evaluated only as an internal efficiency mechanism. It should also be examined as a capability that may strengthen the productivity of other strategic investments, including marketing.

Marketing scholarship has similarly highlighted the challenge of linking marketing activities to organizational performance in a consistent and theoretically grounded way. A central concern is that marketing outcomes are multidimensional and that empirical work often relies on heterogeneous measures, which complicates synthesis and inference (Katsikeas et al., 2016). Related work emphasizes the growing importance of marketing accountability and performance assessment systems, especially as firms expand digital channels and data-driven decision processes (Morgan et al, 2022). These streams collectively suggest that examining marketing effects requires careful attention to measurement, timing, and the mechanisms through which marketing generates economic value.

Despite progress in both domains, there remains limited empirical evidence on how HR decision-making and marketing intensity jointly relate to economic value creation. A firm can invest in marketing to stimulate growth, but the effectiveness of those efforts can depend on the organization's

ability to design and execute market-facing activities. That ability is partly determined by human capital quality, workforce productivity, and managerial decisions about how labor is allocated across value-creating tasks. Conversely, strong HR decision-making can raise productivity, yet the realized economic value may depend on whether internal capabilities are translated into demand and revenue generation. This logic implies that HR and marketing may operate as complements rather than as independent contributors to performance.

A persistent obstacle to testing these relationships is the limited availability of consistent firm-level marketing expenditure data in public sources. Advertising and marketing expenses are often reported unevenly across firms and industries, and they may be aggregated into broader categories. This creates measurement error and sample selection risk in archival research. For this reason, marketing research has increasingly acknowledged the use of theoretically defensible outcome-based proxies when expenditure data are unavailable or unreliable, provided that the proxy is aligned with the marketing construct being studied (Katsikeas et al., 2016; Morgan et al., 2022). In demand-generation contexts, sustained revenue growth can reflect realized outcomes of marketing effectiveness, especially when measured over multiple years to reduce noise from temporary shocks.

This study examines the relationship between HR decision-making, marketing intensity, and economic value creation using a panel of publicly listed firms from 2013 to 2023. HR decision-making is operationalized as workforce productivity via revenue per employee, which captures the economic output produced per unit of labor. Marketing intensity is operationalized as a three-year moving average of revenue growth. This measure reflects sustained demand expansion and reduces sensitivity to single-year volatility. The analysis evaluates economic value creation using both accounting-based and market-based outcomes. This dual approach recognizes that value creation can be expressed through current operating returns as well as through investor expectations about future cash flows. The empirical approach uses panel methods with firm and year fixed effects, which helps account for unobserved heterogeneity and macroeconomic time trends.

This study contributes to the literature in three ways. First, it advances research on strategic HRM by demonstrating that the value implications of HR decision-making depend on alignment with market-facing outcomes. Second, it contributes to marketing

and strategy research by employing an outcome-based measure of marketing intensity that is suitable for longitudinal archival analysis. Third, it provides empirical evidence on complementarities between internal workforce productivity and sustained demand outcomes, highlighting the importance of cross-functional alignment for economic value creation.

Research Objectives

1. To examine the relationship between HR decision-making, captured through workforce productivity, and economic value creation in publicly listed firms.
2. To assess how sustained marketing intensity, operationalized through multi-year revenue growth, is associated with firms' economic value creation.
3. To analyze whether HR decision-making moderates the relationship between marketing intensity and economic value creation, indicating a complementary effect between internal human capital efficiency and market-facing outcomes.

2 METHODS

Research Design

This study adopts a quantitative, explanatory research design based on secondary archival data. The objective is to examine the relationships between HR decision-making, marketing intensity, and economic value creation using firm-level panel data. A panel design is appropriate because it allows for the analysis of within-firm variation over time while controlling for unobserved heterogeneity that may bias cross-sectional estimates (Wooldridge, 2010). The empirical strategy relies on fixed-effects regression models, which are commonly used in strategy and management research to isolate the effects of time-varying explanatory variables.

Sample and Data Sources

The sample consists of publicly listed firms observed over the period 2013 to 2023. Firms were included based on the availability of consistent financial and employment data across multiple years. Public firms were selected because they provide standardized financial disclosures that allow for comparability across time. The final panel is unbalanced due to missing observations in some years, which is typical in archival research using longitudinal firm-level data.

All data were obtained from publicly available financial disclosures and compiled into a firm-year panel dataset. The use of publicly accessible sources ensures transparency and replicability. The study

period was chosen to reflect relatively recent reporting practices and to reduce measurement inconsistencies associated with earlier disclosure regimes.

Variable Measurement

Economic Value Creation

Economic value creation is captured using both accounting-based and market-based measures. This dual approach reflects the view that firm value can be expressed through current operating performance as well as through investor expectations.

The primary accounting-based measure is return on assets, defined as net income divided by total assets. Return on assets reflects how efficiently firms generate earnings from their asset base and is widely used in strategic management research.

$$ROA_{it} = \frac{\text{Net Income}_{it}}{\text{Total Assets}_{it}}$$

To complement this measure, a market-based proxy is used to capture investor valuation. Following prior archival studies, a simplified Tobin's Q proxy is constructed as the ratio of market capitalization to book value of equity. This measure reflects market expectations regarding future growth and profitability.

$$Q_{it} = \frac{\text{Market Capitalization}_{it}}{\text{Book Value of Equity}_{it}}$$

Using both measures allows the analysis to assess whether internal decision-making affects realized operating performance and perceived firm value.

HR Decision-Making

HR decision-making is operationalized using workforce productivity, measured as revenue per employee. This proxy captures how effectively firms deploy human capital to generate economic output. Revenue per employee has been widely used as an indicator of human capital efficiency in archival research when detailed HR practice data are unavailable (Boon et al., 2019).

$$HR_{it} = \frac{\text{Revenue}_{it}}{\text{Number of Employees}_{it}}$$

Higher values of this measure indicate more efficient utilization of human resources, which reflects cumulative HR decisions related to hiring, training, task allocation, and performance management. This measure captures the cumulative outcomes of HR-related decisions affecting workforce deployment and productivity, rather than specific HR practices such as training or compensation design. Accordingly, it reflects the economic consequences of HR decision-making rather than its procedural characteristics.

Marketing Intensity

Marketing intensity is measured using an outcome-based proxy derived from sustained revenue growth. Specifically, marketing intensity is operationalized as a three-year moving average of year-over-year revenue growth. This approach captures persistent demand expansion rather than short-term fluctuations.

First, annual revenue growth is calculated as:

$$\text{Growth}_{it} = \frac{\text{Revenue}_{it} - \text{Revenue}_{i,t-1}}{\text{Revenue}_{i,t-1}}$$

Marketing intensity is then defined as the moving average of revenue growth over three consecutive years:

$$\text{Marketing}_{it} = \frac{1}{3} \sum_{k=0}^2 \text{Growth}_{i,t-k}$$

This measure aligns with recent marketing research that emphasizes outcome-based indicators of marketing effectiveness when expenditure data are incomplete or inconsistently reported (Katsikeas et al., 2016; Morgan et al., 2022). The moving average reduces sensitivity to temporary shocks and better reflects sustained marketing outcomes.

Interaction Term

To test whether HR decision-making conditions the effect of marketing intensity on value creation, an interaction term is constructed as the product of workforce productivity and marketing intensity:

$$HR \times \text{Marketing}_{it} = HR_{it} \times \text{Marketing}_{it}$$

This interaction captures complementarity effects between internal human capital efficiency and market-facing demand generation.

Control Variables

The models include firm size as a control variable, measured as the natural logarithm of market capitalization. Firm size is included because larger firms may benefit from scale advantages that influence both performance and valuation. Year fixed effects are included to control for macroeconomic shocks and time-specific trends. Firm fixed effects are included to control for time-invariant firm characteristics such as organizational culture, industry positioning, and managerial philosophy.

Econometric Specification

The empirical analysis employs fixed-effects panel regression models. The baseline specification is as follows:

$$\begin{aligned} \text{Value}_{it} = & \beta_0 + \beta_1 HR_{it} + \beta_2 \text{Marketing}_{it} \\ & + \beta_3 (HR \times \text{Marketing}_{it}) + \beta_4 \text{Size}_{it} \\ & + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned}$$

where Value_{it} represents economic value creation measured by return on assets or the market-based proxy, μ_i denotes firm fixed effects, λ_t denotes year fixed effects, and ε_{it} is the error term.

To address potential concerns about simultaneity, robustness models use a lagged version of marketing intensity. This specification helps ensure that marketing outcomes precede observed value creation:

$$\begin{aligned} \text{Value}_{it} = & \beta_0 + \beta_1 HR_{it} + \beta_2 \text{Marketing}_{i,t-1} \\ & + \beta_3 (HR \times \text{Marketing}_{i,t-1}) \\ & + \beta_4 \text{Size}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned}$$

Standard errors are clustered at the firm level to account for serial correlation within firms over time, consistent with best practices in panel data analysis (Wooldridge, 2010).

3 RESULTS

This section reports the empirical findings from the panel data analysis examining the relationships between HR decision-making, marketing intensity, and economic value creation. The results are presented in three parts. First, descriptive statistics and correlations are reported. Second, the main regression results are discussed. Third, robustness analyses using lagged marketing intensity are summarized. All regression models include firm and year fixed effects, with standard errors clustered at the firm level.

Descriptive Statistics

Table 1 reports descriptive statistics for the key variables. Workforce productivity, measured as revenue per employee, exhibits substantial variation across firm-year observations. This variation indicates meaningful differences in how firms deploy human capital. Marketing intensity, measured as the three-year moving average of revenue growth, shows both positive and negative values, reflecting sustained expansion as well as contraction across firms and time periods. Return on assets also varies considerably, suggesting heterogeneity in firms' ability to generate operating returns from their asset base.

Table 1. Descriptive Statistics

Variable	N	Mean	SD	Min	25%	Median	75%	Max
HR productivity (revenue per employee)	117	0.783	0.542	0.061	0.353	0.709	0.959	2.404
Marketing intensity (3-year avg revenue growth)	93	0.084	0.125	-0.186	-0.001	0.067	0.179	0.381
ROA	117	7.589	8.834	-23.724	0.921	6.989	13.901	31.154

Tobin's Q proxy (market cap/equity)	116	4,893,425	14,286,970	-62,246,520	797,232	3,886,986	9,618,707	46,176,570
Firm size (ln market cap)	116	25.635	1.876	17.504	24.554	25.710	27.068	28.700

Source: Author's calculations

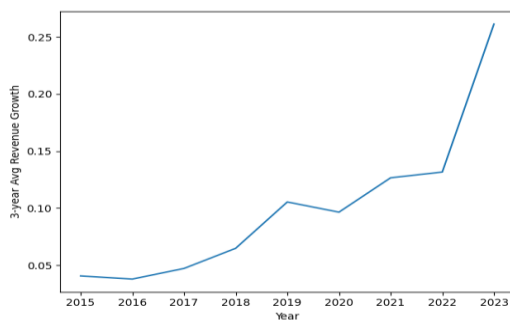


Figure 1. Average three-year moving average of revenue growth by year

Figure 1 illustrates the evolution of average marketing intensity over the sample period,

highlighting variation in sustained revenue growth across years.

Correlation Analysis

Table 2 presents the Pearson correlation matrix for the main variables. Workforce productivity is positively correlated with return on assets, indicating that firms with higher revenue per employee tend to exhibit stronger operating performance. Marketing intensity shows a weaker bivariate relationship with both value measures, which supports the use of multivariate regression analysis. The correlations among explanatory variables remain moderate, suggesting that multicollinearity is unlikely to be a concern.

Table 2. Correlation Matrix

Variable	HR productivity	Marketing intensity	ROA	Tobin's Q proxy	Firm size
HR productivity (revenue per employee)	1.000	0.263	0.448	0.229	0.221
Marketing intensity (3-year avg revenue growth)	0.263	1.000	0.240	0.301	0.208
ROA	0.448	0.240	1.000	0.338	0.268
Tobin's Q proxy (market cap/equity)	0.229	0.301	0.338	1.000	0.257
Firm size (ln market cap)	0.221	0.208	0.268	0.257	1.000

Source: Author's calculations

Main Regression Results

Table 3 reports the fixed-effects regression results with return on assets as the dependent variable. Workforce productivity exhibits a positive association with operating performance, although statistical significance weakens after controlling for

firm and year effects. Marketing intensity does not show a consistent direct effect on return on assets. Figure 2 provides a visual illustration of the association between workforce productivity and return on assets.

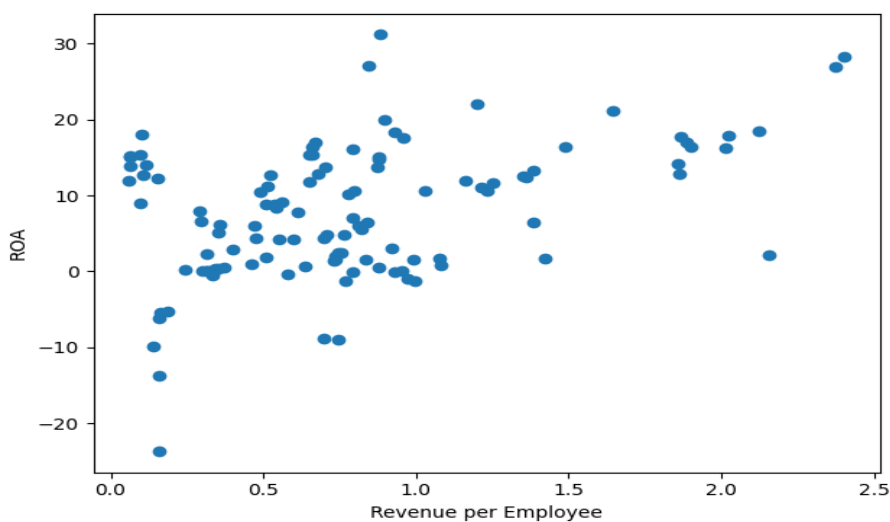


Figure 2. HR Productivity and Return on Assets

The interaction between HR decision-making and marketing intensity is positive and statistically

significant in the contemporaneous specification. This result indicates that sustained revenue growth is

more strongly associated with operating performance when firms exhibit higher workforce

productivity. Firm size is positively and significantly related to return on assets across all specifications.

Table 3. Fixed-Effects Regression Results (Dependent Variable: ROA)

Variable	ROA FE (t) Coef.	SE (clustered)	p	ROA FE (t-1) Coef.	SE (clustered)	p
Intercept	-5.678	36.408	0.876	-21.812	43.971	0.620
HR productivity (revenue per employee)	-0.274	3.957	0.945	7.942	8.012	0.322
Marketing intensity (3-year avg revenue growth)	12.974	23.814	0.586	10.810	20.352	0.595
HR × Marketing	29.194	13.066	0.025	9.341	16.151	0.563
Firm size (ln market cap)	0.596	1.280	0.642	0.772	1.629	0.635

Source: Author's calculations

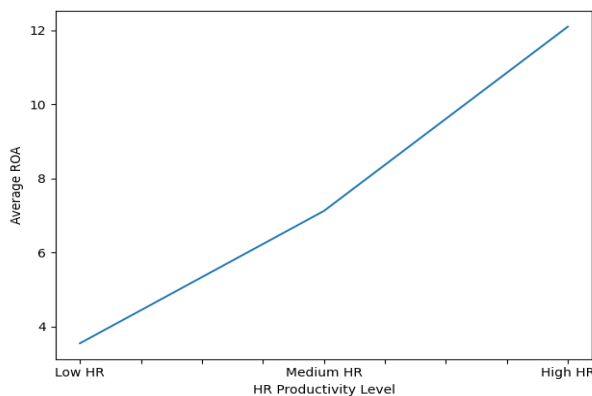


Figure 3. Interaction Pattern Between HR Productivity and Value Creation

Figure 3 depicts average operating performance across different levels of HR productivity, illustrating the pattern underlying the estimated interaction effect.

Market-Based Value Results

Table 4 reports results using the market-based value proxy. The interaction between HR decision-making and marketing intensity is positive but less precisely estimated in these models. Firm size remains positively associated with market valuation. These findings suggest that complementarities between HR productivity and marketing outcomes are more directly reflected in operating performance than in investor valuation.

Table 4. Fixed-Effects Regression Results (Dependent Variable: Tobin's Q Proxy)

Variable	Q FE (t) Coef.	SE (clustered)	p	Q FE (t-1) Coef.	SE (clustered)	p
Intercept	(-) 128,960,800	87,571,130	0.141	(-) 156,441,500	73,418,040	0.033
HR productivity (revenue per employee)	8,787,174	8,891,887	0.323	9,715,769	9,881,915	0.326
Marketing intensity	-74,927,410	45,775,430	0.102	-38,932,470	47,689,300	0.414
HR × Marketing	43,923,310	33,065,690	0.184	1,287,939	34,644,950	0.970
Firm size (ln market cap)	4,713,858	2,922,953	0.107	5,677,652	2,565,484	0.027

Source: Author's calculations

In the market-value models, coefficients are less precisely estimated. Firm size is statistically significant in the lagged model.

Notes on inference

Because the panel includes 12 firms, clustered standard errors can be sensitive in small-cluster settings. The decision to cluster at the firm level is consistent with established guidance for panel regressions, but inference should be interpreted cautiously given the limited number of clusters (Cameron & Miller, 2015; Esarey & Menger, 2019). Recent work also clarifies when clustering adjustments are appropriate and how clustering relates to dependence structures in the data (Abadie et al., 2023).

Robustness Analysis

To address concerns about simultaneity and reverse causality, additional models use a lagged version of

marketing intensity. These specifications ensure that sustained revenue growth precedes observed value creation. In the lagged models, the direct effect of marketing intensity remains statistically weak. The interaction term between HR decision-making and lagged marketing intensity also weakens and loses statistical significance.

While this attenuation suggests that the complementarity effect is sensitive to timing, it does not negate the main findings. Instead, it indicates that the joint impact of HR productivity and marketing outcomes may be more contemporaneous in nature, reflecting ongoing alignment between internal capabilities and market performance rather than delayed effects.

Overall, the results provide partial support for the argument that HR decision-making and marketing intensity jointly shape economic value creation. The findings emphasize the importance of considering

complementarities between internal human capital efficiency and sustained demand generation, rather than evaluating HR and marketing investments in isolation.

4 DISCUSSION

This study examined how HR decision-making and marketing intensity jointly relate to economic value creation in publicly listed firms. The results provide nuanced evidence that complements existing research on strategic resource allocation. In particular, the findings suggest that HR decision-making, when combined with sustained demand outcomes, plays a meaningful role in shaping operating performance. At the same time, the results highlight important differences between accounting-based and market-based value measures.

The analysis shows that workforce productivity, measured as revenue per employee, is positively associated with operating performance at the descriptive level. However, this relationship weakens in fixed-effects models once unobserved firm characteristics and time effects are controlled for. This pattern is consistent with prior research suggesting that much of the performance advantage associated with human capital efficiency may be driven by persistent firm-level attributes rather than short-term changes in HR decision-making alone (Ployhart et al., 2014). The results reinforce the view that HR effects are often embedded in broader organizational systems and may not manifest as strong standalone effects in within-firm estimations. Marketing intensity, operationalized as sustained revenue growth, does not exhibit a consistently significant direct effect on economic value creation. This finding aligns with prior evidence showing that marketing outcomes do not automatically translate into higher profitability or valuation, particularly when examined over short horizons or in isolation (Srinivasan et al., 2009). The lack of a strong direct effect underscores the importance of examining contextual factors that shape the effectiveness of marketing-related outcomes.

The most informative result emerges from the interaction between HR decision-making and marketing intensity in the operating performance models. The positive and statistically significant interaction in the contemporaneous return on assets specification suggests that sustained revenue growth is more strongly associated with operating returns when firms exhibit higher workforce productivity. This finding supports a complementarity perspective, which posits that the value of one strategic resource depends on the presence and

quality of other resources (Ennen & Richter, 2010). In this case, marketing outcomes appear to generate greater economic returns when firms possess the human capital capacity to support execution, coordination, and adaptation.

The attenuation of the interaction effect in lagged models warrants careful interpretation. One explanation is that the complementarity between HR decision-making and marketing outcomes operates through contemporaneous alignment rather than delayed effects. Marketing activities and workforce deployment often require real-time coordination, especially in environments characterized by rapid feedback from customers and markets. Prior research suggests that the benefits of cross-functional alignment may depend on the timing and coordination of internal capabilities and external demand conditions. The results are therefore consistent with the notion that complementarities are dynamic and may depend on ongoing alignment rather than static investment levels.

The market-based value results further illustrate the complexity of translating internal decision-making into investor perceptions. The interaction between HR productivity and marketing intensity is not statistically significant in the Tobin's Q models. This pattern is consistent with evidence that financial markets may respond more strongly to observable growth signals, scale, and risk characteristics than to internal efficiency measures that are less transparent to investors (Belo et al., 2014). It also suggests that complementarities between HR and marketing may influence realized operating outcomes before they are reflected in market valuations.

Taken together, these findings contribute to the growing literature that emphasizes the importance of integrated decision-making across functional domains. Rather than viewing HR and marketing as independent drivers of performance, the results suggest that their joint alignment matters for value creation. This insight is consistent with recent calls to move beyond siloed analyses and toward system-level perspectives on strategy implementation (Felin et al., 2015). The findings also support the use of outcome-based proxies for marketing intensity in archival research, particularly when expenditure data are unavailable or unreliable.

From a managerial perspective, the results imply that investments aimed at improving workforce productivity may enhance the returns to marketing-related growth efforts. Managers should therefore consider how HR policies, skill development, and workforce allocation decisions support the execution of market-facing activities. At the same time, the

absence of strong market-valuation effects cautions against assuming that such complementarities will be immediately recognized by investors. The benefits of aligned HR and marketing decisions may first materialize in operating performance before influencing external perceptions of firm value.

Although the sample size is limited in terms of the number of firms, the longitudinal structure of the data allows the analysis to focus on within-firm variation over time. This design is appropriate for examining complementarities between HR decision-making and marketing outcomes, which are inherently dynamic and context dependent. Rather than aiming for broad population-level generalization, the study contributes by testing theoretically grounded relationships using detailed firm-year observations. Such an approach aligns with prior strategy research that prioritizes internal validity and temporal variation when examining resource interactions.

The study operationalizes HR decision-making through workforce productivity, which captures outcomes rather than discrete HR practices. While this approach is appropriate for archival analysis, it does not allow differentiation among specific HR policies. Future research could extend this work by incorporating more granular measures of HR systems and practices.

Although fixed effects mitigate concerns related to macroeconomic and industry-wide demand shocks, revenue growth cannot fully disentangle marketing effects from other sources of demand variation.

The study has limitations that suggest directions for future research. Future studies could extend the analysis to larger samples or different institutional contexts. Research using richer data on marketing activities and HR practices could further refine the understanding of the mechanisms underlying the observed complementarities.

5 CONCLUSION

This study provides an integrative perspective on economic value creation by examining how HR decision-making and marketing intensity interact within firms. Rather than treating these domains as

independent drivers of performance, the findings emphasize the importance of their alignment. The results suggest that workforce productivity enhances the value-creating potential of sustained demand outcomes, particularly in terms of operating performance. This insight reinforces the idea that value creation emerges from coordinated decision-making across internal and market-facing functions. An important implication of this study concerns how marketing intensity is conceptualized and measured in empirical research. By focusing on sustained revenue growth as an outcome-based proxy, the analysis shifts attention from reported expenditures to realized market performance. This approach acknowledges the limitations of archival marketing expenditure data while offering a theoretically grounded alternative that captures demand-side effectiveness over time. The findings demonstrate that such proxies can be informative when used carefully and interpreted within an appropriate strategic framework.

The distinction between operating performance and market-based valuation outcomes offers further insight. While complementarities between HR decision-making and marketing intensity are reflected in accounting-based measures, they are less evident in market valuation. This pattern suggests that internal alignment may first influence realized performance before shaping external perceptions. For managers, this highlights the importance of patience and communication when evaluating the returns to coordinated strategic investments.

More broadly, the study contributes to a growing body of work that emphasizes systemic and cross-functional views of strategy. It suggests that firms seeking sustained value creation should move beyond optimizing individual functions in isolation. Instead, attention should be directed toward how internal capabilities support and amplify market-facing outcomes. Future research can build on this perspective by examining additional forms of complementarities and by exploring how alignment mechanisms evolve across different organizational and institutional contexts.

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